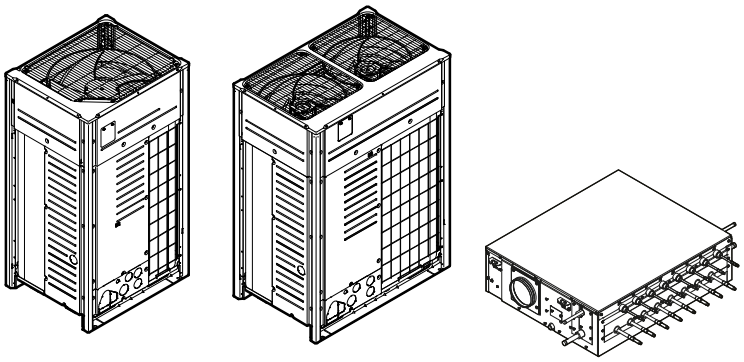
Service manual

VRV5 Heat Pump outdoor unit
VRV5 Safety valve box



RXYA8A7Y1B
RXYA10A7Y1B
RXYA12A7Y1B
RXYA14A7Y1B
RXYA16A7Y1B
RXYA18A7Y1B
RXYA20A7Y1B

RYMA5A7Y1B

SV1A25AJV1B
SV4A14AJV1B
SV6A14AJV1B
SV8A14AJV1B

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- Troubleshooting – To retrieve error codes and check error history: Procedures "via the wired remote controller BR1E" and "via the wireless remote controller BRC4/7" removed.
- Troubleshooting – Error based troubleshooting: Overview of error codes updated.
- Troubleshooting – Error based troubleshooting: Error code E1-01 updated to E1-01-02.
- Troubleshooting – Error based troubleshooting: Error code E1-02 removed.
- Troubleshooting – Error based troubleshooting: Error code E3-20-21 updated.
- Troubleshooting – Error based troubleshooting: Error codes E9-03-06, E9-04-07 and E9-29-34 updated.
- Troubleshooting – Error based troubleshooting: Error code HA-00 renamed to HA-01.
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- Troubleshooting – Error based troubleshooting: Error code UF-01 updated.
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- Third party components – Refrigerant circuit: Additional refrigerant charge amount updated.
- Technical data – Field settings: Mode 2: Field settings updated.

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- Third party components – Refrigerant circuit: Location of gas stop valve and equalising pipe stop valve updated.
- Technical data – Component overview: Location of gas stop valve and equalising pipe stop valve updated.
- Technical data – Field settings: "Mode 1: Field settings" updated.

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1 Safety precautions

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

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

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

1.1 Meaning of warnings and symbols



DANGER

Indicates a situation that results in death or serious injury.



DANGER: RISK OF ELECTROCUTION

Indicates a situation that could result in electrocution.



DANGER: RISK OF BURNING/SCALDING

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



DANGER: RISK OF EXPLOSION

Indicates a situation that could result in explosion.



WARNING

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



WARNING: FLAMMABLE MATERIAL



CAUTION

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



NOTICE

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

INFORMATION

Indicates useful tips or additional information.

1.2 Dangers

DANGER: RISK OF BURNING/SCALDING

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

DANGER: RISK OF ELECTROCUTION

- Turn OFF all power supply before removing the switch box cover, connecting electrical wiring or touching electrical parts.
- Where applicable, stop the equipment's operation first and allow (refrigerant) pressure to 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 componennts from getting wet while the service cover is opened.

1.3 Warnings

WARNING

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

WARNING

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

WARNING

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

Initial safety checks MUST include that:

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

WARNING

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

WARNING

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

WARNING

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

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

WARNING

If any work is to be conducted on the refrigerating equipment or any associated parts which involves brazing, an appropriate dry powder or CO_2 fire extinguisher MUST be present.

When charging the unit, an appropriate dry powder or CO_2 fire extinguisher MUST be present.

WARNING

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

WARNING

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

WARNING

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

WARNING

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 them 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.

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 breaking into the system or conducting any brazing. The ventilation MUST continue to operate during the period that the work is carried out to prevent accumulation of refrigerant in the work area. The ventilation should safely disperse any released refrigerant and preferably ventilate to the open air.

WARNING

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

WARNING

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

WARNING

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

WARNING

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

WARNING

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

WARNING

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

WARNING

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

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

WARNING

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

WARNING

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

WARNING

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

Please refer to the service manual for more information.

WARNING

- In case refrigerant recovery is required, use the appropriate service ports.
- If applicable for your unit, use the appropriate recovery mode or field setting to smoothly recover the refrigerant.
- ONLY use leak free hoses, couplings and manifolds in good working condition.
- ONLY use recovery cylinders designated and labelled to recover 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.

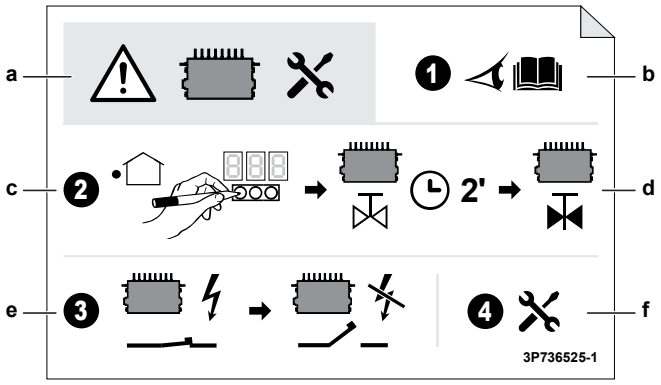
WARNING

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

Before removing any plate work of the SV box (for checking, maintenance or repair purposes), the following steps MUST be performed:

WARNING

Never power off the unit for maintenance and service before the shut-off valves are closed.



a Caution for maintenance and servicing of SV unit
b Consult the installation manual or service manual
c Apply the field setting on the outdoor unit
d Wait for two minutes to allow the system to close the valves
e Turn off the system power
f Perform maintenance and servicing on the SV unit

1. Consult the installation manual of the SV box.
2. At the outdoor unit, set the field setting 2-45-0 to 1 (default = 0).
3. Wait for at least 2 minutes to enable control to close ALL safety valves.
4. Stop the unit operation via the user interface.
5. Turn OFF the respective circuit breaker.

Once the appropriate checking, maintenance or repair has been finished, and ALL plate work is correctly installed on the SV box, perform the following steps:

1. Turn ON the power to the SV box.
2. At the outdoor unit set the field setting 2-45-1 back to 0.
3. Wait for at least 2 minutes before restarting the system.

1.4 Cautions

CAUTION

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

CAUTION

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

CAUTION

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

1.5 Notices

NOTICE

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

NOTICE

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

NOTICE

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

2 General operation

The VRV 5 Heat Pump R32 system consists of 3 types of units:

- Outdoor unit(s)
- Safety valve (SV) unit(s)
- VRV Indoor units

Outdoor units

The VRV 5 Heat Pump R32 outdoor unit has two different types of outdoor unit casing:

Medium casing (5/8/10/12 HP)	Large casing (14/16/18/20 HP)
	

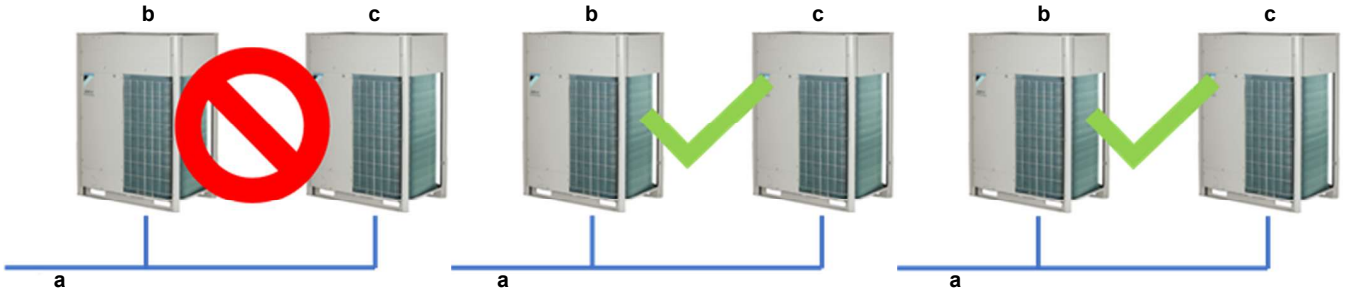
Model name:

- RXYA-A: VRV 5 Heat Pump R32, Single or Multi combination
- RYMA5: VRV 5 Heat Pump R32, ONLY Multi combination
  - RYMA5 units CAN ONLY be used in multi combinations and CANNOT be used as stand-alone units.
  - There are ONLY 2 combination possibilities for RYMA5 units. All other outdoor combinations will result in compatibility error (UA).

Multi combination	Outdoor unit 1	Outdoor unit 2
RXYA10	RYMA5	RYMA5
RXYA13	RXYA8	RYMA5

Attention: There is no compatibility:

- Between indoor or outdoor units using different type of refrigerant R410A and R32.
- Between different series outdoor units in case of outdoor multi combination.



a Refrigerant piping
b A series (R32)
c U or T series (R410A)

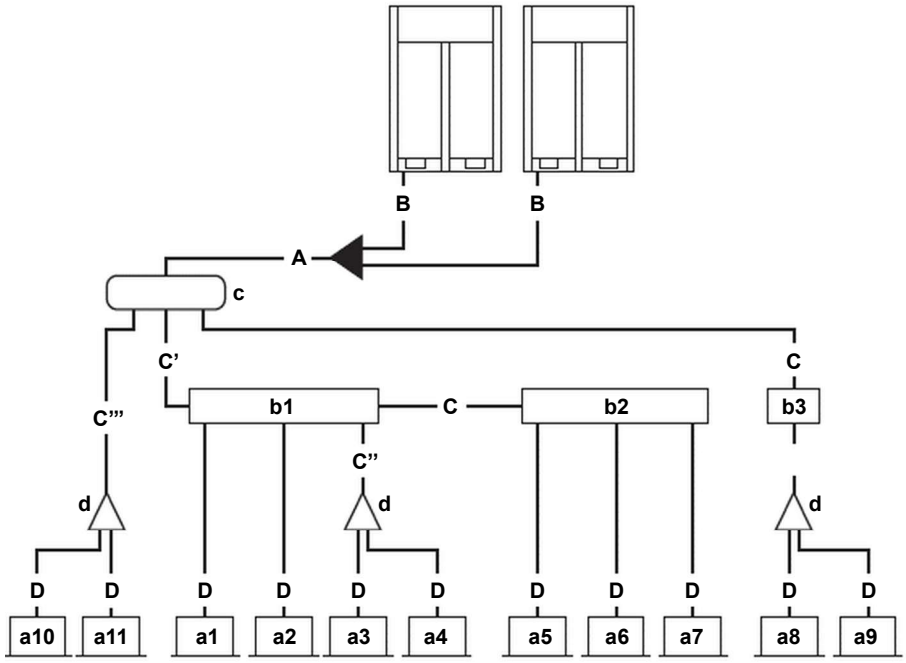
a Refrigerant piping
b A series (R32)
c A series (R32)

a Refrigerant piping
b+c T series (R410A) or U series (R410A)

Up to 2 modules of VRV 5 Heat Pump R32 Outdoor Units CAN be connected using Refnet BHFA22P1007 (Imperial connections) or BHFAM22P1007 (Metric connections).

Total system is limited to 2 modules and system maximum 20 horsepower.

Field piping MUST be thermally insulated copper piping, connected to a combination of Single Circuit SV unit(s) or/and Multi Circuit SV unit(s) or/and indoor units directly.



a1~a11	VRV DX indoor units
b1~b3	SV units
c	First indoor branch kit (header)
d	Indoor branch kit (Refnet joint)
e	Outdoor multi connection kit
A~D	Field piping

SV unit offers 1, 4, 6, or 8 refrigerant circuits. Minimum 1 indoor circuit MUST be used on each SV unit.

To split the refrigerant circuit between outdoor units and different SV units, Daikin Refnet header are used. For details refer to installation manual of the outdoor unit.

After the SV unit, one or more indoor units CAN be connected. To split the refrigerant circuit to the different indoor units to the same port of the SV unit, optional accessory refnet joints are used. For details refer to installation manual of the outdoor unit.

Depending on installation conditions, indoor units might be connected without SV unit. In this case field setting 2-54 MUST be changed. When mode 2 is exit, power reset of outdoor unit is required.

When 2 outdoor modules are used, between the modules all 3 connections MUST be connected to make a continuous heat-pump system. In this combination, during defrost or oil-return in heating mode, indoor units CAN offer some minimum heating capacity.

Outdoor unit heat exchanger actually consists of two separate heat exchangers where each heat exchanger is controlled via its own expansion valve. These heat exchangers are upper and lower heat exchangers.

Depending on difference between actual condensation and evaporation temperature to target condensation and evaporation temperature, outdoor control CAN set the outdoor heat exchangers in following status: In Cooling mode both condenser, or upper condenser + lower evaporator, or in Heating mode both evaporator.

At time of repair on refrigerant piping, it is required to force the safety valves in SV unit(s) to close by field setting 2-45-1.

Safety valve (SV) units



Safety valve (SV) unit:

- SV1A25AJV1B: single port.
- SV4A14AJV1B: 4 ports.
- SV6A14AJV1B: 6 ports.
- SV8A14AJV1B: 8 ports.

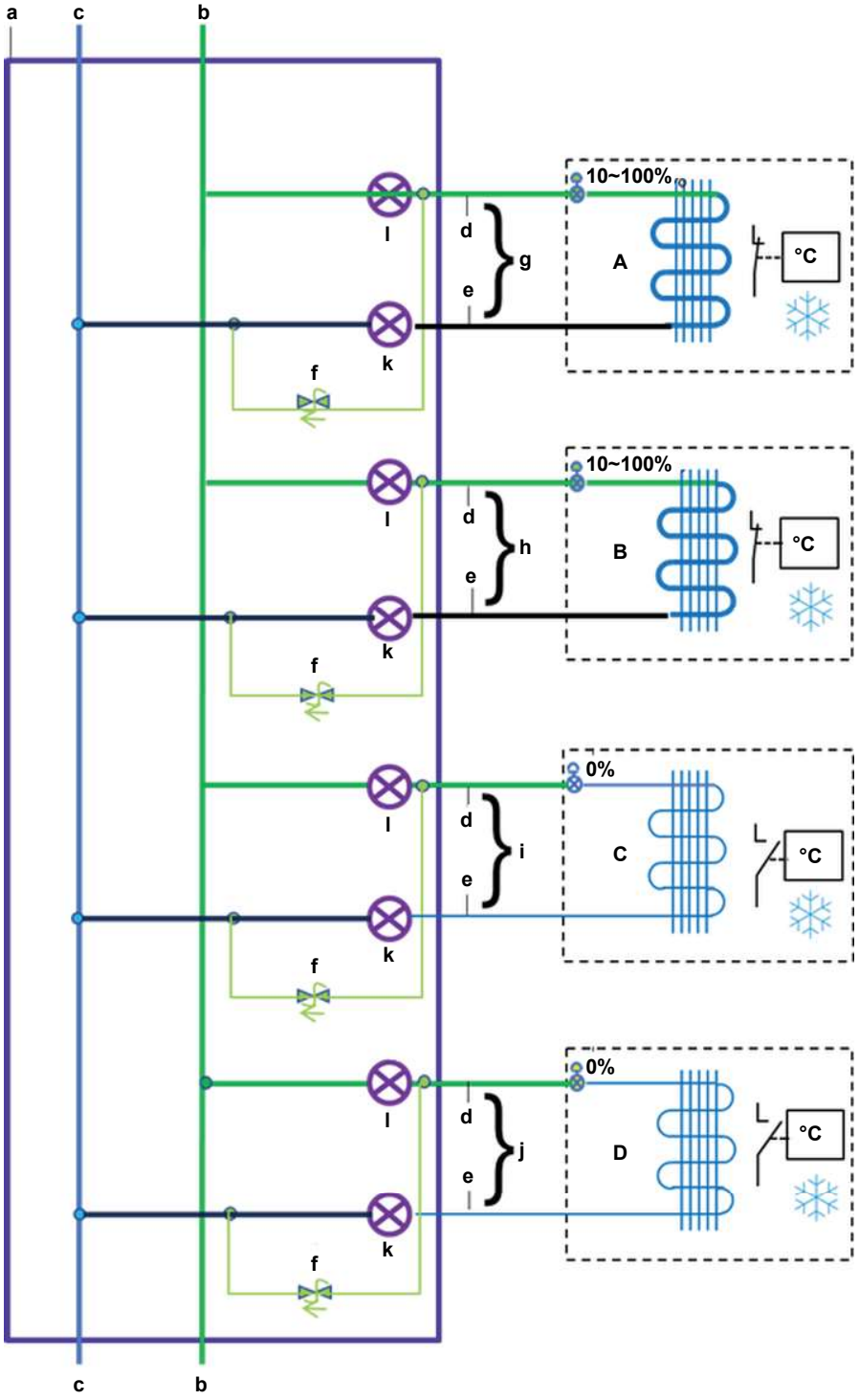
Each indoor circuit CAN have maximum 5 indoor units connected and have maximum index:

- SV1A25AJV1B = maximum index 250 (total index for connected indoor).
- SV4A14AJV1B~SV8A14AJV1B:
  - Each port: 140 (total index for connected indoor).
  - In case indoor index is >140 and ≤250,

    - SV4A14AJV1B~SV8A14AJV1B: circuit A and B or/and C and D MUST be combined by optional refnet EKBSJK.

    - SV6A14AJV1B + SV8A14AJV1B: circuit E and F MUST be combined by optional refnet EKBSJK.

    - SV8A14AJV1B: circuit G and H MUST be combined by optional refnet EKBSJK.



a Multi SV unit
b Liquid pipe (outdoor unit side)
c Gas pressure pipe (outdoor unit side)
d Liquid pipe (indoor unit side)
e Gas pipe (indoor unit side)
f Liquid safety valve internal bypass suction
g Indoor circuit 1 (A)
h Indoor circuit 2 (B)
i Indoor circuit 3 (C)
j Indoor circuit 4 (D)
k Gas safety valve indoor side EVSG
l Liquid safety valve indoor side EVSL

All indoor unit circuits connect the indoor unit side gas pipe to Dual pressure side of the outdoor unit:

- In Cooling mode = low pressure (suction of compressor)
- In Heating mode = high pressure (discharge of compressor)
- Indoor Cooling CAN start

In the SV unit, each indoor circuit is equipped with 2 extra shut-off safety valves. The safety valves are closed when R32 leak is detected;

- In any indoor unit of this port
- In any safety valve unit

After repair of the leak, in case leak occurred at indoor:

- R32 leak sensor MUST be replaced (repair instructions refer to service manual ESIE21-15).
- If through component check, indoor PCB MUST be replaced, ALSO replace the R32 leak sensor.
- Location R32 leak sensor:

Unit	R32 sensor location
FXFA	Drain pan
FXZA	Bell mouth
FXHA	Partition plate coil
FXUA	Below switchbox
FXAA	Front coil
FXDA	Drain pump assembly
FXSA	Drain pump assembly
FXKA	Drain pump assembly
EKVDX	Drain pump assembly
FXMA50~125	Drain pump assembly
FXMA200+250	Side partition plate coil

- After power restore, reset by field setting indoor is required. When disconnect power supply indoor, confirm HAP LED of A1P is OFF.
- Reset by field setting outdoor is required.

Actual sequence when R32 leak detection inside VRV indoor:

- BRC1H52*: error A0-11.
- SV unit individual circuit safety valves EVSG + EVSL close.
- Outdoor keeps operating for other indoor circuits.
- When repair leak:
  - Outdoor setting 2-23-0 to 1 indication "t01".
  - Recover refrigerant except circuit indoor R32 leak (EVSG + EVSL closed).
  - BS3 "t02": outdoor opens all expansion valves.
  - Pressure test to search leak at indoor unit.

- After repair:
  - Outdoor PCB BS3.
  - Power reset indoor: HAP LED OFF!!!
  - Replace R32 leak sensor.
  - Power on: BRC1H52* error CH-10.
  - Reset: BRC1H52* 25-14-1 to 2.
  - Outdoor: UA-55.
  - Outdoor setting reset: 2-24-1 to 0.
  - Resume operation indoor.

After repair of the leak, in case leak occurred at SV unit:

- R32 leak sensor MUST be replaced.
- If through component check, SV unit PCB MUST be replaced, ALSO replace the R32 leak sensor.
- Location R32 leak sensor: left bottom side of switchbox, rear layer.
- After power restore, reset by field setting SV unit is required. To make power reset SV unit:
  - Disconnect circuit breaker to SV unit,
- Reset by field setting outdoor is required.

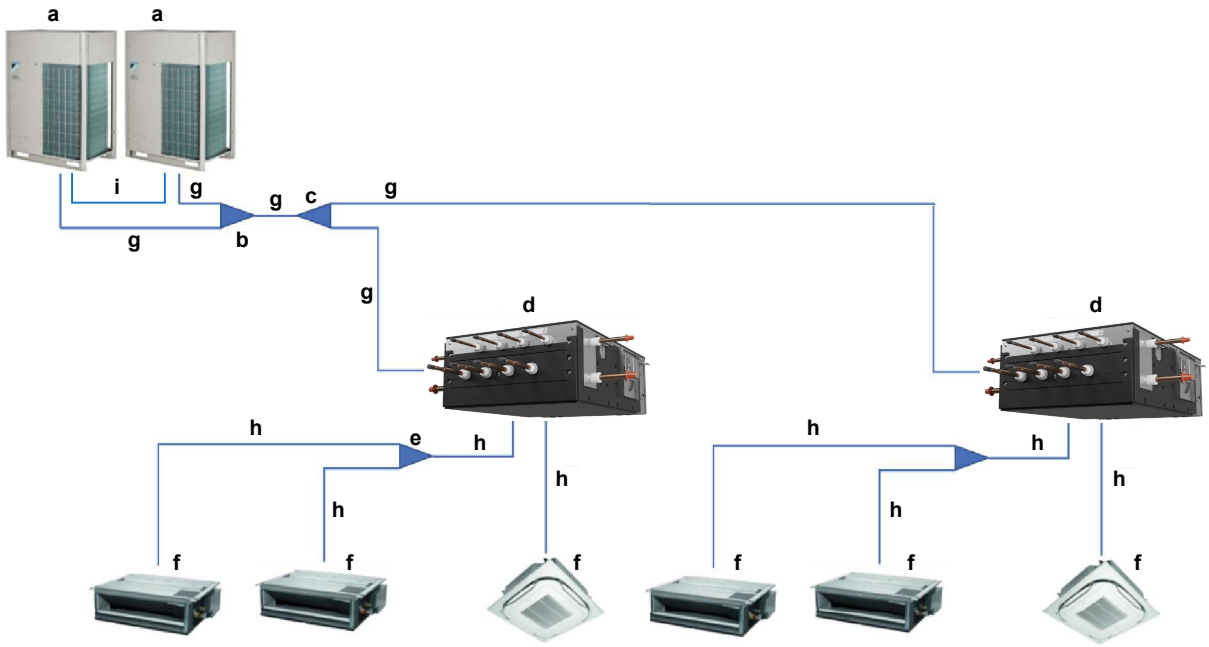
Actual sequence when R32 leak detection inside SV unit:

- BRC1H52* of this SV unit: error A0-20, indoor other SV units: error U9-04.
- All SV units, ALL circuit safety valves EVSG + EVSL close.
- Outdoor stops operation.
- When repair leak:
  - Outdoor setting 2-23-0 to 1 indication "t01".
  - Recover refrigerant except circuit indoor R32 leak (EVSG + EVSL closed).
  - BS3 "t02": outdoor opens all expansion valves.
  - Pressure test to search leak in SV unit.
  - BS3 "t02": outdoor opens all expansion valves (including EVSG + EVSL).
- After repair:
  - Outdoor PCB BS3.
  - Power reset PCB A1P SV unit HAP LED OFF!!!: remove plug X1A.
  - Disconnect power supply to SV unit for repair.
  - Reconnect X1A once HAP LED is OFF.
  - Replace R32 leak sensor.
  - Power on: CH-20 on all indoor units of this SV unit, indoor other SV unit: normal.
  - Reset CH-20: PCB SV unit: 2-5-0 to 1.
  - Outdoor: UA-55 locked state.
  - Outdoor reset: 2-24-1 to 0.
  - Outdoor resume operation.

In the SV unit, each liquid circuit is equipped with an internal liquid safety valve internal bypass to suction. This internal safety valve opens if inlet pressure >4.0 MPa and closes if inlet <3.5 MPa). Abnormal pressure raise, may occur if safety shut off valve liquid and indoor expansion valve are closed, and ambient temperature raised during forced operation-off period.

Indoor units

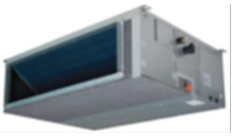
The below illustration does NOT reflect allowed combinations or compatibility. The intention is to give an overview on piping installation for different types of units.



a VRV 5 Heat Pump outdoor unit
b Refnet for outdoor multi connection BHFA22P1007 or BHFAM22P1007
c Refnet KHRQ22M. For actual installation to select correct refnet, see installation manual
d Multi SV unit
e Refnet KHRQ22M. For actual installation to select correct refnet, see installation manual
f VRV indoor unit
g 2 pipes (gas, liquid)
h 2 pipes (gas, liquid)
i Equalizing pipe if multi outdoor

VRV systems have combination limits for different types of indoor units and also limits for piping length and connection ratio for each indoor unit combination pattern. Refer to the Engineering Databook.

The list below is only for reference of compatible units. Always refer to Engineering Databook for compatibility.

Round flow cassette FXFA		Ceiling suspended FXHA	
Fully flat cassette FXZA		4 Way ceiling suspended – FXUA	
Concealed ceiling FXDA		Wall mounted FXAA	
Concealed ceiling with medium ESP - FXSA		EKVDX-A	
Concealed ceiling with high ESP - FXMA50~125		Corner cassette FXKA	
Concealed ceiling with high ESP - FXMA200+250			

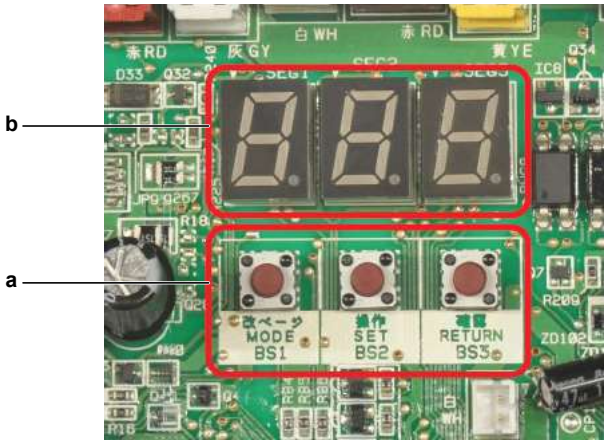
3 Troubleshooting

3.1 To access push buttons and 7-segment display

1 For outdoor unit: Remove the service plate, see "4.14 Plate work" [▸ 309].

2 For SV box: Remove the switch box cover, see "4.14 Plate work" [▸ 309].

Result: The push buttons and 7-segment display are located on A1P.



a Push buttons
b 7-segment display

3 Active error code is highlighted on the 7-segment display.

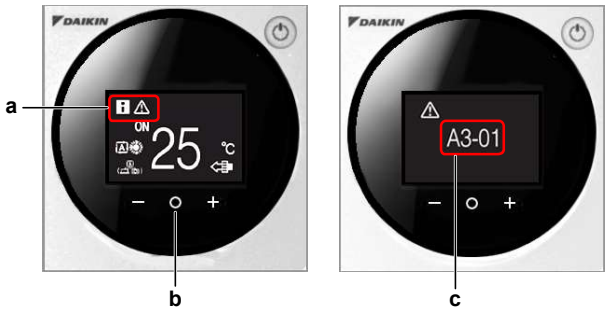
3.2 To retrieve error codes and check error history

3.2.1 Via the indoor unit remote controller BRC1H

> **INFORMATION**
>
> Images are in English and for reference ONLY. For more details on the Madoka Assistant please refer to the BRC1H training course material which is available on the Daikin Business Portal.

To retrieve the error code

To indicate a system error, the controller displays ⚠ on the messages zone of the home screen.



a Messages zone
b Middle button ◯
c Error screen

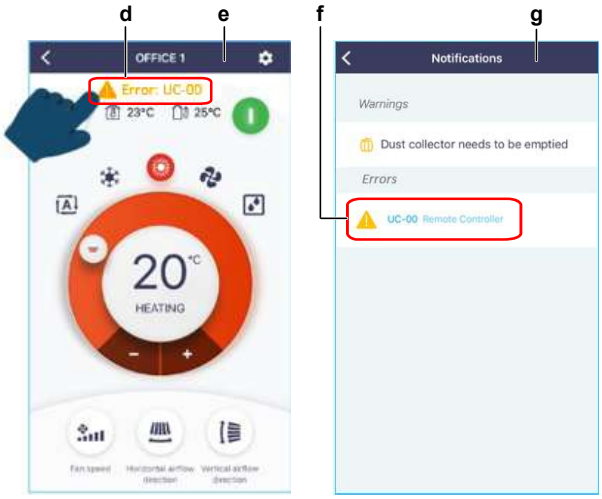
1 Press the middle button ◯ to enter the main menu from the home screen.

Result: An error screen is displayed.

2 Press the middle button ◯ to return to the home screen.

Active error codes are also accessible through the Madoka Assistant for BRC1H.

The active error is shown on the home screen.



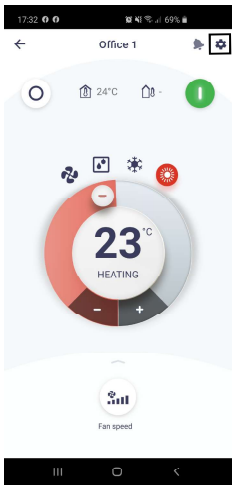
d Active error
e Home screen
f Error(s) details
g Notifications screen

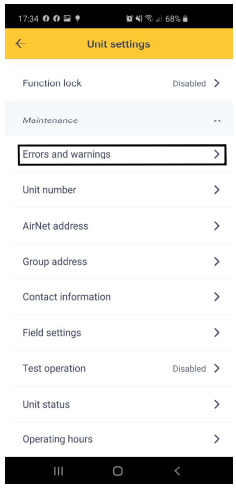
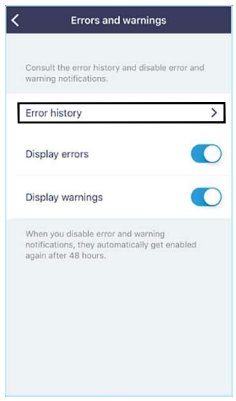
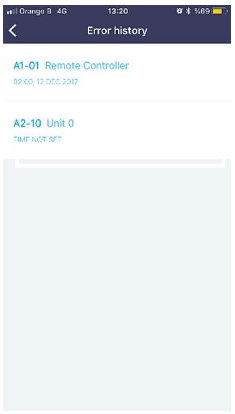
3 Tap the active error.

Result: The detail(s) of the error(s) are shown on the Notifications screen.

To check the error history

To check the error history with the Madoka Assistant for BRC1H:

#	Action	Image for reference	Result
1	Tap the settings icon.		The Unit settings screen is displayed.

#	Action	Image for reference	Result
2	Tap Errors and warnings.		The Errors and warnings screen is displayed.
3	Tap Error history.		 The Error history screen is displayed.

3.2.2 Via the outdoor unit

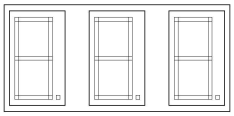
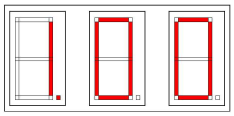
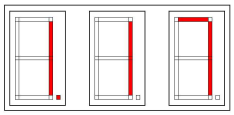
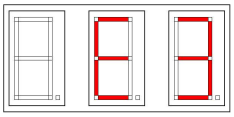
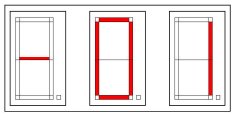
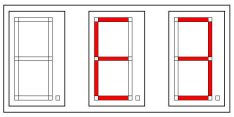
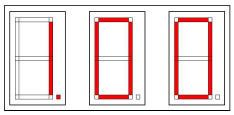
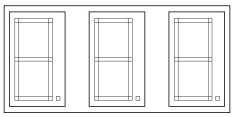
Error codes and/or retry descriptions are accessible on “Mode 1: Monitor Mode”.

The table below shows which setting shows the error codes that led to an outdoor unit forced stop and/or retry.

- When an error is generated, the unit performs a forced off until the error is retrieved.
- On retry, the system attempts to stay in operation. Depending on the type of root cause, after a certain amount of retry attempts, the unit generates an error. Retry cause is also visible as an item on the service monitoring tool.

Mode	Setting	Description
Mode 1: Monitor mode	17	Error code last forced off
	18	Error code 2nd last forced off
	19	Error code 3rd last forced off
	23	Error code last retry
	24	Error code 2nd last retry
	25	Error code 3rd last retry

Please follow the procedure described below to access the regarding error code for outdoor unit forced stop and/or retry description:

Action	Result	Display
Make sure the 7-segment display indication is as during normal operation.		
To enter “Mode 1”, push the (BS1) button one time	Mode 1 is accessed.	
Push the (BS2) button as many times as the setting you want to go to.	The setting is accessed (e.g. 17, Error code last forced off)	
Press the RETURN (BS3) Button.	Malfunction/Retry item will appear on display.	
Press the SET (BS2) Button.	Detailed Malfunction/ Retry sub-code will appear on display.	
Press SET (BS2) once again to return to main Malfunction/Retry display.	Main Malfunction/Retry item will appear on display.	
Press the RETURN (BS3) Button to return to Home Screen for “Monitoring Mode”.	Home Screen for “Monitoring Mode” will appear on display.	
Press the MODE (BS1) Button to return to “Normal Mode”.	Back in normal mode.	

3.2.3 Via service monitoring tool

With the service monitoring tool, it is possible to monitor not only error codes but also some common retries and stepping down controls:

- Unit error
- Error code
- High pressure retry
- Low pressure retry
- Discharge pipe retry
- Inverter retry
- High pressure stepping down control
- Low pressure stepping down control
- Over current stepping down control
- Fin temperature stepping down control
- Compressor discharging stepping down control

3.3 Error based troubleshooting

3.3.1 Overview of error codes

Main error code	Sub code		Description
	Main unit	Sub unit	
A0	00		External Protection Device Activated
	11		R32 Leakage Detection
	13		False R32 Leakage Detection
	20		R32 Leakage Detection At Safety Valve Box
A3	01		Open Float Switch On Optional Drain-up Kit Of Safety Valve Box
CH	01		R32 Leak Detection Sensor Failure Or Disconnected
	02		R32 Leak Detection Sensor Life Time Is Exceeded
	05		R32 Leak Detection Sensor Life Time <6 Months
	10		R32 Leak Detection Sensor Replacement To Confirm
	20		R32 Leak Detection Sensor Replacement At Safety Valve Box To Confirm
	21		R32 Leak Detection Sensor At Safety Valve Box Failure Or Disconnected
	22		R32 Leak Detection Sensor At Safety Valve Box Life Time <6 Months
	23		R32 Leak Detection Sensor At Safety Valve Box Life Time Is Exceeded
E1	01	02	Outdoor Unit Main PCB A1P Error
	15		Safety Valve Box Main PCB Error
E2	01	02	Current Leak Detection
	06	07	Open Circuit on Earth Leakage Detection Core
E3	01	03	Actuation of High Pressure Switch
	02	04	High Pressure Error
	07		High Pressure Switch Reset Error
	13	14	Liquid Stop Valve Check Error
	18		Actuation of High Pressure Switch During Test Run
	20	21	Actuation Of High Pressure Switch S2PH (Gas Pipe Indoor)
E4	01	02	Low Pressure Error
E5	01	02	Compressor Overload/Motor Lock Error
E6	17	19	Inverter Overcurrent Error
E7	01	13	Outdoor Unit Fan Motor M1F Error
	02	14	Outdoor Unit Fan Motor M2F Error
	05	17	Outdoor Unit Fan Motor M1F Overcurrent Error
	06	18	Outdoor Unit Fan Motor M2F Overcurrent Error
	09	21	Fan Inverter PCB A4P (Integrated Power Module) Overheated
	10	22	Fan Inverter PCB A5P (Integrated Power Module) Overheated

Main error code	Sub code		Description
	Main unit	Sub unit	
E9	01	05	Electronic Expansion Valve (Y1E) Malfunction
	03	06	Electronic Expansion Valve (Y3E) Malfunction
	04	07	Electronic Expansion Valve (Y5E) Malfunction
	20	21	Electronic Expansion Valve (Y1E) Failure
	23	24	Electronic Expansion Valve (Y2E) Failure
	26	27	Electronic Expansion Valve (Y4E) Malfunction
	29	34	Electronic Expansion Valve (Y2E) Malfunction
	30	35	Electronic Expansion valve (Y7E) Malfunction
	44	45	Electronic Expansion Valve (Y3E) Failure
	48	49	Electronic Expansion Valve Overcurrent Error
	51	52	Electronic Expansion Valve Thermal Cutting Error
	54	55	Electronic Expansion Valve Defective Circuit
EA	27		Safety Valve Box Damper Failure
F3	01	03	Compressor Discharge Temperature Too High
	20	21	Compressor Body Temperature Too High
F4	01		Wet Operation Caution
	02	04	Wet Alarm for Compressor M1C
	08	10	Wet Operation Error for Compressor M1C
	14		Indoor Unit Wet Operation Alarm
F6	01		Refrigerant Overcharge Detection by High Pressure Sensor S1NPH
	02		Refrigerant Overcharge Detection During Test-Run
	03		Refrigerant Overcharge Detection from High Subcool Value
F9	06		Safety Valve Box Electronic Expansion Valve Abnormality (Safety Gas)
	07		Safety Valve Box Electronic Expansion Valve Abnormality (Safety Liquid)
	08		Safety Valve Box Electronic Expansion Valve Overcurrent Error (Safety Gas/Liquid)
H3	02	04	Transmission Error Between Main PCB And Inverter PCB
H7	01	05	Defective Fan Inverter PCB A4P
	02	06	Defective Fan Inverter PCB A5P
	21	23	Defective Fan Inverter PCB A4P
	22	24	Defective Fan Inverter PCB A5P
H9	01	02	Ambient Temperature Thermistor R1T Abnormality
HA	01		Defrost Fail Alarm

Main error code	Sub code		Description
	Main unit	Sub unit	
J3	16	22	Discharge Thermistor R21T Open Circuit
	17	23	Discharge Thermistor R21T Short Circuit
	47	49	Compressor Body Thermistor R15T Open Circuit
	48	50	Compressor Body Thermistor R15T Short Circuit
	56	57	High Discharge Temperature
J5	01	03	Compressor Suction Thermistor R12T Malfunction
	18	19	Suction Temperature Thermistor R10T Abnormality
J6	01	02	De-icer Thermistor R11T Abnormality
	08	09	Upper Heat Exchanger Gas Pipe Thermistor R8T Malfunction
	11	12	Lower Heat Exchanger Gas Pipe Thermistor R9T Malfunction
J7	01	02	Main Liquid Pipe Thermistor R3T Malfunction
	06	07	Liquid Thermistor R7T Abnormality
	18	19	Gas Inlet Subcool PHE Thermistor R16T Abnormality
J8	01	02	Upper Heat Exchanger Liquid Temperature Thermistor R4T Abnormality
	08	09	Lower Heat Exchanger Liquid Pipe Thermistor R5T Abnormality
J9	01	02	Gas Thermistor R6T Abnormality
	08	09	Gas Thermistor R6T Abnormality
	11	12	Receiver Gas Thermistor R13T Abnormality
JA	06	08	High Pressure Sensor S1NPH Abnormality
	07	09	High Pressure Sensor S1NPH Malfunction
JC	06	08	Low Pressure Sensor S1NPL Abnormality
	07	09	Low Pressure Sensor S1NPL Malfunction
L1	01	07	Inverter PCB A3P Malfunction
	02	08	Inverter PCB A3P Current Detection Primary Circuit
	03	09	Inverter PCB A3P Current Detection Secondary Circuit
	04	10	Power Transistor Error On Inverter PCB A3P
	05	15	Inverter PCB A3P Hardware Fault
	28	32	Fan Inverter PCB A4P EEPROM Error
	29	33	Fan Inverter PCB A5P EEPROM Error
	36	38	Inverter PCB A3P EEPROM Error
	47	49	Inverter PCB A3P16 V DC Abnormal
L2	01	02	Power Supply Abnormality During Test Run
	04	05	Power Supply Abnormality During Normal Operation
L4	01	02	Inverter PCB A3P High Fin Temperature
	06	18	Fan Inverter PCB A4P High Fin Temperature
	07	19	Fan Inverter PCB A5P High Fin Temperature

Main error code	Sub code		Description
	Main unit	Sub unit	
L5	03	05	Output Overcurrent Detection On Inverter PCB A3P
L8	03	06	Overcurrent on Inverter PCB A3P Except Start-up
L9	01	05	Stall Prevention by Inverter PCB A3P
	13	14	Inverter PCB A3P Output Phase Abnormality
LC	01		Transmission Abnormality
	14	15	Transmission Abnormality Main PCB/Inverter PCB A3P
	19	20	Transmission Abnormality Main PCB/Fan Inverter PCB A4P
	24	25	Transmission Abnormality Main PCB/Fan Inverter PCB A5P
	33	34	Transmission Abnormality Main PCB/Sub PCB
P1	01	02	Open Phase or Unbalanced Power Supply Detection by Inverter PCB A3P
P4	01	04	Fin Thermistor Abnormality On Inverter PCB A3P
	02	15	Fin Thermistor Abnormality On Fan Inverter PCB A4P
	03	16	Fin Thermistor Abnormality On Fan Inverter PCB A5P
PF	00		Long Test Run Failed
PJ	04	05	Capacity Setting Mismatch for Inverter PCB A3P
	09	15	Capacity Setting Mismatch for Fan Inverter PCB A4P
	10	17	Capacity Setting Mismatch for Fan Inverter PCB A5P
U0	-		Refrigerant Shortage Detection (Warning)
	05		Refrigerant Shortage Detection
	06		Refrigerant Shortage Detection
	08	09	Refrigerant Shortage Detection by High Pressure Sensor
U1	01	05	Open Phase Detection On Power Supply
	04	06	Reverse Phase Detection
	19	20	Hz Error Detection On Power Supply
U2	01	08	Inverter Circuit Power Supply Abnormality - Inverter PCB A3P Abnormal Voltage
	02	09	Inverter Circuit Power Supply Abnormality - Inverter PCB A3P Phase Loss
	03	10	Inverter Circuit Power Supply Abnormality - Inverter PCB A3P DC Circuit Not Charging
U3	02		Test Run Interrupted
	03		Test Run Not Performed Yet
	04		Test Run Ended Abnormally
	05		Test Run Aborted on Initial Transmission
	06		Test Run Aborted on Normal Transmission
	07		Transmission Abnormality on Test Run
	08		Transmission Abnormality on Test Run
	12		Commissioning Of Safety Valve Box Safety System NOT Completed

Main error code	Sub code		Description
	Main unit	Sub unit	
U4	01		Communication Between Indoor Units And Safety Valve Box Missing
	03		Outdoor Unit Not Able to Start Because Of Indoor Unit Malfunction
	11		Communication Between Outdoor Unit And Safety Valve Box Missing
	12		Communication Between Outdoor Unit And All Safety Valve Boxes Electric Noise
	13		Communication Between Indoor Units And Safety Valve Box Missing
	14		Communication Between Indoor Units And Safety Valve Box Electric Noise
U5	04		Communication Abnormality Between Indoor Unit Main PCB And Remote Controller
	06		Supervisor Remote Controller Not Connected/Not Set
U7	01		Transmission Abnormality Between Systems - DTA104A61, 62 Error
	02		Transmission Abnormality Between Systems - DTA104A61, 62 Error
	03		Transmission Error Between Main Outdoor Unit and Sub 1 Outdoor Unit
	05		Multi System Abnormality
	06		Multi System Address Abnormality
	07		More Than 2 Outdoor Units on Q1-Q2 Transmission
	11		Excess Indoor Units Detected on Test Run
	24		Duplication of Address Setting on Multiple DTA104A61,62 Installation
U9	01		Other Indoor Unit Has Error
	03		Abnormality Of R32 Safety System On Other Indoor Unit On Same Port Of Safety Valve Box
	04		Abnormality Of R32 Safety System On Other Safety Valve Box

Main error code	Sub code		Description
	Main unit	Sub unit	
UA	00		Combination Abnormality
	03		Combination Abnormality - Mix of R22, R407C, R410A And R32 Type Units Detected
	16		Combination Abnormality - More Than 64 Indoor Units Detected On Same System
	17		Combination Abnormality - Local Setting Abnormality
	18		Combination Abnormality - Outdoor Unit Not Compatible With Indoor Units (Refrigerant Type)
	19		Combination Abnormality - Local Set Alarm
	20		Combination Abnormality - Non Compatible Outdoor Unit in Multi Combination
	21		Combination Abnormality - BPMK Unit(s) Detected
	22		Combination Abnormality – Single installation
	23		Safety Valve Box Abnormality –Connected Indoor Unit Index too High
	25		Safety Valve Box Abnormality –Transmission Wiring Abnormality Between Safety Valve Box and Outdoor Unit
	26		Safety Valve Box Abnormality - Transmission Wiring Abnormality On Safety Valve Box
	29		Safety Valve Box Abnormality – Minimum 1 Indoor Unit Without Safety Valve Box Detected When Outdoor Setting 2-54-0
	30		Combination Abnormality – Heat Pump and Heat Recovery Outdoor Units Detected in Same Combination
	31		Combination Abnormality - RYMA-A Unit Detected Without a Multi Combination
	35		Combination Abnormality - RYMA-A Unit Detected in Wrong Combination
	38		Combination Abnormality - Altherma Hydro Unit Detected
	39		Combination Abnormality - Incorrect Combination
	43		Combination Abnormality - Incorrect Combination
	49		Combination Abnormality - Wrong unit Combination
	50		Combination Abnormality - High Temperature Hydrobox Detected Connected to a SV Unit
	51		Combination Abnormality - Only Hydrobox Units Detected
	52		Safety Valve Box Refrigerant Type Abnormality
	53		Safety Valve Box Abnormality – Safety Valve Box Dip Switch Abnormality
	55		R32 Pump Down Locked State (Outdoor Unit Setting Required)
	57		Mechanical Ventilation Abnormality (External Input Is Closed)
	58		Supervisor Remote Controller Not Connected/Not Set
	62		Safety Valve Box Power Failure Detection
UF	01		Wiring and Piping Mismatch - Excess Connection Ratio
	05		Wiring and Piping Mismatch - Stop Valves Closed or Incorrect
	18		Failure Test Run Cross Wiring/Cross Piping (After Outdoor Set Mode 2-20-2)
UH	01		Auto Address Failure
	02		Auto Address Failure

Main error code	Sub code		Description
	Main unit	Sub unit	
UJ	34		Capacity Mismatch Between VAM And EKVDX Module
	35		Abnormality At VAM Unit
	36		Transmission Error Between VAM And EKVDX
	37		VAM Unit Has A6-28 Error
	40		Maintenance Warning (Ventilation Fan Safety Valve Box)
E-1	-		Refrigerant Leak Check is Not Possible
E-2	-		Refrigerant Leak Check Cannot Be Performed - Indoor Air Temperature is Out Of Range.
E-3	-		Refrigerant Leak Check Cannot Be Performed - Outdoor Air Temperature is Out Of Range.
E-4	-		Refrigerant Leak Check is Interrupted - Too Low Pressure is Detected
E-5	-		Refrigerant Leak Check Cannot Be Performed - A Unit Which is Not Compatible With Leak Detection Function is Installed
NG	-		Refrigerant Leak Check Function Detects Refrigerant Leak
OK	-		Refrigerant Leak Check Function Detects No Refrigerant Leak

3.3.2 A0-00 – External protection device activated

Trigger	Effect	Reset
T1-T2 input is ON and field setting 22-1=3.	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 if the field setting 22-1 is correctly set according to the following wiring situations on T1-T2 of X*M terminal of the indoor unit. See "7.9 Field settings" [▸ 489]. Correct as needed.

- No wiring connected: Field setting 22-1=1
- Wiring connected to a window or door contact: Field setting 22-1=1
- Wiring connected to a remote operation switch: Field setting 22-1=2
- Wiring connected to an external protection device (fire alarm, R32 leak detection sensor,...): Field setting 22-1=3
  Possible cause: Incorrect field setting.

2 If wiring connected to T1-T2 of the indoor unit terminal, check correct connection and continuity of the wiring. See Wiring diagram in the service manual of the specific indoor unit.

Possible cause: Faulty or damaged wiring between T1-T2 of the indoor unit terminal and external device.

3 If wiring is connected, measure on T1-T2 of X*M terminal of the indoor unit to check for the correct functioning of the external device:

- Wiring connected to a window or door contact: Open circuit (unit continues previous operation, remote controller enabled) when window / door is closed, short-circuit (forced stop, remote controller buttons disabled) when window / door is open. Replace window / door contact if incorrect measurement.
  Possible cause: Faulty window / door contact.
- Wiring connected to a remote operation switch: Open circuit when OFF command to the unit, short-circuit when ON command to the unit. Replace remote operation switch if incorrect measurement.
  Possible cause: Faulty remote operation switch.
- Wiring connected to an external protection device (fire alarm, R32 leak detection sensor,...): Short-circuit when normal operation, open circuit (forced stop with error code A0-00) when external protection device is active. If open circuit is detected, check and eliminate the root cause why the protection device is activated. Do NOT try to run the unit until the root cause is eliminated. If NO root cause was found, protection device may be faulty. Replace as needed.
  Possible cause: Root cause of external protection device activation or faulty external protection device.

4 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 403].

Possible cause: External source may cause interference.

5 Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

Possible cause: Faulty indoor unit main PCB.

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

3.3.3 A0-11 – R32 leakage detection

Trigger	Effect	Reset
The R32 sensor indoor unit detected a refrigerant leak while fan of indoor unit is switched ON.	▪ In SV box, gas and liquid shut-off expansion valves for the faulty indoor unit completely close. ▪ Outdoor unit continues operating for other indoor circuits of this SV box.	▪ Power reset of the indoor unit. ▪ Indoor unit shows error “CH-10”. Set field setting 25-14-01 to 02 on the remote controller of the faulty indoor unit. ▪ Outdoor unit shows error “UA-55”. Set field setting 2-24-1 to 0 on the outdoor unit.

To solve the error code

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

1 Stop the outdoor unit operation for at least 30 minutes.

2 Check the field piping for refrigerant leak. Check saturation pressure of the field piping via the liquid and gas service port and determine the corresponding saturation temperature.

3 If saturation temperature (gas and/or liquid) <outdoor ambient temperature, refrigerant leak is present. Perform as follows to repair the refrigerant leak:

- Recover the refrigerant, see "5.2 Refrigerant circuit" [▸ 392].
- Repair the field piping.
- Perform a pressure test of the field piping.
- Replace the R32 leak detection sensor of the indoor unit with error code A0-11. After replacement, at power ON of indoor unit, outdoor unit will display error code CH-10. Related gas and liquid shut-off expansion valves of the SV box will close again. Other expansion valves keep their position.
- Set field setting 25-14-01 to 02 on the remote controller of the faulty indoor unit. Outdoor unit shows error code UA-55.
- Set outdoor unit field setting 2-21 to 1 + press BS3 1 time on the outdoor unit main PCB. All expansion valves (outdoor unit, SV box and indoor units) will open.
- Vacuum and recharge the refrigerant at the outdoor unit. Consult amount sticker. See installation manual of the outdoor unit for correct refrigerant charge procedure.
- Set outdoor unit field setting 2-24-1 to 0. Error UA-55 is cleared.
- Fill in the logbook.
  Possible cause: Refrigerant leak at indoor unit side.

4 If saturation temperature (gas and/or liquid) = outdoor ambient temperature, NO refrigerant leak is present between the outdoor unit and the SV box. As the related gas and liquid shut-off expansion valves of the SV box are closed, perform as described below to check for refrigerant leak at the indoor unit side.

5 Using a leak tester, check the faulty indoor unit for refrigerant leak. If refrigerant leak is found, repair the leak as described above.

6 If NO refrigerant leak (oil traces) is found, shortly open the related gas and liquid shut-off expansion valves (set field setting 2-23-0 to 1 + press BS3 2 times) of the SV box to equalize the pressure between the system and the faulty indoor unit.

7 Perform a check of the R32 leak detection sensor of the faulty indoor unit. See service manual of the specific indoor unit.

Possible cause: Faulty R32 leak detection sensor.

8 Check if any external (foreign) vapor substance influenced the functioning of the R32 leak detection sensor. Repair as needed.

Possible cause: External (foreign) vapor substance reacted with R32 leak detection sensor.

9 Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

Possible cause: Faulty indoor unit main PCB.

INFORMATION

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

3.3.4 A0-13 – False R32 leakage detection

Trigger	Effect	Reset
The R32 sensor indoor unit detected a refrigerant leak while fan of indoor unit is switched OFF.	Indoor unit will start forced fan operation to check R32 leak detection.	Automatic reset if NO R32 leak detected during forced fan operation.
		A0-11 error will be displayed when R32 leak detected during forced fan operation.

To solve the error code

INFORMATION

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

1 Stop the outdoor unit operation for at least 30 minutes.

2 Check the field piping for refrigerant leak. Check saturation pressure of the field piping via the liquid and gas service port and determine the corresponding saturation temperature.

3 If saturation temperature (gas and/or liquid) <outdoor ambient temperature, refrigerant leak is present. Perform as follows to repair the refrigerant leak:

- Recover the refrigerant, see "5.2 Refrigerant circuit" [▶ 392].
- Repair the field piping.
- Perform a pressure test of the field piping.
- Replace the R32 leak detection sensor of the indoor unit with error code A0-11. After replacement, at power ON, indoor unit will display error code CH-10.
- Recharge the refrigerant at the outdoor unit. Consult amount sticker. See installation manual of the outdoor unit for correct refrigerant charge procedure.
- Fill in the logbook.

  Possible cause: Refrigerant leak at indoor unit side.

4 If saturation temperature (gas and/or liquid) = outdoor ambient temperature, perform as described below.

5 Using a leak tester, check the faulty indoor unit for refrigerant leak. If refrigerant leak is found, repair the leak as described above.

6 If NO refrigerant leak was found, perform as described below.

7 Perform a check of the R32 leak detection sensor of the faulty indoor unit. See service manual of the specific indoor unit.

Possible cause: Faulty R32 leak detection sensor.

8 Check if any external (foreign) vapor substance influenced the functioning of the R32 leak detection sensor. Repair as needed.

Possible cause: External (foreign) vapor substance reacted with R32 leak detection sensor.

9 Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

Possible cause: Faulty indoor unit main PCB.

INFORMATION

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

3.3.5 A0-20 – R32 leakage detection at safety valve box

Trigger	Effect	Reset
The R32 sensor of the SV box detected a refrigerant leak.	Outdoor unit will stop operating and all valves in all SV boxes fully close.	▪ Power reset of the SV box. ▪ Outdoor unit shows error “CH-20”. Set field setting 2-5-0 to 1 on the main PCB of the faulty SV box. ▪ Outdoor unit shows error “UA-55”. Set field setting 2-24-1 to 0 on the outdoor unit.

INFORMATION

In case the system contains multiple SV boxes and field setting 2-9 "Error handling address" is NOT set uniquely at the different SV boxes, ALL indoor units in the system will show this error.

If field setting 2-9 is set uniquely at the different SV boxes, ONLY the indoor units connected to the faulty SV box will show this error.

To solve the error code

INFORMATION

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

1. Stop the outdoor unit operation for at least 30 minutes.
2. Check the field piping for refrigerant leak. Check saturation pressure of the field piping via the liquid and gas service port and determine the corresponding saturation temperature.
3. If saturation temperature (gas and/or liquid) <outdoor ambient temperature, refrigerant leak is present. Perform as follows to repair the refrigerant leak:
   - Recover the refrigerant, see "5.2 Refrigerant circuit" [▸ 392].
   - Repair the field piping.
   - Perform a pressure test of the field piping.
   - Replace the R32 leak detection sensor of the SV box with error code A0-20. After replacement, at power ON of SV box, outdoor unit will display error code CH-20. Safety gas and safety liquid expansion valves of the SV box will close again. Other expansion valves keep their position.
   - Set field setting 2-5-0 to 1 on the main PCB of the faulty SV box. Safety gas and safety liquid expansion valves of the SV box will open. Outdoor unit shows error code UA-55.
   - Set outdoor unit field setting 2-21 to 1 + press BS3 1 time on the outdoor unit main PCB. All expansion valves (outdoor unit, SV box and indoor units) will open.
   - Vacuum and recharge the refrigerant at the outdoor unit. Consult amount sticker. See installation manual of the outdoor unit for correct refrigerant charge procedure.
   - Set outdoor unit field setting 2-24-1 to 0. Error UA-55 is cleared.
   - Fill in the logbook.

   Possible cause: Refrigerant leak at SV box side.
4. If saturation temperature (gas and/or liquid) = outdoor ambient temperature, perform as described below.
5. Using a leak tester, check the faulty SV box for refrigerant leak. If refrigerant leak is found, repair the leak as described above.
6. If NO refrigerant leak was found, perform as described below.
7. Perform a check of the R32 leak detection sensor of the faulty SV box. See "4.18.6 R32 leak detection sensor" [▸ 359].

   Possible cause: Faulty R32 leak detection sensor.
8. Check if any external (foreign) vapor substance influenced the functioning of the R32 leak detection sensor. Repair as needed.

   Possible cause: External (foreign) vapor substance reacted with R32 leak detection sensor.

9 Perform a check of the SV box main PCB. See "4.18.4 Safety valve box main PCB" [▸ 350].

Possible cause: Faulty SV box main PCB.

INFORMATION

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

3.3.6 A3-01 – Open float switch on optional drain-up kit of safety valve box

Trigger	Effect	Reset
Float switch S2L of optional drain-up kit is open.	Outdoor unit stops operating while output to drain pump (230 VAC) continues.	Auto reset when float switch S2L is closed.

To solve the error code

INFORMATION

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

1 Perform a check of the drain-up kit PCB. See "4.5.2 Drain-up kit PCB" [▸ 236].

Possible cause: Faulty PCB.

2 Perform a check of the float switches of the drain-up kit. See "4.5.3 Float switch" [▸ 237].

Possible cause: Faulty float switch(es).

3 Perform a check of the drain pump of the drain-up kit. See "4.5.1 Drain pump" [▸ 236].

Possible cause: Faulty drain pump.

4 Fill the drain pan of the SV box until float switch S1L opens. Check if the drain outlet of the SV box and the optional drain-up kit is blocked. Check the optional drain-up kit for excessive lift (>1000 mm). Correct as needed

Possible cause: Drain outlet blocked or excessive lift at the drain-up kit.

INFORMATION

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

3.3.7 CH-01 – R32 leak detection sensor failure or disconnected

Trigger	Effect	Reset
The R32 sensor NOT connected to indoor unit main PCB.	Indoor unit will stop operating while other indoor units show error U9-02. Outdoor unit forced stop (without automatic refrigerant recovery operation).	Set field setting 25-14-01 to 02 on the remote controller of the faulty indoor unit.
R32 sensor PCB failure		

To solve the error code

INFORMATION

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

1 Check wiring (insertion and continuity) on connector X41A on the indoor unit main PCB and connector CN1 on the PCB of the R32 leak detection sensor. See Wiring diagram in the service manual of the specific indoor unit.

Possible cause: Faulty or damaged wiring between indoor unit main PCB and R32 leak detection sensor.

2 Check the error history for error code A0-11, see "3 Troubleshooting" [▸ 27]. If A0-11 is found, R32 leak detection sensor was replaced after this error and power reconnected. Check if field setting 25-14=02. Correct if needed, see "7.9 Field settings" [▸ 489].

Possible cause: R32 leak detection sensor was replaced without adjusting field setting 25-14.

3 Perform a check of the R32 leak detection sensor of the faulty indoor unit. See service manual of the specific indoor unit.

Possible cause: Faulty R32 leak detection sensor.

4 Check if any external (foreign) vapor substance influenced the functioning of the R32 leak detection sensor. Repair as needed.

Possible cause: External (foreign) vapor substance reacted with R32 leak detection sensor.

5 Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

Possible cause: Faulty indoor unit main PCB.

INFORMATION

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

3.3.8 CH-02 – R32 leak detection sensor life time is exceeded

Trigger	Effect	Reset
The R32 sensor detected operation of 10 years or more.	Indoor unit will stop operating. Other indoor units and outdoor unit will continue operating.	▪ Power reset of the indoor unit. ▪ Set field setting 25-14-01 to 02 on the remote controller of the faulty indoor unit. ▪ Outdoor unit shows error “UA-55”. Set field setting 2-24-1 to 0 on the outdoor unit.

To solve the error code

INFORMATION

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

1 Check the error history to see if R32 leak detection sensor was replaced, see "3 Troubleshooting" [▶ 27]. If replaced, check if timer was reset during sensor replacement. Reset as needed.

Possible cause: R32 leak detection sensor was replaced without timer reset.

2 Check the operation time of the R32 leak detection sensor of the faulty indoor unit. If operation time is 10 years, replace the R32 leak detection sensor. See service manual of the specific indoor unit.

Possible cause: R32 leak detection sensor operation time reached maximum value (10 years).

3 Perform a check of the R32 leak detection sensor of the faulty indoor unit. See service manual of the specific indoor unit.

Possible cause: Faulty R32 leak detection sensor.

4 Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

Possible cause: Faulty indoor unit main PCB.

INFORMATION

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

3.3.9 CH-05 – R32 leak detection sensor life time <6 months

Trigger	Effect	Reset
The R32 sensor detected operation of 9.5 years or more.	Unit will continue operating.	Auto reset.

To solve the error code

INFORMATION

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

1 Check the error history to see if R32 leak detection sensor was replaced, see "3 Troubleshooting" [▶ 27]. If replaced, check if timer was reset during sensor replacement. Reset as needed.

Possible cause: R32 leak detection sensor was replaced without timer reset.

2 Check the operation time of the R32 leak detection sensor of the faulty indoor unit. If operation time approaches 10 years, order a new R32 leak detection sensor and replace at the next maintenance interval.

Possible cause: R32 leak detection sensor operation time approaches maximum value (10 years).

3 Perform a check of the R32 leak detection sensor of the faulty indoor unit. See service manual of the specific indoor unit.

Possible cause: Faulty R32 leak detection sensor.

4 Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

Possible cause: Faulty indoor unit main PCB.

INFORMATION

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

3.3.10 CH-10 – R32 leak detection sensor replacement to confirm

Trigger	Effect	Reset
Power reset after the R32 sensor detected disconnection or malfunction between indoor unit main PCB and R32 sensor (error CH-01).	Outdoor unit stops operating.	▪ Set field setting 25-14-01 to 02 on the remote controller of the faulty indoor unit. ▪ Outdoor unit shows error “UA-55”. Set field setting 2-24-1 to 0 on the outdoor unit.
Power reset after R32 sensor detected a leak (error A0-11).		
Power reset after warning lifetime <6 months (caution CH-02).	Outdoor unit continues operating.	▪ When R32 sensor was replaced, after power reset, set field setting 25-14-01 to 02 on the remote controller of the faulty indoor unit. ▪ Outdoor unit shows error “UA-55”. Set field setting 2-24-1 to 0 on the outdoor unit.

To solve the error code

INFORMATION

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

1 Check wiring (insertion and continuity) on connector X41A on the indoor unit main PCB and connector CN1 on the PCB of the R32 leak detection sensor. See Wiring diagram in the service manual of the specific indoor unit.

Possible cause: Faulty or damaged wiring between indoor unit main PCB and R32 leak detection sensor.

2 Check the error history for error code A0-11, see "3 Troubleshooting" [▸ 27]. If A0-11 is found, R32 leak detection sensor was replaced after this error and power reconnected. Check if field setting 25-14=02. Correct if needed, see "7.9 Field settings" [▸ 489].

Possible cause: R32 leak detection sensor was replaced without adjusting field setting 25-14.

3 Perform a check of the R32 leak detection sensor of the faulty indoor unit. See service manual of the specific indoor unit.

Possible cause: Faulty R32 leak detection sensor.

4 Check if any external (foreign) vapor substance influenced the functioning of the R32 leak detection sensor. Repair as needed.

Possible cause: External (foreign) vapor substance reacted with R32 leak detection sensor.

5 Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

Possible cause: Faulty indoor unit main PCB.

INFORMATION

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

3.3.11 CH-20 – R32 leak detection sensor replacement at safety valve box to confirm

Trigger	Effect	Reset
The R32 sensor detected disconnection between SV box PCB and R32 sensor.	Outdoor unit stops operating.	▪ Set field setting 2-5-0 to 1 on the main PCB of the faulty SV box. ▪ Outdoor units shows error UA-55. Set field setting 2-24-1 to 0 on the outdoor unit.
R32 sensor replaced in SV box and power reset after error A0-20 or CH23.		
Power reset after R32 sensor end lifetime (error CH-23).		▪ When R32 sensor is replaced, after power reset, set field setting 2-5-1 to 2 on the main PCB of the faulty SV box. ▪ Outdoor units shows error UA-55. Set field setting 2-24-1 to 0 on the outdoor unit.
Incorrect setting on sub PCB of SV box.		Reset when setting 2-6-1 (default) on sub PCB of SV box is corrected.
Power reset after warning lifetime <6 months (caution CH-22).	Outdoor unit continues operating.	▪ When R32 sensor is replaced, after power reset, set field setting 2-5-1 to 2 on the main PCB of the faulty SV box. ▪ Outdoor units shows error UA-55. Set field setting 2-24-1 to 0 on the outdoor unit.

To solve the error code

INFORMATION

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

1 Check wiring (insertion and continuity) on connector X19A on the SV box PCB and connector CN1 on the PCB of the R32 leak detection sensor. See "7.2 Wiring diagram" [▶ 411].

Possible cause: Faulty or damaged wiring between SV box PCB and R32 leak detection sensor.

2 Check the error history for error code A0-20, see "3 Troubleshooting" [▶ 27]. If A0-20 is found, R32 leak detection sensor was replaced after this error and power reconnected. Check if field setting 2-5=02 on the SV box. Correct if needed, see "7.9 Field settings" [▶ 489].

Possible cause: R32 leak detection sensor was replaced without adjusting field setting 2-5 on the SV box.

3 Perform a check of the R32 leak detection sensor of the faulty SV box. See "4.18.6 R32 leak detection sensor" [▶ 359].

Possible cause: Faulty R32 leak detection sensor.

4 Check if any external (foreign) vapor substance influenced the functioning of the R32 leak detection sensor. Repair as needed.

Possible cause: External (foreign) vapor substance reacted with R32 leak detection sensor.

5 Perform a check of the SV box main PCB. See "4.18.4 Safety valve box main PCB" [▶ 350].

Possible cause: Faulty SV box main PCB.

INFORMATION

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

3.3.12 CH-21 – R32 leak detection sensor at safety valve box failure or disconnected

Trigger	Effect	Reset
The R32 sensor not connected to SV box PCB.	Outdoor unit continues operating for indoor circuits of other SV box es.	▪ Set field setting 2-5-0 to 1 on the main PCB of the faulty SV box. ▪ Outdoor units shows error UA-55. Set field setting 2-24-1 to 0 on the outdoor unit.
R32 sensor PCB failure.		

To solve the error code

INFORMATION

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

1 Check wiring (insertion and continuity) on connector X19A on the SV box PCB and connector CN1 on the PCB of the R32 leak detection sensor. See "7.2 Wiring diagram" [▶ 411].

Possible cause: Faulty or damaged wiring between SV box PCB and R32 leak detection sensor.

2 Check the error history for error code A0-20, see "3 Troubleshooting" [▶ 27]. If A0-20 is found, R32 leak detection sensor was replaced after this error and power reconnected. Check if field setting 2-5=02 on the SV box. Correct if needed, see "7.9 Field settings" [▶ 489].

Possible cause: R32 leak detection sensor was replaced without adjusting field setting 2-5 on the SV box.

3 Perform a check of the R32 leak detection sensor of the faulty SV box. See "4.18.6 R32 leak detection sensor" [▶ 359].

Possible cause: Faulty R32 leak detection sensor.

4 Check if any external (foreign) vapor substance influenced the functioning of the R32 leak detection sensor. Repair as needed.

Possible cause: External (foreign) vapor substance reacted with R32 leak detection sensor.

5 Perform a check of the SV box main PCB. See "4.18.4 Safety valve box main PCB" [▶ 350].

Possible cause: Faulty SV box main PCB.

INFORMATION

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

3.3.13 CH-22 – R32 leak detection sensor at safety valve box life time <6 months

Trigger	Effect	Reset
The R32 sensor detected operation of 9.5 years or more.	SV box will continue operating. Outdoor unit can operate for ALL indoor units.	▪ Set field setting 2-5-0 to 1 on the main PCB of the faulty SV box. ▪ Outdoor units shows error UA-55. Set field setting 2-24-1 to 0 on the outdoor unit.

To solve the error code

INFORMATION

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

1 Check the error history to see if R32 leak detection sensor was replaced, see "3 Troubleshooting" [▶ 27]. If replaced, check if timer was reset during sensor replacement. Reset as needed.

Possible cause: R32 leak detection sensor was replaced without timer reset.

2 Check the operation time of the R32 leak detection sensor of the faulty SV box. If operation time approaches 10 years, order a new R32 leak detection sensor and replace at the next maintenance interval.

Possible cause: R32 leak detection sensor operation time approaches maximum value (10 years).

3 Perform a check of the R32 leak detection sensor of the faulty SV box. See "4.18.6 R32 leak detection sensor" [▶ 359].

Possible cause: Faulty R32 leak detection sensor.

4 Perform a check of the SV box main PCB. See "4.18.4 Safety valve box main PCB" [▶ 350].

Possible cause: Faulty SV box main PCB.

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

3.3.14 CH-23 – R32 leak detection sensor at safety valve box life time is exceeded

Trigger	Effect	Reset
The R32 sensor detected operation of 10 years or more.	Outdoor unit stops operating.	▪ After R32 sensor replacement, power reset of the SV box. ▪ Set field setting 2-5-0 to 1 on the main PCB of the SV box. ▪ Outdoor unit shows error "UA-55". Set field setting 2-24-1 to 0 on the outdoor unit.

To solve the error code

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

1 Check the error history to see if R32 leak detection sensor was replaced, see "3 Troubleshooting" [▶ 27]. If replaced, check if timer was reset during sensor replacement. Reset as needed.

Possible cause: R32 leak detection sensor was replaced without timer reset.

2 Check the operation time of the R32 leak detection sensor of the faulty SV box. If operation time is 10 years, replace the R32 leak detection sensor. See "4.18.6 R32 leak detection sensor" [▶ 359].

Possible cause: R32 leak detection sensor operation time reached maximum value (10 years).

3 Perform a check of the R32 leak detection sensor of the faulty SV box. See "4.18.6 R32 leak detection sensor" [▶ 359].

Possible cause: Faulty R32 leak detection sensor.

4 Perform a check of the SV box main PCB. See "4.18.4 Safety valve box main PCB" [▶ 350].

Possible cause: Faulty SV box main PCB.

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

3.3.15 E1-01-02 – Outdoor unit main PCB A1P error

Main error code	Sub error code	Unit
E1	01	Main
	02	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Main PCB fails reading/ writing memory (EEPROM error).	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 "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

2 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

3 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

4 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 403].

Possible cause: External source may cause interference.

INFORMATION

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

3.3.16 E1-15 – Safety valve box main PCB error

Trigger	Effect	Reset
Faulty main PCB of SV box.	Unit will stop operating.	Manual reset via user interface.
Main PCB of SV box fails reading/writing memory (EEPROM error).		

INFORMATION

In case the system contains multiple SV boxes and field setting 2-9 "Error handling address" is NOT set uniquely at the different SV boxes, ALL indoor units in the system will show this error.

If field setting 2-9 is set uniquely at the different SV boxes, ONLY the indoor units connected to the faulty SV box will show this error.

To solve the error code

INFORMATION

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

1 Perform a check of the SV box main PCB. See "4.18.4 Safety valve box main PCB" [▸ 350].

Possible cause: Faulty SV box main PCB.

2 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

3 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 403].

Possible cause: External source may cause interference.

INFORMATION

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

3.3.17 E2-01-02 – Current leak detection

Main error code	Sub error code	Unit
E2	01	Main
	02	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Main PCB detects earth leakage through current sensor >safety value, see "7.6 Safety devices" [▶ 483].	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 current sensor. See "4.4 Current sensor" [▶ 230].

Possible cause: Faulty current sensor.

2 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▶ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

3 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

4 Using a megger device, check the solenoid valve coils, 4-way valve coil, fan motors and compressors if any earth leakage is found. Replace the component(s) that generate earth leakage.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant overcharge.

6 Check for the presence of humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Humidity in the refrigerant circuit.

INFORMATION

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

3.3.18 E2-06-07 – Open circuit on earth leakage detection core

Main error code	Sub error code	Unit
E2	06	Main
	07	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Main PCB detects open circuit on connector X101A.	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 that connector X101A is correctly connected to the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Open circuit on connector X101A.

2 Perform a check of the current sensor. See "4.4 Current sensor" [▸ 230].

Possible cause: Faulty current sensor.

3 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.19 E3-01-03 – Actuation of high pressure switch

Main error code	Sub error code	Unit
E3	01	Main
	03	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
High pressure switch opens due to high pressure >safety value, "7.6 Safety devices" [▸ 483].	Unit will stop operating.	If field setting 2-15=1 (default): When pressure drops below the reset value, via the indoor unit remote controller, cycle OFF & ON.
		If field setting 2-15=0: When pressure drops below the reset value, press BS3 on main PCB on outdoor unit, and then via indoor unit remote controller, cycle OFF & ON.

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 refrigerant circuit are open. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▶ 403].

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

3 Clean the outdoor heat exchanger. See "6 Maintenance" [▶ 405].

Possible cause: Dirty outdoor heat exchanger.

4 Perform a check of both high pressure switches. See "4.8 High pressure switch" [▶ 259].

Possible cause: Faulty high pressure switch.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant overcharge.

6 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

7 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Clogged refrigerant circuit.

8 Perform a check of the condenser side expansion valve. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty condenser side expansion valve.

9 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.20 E3-02-04 – High pressure error

Main error code	Sub error code	Unit
E3	02	Main
	04	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
High pressure control (by sensor) active due to pressure >safety value certain times within certain minutes, see "7.6 Safety devices" [▶ 483].	Unit will stop operating.	If field setting 2-15=1 (default): Via the indoor unit remote controller, cycle OFF & ON.
		If field setting 2-15=0: Press BS3 on main PCB on outdoor unit, and then via indoor unit remote controller, cycle OFF & ON.

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 refrigerant circuit are open. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▶ 403].

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

3 Clean the outdoor heat exchanger. See "6 Maintenance" [▶ 405].

Possible cause: Dirty outdoor heat exchanger.

4 Perform a check of the refrigerant high pressure sensor. See "4.16 Refrigerant high pressure sensor" [▶ 329].

Possible cause: Faulty refrigerant high pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant overcharge.

6 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

7 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Clogged refrigerant circuit.

8 Perform a check of the condenser side expansion valve. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty condenser side expansion valve.

9 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.21 E3-07 – High pressure switch reset error

Trigger	Effect	Reset
High pressure switch did not reset and it stays activated.	Unit will stop operating.	If field setting 2-15=1 (default): Via the indoor unit remote controller, cycle OFF & ON.
		If field setting 2-15=0: Press BS3 on main PCB on outdoor unit, and then via indoor unit remote controller, cycle OFF & ON.

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 refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Perform a check of both high pressure switches. See "4.8 High pressure switch" [▸ 259].

Possible cause: Faulty high pressure switch.

3 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.22 E3-13-14 – Liquid stop valve check error

Main error code	Sub error code	Unit
E3	13	Main
	14	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Pressure builds up quickly on test run operation.	Unit will stop test run.	Eliminate the cause, repeat test operation procedure.

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 refrigerant circuit are open. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Perform a check of the refrigerant high pressure sensor. See "4.16 Refrigerant high pressure sensor" [▶ 329].

Possible cause: Faulty refrigerant high pressure sensor.

3 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant overcharge.

4 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

5 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Clogged refrigerant circuit.

6 Perform a check of the condenser side expansion valve. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty condenser side expansion valve.

7 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.23 E3-18 – Actuation of high pressure switch during test run

Trigger	Effect	Reset
High pressure switch is activated during test run.	Unit will stop test run.	If field setting 2-15=1 (default): Via the indoor unit remote controller, cycle OFF & ON.
		If field setting 2-15=0: Press BS3 on main PCB on outdoor unit, and then via indoor unit remote controller, cycle OFF & ON.

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 refrigerant circuit are open. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Perform a check of both high pressure switches. See "4.8 High pressure switch" [▶ 259].

Possible cause: Faulty high pressure switch.

3 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant overcharge.

4 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

5 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Clogged refrigerant circuit.

6 Perform a check of the condenser side expansion valve. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty condenser side expansion valve.

7 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.24 E3-20-21 – Actuation of high pressure switch S2PH (gas pipe indoor)

Main error code	Sub error code	Unit
E3	20	Main
	21	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
High pressure switch S2PH (gas pipe indoor) opens due to high pressure > safety value, "7.6 Safety devices" [▶ 483].	Unit will stop operating.	When pressure drops below the reset value, via the indoor unit remote controller, cycle OFF & ON.

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 refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▸ 403].

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

3 Clean the outdoor heat exchanger. See "6 Maintenance" [▸ 405].

Possible cause: Dirty outdoor heat exchanger.

4 Perform a check of both high pressure switches. See "4.8 High pressure switch" [▸ 259].

Possible cause: Faulty high pressure switch.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Refrigerant overcharge.

6 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

7 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Clogged refrigerant circuit.

8 Perform a check of the condenser side expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty condenser side expansion valve.

9 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.25 E4-01-02 – Low pressure error

Main error code	Sub error code	Unit
E4	01	Main
	02	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Low pressure control (by sensor) active due to <safety value certain times within certain minutes, see "7.6 Safety devices" [▶ 483].	Unit will stop operating.	Manual reset via user interface.
		Automatic Reset when Low Pressure >reset value, see "7.6 Safety devices" [▶ 483].

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 refrigerant circuit are open. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Perform a cross-wiring check of the F1-F2 transmission wiring between the indoor units and outdoor unit. Set field setting 2-5 of the outdoor unit to 1 to start the indoor units connected to that outdoor unit on forced fan operation, see "7.9 Field settings" [▶ 489]. If any other indoor unit (that should be connected to a different outdoor unit) is operating, this indoor unit is connected to the wrong outdoor unit (cross-wired). Correct the wiring between the indoor unit(s) and outdoor unit.

Possible cause: F1-F2 transmission wiring is cross-wired with another outdoor unit system.

3 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant shortage.

4 Check for the presence of humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Humidity in the refrigerant circuit.

5 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Clogged refrigerant circuit.

6 Perform a check of the evaporator side expansion valve. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty evaporator side expansion valve.

7 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▶ 403].

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

8 Clean the outdoor heat exchanger. See "6 Maintenance" [▶ 405].

Possible cause: Dirty outdoor heat exchanger.

9 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▶ 333]

Possible cause: Faulty refrigerant low pressure sensor.

10 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

11 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▶ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

INFORMATION

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

3.3.26 E5-01-02 – Compressor overload/Motor Lock Error

Main error code	Sub error code	Unit
E5	01	Main
	02	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Compressor overload is detected for M1C.	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 that all stop valves of the refrigerant circuit are open. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Clogged refrigerant circuit.

3 Perform a check of the oil return valve Y11S. See "4.12 Oil return valve" [▶ 294].

Possible cause: Faulty oil return valve Y11S .

4 Check if there are oil traps in the field piping. See installation manual for piping rules.

Possible cause: Compressor running without oil will draw higher current and get locked.

5 Perform a check of the compressor. See "4.2 Compressor" [▶ 212].

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

6 Check liquid back issue. Check expansion valve operation. See "4.6 Expansion valve" [▶ 237].

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

7 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant shortage.

8 Perform a check of the 4-way valve. See "4.1 4-way valve" [▶ 204].

Possible cause: Faulty 4-way valve.

9 Perform a check of the discharge pipe thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty discharge pipe thermistor or connector fault.

10 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▶ 263].

Possible cause: Faulty inverter PCB.

11 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.27 E6-17-19 – Inverter overcurrent error

Main error code	Sub error code	Unit
E6	17	Main
	19	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Overcurrent on Inverter PCB A3P for Compressor M1C.	Unit will stop operating.	Manual reset via user interface.
Actual current value of the compressor is abnormally high compared to nominal current of the compressor for at least 30 minutes.		

To solve the error code

INFORMATION

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

1 Perform a check of the refrigerant high pressure sensor. See "4.16 Refrigerant high pressure sensor" [▶ 329].

Possible cause: Faulty refrigerant high pressure sensor.

2 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▸ 333]

Possible cause: Faulty refrigerant low pressure sensor.

3 Connect a pressure gauge to both high and low pressure service ports and read the high and low refrigerant pressure. Connect the service monitoring tool to the unit and compare the pressure values to the pressure read on the pressure gauges. In case the service monitoring tool read-out does NOT correspond with the pressures read through the pressure gauges, the main PCB needs to be replaced, see "4.10 Main PCB" [▸ 280].

4 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

5 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB.

6 Perform a check of the compressor. See "4.2 Compressor" [▸ 212].

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.

3.3.28 E7-01-13 – Outdoor unit fan motor M1F error

Main error code	Sub error code	Unit
E7	01	Main
	13	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Malfunction of rotation detection for M1F. Careful, there is no rpm detection. Fan judgement is based on logic by current drawn.	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 fan inverter PCB A4P. See "4.7 Fan inverter PCB" [▸ 246].

Possible cause: Faulty fan inverter PCB A4P.

2 Check if power supply cable to fan motor is NOT loose. Check connector X1A on fan inverter PCB A4P. See "To check the wiring of the fan inverter PCB" "4.7 Fan inverter PCB" [▶ 246]. Check wire to fan motor M1F.

Possible cause: Faulty power supply cable to fan motor M1F.

3 Perform a check of the outdoor unit fan motor M1F. See "4.13 Outdoor unit fan motor" [▶ 301].

Possible cause: Faulty outdoor unit fan motor M1F.

INFORMATION

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

3.3.29 E7-02-14 – Outdoor unit fan motor M2F error

Main error code	Sub error code	Unit
E7	02	Main
	14	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Malfunction of rotation detection for M2F. Careful, there is no rpm detection. Fan judgement is based on logic by current drawn.	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 fan inverter PCB A5P. See "4.7 Fan inverter PCB" [▶ 246].

Possible cause: Faulty fan inverter PCB A5P.

2 Check if power supply cable to fan motor is NOT loose. Check connector X3A on fan inverter PCB A5P. See "To check the wiring of the fan inverter PCB" "4.7 Fan inverter PCB" [▶ 246]. Check wire to fan motor M2F.

Possible cause: Faulty power supply cable to fan motor M2F.

3 Perform a check of the outdoor unit fan motor M2F. See "4.13 Outdoor unit fan motor" [▶ 301].

Possible cause: Faulty outdoor unit fan motor M2F.

INFORMATION

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

3.3.30 E7-05-17 – Outdoor unit fan motor M1F overcurrent error

Main error code	Sub error code	Unit
E7	05	Main
	17	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Overcurrent detected on outdoor unit fan motor M1F.	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 fan inverter PCB A4P. See "4.7 Fan inverter PCB" [▸ 246].

Possible cause: Faulty fan inverter PCB A4P.

2 Perform a check of the outdoor unit fan motor M1F. See "4.13 Outdoor unit fan motor" [▸ 301].

Possible cause: Faulty outdoor unit fan motor M1F.

INFORMATION

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

3.3.31 E7-06-18 – Outdoor unit fan motor M2F overcurrent error

Main error code	Sub error code	Unit
E7	06	Main
	18	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Overcurrent detected on outdoor unit fan motor M2F.	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 fan inverter PCB A5P. See "4.7 Fan inverter PCB" [▸ 246].

Possible cause: Faulty fan inverter PCB A5P.

2 Perform a check of the outdoor unit fan motor M2F. See "4.13 Outdoor unit fan motor" [▸ 301].

Possible cause: Faulty outdoor unit fan motor M2F.

INFORMATION

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

3.3.32 E7-09-21 – Fan inverter PCB A4P (integrated power module) overheated

Main error code	Sub error code	Unit
E7	09	Main
	21	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Fan inverter PCB A4P is overheated.	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 fan inverter PCB A4P. See "4.7 Fan inverter PCB" [▸ 246].

Possible cause: Faulty fan inverter PCB A4P.

2 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▸ 403].

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

3 Clean the outdoor heat exchanger. See "6 Maintenance" [▸ 405].

Possible cause: Dirty outdoor heat exchanger.

4 Perform a check of the liquid cooling expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty liquid cooling expansion valve.

INFORMATION

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

3.3.33 E7-10-22 – Fan inverter PCB A5P (integrated power module) overheated

Main error code	Sub error code	Unit
E7	10	Main
	22	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Fan inverter PCB A5P is overheated.	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 fan inverter PCB A5P. See "4.7 Fan inverter PCB" [▸ 246].

Possible cause: Faulty fan inverter PCB A5P.

2 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▸ 403].

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

3 Clean the outdoor heat exchanger. See "6 Maintenance" [▸ 405].

Possible cause: Dirty outdoor heat exchanger.

4 Perform a check of the liquid cooling expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty liquid cooling expansion valve.

INFORMATION

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

3.3.34 E9-01-05 – Electronic expansion valve (Y1E) malfunction

Main error code	Sub error code	Unit
E9	01	Main
	05	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Upper heat exchanger expansion valve Y1E malfunction.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

INFORMATION

When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

2 Perform a check of the upper heat exchanger expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty upper heat exchanger expansion valve.

3 Perform a check of all refrigerant side thermistors. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty refrigerant side thermistor(s).

4 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▸ 333]

Possible cause: Faulty refrigerant low pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Refrigerant overcharge.

6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

7 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▶ 403].

Possible cause: External source may cause interference.

INFORMATION

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

3.3.35 E9-03-06 – Electronic expansion valve (Y3E) malfunction

Main error code	Sub error code	Unit
E9	03	Main
	06	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Lower heat exchanger expansion valve Y3E malfunction.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

INFORMATION

When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

2 Perform a check of the lower heat exchanger expansion valve. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty lower heat exchanger expansion valve.

3 Perform a check of all refrigerant side thermistors. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty refrigerant side thermistor(s).

4 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▶ 333]

Possible cause: Faulty refrigerant low pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant overcharge.

6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

7 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 403].

Possible cause: External source may cause interference.

INFORMATION

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

3.3.36 E9-04-07 – Electronic expansion valve (Y5E) malfunction

Main error code	Sub error code	Unit
E9	04	Main
	07	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Liquid cooling expansion valve Y5E malfunction.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

INFORMATION

When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

2 Perform a check of the liquid cooling expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty liquid cooling expansion valve.

3 Perform a check of all refrigerant side thermistors. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty refrigerant side thermistor(s).

4 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▸ 333]

Possible cause: Faulty refrigerant low pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Refrigerant overcharge.

6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

7 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 403].

Possible cause: External source may cause interference.

INFORMATION

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

3.3.37 E9-20-21 – Electronic Expansion Valve (Y1E) failure

Main error code	Sub error code	Unit
E9	20	Main
	21	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Upper heat exchanger expansion valve Y1E malfunction.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

INFORMATION

When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

2 Perform a check of the upper heat exchanger expansion valve. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty upper heat exchanger expansion valve.

3 Perform a check of all refrigerant side thermistors. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty refrigerant side thermistor(s).

4 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▶ 333]

Possible cause: Faulty refrigerant low pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant overcharge.

6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▶ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

7 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▶ 403].

Possible cause: External source may cause interference.

INFORMATION

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

3.3.38 E9-23-24 – Electronic expansion valve (Y2E) failure

Main error code	Sub error code	Unit
E9	23	Main
	24	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Subcool expansion valve Y2E malfunction.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

INFORMATION

When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

2 Perform a check of the subcool expansion valve. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty subcool expansion valve.

3 Perform a check of all refrigerant side thermistors. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty refrigerant side thermistor(s).

4 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▶ 333]

Possible cause: Faulty refrigerant low pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant overcharge.

6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▶ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

7 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▶ 403].

Possible cause: External source may cause interference.

INFORMATION

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

3.3.39 E9-26-27 – Electronic expansion valve (Y4E) malfunction

Main error code	Sub error code	Unit
E9	26	Main
	27	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

To solve the error code

INFORMATION

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

INFORMATION

When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

2 Perform a check of the receiver gas expansion valve. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty receiver gas expansion valve.

3 Perform a check of all refrigerant side thermistors. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty refrigerant side thermistor(s).

4 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▶ 333]

Possible cause: Faulty refrigerant low pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant overcharge.

6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▶ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

7 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▶ 403].

Possible cause: External source may cause interference.

INFORMATION

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

3.3.40 E9-29-34 – Electronic expansion valve (Y2E) malfunction

Main error code	Sub error code	Unit
E9	29	Main
	34	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Subcool expansion valve Y2E malfunction.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

INFORMATION

When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

2 Perform a check of the subcool expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty subcool expansion valve.

3 Perform a check of all refrigerant side thermistors. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty refrigerant side thermistor(s).

4 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▸ 333]

Possible cause: Faulty refrigerant low pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Refrigerant overcharge.

6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

7 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 403].

Possible cause: External source may cause interference.

INFORMATION

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

3.3.41 E9-30-35 – Electronic expansion valve (Y7E) malfunction

Main error code	Sub error code	Unit
E9	30	Main
	35	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Liquid injection expansion valve Y7E malfunction.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

INFORMATION

When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the Sub PCB. See "4.20 Sub PCB" [▸ 368].

Possible cause: Faulty Sub PCB.

2 Perform a check of the liquid injection expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty expansion valve.

3 Perform a check of all refrigerant side thermistors. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty refrigerant side thermistor(s).

4 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▸ 333]

Possible cause: Faulty refrigerant low pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Refrigerant overcharge.

6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

7 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 403].

Possible cause: External source may cause interference.

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

3.3.42 E9-44-45 – Electronic expansion valve (Y3E) failure

Main error code	Sub error code	Unit
E9	44	Main
	45	Sub

> **INFORMATION**
>
> Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Lower heat exchanger expansion valve Y3E malfunction.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

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

> **INFORMATION**
>
> When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

2 Perform a check of the lower heat exchanger expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty lower heat exchanger expansion valve.

3 Perform a check of all refrigerant side thermistors. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty refrigerant side thermistor(s).

4 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▸ 333]

Possible cause: Faulty refrigerant low pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Refrigerant overcharge.

6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

7 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 403].

Possible cause: External source may cause interference.

INFORMATION

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

3.3.43 E9-48-49 – Electronic expansion valve overcurrent error

Main error code	Sub error code	Unit
E9	48	Main
	49	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Expansion valve overcurrent.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

INFORMATION

When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

2 Perform a check of the Sub PCB. See "4.20 Sub PCB" [▸ 368].

Possible cause: Faulty Sub PCB.

3 Perform a check of all expansion valves. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty expansion valve.

4 Perform a check of all refrigerant side thermistors. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty refrigerant side thermistor(s).

5 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▶ 333]

Possible cause: Faulty refrigerant low pressure sensor.

6 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant overcharge.

7 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▶ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

8 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▶ 403].

Possible cause: External source may cause interference.

INFORMATION

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

3.3.44 E9-51-52 – Electronic expansion valve thermal cutting error

Main error code	Sub error code	Unit
E9	51	Main
	52	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Expansion valve thermal cutting error.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

INFORMATION

When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

2 Perform a check of the Sub PCB. See "4.20 Sub PCB" [▶ 368].

Possible cause: Faulty Sub PCB.

3 Perform a check of all expansion valves. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty expansion valve.

4 Perform a check of all refrigerant side thermistors. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty refrigerant side thermistor(s).

5 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▶ 333]

Possible cause: Faulty refrigerant low pressure sensor.

6 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant overcharge.

7 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▶ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

8 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▶ 403].

Possible cause: External source may cause interference.

INFORMATION

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

3.3.45 E9-54-55 – Electronic expansion valve defective circuit

Main error code	Sub error code	Unit
E9	54	Main
	55	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Expansion valve defective circuit.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

INFORMATION

When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

2 Perform a check of the Sub PCB. See "4.20 Sub PCB" [▸ 368].

Possible cause: Faulty Sub PCB.

3 Perform a check of all expansion valves. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty expansion valve.

4 Perform a check of all refrigerant side thermistors. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty refrigerant side thermistor(s).

5 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▸ 333]

Possible cause: Faulty refrigerant low pressure sensor.

6 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Refrigerant overcharge.

7 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

8 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 403].

Possible cause: External source may cause interference.

INFORMATION

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

3.3.46 EA-27 – Safety valve box damper failure

Trigger	Effect	Reset
Limit switch of the SV box damper motor did NOT detect damper movement after motor was energized.	Unit will stop operating.	Power reset at SV box.

To solve the error code

INFORMATION

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

1 At the faulty SV box, set field setting mode 2 – code 3 – 0 to 1 to activate the damper motor.

2 If the damper motor keeps rotating, perform a check of the SV box limit switch(es), see "4.18.3 Safety valve box limit switch" [▸ 348].

Possible cause: Faulty limit switch(es).

3 If the damper motor does NOT start rotating, perform as described below.

4 Perform a check of the SV box damper motor. See "4.18.1 Safety valve box damper motor" [▸ 337].

Possible cause: Faulty damper motor.

5 Perform a check of the SV box main PCB. See "4.18.4 Safety valve box main PCB" [▸ 350].

Possible cause: Faulty SV box main PCB.

6 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 403].

Possible cause: External source may cause interference.

INFORMATION

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

3.3.47 F3-01-03 – Compressor discharge temperature too high

Main error code	Sub error code	Unit
F3	01	Main
	03	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Discharge temperature >safety value certain times within certain minutes, see "7.6 Safety devices" [▸ 483].	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when discharge temperature <reset value, see "7.6 Safety devices" [▸ 483].

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 refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Perform a check of the discharge pipe thermistor. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty discharge pipe thermistor or connector fault.

3 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

4 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Refrigerant shortage.

5 Perform a check of the compressor. See "4.2 Compressor" [▸ 212].

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

6 Perform a check of the lower heat exchanger expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty lower heat exchanger expansion valve.

7 Perform a check of the upper heat exchanger expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty upper heat exchanger expansion valve.

8 Perform a check of the expansion valve(s) of the indoor unit(s). See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit expansion valve.

INFORMATION

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

3.3.48 F3-20-21 – Compressor body temperature too high

Main error code	Sub error code	Unit
F3	20	Main
	21	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Body temperature >safety value certain times within certain minutes, see "7.6 Safety devices" [▸ 483].	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when body temperature <reset value, see "7.6 Safety devices" [▸ 483].

To solve the error code

INFORMATION

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

1 Perform a check of the compressor body thermistor. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty compressor body thermistor or connector fault.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

3 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Refrigerant shortage.

4 Perform a check of the compressor. See "4.2 Compressor" [▸ 212].

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

5 Perform a check of the lower heat exchanger expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty lower heat exchanger expansion valve.

6 Perform a check of the upper heat exchanger expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty upper heat exchanger expansion valve.

7 Perform a check of the expansion valve(s) of the indoor unit(s). See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit expansion valve.

INFORMATION

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

3.3.49 F4-01 – Wet operation caution

Trigger	Effect	Reset
Discharge superheat <10℃ ($SH_{Discharge}=T_{Discharge} - T_{condensation}$).	Unit keeps running.	Automatic reset when discharge superheat >10℃.

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" [▸ 392].

   Possible cause: Refrigerant overcharge.

2. Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 392].

   Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

3. Perform a check of the evaporator side expansion valve. See "4.6 Expansion valve" [▸ 237].

   Possible cause: Faulty evaporator side expansion valve.

4. Check for objects near the indoor unit that may block the airflow. See "5.4 External factors" [▸ 403].

   Possible cause: Airflow of the indoor unit is blocked.

5. Clean the air filters of the indoor unit(s). See service manual of the respective indoor unit(s).

   Possible cause: Faulty or clogged air filter.

6. Adjust external static pressure setting for ducted type indoor units, if necessary.

7. Perform a check of the indoor unit fan motor. See service manual of the respective indoor unit(s).

   Possible cause: Faulty indoor unit fan motor.

8. Perform a check of the discharge pipe thermistor. See "4.21 Thermistors" [▸ 376].

   Possible cause: Faulty discharge pipe thermistor or connector fault.

9. Perform a check of the refrigerant high pressure sensor. See "4.16 Refrigerant high pressure sensor" [▸ 329].

   Possible cause: Faulty refrigerant high pressure sensor.

10. Perform a check of the indoor air thermistor. See indoor unit manuals to check thermistors on indoor units.

    Possible cause: Faulty indoor air thermistor.

11 Check all indoor units operation in heating mode. Check for room temperatures below 20°C. Check if caution disappears once rooms heat-up. If NOT, continue checking the cause of the wet operation.

Possible cause: Indoor room temperature too low when in heating mode. Too cold rooms might create more subcool resulting in wet operation.

INFORMATION

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

3.3.50 F4-02-04 – Wet alarm for compressor M1C

Main error code	Sub error code	Unit
F4	02	Main
	04	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Discharge superheat <10℃ for 90 minutes ($SH_{Discharge}=T_{Discharge} - T_{condensation}$).	Unit will stop.	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 "4.21 Thermistors" [▶ 376].

Possible cause: Faulty suction pipe thermistor or connector fault.

2 Perform a check of the discharge pipe thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty discharge pipe thermistor or connector fault.

3 Perform a check of the refrigerant high pressure sensor. See "4.16 Refrigerant high pressure sensor" [▶ 329].

Possible cause: Faulty refrigerant high pressure sensor.

4 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant overcharge.

5 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

6 Perform a check of the evaporator side expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty evaporator side expansion valve.

7 Check for objects near the indoor unit that may block the airflow. See "5.4 External factors" [▸ 403].

Possible cause: Airflow of the indoor unit is blocked.

8 Clean the air filters of the indoor unit(s). See service manual of the respective indoor unit(s).

Possible cause: Faulty or clogged air filter.

9 Adjust external static pressure setting for ducted type indoor units, if necessary.

10 Perform a check of the indoor unit fan motor. See service manual of the respective indoor unit(s).

Possible cause: Faulty indoor unit fan motor.

11 Perform a check of the indoor air thermistor. See indoor unit manuals to check thermistors on indoor units.

Possible cause: Faulty indoor air thermistor.

12 Check all indoor units operation in heating mode. Check for room temperatures below 20°C. Check if caution disappears once rooms heat-up. If NOT, continue checking the cause of the wet operation.

Possible cause: Indoor room temperature too low when in heating mode. Too cold rooms might create more subcool resulting in wet operation.

INFORMATION

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

3.3.51 F4-08-10 – Wet operation error for compressor M1C

Main error code	Sub error code	Unit
F4	08	Main
	10	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Discharge superheat <10℃ for 90 minutes ($SH_{Discharge}=T_{Discharge} - T_{condensation}$).	Unit will stop.	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 "4.21 Thermistors" [▶ 376].

Possible cause: Faulty suction pipe thermistor or connector fault.

2 Perform a check of the discharge pipe thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty discharge pipe thermistor or connector fault.

3 Perform a check of the refrigerant high pressure sensor. See "4.16 Refrigerant high pressure sensor" [▶ 329].

Possible cause: Faulty refrigerant high pressure sensor.

4 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant overcharge.

5 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

6 Perform a check of the evaporator side expansion valve. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty evaporator side expansion valve.

7 Check for objects near the indoor unit that may block the airflow. See "5.4 External factors" [▶ 403].

Possible cause: Airflow of the indoor unit is blocked.

8 Clean the air filters of the indoor unit(s). See service manual of the respective indoor unit(s).

Possible cause: Faulty or clogged air filter.

9 Adjust external static pressure setting for ducted type indoor units, if necessary.

10 Perform a check of the indoor unit fan motor. See service manual of the respective indoor unit(s).

Possible cause: Faulty indoor unit fan motor.

11 Perform a check of the indoor air thermistor. See indoor unit manuals to check thermistors on indoor units.

Possible cause: Faulty indoor air thermistor.

12 Check all indoor units operation in heating mode. Check for room temperatures below 20°C. Check if caution disappears once rooms heat-up. If NOT, continue checking the cause of the wet operation.

Possible cause: Indoor room temperature too low when in heating mode. Too cold rooms might create more subcool resulting in wet operation.

INFORMATION

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

3.3.52 F4-14 – Indoor unit wet operation alarm

Trigger	Effect	Reset
In cooling mode on indoor Unit: (($T_{Gas\ Pipe}$ – ($T_{Liquid\ Pipe}$) < 2,5 °C while Indoor Expansion Valve opening < 300 pulse AND Outdoor Unit Discharge Superheat = ($T_{Discharge}$ - $T_{condensation}$) < 10 °C for more than 45 minutes	Unit stops Operating.	Manual reset via user interface.

To solve the error code

INFORMATION

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

1 Clean the air filters of the indoor unit(s). See service manual of the respective indoor unit(s).

Possible cause: Faulty or clogged air filter.

2 Use Service Checker to find the indoor units where difference between gas pipe thermistor and liquid pipe thermistor meets the trigger condition and indoor unit expansion valve opening is lower than 300 pulses.

3 Stop these indoor units while some other indoor units are still in operation and system is in Cooling Operation. Check if the liquid pipe temperature read-out is close to evaporation temperature. Or use an expansion valve stethoscope to determine the refrigerant flow on expansion valve while expansion valve is closed.

Possible cause: If liquid pipe temperature is close to evaporation temperature or flow is detected by expansion valve stethoscope then indoor unit expansion valve is bleeding while closed. Faulty indoor unit expansion valve.

4 Perform a check of the indoor unit fan motor. See service manual of the respective indoor unit(s).

Possible cause: Faulty indoor unit fan motor.

5 Perform a check of the indoor unit air and pipe thermistors. See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty thermistor.

INFORMATION

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

3.3.53 F6-01 – Refrigerant overcharge detection by high pressure sensor S1NPH

Trigger	Effect	Reset
Discharge superheat <10℃ ($SH_{Discharge}=T_{Discharge} - T_{condensation}$) during test run.	Unit will stop running.	Manual reset via user interface.
Excessive subcool is detected from comparison of ambient thermistor, liquid thermistor, de-icer thermistor to saturated temperature derived from high pressure sensor S1NPH.		

To solve the error code

INFORMATION

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

1 Perform a check of the outdoor air thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty ambient air thermistor.

2 Perform a check of the main refrigerant liquid thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty main refrigerant liquid thermistor or connector fault.

3 Perform a check of the de–icer thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty de–icer thermistor or connector fault.

4 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant overcharge.

5 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

6 Perform a check of the evaporator side expansion valve. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty evaporator side expansion valve.

7 Check for objects near the indoor unit that may block the airflow. See "5.4 External factors" [▶ 403].

Possible cause: Airflow of the indoor unit is blocked.

8 Clean the air filters of the indoor unit(s). See service manual of the respective indoor unit(s).

Possible cause: Faulty or clogged air filter.

9 Adjust external static pressure setting for ducted type indoor units, if necessary.

10 Perform a check of the indoor unit fan motor. See service manual of the respective indoor unit(s).

Possible cause: Faulty indoor unit fan motor.

11 Perform a check of the discharge pipe thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty discharge pipe thermistor or connector fault.

12 Perform a check of the refrigerant high pressure sensor. See "4.16 Refrigerant high pressure sensor" [▶ 329].

Possible cause: Faulty refrigerant high pressure sensor.

13 Perform a check of the indoor unit air thermistors. See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit air thermistor(s).

14 Check all indoor units operation in heating mode. Check for room temperatures below 20°C. Check if caution disappears once rooms heat-up. If NOT, continue checking the cause of the wet operation.

Possible cause: Indoor room temperature too low when in heating mode. Too cold rooms might create more subcool resulting in wet operation.

INFORMATION

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

3.3.54 F6-02 – Refrigerant overcharge detection during test-run

Trigger	Effect	Reset
Discharge superheat <10℃ ($SH_{Discharge}$=$T_{Discharge}$ – $T_{condensation}$) during test run.	Unit will stop test run.	Push BS3 (return) button once.
Excessive subcool is detected from comparison of ambient thermistor, liquid thermistor, de-icer thermistor to saturated temperature derived from high pressure sensor S1NPH.		

To solve the error code

INFORMATION

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

1 Perform a check of the outdoor air thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty ambient air thermistor.

2 Perform a check of the main refrigerant liquid thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty main refrigerant liquid thermistor or connector fault.

3 Perform a check of the de–icer thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty de–icer thermistor or connector fault.

4 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Refrigerant overcharge.

5 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

6 Perform a check of the evaporator side expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty evaporator side expansion valve.

7 Check for objects near the indoor unit that may block the airflow. See "5.4 External factors" [▸ 403].

Possible cause: Airflow of the indoor unit is blocked.

8 Clean the air filters of the indoor unit(s). See service manual of the respective indoor unit(s).

Possible cause: Faulty or clogged air filter.

9 Adjust external static pressure setting for ducted type indoor units, if necessary.

10 Perform a check of the indoor unit fan motor. See service manual of the respective indoor unit(s).

Possible cause: Faulty indoor unit fan motor.

11 Perform a check of the discharge pipe thermistor. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty discharge pipe thermistor or connector fault.

12 Perform a check of the refrigerant high pressure sensor. See "4.16 Refrigerant high pressure sensor" [▸ 329].

Possible cause: Faulty refrigerant high pressure sensor.

13 Perform a check of the indoor unit air thermistors. See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit air thermistor(s).

14 Check all indoor units operation in heating mode. Check for room temperatures below 20°C. Check if caution disappears once rooms heat-up. If NOT, continue checking the cause of the wet operation.

Possible cause: Indoor room temperature too low when in heating mode. Too cold rooms might create more subcool resulting in wet operation.

INFORMATION

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

3.3.55 F6-03 – Refrigerant overcharge detection by high subcool value

Trigger	Effect	Reset
Discharge superheat <10℃ ($SH_{Discharge}$=$T_{Discharge}$ – $T_{condensation}$) during test run.	Unit will stop running.	Manual reset via user interface.
Excessive subcool is detected from comparison of ambient thermistor, liquid thermistor, de-icer thermistor to saturated temperature derived from high pressure sensor S1NPH.		

To solve the error code

INFORMATION

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

1. Perform a check of the outdoor air thermistor. See "4.21 Thermistors" [▸ 376].

   Possible cause: Faulty ambient air thermistor.

2. Perform a check of the main refrigerant liquid thermistor. See "4.21 Thermistors" [▸ 376].

   Possible cause: Faulty main refrigerant liquid thermistor or connector fault.

3. Perform a check of the de–icer thermistor. See "4.21 Thermistors" [▸ 376].

   Possible cause: Faulty de–icer thermistor or connector fault.

4. Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 392].

   Possible cause: Refrigerant overcharge.

5. Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 392].

   Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

6. Perform a check of the evaporator side expansion valve. See "4.6 Expansion valve" [▸ 237].

   Possible cause: Faulty evaporator side expansion valve.

7. Check for objects near the indoor unit that may block the airflow. See "5.4 External factors" [▸ 403].

   Possible cause: Airflow of the indoor unit is blocked.

8. Clean the air filters of the indoor unit(s). See service manual of the respective indoor unit(s).

   Possible cause: Faulty or clogged air filter.

9. Adjust external static pressure setting for ducted type indoor units, if necessary.

10. Perform a check of the indoor unit fan motor. See service manual of the respective indoor unit(s).

Possible cause: Faulty indoor unit fan motor.

11 Perform a check of the discharge pipe thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty discharge pipe thermistor or connector fault.

12 Perform a check of the refrigerant high pressure sensor. See "4.16 Refrigerant high pressure sensor" [▶ 329].

Possible cause: Faulty refrigerant high pressure sensor.

13 Perform a check of the indoor unit air thermistors. See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit air thermistor(s).

14 Check all indoor units operation in heating mode. Check for room temperatures below 20°C. Check if caution disappears once rooms heat-up. If NOT, continue checking the cause of the wet operation.

Possible cause: Indoor room temperature too low when in heating mode. Too cold rooms might create more subcool resulting in wet operation.

INFORMATION

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

3.3.56 F9-06 – Safety valve box electronic expansion valve abnormality (safety gas)

Trigger	Effect	Reset
After power is supplied, continuity has not been detected on the coil for expansion valve	Unit will stop running.	Power reset at SV box.

INFORMATION

In case the system contains multiple SV boxes and field setting 2-9 "Error handling address" is NOT set uniquely at the different SV boxes, ALL indoor units in the system will show this error.

If field setting 2-9 is set uniquely at the different SV boxes, ONLY the indoor units connected to the faulty SV box will show this error.

To solve the error code

INFORMATION

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

INFORMATION

When the power is switched ON, the SV box main PCB checks all expansion valve coil windings by current check.

1 Locate the SV box by checking indoor unit remote controllers showing F9 error. SV box that is connected to the indoor unit(s) that show F9 error is subject to further investigation.

NOTICE

Other indoor units in the circuit will show U9 Error. This means "There is an error in the circuit but it is not the unit that shows U9".

2 At the located SV box, turn power supply OFF and then ON. Check if error disappears.

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

3 Perform a check of the safety gas expansion valves in the SV box. See "4.18.2 Safety valve box expansion valve" [▸ 343].

Possible cause: Faulty expansion valve, loose connector, faulty expansion valve coil.

4 Perform a check of the SV box main PCB. See "4.18.4 Safety valve box main PCB" [▸ 350].

Possible cause: Faulty SV box main PCB.

5 For SV6~8A box ONLY: Perform a check of the SV box sub PCB. See "4.18.5 Safety valve box sub PCB" [▸ 359].

Possible cause: Faulty SV box sub PCB.

INFORMATION

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

3.3.57 F9-07 – Safety valve box electronic expansion valve abnormality (safety liquid)

Trigger	Effect	Reset
After power is supplied, continuity has not been detected on the coil for expansion valve	Unit will stop running.	Power reset at SV box.

INFORMATION

In case the system contains multiple SV boxes and field setting 2-9 "Error handling address" is NOT set uniquely at the different SV boxes, ALL indoor units in the system will show this error.

If field setting 2-9 is set uniquely at the different SV boxes, ONLY the indoor units connected to the faulty SV box will show this error.

To solve the error code

INFORMATION

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

INFORMATION

When the power is switched ON, the SV box main PCB checks all expansion valve coil windings by current check.

1 Locate the SV box by checking indoor unit remote controllers showing F9 error. SV box that is connected to the indoor unit(s) that show F9 error is subject to further investigation.

NOTICE

Other indoor units in the circuit will show U9 Error. This means "There is an error in the circuit but it is not the unit that shows U9".

2 At the located SV box, turn power supply OFF and then ON. Check if error disappears.

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

3 Perform a check of the safety liquid expansion valves in the SV box. See "4.18.2 Safety valve box expansion valve" [▸ 343].

Possible cause: Faulty expansion valve, loose connector, faulty expansion valve coil.

4 Perform a check of the SV box main PCB. See "4.18.4 Safety valve box main PCB" [▸ 350].

Possible cause: Faulty SV box main PCB.

5 For SV6~8A box ONLY: Perform a check of the SV box sub PCB. See "4.18.5 Safety valve box sub PCB" [▸ 359].

Possible cause: Faulty SV box sub PCB.

INFORMATION

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

3.3.58 F9-08 – Safety valve box electronic expansion valve overcurrent error (safety gas/liquid)

Trigger	Effect	Reset
Expansion valve overcurrent.	Unit will stop running.	Power reset at SV box.

INFORMATION

In case the system contains multiple SV boxes and field setting 2-9 "Error handling address" is NOT set uniquely at the different SV boxes, ALL indoor units in the system will show this error.

If field setting 2-9 is set uniquely at the different SV boxes, ONLY the indoor units connected to the faulty SV box will show this error.

To solve the error code

INFORMATION

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

INFORMATION

When the power is switched ON, the SV box main PCB checks all expansion valve coil windings by current check.

1 Locate the SV box by checking indoor unit remote controllers showing F9 error. SV box that is connected to the indoor unit(s) that show F9 error is subject to further investigation.

NOTICE

Other indoor units in the circuit will show U9 Error. This means "There is an error in the circuit but it is not the unit that shows U9".

2 At the located SV box, turn power supply OFF and then ON. Check if error disappears.

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

3 Perform a check of the SV box main PCB. See "4.18.4 Safety valve box main PCB" [▸ 350].

Possible cause: Faulty SV box main PCB.

4 For SV6~8A box ONLY: Perform a check of the SV box sub PCB. See "4.18.5 Safety valve box sub PCB" [▸ 359].

Possible cause: Faulty SV box sub PCB.

5 Perform a check of the safety gas expansion valves in the SV box. See "4.18.2 Safety valve box expansion valve" [▸ 343].

Possible cause: Faulty expansion valve, loose connector, faulty expansion valve coil.

6 Perform a check of the safety liquid expansion valves in the SV box. See "4.18.2 Safety valve box expansion valve" [▸ 343].

Possible cause: Faulty expansion valve, loose connector, faulty expansion valve coil.

7 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

INFORMATION

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

3.3.59 H3-02-04 – Transmission error between main PCB and inverter PCB

Main error code	Sub error code	Unit
H3	02	Main
	04	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Transmission abnormality between outdoor unit main PCB and inverter PCB A3P.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

1 Check wiring between main PCB and inverter PCB.

2 Check if connector X40A is correctly inserted. See "7.2 Wiring diagram" [▸ 411].

Possible cause: Incorrect wiring.

3 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

4 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB.

INFORMATION

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

3.3.60 H7-01-05 – Defective fan inverter PCB A4P

Main error code	Sub error code	Unit
H7	01	Main
	05	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Abnormal current form detected by fan inverter PCB during start-up of fan motor.	Unit will stop operating.	Power reset at outdoor unit.

INFORMATION

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

1 Perform a check of the outdoor unit fan motor M1F. See "4.13 Outdoor unit fan motor" [▸ 301].

Possible cause: Faulty outdoor unit fan motor M1F.

2 Perform a check of the fan inverter PCB A4P. See "4.7 Fan inverter PCB" [▸ 246].

Possible cause: Faulty fan inverter PCB A4P.

INFORMATION

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

3.3.61 H7-02-06 – Defective fan inverter PCB A5P

Main error code	Sub error code	Unit
H7	02	Main
	06	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Abnormal current form detected by fan inverter PCB during start-up of fan motor.	Unit will stop operating.	Power reset at outdoor unit.

INFORMATION

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

1 Perform a check of the outdoor unit fan motor M2F. See "4.13 Outdoor unit fan motor" [▸ 301].

Possible cause: Faulty outdoor unit fan motor M2F.

2 Perform a check of the fan inverter PCB A5P. See "4.7 Fan inverter PCB" [▸ 246].

Possible cause: Faulty fan inverter PCB A5P.

INFORMATION

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

3.3.62 H7-21-23 – Defective fan inverter PCB A4P

Main error code	Sub error code	Unit
H7	21	Main
	23	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Abnormal current form detected by fan inverter PCB during start-up of fan motor.	Unit will stop operating.	Power reset at outdoor unit.

INFORMATION

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

1 Perform a check of the outdoor unit fan motor M1F. See "4.13 Outdoor unit fan motor" [▸ 301].

Possible cause: Faulty outdoor unit fan motor M1F.

2 Perform a check of the fan inverter PCB A4P. See "4.7 Fan inverter PCB" [▸ 246].

Possible cause: Faulty fan inverter PCB A4P.

INFORMATION

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

3.3.63 H7-22-24 – Defective fan inverter PCB A5P

Main error code	Sub error code	Unit
H7	22	Main
	24	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Abnormal current form detected by fan inverter PCB during start-up of fan motor.	Unit will stop operating.	Power reset at outdoor unit.

INFORMATION

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

1 Perform a check of the outdoor unit fan motor M2F. See "4.13 Outdoor unit fan motor" [▸ 301].

Possible cause: Faulty outdoor unit fan motor M2F.

2 Perform a check of the fan inverter PCB A5P. See "4.7 Fan inverter PCB" [▸ 246].

Possible cause: Faulty fan inverter PCB A5P.

INFORMATION

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

3.3.64 H9-01-02 – Ambient temperature thermistor R1T abnormality

Main error code	Sub error code	Unit
H9	01	Main
	02	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Ambient temperature thermistor R1T read-out is out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the outdoor air thermistor. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty ambient air thermistor.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.65 HA-01 – Defrost fail alarm

Trigger	Effect	Reset
When outdoor unit judges defrost is not completed.	Unit keeps running.	Auto reset.

To solve the error code

INFORMATION

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

1 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▶ 403].

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

2 Clean the outdoor heat exchanger. See "6 Maintenance" [▶ 405].

Possible cause: Dirty outdoor heat exchanger.

3 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant shortage.

4 Perform a check of the de–icer thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty de–icer thermistor or connector fault.

5 Perform a check of the refrigerant high pressure sensor. See "4.16 Refrigerant high pressure sensor" [▶ 329].

Possible cause: Faulty refrigerant high pressure sensor.

INFORMATION

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

3.3.66 J3-16-22 – Discharge thermistor R21T open circuit

Main error code	Sub error code	Unit
J3	16	Main
	22	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Compressor (M1C) discharge thermistor R21T open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

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 "4.21 Thermistors" [▸ 376].

Possible cause: Faulty discharge pipe thermistor or connector fault.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.67 J3-17-23 – Discharge thermistor R21T short circuit

Main error code	Sub error code	Unit
J3	17	Main
	23	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Compressor (M1C) discharge thermistor R21T short circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

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 "4.21 Thermistors" [▸ 376].

Possible cause: Faulty discharge pipe thermistor or connector fault.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.68 J3-47-49 – Compressor body thermistor R15T open circuit

Main error code	Sub error code	Unit
J3	47	Main
	49	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Compressor (M1C) body temperature thermistor R15T open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the compressor body thermistor. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty compressor body thermistor or connector fault.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.69 J3-48-50 – Compressor body thermistor R15T short circuit

Main error code	Sub error code	Unit
J3	48	Main
	50	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Compressor (M1C) body temperature thermistor R15T short circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the compressor body thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty compressor body thermistor or connector fault.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.70 J3-56-57 – High discharge temperature

Main error code	Sub error code	Unit
J3	56	Main
	57	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Compressor discharge temperature too high.	Unit keeps running.	Auto reset.

To solve the error code

INFORMATION

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

1 Perform a check of the discharge pipe thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty discharge pipe thermistor or connector fault.

2 Perform a check of the lower heat exchanger expansion valve. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty lower heat exchanger expansion valve.

3 Perform a check of the upper heat exchanger expansion valve. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty upper heat exchanger expansion valve.

4 Perform a check of the subcool expansion valve. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty subcool expansion valve.

5 Perform a check of the expansion valve(s) of the indoor unit(s). See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit expansion valve.

6 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

7 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant shortage.

INFORMATION

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

3.3.71 J5-01-03 – Compressor suction thermistor R12T malfunction

Main error code	Sub error code	Unit
J5	01	Main
	03	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Thermistor read-out is out of range	Unit will stop operating.	Auto-reset when thermistor read-out is within range

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 "4.21 Thermistors" [▶ 376].

Possible cause: Faulty suction pipe thermistor or connector fault.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.72 J5-18-19 – Suction temperature thermistor R10T abnormality

Main error code	Sub error code	Unit
J5	18	Main
	19	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Thermistor read-out is out of range	Unit will stop operating.	Auto-reset when thermistor read-out is within range

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 "4.21 Thermistors" [▸ 376].

Possible cause: Faulty suction pipe thermistor or connector fault.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.73 J6-01-02 – De–icer thermistor R11T abnormality

Main error code	Sub error code	Unit
J6	01	Main
	02	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
De-icer temperature thermistor R11T short/ open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the de–icer thermistor. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty de–icer thermistor or connector fault.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.74 J6-08-09 – Upper heat exchanger gas pipe thermistor R8T malfunction

Main error code	Sub error code	Unit
J6	08	Main
	09	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Upper heat exchanger gas pipe thermistor R8T short/open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the upper heat exchanger gas pipe thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty upper heat exchanger gas pipe thermistor.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.75 J6-11-12 – Lower heat exchanger gas pipe thermistor R9T malfunction

Main error code	Sub error code	Unit
J6	11	Main
	12	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Lower heat exchanger gas pipe thermistor R9T short/open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the lower heat exchanger gas pipe thermistor. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty lower heat exchanger gas pipe thermistor.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.76 J7-01-02 – Main liquid pipe thermistor R3T malfunction

Main error code	Sub error code	Unit
J7	01	Main
	02	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Main liquid pipe thermistor R3T short/ open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the main liquid pipe thermistor. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty main liquid pipe thermistor.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.77 J7-06-07 – Liquid thermistor R7T abnormality

Main error code	Sub error code	Unit
J7	06	Main
	07	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Refrigerant liquid thermistor R7T after subcool heat exchanger short/open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the refrigerant liquid thermistor of the subcool heat exchanger. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty refrigerant liquid thermistor of the subcool heat exchanger or connector fault.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.78 J7-18-19 – Gas inlet subcool PHE thermistor R16T abnormality

Main error code	Sub error code	Unit
J7	18	Main
	19	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Gas thermistor R16T at inlet of subcool heat exchanger short/open circuit or 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 gas pipe inlet thermistor of the subcool heat exchanger. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty gas pipe inlet thermistor of the subcool heat exchanger.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.79 J8-01-02 – Upper heat exchanger liquid temperature thermistor R4T abnormality

Main error code	Sub error code	Unit
J8	01	Main
	02	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Upper heat exchanger liquid temperature thermistor R4T short/ open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the upper heat exchanger liquid temperature thermistor. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty upper heat exchanger liquid temperature thermistor.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.80 J8-08-09 – Lower heat exchanger liquid temperature thermistor R5T abnormality

Main error code	Sub error code	Unit
J8	08	Main
	09	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Lower heat exchanger liquid temperature thermistor R5T short/ open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the lower heat exchanger liquid temperature thermistor. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty lower heat exchanger liquid temperature thermistor.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.81 J9-01-02 – Gas thermistor R6T abnormality

Main error code	Sub error code	Unit
J9	01	Main
	02	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Gas thermistor R6T after subcool heat exchanger short/open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the gas pipe thermistor of the subcool heat exchanger. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty gas pipe thermistor of the subcool heat exchanger.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.82 J9-08-09 – Gas thermistor R6T abnormality

Main error code	Sub error code	Unit
J9	08	Main
	09	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Gas thermistor R6T after subcool heat exchanger is out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the gas pipe thermistor of the subcool heat exchanger. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty gas pipe thermistor of the subcool heat exchanger.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.83 J9-11-12 – Receiver gas thermistor R13T abnormality

Main error code	Sub error code	Unit
J9	11	Main
	12	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Receiver gas thermistor R13T short/open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the receiver gas thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty receiver gas thermistor or connector fault.

1 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.84 JA-06-08 – High pressure sensor S1NPH abnormality

Main error code	Sub error code	Unit
JA	06	Main
	08	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
High pressure sensor S1NPH read-out open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when sensor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the refrigerant high pressure sensor. See "4.16 Refrigerant high pressure sensor" [▸ 329].

Possible cause: Faulty refrigerant high pressure sensor.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.85 JA-07-09 – High pressure sensor S1NPH malfunction

Main error code	Sub error code	Unit
JA	07	Main
	09	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
High pressure sensor S1NPH read-out short circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when sensor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the refrigerant high pressure sensor. See "4.16 Refrigerant high pressure sensor" [▸ 329].

Possible cause: Faulty refrigerant high pressure sensor.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.86 JC-06-08 – Low pressure sensor S1NPL abnormality

Main error code	Sub error code	Unit
JC	06	Main
	08	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Low pressure sensor S1NPL read-out open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when sensor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▸ 333]

Possible cause: Faulty refrigerant low pressure sensor.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.87 JC-07-09 – Low pressure sensor S1NPL malfunction

Main error code	Sub error code	Unit
JC	07	Main
	09	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Low pressure sensor S1NPL read-out open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when sensor read-out is within range.

To solve the error code

INFORMATION

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

1 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▸ 333]

Possible cause: Faulty refrigerant low pressure sensor.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.88 L1-01-07 – Inverter PCB A3P abnormality

Main error code	Sub error code	Unit
L1	01	Main
	07	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Main PCB detects voltage/ current errors on output waveform or current read-out.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

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 "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the inverter PCB A3P. See "4.9 Inverter PCB" [▶ 263].

Possible cause: Faulty inverter PCB A3P or non-compatible inverter PCB.

3 Perform a check of the compressor. See "4.2 Compressor" [▶ 212].

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

4 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▶ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

INFORMATION

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

3.3.89 L1-02-08 – Inverter PCB A3P current detection primary circuit

Main error code	Sub error code	Unit
L1	02	Main
	08	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Main PCB detects voltage/ current errors on output waveform or current read-out.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

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 "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the inverter PCB A3P. See "4.9 Inverter PCB" [▶ 263].

Possible cause: Faulty inverter PCB A3P or non-compatible inverter PCB.

3 Perform a check of the compressor. See "4.2 Compressor" [▶ 212].

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

4 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

INFORMATION

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

3.3.90 L1-03-09 – Inverter PCB A3P current detection secondary circuit

Main error code	Sub error code	Unit
L1	03	Main
	09	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Main PCB detects voltage/ current errors on output waveform or current read-out.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

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 "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the inverter PCB A3P. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB A3P or non-compatible inverter PCB.

3 Perform a check of the compressor. See "4.2 Compressor" [▸ 212].

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

4 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

INFORMATION

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

3.3.91 L1-04-10 – Power transistor error on inverter PCB A3P

Main error code	Sub error code	Unit
L1	04	Main
	10	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Main PCB detects voltage/ current errors on output waveform or current read-out.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

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 "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the inverter PCB A3P. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB A3P or non-compatible inverter PCB.

3 Perform a check of the compressor. See "4.2 Compressor" [▸ 212].

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

4 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

INFORMATION

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

3.3.92 L1-05-15 – Inverter PCB A3P hardware fault

Main error code	Sub error code	Unit
L1	05	Main
	15	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Main PCB detects voltage/ current errors on output waveform or current read-out.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

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 "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the inverter PCB A3P. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB A3P or non-compatible inverter PCB.

3 Perform a check of the compressor. See "4.2 Compressor" [▸ 212].

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

4 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

INFORMATION

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

3.3.93 L1-28-32 – Fan inverter PCB A4P Eeprom error

Main error code	Sub error code	Unit
L1	28	Main
	32	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Fan inverter PCB A4P fails reading/writing memory (EEPROM error).	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

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

1 Perform a check of the fan inverter PCB A4P. See "4.7 Fan inverter PCB" [▸ 246].

Possible cause: Faulty fan inverter PCB A4P.

INFORMATION

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

3.3.94 L1-29-33 – Fan inverter PCB A5P Eeprom error

Main error code	Sub error code	Unit
L1	29	Main
	33	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Fan inverter PCB A5P fails reading/writing memory (EEPROM error).	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

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

1 Perform a check of the fan inverter PCB A5P. See "4.7 Fan inverter PCB" [▸ 246].

Possible cause: Faulty fan inverter PCB A5P.

INFORMATION

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

3.3.95 L1-36-38 – Inverter PCB A3P Eeprom error

Main error code	Sub error code	Unit
L1	36	Main
	38	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Inverter PCB A3P fails reading/writing memory (EEPROM error).	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

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

1 Perform a check of the inverter PCB A3P. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB A3P or non-compatible inverter PCB.

INFORMATION

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

3.3.96 L1-47-49 – Inverter PCB A3P 16 V DC abnormal

Main error code	Sub error code	Unit
L1	47	Main
	49	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Main PCB detects voltage/ current errors on output waveform or current read-out.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

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 "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the inverter PCB A3P. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB A3P or non-compatible inverter PCB.

3 Perform a check of the compressor. See "4.2 Compressor" [▸ 212].

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

4 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

INFORMATION

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

3.3.97 L2-01-02 – Power supply abnormality during test run

Main error code	Sub error code	Unit
L2	01	Main
	02	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Main PCB detects 50 Hz zero-crossing error.	Unit stops and retries after guard timer (3 minutes) - infinite cycle.	Automatic reset when within zero-crossing interval range.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

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

INFORMATION

Main PCB checks L1-N on connector X1A for sinus waveform each time crossing the zero-line. Interval between each zero-crossing is 10 miliseconds when the power supply is 50 Hz.

1 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

3 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB.

INFORMATION

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

3.3.98 L2-04-05 – Power supply abnormality during normal operation

Main error code	Sub error code	Unit
L2	04	Main
	05	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Main PCB detects 50 Hz zero-crossing error.	Unit stops and retries after guard timer (3 minutes) - infinite cycle.	Automatic reset when within zero-crossing interval range.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

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

INFORMATION

Main PCB checks L1-N on connector X1A for sinus waveform each time crossing the zero-line. Interval between each zero-crossing is 10 miliseconds when the power supply is 50 Hz.

1 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

3 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB.

INFORMATION

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

3.3.99 L4-01-02 – Inverter PCB A3P high fin temperature

Main error code	Sub error code	Unit
L4	01	Main
	02	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Thermistor located inside the power module of the inverter PCB for compressor detects a temperature higher than a certain value.	Unit will stop operating.	Manual reset via remote controller. Outdoor unit power reset.

To solve the error code

INFORMATION

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

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

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

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

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

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

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

Possible cause: Heat sink plate not correctly installed.

4 Check (by touching) if refrigerant is flowing through the radiant cooling refrigerant circuit. The radiant cooling refrigerant circuit should be warm if refrigerant is flowing. If no refrigerant flow, perform a check of the liquid cooling expansion valve, see "4.6 Expansion valve" [▸ 237].

Possible cause: No refrigerant flow through the radiant cooling refrigerant circuit.

5 Perform a check of the liquid cooling expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty liquid cooling expansion valve.

6 Check ambient temperature. Check if outdoor unit location temperature differs drastically.

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

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

8 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB.

INFORMATION

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

3.3.100 L4-06-18 – Fan inverter PCB A4P high fin temperature

Main error code	Sub error code	Unit
L4	06	Main
	18	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Thermistor located inside the power module of the fan inverter PCB detects a temperature higher than a certain value.	Unit will stop operating.	Manual reset via remote controller. Outdoor unit power reset.

To solve the error code

INFORMATION

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

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

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

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

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

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

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

Possible cause: Heat sink plate not correctly installed.

4 Check (by touching) if refrigerant is flowing through the radiant cooling refrigerant circuit. The radiant cooling refrigerant circuit should be warm if refrigerant is flowing. If no refrigerant flow, perform a check of the liquid cooling expansion valve, see "4.6 Expansion valve" [▸ 237].

Possible cause: No refrigerant flow through the radiant cooling refrigerant circuit.

5 Perform a check of the liquid cooling expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty liquid cooling expansion valve.

6 Check ambient temperature. Check if outdoor unit location temperature differs drastically.

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

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

8 Perform a check of the fan inverter PCB A4P. See "4.7 Fan inverter PCB" [▸ 246].

Possible cause: Faulty fan inverter PCB A4P.

INFORMATION

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

3.3.101 L4-07-19 – Fan inverter PCB A5P high fin temperature

Main error code	Sub error code	Unit
L4	07	Main
	19	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Thermistor located inside the power module of the fan inverter PCB detects a temperature higher than a certain value.	Unit will stop operating.	Manual reset via remote controller. Outdoor unit power reset.

To solve the error code

INFORMATION

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

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

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

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

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

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

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

Possible cause: Heat sink plate not correctly installed.

4 Check (by touching) if refrigerant is flowing through the radiant cooling refrigerant circuit. The radiant cooling refrigerant circuit should be warm if refrigerant is flowing. If no refrigerant flow, perform a check of the liquid cooling expansion valve, see "4.6 Expansion valve" [▶ 237].

Possible cause: No refrigerant flow through the radiant cooling refrigerant circuit.

5 Perform a check of the liquid cooling expansion valve. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty liquid cooling expansion valve.

6 Check ambient temperature. Check if outdoor unit location temperature differs drastically.

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

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

8 Perform a check of the fan inverter PCB A5P. See "4.7 Fan inverter PCB" [▶ 246].

Possible cause: Faulty fan inverter PCB A5P.

INFORMATION

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

3.3.102 L5-03-05 – Output overcurrent detection on inverter PCB A3P

Main error code	Sub error code	Unit
L5	03	Main
	05	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Inverter PCB A3P detects overcurrent to power transistor.	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" [▶ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Clogged refrigerant circuit.

3 Check that all stop valves of the refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Closed stop valve in the refrigerant circuit.

4 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

5 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB.

6 Perform a check of the compressor. See "4.2 Compressor" [▸ 212].

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.

3.3.103 L8-03-06 – Overcurrent on inverter PCB A3P except start-up

Main error code	Sub error code	Unit
L8	03	Main
	06	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Inverter PCB A3P detects overcurrent to compressor except on start-up.	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" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Clogged refrigerant circuit.

3 Check that all stop valves of the refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Closed stop valve in the refrigerant circuit.

4 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

5 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB.

6 Perform a check of the compressor. See "4.2 Compressor" [▸ 212].

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.

3.3.104 L9-01-05 – Stall prevention by inverter PCB A3P

Main error code	Sub error code	Unit
L9	01	Main
	05	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Inverter PCB A3P detects overcurrent or no rotation at start-up.	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" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Clogged refrigerant circuit.

3 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▶ 263].

Possible cause: Faulty inverter PCB.

4 Perform a check of the compressor. See "4.2 Compressor" [▶ 212].

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.

3.3.105 L9-13-14 – Inverter PCB A3P output phase abnormality

Main error code	Sub error code	Unit
L9	13	Main
	14	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
When inverter PCB A3P detects phase loss to compressor on U, V, W.	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" [▶ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▶ 263].

Possible cause: Faulty inverter PCB.

3 Perform a check of the compressor. See "4.2 Compressor" [▶ 212].

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.

3.3.106 LC-01 – Transmission abnormality

Trigger	Effect	Reset
No transmission between PCB boards.	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 "4.10 Main PCB" [▸ 280].
   Possible cause: Faulty main PCB or wrong capacity setting.
2. Perform a check of the noise filter PCB. See "4.11 Noise filter PCB" [▸ 289].
   Possible cause: Faulty noise filter PCB.
3. Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▸ 263].
   Possible cause: Faulty inverter PCB.
4. Perform a check of the fan inverter PCB. See "4.7 Fan inverter PCB" [▸ 246].
   Possible cause: Faulty fan inverter PCB.
5. Check that the bridge connector X4A of the fan inverter PCB is correctly connected. See "4.7 Fan inverter PCB" [▸ 246].
   Possible cause: Open jumper X4A on fan inverter PCB.
6. Check the wiring between the PCB's. See "7.2 Wiring diagram" [▸ 411].
   Possible cause: Faulty wiring between PCB's.
7. Check if the correct spare part is installed for all PCB's. See checking procedures of the specific PCB's.
   Possible cause: Wrong spare part PCB installed.

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

3.3.107 LC-14-15 – Transmission abnormality main PCB/inverter PCB A3P

Main error code	Sub error code	Unit
LC	14	Main
	15	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
No transmission between main PCB and inverter PCB A3P.	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 "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the noise filter PCB. See "4.11 Noise filter PCB" [▸ 289].

Possible cause: Faulty noise filter PCB.

3 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB.

4 Check the wiring between the PCB's. See "7.2 Wiring diagram" [▸ 411].

Possible cause: Faulty wiring between PCB's.

5 Check if the correct spare part is installed for all PCB's. See checking procedures of the specific PCB's.

Possible cause: Wrong spare part PCB installed.

INFORMATION

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

3.3.108 LC-19-20 – Transmission abnormality main PCB/fan inverter PCB A4P

Main error code	Sub error code	Unit
LC	19	Main
	20	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
No transmission between main PCB and fan inverter PCB A4P.	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 "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the noise filter PCB. See "4.11 Noise filter PCB" [▸ 289].

Possible cause: Faulty noise filter PCB.

3 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB.

4 Perform a check of the fan inverter PCB A4P. See "4.7 Fan inverter PCB" [▸ 246].

Possible cause: Faulty fan inverter PCB A4P.

5 Check that the bridge connector X4A of the fan inverter PCB is correctly connected. See "4.7 Fan inverter PCB" [▸ 246].

Possible cause: Open jumper X4A on fan inverter PCB.

6 Check the wiring between the PCB's. See "7.2 Wiring diagram" [▸ 411].

Possible cause: Faulty wiring between PCB's.

7 Check if the correct spare part is installed for all PCB's. See checking procedures of the specific PCB's.

Possible cause: Wrong spare part PCB installed.

INFORMATION

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

3.3.109 LC-24-25 – Transmission abnormality main PCB/fan inverter PCB A5P

Main error code	Sub error code	Unit
LC	24	Main
	25	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
No transmission between main PCB and fan inverter PCB A5P.	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 "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the noise filter PCB. See "4.11 Noise filter PCB" [▶ 289].

Possible cause: Faulty noise filter PCB.

3 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▶ 263].

Possible cause: Faulty inverter PCB.

4 Perform a check of the fan inverter PCB A5P. See "4.7 Fan inverter PCB" [▶ 246].

Possible cause: Faulty fan inverter PCB A5P.

5 Check that the bridge connector X4A of the fan inverter PCB is correctly connected. See "4.7 Fan inverter PCB" [▶ 246].

Possible cause: Open jumper X4A on fan inverter PCB.

6 Check the wiring between the PCB's. See "7.2 Wiring diagram" [▶ 411].

Possible cause: Faulty wiring between PCB's.

7 Check if the correct spare part is installed for all PCB's. See checking procedures of the specific PCB's.

Possible cause: Wrong spare part PCB installed.

INFORMATION

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

3.3.110 LC-33-34 – Transmission abnormality main PCB/sub PCB

Main error code	Sub error code	Unit
LC	33	Main
	34	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
No transmission between main PCB and sub PCB.	Unit will stop operating.	Power reset at outdoor unit.

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 "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the Sub PCB. See "4.20 Sub PCB" [▶ 368].

Possible cause: Faulty Sub PCB.

3 Check the wiring between the PCB's. See "7.2 Wiring diagram" [▶ 411].

Possible cause: Faulty wiring between PCB's.

4 Check if the correct spare part is installed for all PCB's. See checking procedures of the specific PCB's.

Possible cause: Wrong spare part PCB installed.

INFORMATION

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

3.3.111 P1-01-02 – Open phase or unbalanced power supply detection by inverter PCB A3P

Main error code	Sub error code	Unit
P1	01	Main
	02	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Inverter PCB A3P detects power unbalance >4%.	Unit will stop operating.	Manual reset via user interface.
		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" [▶ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▶ 263].

Possible cause: Faulty inverter PCB.

INFORMATION

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

3.3.112 P4-01-04 – Fin thermistor abnormality on inverter PCB A3P

Main error code	Sub error code	Unit
P4	01	Main
	04	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Inverter PCB A3P detects open or short circuit or out of range on fin thermistor.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when fin temperature is within range.

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 of the PCB. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty fin thermistor of the PCB.

2 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▸ 403].

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

3 Perform a check of the liquid cooling expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty liquid cooling expansion valve.

4 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB.

INFORMATION

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

3.3.113 P4-02-15 – Fin thermistor abnormality on fan inverter PCB A4P

Main error code	Sub error code	Unit
P4	02	Main
	15	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Fan inverter PCB A4P detects open or short circuit or out of range on fin thermistor.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when fin temperature is within range.

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 of the PCB. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty fin thermistor of the PCB.

2 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▸ 403].

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

3 Perform a check of the liquid cooling expansion valve. See "4.6 Expansion valve" [▸ 237].

Possible cause: Faulty liquid cooling expansion valve.

4 Perform a check of the fan inverter PCB A4P. See "4.7 Fan inverter PCB" [▸ 246].

Possible cause: Faulty fan inverter PCB A4P.

INFORMATION

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

3.3.114 P4-03-16 – Fin thermistor abnormality on fan inverter PCB A5P

Main error code	Sub error code	Unit
P4	03	Main
	16	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Fan inverter PCB A5P detects open or short circuit or out of range on fin thermistor.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when fin temperature is within range.

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 of the PCB. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty fin thermistor of the PCB.

2 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▶ 403].

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

3 Perform a check of the liquid cooling expansion valve. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty liquid cooling expansion valve.

4 Perform a check of the fan inverter PCB A5P. See "4.7 Fan inverter PCB" [▶ 246].

Possible cause: Faulty fan inverter PCB A5P.

INFORMATION

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

3.3.115 PF-00 – Long test run failed

Trigger	Effect	Reset
Long test run failed (2-88=0) while additional charge input (2-14=0).	Unit will stop test run.	Push BS1 (mode) button once.

To solve the error code

INFORMATION

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

1 Change field setting 2–14. See "7.9 Field settings" [▶ 489].

Possible cause: No input at field setting 2–14 (2–14 = 0) when field setting 2–88 = 0.

2 Set field setting 2–88 to 1, see "7.9 Field settings" [▶ 489]. Press the set button BS2 more than 5 seconds to start the short test run.

INFORMATION

Leak check function will NOT be available if short test run is conducted while commissioning.

INFORMATION

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

3.3.116 PJ-04-05 – Capacity setting mismatch for inverter PCB A3P

Main error code	Sub error code	Unit
PJ	04	Main
	05	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Main PCB detects other type PCB than set in EEPROM or wrong dip switch setting on spare part main PCB.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

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

1 Check if the correct spare part is installed for the main PCB. See "4.10 Main PCB" [▸ 280]. Check dip switch setting for spare part main PCB.

Possible cause: Incorrect spare part main PCB or incorrect dip switch setting.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

3 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB.

INFORMATION

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

3.3.117 PJ-09-15 – Capacity setting mismatch for fan inverter PCB A4P

Main error code	Sub error code	Unit
PJ	09	Main
	15	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Main PCB detects other type PCB than set in EEPROM or wrong dip switch setting on spare part main PCB.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

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

1 Check if the correct spare part is installed for the main PCB. See "4.10 Main PCB" [▶ 280]. Check dip switch setting for spare part main PCB.

Possible cause: Incorrect spare part main PCB or incorrect dip switch setting.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

3 Perform a check of the fan inverter PCB A4P. See "4.7 Fan inverter PCB" [▶ 246].

Possible cause: Faulty fan inverter PCB A4P.

INFORMATION

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

3.3.118 PJ-10-17 – Capacity setting mismatch for fan inverter PCB A5P

Main error code	Sub error code	Unit
PJ	10	Main
	17	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Main PCB detects other type PCB than set in EEPROM or wrong dip switch setting on spare part main PCB.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

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

1 Check if the correct spare part is installed for the main PCB. See "4.10 Main PCB" [▶ 280]. Check dip switch setting for spare part main PCB.

Possible cause: Incorrect spare part main PCB or incorrect dip switch setting.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

3 Perform a check of the fan inverter PCB A5P. See "4.7 Fan inverter PCB" [▶ 246].

Possible cause: Faulty fan inverter PCB A5P.

INFORMATION

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

3.3.119 U0 – Refrigerant shortage detection (Warning)

Trigger	Effect	Reset
This is not an error but a warning.	Unit keeps running.	Auto reset when trigger is not met.

To solve the error code

1 Refer to U0-05 or U0-06 to proceed.

3.3.120 U0-05 – Refrigerant shortage detection

Trigger	Effect	Reset
Refrigerant shortage detection during cooling.	Unit keeps running.	Auto reset.

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 refrigerant circuit are open. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Perform a check of all expansion valves. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty expansion valve.

3 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▶ 333]

Possible cause: Faulty refrigerant low pressure sensor.

4 Perform a check of the suction pipe thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty suction pipe thermistor or connector fault.

5 Perform a check of the discharge pipe thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty discharge pipe thermistor or connector fault.

6 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

7 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant shortage.

8 Perform a check of the refrigerant high pressure sensor. See "4.16 Refrigerant high pressure sensor" [▶ 329].

Possible cause: Faulty refrigerant high pressure sensor.

9 Perform a check of the compressor. See "4.2 Compressor" [▶ 212].

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.

3.3.121 U0-06 – Refrigerant shortage detection

Trigger	Effect	Reset
Refrigerant shortage detection during heating.	Unit keeps running.	Auto reset.

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 refrigerant circuit are open. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Perform a check of all expansion valves. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty expansion valve.

3 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▶ 333]

Possible cause: Faulty refrigerant low pressure sensor.

4 Perform a check of the suction pipe thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty suction pipe thermistor or connector fault.

5 Perform a check of the discharge pipe thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty discharge pipe thermistor or connector fault.

6 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

7 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant shortage.

8 Perform a check of the refrigerant high pressure sensor. See "4.16 Refrigerant high pressure sensor" [▶ 329].

Possible cause: Faulty refrigerant high pressure sensor.

9 Perform a check of the compressor. See "4.2 Compressor" [▶ 212].

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.

3.3.122 U0-08-09 – Refrigerant shortage detection by high pressure sensor

Main error code	Sub error code	Unit
U0	08	Main
	09	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Refrigerant shortage detection.	Unit keeps running.	Auto reset.

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 refrigerant circuit are open. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Perform a check of all expansion valves. See "4.6 Expansion valve" [▶ 237].

Possible cause: Faulty expansion valve.

3 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▶ 333]

Possible cause: Faulty refrigerant low pressure sensor.

4 Perform a check of the suction pipe thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty suction pipe thermistor or connector fault.

5 Perform a check of the discharge pipe thermistor. See "4.21 Thermistors" [▶ 376].

Possible cause: Faulty discharge pipe thermistor or connector fault.

6 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

7 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 392].

Possible cause: Refrigerant shortage.

8 Perform a check of the refrigerant high pressure sensor. See "4.16 Refrigerant high pressure sensor" [▶ 329].

Possible cause: Faulty refrigerant high pressure sensor.

9 Perform a check of the compressor. See "4.2 Compressor" [▶ 212].

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.

3.3.123 U1-01-05 – Open phase detection on Power supply

Main error code	Sub error code	Unit
U1	01	Main
	05	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Open phase detected by phase detection circuit.	Unit will stop operating.	Power reset at 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" [▶ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Perform a check of the noise filter PCB. See "4.11 Noise filter PCB" [▶ 289].

Possible cause: Faulty noise filter PCB.

3 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▶ 263].

Possible cause: Faulty inverter PCB.

INFORMATION

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

3.3.124 U1-04-06 – Reverse phase detection

Main error code	Sub error code	Unit
U1	04	Main
	06	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Inverter PCB detects reverse phase between L1 - L3 phases.	Forced stop.	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

1 Check the phase sequence on the mains power supply terminal, see "To check the power supply of the unit" in "5.1 Electrical circuit" [▶ 383]. Correct if needed.

Possible cause: Incorrect phase sequence on mains power supply terminal.

2 Check if any of the phases is missing on the mains power supply terminal, see "To check the power supply of the unit" in "5.1 Electrical circuit" [▶ 383]. Correct if needed.

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

3 Check if the phase L3 is present on the power supply on the inverter PCB, see "To perform a power check" in "4.9 Inverter PCB" [▶ 263]. Correct if needed.

Possible cause: Missing phase L3 on inverter PCB power supply.

4 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▶ 263].

Possible cause: Faulty inverter PCB.

5 Perform a check of the noise filter PCB. See "4.11 Noise filter PCB" [▶ 289].

Possible cause: Faulty noise filter PCB.

INFORMATION

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

3.3.125 U1-19-20 – Hz error detection on Power Supply

Main error code	Sub error code	Unit
U1	19	Main
	20	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Main PCB does not detect zero-crossing for a certain duration.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

INFORMATION

Main PCB checks L1-N on connector X1A for sinus waveform each time crossing the zero-line. Interval between each zero-crossing is 10 miliseconds when the power supply is 50 Hz.

1 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

3 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB.

4 Perform a check of the noise filter PCB. See "4.11 Noise filter PCB" [▸ 289].

Possible cause: Faulty noise filter PCB.

INFORMATION

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

3.3.126 U2-01-08 – Inverter circuit power supply abnormality - inverter PCB A3P abnormal voltage

Main error code	Sub error code	Unit
U2	01	Main
	08	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Inverter PCB A3P detects DC voltage cannot reach or maintain minimum 500 V DC.	Unit will stop operating.	Power reset at outdoor unit.
No zero cross is detected by main PCB through at least 10 seconds.		
Abnormal voltage drop is detected by DC voltage detection circuit.		
Abnormal voltage rise is detected by over voltage detection circuit.		

To solve the error code

INFORMATION

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

1 Check if the power supply wiring is correct. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Incorrect power supply wiring.

2 Perform a check of the noise filter PCB. See "4.11 Noise filter PCB" [▸ 289].

Possible cause: Faulty noise filter PCB.

3 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB.

4 Check the wiring between the PCB's. See "7.2 Wiring diagram" [▸ 411].

Possible cause: Faulty wiring between PCB's.

5 Perform a check of the reactor. See "4.15 Reactor" [▸ 327].

Possible cause: Faulty reactor.

INFORMATION

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

3.3.127 U2-02-09 – Inverter circuit power supply abnormality - inverter PCB A3P phase loss

Main error code	Sub error code	Unit
U2	02	Main
	09	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Inverter PCB A3P detects DC voltage cannot reach or maintain minimum 500 V DC.	Unit will stop operating.	Power reset at outdoor unit.
No zero cross is detected by main PCB through at least 10 seconds.		
Abnormal voltage drop is detected by DC voltage detection circuit.		
Abnormal voltage rise is detected by over voltage detection circuit.		

To solve the error code

INFORMATION

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

1 Check if the power supply wiring is correct. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Incorrect power supply wiring.

2 Perform a check of the noise filter PCB. See "4.11 Noise filter PCB" [▸ 289].

Possible cause: Faulty noise filter PCB.

3 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▸ 263].

Possible cause: Faulty inverter PCB.

4 Check the wiring between the PCB's. See "7.2 Wiring diagram" [▸ 411].

Possible cause: Faulty wiring between PCB's.

5 Perform a check of the reactor. See "4.15 Reactor" [▸ 327].

Possible cause: Faulty reactor.

INFORMATION

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

3.3.128 U2-03-10 – Inverter circuit power supply abnormality - inverter PCB A3P DC circuit not charging

Main error code	Sub error code	Unit
U2	03	Main
	10	Sub

INFORMATION

Main and Sub indications are relevant in multiple outdoor unit configurations. Main outdoor unit is the unit to which F1-F2 IN transmission line is connected. Main and Sub outdoor units can be identified by field setting 1-00.

Trigger	Effect	Reset
Inverter PCB A3P detects DC voltage cannot reach or maintain minimum 500 V DC.	Unit will stop operating.	Power reset at outdoor unit.
No zero cross is detected by main PCB through at least 10 seconds.		
Abnormal voltage drop is detected by DC voltage detection circuit.		
Abnormal voltage rise is detected by over voltage detection circuit.		

To solve the error code

INFORMATION

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

1 Check if the power supply wiring is correct. See "5.1 Electrical circuit" [▶ 383].

Possible cause: Incorrect power supply wiring.

2 Perform a check of the noise filter PCB. See "4.11 Noise filter PCB" [▶ 289].

Possible cause: Faulty noise filter PCB.

3 Perform a check of the inverter PCB. See "4.9 Inverter PCB" [▶ 263].

Possible cause: Faulty inverter PCB.

4 Check the wiring between the PCB's. See "7.2 Wiring diagram" [▶ 411].

Possible cause: Faulty wiring between PCB's.

5 Perform a check of the reactor. See "4.15 Reactor" [▶ 327].

Possible cause: Faulty reactor.

INFORMATION

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

3.3.129 U3-02 – Test run interrupted manually

Trigger	Effect	Reset
Test run interrupted manually by user on main PCB.	Warning.	Perform test run.
Leak detection or refrigerant amount check has NOT been performed.		

To solve the error code

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

1 Check if communication between outdoor unit and indoor units is initialised. Check field setting 1-10 for count of indoor units, see "7.9 Field settings" [▸ 489]. If less indoor units shown than expected, communication between 1 or more indoor unit(s) and outdoor unit is NOT correct. Check the F1-F2 transmission line between the indoor unit and outdoor unit, see "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

2 Perform a test run from the outdoor unit. See installer reference guide for more information.

3 Check the error history, see "3 Troubleshooting" [▸ 27]. Solve the error code(s) using the error based troubleshooting, see "3.3 Error based troubleshooting" [▸ 31].

4 System operation is possible but leak detection function will NEVER run.

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

3.3.130 U3-03 – Test run not performed yet

Trigger	Effect	Reset
Test run NOT performed.	Unit will NOT operate.	Perform test run.

To solve the error code

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

1 Check if communication between outdoor unit and indoor units is initialised. Check field setting 1-10 for count of indoor units, see "7.9 Field settings" [▸ 489]. If less indoor units shown than expected, communication between 1 or more indoor unit(s) and outdoor unit is NOT correct. Check the F1-F2 transmission line between the indoor unit and outdoor unit, see "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

2 Perform a test run from the outdoor unit. See installer reference guide for more information.

3 Check the error history, see "3 Troubleshooting" [▶ 27]. Solve the error code(s) using the error based troubleshooting, see "3.3 Error based troubleshooting" [▶ 31].

INFORMATION

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

3.3.131 U3-04 – Test run ended abnormally

Trigger	Effect	Reset
Test run ended abnormally.	Unit will NOT operate.	Restart test run.

To solve the error code

INFORMATION

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

1 Check for an indoor unit related error code. To solve the error, see the service manual of the respective indoor unit(s) for more information.

2 Check the error history, see "3 Troubleshooting" [▶ 27]. Solve the error code(s) using the error based troubleshooting, see "3.3 Error based troubleshooting" [▶ 31].

3 Check if communication between outdoor unit and indoor units is initialised. Check field setting 1-10 for count of indoor units, see "7.9 Field settings" [▶ 489]. If less indoor units shown than expected, communication between 1 or more indoor unit(s) and outdoor unit is NOT correct. Check the F1-F2 transmission line between the indoor unit and outdoor unit, see "5.1 Electrical circuit" [▶ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

4 Perform a test run from the outdoor unit. See installer reference guide for more information.

INFORMATION

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

3.3.132 U3-05 – Test run aborted on initial transmission

Trigger	Effect	Reset
Test run could NOT start or abort due to transmission issues.	Unit will NOT operate.	Restart test run.

To solve the error code

INFORMATION

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

1 Check if communication between outdoor unit and indoor units is initialised. Check field setting 1-10 for count of indoor units, see "7.9 Field settings" [▶ 489]. If less indoor units shown than expected, communication between 1 or more indoor unit(s) and outdoor unit is NOT correct. Check the F1-F2 transmission line between the indoor unit and outdoor unit, see "5.1 Electrical circuit" [▶ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

2 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▶ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

3 Perform a test run from the outdoor unit. See installer reference guide for more information.

INFORMATION

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

3.3.133 U3-06 – Test run aborted on normal transmission

Trigger	Effect	Reset
Test run could NOT start or abort due to transmission issues.	Unit will NOT operate.	Restart test run.

To solve the error code

INFORMATION

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

1 Check if communication between outdoor unit and indoor units is initialised. Check field setting 1-10 for count of indoor units, see "7.9 Field settings" [▶ 489]. If less indoor units shown than expected, communication between 1 or more indoor unit(s) and outdoor unit is NOT correct. Check the F1-F2 transmission line between the indoor unit and outdoor unit, see "5.1 Electrical circuit" [▶ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

2 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▶ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

3 Perform a test run from the outdoor unit. See installer reference guide for more information.

INFORMATION

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

3.3.134 U3-07 – Transmission abnormality on test run

Trigger	Effect	Reset
Test run could NOT start or abort due to transmission issues.	Unit will NOT operate.	Restart test run.

To solve the error code

INFORMATION

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

1 Check if communication between outdoor unit and indoor units is initialised. Check field setting 1-10 for count of indoor units, see "7.9 Field settings" [▸ 489]. If less indoor units shown than expected, communication between 1 or more indoor unit(s) and outdoor unit is NOT correct. Check the F1-F2 transmission line between the indoor unit and outdoor unit, see "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

2 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

3 Perform a test run from the outdoor unit. See installer reference guide for more information.

INFORMATION

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

3.3.135 U3-08 – Transmission abnormality on test run

Trigger	Effect	Reset
Test run could NOT start or abort due to transmission issues.	Unit will NOT operate.	Restart test run.

To solve the error code

INFORMATION

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

1 Check if communication between outdoor unit and indoor units is initialised. Check field setting 1-10 for count of indoor units, see "7.9 Field settings" [▸ 489]. If less indoor units shown than expected, communication

between 1 or more indoor unit(s) and outdoor unit is NOT correct. Check the F1-F2 transmission line between the indoor unit and outdoor unit, see "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

2 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

3 Perform a test run from the outdoor unit. See installer reference guide for more information.

INFORMATION

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

3.3.136 U3-12 – Commissioning of safety valve box safety system NOT completed

Trigger	Effect	Reset
Safety systems NOT yet confirmed at SV box(es).	Unit will stop operating.	Automatic reset when safety systems are confirmed.

To solve the error code

INFORMATION

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

1 Simulate R32 refrigerant leak (set field setting 2-3-0 to 1 at the SV box main PCB) and check that ALL extra required safety systems function correctly. Extra required safety systems depend on the total refrigerant charge of the system and room surface. See installation manual of the SV box.

Possible cause: Extra required safety systems NOT checked.

2 Check that correct operation of the extra required safety systems is confirmed at ALL SV boxes connected to the same system (set field setting 2-6-0 to 1 at main PCB of ALL SV boxes).

Possible cause: Correct operation of extra required safety systems NOT confirmed at at least 1 SV box in the system.

3 Check that field setting 2-6-1 is ONLY set on main PCB of the SV boxes.

Possible cause: Field setting 2-6-1 set on sub PCB A2P of the SV box.

4 Perform a check of the SV box main PCB. See "4.18.4 Safety valve box main PCB" [▸ 350].

Possible cause: Faulty SV box main PCB.

INFORMATION

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

3.3.137 U4-01 – Communication between indoor units and safety valve box missing

Trigger	Effect	Reset
Communication between SV box and indoor unit(s) disconnected for more than 10 minutes.	Unit will stop operating. Error indication U4-13 on outdoor unit.	Auto reset after communication is restored for more than 1 minute.

To solve the error code

INFORMATION

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

1 Check if the power supply to the SV box is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Check if the power supply to the indoor unit is compliant with the regulations. See indoor unit service manual.

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

3 Check the F1-F2 transmission line between the indoor unit and SV box. See "5.1 Electrical circuit" [▸ 383]. Check that the wiring is correctly connected to the following terminals:
- At indoor unit: F1-F2 terminal (from SV box).
- At SV box: F1-F2 terminal (to indoor unit).

Possible cause: Faulty or interruption in transmission line between indoor unit and SV box.

INFORMATION

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

3.3.138 U4-03 – Outdoor unit not able to start because of indoor unit malfunction

Trigger	Effect	Reset
Minimum 1 indoor unit detects a malfunction when outdoor unit is set for: ▪ Cross piping check (2-20-02), ▪ Refrigerant containment check.	Unit will stop operating.	Restart test function at outdoor unit.

To solve the error code

1 Check indoor units for error codes starting with A, C or U. See troubleshooting in the service manual of the respective indoor unit(s) to solve the error code(s).

Possible cause: Indoor unit detects a malfunction.

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

3.3.139 U4-11 – Communication between outdoor unit and safety valve box missing

Trigger	Effect	Reset
Communication between outdoor unit and SV box disconnected for more than 2 minutes.	Unit will stop operating.	Auto reset after communication is restored for more than 1 minute.

To solve the error code

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

1 Check the F1-F2 transmission line between the outdoor unit and SV box. See "5.1 Electrical circuit" [▸ 383]. Check that the wiring is correctly connected to the following terminals:

- At outdoor unit: F1-F2 terminal (to indoor unit).
- At SV box: F1-F2 terminal (from outdoor unit).

Possible cause: Faulty or interruption in transmission line between outdoor unit and SV box.

2 Check the F1-F2 communication voltage on the SV box. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty communication voltage on SV box.

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

3.3.140 U4-12 – Communication between outdoor unit and all safety valve boxes electric noise

Trigger	Effect	Reset
Communication between outdoor unit and all SV boxes is disturbed by electric noise.	Unit will stop operating.	Auto reset after communication is restored for more than 1 minute.

To solve the error code

INFORMATION

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

1 Check the F1-F2 transmission line between the outdoor unit and SV box. See "5.1 Electrical circuit" [▸ 383]. Check that the wiring is correctly connected to the following terminals:

- At outdoor unit: F1-F2 terminal (to indoor unit).
- At SV box: F1-F2 terminal (from outdoor unit).

Possible cause: Faulty or interruption in transmission line between outdoor unit and SV box.

2 Check the F1-F2 transmission line between the SV boxes. See "5.1 Electrical circuit" [▸ 383]. Check that the wiring is correctly connected to the following terminals of ALL SV boxes:

- F1-F2 terminal (from other SV box).
- F1-F2 terminal (to other SV box).

Possible cause: Faulty or interruption in transmission line between SV boxes.

3 Check the F1-F2 communication voltage on ALL SV boxes. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty communication voltage on SV box.

INFORMATION

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

3.3.141 U4-13 – Communication between indoor units and safety valve box missing

Trigger	Effect	Reset
Communication between SV box and indoor unit(s) disconnected for more than 10 minutes.	Unit will stop operating.	Auto reset after communication is restored for more than 1 minute.

To solve the error code

INFORMATION

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

1 Check if the power supply to the SV box is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Check if the power supply to the indoor unit is compliant with the regulations. See indoor unit service manual.

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

3 Check the F1-F2 transmission line between the indoor unit and SV box. See "5.1 Electrical circuit" [▸ 383]. Check that the wiring is correctly connected to the following terminals:
- At indoor unit: F1-F2 terminal (from SV box).
- At SV box: F1-F2 terminal (to indoor unit).

Possible cause: Faulty or interruption in transmission line between indoor unit and SV box.

INFORMATION

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

3.3.142 U4-14 – Communication between indoor units and safety valve box electric noise

Trigger	Effect	Reset
Communication between SV box and indoor unit(s) is disturbed by electric noise.	Unit will stop operating.	Auto reset after communication is restored for more than 1 minute.

To solve the error code

INFORMATION

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

1 Check the F1-F2 transmission line between the indoor unit and SV box. See "5.1 Electrical circuit" [▸ 383]. Check that the wiring is correctly connected to the following terminals:
- At indoor unit: F1-F2 terminal (from SV box).
- At SV box: F1-F2 terminal (to indoor unit).

Possible cause: Faulty or interruption in transmission line between indoor unit and SV box.

2 Check the F1-F2 communication voltage on the indoor unit. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty communication voltage on indoor unit.

INFORMATION

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

3.3.143 U5-04 – Communication abnormality between indoor unit main PCB and remote controller

Trigger	Effect	Reset
Transmission abnormality between indoor unit main PCB and remote controller.	The indoor unit that has the error will stop operating (fan OFF, expansion valve OFF) while all the other indoor units and outdoor unit will continue operating for indoor units without error.	Auto reset.

To solve the error code

INFORMATION

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

1 Check if multiple remote controllers are wired to the same indoor unit. One remote controller needs to be set to main while all other remote controllers need to be set to sub. Also check that the remote controllers are correctly wired. See installer reference guide of the remote controller for detailed information.

Possible cause: No main remote controller set when multiple units are wired to the same indoor unit.

2 Perform a check of the remote controller. See service manual of the specific indoor unit.

Possible cause: Faulty remote controller or faulty transmission wiring between remote controller and indoor unit.

3 If possible, switch the faulty remote controller with a remote controller from another indoor unit.

- If error transfers to the other indoor unit, replace the remote controller. See service manual of the specific indoor unit.
  Possible cause: Faulty remote controller.
- If error is still present on the indoor unit, Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.
  Possible cause: Faulty indoor unit main PCB.

INFORMATION

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

3.3.144 U5-06 – Supervisor remote controller not connected/not set

Trigger	Effect	Reset
Supervisor remote controller NOT connected or NOT set correctly.	Indoor unit continues FAN ONLY operation while other indoor units show error U9-01. Outdoor unit stops operating.	Operation NOT allowed while abnormality continues.

To solve the error code

INFORMATION

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

1 Check that the field setting is correctly set on the outdoor unit: [2-60=0] when NO supervisor remote controller connected, [2-60=1] when supervisor remote controller connected. See "7.9 Field settings" [▸ 489].

Possible cause: Faulty field setting for supervisor remote controller.

2 Check that the setting [R2-05=02] is correct and that the supervisor remote controller functions correctly. See Remote controller user interface in the service manual of the respective indoor unit for more information.

Possible cause: Faulty setting or supervisor remote controller.

3 Check the communication wiring between the supervisor remote controller and the indoor unit main PCB. See Remote controller user interface in the service manual of the respective indoor unit for more information.

Possible cause: Faulty communication wiring between remote controller and indoor unit.

4 Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

Possible cause: Faulty indoor unit main PCB.

5 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

6 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB or wrong capacity setting.

INFORMATION

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

3.3.145 U7-01 – Transmission abnormality between systems - DTA104A61,62 error

Trigger	Effect	Reset
Communication problem between systems.	Unit will stop operating.	Auto reset when communication is normal.
Conflict in settings and configuration for DTA104A61,62.	Unit keeps running.	Auto reset when correct settings apply on DTA104A61,62.

To solve the error code

INFORMATION

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

1 Check the Q1-Q2 communication between the outdoor units. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in communication between outdoor units.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

3 Check wiring and configuration of option DTA104A61, 62. See option handbook on Business Portal for more information.

4 Check the F1-F2 OUT transmission line between the outdoor unit main PCB and option PCB DTA104A61, 62. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in transmission line between outdoor unit and option DTA104A61, 62.

5 Check that ONLY the master outdoor unit has F1-F2 IN connection. If another outdoor unit has F1-F2 IN connection, correct the installation.

6 Check if low noise operation or demand control is active without an optional DTA104A61,62 PCB. Field setting 2-12 CANNOT be set to 1 if DTA104A61,62 is not present, see "7.9 Field settings" [▸ 489].

INFORMATION

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

3.3.146 U7-02 – Transmission abnormality between systems - DTA104A61,62 error

Trigger	Effect	Reset
Transmission error on DTA104A61,62 initialization.	Forced stop.	Auto reset.

To solve the error code

INFORMATION

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

1 Check if multiple units are wired to the same cool/heat zone without cool/heat master set. One main PCB needs to be set cool/heat master (field setting 2-0 = 1) while all other units need to be set sub (field setting 2-0 = 2). See "7.9 Field settings" [▸ 489].

Possible cause: No cool/heat master set when multiple units are wired to the same cool/heat zone.

2 If unified cool/heat selection is NOT present, set the DTA104A61,62 cool/heat setting to IND.

3 Check wiring and configuration of option DTA104A61, 62. See option handbook on Business Portal for more information.

4 Check if low noise operation or demand control is active without an optional DTA104A61,62 PCB. Field setting 2-12 CANNOT be set to 1 if DTA104A61,62 is not present, see "7.9 Field settings" [▸ 489].

INFORMATION

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

3.3.147 U7-03 – Transmission abnormality between main outdoor unit and sub 1 outdoor unit

Trigger	Effect	Reset
Main PCB on main outdoor unit detects transmission abnormality on a multi installation.	Forced stop.	Auto reset.

To solve the error code

INFORMATION

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

1 Check the Q1-Q2 communication between the outdoor units. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in communication between outdoor units.

2 Perform a check of the main PCB of the main outdoor unit. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB of the main outdoor unit.

3 Perform a check of the main PCB of the sub 1 outdoor unit. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB of the sub 1 outdoor unit.

4 Check that ONLY the master outdoor unit has F1-F2 IN connection. If another outdoor unit has F1-F2 IN connection, correct the installation.

INFORMATION

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

3.3.148 U7-05 – Multi system abnormality

Trigger	Effect	Reset
Main PCB on main outdoor unit detects transmission abnormality on a multi installation.	Forced stop.	Auto reset.

To solve the error code

INFORMATION

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

1 Check the Q1-Q2 communication between the outdoor units. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in communication between outdoor units.

2 Perform a check of the main PCB of the main outdoor unit. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB of the main outdoor unit.

3 Perform a check of the main PCB of the sub 1 outdoor unit. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB of the sub 1 outdoor unit.

4 Check that ONLY the master outdoor unit has F1-F2 IN connection. If another outdoor unit has F1-F2 IN connection, correct the installation.

INFORMATION

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

3.3.149 U7-06 – Multi system address abnormality

Trigger	Effect	Reset
Main PCB on main outdoor unit detects transmission abnormality on a multi installation.	Forced stop.	Auto reset.

To solve the error code

INFORMATION

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

1 Check the Q1-Q2 communication between the outdoor units. See "5.1 Electrical circuit" [▶ 383].

Possible cause: Faulty or interruption in communication between outdoor units.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▶ 280].

Possible cause: Faulty main PCB.

3 Check that ONLY the master outdoor unit has F1-F2 IN connection. If another outdoor unit has F1-F2 IN connection, correct the installation.

INFORMATION

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

3.3.150 U7-07 – More than 2 outdoor units on Q1-Q2 transmission

Trigger	Effect	Reset
More than 2 outdoor units are detected on Q1-Q2 transmission line.	Forced stop.	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

1 Maximum 2 outdoor units are allowed in the installation. Change the installation if needed.

2 Check the Q1-Q2 communication between the outdoor units. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in communication between outdoor units.

3 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.151 U7-11 – Excess indoor units detected on test run

Trigger	Effect	Reset
Test run detects more than allowed amount of indoor units or indoor unit total index.	Forced stop.	Auto reset.

To solve the error code

INFORMATION

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

1 Check total index and total count for indoor units. See Data book on Business Portal for more information.

Possible cause: Indoor Unit capacity connected is too high.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

3 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

INFORMATION

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

3.3.152 U7-24 – Duplication of address setting on multiple DTA104A61,62 installation

Trigger	Effect	Reset
Bad configuration of option DTA104A61,62 PCB.	Forced stop.	DTA104A61,62 power reset.

To solve the error code

INFORMATION

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

1 Check wiring and configuration of option DTA104A61, 62. See option handbook on Business Portal for more information.

2 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

INFORMATION

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

3.3.153 U9-01 – Other indoor unit has error

Trigger	Effect	Reset
System mismatch, non-compatible indoor units.	Forced stop.	Auto reset.
At least one other indoor unit on same F1-F2 wiring has an error.		

To solve the error code

INFORMATION

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

1 Check the indoor units for error codes other than U9-01. See troubleshooting in the service manual of the respective indoor unit(s) to solve the error code(s).

2 Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.

3 Check field setting 1-10 to count the indoor units, see "7.9 Field settings" [▸ 489]. If less indoor units detected than it should be, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

4 Set field setting 2-5 of the outdoor unit to 1 to start the indoor units connected to that outdoor unit on forced fan operation, see "7.9 Field settings" [▸ 489]. If any of these indoor units is NOT operating, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

5 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB.

6 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

INFORMATION

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

3.3.154 U9-03 – Abnormality of R32 safety system on other indoor unit on same port of safety valve box

Trigger	Effect	Reset
R32 leak detected on other indoor unit connected to the same SV box indoor port without group control (no P1/P2 loop).	Outdoor unit can operate for indoor units connected to other ports of the SV box.	Auto reset.

To solve the error code

INFORMATION

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

1. Check other indoor units connected to the same port of the SV box for error code A0-11 or CH-10. See "3.3 Error based troubleshooting" [▸ 31] to solve the error code(s).
2. Check that the F1-F2 transmission line between the indoor unit and SV box is connected to the correct terminal at the SV box.

   Possible cause: Indoor unit that has error U9-03 is NOT connected to the same port of the SV box as the indoor unit that has error A0-11 or CH-10, but is NOT wired correctly.

INFORMATION

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

3.3.155 U9-04 – Abnormality of R32 safety system on other safety valve box

Trigger	Effect	Reset
R32 leak detected on other SV box.	Outdoor unit stops operating.	Auto reset.

To solve the error code

INFORMATION

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

1. Check indoor units connected to other SV box(es) for error code A0-20 or CH-20. See "3.3 Error based troubleshooting" [▸ 31] to solve the error code(s).
2. Check that the F1-F2 transmission line between the indoor unit and SV box is connected to the correct SV box.

Possible cause: Indoor unit that has error U9-04 is connected to the same SV box as the indoor unit that has error A0-20 or CH-20, but is wired to another SV box.

INFORMATION

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

3.3.156 UA-00 – Combination abnormality

Trigger	Effect	Reset
Combination abnormality.	Forced stop.	Power reset and only allowed combination.

To solve the error code

INFORMATION

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

1 Change the installation with ONLY R32 type indoor units.

INFORMATION

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

3.3.157 UA-03 – Combination abnormality - Mix of R22, R407C, R410A and R32 type units detected

Trigger	Effect	Reset
Mix of R22, R407C, R410A, R32 type units detected.	Forced stop.	Power reset and only allowed combination.

To solve the error code

INFORMATION

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

1 Change the installation with ONLY R32 type indoor units.

INFORMATION

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

3.3.158 UA-16 – Combination abnormality - More than 64 indoor units detected on same system

Trigger	Effect	Reset
Main PCB on main outdoor unit detects more than 64 indoor units on same system.	Forced stop.	Automatic reset after re-initialization detects less than 64 compatible indoor units.

To solve the error code

INFORMATION

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

1 Change the installation to include a maximum of 64 indoor units.

INFORMATION

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

3.3.159 UA-17 – Combination abnormality - Local setting abnormality

Trigger	Effect	Reset
Main PCB on main outdoor unit detects compatibility issues.	Forced stop.	Automatic reset after re-initialization detects compatible units and normal field settings.
Main PCB detects field setting abnormality.		

To solve the error code

INFORMATION

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

1 Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.

2 Check and verify the outdoor unit field settings with the default settings. See "7.9 Field settings" [▸ 489].

INFORMATION

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

3.3.160 UA-18 – Combination abnormality - Outdoor unit not compatible with indoor units (refrigerant type)

Trigger	Effect	Reset
Main PCB on main outdoor unit detects compatibility issues.	Forced stop.	Automatic reset after re-initialization detects compatible units.
Outdoor unit NOT compatible with indoor units (refrigerant type).		

To solve the error code

INFORMATION

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

1 Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.

INFORMATION

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

3.3.161 UA-19 – Combination abnormality - Local set alarm

Trigger	Effect	Reset
Main PCB on main outdoor unit detects compatibility issues.	Forced stop.	Automatic reset after re-initialization detects compatible units and normal field settings.
Main PCB detects field setting abnormality, local set alarm.		

To solve the error code

INFORMATION

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

1 Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.

2 Check and verify the outdoor unit field settings with the default settings. See "7.9 Field settings" [▸ 489].

INFORMATION

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

3.3.162 UA-20 – Combination abnormality - Non-compatible outdoor unit in multi-combination

Trigger	Effect	Reset
Main PCB on main outdoor unit detects compatibility issues.	Forced stop.	Automatic reset after re-initialization detects compatible units.
Outdoor unit NOT compatible with multi combination.		

To solve the error code

INFORMATION

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

1 Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.

INFORMATION

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

3.3.163 UA-21 – Combination abnormality - BPMK units detected

Trigger	Effect	Reset
Main PCB detects BPMK unit(s) on F1/F2 wiring.	Forced stop.	Automatic reset after re-initialization detects compatible units.

To solve the error code

INFORMATION

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

1. Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.
2. Change the installation without BPMK units.

3.3.164 UA-22 – Combination abnormality - Single Installation

Trigger	Effect	Reset
Abnormal combination on outdoor unit installation.	Unit will not operate.	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

1. Check if a multi combination ONLY compatible type outdoor unit is detected on a single installation. Check databook for proper combination.

   Possible cause: RYMA5 unit detected without multi combination. Install RYMA5 unit in a multi installation.

2. Check the Q1-Q2 communication between the outdoor units. See "5.1 Electrical circuit" [▸ 383].

   Possible cause: Faulty or interruption in communication between outdoor units.

3. Perform a check of the main PCB of the main outdoor unit. See "4.10 Main PCB" [▸ 280].

   Possible cause: Faulty main PCB of the main outdoor unit.

INFORMATION

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

3.3.165 UA-23 – Safety valve box Abnormality - Connected Indoor Unit Index too High

Trigger	Effect	Reset
Total indoor unit index connected to SV box is too high.	Alarm status ON.	Power reset at SV box.

To solve the error code

INFORMATION

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

1 Check total index and total count for indoor units. See Data book on Business Portal for more information.

Possible cause: Indoor Unit capacity connected is too high.

INFORMATION

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

3.3.166 UA-25 – Safety valve box Abnormality - Transmission Wiring Abnormality between SV Unit and Outdoor Unit

Trigger	Effect	Reset
Transmission abnormality detected between outdoor unit and SV box.	Alarm status ON.	Auto recovery when transmission is normal.

To solve the error code

INFORMATION

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

1 Locate the SV box by checking indoor unit remote controllers showing this error. SV box that is connected to the indoor unit(s) that show this error is subject to further investigation.

NOTICE

Other indoor units in the circuit will show U9 Error. This means "There is an error in the circuit but it is not the unit that shows U9".

2 Check the transmission wiring between SV box and outdoor unit. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty transmission wiring.

3 Perform a check of the SV box main PCB. See "4.18.4 Safety valve box main PCB" [▸ 350].

Possible cause: Faulty SV box main PCB.

4 Perform a check of the main PCB of the main outdoor unit. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB of the main outdoor unit.

INFORMATION

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

3.3.167 UA-26 – Safety valve box Abnormality - Transmission Wiring Abnormality on safety valve box

Trigger	Effect	Reset
Transmission abnormality detected between SV boxes.	Alarm status ON.	Auto recovery when transmission is normal

To solve the error code

INFORMATION

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

1 Locate the SV box by checking indoor unit remote controllers showing this error. SV box that is connected to the indoor unit(s) that show this error is subject to further investigation.

NOTICE

Other indoor units in the circuit will show U9 Error. This means "There is an error in the circuit but it is not the unit that shows U9".

2 Check the transmission wiring between SV boxes. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty transmission wiring.

3 Perform a check of the SV box main PCB. See "4.18.4 Safety valve box main PCB" [▸ 350].

Possible cause: Faulty SV box main PCB.

4 For SV6~8A box ONLY: Perform a check of the SV box sub PCB. See "4.18.5 Safety valve box sub PCB" [▸ 359].

Possible cause: Faulty SV box sub PCB.

INFORMATION

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

3.3.168 UA-29 – Safety valve box Abnormality - Minimum 1 indoor unit without safety valve box detected when outdoor setting 2-54-0

Trigger	Effect	Reset
Minimum 1 indoor unit without SV box detected when outdoor unit setting 2-54-0 (default).	Alarm status ON.	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

1 Check system layout. If at least 1 indoor unit can be connected directly to the outdoor unit without SV box, outdoor unit field setting 2-54 MUST be set to 1, even if other indoor unit(s) are connected through SV box(es).

Possible cause: Incorrect field setting 2-54-0 (default).

2 Check the transmission wiring between outdoor unit, indoor unit(s) connected without SV box and SV box(es). See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty transmission wiring.

3 Check the power supply to the indoor unit that is connected without SV box. See indoor unit service manual.

Possible cause:
- Faulty or disturbance of the power supply (imbalance),
- Phase missing,
- Power drop,
- Short circuit.

4 Perform a check of the main PCB of the main outdoor unit. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB of the main outdoor unit.

INFORMATION

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

3.3.169 UA-30 – Combination Abnormality - Heat Pump and Heat Recovery Outdoor Units Detected in Same Combination

Trigger	Effect	Reset
Heat Pump and Heat Recovery Type outdoor units are detected together on Q1-Q2 wiring.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

1 Check outdoor units on the same Q1-Q2 wiring. Heat Pump and Heat Recovery type outdoor units cannot be present on the same circuit.

Possible cause: Heat Pump and Heat Recovery type units on same circuit.

3.3.170 UA-31 – Combination abnormality - RYMA-A unit detected without a multi combination

Trigger	Effect	Reset
When outdoor total HP ≥20 HP	Forced stop.	Power reset at outdoor unit.
When combination RYMA5 ≥13 HP		

To solve the error code

INFORMATION

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

1 Maximum 2 outdoor units are allowed in the installation. Change the installation if needed.

2 Check the Q1-Q2 communication between the outdoor units. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in communication between outdoor units.

3 RYMA Units are only allowed in multi combination as RYMA5A + RYMA5A or RXYA8A + RYMA5A.

Possible cause: RYMA-A unit installed as standalone unit.

4 Perform a check of the main PCB of the main outdoor unit. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB of the main outdoor unit.

INFORMATION

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

3.3.171 UA-35 – Combination abnormality - RYMA-A Unit Detected in Wrong Combination

Trigger	Effect	Reset
RYMA Unit detected in a Not-Allowed combination	Unit will stop operating	Power reset at outdoor unit.

To solve the error code

INFORMATION

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

1 RYMA Units are only allowed in multi combination as RYMA5A + RYMA5A or RXYA8A + RYMA5A.

Possible cause: RYMA-A unit installed in a not-allowed multi combination.

2 Check the Q1-Q2 communication between the outdoor units in multi combination. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty wiring.

3 Perform a check of the main PCB of the main outdoor unit. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB of the main outdoor unit.

INFORMATION

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

3.3.172 UA-38 – Combination abnormality - Altherma hydro unit detected

Trigger	Effect	Reset
Main PCB on main outdoor unit detects Altherma hydrobox on F1-F2 IN wiring.	Forced stop.	Automatic reset after re-initialization detects compatible units.

To solve the error code

INFORMATION

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

1 NO Hydrobox unit is allowed in the installation. See the Databook for more information.

INFORMATION

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

3.3.173 UA-39 – Combination abnormality - Incorrect combination

Trigger	Effect	Reset
Main PCB on main outdoor unit detects compatibility issues.	Forced stop.	Automatic reset after re-initialization detects compatible units.

To solve the error code

INFORMATION

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

1 Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.

INFORMATION

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

3.3.174 UA-43 – Combination abnormality - Incorrect combination

Trigger	Effect	Reset
Main PCB on main outdoor unit detects compatibility issues.	Forced stop.	Automatic reset after re-initialization detects compatible units.

To solve the error code

INFORMATION

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

1 Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.

INFORMATION

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

3.3.175 UA-49 – Combination abnormality - Wrong unit combination

Trigger	Effect	Reset
Main PCB on main outdoor unit detects compatibility issues.	Forced stop.	Automatic reset after re-initialization detects compatible units.

To solve the error code

INFORMATION

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

1 Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.

INFORMATION

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

3.3.176 UA-50 – Combination abnormality - High Temperature Hydrobox Detected Connected to a SV Unit

Trigger	Effect	Reset
HXHD-A unit detected on SV box to indoor F1-F2 wiring.	Forced stop.	Power reset at outdoor unit.

To solve the error code

1 NO Hydrobox unit is allowed in the installation. See the Databook for more information.

INFORMATION

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

3.3.177 UA-51 – Combination abnormality - only hydrobox units detected

Trigger	Effect	Reset
Outdoor unit detects only hydro units connected.	Forced stop.	Power reset at outdoor unit.

To solve the error code

1 NO Hydrobox unit is allowed in the installation. See the Databook for more information.

INFORMATION

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

3.3.178 UA-52 – Safety valve box refrigerant type abnormality

Trigger	Effect	Reset
Detected PCB of SV box is NOT the correct type. Detected SV box for R22, R407C, R410A.	Unit will stop operating.	Power reset and correct type SV box.

To solve the error code

INFORMATION

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

1 Check that the correct type SV box (SV1~8A) is installed. Change as needed.

Possible cause: Wrong type SV box installed.

2 Check if the correct spare part (EB20062-5) is installed for the main PCB A1P of the SV box See "4.18.4 Safety valve box main PCB" [▸ 350].

Possible cause: Incorrect spare part main PCB A1P.

INFORMATION

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

3.3.179 UA-53 – Combination abnormality - Safety valve box Dip Switch Abnormality

Trigger	Effect	Reset
SV box dip switch abnormality is detected.	Forced stop.	Power reset at outdoor unit.

To solve the error code

1 Check dip switch settings for multi SV boxes.

Possible cause: Wrong dipswitch setting.

2 Apply correct dip switch setting while SV box power is OFF. After correcting the dip switch, turn on the power and perform a communication reset on the outdoor unit PCB. See "How to perform a communication reset" [▸ 391].

3 Check all indoor unit connection to the SV box. Correct any wiring or piping fault.

Possible cause: Piping and/or wiring fault of indoor units to SV box.

4 Check power supply to all indoor units. Turn on any indoor unit where power is OFF. After Indoor unit(s) power ON, perform a communication reset on outdoor unit PCB. See "How to perform a communication reset" [▸ 391].

Possible cause: Indoor unit(s) with power OFF.

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

3.3.180 UA-55 – R32 pump down locked state (outdoor unit setting required)

Trigger	Effect	Reset
After reset of error code CH-10 (by setting field setting 25-14-0 to 1 on indoor unit remote controller).	Outdoor unit forced stop.	Automatic reset when outdoor lock function was reset at outdoor main PCB (set field setting 2-24-1 to 0).
After reset of error code CH-20 (by setting field setting 2-5-0 to 1 on SV box main PCB).		

To solve the error code

1. Check the indoor units for error code A0-11 or CH-01. See "3.3 Error based troubleshooting" [▸ 31] to solve the error code(s).
2. Check the indoor units and outdoor unit for error code A0-20. See "3.3 Error based troubleshooting" [▸ 31] to solve the error code.
3. Reset the outdoor lock function. Set the field setting 2-24-1 to 0 on the outdoor unit. See "7.9 Field settings" [▸ 489].

   Possible cause: Outdoor lock function active.
4. Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

   Possible cause: Faulty main PCB or wrong capacity setting.
5. Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 383].

   Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.
6. Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

   Possible cause: Faulty indoor unit main PCB.
7. Perform a check of the SV box main PCB. See "4.18.4 Safety valve box main PCB" [▸ 350].

   Possible cause: Faulty SV box main PCB.

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

3.3.181 UA-57 – Mechanical ventilation abnormality (external input is closed)

Trigger	Effect	Reset
Mechanical ventilation abnormality (external input on outdoor unit terminal is closed).	Forced stop.	Operation NOT allowed while abnormality continues.

To solve the error code

1 Check if the mechanical ventilation functions correctly and repair as needed. See "5.3 Manufacturer components" [▸ 403].

Possible cause: Faulty mechanical ventilation.

2 Check the mechanical ventilation error input signal. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty mechanical ventilation error input signal.

3 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB or wrong capacity setting.

INFORMATION

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

3.3.182 UA-58 – Supervisor remote controller not connected/not set

Trigger	Effect	Reset
Supervisor remote controller NOT connected.	Indoor unit conitnues FAN ONLY operation while other indoor units show error U9-01. Outdoor unit stops operating.	Operation NOT allowed while abnormality continues.

To solve the error code

1 Check that the field setting is correctly set on the outdoor unit: [2-60=0] when NO supervisor remote controller connected, [2-60=1] when supervisor remote controller connected. See "7.9 Field settings" [▸ 489].

Possible cause: Faulty field setting for supervisor remote controller.

2 Check that the setting [R2-05=02] is correct and that the supervisor remote controller functions correctly. See Remote controller user interface in the service manual of the respective indoor unit for more information.

Possible cause: Faulty setting or supervisor remote controller.

3 Check the communication wiring between the supervisor remote controller and the indoor unit main PCB. See Remote controller user interface in the service manual of the respective indoor unit for more information.

Possible cause: Faulty communication wiring between remote controller and indoor unit.

4 Perform a check of the indoor unit main PCB. See service manual of the airconditioning indoor unit.

Possible cause: Faulty indoor unit main PCB.

5 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

6 Perform a check of the main PCB. See "4.10 Main PCB" [▸ 280].

Possible cause: Faulty main PCB or wrong capacity setting.

INFORMATION

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

3.3.183 UA-62 – Safety valve box power failure detection

Trigger	Effect	Reset
Outdoor unit main PCB lost communication with SV box.	Unit will stop operating.	Auto reset.

To solve the error code

1 Perform a check of the SV box main PCB. See "4.18.4 Safety valve box main PCB" [▸ 350].

Possible cause: Faulty SV box main PCB.

2 For SV6~8A box ONLY: Perform a check of the SV box sub PCB. See "4.18.5 Safety valve box sub PCB" [▸ 359].

Possible cause: Faulty SV box sub PCB.

INFORMATION

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

3.3.184 UF-01 – Wiring and piping mismatch - Excess connection ratio

Trigger	Effect	Reset
Minimum 1 indoor unit fails to perform cross pipe check during test run.	Forced stop.	Perform test run.

INFORMATION

Test run can be initiated by:

- Pushing BS2 button ≥5 seconds.
- Field setting 2-20-2.

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 refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Check that the refrigerant circuit piping and wiring connections of the system are correctly installed.

Possible cause: Refrigerant piping and/or wiring mismatch.

3 Set field setting 2-5 of the outdoor unit to 1 to start the indoor units connected to that outdoor unit on forced fan operation, see "7.9 Field settings" [▸ 489]. If any of these indoor units is NOT operating, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

4 Check field setting 1-10 to count the indoor units, see "7.9 Field settings" [▸ 489]. If less indoor units detected than it should be, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

5 Perform a check of the indoor unit pipe thermistors, see service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit pipe thermistor.

INFORMATION

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

3.3.185 UF-05 – Wiring and piping mismatch - Stop valves closed or incorrect

Trigger	Effect	Reset
Minimum 1 indoor unit fails to perform cross pipe check during test run.	Forced stop.	Perform test run.

INFORMATION

Test run can be initiated by:

- Pushing BS2 button ≥5 seconds.
- Field setting 2-20-2.

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 refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Check that the refrigerant circuit piping and wiring connections of the system are correctly installed.

Possible cause: Refrigerant piping and/or wiring mismatch.

3 Set field setting 2-5 of the outdoor unit to 1 to start the indoor units connected to that outdoor unit on forced fan operation, see "7.9 Field settings" [▸ 489]. If any of these indoor units is NOT operating, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

4 Check field setting 1-10 to count the indoor units, see "7.9 Field settings" [▸ 489]. If less indoor units detected than it should be, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

5 Perform a check of the indoor unit pipe thermistors, see service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit pipe thermistor.

INFORMATION

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

3.3.186 UF-18 – Failure test run cross wiring/cross piping (after outdoor set Mode 2-20-2)

Trigger	Effect	Reset
During test run by Mode 2-20-2, if failure of: ▪ Or indoor unit coil sensor NOT dropping while expansion valve open. ▪ Or outdoor low discharge superheat detected.	Unit will stop operating.	Power reset of outdoor unit.

To solve the error code

INFORMATION

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

1 Operate the faulty indoor unit in forced cooling operation (by outdoor test run).

2 Check via service monitoring tool if the indoor unit coil temperature lowers while indoor unit expansion valve is open. Compatible service monitoring tools are:

- Checker type 3: F1-F2 outdoor <-> SV box
- Checker type 4: F1-F2 outdoor <-> SV box
- D-checker: at connector X27A of outdoor unit main PCB.
- Mobile monitoring tool: at connector X27A of outdoor unit main PCB.

3 If indoor unit coil temperature lowers while expansion valve is open, check refrigerant charge of the system. In case of refrigerant shortage or overcharge, discharge temperature at the compressor might be too high (refrigerant shortage) or too low (refrigerant overcharge).

Possible cause: Incorrect refrigerant charge.

4 If indoor unit coil temperature does NOT lower while expansion is open, perform as described below:

5 Check that the indoor unit refrigerant piping is connected to the correct port of the SV box.

Possible cause: Indoor unit refrigerant piping connected to wrong port in accordance with F1-F2 terminals at SV box.

6 Perform a check of the expansion valve(s) of the indoor unit(s). See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit expansion valve.

7 With the faulty indoor unit operating in forced cooling operation (by outdoor test run), check via service monitoring tool the status of the SV box expansion valves of the circuit of the faulty indoor unit. Compatible service monitoring tools are:

- D-checker: at connector X101A of SV box main PCB or sub PCB.
- Mobile monitoring tool: at connector X101A of SV box main PCB or sub PCB.

8 If expansion valve(s) do NOT function correctly:

- Perform a check of the faulty expansion valve of the SV box, see "4.18.2 Safety valve box expansion valve" [▸ 343].
  Possible cause: Faulty SV box expansion valve.
- Perform a check of the SV box main PCB or sub PCB to which the faulty expansion valve is connected, see "4.18.4 Safety valve box main PCB" [▸ 350] or "4.18.5 Safety valve box sub PCB" [▸ 359].
  Possible cause: Faulty SV box main PCB or sub PCB.

INFORMATION

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

3.3.187 UH-01 – Auto-address failure

Trigger	Effect	Reset
Main PCB detects improper combination at indoor unit side.	Forced stop.	Reset communication from main PCB.
Missing auto address of indoor unit(s) after initialization.		

To solve the error code

INFORMATION

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

1 Set field setting 2-5 of the outdoor unit to 1 to start the indoor units connected to that outdoor unit on forced fan operation, see "7.9 Field settings" [▸ 489]. If any of these indoor units is NOT operating, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

2 Perform a communication reset of the F1-F2 transmission, see "5.1 Electrical circuit" [▸ 383].

3 Check field setting 1-10 to count the indoor units, see "7.9 Field settings" [▸ 489]. If less indoor units detected than it should be, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

4 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

5 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

6 Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.

INFORMATION

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

3.3.188 UH-02 – Auto-address failure

Trigger	Effect	Reset
Main PCB detects improper combination at indoor unit side.	Forced stop.	Reset communication from main PCB.
Missing auto address of indoor unit(s) after initialization.		

To solve the error code

INFORMATION

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

1 Set field setting 2-5 of the outdoor unit to 1 to start the indoor units connected to that outdoor unit on forced fan operation, see "7.9 Field settings" [▸ 489]. If any of these indoor units is NOT operating, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

2 Perform a communication reset of the F1-F2 transmission, see "5.1 Electrical circuit" [▸ 383].

3 Check field setting 1-10 to count the indoor units, see "7.9 Field settings" [▸ 489]. If less indoor units detected than it should be, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

4 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 383].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

5 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 383].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

6 Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.

INFORMATION

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

3.3.189 UJ-34 – Capacity mismatch between VAM and DX module

Trigger	Effect	Reset
Incompatible VAM and EKVDX capacities are installed together.	Unit will NOT operate.	Power reset.

To solve the error code

INFORMATION

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

1 Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.

2 Check if the correct spare part is installed for the indoor unit main PCB. See service manual of the specific indoor unit. Check that the correct capacity setting adapter is connected to X23A of the PCB.

Possible cause: Incorrect spare part PCB or incorrect capacity setting adapter.

INFORMATION

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

3.3.190 UJ-35 – Abnormality at VAM unit

Trigger	Effect	Reset
Malfunction detected at VAM unit.	Unit will stop operating.	Power reset.

To solve the error code

1 Check the error code at the VAM-J* indoor unit. See "Error based troubleshooting" in the service manual of the specific indoor unit to solve the error code.

2 Check the software and EEPROM version on the user interface and PCB. See "User interface" in the service manual of the specific indoor unit.

Possible cause: Mismatch between the software ID and EEPROM on the PCB or user interface.

INFORMATION

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

3.3.191 UJ-36 – Transmission error between VAM and EKVDX

Trigger	Effect	Reset
Error detected in transmission between the units.	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 the transmission wiring between the VAM unit and the DX unit. See "Wiring diagram" in the service manual of the specific indoor unit. Field wiring F1-F2 is ONLY required at DX unit. If F1-F2 wiring is present between VAM unit and DX unit, remove this loop.

Possible cause: Faulty transmission wiring.

2 Check the field settings for VAM unit and DX unit pair application. Make sure to perform the correct settings. See "Field settings" in the service manual of the specific indoor unit.

Possible cause: Incorrect field setting.

INFORMATION

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

3.3.192 UJ-37 – VAM unit has A6-28 error

Trigger	Effect	Reset
VAM unit has A6-28 error.	Unit will stop operating.	Power reset.

To solve the error code

1 Check the VAM-J* indoor unit for error code A6-28. See "Error based troubleshooting" in the service manual of the specific indoor unit to solve the error code.

INFORMATION

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

3.3.193 UJ-40 – Maintenance warning (ventilation fan safety valve box)

Trigger	Effect	Reset
When period of power to outdoor unit exceeds the maintenance cycle since last reset (setting 2-58-0 at outdoor unit main PCB).	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 that the ventilation functions correctly (maintenance at SV box). Perform as follows:

- At the SV box main PCB, set field setting 2-3-0 to 1 to activate the safety system.
- Check that the ventilation functions correctly. See "5.3 Manufacturer components" [▸ 403]. Correct as needed.
- Once ventilation functions correctly, set field setting 2-3-1 to 0 to deactivate the safety system.

2 Reset the maintenance cycle timer. Perform as follows:

- At the outdoor unit main PCB, check the current setting of field setting 2-58 (default setting -5 = 5 years).
- Set field setting 2-58 to 0 (timer reset).
- Set field setting 2-58 back to the same value that was originally found.

Possible cause: Period of power to outdoor unit exceeds the maintenance cycle since last reset.

3 Check if ventilation is required at the SV box, see installation manual of the SV box. If NO ventilation is required at SV box, check that field setting 2-4 is set to 0 (default setting = 1) at the SV box main PCB.

Possible cause: No ventilation required at SV box while field setting 2-4 is set to 1.

INFORMATION

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

3.3.194 E-1 – Refrigerant leak check is not possible

Trigger	Effect	Reset
Total refrigerant judgement is unknown.	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. Change field setting 2–14. See "7.9 Field settings" [▶ 489].

   Possible cause: No input at field setting 2–14 (2–14 = 0) when field setting 2–88 = 0.

2. Set field setting 2–88 to 0, see "7.9 Field settings" [▶ 489] to enable the outdoor unit to perform long test run to be able to judge refrigerant amount.
3. Check if test run was interrupted.
4. Check the error history, see "3 Troubleshooting" [▶ 27]. Solve the error code(s) using the error based troubleshooting, see "3.3 Error based troubleshooting" [▶ 31].

INFORMATION

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

3.3.195 E-2 – Refrigerant leak check cannot be performed - indoor air temperature is out of range

Trigger	Effect	Reset
Indoor air return temperature outside temperature range 20~32°C.	Unit will stop operating.	Perform refrigerant leak check when air temperature of ALL indoor units is within temperature range 20~32°C.

To solve the error code

INFORMATION

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

1. Perform a check of the indoor unit air thermistors. See service manual of the respective indoor unit(s) for more information.

   Possible cause: Faulty indoor unit air thermistor(s).

2. Perform refrigerant leak check when air temperature of ALL indoor units is within temperature range 20~32°C.

INFORMATION

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

3.3.196 E-3 – Refrigerant leak check cannot be performed - outdoor air temperature is out of range

Trigger	Effect	Reset
Outdoor unit air temperature outside temperature range 4~43°C.	Unit will stop operating.	Perform refrigerant leak check when air temperature of outdoor unit(s) is within temperature range 4~43°C.

To solve the error code

INFORMATION

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

1 Perform a check of the outdoor air thermistor. See "4.21 Thermistors" [▸ 376].

Possible cause: Faulty ambient air thermistor.

2 Perform refrigerant leak check when air temperature of outdoor unit(s) is within temperature range 4~43°C.

INFORMATION

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

3.3.197 E-4 – Refrigerant leak check is interrupted - too low pressure is detected

Trigger	Effect	Reset
Too low pressure is detected during refrigerant leak check mode.	Refrigerant leak check function CANNOT be performed.	Restart leak detection operation.

To solve the error code

INFORMATION

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

1 Perform a check of the refrigerant high pressure sensor. See "4.16 Refrigerant high pressure sensor" [▸ 329].

Possible cause: Faulty refrigerant high pressure sensor.

2 Perform a check of the refrigerant low pressure sensor. See "4.17 Refrigerant low pressure sensor" [▸ 333]

Possible cause: Faulty refrigerant low pressure sensor.

3 Restart leak detection operation.

INFORMATION

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

3.3.198 E-5 – Refrigerant leak check cannot be performed - a unit which is not compatible with leak detection function is installed

Trigger	Effect	Reset
Leak detection is NOT supported for some of the installed indoor units (e.g. Hydrobox, ...).	Refrigerant leak check function CANNOT be performed.	No reset required.

To solve the error code

1 No corrective action needed, unless there is an indoor unit in the system which is refrigerant leak function incompatible.

3.3.199 NG – Refrigerant leak check function detects refrigerant leak

Trigger	Effect	Reset
Result of refrigerant leak check function deviates more than 15% compared to result of test run.	Result of last 3 refrigerant leak check function is stored on Mode 1 items 29-30-31, see "7.9 Field settings" [▸ 489].	No reset required.

To solve the error code

INFORMATION

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

1 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 leak test, see "5.2 Refrigerant circuit" [▸ 392].

Possible cause: Leak in the refrigerant circuit.

2 Indoor and/or outdoor temperature(s) of test run and latest leak check function should NOT differ too much. Consult the logbook and compare temperatures to auto-charge time. Perform a new leak test when the indoor and outdoor temperatures do NOT deviate too much compared to the time of test run.

Possible cause: Indoor and/or outdoor temperature(s) of test run and latest leak check function is drastically different from each other.

3 Check if indoor unit layout has changed since latest test run. If this is the case, a new test run needs to be performed.

Possible cause: Indoor unit layout has changed since latest test run.

INFORMATION

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

3.3.200 OK – Refrigerant leak check function detects no refrigerant leak

Trigger	Effect	Reset
Result of refrigerant leak check function is within 15% range, compared to result of test run.	Unit will operate normally.	No reset required.

To solve the error code

1 No corrective action needed.

3.4 Symptom based troubleshooting

3.4.1 Normal operating conditions

Below items are a guideline on how to check normal operating conditions of the unit. Still, values are for reference ONLY and working conditions outside of this range do NOT necessarily address abnormalities and errors. Operating conditions are a result of several items to check together.

Item	Description	Normal value
Discharge superheat	Discharge pipe temperature – condensation temperature	25 K to 45 K

Discharge superheat = discharge pipe temperature – condensation temperature

- Discharge pipe temperature: Read out from discharge pipe thermistor R21T.
- Condensation temperature: Calculated by main PCB from the pressure read-out of the high pressure sensor.

Higher discharge superheat may result from refrigerant shortage or compressor internal by-pass.

Lower discharge superheat may result from low suction superheat which is caused by wet operation.

Item	Description	Normal value
Suction superheat	Suction temperature – evaporation temperature	5 K

Suction superheat = suction temperature – evaporation temperature

- Suction temperature: Read out from suction thermistor R10T.
- Evaporation temperature: Calculated by main PCB from the pressure read-out of the low pressure sensor.

Suction superheat may be high if difference between [indoor set temperature – indoor air temperature] is too high and will result in high discharge superheat.

Suction superheat may be low if:

- Difference between [indoor set temperature – indoor air temperature] is too low
- Discharge superheat is too low (<20 K)
- Outdoor unit judges wet operation

3.4.2 Symptom: The system does not operate

- The air conditioner does not start immediately after the ON/OFF button on the user interface is pressed. If the operation lamp lights, the system is in normal condition. To prevent overloading of the compressor motor, the air conditioner starts 5 minutes after it is turned ON again in case it was turned OFF just before. The same starting delay occurs after the operation mode selector button was used.
- If "Under Centralised Control" is displayed on the user interface, pressing the operation button causes the display to blink for a few seconds. The blinking display indicates that the user interface cannot be used.
- The system does not start immediately after the power supply is turned on. Wait one minute until the microcomputer is prepared for operation.

3.4.3 Symptom: Cool/Heat cannot be changed over

- When the display shows (changeover under centralised control), it shows that this is a slave user interface.
- When the cool/heat changeover remote control switch is installed and the display shows (changeover under centralised control), this is because cool/ heat changeover is controlled by the cool/ heat changeover remote control switch. Ask your dealer where the remote control switch is installed.

3.4.4 Symptom: Fan operation is possible, but cooling and heating do not work

Immediately after the power is turned on. The micro computer is getting ready to operate and is performing a communication check with all indoor units. Please wait 12 minutes maximally until this process is finished.

3.4.5 Symptom: The fan speed does not correspond to the setting

The fan speed does not change even if the fan speed adjustment button is pressed. During heating operation, when the room temperature reaches the set temperature, the outdoor unit goes off and the indoor unit changes to whisper fan speed. This is to prevent cold air blowing directly on occupants of the room. The fan speed will not change even when another indoor unit is in heating operation, if the button is pressed.

3.4.6 Symptom: The fan direction does not correspond to the setting

The fan direction does not correspond with the user interface display. The fan direction does not swing. This is because the unit is being controlled by the micro computer.

3.4.7 Symptom: White mist comes out of a unit (Indoor unit)

- When humidity is high during cooling operation. If the interior of an indoor unit is extremely contaminated, the temperature distribution inside a room becomes uneven. It is necessary to clean the interior of the indoor unit. Ask your dealer for details on cleaning the unit. This operation requires a qualified service person.
- Immediately after the cooling operation stops and if the room temperature and humidity are low. This is because warm refrigerant gas flows back into the indoor unit and generates steam.

3.4.8 Symptom: White mist comes out of a unit (Indoor unit, outdoor unit)

When the system is changed over to heating operation after defrost operation. Moisture generated by defrost becomes steam and is exhausted.

3.4.9 Symptom: The user interface reads "U4" or "U5" and stops, but then restarts after a few minutes

This is because the user interface is intercepting noise from electric appliances other than the air conditioner. The noise prevents communication between the units, causing them to stop. Operation automatically restarts when the noise ceases. A power reset may help to remove this error.

3.4.10 Symptom: Noise of air conditioners (Indoor unit)

- A "zeen" sound is heard immediately after the power supply is turned on. The electronic expansion valve inside an indoor unit starts working and makes the noise. Its volume will reduce in about one minute.
- A continuous low "shah" sound is heard when the system is in cooling operation or at a stop. When the drain pump (optional accessories) is in operation, this noise is heard.
- A "pishi-pishi" squeaking sound is heard when the system stops after heating operation. Expansion and contraction of plastic parts caused by temperature change make this noise.
- A low "sah", "choro-choro" sound is heard while the indoor unit is stopped. When another indoor unit is in operation, this noise is heard. In order to prevent oil and refrigerant from remaining in the system, a small amount of refrigerant is kept flowing.

3.4.11 Symptom: Noise of air conditioners (Indoor unit, outdoor unit)

- A continuous low hissing sound is heard when the system is in cooling or defrost operation. This is the sound of refrigerant gas flowing through both indoor and outdoor units.
- A hissing sound which is heard at the start or immediately after stopping operation or defrost operation. This is the noise of refrigerant caused by flow stop or flow change.

3.4.12 Symptom: Noise of air conditioners (Outdoor unit)

When the tone of operating noise changes. This noise is caused by the change of frequency.

3.4.13 Symptom: Dust comes out of the unit

When the unit is used for the first time in a long time. This is because dust has gotten into the unit.

3.4.14 Symptom: The units can give off odours

The unit can absorb the smell of rooms, furniture, cigarettes, etc., and then emit it again.

3.4.15 Symptom: The outdoor unit fan does not spin

During operation, the speed of the fan is controlled in order to optimise product operation.

3.4.16 Symptom: The display shows "88"

This is the case immediately after the main power supply switch is turned on and means that the user interface is in normal condition. This continues for 1 minute.

3.4.17 Symptom: The compressor in the outdoor unit does not stop after a short heating operation

This is to prevent refrigerant from remaining in the compressor. The unit will stop after 5 to 10 minutes.

3.4.18 Symptom: The inside of an outdoor unit is warm even when the unit has stopped

This is because the crankcase heater is warming the compressor so that the compressor can start smoothly.

3.4.19 Symptom: Hot air can be felt when the indoor unit is stopped

Several different indoor units are being run on the same system. When another unit is running, some refrigerant will still flow through the unit.

3.4.20 Symptom: Unit operation problems

Symptom	Possible failure	Root cause	Repair
Unit(s) do not operate	Unit(s) do not operate	Missing or abnormal power supply (reverse phase, missing phase, abnormal voltage...) to the outdoor unit	Check Power Supply. See "5.1 Electrical circuit" [▶ 383]
		Indoor unit(s) do not receive power supply	Check power supply to the indoor unit(s), check if HAP Led blinks, check fuse(s) on indoor unit board. Also check BPMKs in case indoor unit is of RA type.
		Mismatch of combination of outdoor unit and indoor unit	Check error codes. Check compatibility
		Out of operation range	Check operation range on databook
	All indoor units show icon blinking continuously	No Cool/Heat master is set	Select Cool/Heat Master by pressing Operating Mode button on the desired unit. The symbol will fade-away for Cool/Heat Master and will be fixed (not blinking) for the remaining indoor units
	Indoor unit(s) show icon blinking temporarily when ON button is pressed	The unit(s) are either under Centralized Control and prohibited to operate or under Forced OFF operation by T1/T2 input	Release prohibitions from central controller or check T1/T2 contact status or check indoor unit field setting for forced off
	Indoor units show fan-only mode	Transmission initialization not completed	See "To check F1-F2 transmission" [▶ 386]. Perform transmission re-initialization
			Check transmission wiring
			Check indoor unit PCBs
			Check outdoor unit main PCB, see "4.10 Main PCB" [▶ 280]
Operation sometimes stops	Power failure	A power failure consecutively more than 2 cycles may stop the air conditioner operation	Restore power supply. See "5.1 Electrical circuit" [▶ 383]

Symptom	Possible failure	Root cause	Repair
Operation stops and then restarts after 3 minutes.	Outdoor unit performing 'retry' operation	Retry mode triggered by an error	Check field setting 1-23, 1-24, 1-25 for latest retry content. See "7.9 Field settings" [▸ 489]. Refer to error code found for further troubleshooting.
Unit operates but does not cool or does not heat	Piping or wiring mismatch	Tranmission or piping problem	Correct piping, wiring
	Abnormal refrigerant amount	Outdoor unit may be overcharged or lacking refrigerant	Check refrigerant amount. See "5.2 Refrigerant circuit" [▸ 392]
	Incorrect thermistor values	Thermistors not in their location, miswiring or faulty thermistor	Check thermistors, see "4.21 Thermistors" [▸ 376]
	Incorrect expansion valve operation	Expansion valve not operating correctly	Check expansion valves. See "4.6 Expansion valve" [▸ 237]
	Cross piping/wiring among different outdoor unit systems	Indoor unit transmission line and piping is not connected to the same outdoor unit system	Correct piping, wiring

Symptom	Possible failure	Root cause	Repair
Disturbing operation noise and vibration	Faulty Inverter PCB output	Instable output voltage from inverter PCB to compressor(s)	Check Power Supply, see "5.1 Electrical circuit" [▶ 383]. Restore the power supply in conform with the requirements. Check inverter PCB(s) and perform a power transistor check, see "4.9 Inverter PCB" [▶ 263]. Check compressor(s), see "4.2 Compressor" [▶ 212]
	Installation faults	Unit not installed according to installation manual	Check installation manual. Correct necessary items. Leave required space to outdoor unit for operation
	Wet operation	Liquid compression	Check thermistors. See "4.21 Thermistors" [▶ 376]. Check for refrigerant overcharge, see "5.2 Refrigerant circuit" [▶ 392]. Check expansion valves for heat exchanger that run as evaporator. Check superheat. Recover refrigerant and weigh. Charge refrigerant to the correct amount
	Flash gas on liquid piping	Expansion valve fault of refrigerant shortage	Check expansion valves for heat exchangers that run as evaporator. Check superheat. Recover refrigerant and weigh. Charge refrigerant to the correct amount

3.4.21 Other symptoms

Mode: Cooling	Low pressure	High pressure	Running current
Dirty air filters	Lower than normal	Lower than normal	Lower than normal
Air by-pass between air inlet/outlet @indoor unit	Lower than normal	Lower than normal	Lower than normal
Non condensables (i.e air) in refrigerant	Higher than normal	Higher than normal	Higher than normal
Moisture in refrigerant *1	Lower than normal	Lower than normal	Lower than normal
Impurities (dust, burr, ...) in refrigerant *2	Lower than normal	Lower than normal	Lower than normal
Refrigerant shortage	Lower than normal	Lower than normal	Lower than normal
Insufficient compression *3	Higher than normal	Lower than normal	Lower than normal

Mode: Heating	Low pressure	High pressure	Running current
Dirty air filters	Higher than normal	Higher than normal	Higher than normal
Air by-pass between air inlet/outlet @indoor unit	Higher than normal	Higher than normal	Higher than normal
Non condensables (i.e air) in refrigerant	Higher than normal	Higher than normal	Higher than normal
Moisture in refrigerant *1	Lower than normal	Lower than normal	Lower than normal
Impurities (dust, burr, ...) in refrigerant *2	Lower than normal	Lower than normal	Lower than normal
Refrigerant shortage	Lower than normal	Lower than normal	Lower than normal
Insufficient compression *3	Higher than normal	Lower than normal	Lower than normal

*1 Water in the refrigerant freezes inside the electronic expansion valve and is basically the same phenomenon as pump-down.

*2 Dust, burr in refrigerant clogs refrigerant filters and results with symptoms of pump-down operation.

*3 Pressure difference between high and low pressure decreases.

4 Components

CAUTION

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

4.1 4-way valve

4.1.1 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 central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

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 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 "4.1.1 Checking procedures" [▸ 204].
No	Fix or replace the 4-way valve coil, see "4.1.2 Repair procedures" [▸ 209].

To perform an electrical check of the 4-way valve

1 First perform a mechanical check of the 4-way valve, see "4.1.1 Checking procedures" [▸ 204].

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 as indicated in the table below ± 10%.

Name	Symbol	Location (PCB)	Connector	Winding resistance (Ω)			
				5+8	10+12	14+16	18+20
High pressure/ low pressure 4-way valve	Y3S	A1P	X8A	1510		1350	

Name	Symbol	Location (PCB)	Connector	Winding resistance (Ω)			
				5+8	10+12	14+16	18+20
Lower heat exchanger 4-way valve	Y4S	A1P	X13A	1510			1430
Upper heat exchanger 4-way valve	Y5S	A1P	X9A	2210			

Is the measured value correct?	Action
Yes	Continue with the next step.
No	Replace the 4-way valve coil, see "4.1.2 Repair procedures" [▶ 209].

When outdoor temperature is mild and unit can switch between heating and cooling

INFORMATION

This procedure is ONLY possible when the outdoor temperature is within the temperature range for both **Heating** and **Cooling** operation mode. See the databook on Business Portal for the temperature range of the operation modes.

1 Connect the 4-way valve connector to the appropriate PCB.

2 Turn ON the power using the respective circuit breaker.

3 Activate **Heating** operation via the Cool/Heat master user interface.

CAUTION

Activate all units to make sure the system is operating with full Heating load so the upper heat exchanger 4-way valve Y5S is switched ON. Check with the service monitoring tool that Operation Mode is **Heating**.

4 With the 4-way valve connector connected to the PCB, measure the voltage on the 4-way valve connection of the PCB. The measured voltage MUST be:

- 0 V AC for high pressure / low pressure 4-way valve Y3S
- 230 V AC for lower heat exchanger 4-way valve Y4S
- 230 V AC for upper heat exchanger 4-way valve Y5S. When operating with low load, Y5S can switch OFF (=0 V AC).

5 De-activate **Heating** and activate **Cooling** operation via the Cool/Heat master user interface.

CAUTION

Activate all units to make sure the system is operating with full Cooling load so the lower heat exchanger 4-way valve Y4S is switched ON. Check with the service monitoring tool that Operation Mode is **Cooling**.

6 With the 4-way valve connector connected to the PCB, measure the voltage on the 4-way valve connection of the PCB. The measured voltage MUST be:

- 230 V AC for high pressure / low pressure 4-way valve Y3S
- 0 V AC for lower heat exchanger 4-way valve Y4S. When operating with low load, Y4S can switch ON (=230 V AC).
- 0 V AC for upper heat exchanger 4-way valve Y5S.

Are the measured voltages correct?	Action
Yes	Perform a position check of the 4-way valve, see "4.1.1 Checking procedures" [▶ 204].
No	Perform a check the main PCB, see "4.10 Main PCB" [▶ 280].

When outdoor temperature does not allow the unit to run in cooling or heating mode

INFORMATION

Follow this procedure when the outdoor temperature is outside the temperature range for one of the operation modes (`Heating` or `Cooling`). The unit CANNOT operate in the mode for which the outdoor temperature is outside its temperature range. See the databook on Business Portal for the temperature range of the operation modes.

1 Connect the 4-way valve connector to the appropriate PCB.

2 Turn ON the power using the respective circuit breaker.

3 With the unit operating, connect the service monitoring tool to the unit and check whether the unit is in one of the following operation modes in which the 4-way valves are energized:

Y3S valve:
- Cooling mode
- Oil Return Operation in Cooling
- Defrost/Oil Return Operation in Heating

Y4S valve:
- Heating mode
- Low load Cooling mode
- Simultaneous Cooling/Heating operation
- Defrost operation

Y5S valve:
- Heating mode*
- Oil Return Operation in simultaneous Cooling/Heating mode

* Y5S may also be OFF if low load condition

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

4 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.

Is the measured voltage correct?	Action
Yes	Perform a position check of the 4-way valve, see "4.1.1 Checking procedures" [▶ 204].
No	Perform a check the main PCB, see "4.10 Main PCB" [▶ 280].

5 If, according to the service monitoring tool, the unit is in one of the following operation modes in which the 4-way valves are NOT energized:

Y3S valve:
- Heating mode
- Simultaneous Cooling/Heating operation
- Oil Return Operation in Simultaneous Cooling/Heating mode

Y4S valve:
- Cooling mode*
- Oil Return operation in Cooling
- Defrost/Oil return operation in Heating
- Oil Return operation in Simultaneous Cooling/Heating

* Y4S may also be ON if low load condition

Y5S valve:
- Cooling mode
- Low load Heating mode
- Simultaneous Cooling/Heating operation
- Defrost/Oil return operation in Heating
- Oil Return operation in Simultaneous Cooling/Heating

6 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 0 V AC.

Is the measured voltage correct?	Action
Yes	Perform a position check of the 4-way valve, see "4.1.1 Checking procedures" [▸ 204].
No	Perform a check the main PCB, see "4.10 Main PCB" [▸ 280].

To perform a position check of the 4-way valve

1 First perform an electrical check of the 4-way valve, see "4.1.1 Checking procedures" [▸ 204].

When outdoor temperature is mild and unit can switch between heating and cooling

INFORMATION

This procedure is ONLY possible when the outdoor temperature is within the temperature range for both `Heating` and `Cooling` operation mode. See the databook on Business Portal for the temperature range of the operation modes.

1 Activate `Heating` operation via the Cool/Heat master user interface.

CAUTION

It is NOT possible to activate operation modes with another user interface than the Cool/Heat master user interface.

INFORMATION

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

2 Check with a contact thermometer (or by touching) if the flow through the 4-way valve corresponds with the flow shown in the flow diagram. (See "7.3 Piping diagram" [▸ 424]).

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

3 Connect a manifold to one of the service ports of the refrigerant circuit and check the pressure (suction, discharge). Compare with normal operation conditions of the unit.

Refrigerant pressure correct?	Action
Yes	Replace the body of the 4-way valve, see "4.1.2 Repair procedures" [▶ 209].
No	Leaks may be found in the refrigerant circuit. Perform a pressure test of the refrigerant circuit, see "5.2.1 Checking procedures" [▶ 392].

4 De-activate **Heating** and activate **Cooling** operation via the Cool/Heat master user interface.

5 Check with a contact thermometer (or by touching) if the flow through the 4-way valve corresponds with the flow shown in the flow diagram. (See "7.3 Piping diagram" [▶ 424]).

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 "4.1.2 Repair procedures" [▶ 209].

When outdoor temperature does not allow the unit to run in cooling or heating mode

INFORMATION

Follow this procedure when the outdoor temperature is outside the temperature range for one of the operation modes (**Heating** or **Cooling**). The unit CANNOT operate in the mode for which the outdoor temperature is outside its temperature range. See the databook on Business Portal for the temperature range of the operation modes.

1 With the unit operating, connect the service monitoring tool to the unit and check in which of the following operation modes the unit is operating:

- Cooling mode
- Heating mode
- Simultaneous Cooling/Heating Operation
- Oil return operation in Cooling mode
- Defrost / Oil return Operation in Heating mode
- Oil return Operation in Simultaneous Cooling/Heating mode

2 Check with a contact thermometer (or by touching) if the flow through the 4-way valve corresponds with the flow shown in the flow diagram of the specific operation mode. (See "7.3 Piping diagram" [▶ 424]).

Is the flow correct?	Action
Yes	4-way valve is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Perform the next step of this procedure.

3 Connect a manifold to one of the service ports of the refrigerant circuit and check the pressure (suction, discharge). Compare with normal operation conditions of the unit.

Refrigerant pressure correct?	Action
Yes	Replace the body of the 4-way valve, see "4.1.2 Repair procedures" [▸ 209].
No	Leaks may be found in the refrigerant circuit. Perform a pressure test of the refrigerant circuit, see "5.2.1 Checking procedures" [▸ 392].

4.1.2 Repair procedures

To remove the 4-way valve coil

Prerequisite: Stop the unit operation via the central controller.

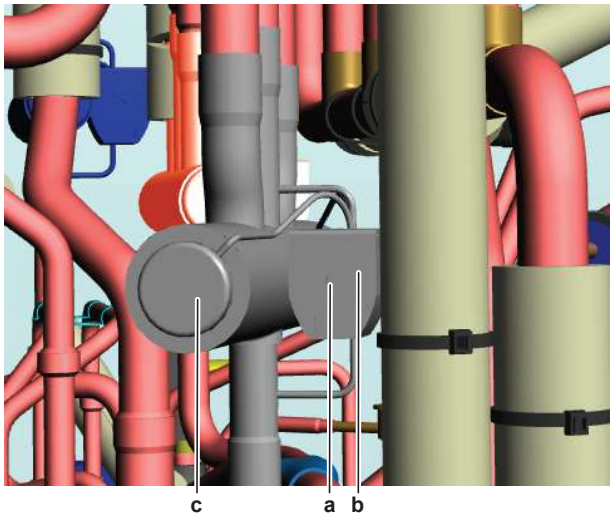
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

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.

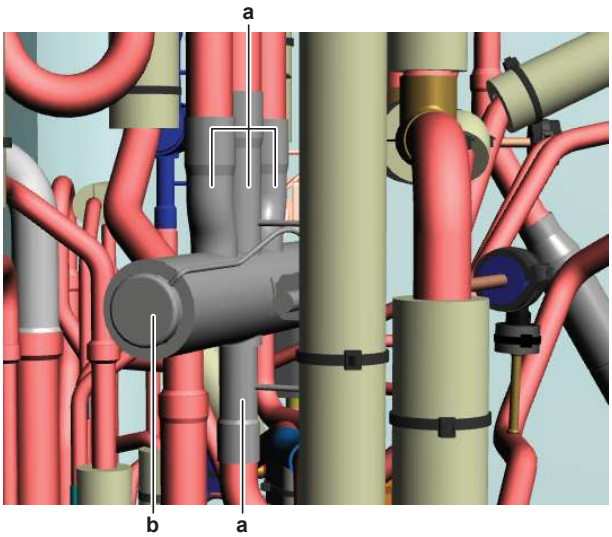
3 Unplug the 4-way valve connector from the appropriate PCB.

4 To install the 4-way valve coil, see "4.1.2 Repair procedures" [▸ 209].

To remove the 4-way valve body

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

1. Remove the 4-way valve coil from the 4-way valve body, see "4.1.2 Repair procedures" [▸ 209].
2. Remove and keep the putty (if installed) and the insulation (if installed) for re-use.
3. Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
4. Wrap a wet rag around the components near the 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

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

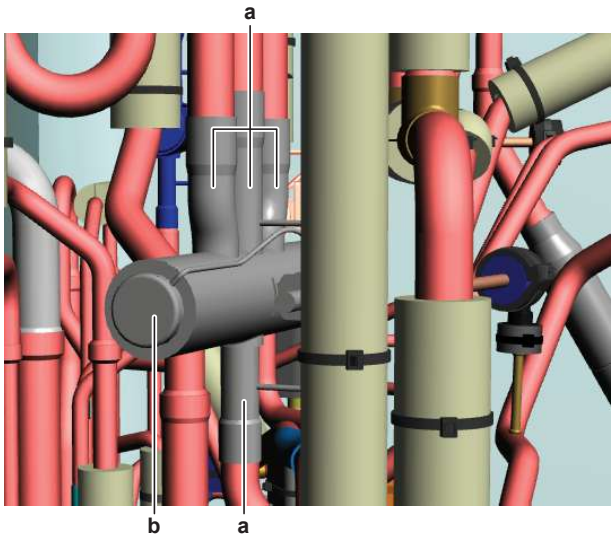
> **INFORMATION**
>
> It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

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 4-way valve body, see "4.1.2 Repair procedures" [▸ 209].

To install the 4-way valve body

1. Remove the plugs or caps from the refrigerant piping and make sure they are clean.
2. Remove the 4-way valve coil from the spare part 4-way valve body.
3. Install the 4-way valve body in the correct location and correctly oriented. Insert the pipe ends in the pipe expansions.
4. Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

5 Wrap a wet rag around the 4-way valve body and any other components near the 4-way valve and solder 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 soldering 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.

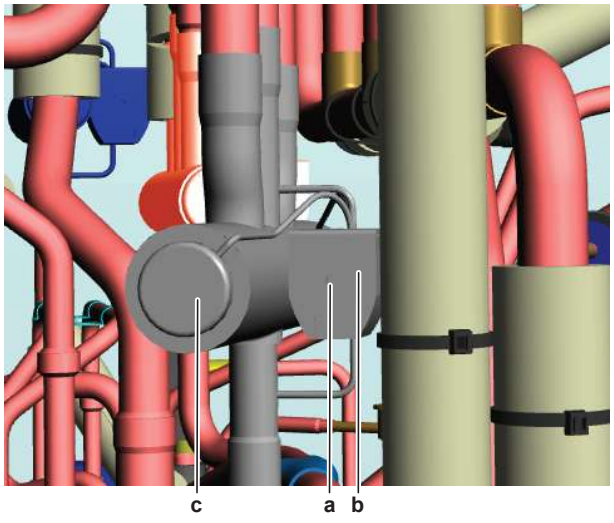
8 Install the 4-way valve coil on the 4-way valve body, see "4.1.2 Repair procedures" [▸ 209].

9 Perform a pressure test, see "5.2.1 Checking procedures" [▸ 392].

10 Add refrigerant to the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

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.

4.2 Compressor

4.2.1 Checking procedures

INFORMATION

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

To perform an auditive check of the compressor

Prerequisite: First perform a power transistor check of the inverter PCB, see "4.9 Inverter PCB" [▸ 263]. If power transistor is OK, proceed as follows:

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Open the compressor insulation.

2 Turn ON the power using the respective circuit breaker.

3 Start the unit operation via the central controller.

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 "4.2.2 Repair procedures" [▶ 219].
No	Perform an mechanical check of the compressor, see "4.2.1 Checking procedures" [▶ 212].

To perform a mechanical check of the compressor

INFORMATION

For outdoor units 5~12 HP, the transportation stay for the compressor should be removed. Otherwise vibration is not absorbed, which can lead to pipe crack. See "4.2.2 Repair procedures" [▶ 219].

Prerequisite: First perform an auditive check of the compressor, see "4.2.1 Checking procedures" [▶ 212].

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Before proceeding:

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▶ 384].

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.

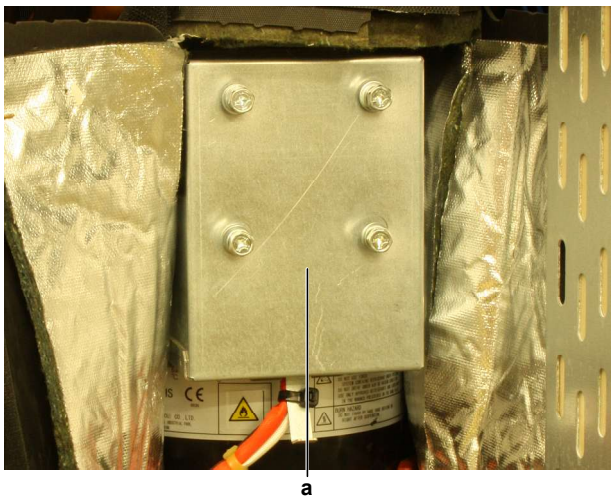
Compressor dampers are in a good condition?	Action
Yes	Perform an electrical check of the compressor, see "4.2.1 Checking procedures" [▸ 212].
No	Replace the compressor and/or damaged dampers, see "4.2.2 Repair procedures" [▸ 219].

To perform an electrical check of the compressor

1 First perform a mechanical check of the compressor, see "4.2.1 Checking procedures" [▸ 212].

> **DANGER: RISK OF ELECTROCUTION**
>
> Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Remove the cover of the compressor wire terminals.



a Compressor wire terminals cover

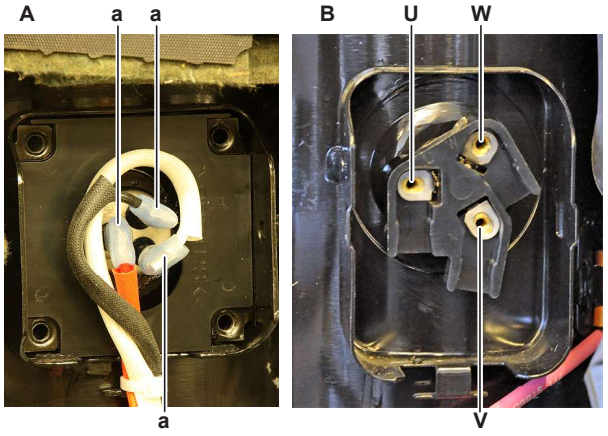
3 For 5~12 HP units: Disconnect the Faston connectors from the compressor wire terminals U, V and W.

4 For 14~20 HP units:

- Loosen and remove the 3 bolts that fix the compressor wiring.
- Remove the wiring from the compressor wire terminals U, V and W.
- Carefully straighten the terminal lugs.
- Remove the black wire guide.

INFORMATION

Note the position of the wiring on the compressor wire terminals to allow correct connection during installation.



A 5~12 HP units
B 14~20 HP units
a Faston connection
U U
V V
W W

CAUTION

Before measuring the compressor motor windings resistance, measure the resistance of the multimeter probes by holding the probes against each other. If the measured resistance is NOT 0 Ω, this value MUST be subtracted from the measured winding resistance.

5 Measure the resistance between the compressor motor windings U-V, V-W and U-W.

Result: All measurements MUST be approximately the same.

Unit	Winding resistance value (at temperature of 20°C)
5~12 HP	0.299 Ω±5%
14~20 HP	0.168 Ω±5%

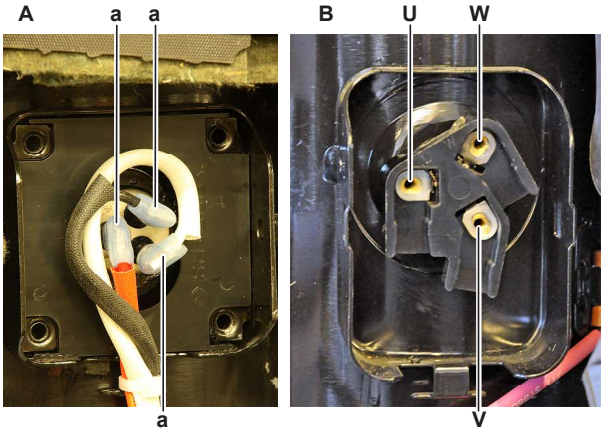
Compressor motor winding measurements are correct?	Action
Yes	Continue with the next step.
No	Replace the compressor, see "4.2.2 Repair procedures" [▸ 219].

6 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" [▸ 411].

7 For 5~12 HP units: Connect the Faston connectors to the compressor wire terminals U, V and W

8 For 14~20 HP units:

- Install the black wire guide over the terminal lugs.
- Bend the terminal lugs against the black wire guide.
- Align the wiring with the compressor wire terminals U, V and W.
- Insert and fix the 3 bolts that fix the compressor wiring.



A 5~12 HP units
B 14~20 HP units
a Faston connection
U U
V V
W W

9 Install the compressor wire terminals cover.

10 Install the compressor insulation.

11 Turn ON the power using the respective circuit breaker.

12 Start the unit operation via the central controller.

CAUTION

NEVER operate the compressor with the compressor wire terminals cover removed.

13 Wait for – or create condition to operate the compressor.

14 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" [▸ 204].

15 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 "4.2.1 Checking procedures" [▸ 212].
No	Preventively replace the compressor, see "4.2.2 Repair procedures" [▸ 219].

To perform an insulation check of the compressor

Prerequisite: First perform an electrical check of the compressor, see "4.2.1 Checking procedures" [▸ 212].

Prerequisite: Stop the unit operation via the central controller.

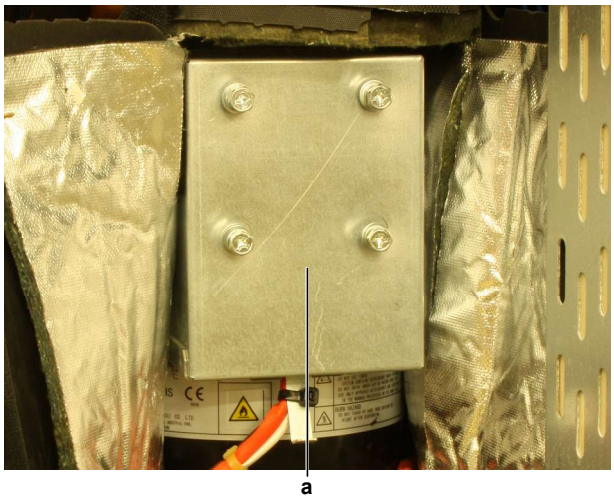
Prerequisite: Turn OFF the respective circuit breaker.

1 Before proceeding:

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Remove the cover of the compressor wire terminals.



a Compressor wire terminals cover

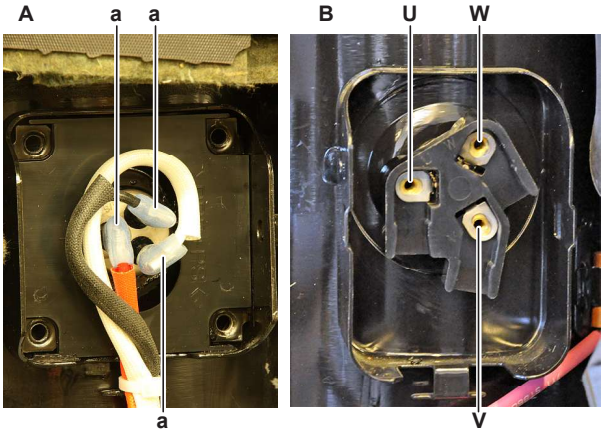
3 For 5~12 HP units: Disconnect the Faston connectors from the compressor wire terminals U, V and W.

4 For 14~20 HP units:

- Loosen and remove the 3 bolts that fix the compressor wiring.
- Remove the wiring from the compressor wire terminals U, V and W.
- Carefully straighten the terminal lugs.
- Remove the black wire guide.

INFORMATION

Note the position of the wiring on the compressor wire terminals to allow correct connection during installation.



A 5~12 HP units
B 14~20 HP units
a Faston connection
U U
V V
W W

5 Set the Megger voltage to 500 V DC or 1000 V DC.

6 Measure the insulation resistance between the following terminals. The measured insulation resistance MUST be >3 MΩ.

- U–ground,
- V–ground,
- W–ground.

7 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 "4.2.2 Repair procedures" [▸ 219].

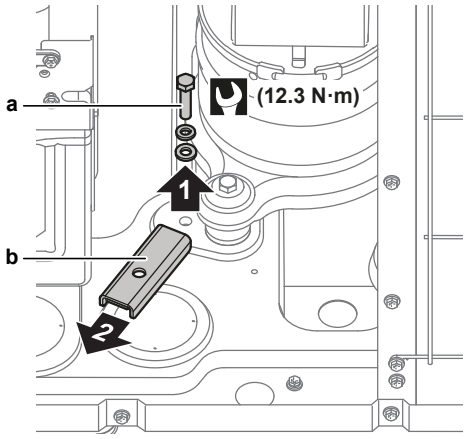
4.2.2 Repair procedures

To remove the transportation stay (only for 5~12 HP)

> **NOTICE**
>
> If the unit is operated with the transportation stay attached, abnormal vibration or noise may be generated.

The transportation stay for protecting the unit during transport must be removed. Proceed as shown in the figure and procedure below.

1. Remove the bolt (a) and washers.
2. Remove the transportation stay (b) as shown in the figure below.



a Bolt
b Transportation stay

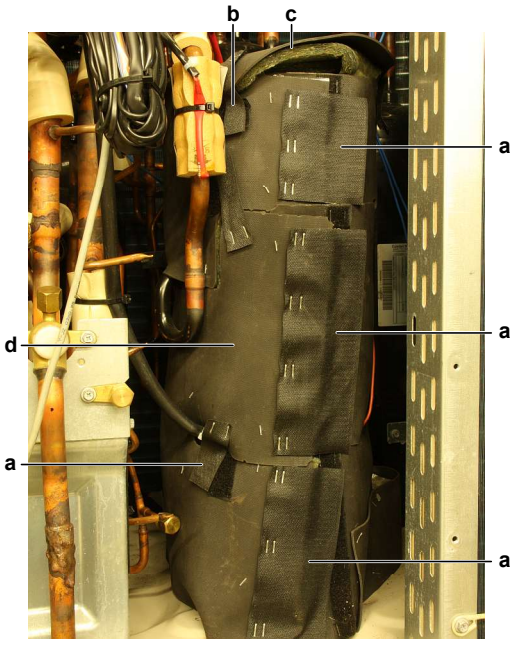
To remove the compressor insulation

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1. Detach all the strips.



a Strip
b Top jacket strip

c Top jacket
d Body jacket

2 Detach the strip of the top jacket.

3 Remove the top jacket.

4 Remove the body jacket from the compressor.

5 To install the compressor insulation, see "4.2.2 Repair procedures" [▸ 219].

To remove the compressor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

Prerequisite: Remove the compressor insulation.

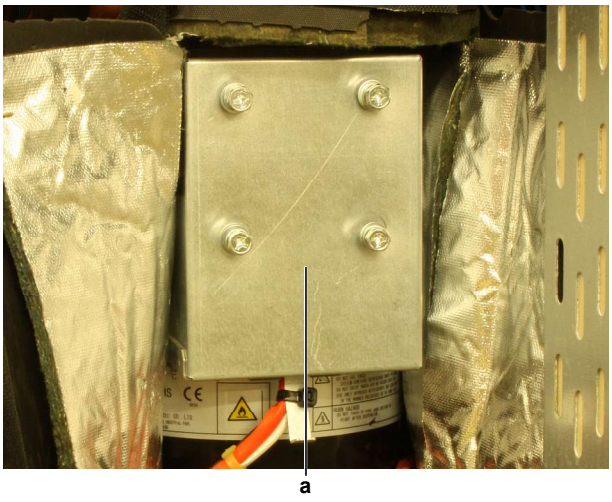
Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

1 If needed, remove any parts to create more space for the removal of the compressor.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Remove the cover of the compressor wire terminals.



a Compressor wire terminals cover

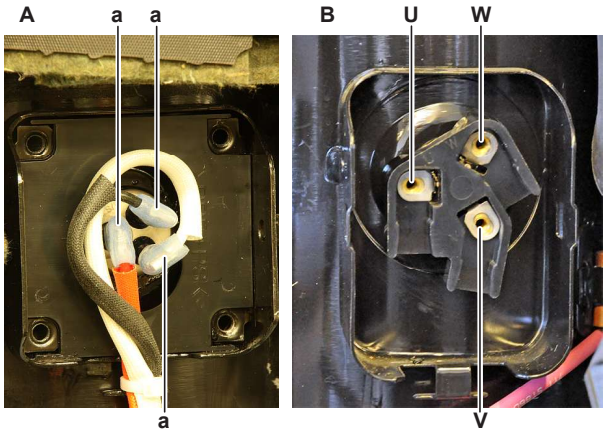
3 For 5~12 HP units: Disconnect the Faston connectors from the compressor wire terminals U, V and W.

4 For 14~20 HP units:

- Loosen and remove the 3 bolts that fix the compressor wiring.
- Remove the wiring from the compressor wire terminals U, V and W.
- Carefully straighten the terminal lugs.
- Remove the black wire guide.

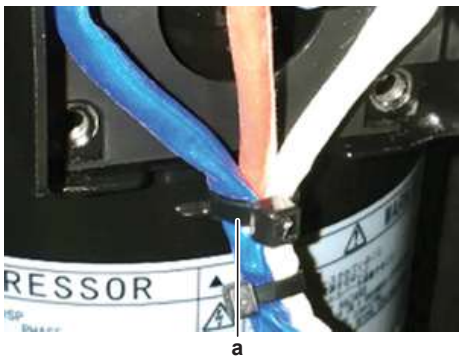
INFORMATION

Note the position of the wiring on the compressor wire terminals to allow correct connection during installation.



A 5~12 HP units
B 14~20 HP units
a Faston connection
U U
V V
W W

5 Cut the tie strap and remove the compressor wiring from the compressor body.



a Tie strap

6 If applicable, remove the screw and disconnect the ground wire from the compressor.

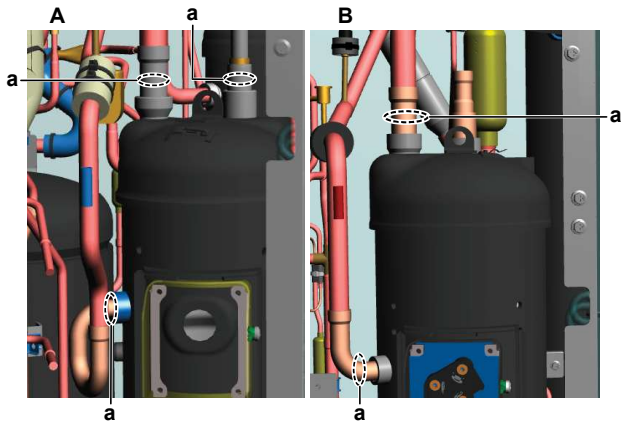
7 Remove the crankcase heater, see "To remove the crankcase heater" [▸ 228].

8 Remove the following thermistors from their holder:

- Suction thermistor
- Discharge pipe thermistor
- Compressor body thermistor (if applicable)

9 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

10 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.



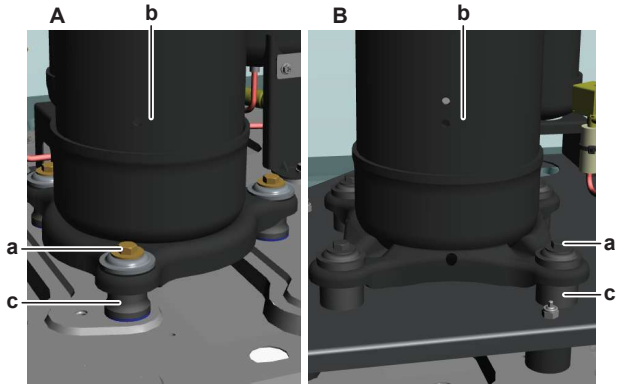
A 5~12 HP units
B 14~20 HP units
a Compressor pipe

11 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.

12 Remove the nuts and bolts and remove the compressor from the unit.



A 5~12 HP units
B 14~20 HP units
a Nut
b Compressor
c Damper

13 For 5~12 HP units: Remove the 3 dampers from the compressor.

14 For 14~20 HP units: Remove the 4 dampers from the compressor.

INFORMATION

The compressor dampers may look different.

15 Remove the bushings and keep them for re-use.

16 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.

17 To install the compressor, see "4.2.2 Repair procedures" [▶ 219].

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 solder 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 For 5~12 HP units: Install the 3 dampers in the correct location on the unit.

3 For 14~20 HP units: Install the 4 dampers in the correct location on the unit.

4 Remove the plugs or caps from the refrigerant piping and make sure they are clean.

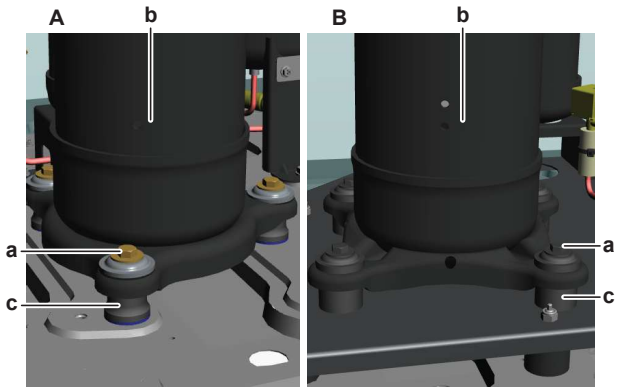
5 Remove the caps from the compressor pipes (of the new compressor).

CAUTION

The oil in the compressor is hygroscopic. Therefore remove the caps from the compressor pipes as late as possible.

6 Install the compressor on the correct location on the dampers. Properly insert the refrigerant pipes in the pipe expansions of the compressor pipes.

7 Install and tighten the bolts and nuts to fix the compressor to the dampers.



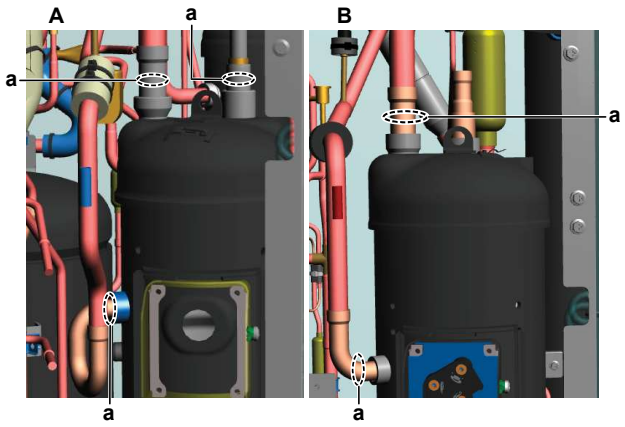
A 5~12 HP units
B 14~20 HP units
a Nut
b Compressor
c Damper

INFORMATION

The compressor dampers may look different.

8 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

9 Wrap a wet rag around the compressor pipes and any other components near the compressor and solder the compressor pipes to the refrigerant pipes.



A 5~12 HP units
B 14~20 HP units
a Compressor pipe

CAUTION

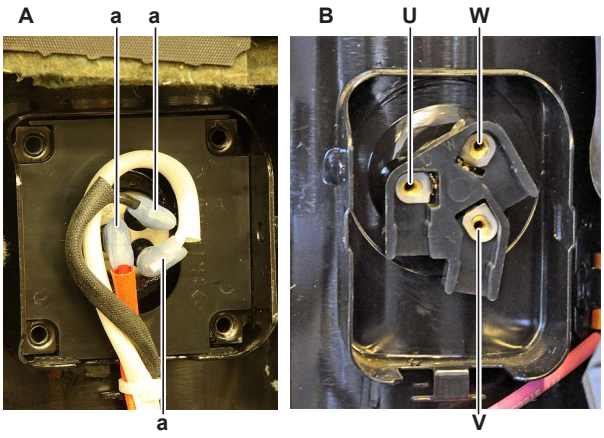
Overheating the compressor pipes (and the oil inside the compressor pipes) will damage or destroy the compressor.

10 After soldering is done, stop the nitrogen supply after the component has cooled-down.

11 For 5~12 HP units: Connect the Faston connectors to the compressor wire terminals U, V and W

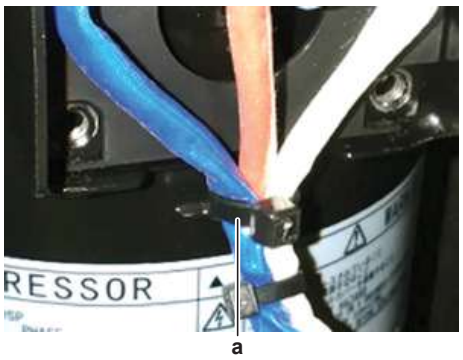
12 For 14~20 HP units:

- Install the black wire guide over the terminal lugs.
- Bend the terminal lugs against the black wire guide.
- Align the wiring with the compressor wire terminals U, V and W.
- Insert and fix the 3 bolts that fix the compressor wiring.



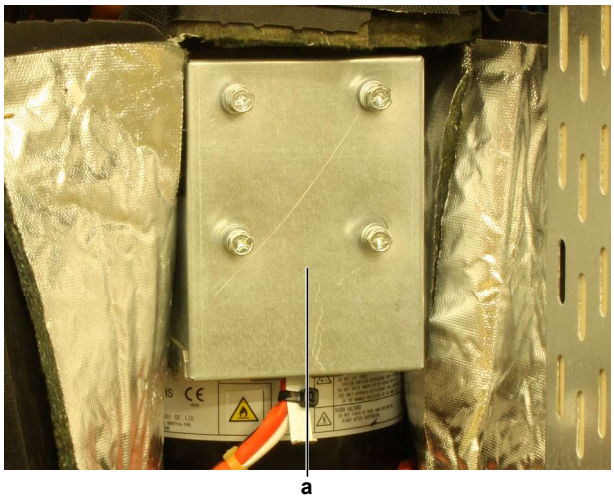
A 5~12 HP units
B 14~20 HP units
a Faston connection
U U
V V
W W

13 Fix the compressor wiring to the protrusion on the compressor body using a new tie strap.



a Tie strap

14 Install the cover of the compressor wire terminals.



a Compressor wire terminals cover

15 If applicable, connect the ground wire to the compressor. Install and tighten the screw to fix the ground wire.

16 Install the crankcase heater, see "To install the crankcase heater" [▸ 229]

17 Install the following thermistors in their holder:

- Suction thermistor
- Discharge pipe thermistor
- Compressor body thermistor (if applicable)

18 Install the compressor insulation, see "4.2.2 Repair procedures" [▸ 219].

19 Perform a pressure test, see "5.2.1 Checking procedures" [▸ 392].

20 Add refrigerant to the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

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.

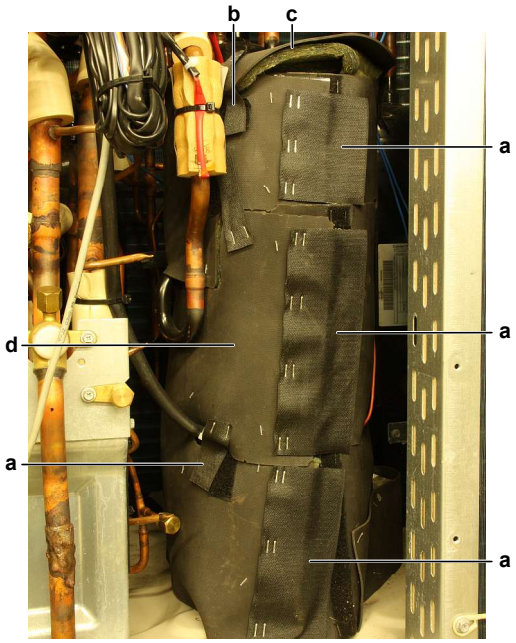
To install the compressor insulation

1 Install the body jacket on the compressor.

2 Route the compressor wiring, crankcase heater wiring and compressor body thermistor wiring through the appropriate openings in the compressor body jacket.

3 Install the top jacket.

4 Attach the strip to the top jacket.



a Strip
b Top jacket strip
c Top jacket
d Body jacket

5 Attach all the strips.

4.3 Crankcase heater

4.3.1 Checking procedures

INFORMATION

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

To perform an electrical check of the crankcase heater

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

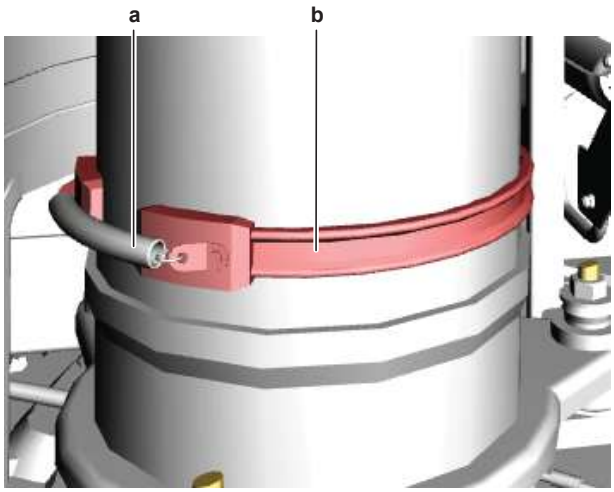
1 Remove the required plate work, see "4.14 Plate work" [▸ 309].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Open the compressor insulation.

3 Detach the spring that fixes the crankcase heater on the compressor.



a Spring
b Crankcase heater

4 Remove the crankcase heater from the compressor and wait for 5 minutes (until the heater element reaches ambient temperature).

5 Disconnect the crankcase heater connector from the appropriate PCB.

6 Measure the resistance on the crankcase heater connector.

Result: The resistance MUST be 1.8 kΩ±10%.

Is the measured resistance correct?	Action
Yes	Continue with the next step.
No	Replace the crankcase heater, see "4.3.2 Repair procedures" [▸ 228].

CAUTION

If the crankcase heater is found short-circuit, do NOT connect its connector to the PCB. When the crankcase heater gets energized, it will damage the PCB.

7 Connect the crankcase heater connector to the appropriate PCB.

8 Turn ON the power using the respective circuit breaker.

9 Start the unit operation via the central controller.

INFORMATION

Verify that the read-out of the outdoor air thermistor, discharge thermistor and compressor body thermistor (if available) is correct.

- Measure the outdoor temperature. Use a contact thermometer to measure the other thermistor temperatures.
- Compare with the read-out via the service monitoring tool or field settings.

10 With the crankcase heater energised (compressor OFF and discharge temperature <70°C), measure the voltage on the crankcase heater connector on the PCB.

Result: The measured voltage MUST be 230 V AC.

INFORMATION

The compressor body temperature MUST raise at least 5°C before the crankcase heater is deactivated.

Is the measured voltage correct?	Action
Yes	Perform an insulation check of the crankcase heater, see "4.3.1 Checking procedures" [▸ 226].
No	Perform a check of the main PCB, see "4.10 Main PCB" [▸ 280].

To perform an insulation check of the crankcase heater

Prerequisite: First perform an electrical check of the crankcase heater, see "4.3.1 Checking procedures" [▸ 226].

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Before proceeding:

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Disconnect the crankcase heater connector from the appropriate PCB.

3 Set the Megger voltage to at least 500 V DC.

4 Connect the Megger ground test lead directly to the crankcase heater ground wire.

CAUTION

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

5 Measure the insulation resistance between the phase and ground wire. The measured insulation resistance MUST be >1 MΩ.

Is the measured insulation resistance correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the crankcase heater, see "4.3.2 Repair procedures" [▸ 228].

4.3.2 Repair procedures

To remove the crankcase heater

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

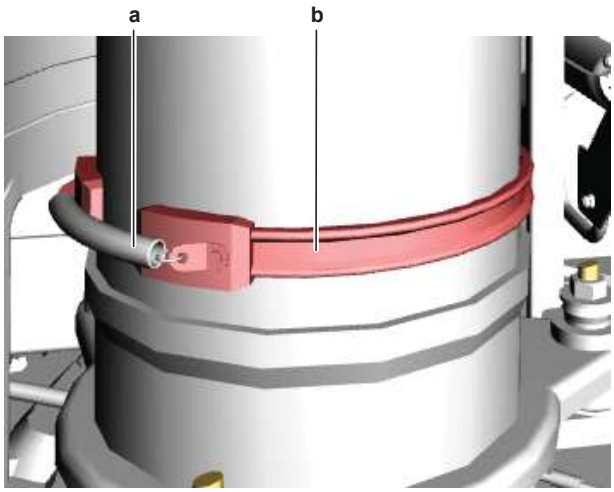
1 Remove the required plate work, see "4.14 Plate work" [▸ 309].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Open the compressor insulation.

3 Detach the spring that fixes the crankcase heater on the compressor.



a Spring
b Crankcase heater

4 Cut all tie straps that fix the crankcase heater harness.

5 Disconnect the crankcase heater connector from the appropriate PCB.

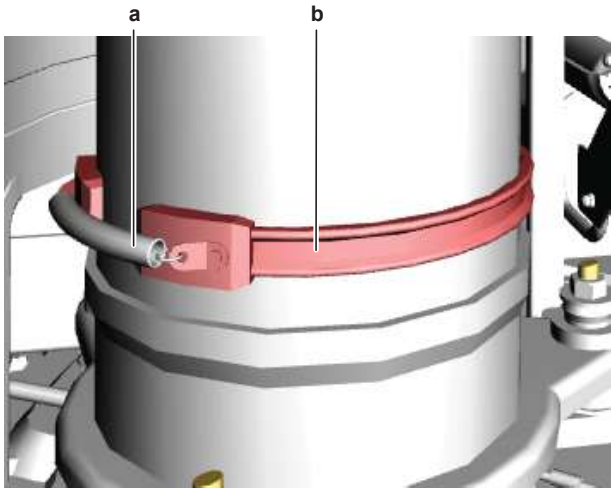
6 Remove the crankcase heater from the unit.

7 To install the crankcase heater, see "4.3.2 Repair procedures" [▸ 228].

To install the crankcase heater

1 Install the crankcase heater on the compressor.

2 Attach the spring to fix the crankcase heater.



a Spring
b Crankcase heater

3 Route the crankcase heater harness towards the switch box.

4 Connect the crankcase heater 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 crankcase heater harness using new tie straps.

INFORMATION

Replace all cable ties that were cut during removal.

6 Install the compressor insulation.

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 Current sensor

4.4.1 Checking procedures

To perform an electrical check of the current sensor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Remove the required plate work, see "4.14 Plate work" [▸ 309].

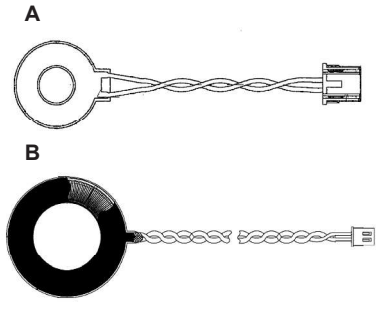
DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Visually check the current sensor for any damage or burnt-out components. If any damage is found, replace the current sensor, see "4.4.2 Repair procedures" [▸ 231].

3 Locate the current sensor connector on the main PCB, see "7.2 Wiring diagram" [▸ 411].

Unit	Location (PCB)	Connector	Type
5~12 HP	A1P	X101A	1
14~20 HP	A1P	X101A	2



A Type 1
B Type 2

4 Check the wiring from connector X101A to the current sensor.

5 Disconnect the current sensor connector from the connector X101A on the main PCB and measure the resistance between the pins of the current sensor connector.

Result: The measured resistance MUST be:

Type	Resistance
1	40.5~49.5 Ω
2	57.6~70.4 Ω

6 Set the Megger voltage to at least 500 V DC.

7 Measure the insulation resistance between the phase and ground.

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 "4.4.2 Repair procedures" [▸ 231].

4.4.2 Repair procedures

To remove the current sensor

5~12 HP units

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

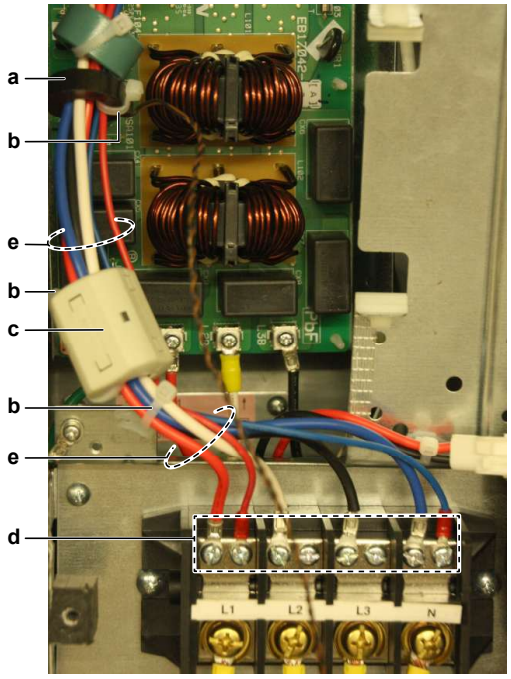
1 Remove the required plate work, see "4.14 Plate work" [▸ 309].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Disconnect the current sensor connector from the main PCB.

3 Route the current sensor wiring harness through the hole at the top of the main PCB mounting plate.



a Current sensor

b Tie wrap
c Ferrite core
d Screw connections
e Power wiring

4 Remove the necessary tie wraps from the wiring of the current sensor and the power wiring.

5 Remove the ferrite core.

6 Loosen the screw connections to disconnect the power wiring.

7 Slide the current sensor on the power wiring and remove the current sensor.

8 To install the current sensor, see "4.4.2 Repair procedures" [▸ 231].

14~20 HP units

Prerequisite: Stop the unit operation via the central controller.

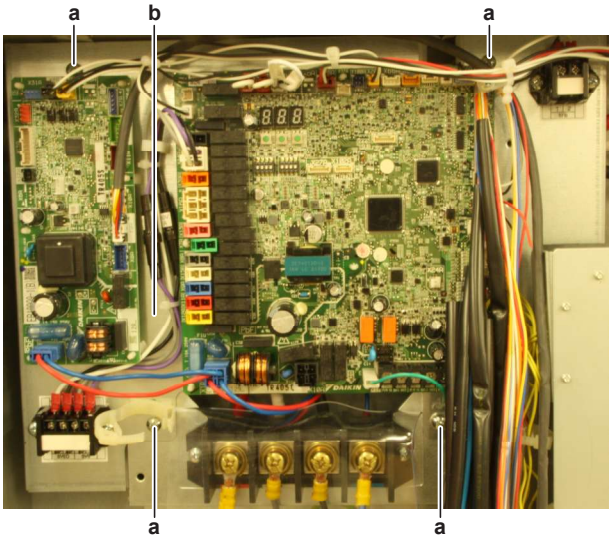
Prerequisite: Turn OFF the respective circuit breaker.

1 Remove the required plate work, see "4.14 Plate work" [▸ 309].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Remove the screws from the main PCB mounting plate.

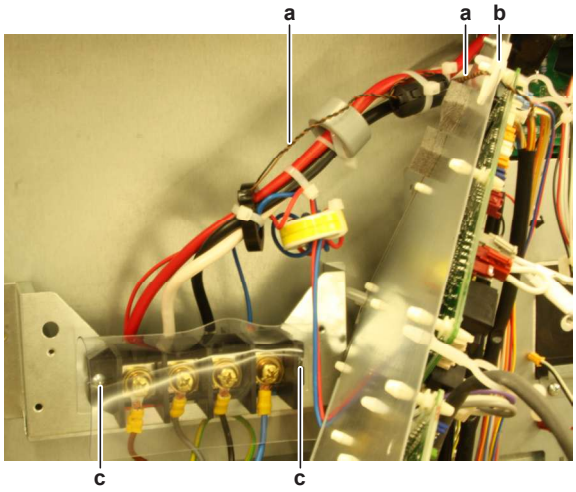


a Screw
b Main PCB mounting plate

3 Tilt the PCB mounting plate forward.

4 Disconnect the current sensor connector from the main PCB.

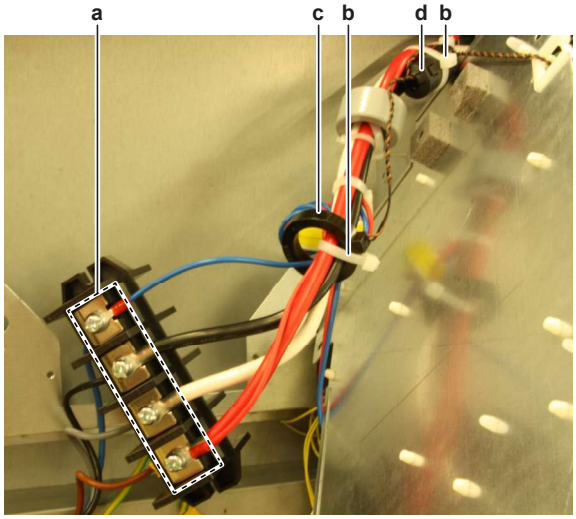
5 Route the current sensor wiring harness through the hole at the top of the main PCB mounting plate.



a Current sensor wiring harness
b Hole at top of PCB mounting plate
c Screw (wiring terminal)

6 Remove the 2 screws from the wiring terminal and remove the terminal from the mounting plate.

7 At the back side of the wiring terminal, loosen the screw connections to disconnect the power wiring.



a Screw connections
b Tie wrap
c Current sensor
d Ferrite core

8 Remove the necessary tie wraps from the wiring of the current sensor and the power wiring.

9 Slide the current sensor and the ferrite core on the power wiring and remove the current sensor.

10 To install the current sensor, see "4.4.2 Repair procedures" [▸ 231].

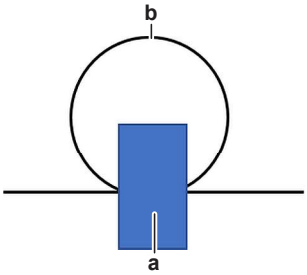
To install the current sensor

5~12 HP units

1 Slide the current sensor on the power wiring and install the current sensor in place.

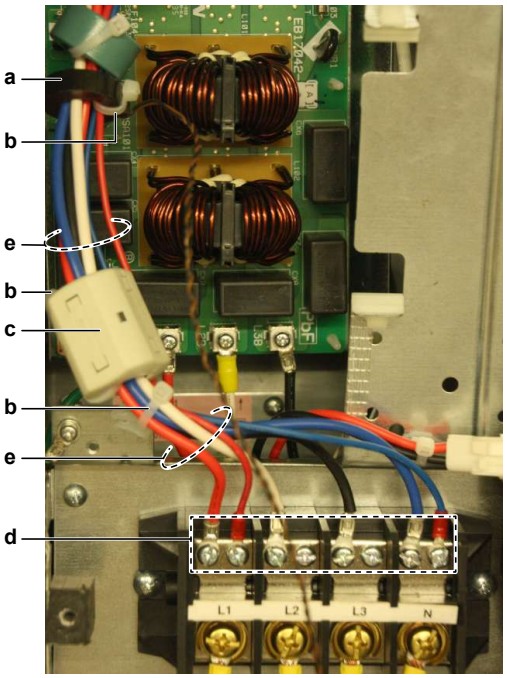
2 Loop count for current sensor N=1. Make the loop with the appropriate wiring:

Current sensor	Power wire
T1A	X1M (L1, L2, L3, N) to A2P (L1A, L2A, L3A, N) + X1M (L1, N) to A1P



a Current sensor
b Power wiring (loop once through current sensor)

3 Install the power wiring in the connections and fasten the screws.



a Current sensor
b Tie wrap
c Ferrite core
d Screw connections
e Power wiring

4 Route the current sensor wiring harness through the hole at the top of the main PCB mounting plate (towards the front of the mounting plate).

5 Connect the current sensor connector.

6 Install the ferrite core.

7 Install new tie wraps on the wiring of the current sensor and on the power wiring.

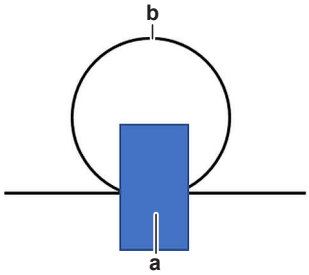
Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

14~20 HP units

1 Slide the current sensor together with the ferrite core on the power wiring and install the current sensor in place.

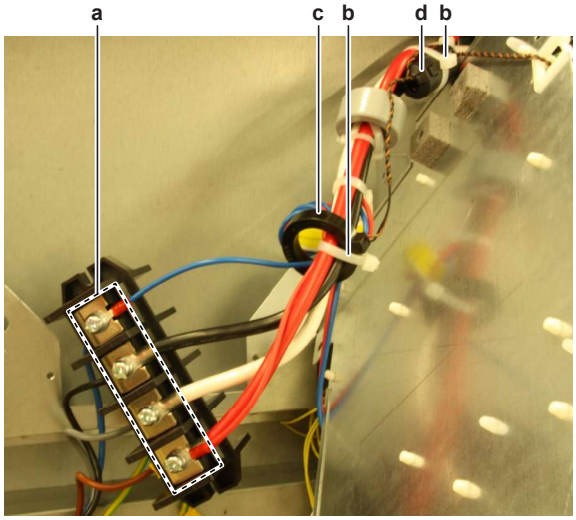
2 Loop count for current sensor N=1. Make the loop with the appropriate wiring:

Current sensor	Power wire
T1A	X1M (L1, L2, L3) to A2P (L1A, L2A, L3A) + X1M (L1, N) to A1P



a Current sensor
b Power wiring (loop once through current sensor)

3 Install the power wiring in the connections and fasten the screws.



a Screw connections
b Tie wrap
c Current sensor
d Ferrite core

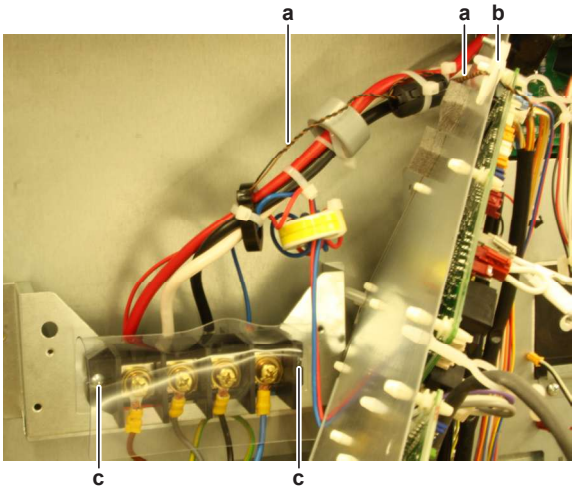
4 Route the current sensor wiring harness through the hole at the top of the main PCB mounting plate (towards the front of the mounting plate).

5 Connect the current sensor connector.

6 Install new tie wraps on the wiring of the current sensor and on the power wiring.

7 Install the wiring terminal in the correct location on the mounting plate.

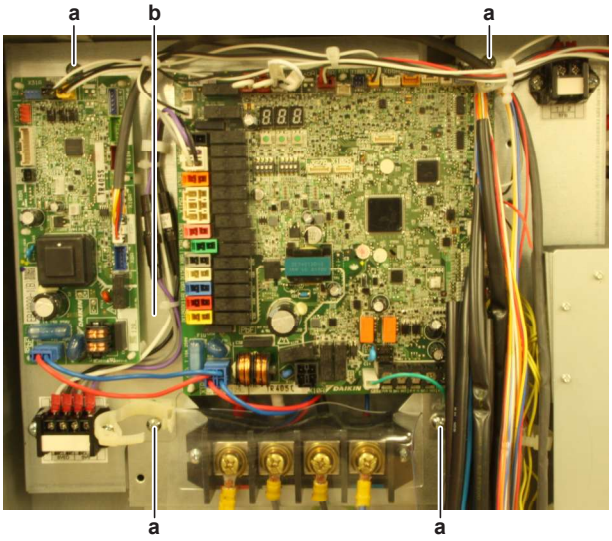
8 Install and tighten the 2 screws to fix the wiring terminal.



a Current sensor wiring harness
b Hole at top of PCB mounting plate
c Screw (wiring terminal)

9 Install the main PCB mounting plate in the correct location.

10 Install and tighten the screws to fix the PCB mounting plate.



a Screw
b Main PCB mounting plate

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.

4.5 Drain-up kit

4.5.1 Drain pump

Not available yet

4.5.2 Drain-up kit PCB

Not available yet

4.5.3 Float switch

Not available yet

4.6 Expansion valve

4.6.1 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 "4.6.1 Checking procedures" [▸ 237].

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1. Remove the required plate work (see "4.14 Plate work" [▸ 309]).
2. 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 "4.6.2 Repair procedures" [▸ 241].
3. Remove the expansion valve coil from the expansion valve body, see "4.6.2 Repair procedures" [▸ 241].
4. 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 "4.6.1 Checking procedures" [▸ 237].
No	Replace the expansion valve body, see "4.6.2 Repair procedures" [▸ 241].

To perform an electrical check of the expansion valve

1 First perform a mechanical check of the expansion valve, see "4.6.1 Checking procedures" [▸ 237].

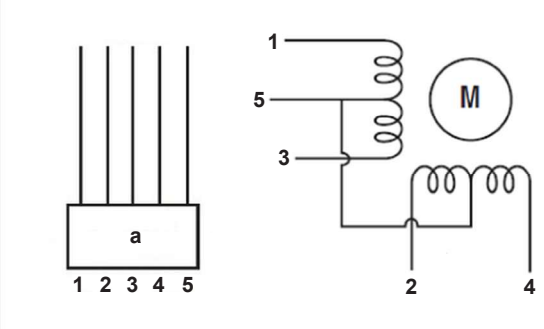
2 Disconnect the electrical connector of the expansion valve coil from the appropriate PCB and measure the resistance of all windings (between the pins of each phase (wire) and the common wire) using a multi meter. All measurements MUST be approximately the same.

Name	Symbol	Location (PCB)	Connector	Winding resistance
Upper heat exchanger expansion valve	Y1E	Main	X21A	150±15 Ω
Sub-cool expansion valve	Y2E	Main	X26A	46±3 Ω
Lower heat exchanger expansion valve	Y3E	Main	X22A	150±15 Ω
Receiver gas expansion valve	Y4E	Main	X25A	150±15 Ω
Liquid cooling expansion valve	Y5E	Main	X23A	46±3 Ω
Liquid injection expansion valve	Y7E	Sub	X9A	46±3 Ω

INFORMATION

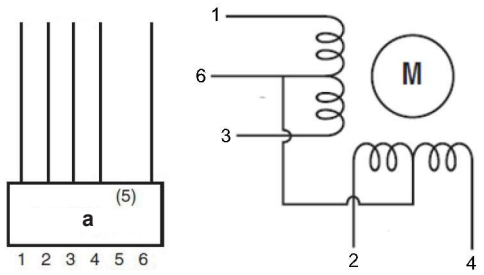
Below are shown examples of the resistance measurements in which the common wire is connected to pin 5 or to pin 6 of the expansion valve coil connector. Connections may differ according to the type of expansion valve.

- 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 "4.6.1 Checking procedures" [▸ 237].
No	Replace the expansion valve coil, "4.6.2 Repair procedures" [▸ 241].

To perform an operation check of the expansion valve

Prerequisite: First perform an electrical check of the expansion valve, see "4.6.1 Checking procedures" [▸ 237].

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 central controller.

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 (Φ1, 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.

- Opening sequence for Y1E, Y3E Y4E and Y7E:
  Valve closing: 1 > 2 > 3 > 4 > 1
  Valve opening: 4 > 3 > 2 > 1 > 4

Phase	Energizing status			
	1	2	3	4
Φ1	ON	OFF	OFF	ON
Φ2	ON	ON	OFF	OFF
Φ3	OFF	ON	ON	OFF
Φ4	OFF	OFF	ON	ON

- Opening sequence for Y2E andY5E:
  Valve closing: 8 > 7 > 6 > 5 > 4 > 3 > 2 > 1
  Valve opening: 1 > 2 > 3 > 4 > 5 > 6 > 7 > 8

Phase	Energizing status							
	1	2	3	4	5	6	7	8
Φ1	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
Φ2	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
Φ3	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
Φ4	OFF	OFF	OFF	OFF	OFF	ON	ON	ON

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 "4.6.2 Repair procedures" [▸ 241].

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.

4.6.2 Repair procedures

To remove the expansion valve coil

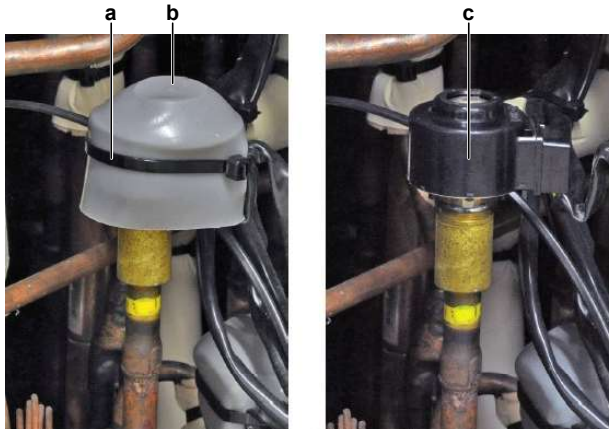
Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 If needed, remove any parts or insulation to create more space for the removal.

2 Cut the tie strap and remove the insulation cap.



a Tie strap
b Expansion valve cover
c Expansion valve coil

3 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.

4 Cut all tie straps that fix the expansion valve coil harness.

5 Disconnect the expansion valve coil connector from the appropriate PCB. See "To perform an electrical check of the expansion valve" [▸ 238] for an overview oft he expansion valve connectors and their locations.

6 To install the expansion valve coil, see "4.6.2 Repair procedures" [▸ 241].

To remove the expansion valve body

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

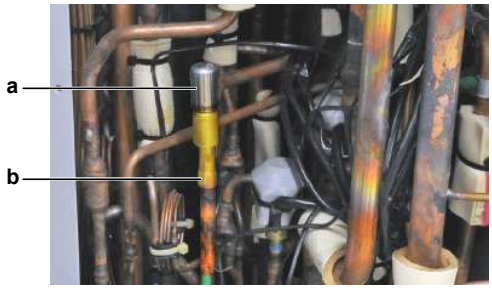
Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

1 Remove the expansion valve coil, see "4.6.2 Repair procedures" [▸ 241].

2 Using a valve magnet, open the expansion valve.

3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

4 Wrap a wet rag around the components near the expansion valve pipes. Heat the brazing points of the expansion valve pipes using an oxygen acetylene torch and remove the expansion valve pipes from the refrigerant pipes using pliers.



a Expansion valve body
b Expansion valve pipe

INFORMATION

The expansion valve and coil can have a different configuration / layout.

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 "4.6.2 Repair procedures" [▸ 241].

To install the expansion valve body

1 Remove the plugs or caps from the refrigerant piping and make sure they are clean.

2 Remove the expansion valve coil from the spare part expansion valve body.

3 Install the expansion valve body in the correct location and correctly oriented. Insert the pipe ends in the pipe expansions.

4 Open the expansion valve using a valve magnet.

5 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

6 Wrap a wet rag around the expansion valve body and any other components near the expansion valve and solder the expansion valve pipes to the refrigerant pipes.

CAUTION

Overheating the valve will damage or destroy it.

7 After soldering 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 "4.6.2 Repair procedures" [▸ 241].

9 Perform a pressure test, see "5.2.1 Checking procedures" [▸ 392].

10 Add refrigerant to the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

To install the expansion valve coil

1 Install the expansion valve coil on the expansion valve body.

INFORMATION

Turn the expansion valve coil 1/8 turn clockwise to lock it on the expansion valve body.

INFORMATION

The correct alignment of the expansion valve coil is ensured by dimples.



a Expansion valve coil
b Pipe

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).

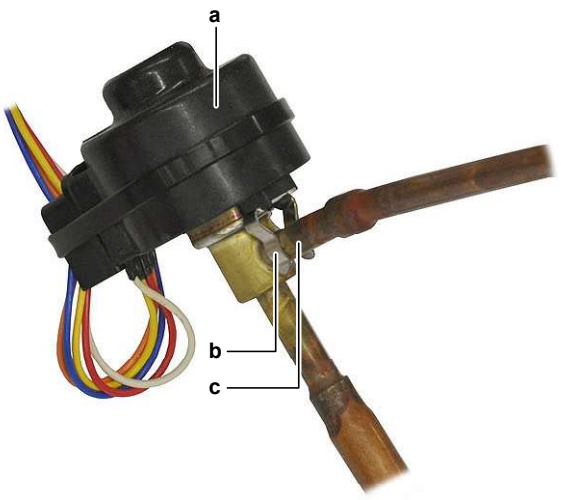
Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.6.1 Checking procedures" [▸ 237] of the expansion valve and continue with the next procedure.

To install the expansion valve coil with clip

1 Install the expansion valve coil on the expansion valve body.

INFORMATION

The expansion valve coil is equipped with a pipe retention clip. Install the pipe retention clip over the pipe to lock the expansion valve coil.



a Expansion valve coil
b Pipe retention clip
c Pipe

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 "4.6.1 Checking procedures" [▶ 237] of the expansion valve and continue with the next procedure.

To install the expansion valve coil with bracket

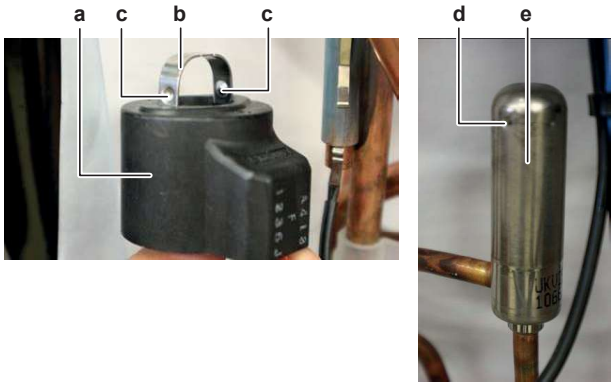
1 Install the expansion valve coil on the expansion valve body.

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 "4.6.1 Checking procedures" [▶ 237] of the expansion valve and continue with the next procedure.

4.7 Fan inverter PCB

4.7.1 Single fan outdoor unit

Checking procedures

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

To perform a power check of the fan inverter PCB

Prerequisite: Stop the unit operation via the central controller.

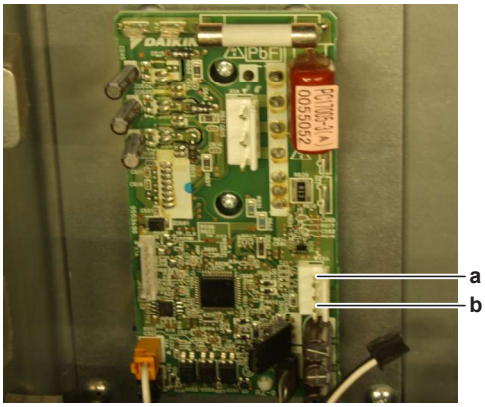
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

Prerequisite: Access the switch box, see "4.14 Plate work" [▸ 309].

1 Turn ON the power of the unit.

2 Measure the voltage between pins 1 and 3 of connector X5A The measured voltage MUST be 18 V DC.



a Pin 1
b Pin 3

Is the measured voltage on the PCB correct?	Action
Yes	Return to "Checking procedures" [▸ 246] of the PCB and continue with the next procedure.
No	Continue with the next step.

3 Measure the output voltage voltage on connector X601A on the inverter PCB.

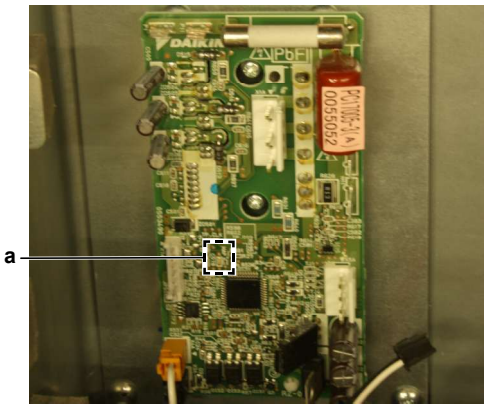
Result: The measured voltage MUST be 18 V DC.

Is the measured output voltage on the inverter PCB correct?	Action
Yes	Correct the wiring between the fan inverter PCB and the inverter PCB, see "5.1.2 Repair procedures" [▸ 390].
No	Perform a check of the inverter PCB, see "4.9.1 Checking procedures" [▸ 263].

To check the HAP LED of the fan inverter PCB

1 First perform a power check of the fan inverter PCB, see "Checking procedures" [▸ 246].

2 Locate the HAP LED on the fan inverter PCB.



a HAP LED

Does the HAP LED blink in regular intervals (approximately 1 Hz)?	Action
Yes	Return to "Checking procedures" [▸ 246] of the fan inverter PCB and continue with the next procedure.
No	Replace the fan inverter PCB, see "Repair procedures" [▸ 250].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the fan inverter PCB, see "Checking procedures" [▸ 246].

1 Visit your local spare parts webbank.

2 Enter the model name of your unit and check if the installed spare part number corresponds with the spare part number indicated in the webbank.

Is the correct spare part for the fan inverter PCB installed?	Action
Yes	Return to "Checking procedures" [▸ 246] of the fan inverter PCB and continue with the next procedure.
No	Replace the fan inverter PCB, see "Repair procedures" [▸ 250].

To check the wiring of the fan inverter PCB

Prerequisite: First perform all earlier checks of the fan inverter PCB, see "Checking procedures" [▸ 246].

Prerequisite: Stop the unit operation via the central controller.

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" [▸ 411].

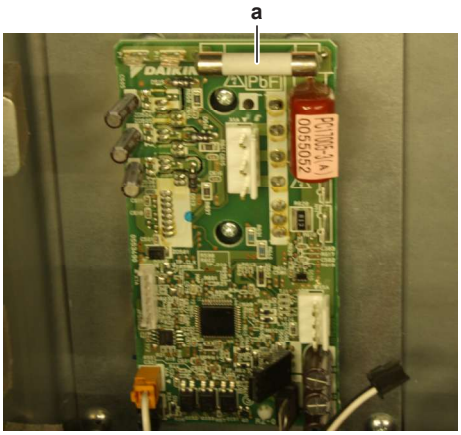
> **INFORMATION**
> Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "Checking procedures" [▸ 246] of the fan inverter PCB and continue with the next procedure.

To check the fuse of the fan inverter PCB

Prerequisite: First perform all earlier checks of the fan inverter PCB, see "Checking procedures" [▸ 246].

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



a Fuse

Blown fuse on the fan inverter PCB?	Action
Yes	Replace the fan inverter PCB, see "Repair procedures" [▸ 250].
No	Return to "Checking procedures" [▸ 246] of the fan inverter PCB and continue with the next procedure.

To check the rectifier voltage of the fan inverter PCB

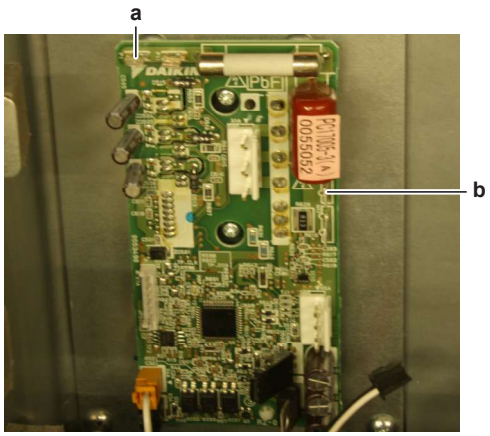
Prerequisite: First perform all earlier checks of the fan inverter PCB, see "Checking procedures" [▸ 246].

1 Turn ON the power of the unit.

> **DANGER: RISK OF ELECTROCUTION**
> Do NOT touch any live parts or PCB's.

2 Measure the DC voltage on P1 and N1 on the fan inverter PCB.

Result: The measured voltage MUST be approximately 560 V DC.



a Wire terminal P1
b Wire terminal N1

Is the measured voltage correct?	Action
Yes	Perform a power transistor check of the fan inverter PCB, see "Checking procedures" [▸ 246].
No	Continue with the next step.

3 Measure the DC output voltage on P11 and N31 on the inverter PCB.

Result: The measured voltage MUST be approximately 560 V DC.

Is the measured output voltage on the inverter PCB correct?	Action
Yes	Correct the wiring between the fan inverter PCB and the inverter PCB, see "5.1.2 Repair procedures" [▸ 390].
No	Perform a check of the inverter PCB, see "4.9.1 Checking procedures" [▸ 263].

To perform a power transistor check of the fan inverter PCB

Prerequisite: First perform all earlier checks of the fan inverter PCB, see "Checking procedures" [▸ 246].

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

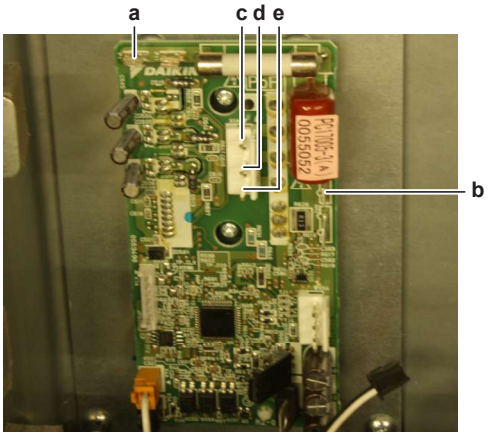
1 Set the multimeter to diode measurement.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Disconnect the connector X1A and Faston connectors P1 and N1 from the fan inverter PCB.

3 Check the fan inverter PCB in reference with the image and table below.



a Connector P1
b Connector N1
c Connector X1A, pin U
d Connector X1A, pin V
e Connector X1A, pin W

VDC	Com	Ref	VDC	Com	Ref
P1	X1A, pin U	OL	N1	X1A, pin V	0.45
P1	X1A, pin V	OL	N1	X1A, pin W	0.45
P1	X1A, pin W	OL	X1A, pin U	N1	OL
X1A, pin U	P1	0.45	X1A, pin V	N1	OL
X1A, pin V	P1	0.45	X1A, pin W	N1	OL
X1A, pin W	P1	0.45	P1	N1	OL
N1	X1A, pin U	0.45	N1	P1	0.81

Are the test results OK?	Action
Yes	Power transistors are OK. Return to "Checking procedures" [▸ 246].
No	Replace the fan inverter PCB, see "Repair procedures" [▸ 250].

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.

Repair procedures

To remove the fan inverter PCB

Prerequisite: Stop the unit operation via the central controller.

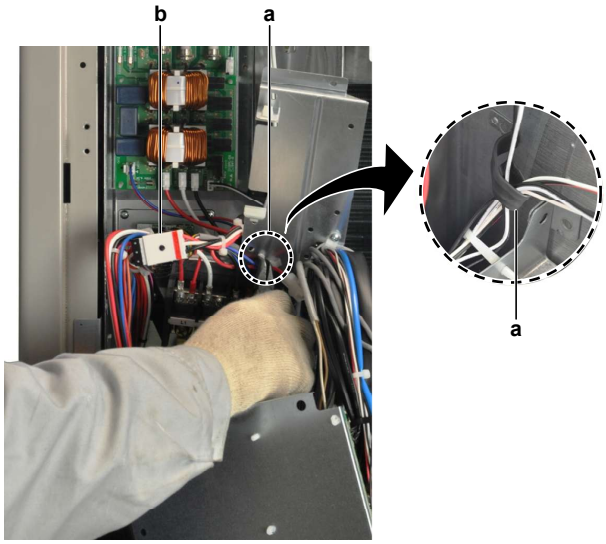
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

Prerequisite: Access the switch box, see "4.14 Plate work" [▸ 309].

1 Locate the fan inverter PCB.

2 Using pliers, detach the cable clamp from the power terminal assembly.



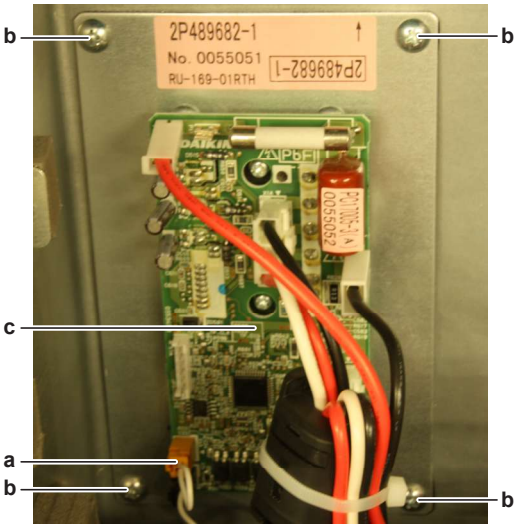
a Cable clamp
b Fan connector X1A

3 Disconnect the fan motor connector X1A.

4 Disconnect ALL connectors from the fan inverter PCB.

> **INFORMATION**
>
> Bridge connector X4A is not supplied with the spare part PCB. Transfer the bridge connector X4A.

5 Remove the 4 screws that fix the fan inverter PCB mounting plate.



a Bridge connector X4A
b Screw
c Fan inverter PCB

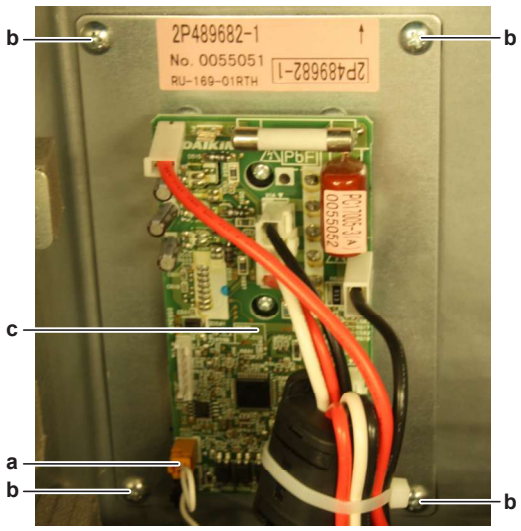
6 Remove the fan inverter PCB mounting plate (with fan inverter PCB and heat sink mounted).

7 To install the new fan inverter PCB, see "Repair procedures" [▸ 250].

To install the fan inverter PCB

1 Install the fan inverter PCB mounting plate (with fan inverter PCB and heat sink mounted) in the correct location on the unit.

2 Install and tighten the 4 screws to fix the fan inverter PCB mounting plate.



a Bridge connector X4A
b Screw
c Fan inverter PCB

3 Connect all connectors to the fan inverter PCB.

INFORMATION

Use the wiring diagram and connection diagram for correct installation of the connectors, see "7.2 Wiring diagram" [▸ 411].

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 Install connector X4A which you recuperated from the removed PCB.

5 Assemble the switch box, see "4.14 Plate work" [▸ 309].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "Checking procedures" [▸ 246] of the fan inverter PCB and continue with the next procedure.

4.7.2 Double fan outdoor unit

Checking procedures

INFORMATION

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

To perform a power check of the fan inverter PCB

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

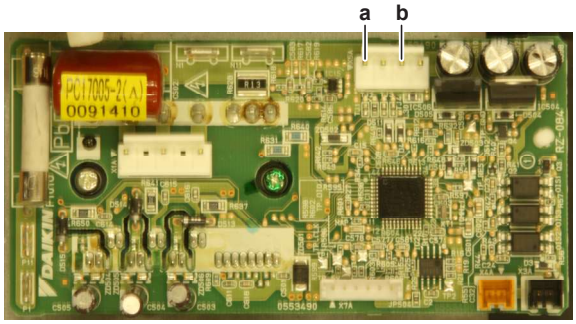
Prerequisite: Access the switch box, see "4.14 Plate work" [▸ 309].

1 Turn ON the power of the unit.

2 For fan inverter PCB A4P: Measure the voltage between pins 1 and 3 of connector X5A.

3 For fan inverter PCB A5P: Measure the voltage between pins 2 and 4 of connector X5A.

Result: The measured voltage MUST be 18 V DC.



a Pin 1
b Pin 3

Is the measured voltage on the PCB correct?	Action
Yes	Return to "Checking procedures" [▸ 252] procedures of the PCB and continue with the next procedure.
No	Continue with the next step.

4 Measure the output voltage on connector X601A on the inverter PCB.

Result: The measured voltage MUST be 18 V DC.

Is the measured output voltage on the inverter PCB correct?	Action
Yes	Correct the wiring between the fan inverter PCB and the inverter PCB, see "5.1.2 Repair procedures" [▸ 390].
No	Perform a check of the inverter PCB, see "4.9.1 Checking procedures" [▸ 263].

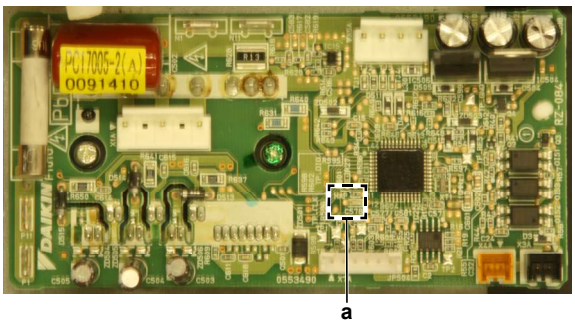
To check the HAP LED of the fan inverter PCB

1 First perform a power check of the fan inverter PCB, see "Checking procedures" [▸ 252].

INFORMATION

Make sure that the PCB is NOT in stand-by mode. The HAP LED will NOT blink when in stand-by mode.

2 Locate the HAP LED on the fan inverter PCB.



a HAP LED

Does the HAP LED blink in regular intervals (approximately 1 Hz)?	Action
Yes	Return to "Checking procedures" [▸ 252] of the fan inverter PCB and continue with the next procedure.
No	Replace the fan inverter PCB, see "Repair procedures" [▸ 257].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the fan inverter PCB, see "Checking procedures" [▸ 252].

1. Visit your local spare parts webbank.
2. Enter the model name of your unit and check if the installed spare part number corresponds with the spare part number indicated in the webbank.

Is the correct spare part for the fan inverter PCB installed?	Action
Yes	Return to "Checking procedures" [▸ 252] of the fan inverter PCB and continue with the next procedure.
No	Replace the fan inverter PCB, see "Repair procedures" [▸ 257].

To check the wiring of the fan inverter PCB

Prerequisite: First perform all earlier checks of the fan inverter PCB, see "Checking procedures" [▸ 252].

Prerequisite: Stop the unit operation via the central controller.

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" [▸ 411].

INFORMATION

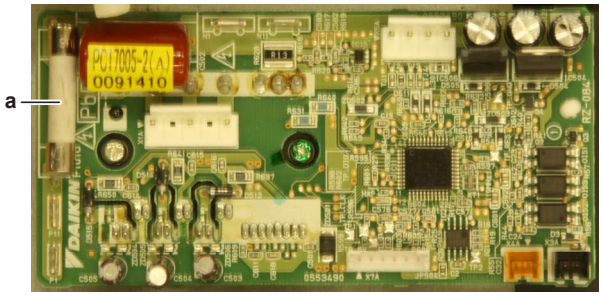
Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "Checking procedures" [▶ 252] of the fan inverter PCB and continue with the next procedure.

To check the fuse of the fan inverter PCB

Prerequisite: First perform all earlier checks of the fan inverter PCB, see "Checking procedures" [▶ 252].

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



a Fuse

Blown fuse on the fan inverter PCB?	Action
Yes	Replace the fan inverter PCB, see "Repair procedures" [▶ 257].
No	Return to "Checking procedures" [▶ 252] of the fan inverter PCB and continue with the next procedure.

To check the rectifier voltage of the fan inverter PCB

Prerequisite: First perform all earlier checks of the fan inverter PCB, see "Checking procedures" [▶ 252].

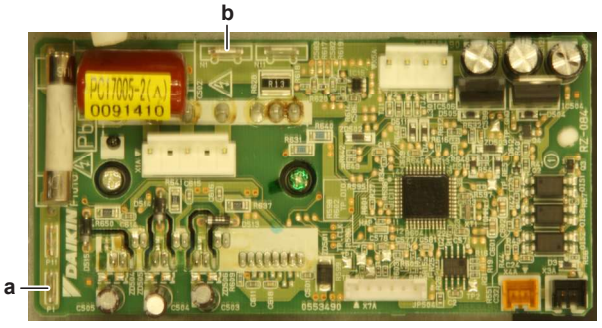
1 Turn ON the power of the unit.

DANGER: RISK OF ELECTROCUTION

Do NOT touch any live parts or PCB's.

2 Measure the DC voltage on P1 and N1 on the fan inverter PCB.

Result: The measured voltage MUST be approximately 560 V DC.



a Faston connection P1
b Faston connection N1

Is the measured voltage correct?	Action
Yes	Perform a power transistor check of the fan inverter PCB, see "Checking procedures" [▸ 252].
No	Continue with the next step.

- FAN INVERTER PCB A4P

1 Measure the DC output voltage between the terminals P12 and N33 on the inverter PCB.

Result: The measured voltage MUST be approximately 560 V DC.

Is the measured output voltage on the inverter PCB correct?	Action
Yes	Correct the wiring between the fan inverter PCB and the inverter PCB, see "5.1.2 Repair procedures" [▸ 390].
No	Perform a check of the inverter PCB, see "4.9.1 Checking procedures" [▸ 263].

- FAN INVERTER PCB A5P

1 Measure the DC output voltage between the terminals P11 and N11 on the fan inverter PCB A4P.

Result: The measured voltage MUST be approximately 560 V DC.

Is the measured output voltage on the fan inverter PCB correct?	Action
Yes	Correct the wiring between the fan inverter PCB's, see "5.1.2 Repair procedures" [▸ 390].
No	Perform a check of the fan inverter PCB A4P, see "Repair procedures" [▸ 257].

To perform a power transistor check of the fan inverter PCB

Prerequisite: First perform all earlier checks of the fan inverter PCB, see "Checking procedures" [▸ 252].

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Set the multimeter to diode measurement.

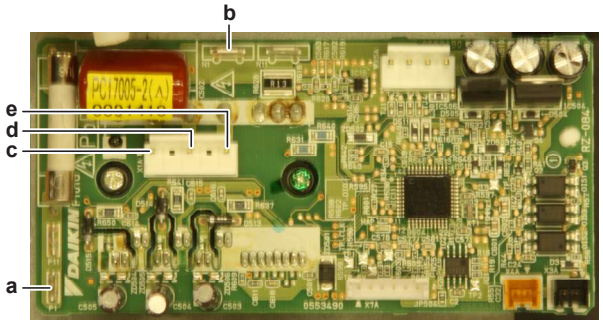


DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Disconnect the connector X1A and Faston connectors P1 and N1 from the fan inverter PCB.

3 Check the fan inverter PCB in reference with the tables below.



a Faston connection P1
b Faston connection N1
c Connector X1A, pin U
d Connector X1A, pin V
e Connector X1A, pin W

VDC	Com	Ref	VDC	Com	Ref
P1	X1A, pin U	OL	N1	X1A, pin V	0.45
P1	X1A, pin V	OL	N1	X1A, pin W	0.45
P1	X1A, pin W	OL	X1A, pin U	N1	OL
X1A, pin U	P1	0.45	X1A, pin V	N1	OL
X1A, pin V	P1	0.45	X1A, pin W	N1	OL
X1A, pin W	P1	0.45	P1	N1	OL
N1	X1A, pin U	0.45	N1	P1	0.81

Are the test results OK?	Action
Yes	Power transistors are OK. Return to "Checking procedures" [▸ 252].
No	Replace the fan inverter PCB, see "Repair procedures" [▸ 257].

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.

Repair procedures

To remove the fan inverter PCB

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

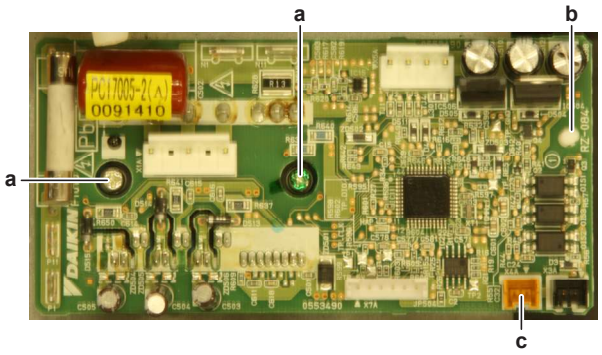
Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Access the switch box, see "4.14 Plate work" [▸ 309].

2 Disconnect ALL connectors from the fan inverter PCB.

INFORMATION

For fan inverter PCB A5P: Bridge connector X4A is not supplied with the spare part PCB. Transfer the bridge connector X4A.



a Screw
b PCB support
c Connector X4A

3 Loosen and remove the 2 screws that fix the fan inverter PCB to the heat sink plate.

4 Carefully pull the PCB at the side and unlatch the PCB support using a small pair of pliers.

5 Remove the fan inverter PCB.

6 To install the new fan inverter PCB, see "Repair procedures" [▸ 257].

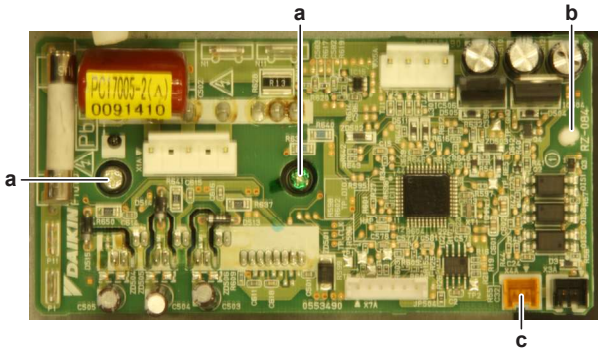
To install the fan inverter PCB

1 Check the status of the heat transfer sheet. If damaged, replace the heat transfer sheet.

2 Install the fan inverter PCB in the correct location on the heat sink.

3 Install the fan inverter PCB on the PCB support.

4 Install and tighten the 2 screws to fix the fan inverter PCB to the heat sink plate.



a Screw
b PCB support
c Connector X4A

5 Connect ALL connectors to the fan inverter PCB.

INFORMATION

Use the wiring diagram and connection diagram for correct installation of the connectors, see "7.2 Wiring diagram" [▸ 411].

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 For inverter PCB A5P: Install connector X4A which you recuperated from the removed PCB.

7 Assemble the switch box, see "4.14 Plate work" [▸ 309].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "Checking procedures" [▸ 252] of the fan inverter PCB and continue with the next procedure.

4.8 High pressure switch

4.8.1 Checking procedures

To perform an electrical check of the high pressure switch

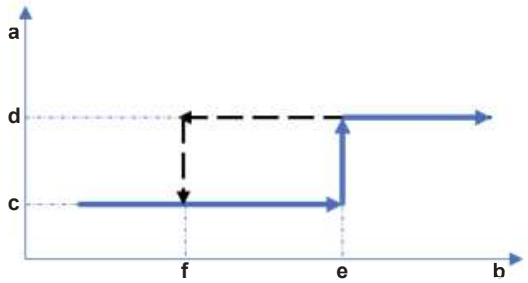
Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

2 Fill the refrigerant circuit with nitrogen until pressurized just below operating 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 (MPa)	Reset pressure (MPa)
S1PH	4.03~4.15	3.05~3.35
S2PH	3.58~3.73	2.60~2.90

3 Disconnect the high pressure switch connector from the PCB.

4 Measure the resistance between the pins 1-2 of the high pressure switch connector.

Result: The switch MUST be closed.

5 Fill the refrigerant circuit with nitrogen until pressurized just above operating pressure of the high pressure switch.

6 Measure the resistance between the pins 1-2 of the high pressure switch connector.

Result: The switch MUST be open.

> **INFORMATION**
>
> If the high pressure switch was triggered open, it will stay open until the refrigerant pressure drops below the reset pressure of the high pressure switch.

7 Lower the pressure of the nitrogen in the refrigerant circuit just above reset pressure of the high pressure switch.

8 Measure the resistance between the pins 1-2 of the high pressure switch connector.

Result: The switch MUST be open.

9 Lower the pressure of the nitrogen in the refrigerant circuit just below reset pressure of the high pressure switch.

10 Measure the resistance between the pins 1-2 of the high pressure switch connector.

Result: The switch MUST be closed.

High pressure switch connector measurements are correct?	Then
Yes	High pressure switch is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the high pressure switch, see "4.8.2 Repair procedures" [▸ 260].

4.8.2 Repair procedures

To remove the high pressure switch

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

1 If needed, remove any parts or putty (if installed) to create more space for the removal of the high pressure switch.

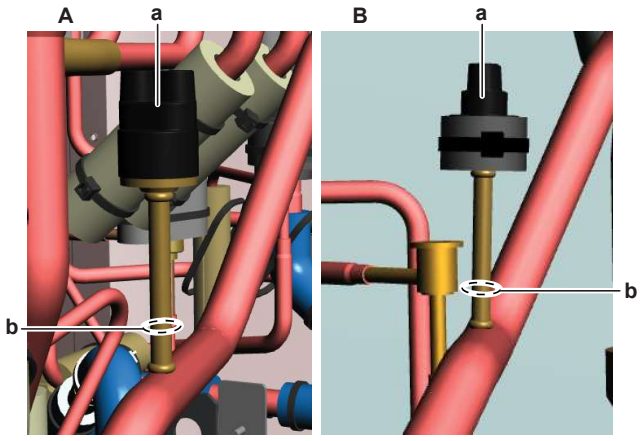
2 Disconnect the high pressure switch connector from the PCB.

3 Cut all tie straps that fix the high pressure switch harness.

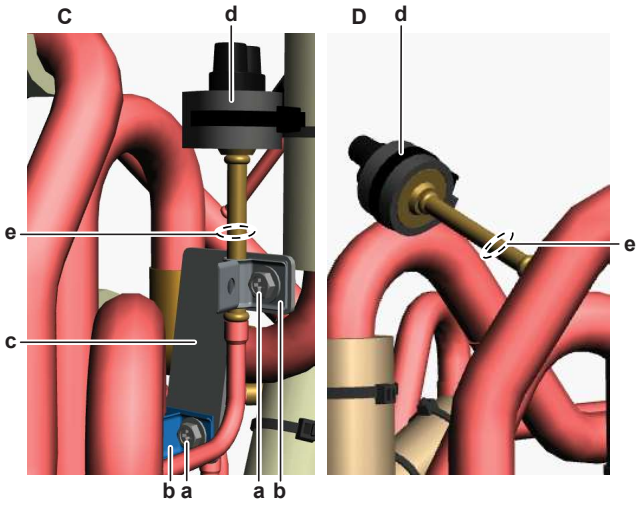
4 ONLY for S2PH on 5~8 HP units: Remove the 2 screws, clamps and plate from the high pressure switch.

5 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

6 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 S1PH on 5~12 HP units
B S1PH on 14~20 HP units
a High pressure switch
b High pressure switch pipe



C S2PH on 5~12 HP units
D S2PH on 14~20 HP units
a Screw
b Clamp
c Plate
d High pressure switch
e High pressure switch pipe

7 Stop the nitrogen supply when the piping has cooled down.

8 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.

9 Install a plug or cap on the refrigerant piping to avoid dirt or impurities from entering the piping.

10 To install the high pressure switch, see "4.8.2 Repair procedures" [▸ 260].

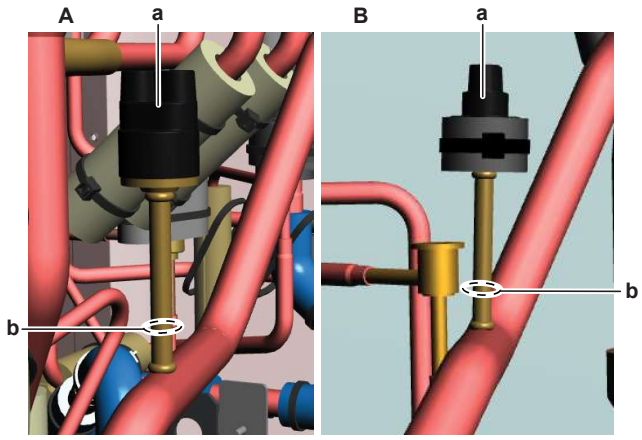
To install the high pressure switch

1 Remove the plug or cap from the refrigerant piping and make sure it is clean.

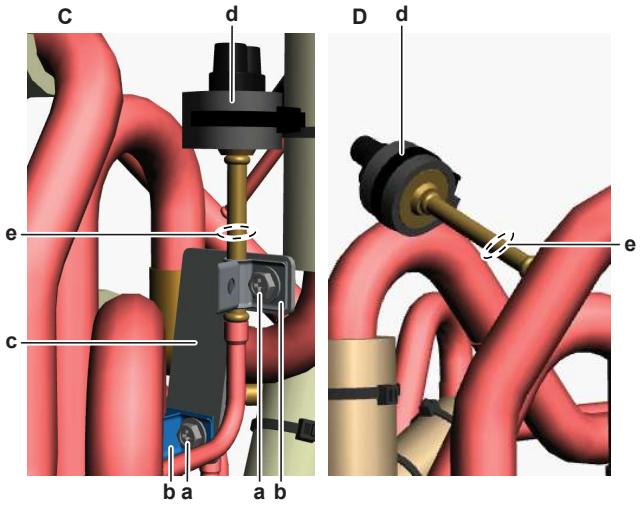
2 Install the high pressure switch in the correct location.

3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

4 Wrap a wet rag around the high pressure switch and any other components near the high pressure switch and solder the high pressure switch pipe to the refrigerant pipe.



A S1PH on 5~12 HP units
B S1PH on 14~20 HP units
a High pressure switch
b High pressure switch pipe



C S2PH on 5~12 HP units
D S2PH on 14~20 HP units
a Screw
b Clamp
c Plate
d High pressure switch
e High pressure switch pipe

CAUTION

Overheating the pressure switch will damage or destroy it.

5 After soldering is done, stop the nitrogen supply after the component has cooled-down.

6 ONLY for S2PH on 5~8 HP units: Install the 2 clamps and plate in the correct location on the high pressure switch. Install and tighten the 2 screws to fix the clamps and plate.

7 Route the high pressure switch harness towards the appropriate PCB.

8 Connect the high pressure switch connector to the PCB.

9 Install new tie straps to fix the high pressure switch harness.

10 Install all removed parts or putty (as needed) that were removed for space creation purposes.

11 Perform a pressure test, see "5.2.1 Checking procedures" [▶ 392].

12 Add refrigerant to the refrigerant circuit, see "5.2.2 Repair procedures" [▶ 397].

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 Inverter PCB

4.9.1 Checking procedures

INFORMATION

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

To perform a power check of the inverter PCB

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▶ 309].

Prerequisite: Access the switch box, see "4.14 Plate work" [▶ 309].

1 Turn ON the power of the unit.

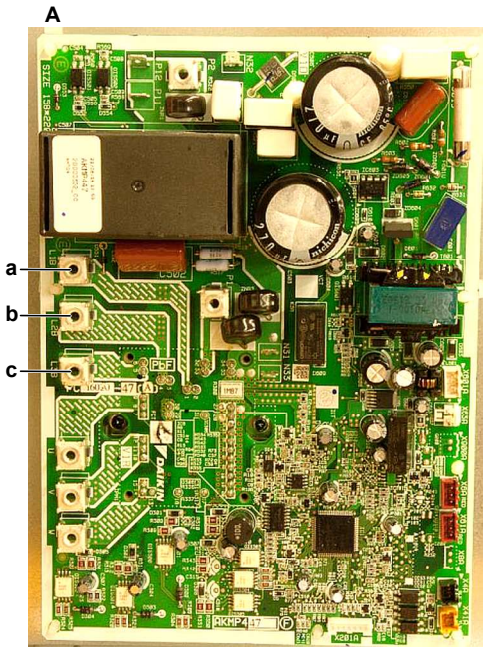
DANGER: RISK OF ELECTROCUTION

Do NOT touch any live parts or PCB's.

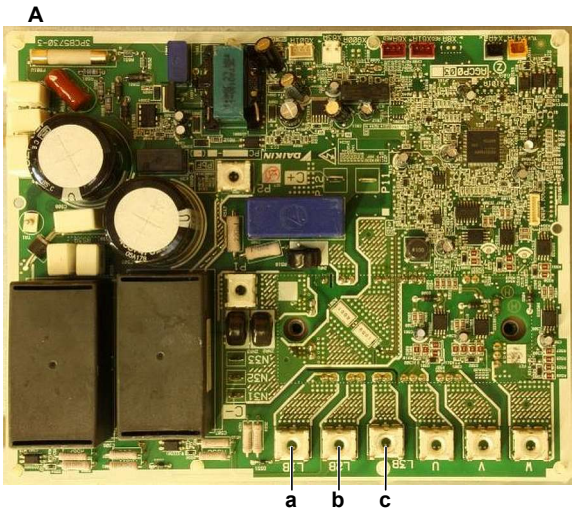
2 Measure the voltage between the following wires on the inverter PCB.

Result: All measurements MUST be 380~415 V AC.

- L1B –L2B
- L1B –L3B
- L2B –L3B



A 5~12 HP units
a Wire L1B
b Wire L2B
c Wire L3B



A 14~20 HP units
a Wire L1B
b Wire L2B
c Wire L3B

Does the inverter PCB receive power?	Action
Yes	Return to "4.9.1 Checking procedures" [▸ 263] of the inverter PCB and continue with the next procedure.
No	Continue with the next step.

3 Perform an electrical check of the noise filter PCB, see "4.11.1 Checking procedures" [▸ 289].

Electrical check of noise filter PCB correct?	Action
Yes	Correct the wiring between the inverter PCB and the noise filter PCB, see "5.1.2 Repair procedures" [▸ 390].

Electrical check of noise filter PCB correct?	Action
No	Perform a check of the noise filter PCB, see "4.11.1 Checking procedures" [▸ 289].

To check the HAP LED of the inverter PCB

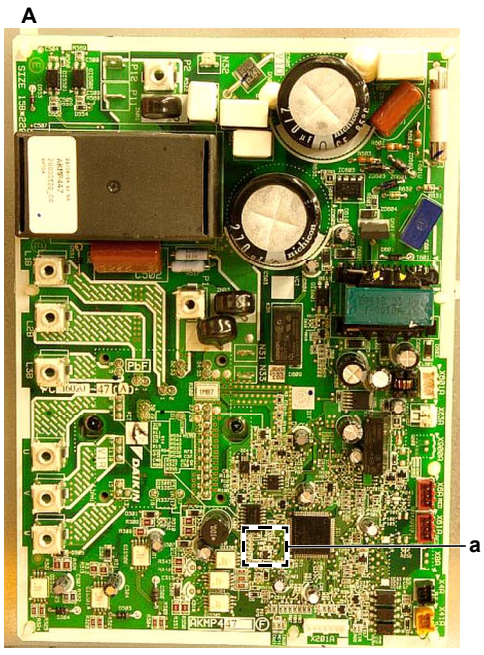
1 First perform a power check of the inverter PCB, see "4.9.1 Checking procedures" [▸ 263].

> **INFORMATION**
>
> Make sure that the PCB is NOT in stand-by mode. The HAP LED will NOT blink when in stand-by mode.

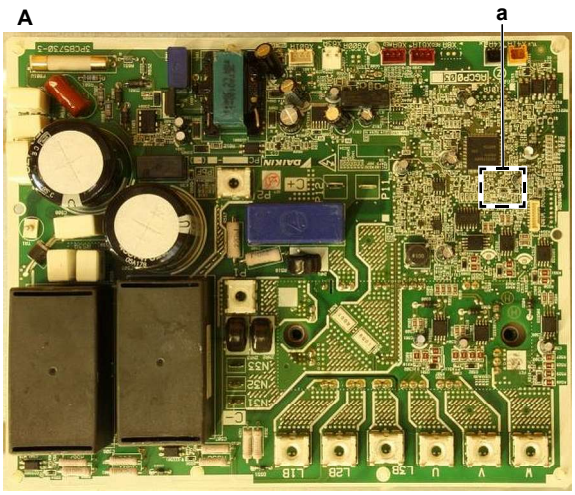
2 If needed wake up the PCB by performing one of the following actions:

- Turn OFF and then ON the power to the unit,
- Turn OFF the power supply to the main PCB by unplugging and then plugging the connector X1A;
- Create a forced thermo-ON condition by setting field setting 2–6 = 1 (forced thermo-ON indoor) or field setting 2–20 = 1 (manual refrigerant charge). See "7.9 Field settings" [▸ 489]. Once HAP LED blinks, immediately change related field setting (2–6 or 2–20) back to 0 to deactivate related function.

3 Locate the HAP LED on the inverter PCB.



A 5~12 HP units
a HAP LED



A 14~20 HP units
a HAP LED

Does the HAP LED blink in regular intervals (approximately 1 Hz)?	Action
Yes	Return to "4.9.1 Checking procedures" [▸ 263] of the inverter PCB and continue with the next procedure.
No	Replace the inverter PCB, see "4.9.2 Repair procedures" [▸ 277].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the inverter PCB, see "4.9.1 Checking procedures" [▸ 263].

1 Visit your local spare parts webbank.

2 Enter the model name of your unit and check if the installed spare part number corresponds with the spare part number indicated in the webbank.

Is the correct spare part for the inverter PCB installed?	Action
Yes	Return to "4.9.1 Checking procedures" [▸ 263] of the inverter PCB and continue with the next procedure.
No	Replace the inverter PCB, see "4.9.2 Repair procedures" [▸ 277].

To check the wiring of the inverter PCB

Prerequisite: First perform all earlier checks of the inverter PCB, see "4.9.1 Checking procedures" [▸ 263].

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

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

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

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" [▸ 411].

INFORMATION

Correct the wiring as needed.

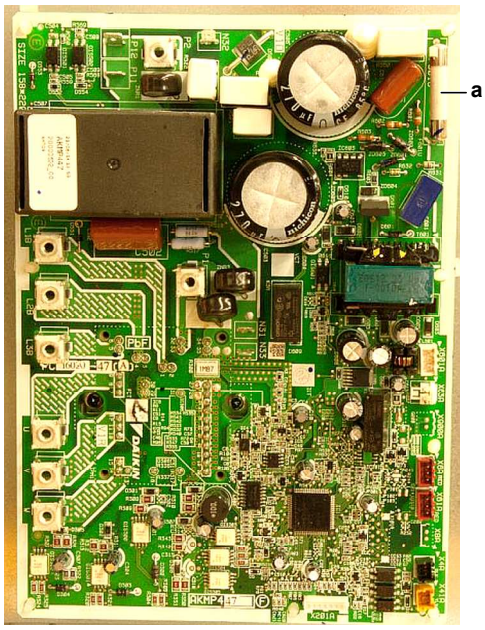
Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.9.1 Checking procedures" [▸ 263] of the inverter PCB and continue with the next procedure.

To check the fuses of the inverter PCB

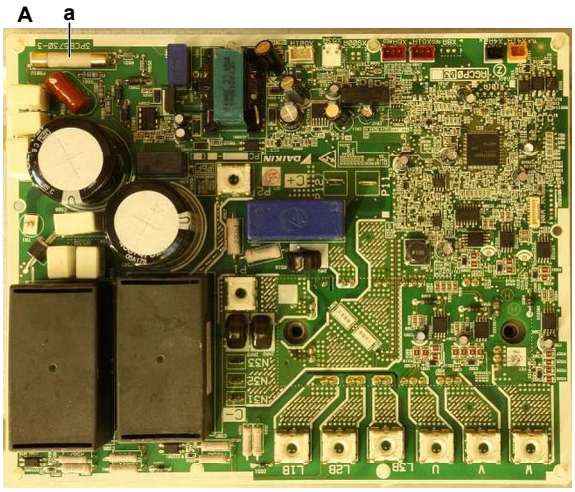
Prerequisite: First perform all earlier checks of the inverter PCB, see "4.9.1 Checking procedures" [▸ 263].

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

A



A 5~12 HP units
a Fuse



A 14~20 HP units
a Fuse

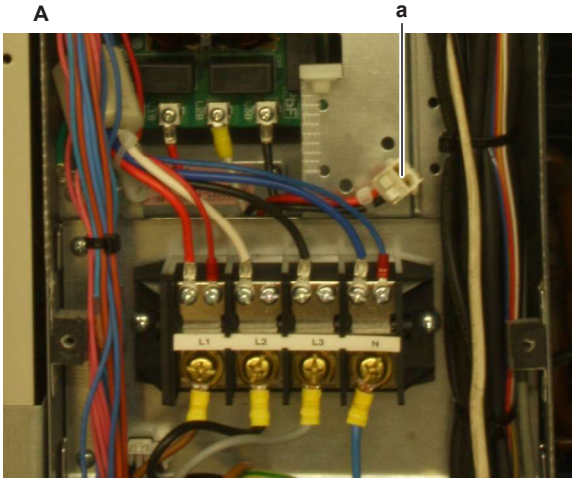
Any blown fuses on the inverter PCB?	Action
Yes	Replace the inverter PCB, see "4.9.2 Repair procedures" [▸ 277].
No	Return to "4.9.1 Checking procedures" [▸ 263] of the inverter PCB and continue with the next procedure.

To check the rectifier voltage of the inverter PCB

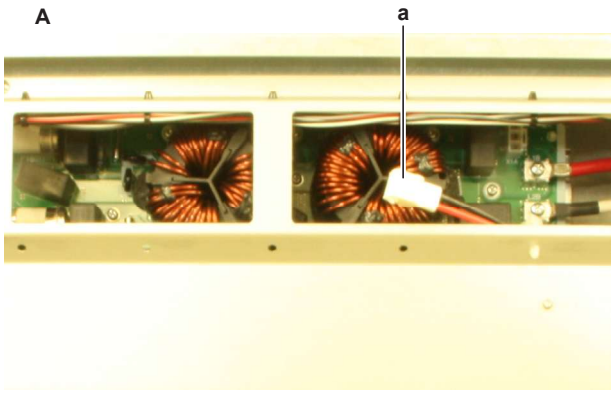
Prerequisite: First perform all earlier checks of the inverter PCB, see "4.9.1 Checking procedures" [▸ 263].

1. Turn ON the power of the unit.
2. Measure the voltage on the rectifier voltage check connector X3A.

   Result: The measured voltage MUST be approximately 560 V DC.



A 5~12 HP units
a Connector X3A



A 14~20 HP units
a Connector X3A

Is the measured voltage correct?	Action
Yes	Diode module is OK. Perform a check of the power module of the inverter PCB, see "4.9.1 Checking procedures" [▸ 263].
No	Continue with the next step.

3 Perform a check of the reactor, see "4.15.1 Checking procedures" [▸ 327].

Is the reactor OK?	Action
Yes	Replace the inverter PCB, see "4.9.2 Repair procedures" [▸ 277].
No	Replace the reactor, see "4.15.2 Repair procedures" [▸ 328].

To perform a diode module check

5~12 HP units

1 First check the rectifier voltage of the inverter PCB, see "4.9.1 Checking procedures" [▸ 263].

INFORMATION

If the rectifier voltage is OK, the diode module is OK. If rectifier voltage is NOT OK, proceed as described in the rectifier voltage check procedure.

Below procedure describes how to check the diode module itself.

2 Stop the unit operation via the central controller.

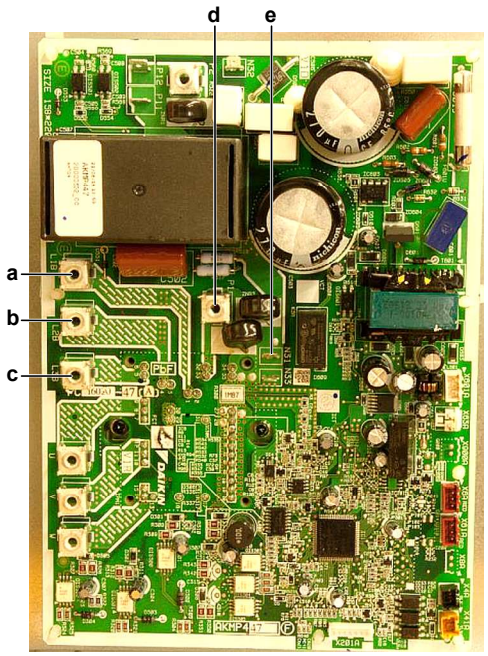
3 Turn OFF the respective circuit breaker.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

4 Disconnect the wire terminals and Faston connectors L1B, L2B, L3B, P1 and N31 from the inverter PCB.

5 Check the diode module in reference with the table below.



a Wire terminal L1B
b Wire terminal L2B
c Wire terminal L3B
d Wire terminal P1
e Faston connector terminal N31

VDC	Com	Ref	VDC	Com	Ref
P1	L1B	OL	N31	L1B	0.49
P1	L2B	OL	N31	L2B	0.49
P1	L3B	OL	N31	L3B	0.49
L1B	P1	0.49	L1B	N31	OL
L2B	P1	0.49	L2B	N31	OL
L3B	P1	0.49	L3B	N31	OL
			N31	P1	0.87
			P1	N31	OL

6 If the diode module is NOT ok, replace the inverter PCB, see "4.9.2 Repair procedures" [▸ 277].

14~20 HP units

1 First check the rectifier voltage of the inverter PCB, see "4.9.1 Checking procedures" [▸ 263].

INFORMATION

If the rectifier voltage is OK, the diode module is OK. If rectifier voltage is NOT OK, proceed as described in the rectifier voltage check procedure.

Below procedure describes how to check the diode module itself.

2 Stop the unit operation via the central controller.

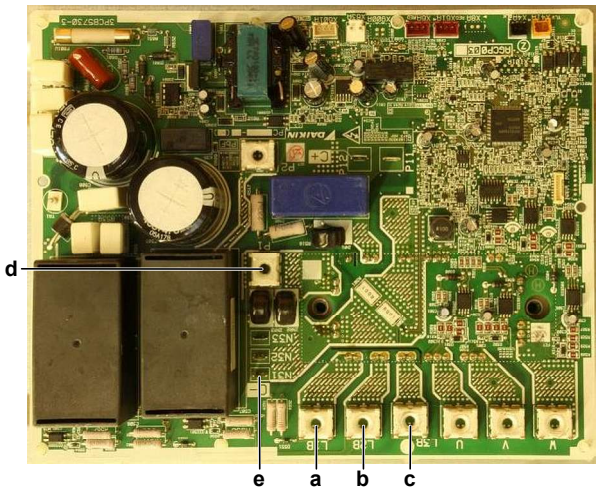
3 Turn OFF the respective circuit breaker.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

4 Disconnect the wire terminals and Faston connectors L1B, L2B, L3B, P1 and N31 from the inverter PCB.

5 Check the diode module in reference with the table below.



a Wire terminal L1B
b Wire terminal L2B
c Wire terminal L3B
d Wire terminal P1
e Faston connector terminal N31

VDC	Com	Ref	VDC	Com	Ref
P1	L1B	OL	N31	L1B	0.48
P1	L2B	OL	N31	L2B	0.48
P1	L3B	OL	N31	L3B	0.48
L1B	P1	0.48	L1B	N31	OL
L2B	P1	0.48	L2B	N31	OL
L3B	P1	0.48	L3B	N31	OL
			N31	P1	0.85
			P1	N31	OL

6 If the diode module is NOT ok, replace the inverter PCB, see "4.9.2 Repair procedures" [▸ 277].

To perform a power module check

5~12 HP units

Prerequisite: First check the rectifier voltage of the inverter PCB, see "4.9.1 Checking procedures" [▸ 263].

Prerequisite: Stop the unit operation via the central controller.

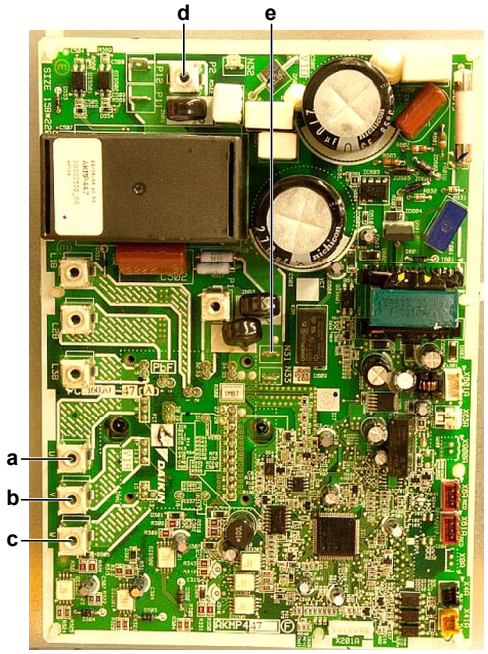
Prerequisite: Turn OFF the respective circuit breaker.

1 Loosen the screws and disconnect the compressor wires from the wire terminals U, V and W on the inverter PCB.

2 Loosen the screw and disconnect the wire from the wire terminal P2 on the inverter PCB.

3 Disconnect the Faston connector from terminal N31 on the inverter PCB.

4 Check the power module in reference with the image and the table below.



a Wire terminal U
b Wire terminal V
c Wire terminal W
d Wire terminal P2
e Faston connector terminal N31

VDC	Com	Ref	VDC	Com	Ref
P2	U	OL	N31	U	0.43
P2	V	OL	N31	V	0.43
P2	W	OL	N31	W	0.43
U	P2	0.43	U	N31	OL
V	P2	0.43	V	N31	OL
W	P2	0.43	W	N31	OL
			N31	P2	0.78
			P2	N31	OL

Are the test results OK?	Action
Yes	Return to "4.9.1 Checking procedures" [▸ 263] of the inverter PCB and continue with the next procedure.
No	Replace the inverter PCB, see "4.9.2 Repair procedures" [▸ 277].

14~20 HP units

Prerequisite: First check the rectifier voltage of the inverter PCB, see "4.9.1 Checking procedures" [▸ 263].

Prerequisite: Stop the unit operation via the central controller.

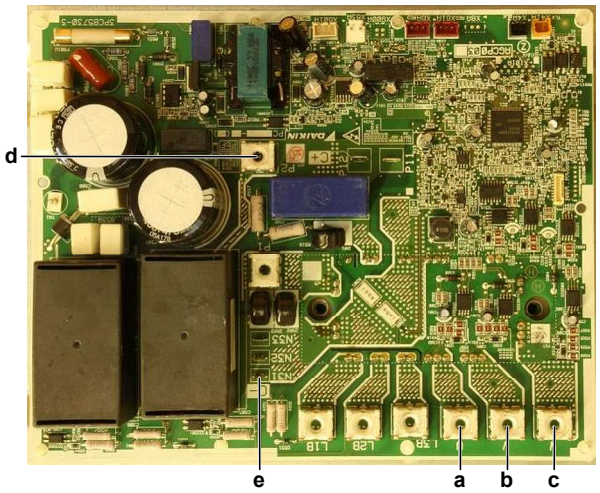
Prerequisite: Turn OFF the respective circuit breaker.

1 Loosen the screws and disconnect the compressor wires from the wire terminals U, V and W on the inverter PCB.

2 Loosen the screw and disconnect the wire from the wire terminal P2 on the inverter PCB.

3 Disconnect the Faston connector from terminal N31 on the inverter PCB.

4 Check the power module in reference with the image and the table below.



a Wire terminal U
b Wire terminal V
c Wire terminal W
d Wire terminal P2
e Faston connector terminal N31

VDC	Com	Ref	VDC	Com	Ref
P2	U	OL	N31	U	0.42
P2	V	OL	N31	V	0.42
P2	W	OL	N31	W	0.42
U	P2	0.42	U	N31	OL
V	P2	0.42	V	N31	OL
W	P2	0.42	W	N31	OL
			N31	P2	0.75
			P2	N31	OL

Are the test results OK?	Action
Yes	Return to "4.9.1 Checking procedures" [▸ 263] of the inverter PCB and continue with the next procedure.
No	Replace the inverter PCB, see "4.9.2 Repair procedures" [▸ 277].

To perform a power transistor check of the inverter PCB

Prerequisite: First perform all earlier checks of the inverter PCB, see "4.9.1 Checking procedures" [▸ 263].

Prerequisite: Stop the unit operation via the central controller.

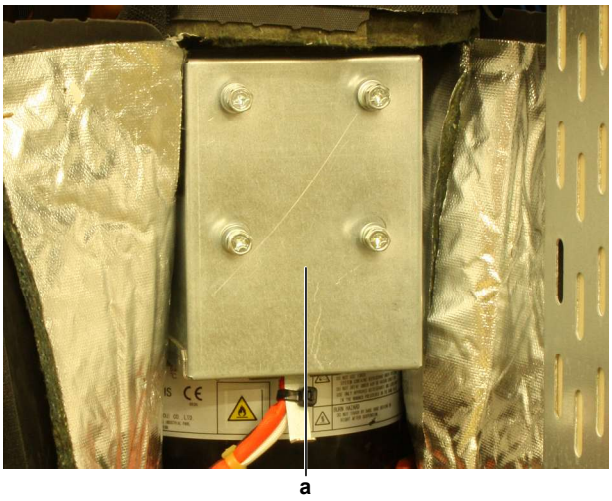
Prerequisite: Turn OFF the respective circuit breaker.

1 Open the compressor insulation.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Remove the cover of the compressor wire terminals.



a Compressor wire terminals cover

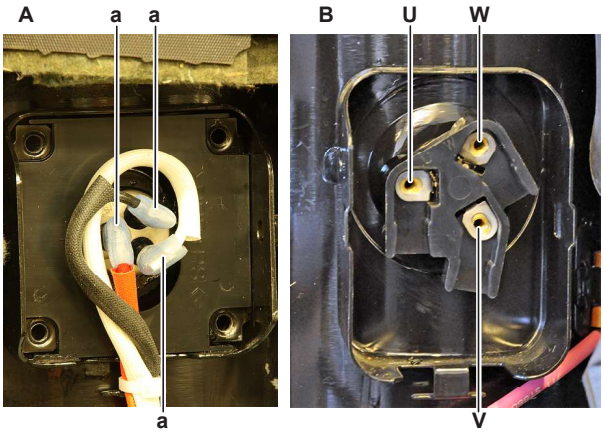
3 For 5~12 HP units: Disconnect the Faston connectors from the compressor wire terminals U, V and W.

4 For 14~20 HP units:

- Loosen and remove the 3 bolts that fix the compressor wiring.
- Remove the wiring from the compressor wire terminals U, V and W.
- Carefully straighten the terminal lugs.
- Remove the black wire guide.

INFORMATION

Note the position of the wiring on the compressor wire terminals to allow correct connection during installation.



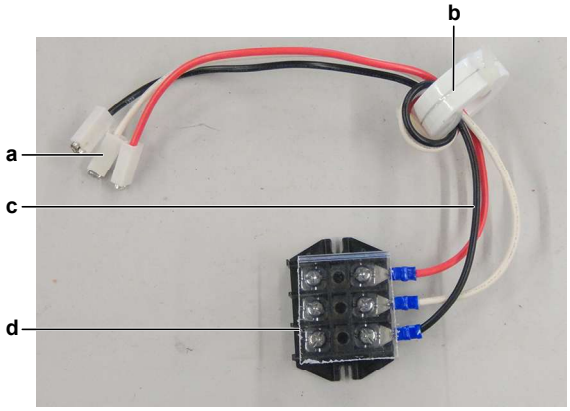
A 5~12 HP units
B 14~20 HP units
a Faston connection
U U
V V
W W

CAUTION

Power transistor check mode is activated ONLY on the main PCB of the main outdoor unit. When there is more than 1 compressor in the unit or if the system is a multi-combination, all inverter PCB's will perform a power transistor check. All compressor wiring of all available compressors MUST be disconnected and safely secured before power transistor check mode is activated. Do NOT touch the compressor wiring and do NOT short-circuit to ground through unit casing. Secure the compressor wiring to avoid touching them accidentally.

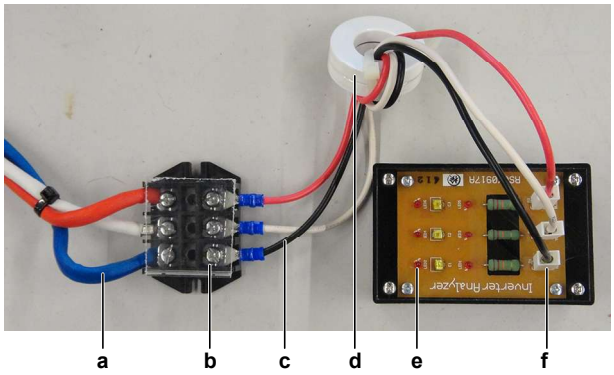
14~20 HP units

1 Prepare a wire harness with Faston connectors and a terminal block



a Faston plugs
b Ferrite core (optional)
c Wire harness
d Terminal block

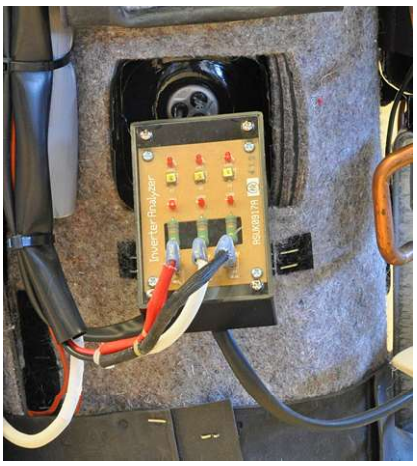
2 Attach the compressor wiring to the terminal block.



a Compressor wires
b Terminal block
c Wire harness
d Ferrite core (optional)
e Inverter analyser
f Faston plugs

ALL units

1 Connect the Faston connectors to the Inverter Analyzer (SPP number 1368521).



a Inverter checker
b Faston terminal U
c Faston terminal V
d Faston terminal W
e 2 LEDs for phase U
f 2 LEDs for phase V
g 2 LEDs for phase W

2 Turn ON the power of the unit.

3 Activate power transistor check mode by applying field setting 2-28=1.

Result: If all 6 LEDs on inverter checker module blink, then it means that the transistors on the inverter PCB switch correctly.

4 To exit the power transistor check mode, set 2-28=0.

Result: 2 LEDs on inverter checker module for V phase will indicate the discharge status of the DC voltage.

5 Wait until the LEDs are OFF before disconnecting U, V and W connections from the inverter checker.

6 Turn OFF the unit via the circuit breaker.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

7 Disconnect the Inverter Analyzer from the Faston connectors.

8 For 14~20 HP units ONLY: Detach the screw connector/female Faston adapter cable from the compressor cable.

9 Connect the compressor wiring to the wire terminals U, V and W of the compressor.

INFORMATION

Use the notes made during disconnection to connect the compressor wiring to the correct wire terminals of the compressor.

Are the test results OK?	Action
Yes	Power transistors are OK. Return to "4.9.1 Checking procedures" [▸ 263].
No	Replace the inverter PCB, see "4.9.2 Repair procedures" [▸ 277].

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.

4.9.2 Repair procedures

To remove the inverter PCB

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Access the switch box, see "4.14 Plate work" [▸ 309].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

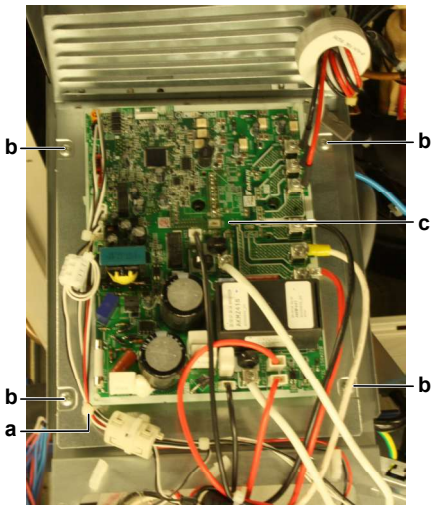
For single fan units

1 Disconnect ALL connectors from the inverter PCB.

2 Loosen the screws and disconnect ALL wiring from the inverter PCB.

3 Cut the tie strap and disconnect the wiring from the inverter PCB mounting plate.

4 Remove the 4 screws that fix the inverter PCB mounting plate.



a Tie strap
b Screw
c Inverter PCB

5 Remove the inverter PCB mounting plate (with inverter PCB mounted).

6 To install the new inverter PCB, see "4.9.2 Repair procedures" [▸ 277].

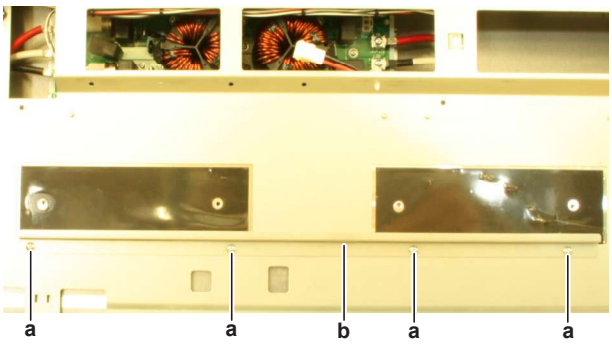
For double fan units

1 Disconnect all connectors from the inverter PCB.

2 Loosen the screws and disconnect ALL wiring from the inverter PCB.

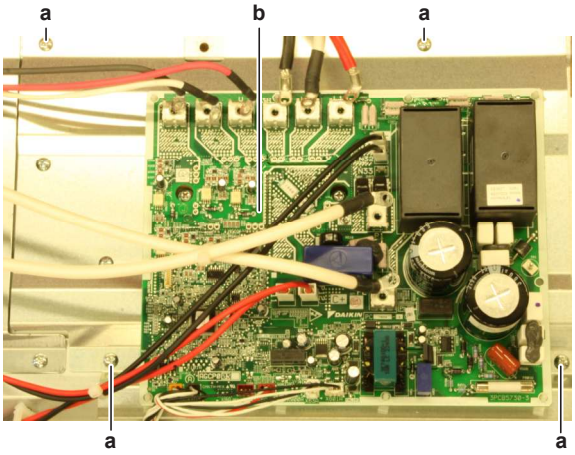
3 Remove the 4 screws that fix the heat sink plate support.

4 Remove the heat sink plate support.



a Screw
b Heat sink plate support

5 Remove the 4 screws that fix the inverter PCB mounting plate.



a Screw
b Inverter PCB

6 Remove all wiring from the inverter PCB mounting plate (harness retainers, tie straps).

7 Remove the inverter PCB mounting plate (with inverter PCB mounted).

8 To install the new inverter PCB, see "4.9.2 Repair procedures" [▸ 277].

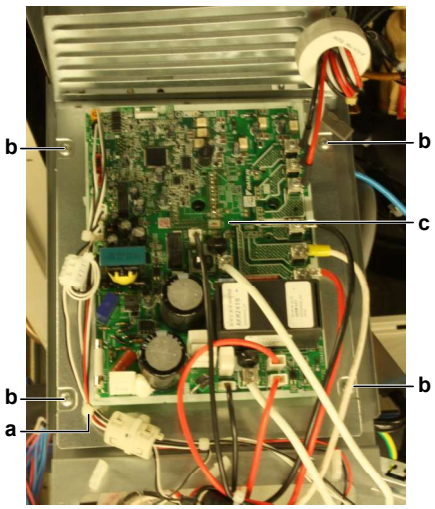
To install the inverter PCB

For single fan units

1 Clean the heat sink surface of the inverter PCB mounting plate (with inverter PCB installed) and install a new heat transfer sheet on the heat sink.

2 Install the inverter PCB mounting plate on the correct location.

3 Install and tighten the 4 screws to fix the inverter PCB mounting plate.



a Tie strap
b Screw
c Inverter PCB

4 Connect the wires to the screw connections on the inverter PCB.

5 Connect all connectors to the inverter PCB.

INFORMATION

Use the wiring diagram and connection diagram for correct installation of the connectors, see "7.2 Wiring diagram" [▸ 411].

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 Install a new tie strap to fix the wiring to the inverter PCB mounting plate.

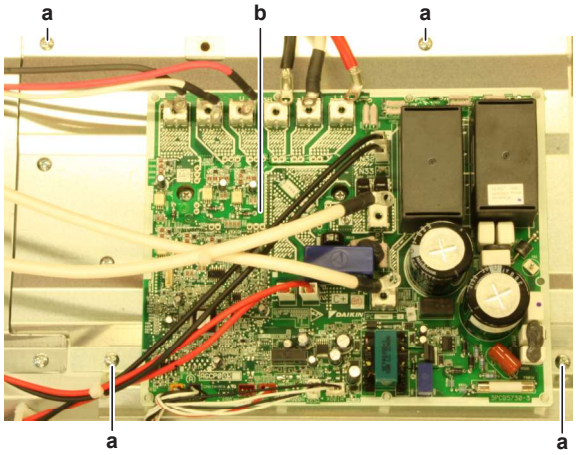
7 Assemble the switch box, see "4.14 Plate work" [▸ 309].

For double fan units

1 Clean the heat sink surface of the inverter PCB mounting plate (with inverter PCB installed) and install a new heat transfer sheet on the heat sink.

2 Install the inverter PCB mounting plate on the correct location.

3 Install and tighten the 4 screws that fix the inverter PCB mounting plate.



a Screw
b Inverter PCB

4 Connect the wires to the screw connections on the inverter PCB.

5 Connect all connectors to the inverter PCB.

INFORMATION

Use the wiring diagram and connection diagram for correct installation of the connectors, see "7.2 Wiring diagram" [▸ 411].

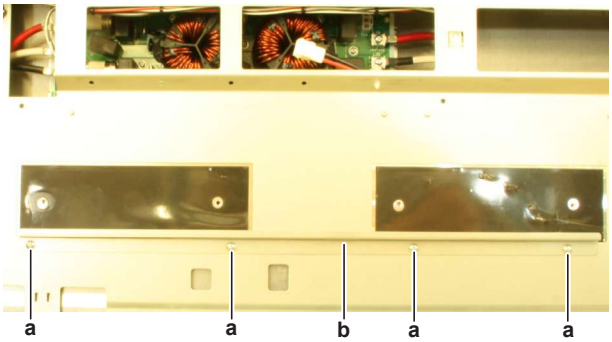
WARNING

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 Install ALL wiring on the inverter PCB mounting plate (harness retainers, tie straps).

7 Install the heat sink plate support in the correct location.

8 Install and tighten the 4 screws to fix the heat sink plate support.



a Screw
b Heat sink plate support

9 Assemble the switch box, see "4.14 Plate work" [▸ 309].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.9.1 Checking procedures" [▸ 263] of the inverter PCB and continue with the next procedure.

4.10 Main PCB

4.10.1 Checking procedures

INFORMATION

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

To perform a power check of the main PCB

Prerequisite: Stop the unit operation via the central controller.

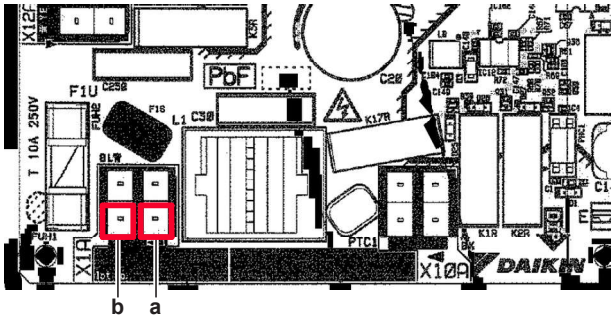
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Turn ON the power of the unit.

2 Measure the voltage between the pins 1-2 on connector X1A of the main PCB.

Result: The measured voltage MUST be 230 V AC±10%.



a Connector X1A , pin 1
b Connector X1A , pin 2

Does the main PCB receive power?	Action
Yes	Return to "4.10.1 Checking procedures" [▶ 280] of the main PCB and continue with the next procedure.
No	Continue with the next step.

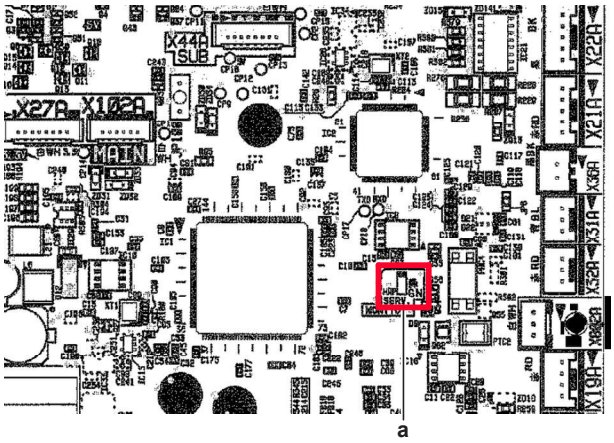
3 Check the power supply to the unit, see "5.1.1 Checking procedures" [▶ 383].

Does the unit receive power?	Action
Yes	Correct the wiring from the main power supply terminal to the main PCB, see "4.10.2 Repair procedures" [▶ 284].
No	Adjust the power supply to the unit, see "5.1.2 Repair procedures" [▶ 390].

To check the HAP LED of the main PCB

Prerequisite: First perform a power check of the main PCB, see "4.10.1 Checking procedures" [▶ 280].

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 (approximately 1 Hz)?	Action
Yes	Return to "4.10.1 Checking procedures" [▶ 280] of the main PCB and continue with the next procedure.
No	Replace the main PCB, "4.10.2 Repair procedures" [▶ 284].

To check if the correct spare part is installed

1. First perform all earlier checks of the main PCB, see "4.10.1 Checking procedures" [▶ 280].
2. If a spare part main PCB is installed in your unit, check that it is the correct one by performing the procedure described below.
3. Make sure the DIP switches of the main PCB are set correctly, see "4.10.2 Repair procedures" [▶ 284].
4. Visit your local spare parts webbank.
5. Enter the model name of your unit and check if the installed spare part number corresponds with the spare part number indicated in the webbank.

Is the correct spare part for the main PCB installed?	Action
Yes	Return to "4.10.1 Checking procedures" [▶ 280] of the main PCB and continue with the next procedure.
No	Replace the main PCB, "4.10.2 Repair procedures" [▶ 284].

To check the wiring of the main PCB

Prerequisite: First perform all earlier checks of the main PCB, see "4.10.1 Checking procedures" [▶ 280].

Prerequisite: Stop the unit operation via the central controller.

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" [▶ 411].
4. Check that the bridge connectors X3A and X4A is plugged in, see "7.2 Wiring diagram" [▶ 411].

INFORMATION

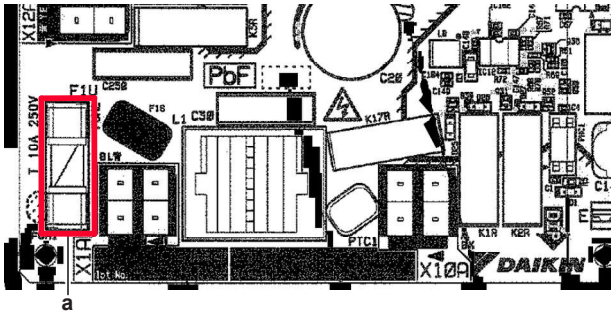
Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.10.1 Checking procedures" [▶ 280] of the main PCB and continue with the next procedure.

To check the fuses of the main PCB

Prerequisite: First perform all earlier checks of the main PCB, see "4.10.1 Checking procedures" [▶ 280].

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



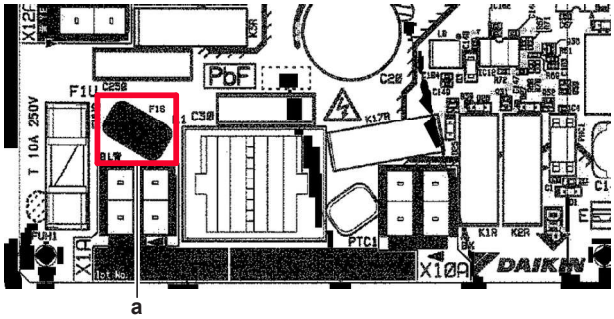
a Fuse F1U

Any blown fuses on the main PCB?	Action
Yes	Replace the blown fuse(s), see "4.10.2 Repair procedures." [▶ 284]
No	Return to "4.10.1 Checking procedures" [▶ 280] of the main PCB and continue with the next procedure.

To check the varistors of the main PCB

Prerequisite: First perform all earlier checks of the main PCB, see "4.10.1 Checking procedures" [▶ 280].

1 Measure the resistance of the varistor. If the reading is nearly infinite, the varistor is still good.



a Varistor F1S

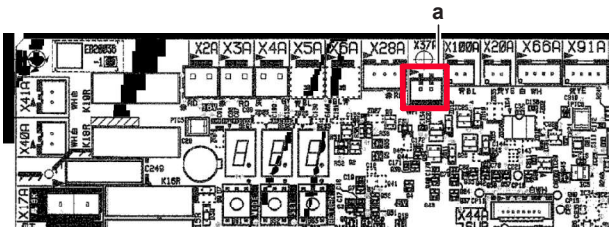
Any broken varistors on the main PCB?	Action
Yes	Replace the main PCB, see "4.10.2 Repair procedures." [▶ 284]
No	Return to "4.10.1 Checking procedures" [▶ 280] of the main PCB and continue with the next procedure.

To check the power supply to the optional PCB

Prerequisite: First perform all earlier checks of the main PCB, see "4.10.1 Checking procedures" [▶ 280].

1 Turn ON the power of the unit.

2 Measure the voltage on connector X37A of the main PCB. The measurement MUST be 16 V DC.



a Connector X37A

Is the measurement correct?	Action
Yes	Return to "4.10.1 Checking procedures" [▶ 280] of the main PCB and continue with the next procedure.
No	Replace the main PCB, see "4.10.2 Repair procedures" [▶ 284].

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 correct the wiring from the main power supply terminal to the main PCB

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Remove the required plate work, see "4.14 Plate work" [▶ 309].

2 Make sure that all wires are firmly and correctly connected, see "7.2 Wiring diagram" [▶ 411].

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 "4.10.1 Checking procedures" [▶ 280] of the main PCB and continue with the next procedure.

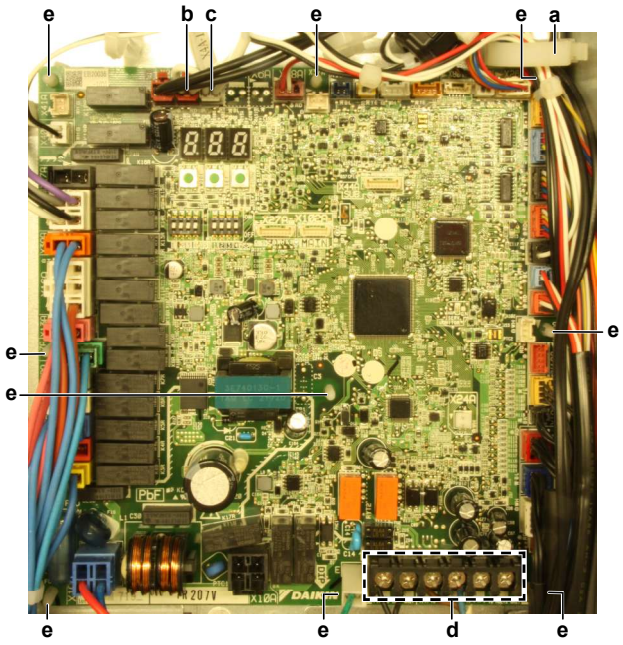
To remove the main PCB

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▶ 309].

1 Unlatch the cable clamp at the top right corner of the main PCB to facilitate the removal of the PCB.



a Cable clamp
b Bridge connector X3A
c Bridge connector X4A
d Wire terminal X1M
e PCB support

2 Disconnect the bridge connectors X3A and X4A from the main PCB. Keep for reuse.

3 Disconnect ALL other connectors from the main PCB assembly.

4 Note the transmission field wiring on wire terminal X1M.

5 Loosen the screws and disconnect the wiring from the wire terminal X1M.

6 Carefully pull the PCB at the side and unlatch the PCB supports one by one using a small pair of pliers.

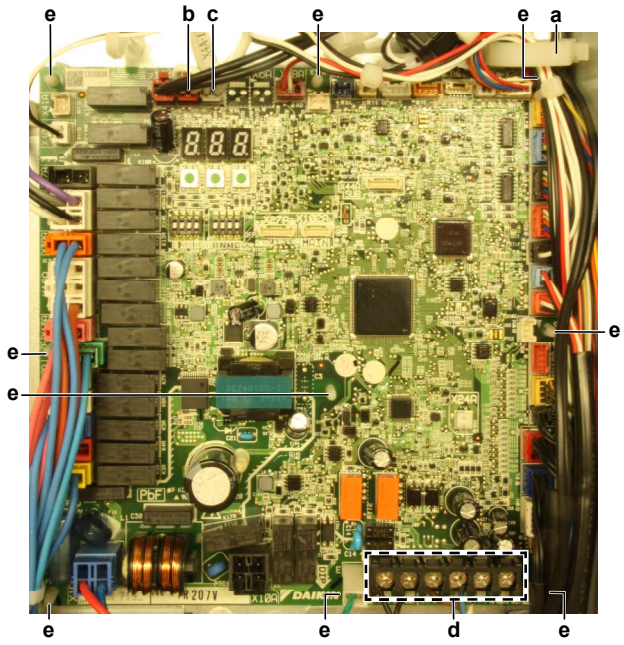
7 Remove the main PCB from the switch box.

8 To install the new outdoor unit main PCB, see "4.10.2 Repair procedures" [▸ 284].

To install the main PCB

1 Install the main PCB on its correct location in the switch box.

2 Install the main PCB on the PCB supports.



a Cable clamp
b Bridge connector X3A
c Bridge connector X4A
d Wire terminal X1M
e PCB support

3 Connect ALL field wiring to the wire terminal X1M. Tighten the screws to fix the field wiring.

4 Install the bridge connectors X3A and X4A in the correct location on the main PCB.

5 Connect ALL connectors to the main PCB assembly.

INFORMATION

Use the wiring diagram and connection diagram for correct installation of the connectors, see "7.2 Wiring diagram" [▸ 411].

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 Route the wiring through the cable clamp at the upper right side of the main PCB.

7 Install new tie straps as needed to fix the wiring.

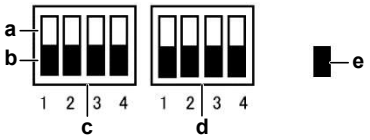
8 When installing a new main PCB, it needs to be defined for capacity. Otherwise, PJ error is generated.

9 When installing a new main PCB, set the dipswitch settings accordingly to the model. See "4.10.2 Repair procedures" [▸ 284].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.10.1 Checking procedures" [▸ 280] of the main PCB and continue with the next procedure.

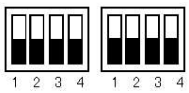
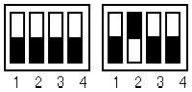
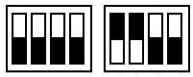
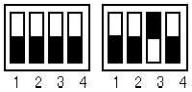
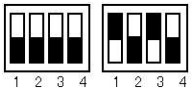
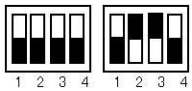
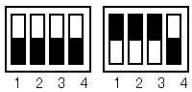
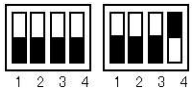
To set the DIP switches of the spare part main PCB

If a spare part main PCB is installed in your unit, the DIP switches need to be set. By default (factory settings) all switches are in off position.



a ON position
b OFF position
c DS1
e DS2
e Shows the position of a switch

1. Shut the power off.
2. Position the DIP switches for your particular model as shown in the table below.

Applicable models	Position of DIP switches	
RYMA5		All switches are OFF.
RXYA8		DS2-2 is ON.
RXYA10		DS2-1 and DS2-2 are ON.
RXYA12		DS2-3 is ON.
RXYA14		DS2-1 and DS2-3 are ON.
RXYA16		DS2-2 and DS2-3 are ON.
RXYA18		DS2-1 and DS2-2 and DS2-3 are ON.
RXYA20		DS2-4 is ON.

3. After replacing main PCB A1P , a test run is required. Refer to Installation Manual for Test Run. If test run is not carried out successfully, U3 Error will be triggered.
4. If PJ or UA or U7 Errors are triggered after spare part main PCB A1P replacement, check the position of the switches accordingly. If the error is not solved then consult the related error code for troubleshooting.

Is the problem solved?	Action
Yes	No further actions required.

Is the problem solved?	Action
No	Return to "4.10.1 Checking procedures" [▶ 280] of the main PCB and continue with the next procedure.

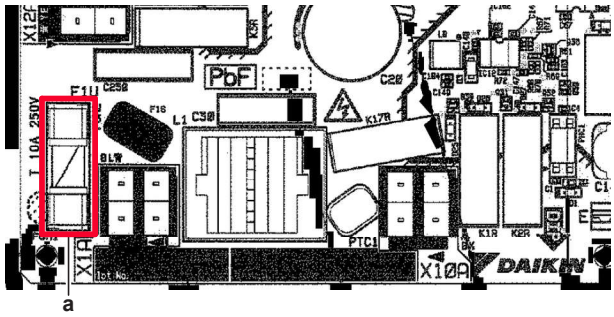
To remove a fuse of the main PCB

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▶ 309].

1 Remove the fuse from the PCB.



a Fuse F1U

2 To install the fuse on the main PCB, see "4.10.2 Repair procedures" [▶ 284].

To install a fuse on the main PCB

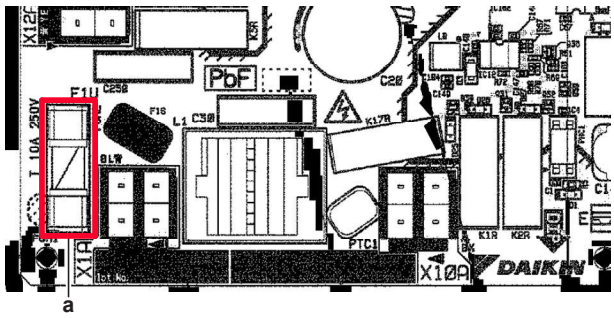
WARNING

- For continued protection against risk of fire, replace ONLY with same type and rating of fuse.
- Before replacing the fuse, check and eliminate the cause of the blown fuse.

1 Install the fuse on the correct location on the PCB.

CAUTION

Make sure the fuse is plugged-in correctly (contact with the fuse holder).



a Fuse F1U

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.10.1 Checking procedures" [▶ 280] of the main PCB and continue with the next procedure.

4.11 Noise filter PCB

4.11.1 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 central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

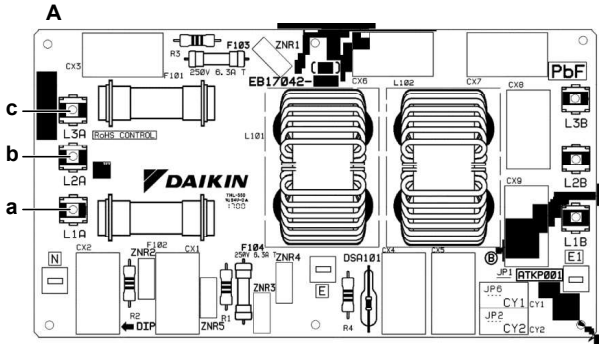
Prerequisite: Access the switch box but leave ALL wiring connected, see "4.14 Plate work" [▸ 309].

1 Turn ON the power of the unit.

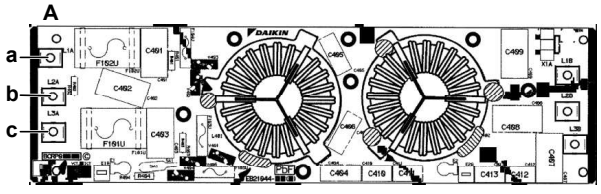
2 Measure the voltage between the following wires of the noise filter PCB on the location shown below.

Result: All measurements MUST be 380~415 V AC.

- L1A–L2A
- L1A–L3A
- L2A–L3A



A 5~12 HP units
a L1A
b L2A
c L3A



A 14~20 HP units
a L1A
b L2A
c L3A

Is the measured voltage on the PCB correct?	Action
Yes	Return to "4.11.1 Checking procedures" [▸ 289] procedures of the PCB and continue with the next procedure.
No	Continue with the next step.

3 Check the power supply to the unit, see "5.1.1 Checking procedures" [▶ 383].

Does the unit receive power?	Action
Yes	Correct the wiring from the main power supply terminal to the noise filter PCB, see "4.11.2 Repair procedures" [▶ 292].
No	Adjust the power supply to the unit, see "5.1.2 Repair procedures" [▶ 390].

To perform an electrical check of the noise filter PCB

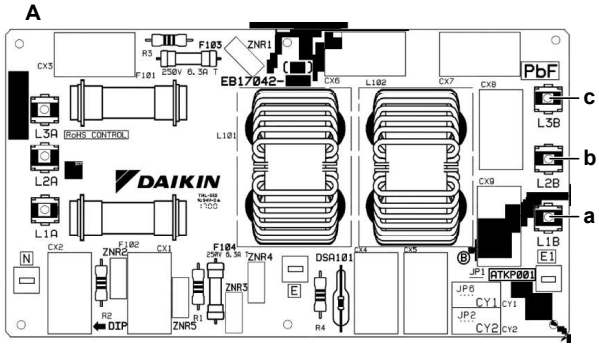
Prerequisite: First check the power supply to the noise filter PCB, see "4.11.1 Checking procedures" [▶ 289].

1 Measure the voltage between the following output wires of the noise filter PCB on the location shown below.

Result: All measurements MUST be 380~415 V AC.

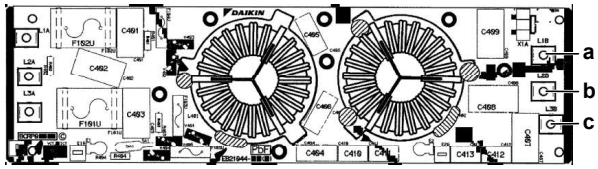
- L1B–L2B
- L1B–L3B
- L2B–L3B

A



A 5~12 HP units
a L1B
b L2B
c L3B

A



A 14~20 HP units
a L1B
b L2B
c L3B

Is the output voltage on the noise filter PCB correct?	Action
Yes	Return to "4.11.1 Checking procedures" [▶ 289] of the noise filter PCB and continue with the next procedure.
No	Replace the noise filter PCB, see "4.11.2 Repair procedures" [▶ 292].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the noise filter PCB, see "4.11.1 Checking procedures" [▸ 289].

1 Visit your local spare parts webbank.

2 Enter the model name of your unit and check if the installed spare part number corresponds with the spare part number indicated in the webbank.

Is the correct spare part for the noise filter PCB installed?	Action
Yes	Return to "4.11.1 Checking procedures" [▸ 289] of the noise filter PCB and continue with the next procedure.
No	Replace the noise filter PCB, see "4.11.2 Repair procedures" [▸ 292].

To check the wiring of the noise filter PCB

Prerequisite: First perform all earlier checks of the noise filter PCB, see "4.11.1 Checking procedures" [▸ 289].

Prerequisite: Stop the unit operation via the central controller.

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" [▸ 411].

INFORMATION

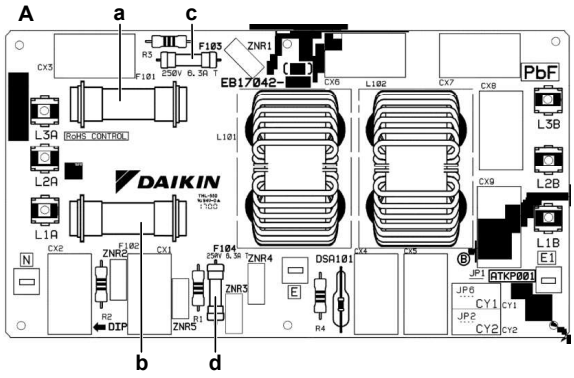
Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.11.1 Checking procedures" [▸ 289] of the noise filter PCB and continue with the next procedure.

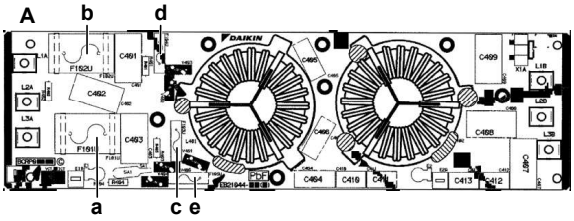
To check the fuses of the noise filter PCB

Prerequisite: First perform all earlier checks of the noise filter PCB, see "4.11.1 Checking procedures" [▸ 289].

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



A 5~12 HP units
a Fuse F101
b Fuse F102
c Fuse F103
d Fuse F104



A 14~20 HP units
a Fuse F101U
b Fuse F102U
c Fuse F103U
d Fuse F104U
e Fuse F105U

Blown fuse on the noise filter PCB?	Action
Yes	Replace the noise filter PCB, see "4.11.2 Repair procedures" [▸ 292].
No	Return to "4.11.1 Checking procedures" [▸ 289] 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.

4.11.2 Repair procedures

To correct the wiring from the main power supply terminal to the noise filter PCB

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Access the switch box, see "4.14 Plate work" [▸ 309].

2 Make sure that all wires are firmly and correctly connected, see "7.2 Wiring diagram" [▸ 411].

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 "4.11.1 Checking procedures" [▸ 289] of the noise filter PCB and continue with the next procedure.

To remove the noise filter PCB

Prerequisite: Stop the unit operation via the central controller.

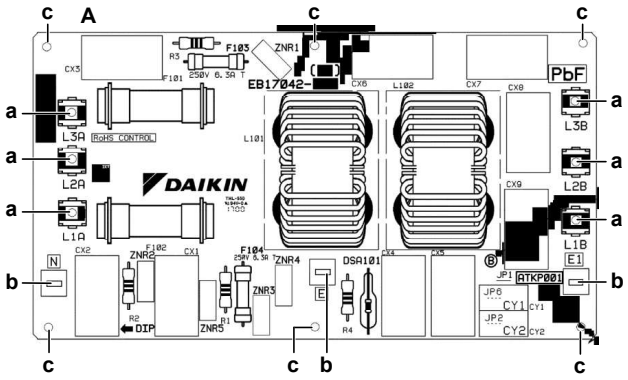
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

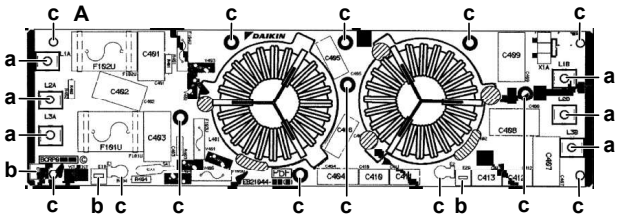
1 Access the switch box, see "4.14 Plate work" [▸ 309].

2 Loosen the screws and disconnect the wires from the wire terminals of the noise filter PCB.

3 Disconnect the Faston connectors from the noise filter PCB.



A 5~12 HP units
a Screw connection
b Faston connector
c PCB support



A 14~20 HP units
a Screw connection
b Faston connector
c PCB support

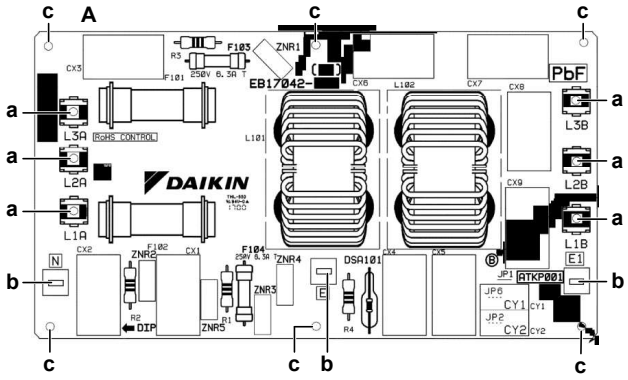
4 Carefully pull the PCB at the side and unlatch the PCB supports one by one using a small pair of pliers.

5 To install the new noise filter PCB, see "4.11.2 Repair procedures" [▸ 292].

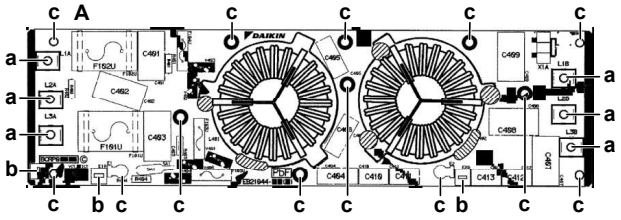
To install the noise filter PCB

1 Install the noise filter PCB on the correct location in the switch box.

2 Install the noise filter PCB on the PCB supports.



A 5~12 HP units
a Screw connection
b Faston connector
c PCB support



A 14~20 HP units
a Screw connection
b Faston connector
c PCB support

3 Connect the Faston connectors to the noise filter PCB.

4 Connect ALL wires to the screw connections of the noise filter PCB. Tighten the screws to fix the wires.

INFORMATION

Use the wiring diagram for correct installation of the wiring, see "7.2 Wiring diagram" [▸ 411].

5 Assemble the switch box, see "4.14 Plate work" [▸ 309].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.11.1 Checking procedures" [▸ 289] of the noise filter PCB and continue with the next procedure.

4.12 Oil return valve

4.12.1 Checking procedures

INFORMATION

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

To perform a mechanical check of the oil return valve

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Verify that the screw is firmly fixing the coil to the valve body.

2 Check if any damage or burst is present.

Is the oil return valve coil firmly fixed and not visually damaged?	Action
Yes	Perform an electrical check of the oil return valve, see "4.12.1 Checking procedures" [▸ 294].
No	Fix or replace the oil return valve coil, see "4.12.2 Repair procedures" [▸ 296].

To perform an electrical check of the oil return valve

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Unplug the oil return valve connector from the appropriate PCB.

2 Measure the resistance of the oil return valve coil.

Name	Symbol	Location (PCB)	Connector	Winding resistance (kΩ)
Accumulator oil return valve	Y10S	A1P	X12A	2.03~2.48
Oil return valve M1C	Y11S	A1P	X7A	1.98~2.42

Is the measured value correct?	Action
Yes	Continue with the next step.
No	Replace the oil return valve coil, see "4.12.2 Repair procedures" [▸ 296].

For the Y10S and Y11S valves

1 Turn ON the power using the respective circuit breaker.

2 Turn ON an indoor unit via remote controller or central controller.

3 Measure the voltage on the Y10S or Y11S valve connection on the PCB.

Result: The measured voltage MUST be 0 V AC. Y10S and Y11S are NOT energized when compressor is OFF and the pressure difference between the high and low pressure <0,3 MPa.

4 Connect the service monitoring tool to the unit and check the pressure difference between the high and low pressure. Once the pressure difference between the high and low pressure exceeds 0,3 MPa and the compressor is running, Y10S and Y11S are energized.

5 With the Y10S/Y11S valve connector connected to the PCB, measure the voltage on the Y10S/Y11S valve connection of the PCB.

Result: The measured voltage MUST be 230 V AC.

Are the measured voltages correct?	Action
Yes	Perform an operation check of the oil return valve, see "4.12.1 Checking procedures" [▶ 294].
No	Check the main PCB, see "4.10.1 Checking procedures" [▶ 280].

To perform an operation check of the oil return valve

1 Turn ON the power using the respective circuit breaker.

2 Turn ON an indoor unit via remote controller or central controller.

For the Y10S and Y11S valves

1 Connect the service monitoring tool to the unit and check the pressure difference between the high and low pressure. Once the pressure difference between the high and low pressure exceeds 0,3 MPa and the compressor is running, Y10S and Y11S are energized.

2 Check with a contact thermometer if the flow through the oil return valve corresponds with the flow shown in the flow diagram. (See "7.3 Piping diagram" [▶ 424]).

Is the flow correct?	Action
Yes	Oil return valve is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the body of the oil return valve, see "4.12.2 Repair procedures" [▶ 296].

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.

4.12.2 Repair procedures

To remove the oil return valve coil

Prerequisite: Stop the unit operation via the central controller.

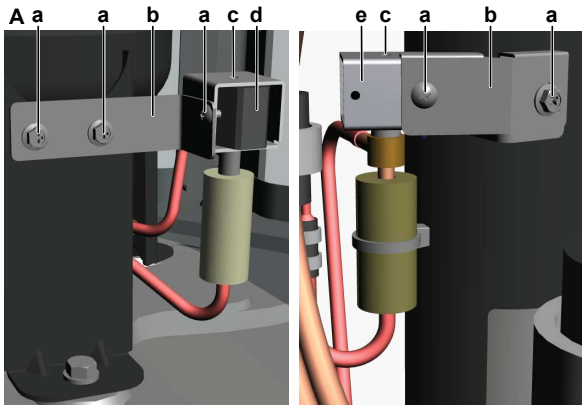
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▶ 309].

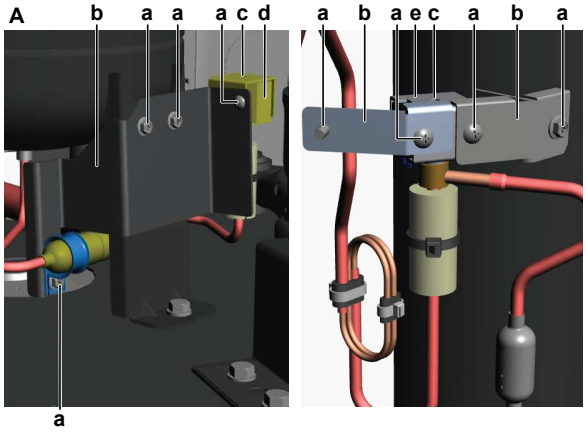
1 If needed, remove any parts to create more space for the removal of the oil return valve coil.

2 Remove the screws and remove the bracket. Keep for reuse.

3 Remove the screw and remove the oil return valve coil from the oil return valve body.



A 5~12 HP units
a Screw (bracket)
b Bracket
c Screw (coil)
d Y10S valve coil
e Y11S valve coil



A 14~20 HP units
a Screw (bracket)
b Bracket
c Screw (coil)
d Y10S valve coil
e Y11S valve coil

4 Cut all tie straps that fix the oil return valve coil harness.

5 Disconnect the oil return valve coil connector from the appropriate PCB.

6 To install the oil return valve coil, see "4.12.2 Repair procedures" [▸ 296].

To remove the oil return valve body

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

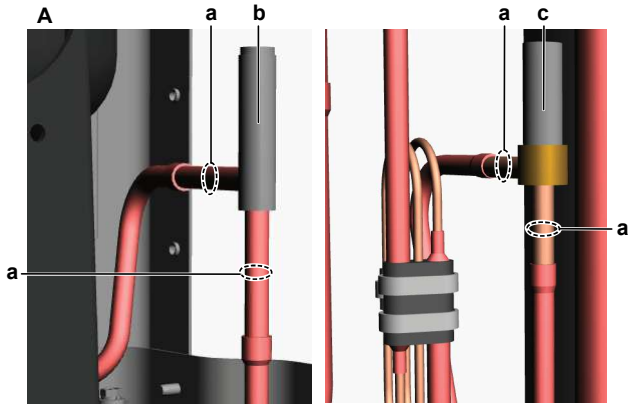
1 Remove the oil return valve coil from the oil return valve body, see "4.12.2 Repair procedures" [▸ 296].

2 Remove the insulation from the oil return valve pipes. Keep for reuse.

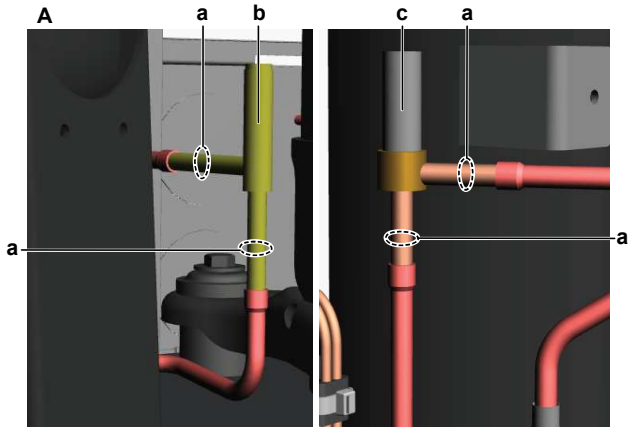
3 Using a valve magnet, open the oil return valve.

4 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

5 Wrap a wet rag around the components near the oil return valve pipes. Heat the brazing points of the oil return valve pipes using an oxygen acetylene torch and remove the oil return valve pipes from the refrigerant pipes using pliers.



A 5~12 HP units
a Oil return valve pipe
b Y10S oil return valve body
c Y11S oil return valve body



A 14~20 HP units
a Oil return valve pipe
b Y10S oil return valve body
c Y11S oil return valve body

6 Stop the nitrogen supply when the piping has cooled down.

7 Remove the oil return 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 oil return valve body, see "4.12.2 Repair procedures" [▶ 296].

To install the oil return valve body

1 Remove the plugs or caps from the refrigerant piping and make sure they are clean.

2 Remove the oil return valve coil from the spare part oil return valve body.

3 Install the oil return valve body in the correct location and correctly oriented. Insert the pipe ends in the pipe expansions.

4 Open the oil return valve using a valve magnet.

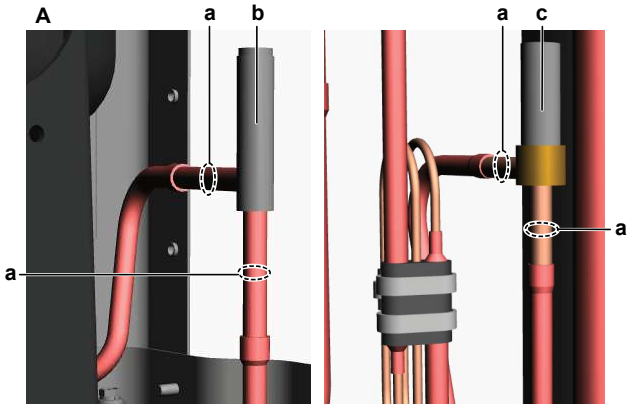
5 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

6 Wrap a wet rag around the oil return valve body and any other components near the oil return valve and solder the oil return valve pipes to the refrigerant pipes.

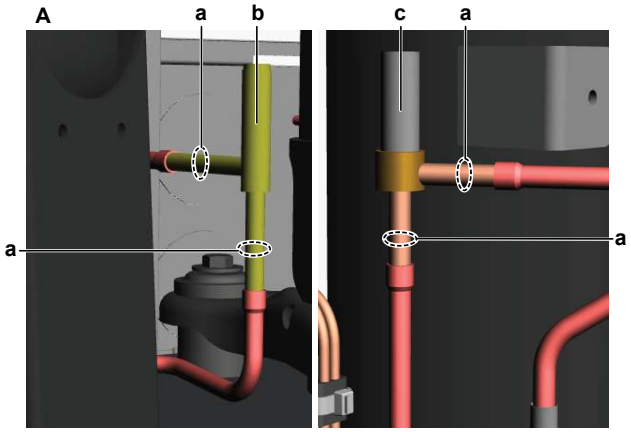
CAUTION

Overheating the valve will damage or destroy it.

7 After soldering is done, stop the nitrogen supply after the component has cooled-down.



A 5~12 HP units
a Oil return valve pipe
b Y10S oil return valve body
c Y11S oil return valve body



A 14~20 HP units
a Oil return valve pipe
b Y10S oil return valve body
c Y11S oil return valve body

8 Install the insulation in the original location on the oil return valve pipes.

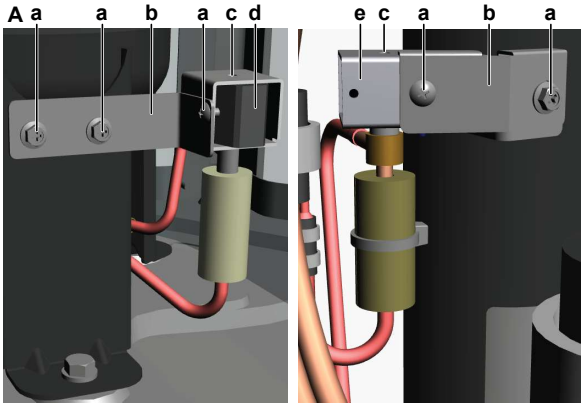
9 Install the oil return valve coil on the oil return valve body, see "4.12.2 Repair procedures" [▸ 296].

10 Perform a pressure test, see "5.2.1 Checking procedures" [▸ 392].

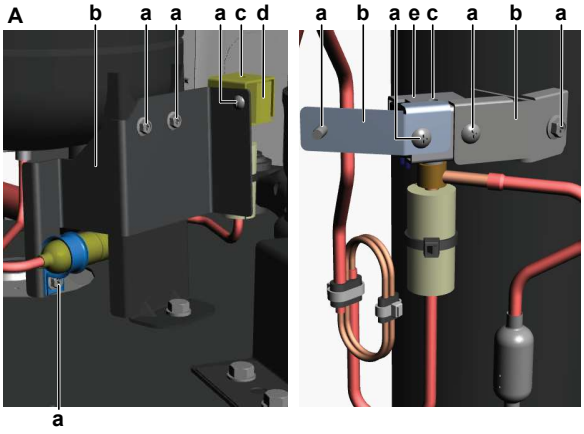
11 Add refrigerant to the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

To install the oil return valve coil

1 Install the oil return valve coil on the oil return valve body.



A 5~12 HP units
a Screw (bracket)
b Bracket
c Screw (coil)
d Y10S valve coil
e Y11S valve coil



A 14~20 HP units
a Screw (bracket)
b Bracket
c Screw (coil)
d Y10S valve coil
e Y11S valve coil

2 Install and tighten the screw to fix the oil return valve coil.

3 Install the bracket and fix it using the screws.

4 Route the oil return valve coil harness towards the appropriate PCB.

5 Connect the oil return valve coil connector to the 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 oil return valve coil harness using new tie straps.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.12.1 Checking procedures" [▶ 294] of the oil return valve and continue with the next procedure.

4.13 Outdoor unit fan motor

4.13.1 Single fan outdoor unit

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: First perform a power transistor check of the fan inverter PCB, see "4.7 Fan inverter PCB" [▸ 246]. If power transistor is OK, proceed as follows:

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 If propeller fan blade touches the bell mouth, check if the fan motor is correctly mounted on its base, see "Repair procedures" [▸ 303].

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 "Repair procedures" [▸ 303].
No	Perform a mechanical check of the DC fan motor assembly, see "Checking procedures" [▸ 301].

To perform a mechanical check of the DC fan motor assembly

Prerequisite: First perform a mechanical check of the propeller fan blade assembly, see "Checking procedures" [▸ 301].

1 Visually check:

- For any burnt-out part or wire. If found, replace the fan motor, see "Repair procedures" [▸ 303].
- That fan motor fixation bolts are correctly installed and fixed. Correct as needed.

2 Manually rotate the fan motor shaft. Check that it rotates smoothly.

3 Check the friction of the DC fan motor shaft bearing.

Is the DC fan motor shaft friction normal?	Action
Yes	Perform an electrical check of the DC fan motor assembly, see "Checking procedures" [▸ 301].
No	Replace the DC fan motor assembly, see "Repair procedures" [▸ 303].

To perform an electrical check of the DC fan motor assembly

1 First perform a mechanical check of the DC fan motor assembly, see "Checking procedures" [▸ 301].

INFORMATION

Check the DC 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 Cool/Heat master user interface.

4 Check the functioning of the outdoor unit fan.

Outdoor unit fan ...	Action
Rotates continuously (without interruption)	DC fan motor assembly is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
Does not rotate or rotates for a short time	Continue with the next step.

5 Stop the unit operation via the central controller.

6 Turn OFF the respective circuit breaker.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

7 Check that the DC fan motor connector X1A is properly connected to the PCB.

8 Unplug the DC fan motor connector and measure the resistance between the pins 1-2, 1-3, and 2-3 of the DC fan motor connector.

Result: All measurements MUST be 8.27 Ω±5% at 20°C.

INFORMATION

Make sure that the wiring between the DC fan motor connector and the connector on the PCB is properly connected and NOT damaged (check continuity), see "7.2 Wiring diagram" [▸ 411].

INFORMATION

Winding resistance values above are given for reference. You should NOT be reading a value in kΩ or a short-circuit. Make sure that the propeller fan blade does NOT rotate, as this could affect resistance measurements.

9 Set the Megger voltage to 500 V DC or 1000 V DC.

10 Measure the insulation resistance for the motor terminals. Measurements between each phase and fan motor body (e.g. axle) MUST be >1000 MΩ.

Are the measured resistance values correct?	Action
Yes	Perform a check of the fan inverter PCB, see "Checking procedures" [▸ 246].
No	Replace the DC fan motor, see "Repair procedures" [▸ 303].

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.

Repair procedures

To remove the propeller fan blade assembly

Prerequisite: Stop the unit operation via the central controller.

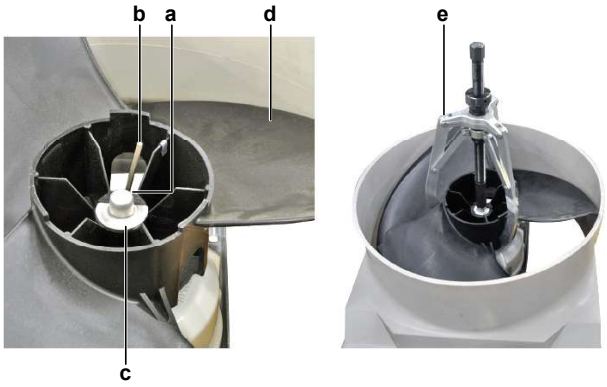
Prerequisite: Turn OFF the respective circuit breaker.

1 Remove the required plate work, see "4.14 Plate work" [▸ 309].

2 Loosen and remove the screw using an Allen key.

3 Remove the axle cover.

4 Pull the propeller fan blade from the fan motor axle.



a Screw
b Allen key
c Axle cover
d Propeller fan blade assembly
e Pulley remover

INFORMATION

Use a pulley remover if the propeller cannot be removed manually.

5 To install the propeller fan blade assembly, see "Repair procedures" [▸ 303].

To remove the DC fan motor assembly

1 Remove the propeller fan blade assembly from the DC fan motor assembly, see "Repair procedures" [▸ 303].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Disconnect the DC fan motor connector.

3 Unlock the ferrite bead.

4 Cut the tie strap.

5 Detach the DC fan motor cable.



a Fan motor cable
b Tie wrap
c Screw
d Fan motor

6 Remove the 4 screws that fix the DC fan motor assembly.

7 Remove the DC fan motor assembly from the unit.

8 To install the DC fan motor assembly, see "Repair procedures" [▸ 303].

To install the DC fan motor assembly

1 Install the DC fan motor assembly in the correct location.

2 Fix the DC fan motor assembly to the unit by tightening the screws.

3 Route the DC fan motor cable.

4 Attach the DC fan motor cable to the fan motor support bracket.

5 Install a new tie strap to fix the DC fan motor cable.

6 Connect the DC fan motor connector.

7 Lock the ferrite bead.

8 Install the propeller fan blade assembly, see "Repair procedures" [▸ 303].

To install the propeller fan blade assembly

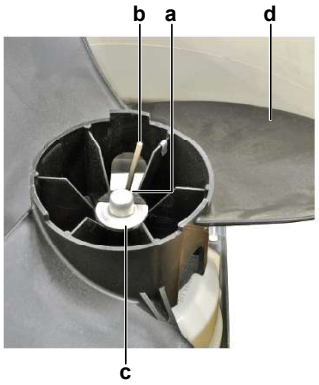
1 Install the propeller fan blade assembly on the DC fan motor assembly.

CAUTION

Do NOT install a damaged propeller fan blade assembly.

2 Install the axle cover.

3 Install and tighten the screw using an Allen key to fix the propeller fan blade assembly.



a Screw
b Allen key
c Axle cover
d Propeller fan blade assembly

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "Checking procedures" [▸ 301] of the outdoor unit fan motor and continue with the next procedure.

4.13.2 Double fan outdoor unit

INFORMATION

See "7.4 Component overview" [▸ 461] for the correct location of DC fan motors M1F and M2F.

Checking procedures

INFORMATION

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

To perform a mechanical check of the propeller fan blade assemblies

Prerequisite: First perform a power transistor check of the fan inverter PCB, see "4.7 Fan inverter PCB" [▸ 246]. If power transistor is OK, proceed as follows:

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 If propeller fan blade touches the bell mouth, check if the fan motor is correctly mounted on its base, see "Repair procedures" [▸ 307].

2 Check the state of the propeller fan blade assemblies for damage, deformations and cracks.

One or both propeller fan blade assemblies are damaged?	Action
Yes	Replace the damaged propeller fan blade assembly, see "Repair procedures" [▸ 307].

One or both propeller fan blade assemblies are damaged?	Action
No	Perform a mechanical check of the DC fan motor assembly, see "Checking procedures" [▸ 305].

To perform a mechanical check of the DC fan motor assembly

Prerequisite: First perform a mechanical check of the propeller fan blade assembly, see "Checking procedures" [▸ 305].

1 Visually check:
   - For any burnt-out part or wire. If found, replace the fan motor, see "Repair procedures" [▸ 307].
   - That fan motor fixation bolts are correctly installed and fixed. Correct as needed.

2 Manually rotate the fan motor shaft. Check that it rotates smoothly.

3 Check the friction of the DC fan motor shaft bearing.

Is the DC fan motor shaft friction normal?	Action
Yes	Perform an electrical check of the DC fan motor assembly, see "Checking procedures" [▸ 305].
No	Replace the DC fan motor assembly, see "Repair procedures" [▸ 307].

To perform an electrical check of the DC fan motor assembly

1 First perform a mechanical check of both DC fan motor assemblies, see "Checking procedures" [▸ 305].

INFORMATION

Check the DC 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 Cool/Heat master user interface.

4 Check the functioning of the outdoor unit fan.

Outdoor unit fan ...	Action
Rotates continuously (without interruption)	DC fan motor assembly is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
Does not rotate or rotates for a short time	Continue with the next step.

5 Stop the unit via the central controller.

6 Turn OFF the respective circuit breaker.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

7 Check that the DC fan motor connectors (X1A on A4P for M1F and X1A on A5P for M2F) are properly connected to the PCB.

8 Unplug the DC fan motor connectors X1A of both fans and measure the resistance between the pins 1–2, 1–3, and 2–3 of the DC fan motor connectors.

Result: All measurements MUST be 4.44°Ω±5% at 20°C.

INFORMATION

Make sure that the wiring between the DC fan motor connector and the connector on the PCB is properly connected and NOT damaged (check continuity), see "7.2 Wiring diagram" [▸ 411].

INFORMATION

Winding resistance values above are given for reference. You should NOT be reading a value in kΩ or a short-circuit. Make sure that the propeller fan blade does NOT rotate, as this could affect resistance measurements.

9 Set the Megger voltage to 500 V DC or 1000 V DC.

10 Measure the insulation resistance for the motor terminals. Measurements between each phase and fan motor body (e.g. axle) MUST be >1000 MΩ.

Are the measured resistance values correct?	Action
Yes	Perform a check of the fan inverter PCB, see "Checking procedures" [▸ 252].
No	Replace the DC fan motor assembly, see "Repair procedures" [▸ 307].

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.

Repair procedures

To remove the propeller fan blade assembly

Prerequisite: Stop the unit operation via the central controller.

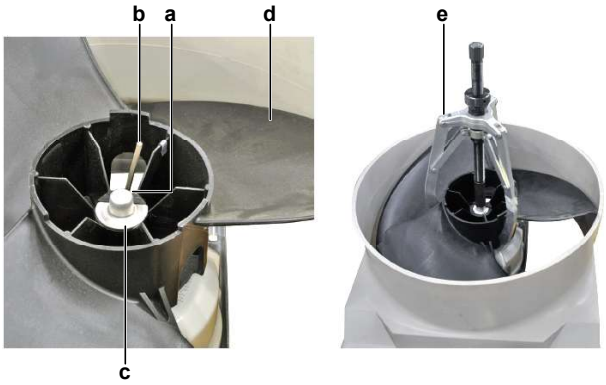
Prerequisite: Turn OFF the respective circuit breaker.

1 Remove the required plate work, see "4.14 Plate work" [▸ 309].

2 Loosen and remove the screw using an Allen key.

3 Remove the axle cover.

4 Pull the propeller fan blade from the fan motor axle.



a Screw
b Allen key
c Axle cover
d Propeller fan blade assembly
e Pulley remover

INFORMATION

Use a pulley remover if the propeller cannot be removed manually.

5 To install the propeller fan blade assembly, see "Repair procedures" [▸ 307].

To remove the DC fan motor assembly

1 Remove the propeller fan blade assembly from the DC fan motor assembly, see "Repair procedures" [▸ 307].

2 Disconnect the DC fan motor connector.

3 Unlock the ferrite bead.

4 Cut the tie strap.

5 Detach the DC fan motor cable.



a Fan motor cable
b Tie wrap
c Screw
d Fan motor

6 Remove the 4 screws that fix the DC fan motor assembly.

7 Remove the DC fan motor assembly from the unit.

8 To install the DC fan motor assembly, see "Repair procedures" [▶ 307].

To install the DC fan motor assembly

1 Install the DC fan motor assembly in the correct location.
2 Install and tighten the 4 screws.
3 Route the DC fan motor cable.
4 Attach the DC fan motor cable to the fan motor support bracket.
5 Install a new tie strap to fix the DC fan motor cable.
6 Connect the DC fan motor connector.
7 Lock the ferrite bead.
8 Install the propeller fan blade assembly, see "Repair procedures" [▶ 307].

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 the axle cover.
3 Install and tighten the screw using an Allen key to fix the propeller fan blade assembly.



a Screw
b Allen key
c Axle cover
d Propeller fan blade assembly

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "Checking procedures" [▶ 305] of the outdoor unit fan motor and continue with the next procedure.

4.14 Plate work

4.14.1 To remove the plate work on single fan units

Prerequisite: Stop the unit operation via the central controller.

1 Turn OFF the respective circuit breaker.

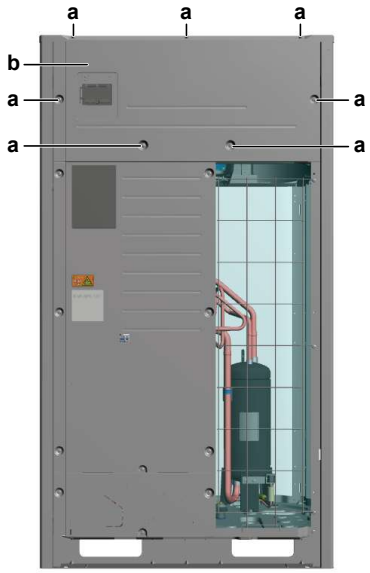
To remove the service plate



a Screw
b Service plate

1. Loosen and remove the 2 screws that fix the service plate assembly.
2. Remove the service plate assembly from the unit.

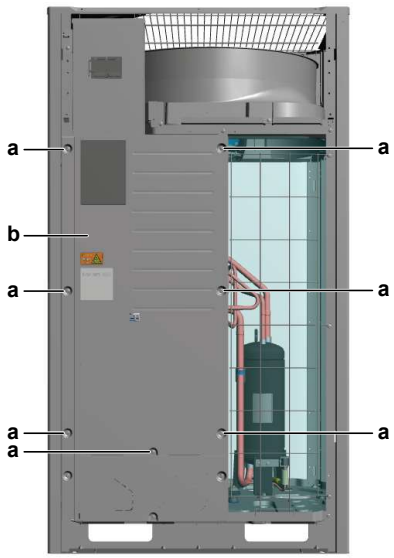
To remove the upper front plate



a Screw
b Upper front plate

1. Loosen and remove the 7 screws that fix the upper front plate assembly.
2. Lift the upper front plate assembly and remove it from the unit.

To remove the front plate



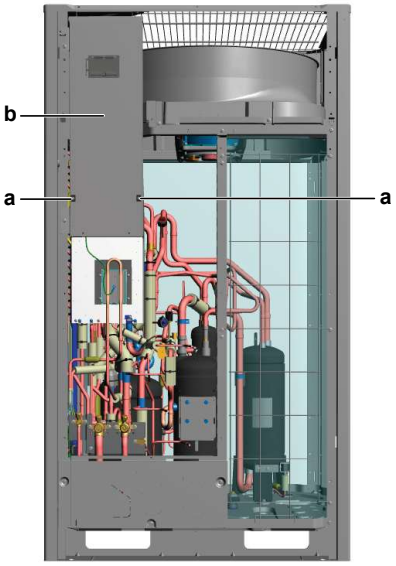
a Screw
b Front plate

1. Loosen and remove the 7 screws that fix the front plate assembly.
2. Lift the front plate assembly and remove it from the unit.

To remove the switch box cover

DANGER: RISK OF ELECTROCUTION

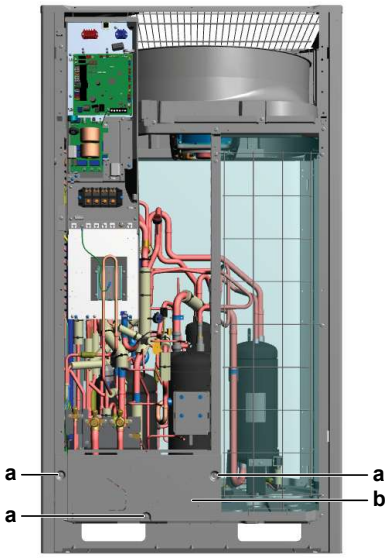
Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.



a Screw
b Switch box cover

1. Loosen and remove the 2 screws that fix the switchbox cover.
2. Remove the switchbox cover from the unit.

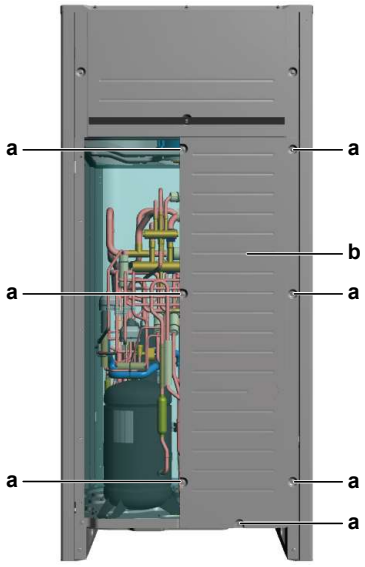
To remove the lower front plate



a Screw
b Lower front plate

1. Loosen and remove the 3 screws that fix the lower front plate assembly.
2. Lift the lower front plate assembly and remove it from the unit.

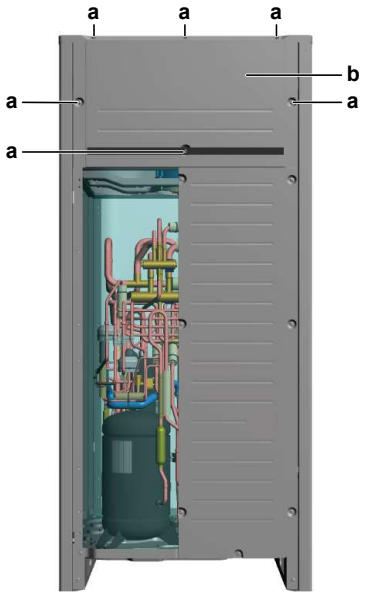
To remove the side plate



a Screw
b Side plate

1. Loosen and remove the 7 screws that fix the side plate assembly.
2. Lift the side plate assembly and remove it from the unit.

To remove the upper side plate

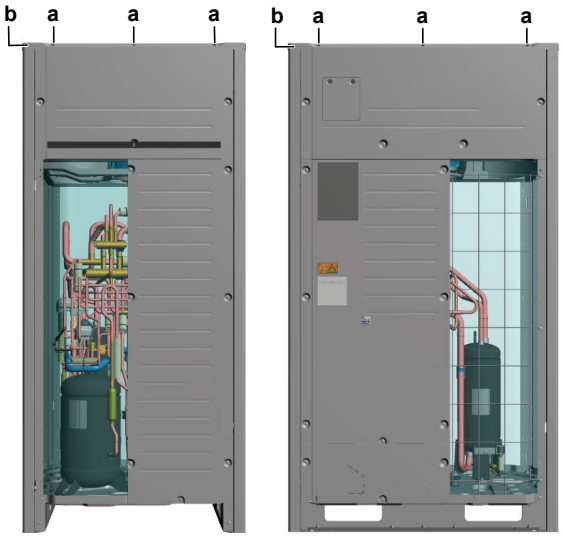


a Screw
b Upper side plate

1 Loosen and remove the 6 screws that fix the upper side plate assembly.

2 Lift the upper side plate assembly and remove it from the unit.

To remove the top plate



a Screw
b Top plate

1 Loosen and remove the 12 screws that fix the top plate assembly.

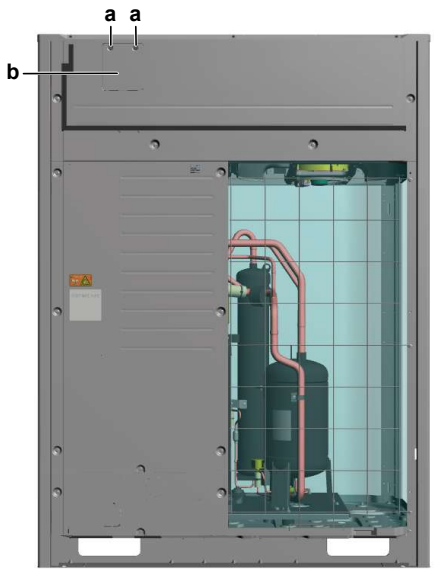
2 Remove the top plate from the unit.

4.14.2 To remove the plate work on double fan units

Prerequisite: Stop the unit operation via the central controller.

1 Turn OFF the respective circuit breaker.

To remove the service plate

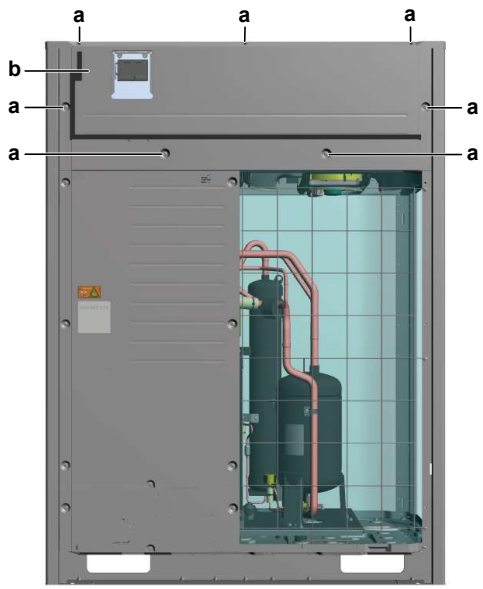


a Screw
b Service plate

1 Loosen and remove the 2 screws that fix the service plate assembly.

2 Remove the service plate assembly from the unit.

To remove the upper front plate

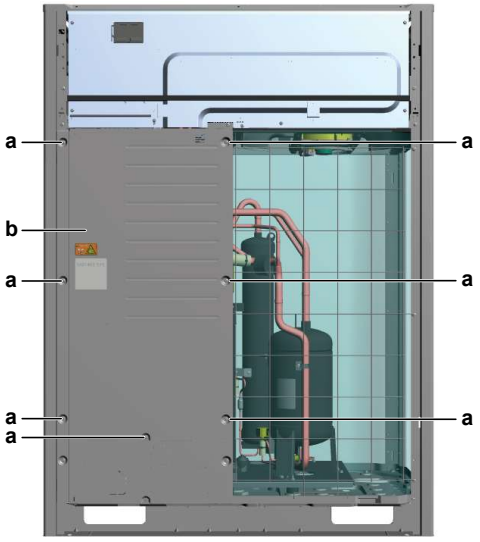


a Screw
b Upper front plate

1 Loosen and remove the 7 screws that fix the upper front plate assembly.

2 Lift the upper front plate assembly and remove it from the unit.

To remove the front plate



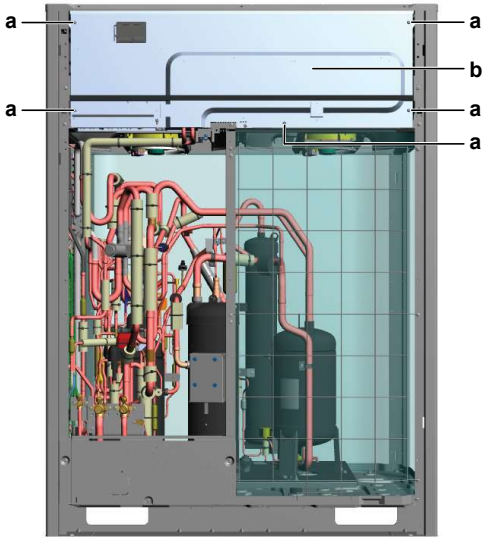
a Screw
b Front plate

1. Loosen and remove the 7 screws that fix the front plate assembly.
2. Lift the front plate assembly and remove it from the unit.

To remove the switch box cover

DANGER: RISK OF ELECTROCUTION

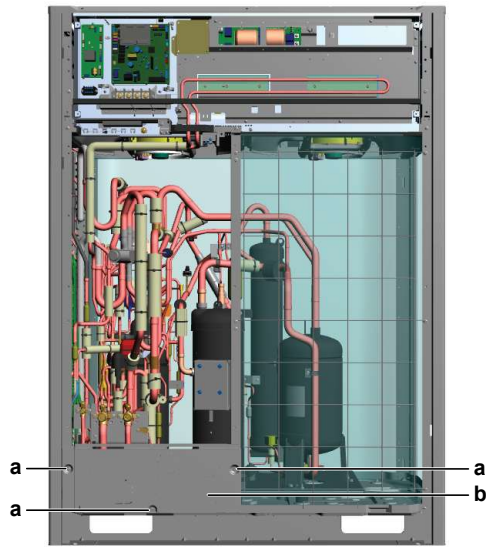
Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.



a Screw
b Switchbox cover

1. Loosen and remove the 5 screws that fix the switchbox cover.
2. Remove the switchbox cover from the unit.

To remove the lower front plate

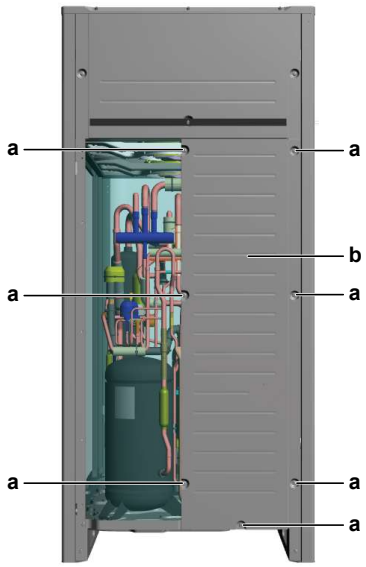


1 Screw
3 Lower front plate

1 Loosen and remove the 3 screws that fix the lower front plate assembly.

2 Lift the lower front plate assembly and remove it from the unit.

To remove the side plate

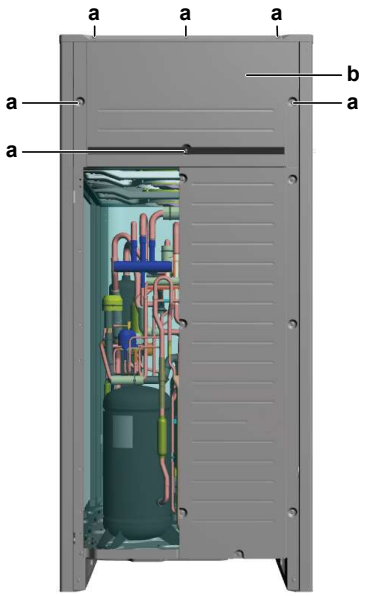


a Screw
b Side plate

1 Loosen and remove the 7 screws that fix the side plate assembly.

2 Lift the side plate assembly and remove it from the unit.

To remove the upper side plate

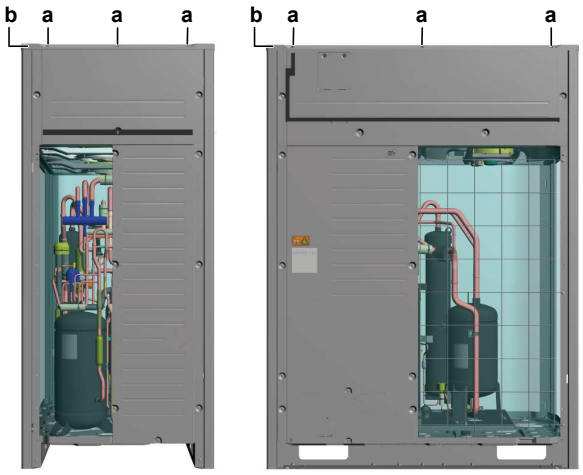


a Screw
b Upper side plate

1 Loosen and remove the 6 screws that fix the upper side plate assembly.

2 Lift the upper side plate assembly and remove it from the unit.

To remove the top plate



a Screw
b Top plate

1 Loosen and remove the 12 screws that fix the top plate assembly.

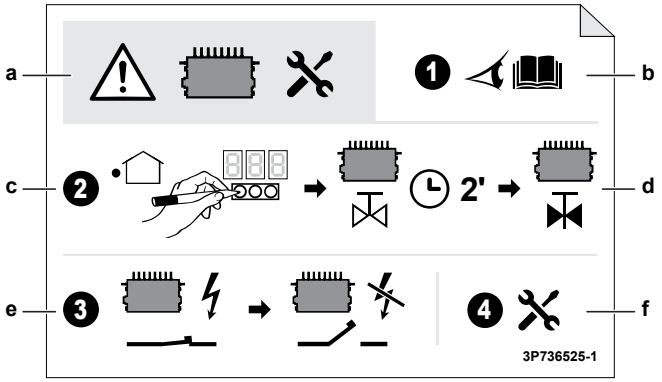
2 Remove the top plate from the unit.

4.14.3 To remove the plate work on the safety valve box

Before removing any plate work of the SV box (for checking, maintenance or repair purposes), the following steps MUST be performed:

WARNING

Never power off the unit for maintenance and service before the shut-off valves are closed.



a Caution for maintenance and servicing of SV unit
b Consult the installation manual or service manual
c Apply the field setting on the outdoor unit
d Wait for two minutes to allow the system to close the valves
e Turn off the system power
f Perform maintenance and servicing on the SV unit

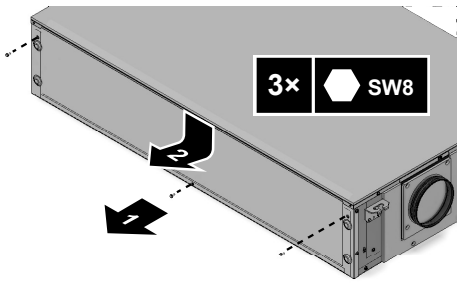
1. Consult the installation manual of the SV box.
2. At the outdoor unit, set the field setting 2-45-0 to 1 (default = 0).
3. Wait for at least 2 minutes to enable control to close ALL safety valves.
4. Stop the unit operation via the user interface.
5. Turn OFF the respective circuit breaker.

Once the appropriate checking, maintenance or repair has been finished, and ALL plate work is correctly installed on the SV box, perform the following steps:

1. Turn ON the power to the SV box.
2. At the outdoor unit set the field setting 2-45-1 back to 0.
3. Wait for at least 2 minutes before restarting the system.

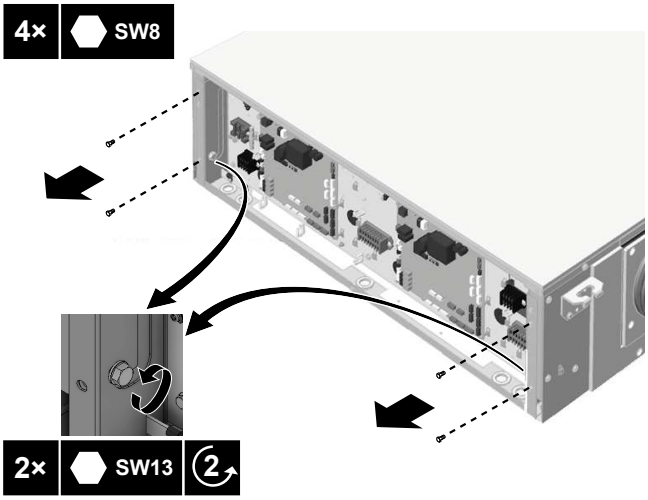
To remove the switch box cover

1. Loosen and remove the screws that fix the switchbox cover.
2. Remove the switchbox cover to access the PCB.

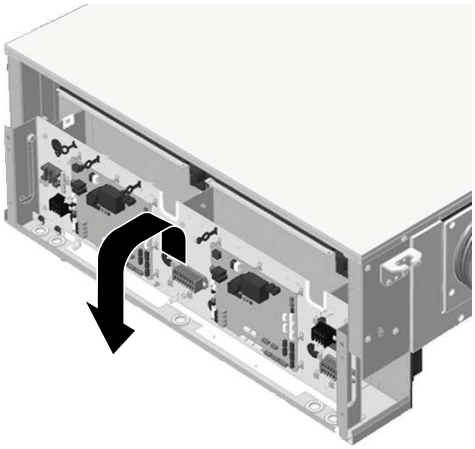


To lower the switch box

1. Remove the switch box cover.
2. Remove the 4 screws.
3. Store the screws in a safe place.
4. Loosen the M8 bolts 2 turns without removing them.



5 Lift the switch box, pull it forward and lower it.



4.14.4 To access the switch box on single fan units

- TO ACCESS THE NOISE FILTER PCB, FAN INVERTER PCB AND REACTOR

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

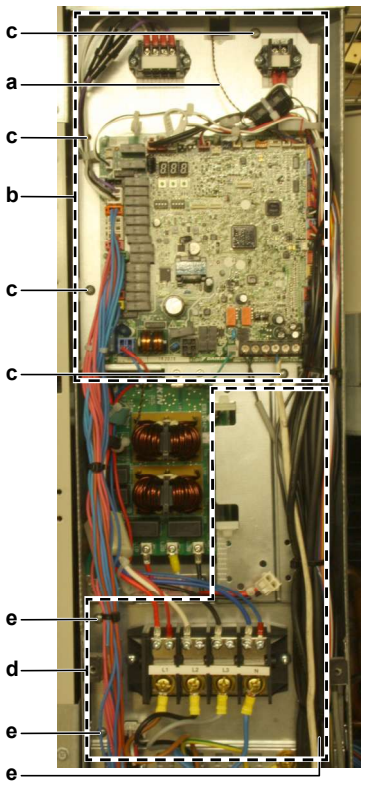
1 Remove the required plate work, see "4.14 Plate work" [▸ 309].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Disconnect the current sensor connector from the main PCB.

3 Route the current sensor wiring harness through the hole at the top of the main PCB mounting plate.



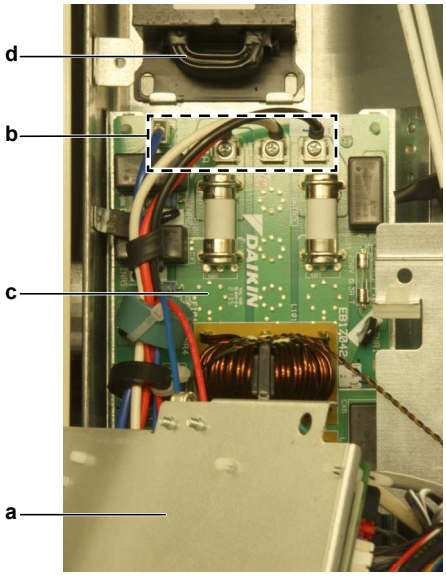
a Current sensor wiring harness
b Main PCB
c Screw (main PCB assy)
d Power supply terminal assembly
e Screw (power supply terminal assy)

4 Remove the 4 screws that fix the main PCB assembly.

5 Remove the 3 screws that fix the power supply terminal assembly.

6 Slightly tilt the main PCB assembly to access the noise filter PCB while ALL wiring is still connected.

7 Remove the power input wiring from the noise filter PCB.



a Main PCB
b Power input wiring
c Noise filter PCB
d Reactor

8 Completely tilt the main PCB assembly to get full access to the noise filter PCB and the reactor.

- TO ACCESS THE INVERTER PCB

Prerequisite: Stop the unit operation via the central controller.

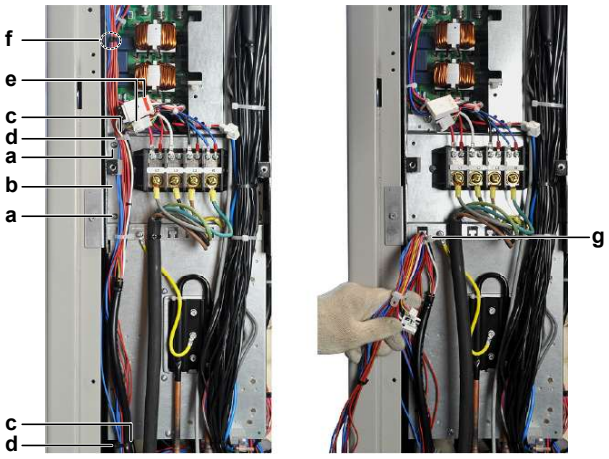
Prerequisite: Turn OFF the respective circuit breaker.

1 Remove the required plate work, see "4.14 Plate work" [▸ 309].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Loosen and remove the screws that fix the power terminal assembly.



a Screw (power terminal assy)
b Power terminal assembly
c Screw (cable clamp)
d Cable clamp
e Connectors X1A and X2A
f Wiring
g Tie wrap

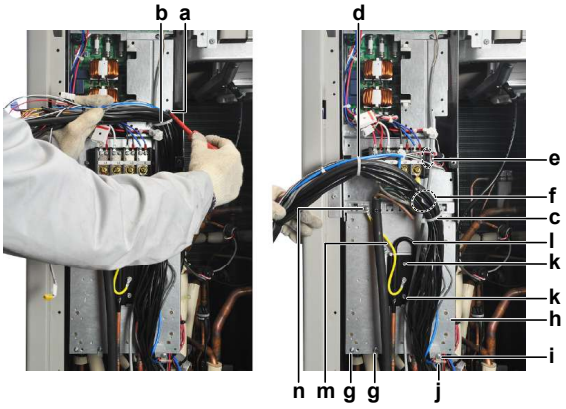
3 Loosen and remove the 2 screws that fix the cable clamps.

4 Unplug the fan connectors X1A and X2A.

5 Unplug the wiring from the main PCB.

6 Detach the tie wrap.

7 Loosen and remove the screw that fixes the cable clamp.



a Screw (cable clamp)
b Cable clamp
c Tie wrap
d Tie wrap
e Cables
h Inverter PCB assembly
i Screw (thermistor clamp)
j Thermistor clamp
k Screw (refrigerant liquid pipe)
l Refrigerant liquid pipe

f Cables
g Screw (inverter PCB assy)
m Ground wire
n Screw (ground wire)

8 Detach the tie wrap.

9 Cut the tie wraps on the cable harness.

10 Separate the cables.

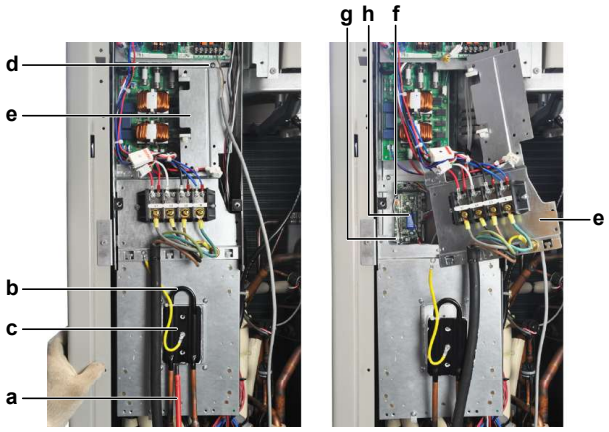
11 Loosen and remove the 2 screws that fix the inverter PCB assembly.

12 Loosen and remove the screw that fixes the thermistor clamp.

13 Loosen and remove the 2 screws that fix the refrigerant liquid pipe.

14 Loosen and remove the screw that fixes the ground wire.

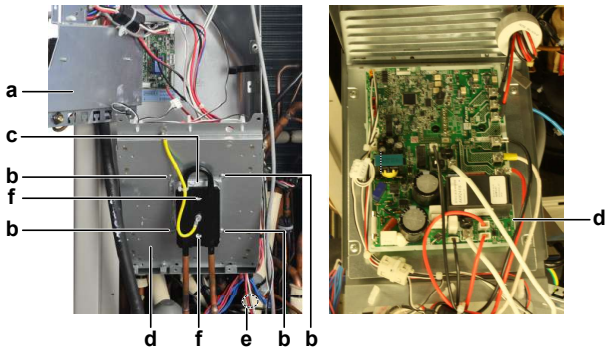
15 Using a flat screwdriver, separate the refrigerant liquid pipe from the heat sink.



a Flat screwdriver
b Refrigerant liquid pipe
c Heat sink
d Screw
e Power terminal assembly
f Connector X3A
g Connector X5A
h Fan inverter PCB

16 Loosen and remove the screw that fixes the power terminal assembly.

17 Move the power terminal assembly to the right.



a Power terminal assembly
b Screw (heat sink)
c Heat sink
d Inverter PCB
e Compressor cable
f Screw (heat sink element)

18 Disconnect connectors X3A and X5A from the fan inverter PCB.

19 Turn the power terminal assembly to the left.

20 Remove the 4 screws that fix the heat sink.

21 Lift and slightly tilt the inverter PCB assembly, guide the compressor cable into the switch box.

22 Put the inverter PCB assembly in horizontal position to access the inverter PCB.

4.14.5 To access the switch box on double fan units

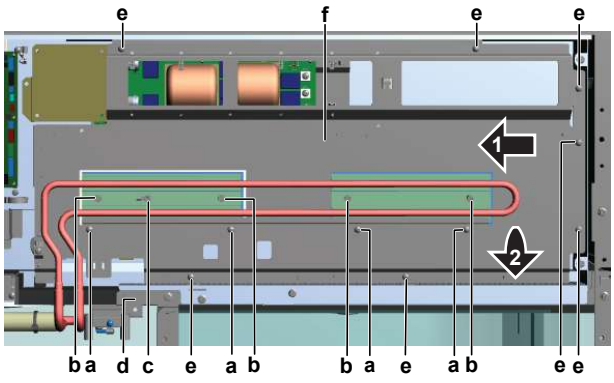
Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Remove the required plate work, see "4.14 Plate work" [▸ 309].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].



a Screw (do NOT loosen)
b Screw (liquid cooling pipe heat sink)
c Short screw (ground wire)
d Screw (thermistor mounting bracket)
e Screw (inverter mounting plate)
f Inverter mounting plate

2 Do NOT loosen the screws that fix the inverter PCB heat sinks at this step. These screws ONLY need to be removed when replacing an inverter PCB.

3 Loosen and remove the 4 screws that fix the liquid cooling pipe heat sinks.

4 Loosen and remove the short screw that fixes the grounding wire to the liquid cooling pipe heat sink.

5 Loosen and remove the screw that fixes the thermistor R1T mounting bracket.

6 Using a screwdriver, carefully separate both liquid cooling pipe heat sinks from the inverter PCB heat sinks.

7 Loosen and remove the screws that fix the inverter mounting plate.

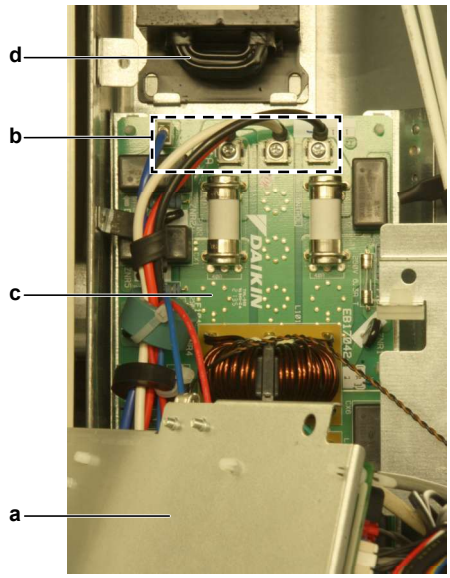
8 Carefully pull the inverter mounting plate to the front and tilt it. Pay attention to the liquid cooling piping.

9 Disconnect the necessary wiring to have access to noise filter PCB, the reactor and - on the rear side of the inverter mounting plate - the inverter PCB and fan inverter PCB.

4.14.6 To assemble the switch box on single fan units

- TO ASSEMBLE THE SWITCH BOX - NOISE FILTER PCB, FAN INVERTER PCB AND REACTOR

1 Carefully bring the main PCB assembly to the correct position and connect the power input wiring to the noise filter PCB.



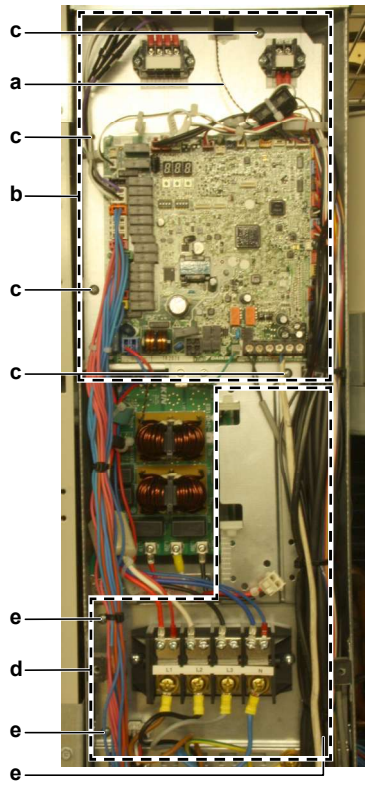
a Main PCB
b Power input wiring
c Noise filter PCB
d Reactor

2 Route the current sensor wiring harness through the hole at the top of the main PCB mounting plate, towards the main PCB.

3 Install the main PCB assembly and power supply terminal assembly in the correct location.

4 Install and tighten the 3 screws to fix the power supply terminal assembly.

5 Install and tighten the 4 screws to fix the main PCB assembly.



a Current sensor wiring harness
b Main PCB
c Screw (main PCB assy)

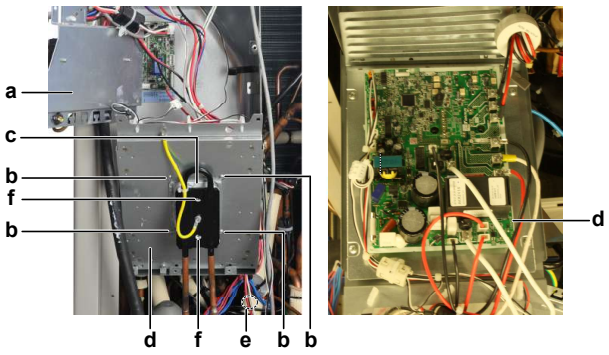
d Power supply terminal assembly
e Screw (power supply terminal assy)

6 Connect the current sensor connector to the main PCB.

7 Install the required plate work, see "4.14 Plate work" [▶ 309].

- TO ASSEMBLE THE SWITCH BOX - INVERTER PCB

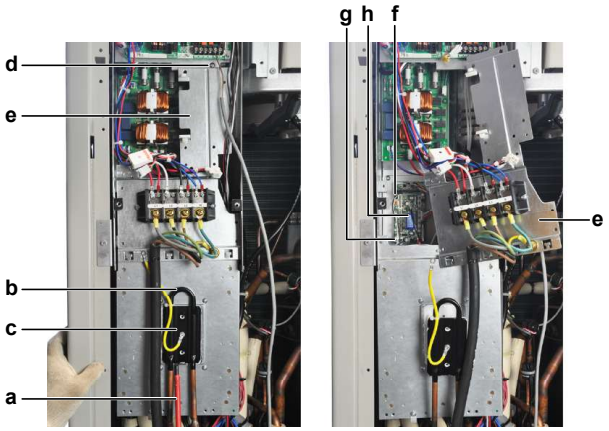
1 Put the inverter PCB assembly in vertical position.



a Power terminal assembly
b Screw (heat sink)
c Heat sink
d Inverter PCB
e Compressor cable
f Screw (heat sink element)

2 Install the 4 screws that fix the heat sink.

3 Turn the power terminal assembly to the right.



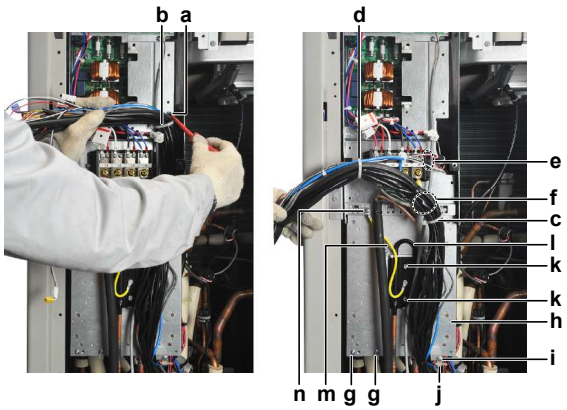
a Flat screwdriver
b Refrigerant liquid pipe
c Heat sink
d Screw
e Power terminal assembly
f Connector X3A
g Connector X5A
h Fan inverter PCB

4 Connect connectors X3A and X5A to the fan inverter PCB.

5 Move the power terminal assembly to the left.

6 Install the screw to fix the power terminal assembly.

7 Install the refrigerant liquid pipe on the heat sink.



a	Screw (cable clamp)	**h**	Inverter PCB assembly
b	Cable clamp	**i**	Screw (thermistor clamp)
c	Tie wrap	**j**	Thermistor clamp
d	Tie wrap	**k**	Screw (refrigerant liquid pipe)
e	Cables	**l**	Refrigerant liquid pipe
f	Cables	**m**	Ground wire
g	Screw (inverter PCB assy)	**n**	Screw (ground wire)

8 Install the screw to fix the ground wire.

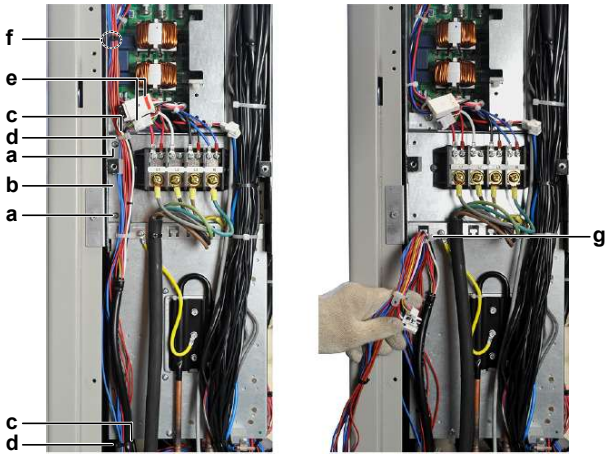
9 Install the 2 screws to fix the refrigerant liquid pipe.

10 Install the screw to fix the thermistor clamp.

11 Install the 2 screws to fix the inverter PCB assembly.

12 Tie the cables together with tie wraps.

13 Install the screw to fix the cable clamp.



a	Screw (power terminal assy)
b	Power terminal assembly
c	Screw (cable clamp)
d	Cable clamp
e	Connectors X1A and X2A
f	Wiring
g	Tie wrap

14 Install the tie wrap.

15 Connect the wiring to the main PCB.

16 Connect the fan connectors X1A and X2A.

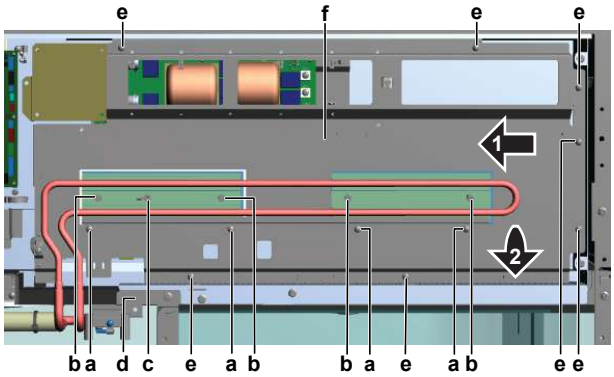
17 Install the 2 screws to fix the cable clamps.

18 Install the screws to fix the power terminal assembly.

19 Install the required plate work, see "4.14 Plate work" [▶ 309].

4.14.7 To assemble the switch box on double fan units

1. Carefully install the inverter mounting plate in the correct location. Pay attention to the liquid cooling piping.
2. Install and tighten the screws that fix the inverter mounting plate.



a Screw (do NOT loosen)
b Screw (liquid cooling pipe heat sink)
c Short screw (ground wire)
d Screw (thermistor mounting bracket)
e Screw (inverter mounting plate)
f Inverter mounting plate

3. Install the liquid cooling pipe heat sinks in the correct location on the inverter PCB heat sinks.
4. Install and tighten the 4 screws to fix the liquid cooling pipe heat sinks.
5. Install and tighten the short screw to fix the ground wire to the liquid cooling pipe heat sink.
6. Install the thermistor R1T mounting bracket in the correct location.
7. Install and tighten the screw to fix the thermistor mounting bracket.
8. Install the required plate work, see "4.14 Plate work" [▸ 309].

4.15 Reactor

4.15.1 Checking procedures

To perform an electrical check of the reactor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1. Remove the required plate work, see "4.14 Plate work" [▸ 309].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2. Access the switch box, see "4.14 Plate work" [▸ 309].
3. Visually check the reactor for any damage or burnt-out components. If any damage is found, replace the reactor, see "4.15.2 Repair procedures" [▸ 328].
4. Check the connections of the reactor on the inverter PCB and check continuity of the wires, see "7.2 Wiring diagram" [▸ 411].
5. Loosen the screws and disconnect the wiring from the reactor.

6 Using a megger device of 500 V DC, check the insulation resistance. Make sure there is no earth leakage.

Is the measured insulation resistance correct?	Action
Yes	Continue with the next step.
No	Replace the reactor, see "4.15.2 Repair procedures" [▸ 328].

7 Measure the inductance of the reactor using an LCR meter.

Result: The inductance MUST be:

Unit	Measured inductance
5~12 HP	0.40~0.60 mH
14~20 HP	0.224~0.336 mH

Is the inductance measurement correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next step.
No	Replace the reactor, see "4.15.2 Repair procedures" [▸ 328].

4.15.2 Repair procedures

To remove the reactor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

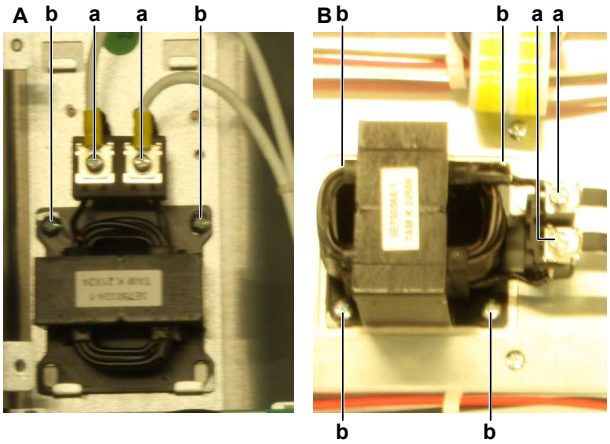
1 Remove the required plate work, see "4.14 Plate work" [▸ 309].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Access the switch box, see "4.14 Plate work" [▸ 309].

3 Remove the screws and disconnect the wires from the reactor.



A 5~12 HP units
B 14~20 HP units

a Screw (wiring)
b Screw (reactor)

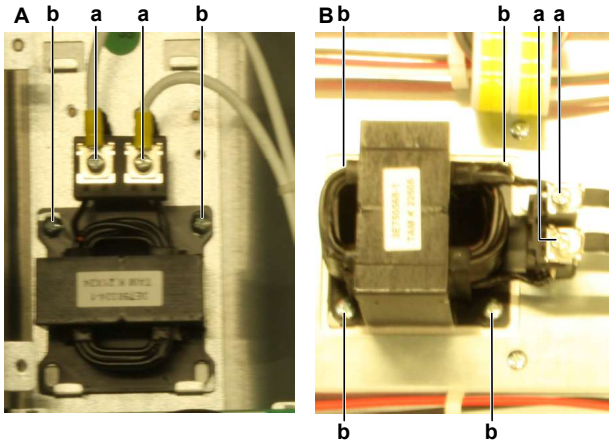
4 Remove the screws that fix the reactor to the switch box.

5 To install the reactor, see "4.15.2 Repair procedures" [▸ 328].

To install the reactor

1 Install the reactor on the correct location in the switch box.

2 Install the screws that fix the reactor to the switch box.



A 5~12 HP units
B 14~20 HP units
a Screw (wiring)
b Screw (reactor)

3 Connect the wiring to the reactor.

4 Install and tighten the screws to fix the reactor wiring.

5 Assemble the switch box, see "4.14 Plate work" [▸ 309].

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 Refrigerant high pressure sensor

4.16.1 Checking procedures

To perform an electrical check of the refrigerant pressure sensor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Connect a pressure gauge to the high pressure service port.

INFORMATION

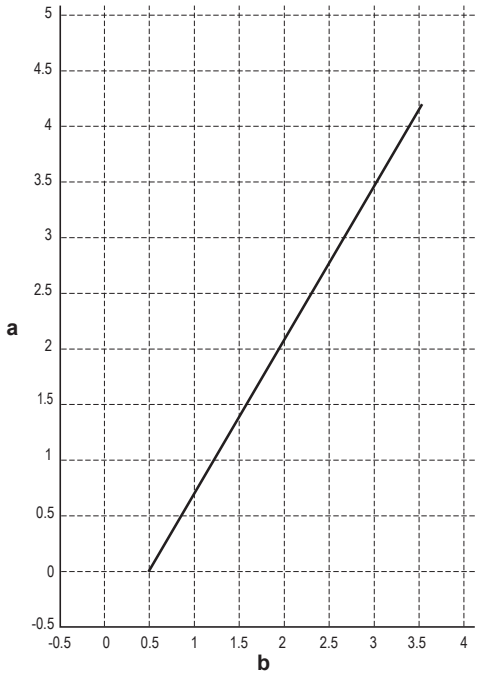
When the unit is operating in heating mode, the high pressure port is the gas service port. When the unit is operating in cooling (defrost) mode, the high pressure port is the liquid service port.

2 Turn ON the power of the unit.

3 Start the unit operation and let it operate for a while in stable conditions.

4 Read the pressure from the pressure gauge.

5 Using the graphic below, determine the expected sensor output voltage based on the pressure obtained in the previous step.



a Detected pressure (MPa)
b Output voltage (V)

V (DC)	Detected pressure MPa
0.5	0.01
0.6	0.15
0.7	0.29
0.8	0.42
0.9	0.56
1.0	0.70
1.1	0.84
1.2	0.98
1.3	1.11
1.4	1.25
1.5	1.39
1.6	1.53
1.7	1.67
1.8	1.80
1.9	1.94
2.0	2.08
2.1	2.22
2.2	2.36

V (DC)	Detected pressure MPa
2.3	2.49
2.4	2.63
2.5	2.77
2.6	2.91
2.7	3.05
2.8	3.18
2.9	3.32
3.0	3.46
3.1	3.60
3.2	3.74
3.3	3.87
3.4	4.01
3.5	4.15
3.6	4.29

6 Measure the voltage on X32A: pins 2–3 (= 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 the unit or use field settings mode 1 (see "7.9 Field settings" [▸ 489]) 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 appropriate 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 X32A and measure the voltage (power supply) between pins 1–3 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 "4.16.2 Repair procedures" [▸ 332].
No	Perform a check of the main PCB, see "4.10 Main PCB" [▸ 280].

4.16.2 Repair procedures

To remove the refrigerant pressure sensor

Prerequisite: Stop the unit operation via the central controller.

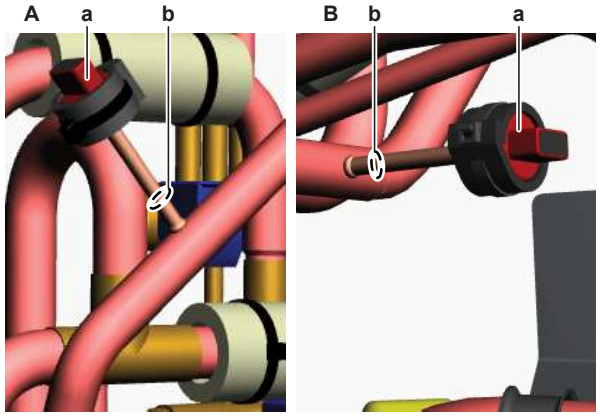
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

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 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 5~12 HP units
B 14~20 HP units
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.

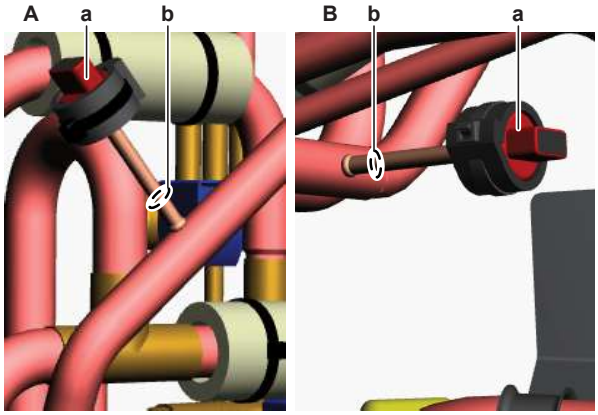
7. Install a plug or cap on the refrigerant piping to avoid dirt or impurities from entering the piping.
8. To install the refrigerant pressure sensor, see "4.16.2 Repair procedures" [▸ 332].

To install the refrigerant pressure sensor

1. Remove the plug or cap from the refrigerant piping and make sure it is clean.
2. Install the refrigerant pressure sensor in the correct location.

3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

4 Wrap a wet rag around the refrigerant pressure sensor and any other components near the pressure sensor and solder the refrigerant pressure sensor pipe to the refrigerant pipe.



A 5~12 HP units
B 14~20 HP units
a Refrigerant pressure sensor
b Refrigerant pressure sensor pipe

CAUTION

Overheating the pressure sensor will damage or destroy it.

5 After soldering 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" [▸ 392].

10 Add refrigerant to the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

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 Refrigerant low pressure sensor

4.17.1 Checking procedures

To perform an electrical check of the refrigerant pressure sensor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

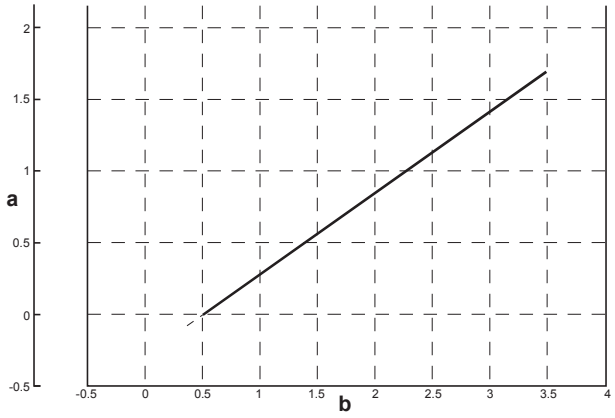
1 Connect a pressure gauge to the refrigerant charge port.

2 Turn ON the power of the unit.

3 Start the unit operation and let it operate for a while in stable conditions.

4 Read the pressure on the pressure gauge.

5 Using the graphic below, determine the expected sensor output voltage based on the pressure obtained in the previous step.



a Detected pressure (MPa)
b Output voltage (V)

V (DC)	Detected pressure (MPa)
0.3	–0.12
0.4	–0.07
0.5	–0.01
0.6	0.05
0.7	0.10
0.8	0.16
0.9	0.22
1.0	0.28
1.1	0.33
1.2	0.39
1.3	0.45
1.4	0.50
1.5	0.56
1.6	0.62
1.7	0.67
1.8	0.73
1.9	0.79
2.0	0.85
2.1	0.90
2.2	0.96
2.3	1.02
2.4	1.07
2.5	1.13

V (DC)	Detected pressure (MPa)
2.6	1.19
2.7	1.24
2.8	1.30
2.9	1.36
3.0	1.42
3.1	1.47
3.2	1.53
3.3	1.59
3.4	1.64
3.5	1.70

INFORMATION

The refrigerant pressure sensor connector MUST be plugged into the appropriate PCB.

6 Measure the voltage on X31A: pins 2–3 (= refrigerant pressure output signal) on the main PCB.

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 the unit or use field settings mode 1-43 (see "7.9 Field settings" [▶ 489]) to monitor the low 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 X31A and measure the voltage (power supply) between pins 1–3 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 "4.17.2 Repair procedures" [▶ 336].
No	Perform a check of the main PCB, see "4.10 Main PCB" [▶ 280].

4.17.2 Repair procedures

To remove the refrigerant pressure sensor

Prerequisite: Stop the unit operation via the central controller.

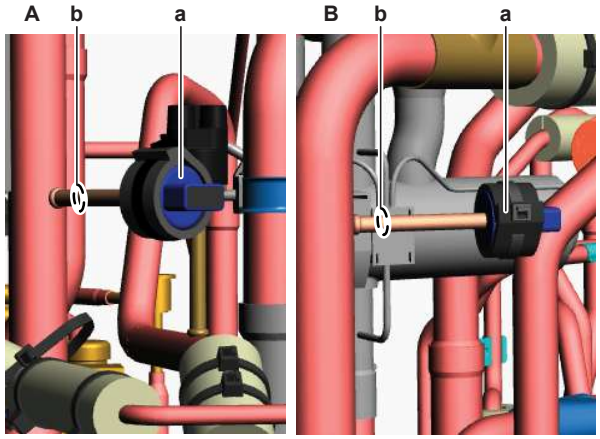
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

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 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 5~12 HP units
B 14~20 HP units
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.

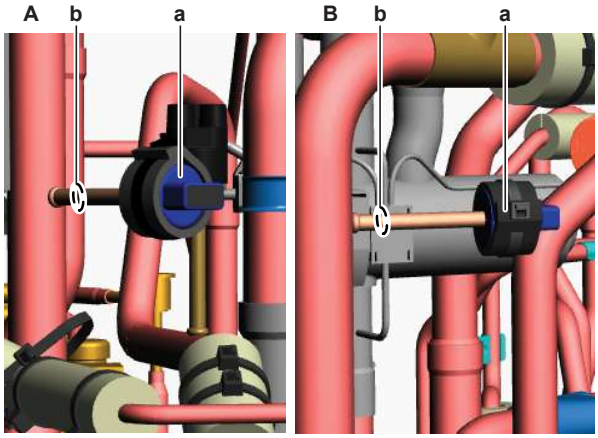
7. Install a plug or cap on the refrigerant piping to avoid dirt or impurities from entering the piping.
8. To install the refrigerant pressure sensor, see "4.17.2 Repair procedures" [▸ 336].

To install the refrigerant pressure sensor

1. Remove the plug or cap from the refrigerant piping and make sure it is clean.
2. Install the refrigerant pressure sensor in the correct location.

3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

4 Wrap a wet rag around the refrigerant pressure sensor and any other components near the pressure sensor and solder the refrigerant pressure sensor pipe to the refrigerant pipe.



A 5~12 HP units
B 14~20 HP units
a Refrigerant pressure sensor
b Refrigerant pressure sensor pipe

CAUTION

Overheating the pressure sensor will damage or destroy it.

5 After soldering 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" [▸ 392].

10 Add refrigerant to the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

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 Safety valve box

4.18.1 Safety valve box damper motor

Checking procedures

To perform an electrical check of the damper motor

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Disconnect the damper motor connector X11A from the SV box main PCB.

2 Measure the resistance between the wires of the damper motor connector.

Result: The measured resistance MUST be 12.7 kΩ ± 10%.

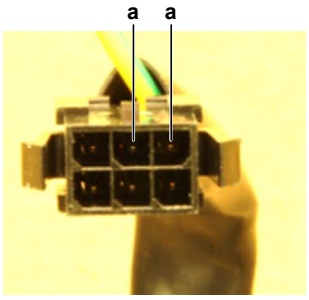
Damper motor resistance measurement is correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

3 Lower the switch box, see "4.14 Plate work" [▸ 309].

4 Disconnect the intermediate connector X1Y of the damper assembly.

5 Measure the resistance between the damper motor (white) wires of the intermediate connector.

Result: The measured resistance MUST be 12.7 kΩ ± 10%.



a Pins for damper motor measurement

Damper motor resistance measurement is correct?	Action
Yes	Replace the damper assembly wiring harness, see "Repair procedures" [▸ 338].
No	Replace the damper assembly, see "Repair procedures" [▸ 338].

Repair procedures

As the damper motor, limit switches and their wiring harness to intermediate connector X1Y are ALL part of the damper assembly, replace the complete damper assembly when any of these parts need to be replaced.

To remove the damper assembly

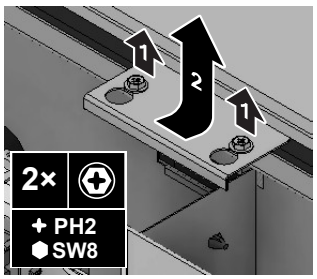
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

Prerequisite: Lower the switch box, see "4.14 Plate work" [▸ 309].

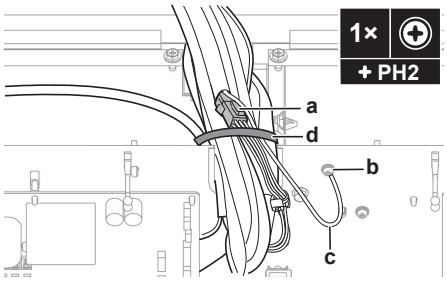
1 Remove the leftmost wire fixing plate. It holds the damper wire in place.

- Loosen the screws lightly without removing them.
- Slide and lift the plate.



2 Cut the cable tie that fixes the intermediate connector X1Y.

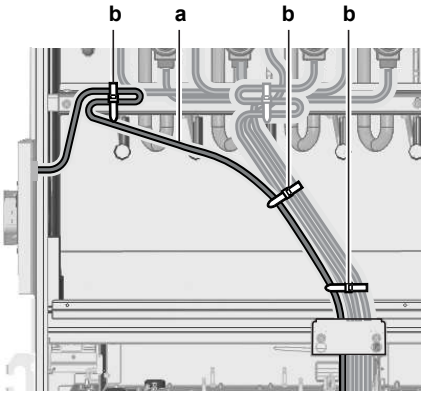
3 Disconnect the intermediate connector X1Y of the damper assembly.



a Intermediate connector X1Y
b Earth wire screw
c Damper assembly earth wire
d Cable tie

4 Loosen and remove the damper earth wire screw and detach the damper assembly earth wire.

5 Cut the cable ties that fix the damper assembly wire, and the one that bundles the damper assembly wire.

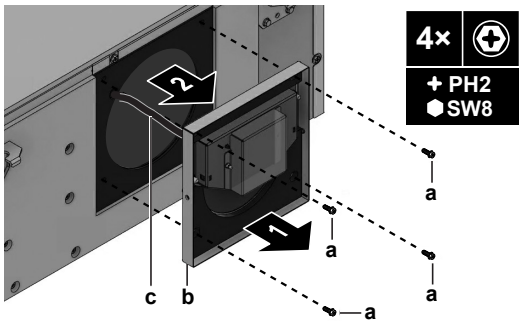


a Damper assembly wire
b Tie strap

6 Remove the 4 screws from the damper assembly.

7 Pull the damper assembly from the unit. Do NOT use excessive force, as the wires on the back of the damper assembly can get stuck inside the unit.

8 Carefully guide the wires from the inside to the outside through the small hole in the unit's metal plate. Take care NOT to damage the connector and the earth wire connection.

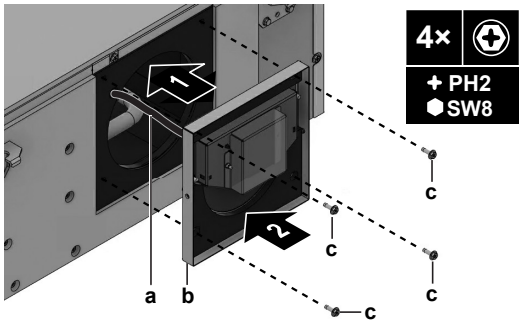


a Screw
b Damper assembly
c Damper assembly wire

9 To install the damper assembly, see "Repair procedures" [▸ 338].

To install the damper assembly

1 Carefully guide the damper assembly wires from the outside to the inside through the small hole in the unit's metal plate. Take care NOT to damage the connector and the earth wire connection.



a Damper assy wire
b Screw
c Damper assy

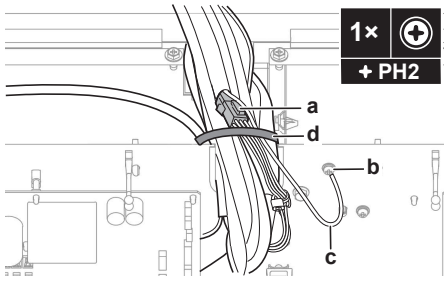
2 Position the damper assembly onto the unit. Take care NOT to pinch and damage the wires between the damper and the unit.

3 Pull the wires through until the foam insulation fits properly in the small hole in the unit's metal plate. This makes the connection airtight.

4 Install and tighten the 4 screws to fix the damper assembly.

5 Connect the damper assembly wire to the intermediate connector X1Y.

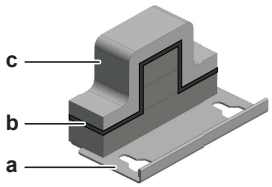
6 Position the damper assembly earth wire and tighten the damper earth wire screw.



a Intermediate connector X1Y
b Earth wire screw
c Damper assembly earth wire
d Cable tie

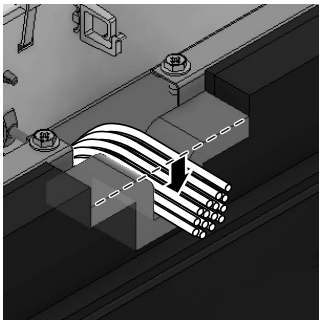
7 Install a cable tie to fix the intermediate connector X1Y. Make sure the wire and connector do NOT touch any sharp edges.

8 Restore the insulation of the wiring fixing plate by applying the small accessory insulation piece on top of the old, flattened insulation.



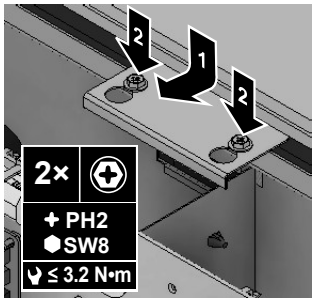
a Wire fixing plate
b Old insulation
c New insulation (accessory)

9 Position the wires as far down as possible in the opening on top of which the wire fixing plate will be installed.

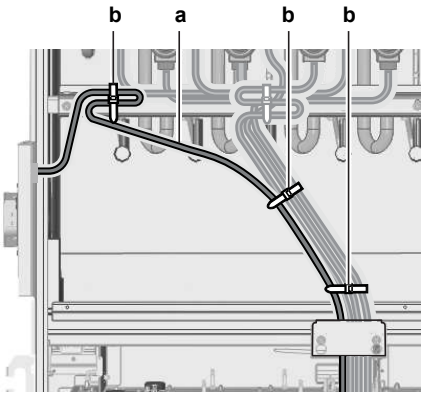


10 Position the wire fixing plate over the screws and slide it in place. Make sure the backside is aligned properly with the insulation of the switch box, in order to make it airtight.

11 Tighten the 2 screws to fix the wire fixing plate.



12 Attach the damper assembly wire in the indicated places using new tie straps. Make sure the wire is tight, but do not pull on it excessively.



a Damper assembly wire
b Tie strap

13 Leave 20 cm of wire between the fixation (tie strap) and the entry into the switch box in order to be able to put back the switch box.

14 Bundle the damper assembly wire if needed using a new tie strap.

15 Install the switch box back in 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.

To remove the damper assembly wiring harness

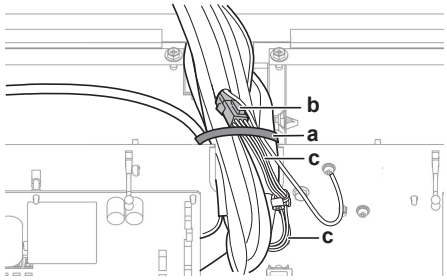
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

Prerequisite: Lower the switch box of the SV box, see "4.14 Plate work" [▸ 309].

1 Cut the cable tie that fixes the intermediate connector X1Y.

2 Disconnect the intermediate connector X1Y of the damper assembly.



a Cable tie
b Connector X1Y
c Damper assembly wiring harness

3 Disconnect the connectors of the damper motor and both limit switches from the SV box main PCB.

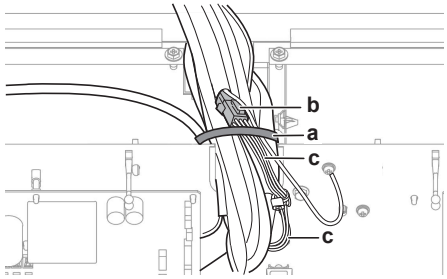
4 Cut all tie straps that fix the damper assembly wiring harness.

5 Remove the damper assembly wiring harness from the unit.

6 To install the damper assembly wiring harness, see "Repair procedures" [▸ 338].

To install the damper assembly wiring harness

1 Connect the damper assembly wiring harness to the intermediate connector X1Y of the damper assembly.



a Cable tie
b Connector X1Y
c Damper assembly wiring harness

2 Route the other end of the wiring harness towards the SV box main PCB.

3 Connect the wiring harness to the damper motor and limit switch connectors on the main PCB.

INFORMATION

Use the wiring diagram and connection diagram for correct installation of the connectors, see "7.2 Wiring diagram" [▸ 411].

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 Install new tie straps to fix the damper assembly wiring harness.

5 Install a cable tie to fix the intermediate connector X1Y. Make sure the wire and connector do NOT touch any sharp edges.

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 Safety valve box expansion valve

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 "Checking procedures" [▸ 343].

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Remove the expansion valve coil from the expansion valve body, see "Repair procedures" [▸ 347].

2 Slide the expansion valve magnet over the expansion valve body and gently rotate the magnet clockwise/counterclockwise to manually close/open the expansion valve.

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 "Checking procedures" [▸ 343].
No	Replace the SV box, see Installation manual of the SV box.

To perform an electrical check of the expansion valve

Prerequisite: First perform a mechanical check of the expansion valve, see "Checking procedures" [▸ 343].

1. Make sure that the valve coil is firmly slid onto the valve body.
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.

A1P

Expansion valve name	Symbol	Connector	Winding resistance	SV1A	SV4A	SV6A	SV8A
Safety gas	Y4E	X33A	150±15 Ω	X	X	X	X
Safety liquid	Y5E	X34A	150±15 Ω				
Safety gas	Y9E	X35A	150±15 Ω		X	X	X
Safety liquid	Y10E	X36A	150±15 Ω				
Safety gas	Y14E	X37A	150±15 Ω		X	X	X
Safety liquid	Y15E	X38A	150±15 Ω				
Safety gas	Y19E	X39A	150±15 Ω		X	X	X
Safety liquid	Y20E	X40A	150±15 Ω				

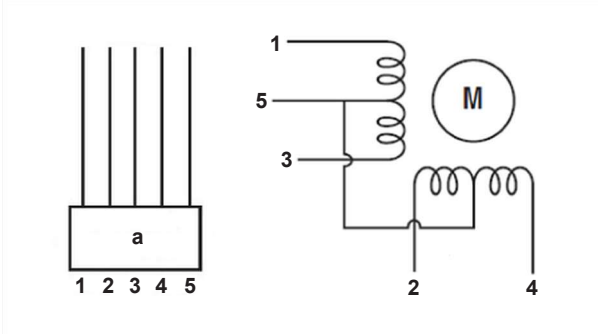
A2P

Expansion valve name	Symbol	Connector	Winding resistance	SV1A	SV4A	SV6A	SV8A
Safety gas	Y24E	X33A	150±15 Ω			X	X
Safety liquid	Y25E	X34A	150±15 Ω				
Safety gas	Y29E	X35A	150±15 Ω			X	X
Safety liquid	Y30E	X36A	150±15 Ω				
Safety gas	Y34E	X37A	150±15 Ω				X
Safety liquid	Y35E	X38A	150±15 Ω				
Safety gas	Y39E	X39A	150±15 Ω				X
Safety liquid	Y40E	X40A	150±15 Ω				

INFORMATION

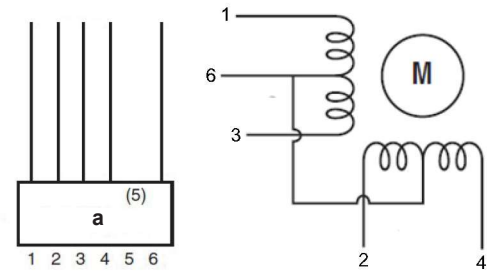
Below are shown examples of the resistance measurements in which the common wire is connected to pin 5 or to pin 6 of the expansion valve coil connector. Connections may differ according to the type of expansion valve.

- 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 "4.6.1 Checking procedures" [▶ 237].
No	Replace the expansion valve coil, "4.6.2 Repair procedures" [▶ 241].

To perform an operation check of the expansion valve

Prerequisite: First perform an electrical check of the expansion valve, see "Checking procedures" [▶ 343].

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 central controller.

3 With the unit operating, connect the service monitoring tool to the unit.

4 When the expansion valve is closed, check the valve inlet and outlet for any leaks. Replace the SV box if any leaks are found, see SV box Installation manual.

5 Wait for the PCB to command the expansion valve to open (pulse output to expansion valve visible on service monitoring tool).

INFORMATION

If the PCB does NOT command the expansion valve to open or close (when it is supposed to), perform a check of the appropriate thermistors and pressure sensors (as their measurements control the operation of the expansion valve(s)).

6 While in opening or closing sequence each expansion valve winding (Φ1, 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.

- Opening sequence for safety gas expansion valves and safety liquid expansion valves:
  Valve closing: 1 > 2 > 3 > 4 > 1
  Valve opening: 4 > 3 > 2 > 1 > 4

Phase	Energizing status			
	1	2	3	4
Φ1	ON	OFF	OFF	ON
Φ2	ON	ON	OFF	OFF
Φ3	OFF	ON	ON	OFF
Φ4	OFF	OFF	ON	ON

7 Check if the expansion valve is open. Check with a contact thermometer (or by touching) if refrigerant flows through the expansion valve.

Is the expansion valve open?	Action
Yes	Component is OK. Return to the troubleshooting of the specific error and continue with the next step.
No	Replace the SV box, see SV box Installation manual.

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.

Is the problem solved?	Action
No	Return to the troubleshooting of the specific error and continue with the next procedure.

Repair procedures

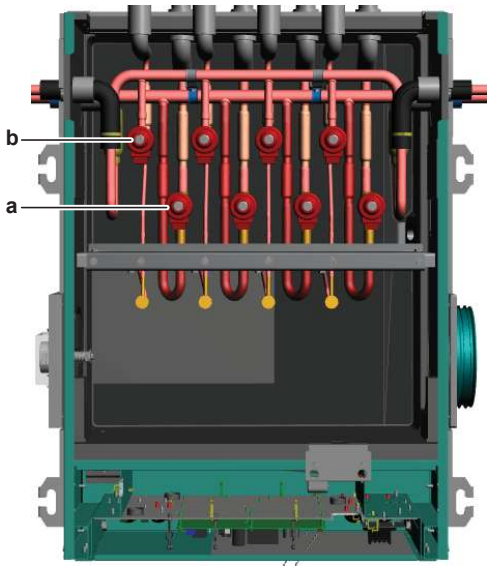
To remove the expansion valve coil

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 If needed, remove any parts or insulation to create more space for the removal.



a Safety gas expansion valve coil
b Safety liquid 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 from the appropriate PCB. See "To perform an electrical check of the expansion valve" [▸ 343] for an overview of the expansion valve connectors and their locations.

5 To install the expansion valve coil, see "Repair procedures" [▸ 347].

To install the expansion valve coil

1 Install the expansion valve coil on the expansion valve body.

> **INFORMATION**
>
> Turn the expansion valve coil 1/8 turn clockwise to lock it on the expansion valve body.



a Expansion valve coil
b Pipe

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 "Checking procedures" [▸ 343] of the expansion valve and continue with the next procedure.

4.18.3 Safety valve box limit switch

Checking procedures

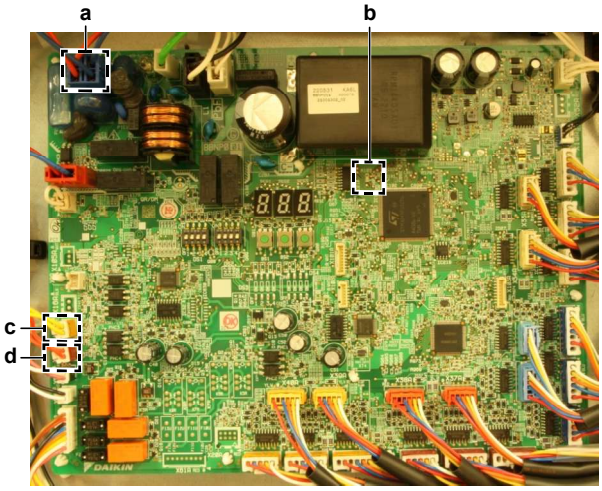
To perform an electrical check of the limit switch

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Turn ON the power of the unit.

2 Disconnect the connector X1A from the SV box main PCB.



a Connector X1A
b HAP LED
c Limit switch K1 connector on terminal X17A

d Limit switch K2 connector on terminal X18A

3 Confirm that the HAP LED of the main PCB is OFF.

4 Disconnect both limit switch connectors from the terminals X17A (K1) and X18A (K2) on the SV box main PCB.

5 Connect the connector of the limit switch K1 (yellow wires) to the terminal X18A on the main PCB.

6 Measure the resistance between the pins of the (disconnected) limit switch K2 connector (red wires).

Result: The measured resistance MUST be 0 Ω (limit switch closed).

7 Reconnect the connector X1A to the SV box main PCB.

Result: HAP LED of the main PCB starts blinking and the damper motor turns 2 revolutions.

8 While the damper motor is rotating, measure the resistance between the pins of the (disconnected) limit switch K2 connector (red wires).

Result: The measured resistance MUST change from 0 Ω (limit switch closed) to OL (limit switch open) and back for 2 times.

9 Once damper motor has stopped rotating, again disconnect the connector X1A from the SV box main PCB.

10 Confirm that the HAP LED of the main PCB is OFF.

11 Disconnect the connector of the limit switch K1 (yellow wires) from the terminal X18A on the main PCB.

12 Connect the connector of the limit switch K2 (red wires) to the terminal X17A on the main PCB.

13 Measure the resistance between the pins of the (disconnected) limit switch K1 connector (yellow wires).

Result: The measured resistance MUST be OL (limit switch open).

14 Reconnect the connector X1A to the SV box main PCB.

Result: HAP LED of the main PCB starts blinking and the damper motor turns 2 revolutions.

15 While the damper motor is rotating, measure the resistance between the pins of the (disconnected) limit switch K1 connector (yellow wires).

Result: The measured resistance MUST change from OL (limit switch open) to 0 Ω (limit switch closed) and back for 2 times.

16 Once damper motor has stopped rotating, again disconnect the connector X1A from the SV box main PCB.

17 Confirm that the HAP LED of the main PCB is OFF.

18 Reconnect the connector of the limit switch K1 (yellow wires) to the terminal X17A and the connector of the limit switch K2 (red wires) to the terminal X18A on the main PCB.

19 Reconnect the connector X1A to the SV box main PCB.

Result: HAP LED of the main PCB starts blinking and the damper motor does NOT rotate (normal state).

Limit switch resistance measurements are correct?	Action
Yes	Limit switches is OK. Return to the troubleshooting of the specific error and continue with the next procedure.

Limit switch resistance measurements are correct?	Action
No	Continue with the next step.

20 Lower the switch box of the SV box, see "4.14 Plate work" [▸ 309].

21 Disconnect the intermediate connector X1Y from the damper assembly.

22 Disconnect both limit switch connectors from the terminals X17A (K1) and X18A (K2) on the SV box main PCB.

23 On the damper assembly wiring harness, check that ALL wiring is correctly installed and measure the continuity between the intermediate connector X1Y and the limit switch connectors (disconnected from the main PCB).

Damper assembly wiring harness is OK?	Action
Yes	Replace the damper assembly, see "Repair procedures" [▸ 338].
No	Replace the damper assembly wiring harness, see "Repair procedures" [▸ 338].

Repair procedures

As the limit switches are part of the damper assembly, replace the complete damper assembly when a limit switch needs to be replaced, see "Repair procedures" [▸ 338].

4.18.4 Safety valve box main PCB

Checking procedures

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

To perform a power check of the main PCB

Prerequisite: Stop the unit operation via the central controller.

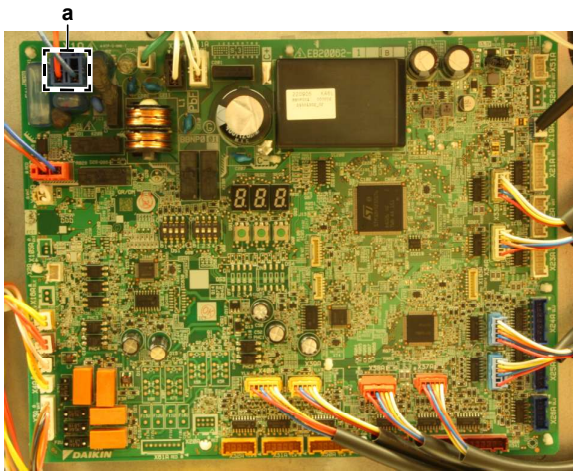
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Turn ON the power of the SV box.

2 Measure the voltage on connector X1A of the SV box main PCB.

Result: The measured voltage MUST be 230 V AC±10%.



a Connector X1A

Does the SV box main PCB receive power?	Action
Yes	Return to "Checking procedures" [▸ 350] of the SV boxx main PCB and continue with the next procedure.
No	Continue with the next step.

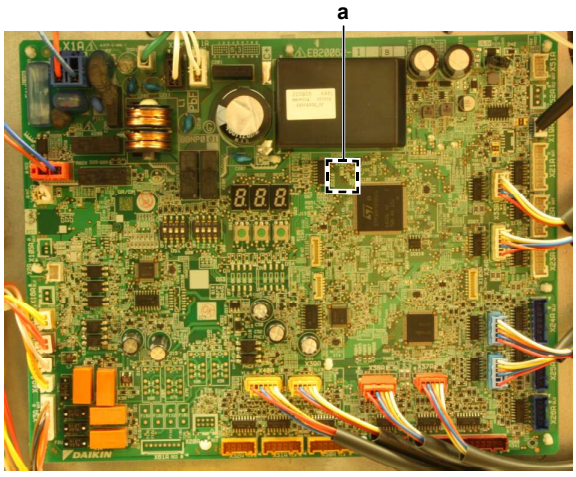
3 Check the power supply to the SV box, see "5.1.1 Checking procedures" [▸ 383].

Does the SV box receive power?	Action
Yes	Correct the wiring from the main power supply terminal to the SV box main PCB, see "5.1.2 Repair procedures" [▸ 390].
No	Adjust the power supply to the SV boxx, see "5.1.2 Repair procedures" [▸ 390].

To check the HAP LED of the main PCB

Prerequisite: First perform a power check of the SV box main PCB, see "Checking procedures" [▸ 350].

1 Locate the HAP LED on the SV box main PCB.



a HAP LED

Does the HAP LED blink in regular intervals (approximately 1 Hz)?	Action
Yes	Return to "Checking procedures" [▶ 350] of the SV box main PCB and continue with the next procedure.
No	Replace the SV box main PCB, see "Repair procedures" [▶ 356].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the SV box main PCB, see "Checking procedures" [▶ 350].

1 Visit your local spare parts webbank.

2 Enter the model name of your unit and check if the installed spare part number corresponds with the spare part number indicated in the webbank.

Is the correct spare part for the SV box main PCB installed?	Action
Yes	Return to "Checking procedures" [▶ 350] of the SV box main PCB and continue with the next procedure.
No	Replace the SV box main PCB, see "Repair procedures" [▶ 356].

To check the wiring of the main PCB

Prerequisite: First perform all earlier checks of the SV box main PCB, see "Checking procedures" [▶ 350].

Prerequisite: Stop the unit operation via the central controller.

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" [▶ 411].

INFORMATION

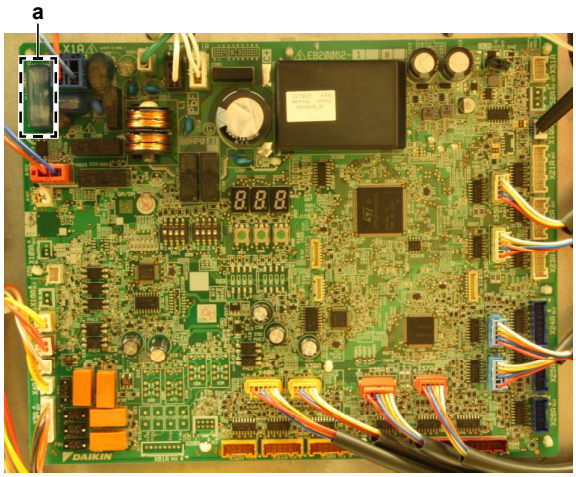
Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "Checking procedures" [▶ 350] of the SV box main PCB and continue with the next procedure.

To check the fuse of the main PCB

Prerequisite: First perform all earlier checks of the SV box main PCB, see "Checking procedures" [▶ 350].

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



a Fuse

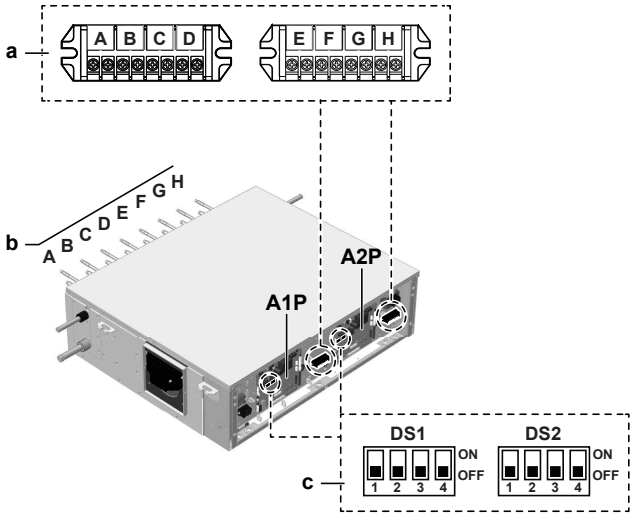
Blown fuse on the SV box main PCB?	Action
Yes	Replace the blown fuse, see "Repair procedures" [▸ 356].
No	Return to "Checking procedures" [▸ 350] of the SV box main PCB and continue with the next procedure.

To check the DIP switches of the main PCB

1 Check the correct position of the DIP switches as described below. Correct as needed.

DIP switch location

The DIP switches are located on the PCBs A1P, A2P (SV6~8A).



a Terminal for interconnection wiring to indoor unit
b Branch pipe port (A, B, C, ...)
c DIP switches

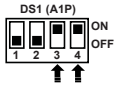
To set the DIP switches for branch pipe ports to which NO indoor unit is connected

Change position of the DIP switch at power OFF (HAP LED OFF). Disconnect connector X1A on the appropriate PCB.

Setting for branch pipe ports to which NO indoor unit is connected[a]								
	DS1 (A1P)				DS1 (A2P)			
	1	2	3	4	1	2	3	4
SV1A	A							
SV4A		B	C	D				
SV6A					E	F		
SV8A							G	H
	Target branch pipe port							

[a] **ON**=NOT connected / **OFF**=connected (factory default)

Note: The SV1A unit requires no DIP switch setting. The factory default setting can be used for any indoor unit connected to the branch port.

Example	When connecting an indoor unit to branch pipe ports A and B, but NOT connecting an indoor unit to branch pipe ports C and D.	

To set the DIP switches when joining branch pipe ports

This is required for connection with e.g. FXMA200 and FXMA250.

Change position of the DIP switch at power OFF (HAP LED OFF). Disconnect connector X1A on the appropriate PCB.

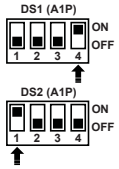
Setting when joining branch pipe ports[a]				
	DS2 (A1P)		DS2 (A2P)	
	1	2	1	2
SV1A				
SV4A	A+B	C+D		
SV6A			E+F	
SV8A				G+H
	Target branch pipe ports			

[a] **ON**=joined / **OFF**=NOT joined (factory default)

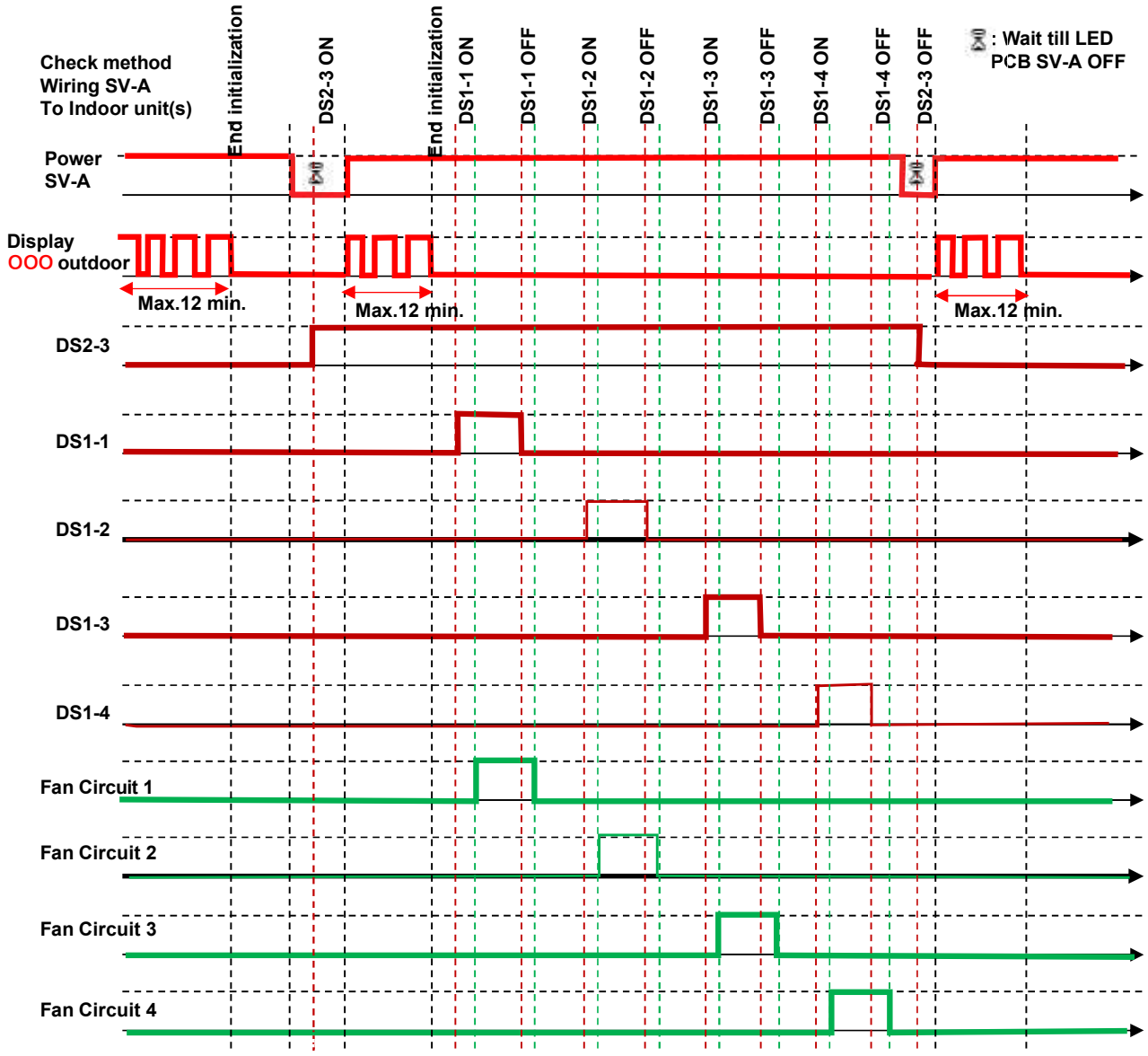
Note: When joining branch pipe ports, ONLY the combinations in above table are possible. E.g.: it is NOT possible to join ports B and C.

Example	When joining branch pipe ports A and B.	

Examples

1.	When connecting an indoor unit to branch pipe ports A, B, and D, but NOT connecting an indoor unit to branch pipe port C.	
2.	When joining branch pipe ports A and B. Connecting an indoor unit to the joined branch pipe ports A and B, also to branch pipe port C, but NOT connecting an indoor unit to branch pipe port D.	

Function description when changing DIP switch DS2-3



Circuit 1 = circuit A, E. Circuit 2 = circuit B, F. Circuit 3 = circuit C, G. Circuit 4 = circuit D, H (respectively for A1P, A2P).

To power OFF A1P, A2P: disconnect connector X1A.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "Checking procedures" [▶ 350] of the SV box main PCB and continue with the next procedure.

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.

Is the problem solved?	Action
No	Return to the troubleshooting of the specific error and continue with the next procedure.

Repair procedures

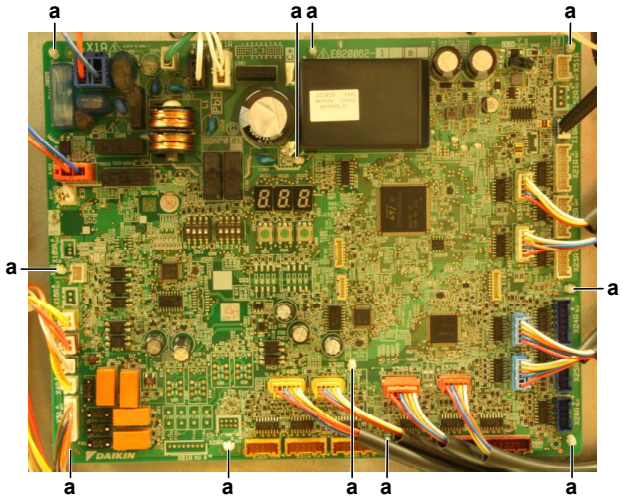
To remove the main PCB

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1. Disconnect all connectors from the SV box main PCB.
2. Remove the bridged connector X15A. Keep for reuse.
3. Remove the screw and disconnect the ground wire from the SV box.
4. Carefully pull the SV box main PCB at the side and unlatch the PCB supports one by one using a small pair of pliers.



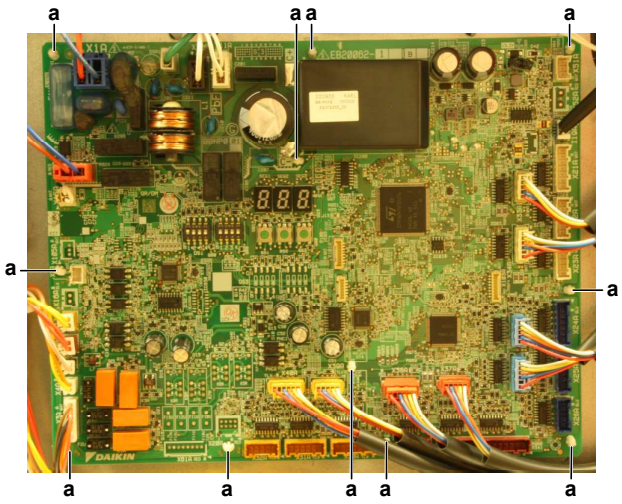
a PCB support

5. Remove the SV box main PCB from the SV box.
6. To install the SV box main PCB, see "Repair procedures" [▸ 356].

To install the main PCB

> **INFORMATION**
>
> When replacing the SV box main PCB, R32 leak detection sensor PCB ALSO MUST be replaced. See "Repair procedures" [▸ 360] and replace R32 leak detection sensor.

1. Install the SV box main PCB on the correct location in the SV box.
2. Correctly install the SV box main PCB on the PCB supports.



a PCB support

3 Connect the ground wire to the SV box. Install and tighten the screw to fix the ground wire.

4 Install the bridged connector X15A.

5 Connect all connectors to the SV box main PCB.

INFORMATION

Use the wiring diagram and connection diagram for correct installation of the connectors, see "7.2 Wiring diagram" [▸ 411].

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 Check DIP switches and adjust as required, see "Checking procedures" [▸ 350].

7 Check the field settings and adjust as required, see "7.9 Field settings" [▸ 489].

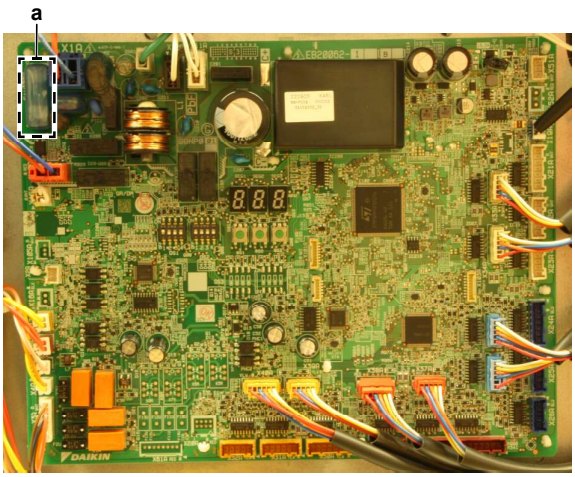
Is the problem solved?	Action
Yes	No further actions required.
No	Return to "Checking procedures" [▸ 350] of the SV box main PCB and continue with the next procedure.

To remove a fuse of the main PCB

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Remove the fuse from the PCB.



a Fuse

2 To install a fuse on the SV box main PCB, see "Repair procedures" [▸ 356].

To install a fuse on the main PCB

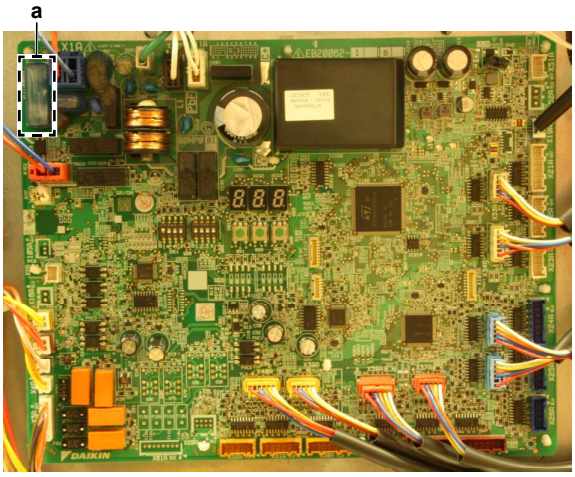
WARNING

- For continued protection against risk of fire, replace ONLY with same type and rating of fuse.
- Before replacing the fuse, check and eliminate the cause of the blown fuse.

1 Install the fuse on the correct location on the PCB.

CAUTION

Make sure the fuse is plugged-in correctly (contact with the fuse holder).



a Fuse

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "Checking procedures" [▸ 350] of the SV box main PCB and continue with the next procedure.

4.18.5 Safety valve box sub PCB

The SV boxes have the following sub PCB's:

- SV6~8A boxes: A2P.

These sub PCB's are identical to the SV box main PCB.

Perform as described in the check and repair procedures of the SV box main PCB (see "4.18.4 Safety valve box main PCB" [▸ 350]) and apply to the appropriate sub PCB.

4.18.6 R32 leak detection sensor

Checking procedures

To perform an electrical check of the R32 leak detection sensor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Remove the required plate work, see "4.14 Plate work" [▸ 309].

DANGER: RISK OF ELECTROCUTION

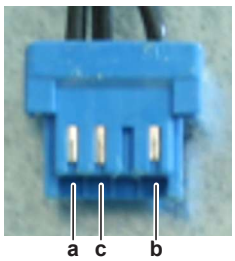
Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

2 Disconnect the R32 leak detection sensor connector X19A from the SV box main PCB.

INFORMATION

Make sure that the wiring between the sensor connector and the connector on the PCB is properly connected and NOT damaged (check continuity), see "7.2 Wiring diagram" [▸ 411].

3 Using a multimeter in diode check, measure in reference with the image and the table below.



a Measuring point
b Measuring point
c Measuring point

VDC	COM	REF	VDC	COM	REF
a	b	1.269~1.551 V	b	a	0.414~0.506 V
a	c	OL	c	a	OL
b	c	1.053~1.287 V	c	b	OL

Measured values are correct?	Action
Yes	Continue with the next step.
No	Replace the R32 leak detection sensor, see "Repair procedures" [▸ 360].

4 Connect the R32 leak detection sensor connector to the SV box main PCB.

5 Turn ON the power using the respective circuit breaker.

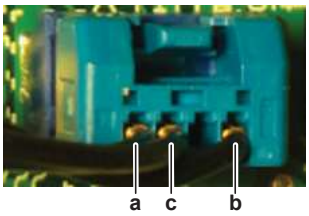
6 Start the unit operation via the central controller.

7 Activate Cooling operation via the user interface.

8 Wait until the unit is operating properly and make sure NO R32 leak is present.

9 Measure the voltage between N wire and power supply wire on connector X19A on the SV box main PCB.

Result: The measured voltage MUST be 5 V DC.



a Power supply
b N
c R32 leak detection

Is the measured voltage correct?	Action
Yes	Continue with the next step.
No	Perform a check of the SV box main PCB, see "Checking procedures" [▸ 350].

10 Measure the voltage between N wire and R32 leak detection wire on connector X19A on the SV box main PCB.

Result: The measured voltage MUST be 0.5~4.5 V DC.

Does the leak detection sensor function correctly?	Action
Yes	Return to troubleshooting of the specific error code and continue with the next procedure.
No	Replace the leak detection sensor, see "Repair procedures" [▸ 360].

Repair procedures

To remove the R32 leak detection sensor

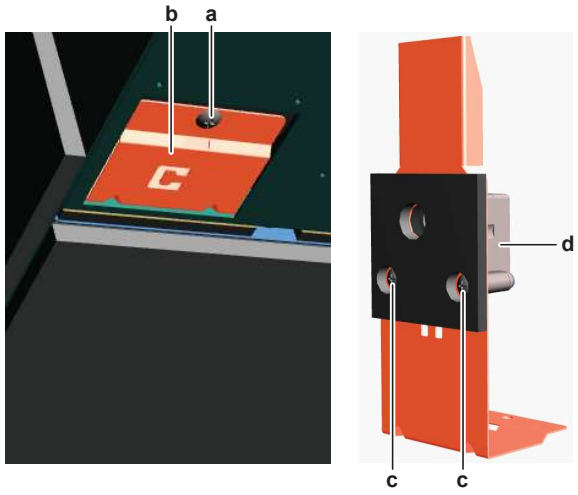
Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Disconnect the R32 leak detection sensor connector.

2 At the bottom of the SV box, remove the screw and pull the R32 leak detection sensor assembly out of the SV box. Take care NOT to damage the wiring harness.



a Screw
b R32 leak detection sensor assy
c Screw (R32 leak detection sensor)
d R32 leak detection sensor

3 Remove the 2 screws from the R32 leak detection sensor.

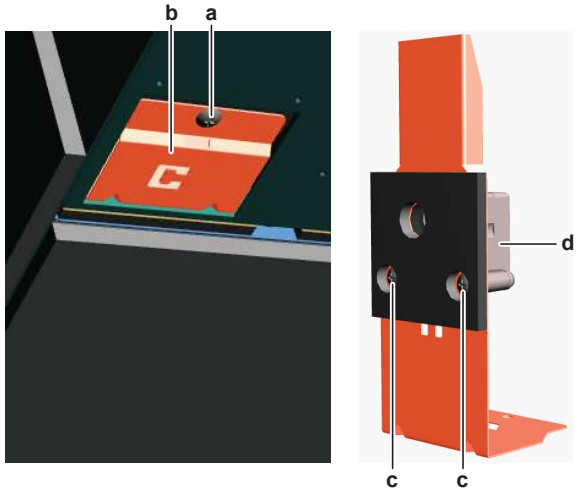
4 Remove the R32 leak detection sensor from its mounting bracket.

5 To install the R32 leak detection sensor, see "Repair procedures" [▶ 360].

To install the R32 leak detection sensor

1 Install the R32 leak detection sensor in the correct location on mounting bracket.

2 Install and tighten the 2 screws to fix the R32 leak detection sensor.



a Screw
b R32 leak detection sensor assy
c Screw (R32 leak detection sensor)
d R32 leak detection sensor

3 While guiding the R32 leak detection sensor wiring harness, install the R32 leak detection sensor assembly in the correct location on the SV box.

4 Install and tighten the screw to fix the R32 leak detection sensor assembly.

5 Route the wiring harness to the correct location and connect the R32 leak detection sensor connector.

INFORMATION

Replace all cable ties that were cut during removal.

INFORMATION

Upon power supply to the SV box, set the field setting 2-5 = 1 to reset the timer of the R32 leak detection sensor.

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 Solenoid valve

4.19.1 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 central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1. Remove the required plate work (see "4.14 Plate work" [▸ 309]).
2. Visually check:
   - For oil drops around the solenoid valve. Locate and fix as needed.
   - Pipes for signs of damage. Replace pipes as needed.
3. Verify that the screw is firmly fixing the coil to the valve body.
4. Check coil and coil wires if any damage or burst is present.

Is the solenoid valve coil firmly fixed and not visually damaged?	Action
Yes	Perform an electrical check of the solenoid valve, see "4.19.1 Checking procedures" [▸ 362].
No	Fix or replace the solenoid valve coil, see "4.19.2 Repair procedures" [▸ 364].

To perform an electrical check of the solenoid valve

Prerequisite: First perform a mechanical check of the solenoid valve, see "4.19.1 Checking procedures" [▸ 362].

1. Unplug the solenoid valve connector from the appropriate PCB.
2. Measure the resistance of the solenoid valve coil.

   Result: The measured resistance MUST be:

Name	Symbol	Location (PCB)	Connector	Winding resistance	
				5~12 HP	14~20 HP
Liquid pipe solenoid valve	Y2S	A1P	X39A	1.34 kΩ	1.32 kΩ

Name	Symbol	Location (PCB)	Connector	Winding resistance	
				5~12 HP	14~20 HP
Gas injection solenoid valve	Y8S	A1P	X15A	1.33 kΩ	

Is the measured value correct?	Action
Yes	Continue with the next step.
No	Replace the solenoid valve coil, see "4.19.2 Repair procedures" [▶ 364].

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 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 closed
- 230 V AC when the solenoid valve is triggered open

7 Check the solenoid valve status using the service monitoring tool to see if it is open or closed.

For Y2S:
- Open at start-up of outdoor unit (when pressure equalization / outdoor fan 60 seconds at medium speed).
- Closed if NO demand.

For Y8S:
- Open at start-up of outdoor unit (when pressure equalization / outdoor fan 60 seconds at medium speed).
- Closed if NO demand OR if discharge temperature too high (>115°C, reset if temperature <90°C).

Are the measured voltages correct?	Action
Yes	Perform an operation check of the solenoid valve, see "4.19.1 Checking procedures" [▶ 362].
No	Perform a check of the main PCB, see "4.10 Main PCB" [▶ 280].

To perform an operation check of the solenoid valve

Prerequisite: First perform an electrical check of the solenoid valve, see "4.19.1 Checking procedures" [▶ 362].

1 With the unit operating, check the solenoid valve status using the service monitoring tool to see if it is open or closed.

For Y2S:
- Open at start-up of outdoor unit (when pressure equalization / outdoor fan 60 seconds at medium speed).
- Closed if NO demand.

For Y8S:
- Open at start-up of outdoor unit (when pressure equalization / outdoor fan 60 seconds at medium speed).
- Closed if NO demand OR if discharge temperature too high (>115°C, reset if temperature <90°C).

2 When the solenoid valve is closed according to the service monitoring tool, check the inlet and outlet of the valve with a contact thermometer or use a valve stethoscope to see if refrigerant flows through the solenoid valve. Check that the valve is NOT bleeding.

Result: There MUST be NO flow through the solenoid valve.

3 When the solenoid valve is open according to the service monitoring tool, check the inlet and outlet of the valve with a contact thermometer or use a valve stethoscope to see if refrigerant flows through the solenoid valve.

Result: Refrigerant MUST flow through the solenoid valve.

4 Wait for the solenoid valve to open or close and again perform the above checks.

Is the solenoid valve operating correctly?	Action
Yes	Component is OK. Return to the troubleshooting of the specific error and continue with the next step.
No	Replace the solenoid valve body, see "4.19.2 Repair procedures" [▸ 364].

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 solenoid valve coil

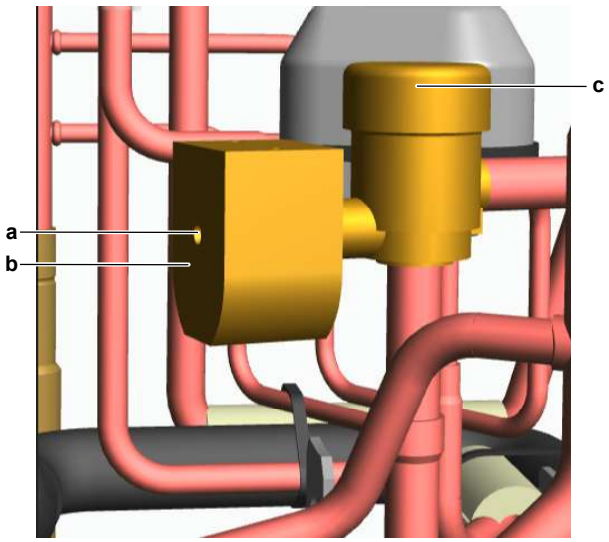
Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

1 Remove the screw that fixes the solenoid valve coil to the solenoid valve body.



a Screw
b Solenoid valve coil
c Solenoid valve body

2 Remove the solenoid valve coil from the solenoid valve body.

3 Disconnect the solenoid valve connector from the main PCB.

4 Cut all tie straps that fix the solenoid valve harness.

5 To install the solenoid valve coil, see "4.19.2 Repair procedures" [▸ 364].

To remove the solenoid valve body

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

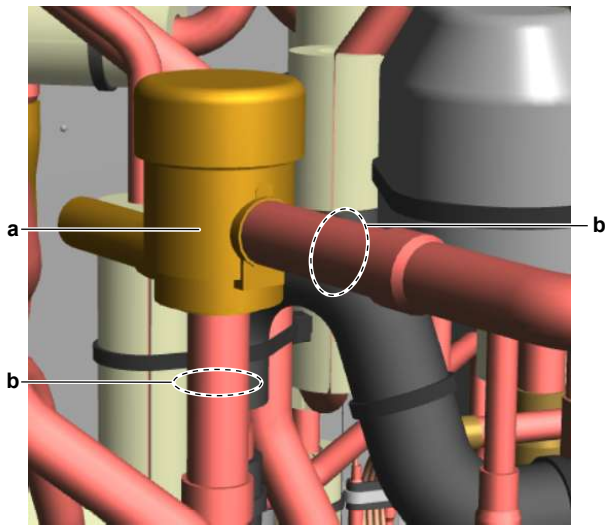
1 Remove the solenoid valve coil, see "4.19.2 Repair procedures" [▸ 364].

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 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 "4.19.2 Repair procedures" [▸ 364].

To install the solenoid valve body

1 Remove the plugs or caps from the refrigerant piping and make sure they are clean.

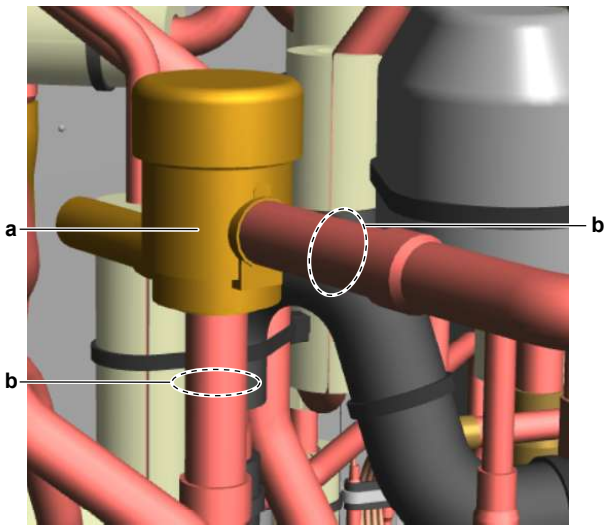
2 Remove the solenoid valve coil from the spare part solenoid valve body.

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 0.02 MPa.

6 Wrap a wet rag around the solenoid valve body and any other components near the solenoid valve and solder 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 soldering 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 "4.19.2 Repair procedures" [▸ 364].

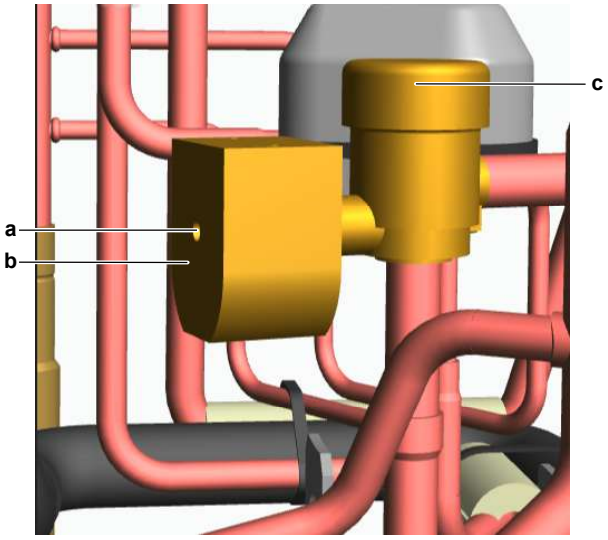
10 Perform a pressure test, see "5.2.1 Checking procedures" [▸ 392].

11 Add refrigerant to the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

To install the solenoid valve coil

1 Correctly install the solenoid valve coil on the solenoid valve body.

2 Install and tighten the screw to fix the solenoid valve coil to the solenoid valve body.



a Screw
b Solenoid valve coil
c Solenoid valve body

3 Route the solenoid valve harness towards the switch box.

4 Connect the solenoid valve connector to the 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 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 "4.19.1 Checking procedures" [▸ 362] of the solenoid valve and continue with the next procedure.

4.20 Sub PCB

4.20.1 Checking procedures

INFORMATION

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

To perform a power check of the Sub PCB

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

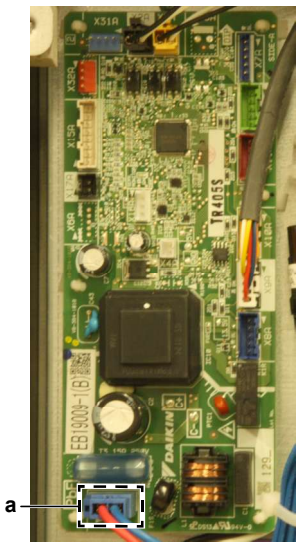
Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Visually check the PCB for damage and burnt-out components. If any damage found, replace the PCB, see "4.20.2 Repair procedures" [▸ 372].

2 Turn ON the power of the unit.

3 Measure the voltage on connector X1A of the Sub PCB.

Result: The voltage MUST be 230 V AC±10%.



a Connector X1A

Does the Sub PCB receive power?	Action
Yes	Return to "4.20.1 Checking procedures" [▸ 368] of the sub PCB and continue with the next procedure.
No	Continue with the next step.

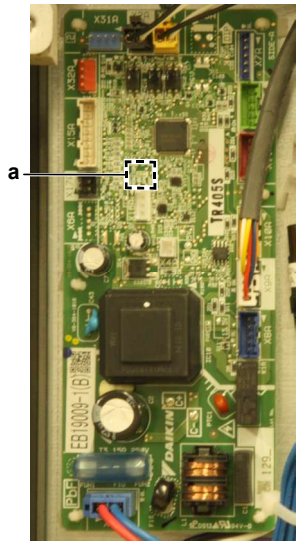
4 Check the power supply to the unit, see "5.1.1 Checking procedures" [▸ 383].

Does the unit receive power?	Action
Yes	Correct the wiring from the main power supply terminal to the sub PCB, see "4.20.2 Repair procedures" [▸ 372].
No	Adjust the power supply to the unit, see "5.1.2 Repair procedures" [▸ 390].

To check the HAP LED of the Sub PCB

Prerequisite: First perform a power check of the Sub PCB, see "4.20.1 Checking procedures" [▸ 368].

1 Locate the HAP LED on the Sub PCB.



a HAP LED

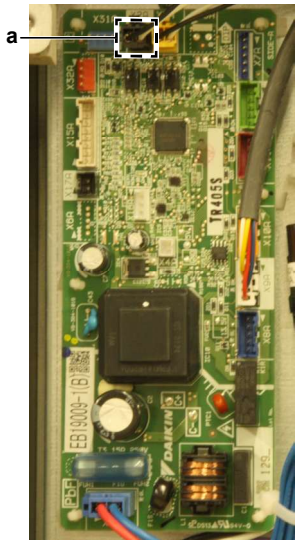
Does the HAP LED blink in regular intervals (approximately 1 Hz)?	Action
Yes	Return to "4.20.1 Checking procedures" [▶ 368] of the Sub PCB and continue with the next procedure.
No	Replace the Sub PCB, see "4.20.2 Repair procedures" [▶ 372].

To perform an electrical check of the sub PCB

Prerequisite: First perform all earlier checks of the Sub PCB, see "4.20.1 Checking procedures" [▶ 368].

1 Measure the voltage on connector X2A of the sub PCB.

Result: The measurement MUST be 13.8 V DC ± 10%.



a Connector X2A

Is the measured voltage correct?	Action
Yes	Return to "4.20.1 Checking procedures" [▶ 368] of the Sub PCB and continue with the next procedure.
No	Replace the Sub PCB, see "4.20.2 Repair procedures" [▶ 372].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the Sub PCB, see "4.20.1 Checking procedures" [▶ 368].

1 Visit your local spare parts webbank.

2 Enter the model name of your unit and check if the installed spare part number corresponds with the spare part number indicated in the webbank.

Is the correct spare part for the Sub PCB installed?	Action
Yes	Return to "4.20.1 Checking procedures" [▶ 368] of the Sub PCB and continue with the next procedure.
No	Replace the Sub PCB, see "4.20.2 Repair procedures" [▶ 372].

To check the wiring of the Sub PCB

Prerequisite: First perform all earlier checks of the Sub PCB, see "4.20.1 Checking procedures" [▶ 368].

Prerequisite: Stop the unit operation via the central controller.

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" [▶ 411].

INFORMATION

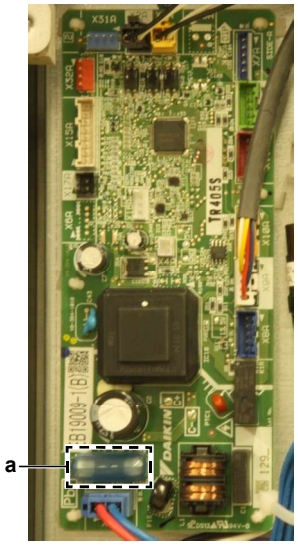
Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.20.1 Checking procedures" [▶ 368] of the Sub PCB and continue with the next procedure.

To check the fuse of the Sub PCB

Prerequisite: First perform all earlier checks of the Sub PCB, see "4.20.1 Checking procedures" [▶ 368].

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



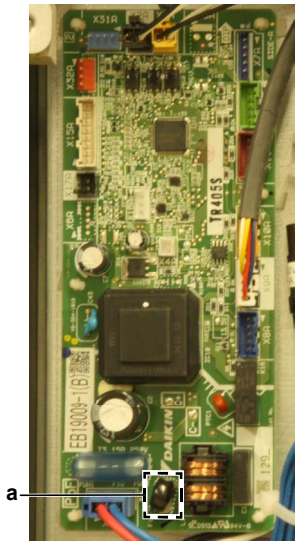
a Fuse F1U

Blown fuse on the Sub PCB?	Action
Yes	Replace the blown fuse, see "4.20.2 Repair procedures" [▶ 372].
No	Return to "4.20.1 Checking procedures" [▶ 368] of the Sub PCB and continue with the next procedure.

To check the varistor of the Sub PCB

Prerequisite: First perform all earlier checks of the Sub PCB, see "4.20.1 Checking procedures" [▸ 368].

1 Measure the resistance of the varistor. If the reading is nearly infinite, the varistor is still good.



a Varistor F1S

Varistor on Sub PCB broken?	Action
Yes	Replace the Sub PCB, see "4.20.2 Repair procedures" [▸ 372].
No	Return to "4.20.1 Checking procedures" [▸ 368] of the sub PCB and continue with the next procedure.

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.20.2 Repair procedures

To correct the wiring from the main power supply terminal to the Sub PCB

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Remove the required plate work, see "4.14 Plate work" [▸ 309].

2 Make sure that all wires are firmly and correctly connected, see "7.2 Wiring diagram" [▸ 411].

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 "4.20.1 Checking procedures" [▶ 368] of the Sub PCB and continue with the next procedure.

To remove the Sub PCB

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Remove the required plate work, see "4.14 Plate work" [▶ 309].

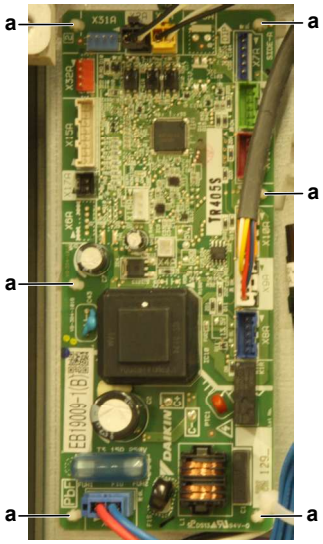
DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▶ 384].

2 Locate the Sub PCB.

3 Disconnect all connectors from the Sub PCB.

4 Carefully pull the Sub PCB at the side and unlatch the PCB supports one by one using a small pair of pliers.



a PCB support

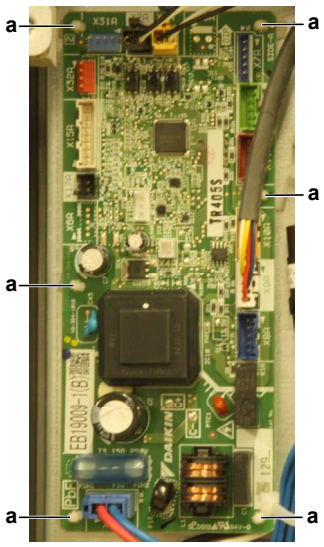
5 Remove the Sub PCB from the unit.

6 To install the Sub PCB, see "4.20.2 Repair procedures" [▶ 372].

To install the Sub PCB

1 Install the Sub PCB on its correct location.

2 Latch the PCB supports to fix the Sub PCB.



a PCB support

3 Connect all connectors to the Sub PCB.

> **INFORMATION**
>
> Use the wiring diagram and connection diagram for correct installation of the connectors, see "7.2 Wiring diagram" [▸ 411].

> **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 "4.20.1 Checking procedures" [▸ 368] of the Sub PCB and continue with the next procedure.

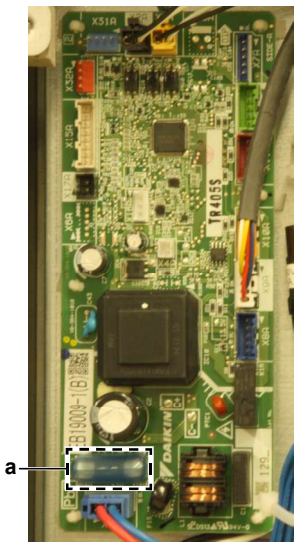
To remove a fuse of the Sub PCB

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Remove the fuse from the PCB.



a Fuse F1U

2 To install a fuse on the Sub PCB, see "4.20.2 Repair procedures" [▸ 372].

To install a fuse on the Sub PCB

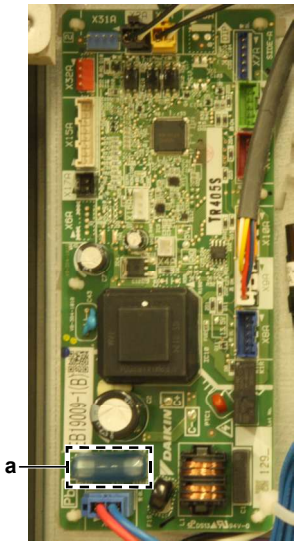
WARNING

- For continued protection against risk of fire, replace ONLY with same type and rating of fuse.
- Before replacing the fuse, check and eliminate the cause of the blown fuse.

1 Install the fuse on the correct location on the PCB.

CAUTION

Make sure the fuse is plugged-in correctly (contact with the fuse holder).



a Fuse F1U

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.20.1 Checking procedures" [▸ 368] of the Sub PCB and continue with the next procedure.

4.21 Thermistors

4.21.1 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 central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

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" [▸ 376].
No	Correctly install the thermistor, see "Repair procedures" [▸ 379].

To perform an electrical check of the specific thermistor

1 First perform a mechanical check of the thermistor, see "Checking procedures" [▸ 376].

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)	Reference (table)
Air thermistor	R1T	Main	X18A:1-2	A
Main Liquid Pipe thermistor	R3T	Main	X30A:1-2	B
Upper heat exchanger liquid temperature thermistor	R4T	Main	X30A:3-4	B

Name	Symbol	Location (PCB)	Connector (pins)	Reference (table)
Lower heat exchanger liquid temperature thermistor	R5T	Main	X30A:5-6	B
Gas pipe thermistor of the subcool heat exchanger	R6T	Main	X30A:7-8	B
Liquid pipe thermistor of the subcool heat exchanger	R7T	Main	X30A:9-10	B
Upper heat exchanger Gas temperature thermistor	R8T	Main	X29A:1-2	B
Lower heat exchanger Gas temperature thermistor	R9T	Main	X29A:3-4	B
Suction temperature thermistor	R10T	Main	X29A:5-6	B
De-icer thermistor	R11T	Main	X35A:1-2	B
Compressor suction temperature thermistor	R12T	Main	X35A:3-4	B
Receiver Gas Thermistor	R13T	Main	X46A:1-2	B
Compressor Body Thermistor	R15T	Main	X33A: 3-4	C
Gas Injection Thermistor (ONLY for 5~12 HP units)	R16T	Main	X35A: 5-6	B
Compressor Discharge Thermistor	R21T	Main	X33A: 1-2	C

4 Determine the thermistor resistance that matches the measured temperature.

Thermistor – Table A

T °C	kΩ	T °C	kΩ	T °C	kΩ	T °C	kΩ
–30	363.4	0	65.80	30	16.09	60	4.93
–25	266.7	5	51.11	35	13.02	65	4.12
–20	197.8	10	40.01	40	10.60	70	3.46
–15	148.2	15	31.54	45	8.69		
–10	112.1	20	25.04	50	7.15		
–5	85.51	25	20.00	55	5.92		

Thermistor – Table B

T °C	kΩ	T °C	kΩ	T °C	kΩ	T °C	kΩ
–30	363.8	5	51.05	40	10.58	75	2.93
–25	266.8	10	39.91	45	8.67	80	2.48
–20	197.8	15	31.44	50	7.14	85	2.12
–15	148.2	20	24.95	55	5.92	90	1.81
–10	112.0	25	19.94	60	4.93		
–5	85.52	30	16.04	65	4.12		
0	65.84	35	12.99	70	3.47		

Thermistor – Table C

T °C	kΩ	T °C	kΩ	T °C	kΩ	T °C	kΩ
–30	3407	20	256.9	70	35.45	120	7.47
–25	2540	25	205.7	75	29.84	125	6.50
–20	1910	30	165.7	80	26.07	130	5.68
–15	1449	35	134.3	85	21.38	135	4.97
–10	1108	40	109.4	90	18.21	140	4.36
–5	853.8	45	59.58	95	15.57	145	3.84
0	662.7	50	73.73	100	13.36	150	3.84
5	517.9	55	60.98	105	11.49		
10	407.4	60	50.67	110	9.92		
15	322.5	65	42.29	115	8.59		

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. R3T thermistor:
- Measured temperature with contact thermometer: 23.1°C,
- Resistance value determined through temperature (using the thermistor table B):
  Resistance at 23°C: 21.85 kΩ,
  Resistance at 24°C: 20.90 kΩ,
- Disconnect connector and measure resistance between X30A pin 1-2:
  Measured resistance: 21.8 kΩ,
- Measured resistance value is inside the range. R3T thermistor passes the check.

INFORMATION

All thermistors have a resistance tolerance of 3%.

INFORMATION

Connect the service monitoring tool to the unit or use field settings mode 1 (see "7.9 Field settings" [▶ 489]) to monitor the thermistors.

If the measured resistance value matches the resistance determined through the measured temperature, but the temperature for the corresponding thermistor via service monitoring tool or field settings mode 1 is NOT correct, replace the applicable PCB.

Does the measured resistance of the thermistor match with the temperature determined resistance?	Action
Yes	Thermistor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the specific thermistor, see "Repair procedures" [▶ 379].

Repair procedures

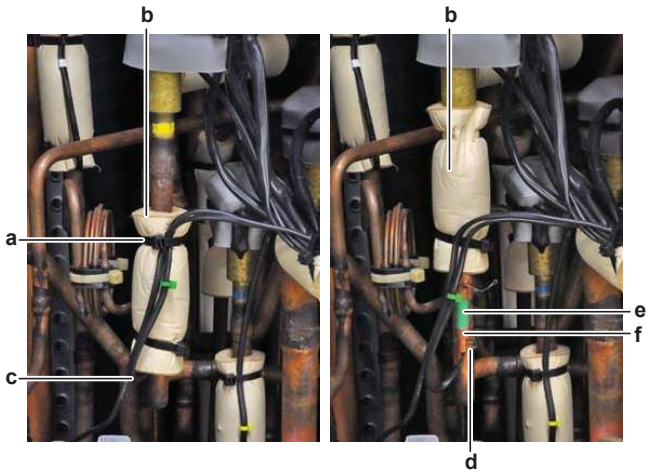
To remove the thermistor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▶ 309].

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.
     - Slide the insulation aside.
     - 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 holder
f Thermistor

3 Cut all tie straps that fix the thermistor harness.

4 Disconnect the thermistor connector from 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" [▸ 411]. 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:

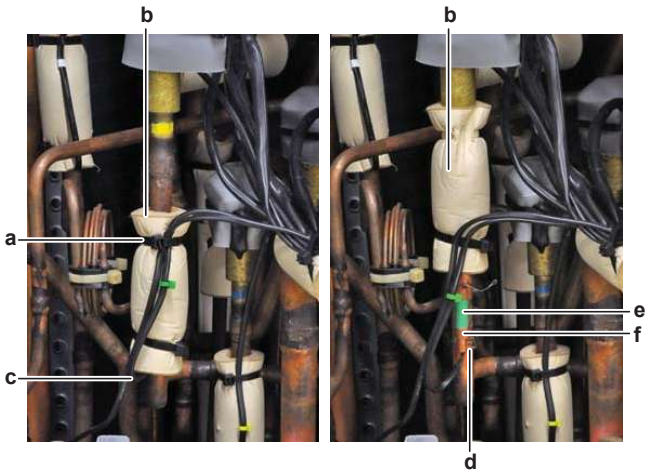
- Remove all other thermistors wired to the connector from their thermistor holder,
- Cut all tie straps that fix the thermistor wiring harness,
- Disconnect the thermistor connector,
- Remove the complete set of thermistors.

6 To install the thermistor, see "Repair procedures" [▸ 379].

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 Tie strap
b Insulation
c Thermistor wire
d Clip
e Thermistor holder
f Thermistor

2 Route the thermistor harness towards the appropriate PCB.

3 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" [▸ 411]. 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.

4.21.2 Other thermistors

Checking procedures

To perform an electrical check of the fin thermistor

1. Stop operation of the outdoor unit and wait for at least 30 minutes.
2. Measure the ambient temperature close to the outdoor unit.
3. Connect the service checker tool to the outdoor unit.
4. Read the temperature of the specific PCB fin thermistor. The read temperature MUST correspond to the measured ambient temperature.

Does the temperature of the fin thermistor match with the ambient temperature?	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" [▸ 204].

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 central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1. Check that the power supply cables and earth connection are firmly fixed to the 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, earth leakage is present.
3. Turn ON the power of the unit.
4. Measure the voltage between the phases L1-L2-L3 on the power supply terminal X1M.

   Result: The voltage MUST be 400 V AC ± 10%.
5. Measure the voltage between each phase and N on the power supply terminal X1M.

   Result: The voltage MUST be 230 V AC ± 10%.
6. Unbalance between the phases MUST NOT exceed 2%.

Is the measured voltage (power supply) correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Adjust the power supply, see "5.1.2 Repair procedures" [▸ 390].

To check the power supply to the safety valve box

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1. Check that the power supply cables and earth connection are firmly fixed to the indoor 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, earth leakage is present.
3. Turn ON the power using the respective circuit breaker.
4. Measure the voltage between L and N on the indoor unit 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" [▶ 390].

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" [▶ 390].

To prevent electrical hazards

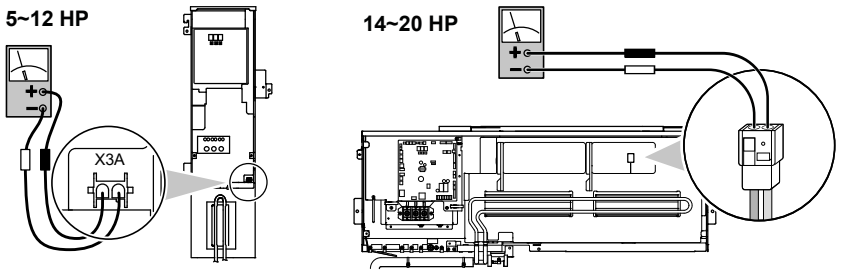
To check the rectifier voltage

1 Stop the unit operation (via the central controller).

2 Turn OFF the respective circuit breaker.

3 Measure the voltage on the rectifier voltage check connector X3A.

Result: The measured voltage should be below 10 V DC.



Additional information

1 To prevent damaging the PCB, touch a non-coated metal part to eliminate static electricity before pulling out or plugging in connectors.

2 Pull out junction connectors X1A, X2A for the fan motors in the outdoor unit before starting service operation on the inverter equipment. Be careful NOT to touch the live parts. (If a fan rotates due to strong wind, it may store electricity in the capacitor or in the main circuit and cause electrical shock.)

3 After the service is finished, plug the junction connector back in. Otherwise the malfunction code E7 will be displayed on the user interface or on the outdoor unit 7-segment display and normal operation will NOT be performed.

For details refer to the wiring diagram labelled on the back of the switch box/ service cover.

Pay attention to the fan. It is dangerous to inspect the unit while the fan is running. Make sure to turn off the main switch and to remove the fuses from the control circuit located in the outdoor unit.

To check the F1-F2 communication voltage on safety valve box

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1. Turn ON the power using the respective circuit breaker.
2. Start the unit operation via the central controller.
3. Let the system operate for a while.
4. Check that the connector X5A is correctly connected to the SV box main PCB A1P and is NOT damaged.
5. Measure the communication voltage between pins 1-2 on the connector X5A.

   Result: The measured voltage MUST be 16 V DC.

Is the measured communication voltage correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

6. Measure the communication voltage between F1-F2 (to which transmission wiring from outdoor unit or from other SV box is connected) on the terminal X2M of the SV box.

   Result: The measured voltage MUST be 16 V DC.

Is the measured communication voltage correct?	Action
Yes	Correct the wiring between the terminal X2M and the SV box main PCB A1P, see "7.2 Wiring diagram" [▸ 411].
No	Check the F1-F2 transmission between outdoor units and SV box or between SV boxes, see "5.1.1 Checking procedures" [▸ 383].

To check the F1-F2 communication voltage on indoor unit

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1. Turn ON the power using the respective circuit breaker.
2. Start the unit operation via the central controller.
3. Let the system operate for a while.
4. Check that the connector X30A is correctly connected to the indoor unit main PCB and is NOT damaged.
5. Measure the communication voltage between pins 3-4 on the connector X30A.

   Result: The measured voltage MUST be 16 V DC.

Is the measured communication voltage correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

6 Measure the communication voltage between F1-F2 on the terminal (X2M or X1M depending on the indoor unit).

Result: The measured voltage MUST be 16 V DC.

Is the measured communication voltage correct?	Action
Yes	Correct the wiring between the terminal (X2M or X1M depending on the indoor unit) and the indoor unit main PCB, see Wiring diagram in the indoor unit service manual.
No	Check the F1-F2 transmission between indoor units and SV box, see "5.1.1 Checking procedures" [▸ 383].

To check F1-F2 transmission

To check the F1-F2 wiring

1 Check that the wiring:

- is within installation length limits,
- is within installation length limits,
- is of the proper wire thickness,
- is properly fixed to the terminals,
- is executed according to the installation manual, with no star connections.

2 Check that no shielded cables are used or that shielded cables are grounded only on one side of the cable.

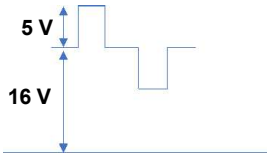
3 Check that F1-F2 wiring has continuity all over.

4 Check that the minimum distance between the power cables and communication cables outside the units is respected (see table below).

Power supply cable current (X)	Distance between power and communication cables
X ≤10 A	≥300 mm
10 A <X ≤50 A	≥500 mm
50 A <X ≤100 A	≥1000 mm
X >100 A	≥1500 mm
Is the wiring correctly executed, as indicated in the installation manual?	Action
Yes	Continue with the next step in this checking procedure.
No	Modify the wiring, see the installation manual.

To measure the F1-F2 transmission

F1-F2 transmission is a D3Net rectangular waveform, 16 VDC ± 5 V with 16-5V amplitude that appears on the 16V base line:



F1-F2 terminals on indoor units, SV boxes, outdoor unit(s) and central controllers are all possible measurement points. Use as many points as you can and take the time necessary for measurement if analyzing with an oscilloscope.

On outdoor units, measurement should be done either at F1-F2 IN or F1-F2 OUT. If the F1-F2 OUT terminal is not used, then measure at the F1-F2 IN terminal.

You can conduct the measuring with a multimeter or an oscilloscope.

To measure the F1-F2 transmission with a multimeter:

1. Set the multimeter to DC Voltage measurement.
2. Measure on the F1 and F2 terminals.

   Result: 16 V DC should be read.

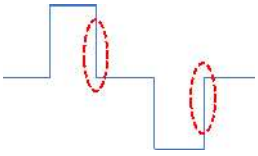
To measure the F1-F2 transmission with an oscilloscope:

> **INFORMATION**
>
> Ensure that probes are securely connected to F1-F2 terminals. Otherwise, distortions will be generated resulting in misinterpretation of data. It is recommended to connect temporary cables to the probes and then connect the cables to the terminals securely.

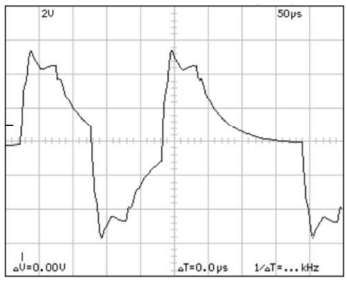
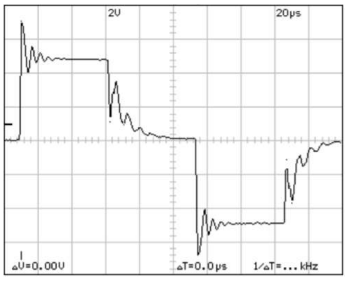
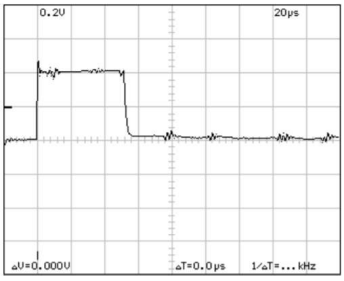
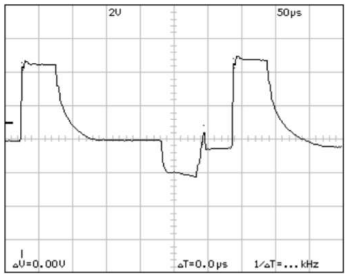
1. Measure at as many points as you can, this can help to determinate the problem.

For example: if the measurements at the indoor unit side are distorted while central controller and outdoor unit seem OK, you can suppose that the failure in transmission is related to the indoor unit side.

2. Set time base (horizontal) to 50 µs/div to 100 µs. Voltage axis (vertical) should be set to 2V/div to 5V. Set position properly, otherwise the data may appear outside the screen. In AC mode, which is a sampling mode in oscilloscopes, waveforms appear in the middle of the screen. So, it is recommended to use AC mode if possible.
3. Set the triggering mode of the oscilloscope to "Normal". If "Auto" mode is selected, observed waveforms may be cleared instantaneously leading to misinterpretation of data.
4. Ignore very short-time pulses of 1V amplitude or less, or overshooting at the rising edge may be ignored. Focus on the shown points of the waveform below:



Examples of waveform distortions on D3Net and possible causes:

	**Rounded waveforms at falling edges.** Possible reasons: ▪ Excessive wire length, ▪ Excessive number of connected devices, ▪ Branching (star connections).
	**Ringing.** Possible reasons: ▪ Transmission wiring very close to high voltage cables, ▪ Use of multi-conductor type wires.
	**Noise.** Possible reasons: ▪ Transmission wiring very close to high voltage cables, ▪ Transmission wiring effected from external equipment causing noise.
	**Faulty Waveform.** Possible reasons: ▪ Transmission circuit failure on a PCB.

After checking and correcting possible causes of F1-F2 transmission problems, perform a communication reset (see "5.1.2 Repair procedures" [▸ 390]).

To check the mechanical ventilation error input

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1. Turn ON the power using the respective circuit breaker.
2. Start the unit operation via the central controller.
3. Let the system operate for a while.
4. Check that the mechanical ventilation functions correctly. Repair as needed.
5. Disconnect the connector X36A from the main PCB and measure the resistance between pins 1-2 on wired connector. Resistance MUST be:

- OL (switch SFB=open) when mechanical ventilation functions correctly (=normal operation).
- 0 Ω (switch SFB=closed) when faulty mechanical ventilation detected.

INFORMATION

Make sure that the wiring between the switch SFB and connector X36A is correctly connected and NOT damaged (check continuity). "7.2 Wiring diagram" [▸ 411].

Is the measured resistance 0 Ω (switch SFB=closed)?	Action
Yes	Continue with the next step.
No	Mechanical ventilation error input is OK.

6 Again check that the mechanical ventilation functions correctly. Repair as needed.

7 If mechanical ventilation functions correctly, check if the option PCB drives the switch SFB to the closed position.

Does the option PCB drive the switch SFB to closed position?	Action
Yes	Check for the reason why the option PCB drives the switch SFB to closed position (faulty option PCB, ...).
No	Replace the switch SFB, see "5.3.2 Repair procedures" [▸ 403].

To check the communication between outdoor units

Q1 and Q2 are connection terminals for the transmission wiring between multi outdoor units. Perform as follows:

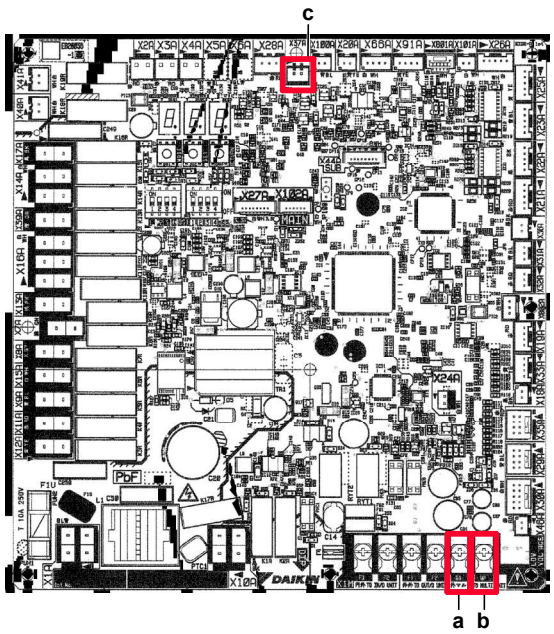
1 Make sure that all wires are firmly and correctly connected, see "7.2 Wiring diagram" [▸ 411].

2 Check the continuity of all wires.

3 Replace any damaged or broken wires.

4 Measure the voltage on the main PCB's of all connected outdoor units as shown below:

VDC	Com.	Ref.
Q1	X37A: pin 1	13 V DC
Q2	X37A: pin 1	13 V DC
Q1	X37A: pin 2	-3 V DC
Q2	X37A: pin 2	-3 V DC



a Terminal Q1
b Terminal Q2
c Connector X37A

Is the measured voltage correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Perform a check of the main PCB, see "4.10 Main PCB" [▶ 280].

To check the wiring between the outdoor unit and the indoor unit

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" [▶ 411].

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 50 Hz ± 3%.

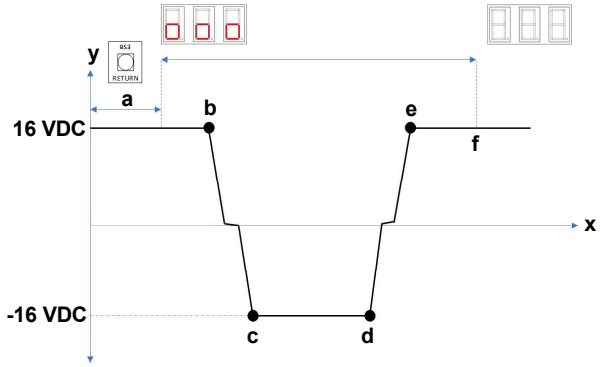
Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To perform a communication reset

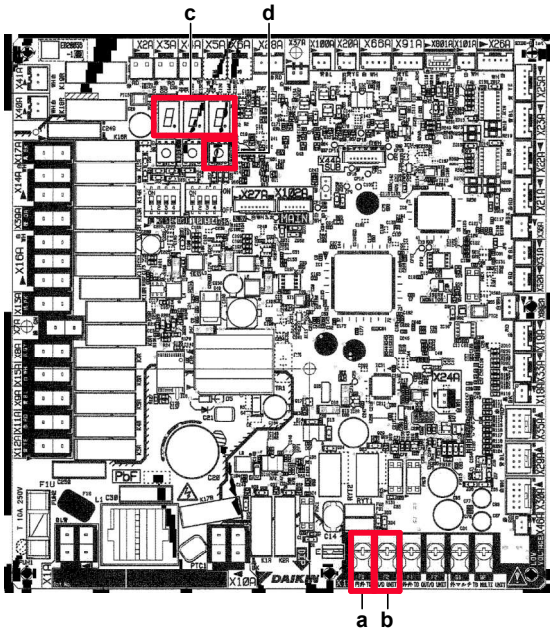
NOTICE

If an indoor unit and/or SV box is/are powered OFF when communication reset is performed, the outdoor unit will delete the indoor unit/SV box information since this/these unit will not be identified during re-initialization. If a SV box is Power OFF, all the indoor units connected to the SV box will not be identified no matter if they have power or not. If so, these units will not be recognized by the outdoor unit upon power restore to this indoor unit.

1 Set multimeter to V DC measurement. The example below is performed while COM-F1 and V DC-F2, the polarity will be opposite than the graph below if connected otherwise (which is not a problem).



a Y: Voltage (VDC)
b X: Time



a Terminal F1
b Terminal F2
c 7-segment display
d Push button BS3

2 Push BS3 (RETURN) and hold it for 5 seconds until the 7-segment display shows "000". Then release BS3.

Result: After a while, voltage will drop to almost 0 V DC. At this stage it means that re-initialization has started.

Result: Depending on the system size, voltage will rise to 16 V DC and hit 0 V back again several times.

Result: When finished, 7-Segment Display will turn OFF. This indicates that re-initialization has completed.

The time this procedure takes, depends on the amount of indoor units.

To adjust the wiring between the outdoor units

1 Adjust the wiring according to the wiring diagram and connection diagram, see "7.2 Wiring diagram" [▸ 411].

2 Check that all wires are properly connected.

3 Check that no wires are damaged.

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 central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Make sure that all wires are firmly and correctly connected, see "7.2 Wiring diagram" [▸ 411].

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

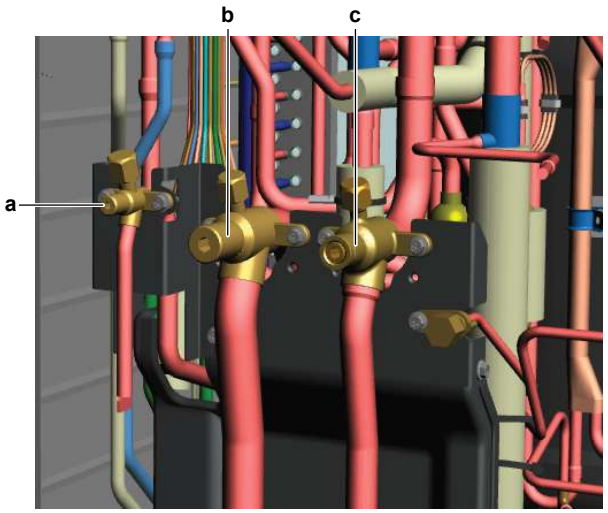
INFORMATION

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

To check if the stop valves are open

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Remove the caps.



a Liquid stop valve
b Equalising pipe stop valve (ONLY used if multi outdoor)
c Gas stop valve

2 Check if the stop valves are completely open.

The refrigerant circuit stop valves are open?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Open the stop valves of the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].

To check if the refrigerant circuit is clogged

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Wait for the refrigerant to reach the outdoor temperature.

2 Check that all field piping is done according to the refrigeration practice and installation manual:

- Correct piping diameters
- Piping distance limits are followed
- NO pipes are squeezed
- NO short radius bends

3 Connect a manometer to the high pressure and low pressure service ports.

4 Turn ON the power of the unit.

5 Activate `Heating` operation via the Cool/Heat master user interface.

6 Read the pressure on the high and low pressure gauges. If the difference between high and low pressure >0.2 MPa, the refrigerant circuit might be clogged.

7 On the refrigerant liquid piping (between the indoor unit 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" [▶ 397].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To check if the refrigerant circuit is correctly charged

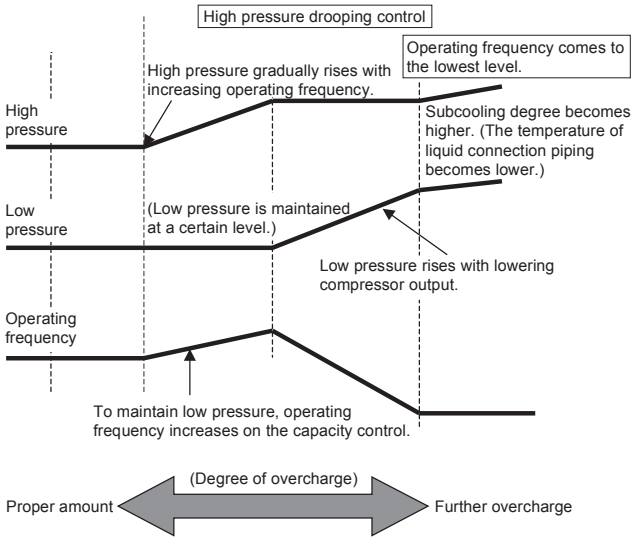
Due to the relationship to pressure control and electronic expansion valve control, the amount of refrigerant needs to be examined according to operating conditions.

Refer to the procedures shown below for correct examination.

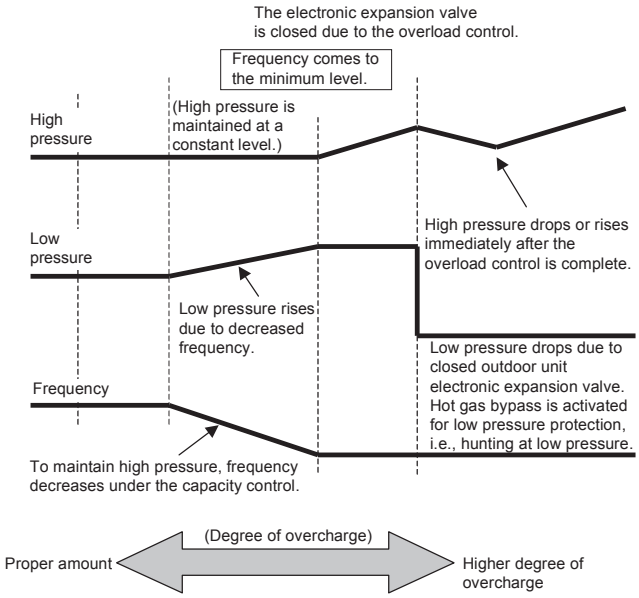
Refrigerant overcharge diagnosis

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). Consequently, in heating, the temperature of discharge air through the subcooled section becomes lower.

Cooling



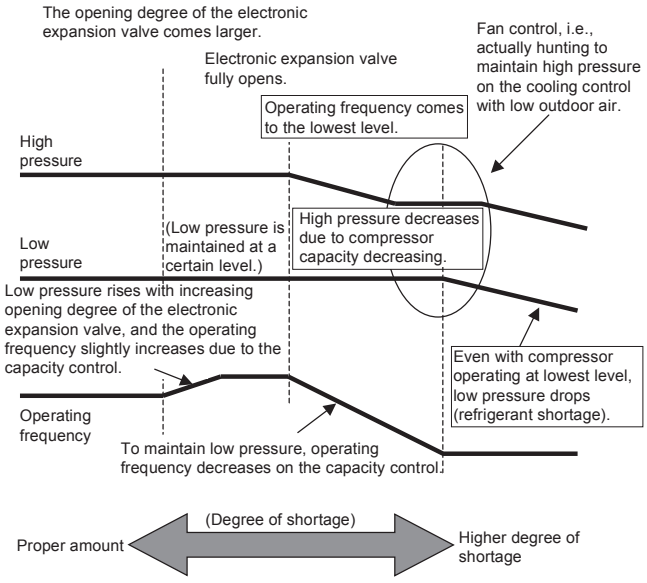
Heating



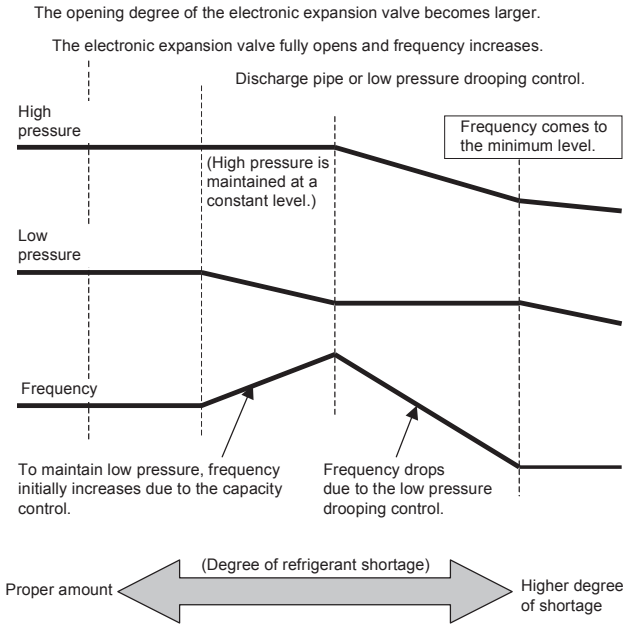
Refrigerant shortage diagnosis

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" [▸ 397].

To check for non-condensables in the refrigerant circuit

Prerequisite: Stop the unit operation via the central controller.

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 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" [▸ 397].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To perform a leak test

The leak test must satisfy the specifications of EN378-2.

1. Perform the two leaks tests below.

Vacuum leak test

1 Evacuate the system from the liquid and gas piping to a gauge pressure of –100.7 kPa (–1.007 bar) for more than 2 hours.

2 Once reached, turn off the vacuum pump and check that the pressure does not rise for at least 1 minute.

3 Should the pressure rise, the system may either contain moisture (see vacuum drying below) or have leaks.

Pressure leak test

1 Break the vacuum by pressurising with nitrogen gas to a minimum gauge pressure of 0.2 MPa (2 bar). Never set the gauge pressure higher than the maximum operation pressure of the unit at the piping, i.e. 3.73 MPa (37.3 bar).

2 Test for leaks by applying a bubble test solution to all piping connections.

3 Discharge all nitrogen gas.

NOTICE

ALWAYS use a recommended bubble test solution from your wholesaler.

NEVER use soap water:

- Soap water may cause cracking of components, such as flare nuts or stop valve caps.
- Soap water may contain salt, which absorbs moisture that will freeze when the piping gets cold.
- Soap water contains ammonia which may lead to corrosion of flared joints (between the brass flare nut and the copper flare).

Problem solved?

Any leaks found in the refrigerant circuit?	Action
Yes	Replace the leaking part of the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 397].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To check if the refrigerant field piping is compliant with the regulations

1 Check if the refrigerant field piping is compliant with the regulations. Adjust as needed. See installation manual for field piping specifications.

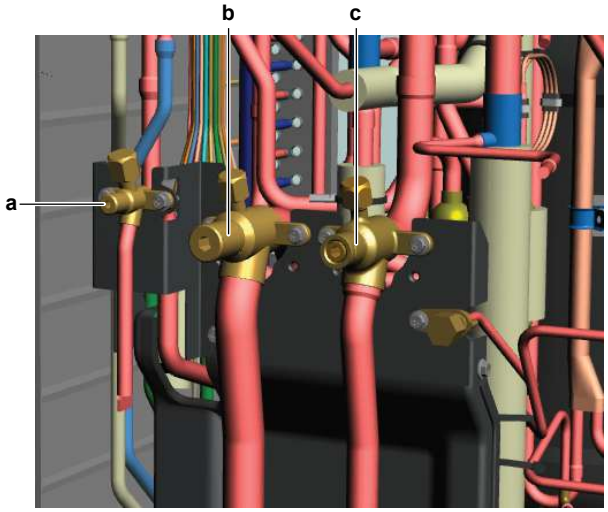
Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

5.2.2 Repair procedures

To open the stop valves of the refrigerant circuit

Prerequisite: Remove the required plate work, see "4.14 Plate work" [▸ 309].

1 Remove the caps.



a Liquid stop valve
b Equalising pipe stop valve (ONLY used if multi outdoor)
c Gas stop valve

2 Completely open the stop valves by screwing the stop valve screw counterclockwise.

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/leaking part of the refrigerant circuit

1 See the correct procedure for the component that needs to be repaired. See also "Repair information" [▸ 401] for more details.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To recuperate the refrigerant

SV unit

See procedure for the appropriate outdoor unit.

Outdoor unit

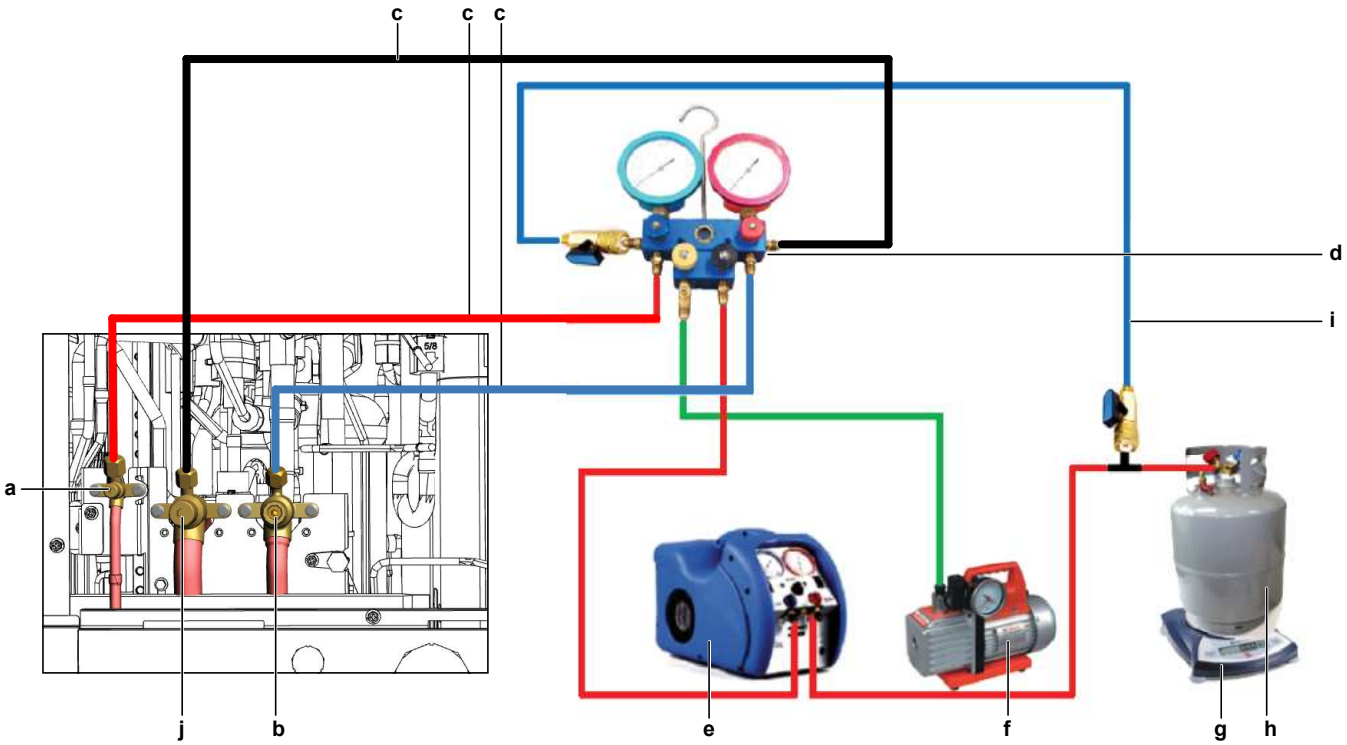
Prerequisite: Stop the unit operation via the central controller.

1 Necessary tools:

Service tool		Remark
	Refrigerant recovery unit	Compatible with the refrigerant to be recovered
	Scale	Read-out / 10 grams
	Manifold	Compatible with the refrigerant to be recovered
	Flexible hoses	Compatible with the refrigerant to be recovered
	Recovery cylinder	Compatible with the refrigerant to be recovered
	Vacuum pump	2-stage, equipped with solenoid valve

2 Setup a vacuum line between recovery unit discharge and the recovery bottle. Without this additional setup, the discharge line from the recovery device to the refrigerant cylinder would not have been vacuumed.

3 Connect the vacuum pump, manifold, recovery unit, and refrigerant recovery cylinder to the service ports of the refrigerant circuit as shown below.



a Liquid pipe service port
b Gas pipe service port
c Flexible hose
d Manifold
e Recovery unit
f Vacuum pump
g Scale
h Recovery cylinder
i Vacuum setup
j Equalising pipe service port

4 Activate refrigerant recovery / vacuum mode by setting field setting mode 2-21 to 1 (see "7.9 Field settings" [▸ 489]).

5 If refrigerant is recovered after error code A0-11 or A0-20, ALSO set field setting mode 2-23 to 1 (see "7.9 Field settings" [▸ 489]).

To make sure that refrigerant cycle is completely connected and there are no dead-zones because of closed expansion- or solenoid valves, entering the refrigerant recovery / vacuum mode ensures that:

- All indoor unit expansion valves get fully opened,
- All SV box expansion valves get fully opened,
- all outdoor unit expansion valves get fully opened,
- the necessary solenoid valves get fully opened.

6 To add refrigerant, see "5.2.2 Repair procedures" [▸ 397].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To add refrigerant

1 See the installer reference guide for the correct procedure.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to troubleshooting of the specific error and continue with the next procedure.

Repair information

Refrigerant piping handling

- Make sure that the applied pressure is never higher than the unit design pressure indicated on the nameplate (PS).
- Work according to the F-gas regulation and/or local regulations.
- Make sure the correct amount of refrigerant is charged after repair according to the F-gas regulation label on the unit (factory + additional where required).
- Make sure to use the appropriate equipment and tools according to the refrigerant and unit type.
- 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 pressure of minimal 2000 micron / 2 Torr / 266 Pa MUST be reached. This pressure should stay stable for 30 minutes when vacuum pump is NOT running. If vacuum pressure CANNOT be held, most likely there is still moisture in the system. Again run the vacuum pump for 1~2 hours to a pressure (absolute pressure readout) lower than 2000 micron / 2 torr / 266 Pa. 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 ≥99.99%).

Additional refrigerant charge amount

1 Once automatic or manual additional refrigerant charge is completed, it is necessary to give input to the outdoor unit over the total additional refrigerant charge amount.

2 Set field setting 2–14 according to the table below. See "7.9 Field settings" [▸ 489].

Mode 2-14	R32 [kg]	Mode 2-14	R32 [kg]	Mode 2-14	R32 [kg]
0	No input	6	25 <x ≤30	12	55 <x ≤60
1	0 <x ≤5	7	30 <x ≤35	13	60 <x ≤65
2	5 <x ≤10	8	35 <x ≤40	14	65 <x ≤70
3	10 <x ≤15	9	40 <x ≤45	15	70 <x ≤75
4	15 <x ≤20	10	45 <x ≤50		
5	20 <x ≤25	11	50 <x ≤55		

3 Even though it can be selected, 2-14 setting 16 is NOT allowed (maximum total allowable refrigerant charge <79.8 kg).

4 Default setting is 0. If set to 0, refrigerant leak check function will NOT be available.

5 If set to 0 and field setting 2-88=0, at the end of the test-run error code U3-02 will indicate that refrigerant leak check function will NOT be available.

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 270 Pa 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.
- After stopping the vacuum pump, the absolute pressure MUST be kept below 270 Pa for at least 30 minutes, without a significant increase of pressure. 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	°C
760000 / 760	1013 / 101325	100
50000 / 50	66 / 6666	38
10000 / 10	13 / 1333	11
2000 / 2	2.6 / 266	−10
1000 / 1	1.33 / 133	−18
500 / 0.5	0.66 / 66	−24

5.3 Manufacturer components

5.3.1 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 "5.3.2 Repair procedures" [▸ 403].

5.3.2 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.

5.4 External factors

5.4.1 Checking procedures

To check the outdoor temperature

1 The temperature ranges for the different operation modes of the unit can be found in the databook on Business Portal.

INFORMATION

If the outdoor temperature is outside the range of operation, the unit may NOT operate or may NOT deliver the required capacity.

INFORMATION

If difference between the ambient temperature and temperature at air inlet of the outdoor unit heat exchanger is >5 K, consider mounting an air guide at the air discharge outlet of the outdoor unit heat exchanger.

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 for objects that may block the airflow

1 Check for the presence of object(s) near the indoor unit that may block the airflow. Remove the object(s) 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 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.

To check for an external power source

1 Check for the presence of an external power source. This might cause electrical interference (electrical noise disturbance).

2 If an external power source was found, remove it.

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 Maintenance schedule

To ensure optimal availability of the unit, certain checks and inspections on the unit and the field wiring have to be carried out at regular intervals. See the checking procedures in this manual for inspection of the components mentioned below.

The intervals depend on:

- Local legislation,
- the conditions at the installation site (presence of dust, sea salt, harmful gas, oil mist, power supply fluctuation, bumps, vibration etc.),
- how the unit is operated (frequent stop and start, longer operation hours etc.),
- total running hours of the unit,
- ambient conditions (high heat and humidity load etc.)

Depending on the above mentioned factors, maintenance may be required sooner than the mentioned interval here below.

The table below also assumes a unit operation of 10 hours/day and 2500 hours/year.
Normal use of the unit is considered when a unit is not performing the stop/start cycle (Thermo OFF and then ON) more than 6 times/hour.

Component	Inspection	Maintenance
Electric Motor	1 year	20.000 hours
PCB		25.000 hours
Heat Exchanger		5 years
Sensor, Thermistor		5 years
User Interface, Switches		25.000 hours
Drain Pan		8 years
Expansion Valve		20.000 hours
Solenoid Valve		20.000 hours
Air Filter		5 years
High Efficiency Filter		1 year
Fuse		10 years
Crankcase Heater		8 years
Components under pressure		In case of corrosion
R32 leak sensor (indoor + SV box)		10 years

Also, the cleaning of air filters, heat exchangers, fan propellers, drain pans etc. has to be carried out at regular intervals, see "6.2 Maintenance procedures for outdoor units" [▸ 406], Maintenance procedures for indoor units (see indoor units service manual) and "6.3 Maintenance procedures for Safety Valve Boxes" [▸ 409].

6.2 Maintenance procedures for outdoor units

6.2.1 To check the general status of the unit

Prerequisite: Switch off all the indoor units.

Prerequisite: Stop the unit operation via the central controller.

1 Turn OFF the respective circuit breaker.



DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 384].

2 Clean the cover plates, see "6.2.2 To clean the cover plates" [▸ 407].

3 Check if any other equipment interferes with the operation of the outdoor unit (other device exhaust to outdoor unit heat exchanger, chimney exhaust to outdoor unit, corrosive or explosive ambient, electrical equipment such as antennas, GSM towers, etc...). Refer to the installation manual.

4 Make sure that there is sufficient air flow or no air by-pass on outdoor unit heat exchanger in cooling mode. Refer to installation manual for required space. Even after outdoor unit heat exchanger is cleaned by maintenance, if difference between ambient temperature and air inlet of outdoor unit heat exchanger is 5K or more, consider mounting an air guide at air discharge outlet of the outdoor unit.

5 Prior to cleaning, check for oil drips on the bottom plate. If found, check system for signs of refrigerant shortage, check possible leaking points and repair when necessary. Refer to Repair instructions of the component when necessary.

6 Clean the bottom plate.

7 Clean the inside of the unit.

NOTICE

To clean the inside of the unit:

- Use water or compressed air, not warmer than 50° C.
- Do not use any cleaning agents or chemicals.
- Do not use pressurized water.

8 Check the general status inside the cover plates.

9 Check the visual appearance of all the components, including PCBs. Refer to component check methods if any irregularity is found.

10 Check the electrical connections. Tighten and secure the connections when necessary.

11 Check if power supply is in conform with legislation. See "To check if the power supply is compliant with the regulations" [▸ 384].

12 Check and tighten the power supply wiring on the dedicated terminal.

13 Check insulation on piping and refrigerant branches. Replace or fix insulation where necessary.

14 Make sure that the water drain works properly and is not clogged or does not cause any accumulation of water.

15 Clean outdoor unit heat exchanger see "6.2.3 To clean the outdoor unit heat exchanger" [▸ 408].

16 Clean outdoor unit fan propellers.

17 Check latest error codes and latest retries, see "3.2 To retrieve error codes and check error history" [▸ 27].

18 Log the maintenance in the log-book.

After outdoor unit maintenance, indoor unit maintenance (see service manual of the indoor unit) and SV box maintenance (see "6.3 Maintenance procedures for Safety Valve Boxes" [▸ 409]) is performed, check the system via the service monitoring tool for normal operation. See "3.4 Symptom based troubleshooting" [▸ 196].

6.2.2 To clean the cover plates

1 Clean the cover plates with a wet cloth.

NOTICE

To clean the plate work:

- Use water or compressed air, not warmer than 50° C.
- Do not use any cleaning agents or chemicals.
- Do not use pressurized water.

6.2.3 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/N_2.

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.

6.3 Maintenance procedures for Safety Valve Boxes

6.3.1 To check the general status of the Safety Valve Box

Prerequisite: Stop indoor unit operation via user interface, central controller, ...

Prerequisite: Turn OFF the power of the SV box.

Prerequisite: Turn OFF the respective circuit breaker.

1. Prior to cleaning, check installation space for oil drips. If found, check system for signs of refrigerant shortage, check possible leaking points and repair as needed.
2. Check if any other equipment interferes with the operation of the SV box.
3. Clean the cover plates with a piece of wet cloth, see "6.3.2 To clean the cover plates" [▸ 409].
4. Open the SV box, see "4.14 Plate work" [▸ 309].
5. Check the general status inside the cover plates.
6. Check the status of drain piping in case multi SV.
7. Check the visual appearance of all components. Refer to component checks if any irregularity is found.
8. Check the electrical connections. Tighten and secure the connections as needed.
9. Check if power supply is in conform with legislation. See ""To check if the power supply is conform with the regulations" [▸ 384]".
10. Check and tighten the power supply wiring on the dedicated terminal.
11. Check the insulation on piping. Replace or fix insulation where necessary.
12. Check the DIP switch settings. See the installation manual for more information.
13. Log the maintenance in the log-book.
14. After outdoor unit maintenance (see "6.2 Maintenance procedures for outdoor units" [▸ 406]), indoor unit maintenance (see service manual of the indoor unit) and SV box maintenance is performed, check the system via the service monitoring tool for normal operation. See "3.4 Symptom based troubleshooting" [▸ 196].

6.3.2 To clean the cover plates

1. Clean the cover plates with a wet cloth.

NOTICE

To clean the plate work:

- Use water or compressed air, not warmer than 50° C.
- Do not use any cleaning agents or chemicals.
- Do not use pressurized water.

7 Technical data

7.1 Detailed information setting mode

7.1.1 Detailed information setting mode: Outdoor unit

See the installer reference guide on business portal for more information.

7.1.2 Detailed information setting mode: Remote controller

See the installer reference guide on business portal for more information.

7.2 Wiring diagram

7.2.1 Wiring diagram: Outdoor unit

Refer to the wiring diagram sticker on the unit. The abbreviations used are listed below:

> **INFORMATION**
>
> The wiring diagram on the outdoor unit is only for the outdoor unit. For the indoor unit or optional electrical components, refer to the wiring diagram of the indoor unit.

1 Symbols (see below).

2 Refer to the installation or service manual on how to use BS1~BS3 push buttons and DS1~DS2 switches.

3 Do NOT operate the unit by short-circuiting protection device S1PH.

4 Refer to the installation manual for connecting indoor–outdoor interconnection F1-F2 and outdoor-multi interconnection Q1-Q2.

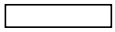
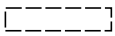
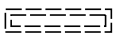
5 When using the central control system, connect outdoor–outdoor interconnection F1-F2.

6 The capacity of the contact is 220~240V AC – 0.5 A (rush current needs 3 A or less).

7 Use dry contact for micro current (10 mA or less, 15 V DC).

8 When using the optional adapter, refer to the installation manual of the optional adapter.

Symbols:

	Field wiring
	Terminal block
	Connector
	Terminal
	Protective earth
	Noiseless earth
	Earth wiring
	Field supply
	PCB
	Switch box
	Option

Colours:

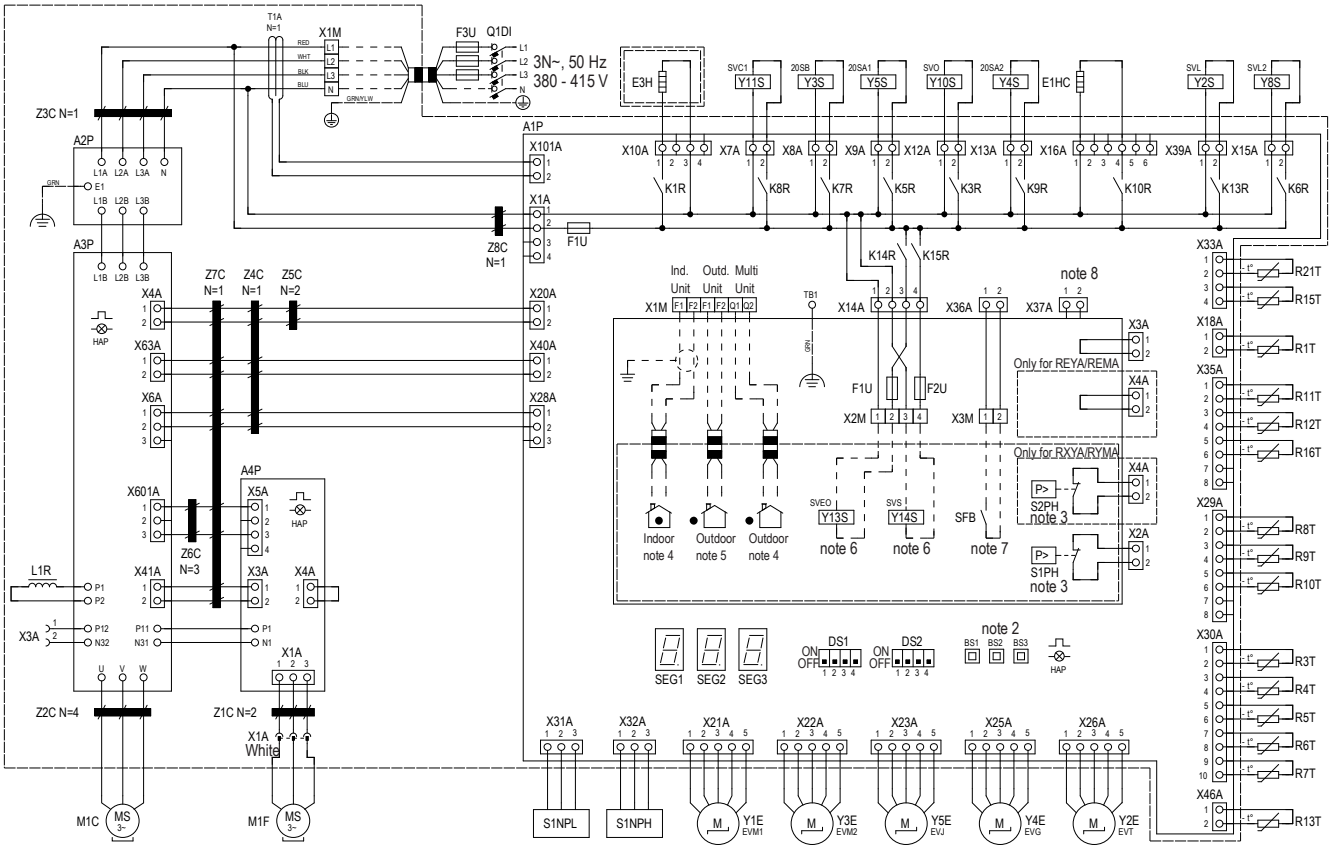
BLK	Black
RED	Red
BLU	Blue
WHT	White
GRN	Green

Legend for wiring diagram

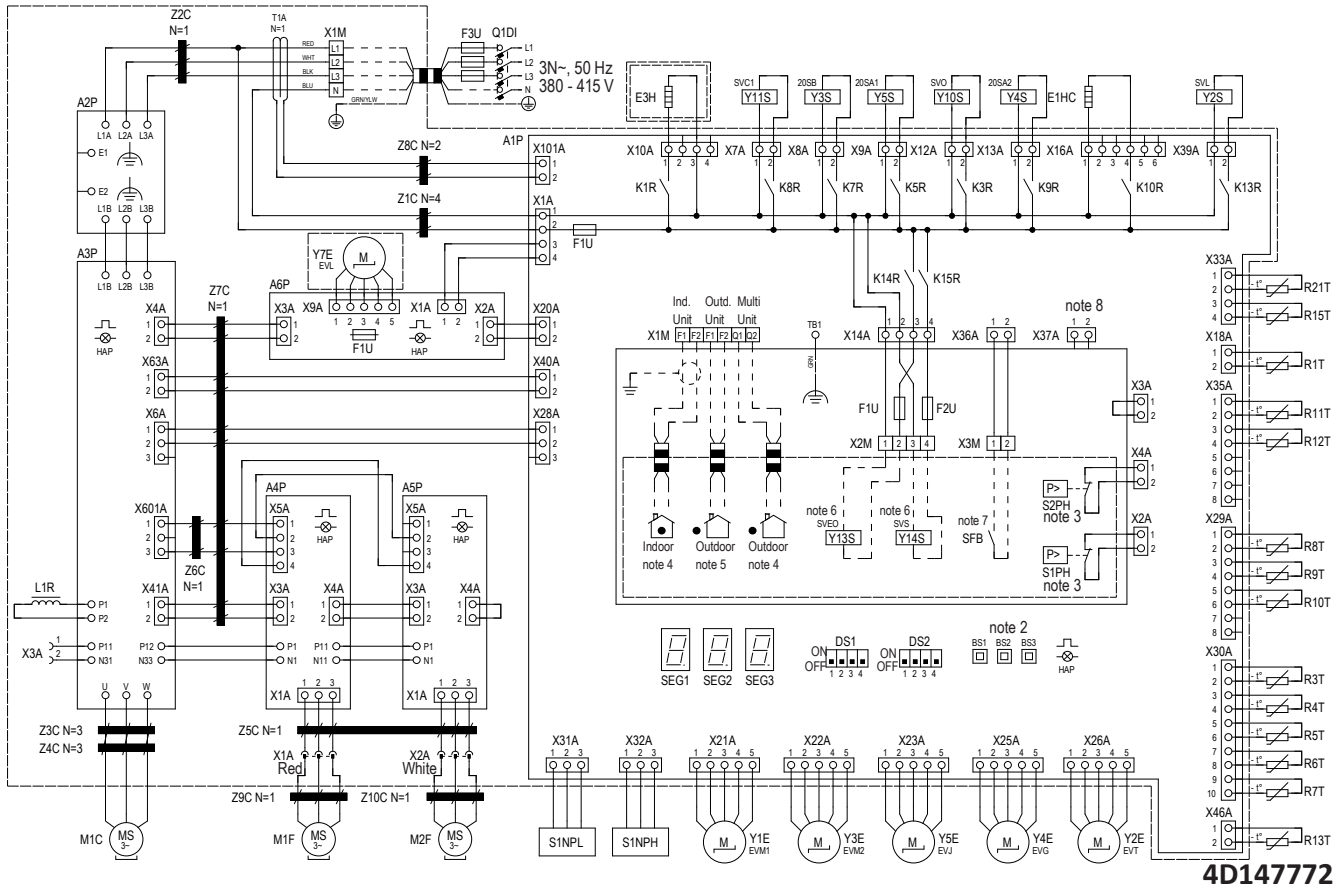
A1P	Printed circuit board (main)
A2P	Printed circuit board (noise filter)
A3P	Printed circuit board (inverter)
A4P	Printed circuit board (fan)
A5P (14~20 HP only)	Printed circuit board (fan)
A6P (14~20 HP only)	Printed circuit board (sub)
BS1~BS3 (A1P)	Push button switch (MODE, SET, RETURN)
DS1, DS2 (A1P)	DIP switch
E1HC	Crankcase heater
E3H	Bottom plate heater
F1U (A1P)	Fuse (T 10 A / 250 V)
F1U (A6P)(14~20 HP only)	Fuse (T 3.15 A / 250 V)
F1U, F2U	Fuse (T 1 A / 250 V)
F3U	Field fuse
F101U (A4P)	Fuse
HAP (A*P)	Pilot lamp (service monitor is green)
K*R (A*P)	Relay on PCB
L1R	Reactor
M1C	Motor (compressor)
M1F	Motor (fan)
M2F (14~20 HP only)	Motor (fan)
Q1DI	Earth leakage circuit breaker
R1T	Thermistor (air)
R3T	Thermistor (liquid, main)
R4T	Thermistor (heat exchanger, liquid pipe upper)
R5T	Thermistor (heat exchanger, liquid pipe lower)
R6T	Thermistor (subcool heat exchanger gas)
R7T	Thermistor (subcool heat exchanger liquid)
R8T	Thermistor (heat exchanger, gas upper)
R9T	Thermistor (heat exchanger, gas lower)
R10T	Thermistor (suction)
R11T	Thermistor (heat exchanger, de-icer)
R12T	Thermistor (suction compressor)
R13T	Thermistor (receiver gas)

R15T	Thermistor (M1C body)
R16T (5~12 HP only)	Thermistor (gas injection)
R21T	Thermistor (M1C discharge)
S1NPH	High pressure sensor
S1NPL	Low pressure sensor
S1PH	High pressure switch
S2PH	High pressure switch
SEG1~SEG3 (A1P)	7-segment display
SFB	Mechanical ventilation error input
T1A	Current sensor
X*A	Connector
X*M	Terminal strip
Y1E	Electronic expansion valve (heat exchanger upper)
Y2E	Electronic expansion valve (subcool heat exchanger)
Y3E	Electronic expansion valve (heat exchanger lower)
Y4E	Electronic expansion valve (receiver gas)
Y5E	Electronic expansion valve (inverter cooling)
Y7E (14~20 HP only)	Electronic expansion valve (liquid injection)
Y2S	Solenoid valve (liquid pipe)
Y3S	Solenoid valve (high pressure/low pressure gas pipe)
Y4S	Solenoid valve (heat exchanger lower)
Y5S	Solenoid valve (heat exchanger upper)
Y8S (5~12 HP only)	Solenoid valve (gas injection)
Y10S	Solenoid valve (accu oil return)
Y11S	Solenoid valve (M1C oil return)
Y13S	Error operation output (SVEO)
Y14S	Leak sensor output (SVS)
Z*C	Noise filter (ferrite core)

RYMA5 + RXYA8~12



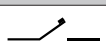
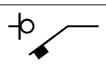
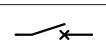
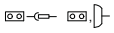
RXYA14~20



7.2.2 Wiring diagram: Safety valve box

The wiring diagram is delivered with the unit, located at the inside of the service cover.

For applied parts and numbering, see the wiring diagram on the unit. Part numbering is by Arabic numbers in ascending order for each part and is represented in the overview below by "*" in the part code.

Symbol	Meaning	Symbol	Meaning
  	Circuit breaker		Protective earth
	Connection		Protective earth (screw)
	Connector		Rectifier
	Earth		Relay connector
	Field wiring		Short-circuit connector
	Fuse		Terminal
	Indoor unit		Terminal strip
	Outdoor unit		Wire clamp
	Residual current device		

Symbol	Colour	Symbol	Colour
BLK	Black	ORG	Orange
BLU	Blue	PNK	Pink
BRN	Brown	PRP, PPL	Purple
GRN	Green	RED	Red
GRY	Grey	WHT	White
		YLW	Yellow

Symbol	Meaning
A*P	Printed circuit board (PCB)
BS*	Pushbutton ON/OFF, operation switch
BZ, H*O	Buzzer
C*	Capacitor
AC*, CN*, E*, HA*, HE*, HL*, HN*, HR*, MR*_A, MR*_B, S*, U, V, W, X*A, K*R_*, NE	Connection, connector
D*, V*D	Diode
DB*	Diode bridge
DS*	DIP switch
E*H	Heater

Symbol	Meaning
FU*, F*U, (for characteristics, see PCB inside your unit)	Fuse
FG*	Connector (frame ground)
H*	Harness
H*P, LED*, V*L	Pilot lamp, light emitting diode
HAP	Light emitting diode (service monitor green)
HIGH VOLTAGE	High voltage
IES	Intelligent eye sensor
IPM*	Intelligent power module
K*	Contact
K*R, KCR, KFR, KHuR, K*M	Magnetic relay
L	Live
L*	Coil
L*R	Reactor
M*	Stepper motor
M*C	Compressor motor
M*D	Damper motor
M*F	Fan motor
M*P	Drain pump motor
M*S	Swing motor
MR*, MRCW*, MRM*, MRN*	Magnetic relay
N	Neutral
n=*, N=*	Number of passes through ferrite core
NE*	Functional earth
PAM	Pulse-amplitude modulation
PCB*	Printed circuit board
PM*	Power module
PS	Switching power supply
PTC*	PTC thermistor
Q*	Insulated gate bipolar transistor (IGBT)
Q*C	Circuit breaker
Q*DI, KLM	Earth leak circuit breaker
Q*L	Overload protector
Q*M	Thermo switch
Q*R	Residual current device

Symbol	Meaning
R*	Resistor
R*T	Thermistor
RC	Receiver
S*C	Limit switch
S*L	Float switch
S*NG	Refrigerant leak detector
S*NPH	Pressure sensor (high)
S*NPL	Pressure sensor (low)
S*PH, HPS*	Pressure switch (high)
S*PL	Pressure switch (low)
S*T	Thermostat
S*RH	Humidity sensor
S*W, SW*	Operation switch
SA*, F1S	Surge arrester
SEG*	7-segment display
SR*, WLU	Signal receiver
SS*	Selector switch
SHEET METAL	Terminal strip fixed plate
T*R	Transformer
TC, TRC	Transmitter
V*, R*V	Varistor
V*R	Diode bridge, Insulated-gate bipolar transistor (IGBT) power module
WRC	Wireless remote controller
X*	Terminal
X*M	Terminal strip (block)
X*Y	Connector
Y*E	Electronic expansion valve coil
Y*R, Y*S	Reversing solenoid valve coil
Z*C	Ferrite core
ZF, Z*F	Noise filter

Specific SV unit wiring diagram legend

Symbol	Meaning
EVSG	Electronic expansion valve (gas shut-off valve)
EVSL	Electronic expansion valve (liquid shut-off valve)
X15A	Connector (drain up kit abnormal signal)

Notes

1 This wiring diagram applies to the SV unit only.

2 Symbols:

□□□□: terminal block

⊡: connector

: field wiring

⏚: earth terminal

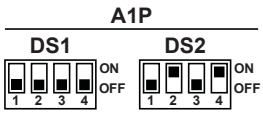
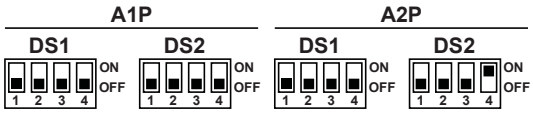
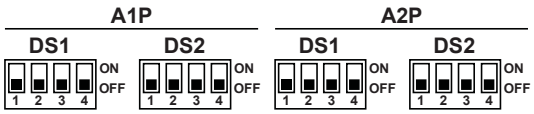
3 For wiring for the terminal block on X2M ~ X6M (operation), see the installation manual attached to the product.

4 For X15A (A1P), remove the short circuit connector and connect the air conditioner stop signal (optional product) when using the drain up kit (optional product). For details, see the operation manual attached to the kit.

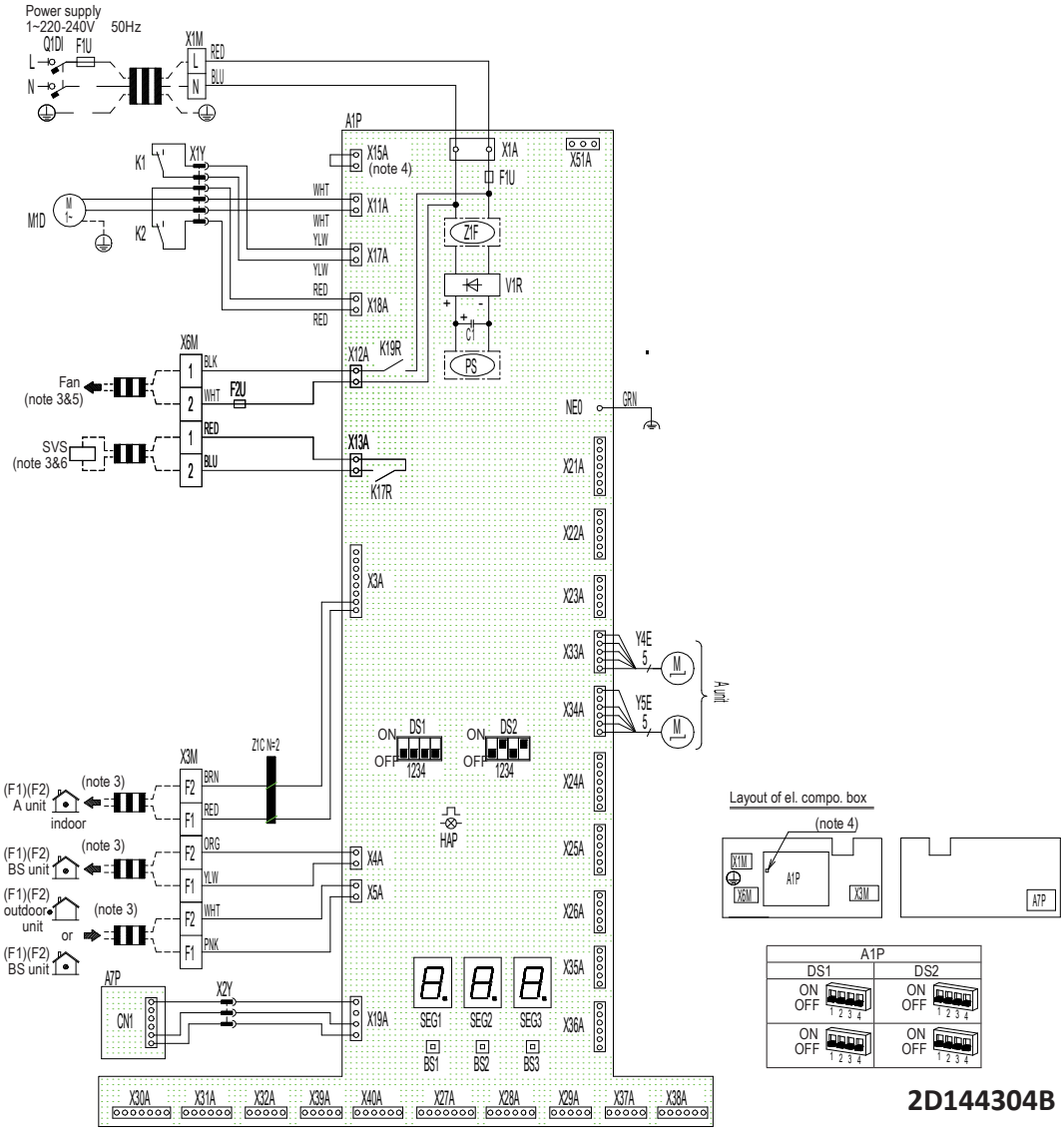
5 The capacity of the contact is 220~240V AC-0.5A.

6 Digital output: max 220~240V AC-0.5A. To use this output, see the installation manual.

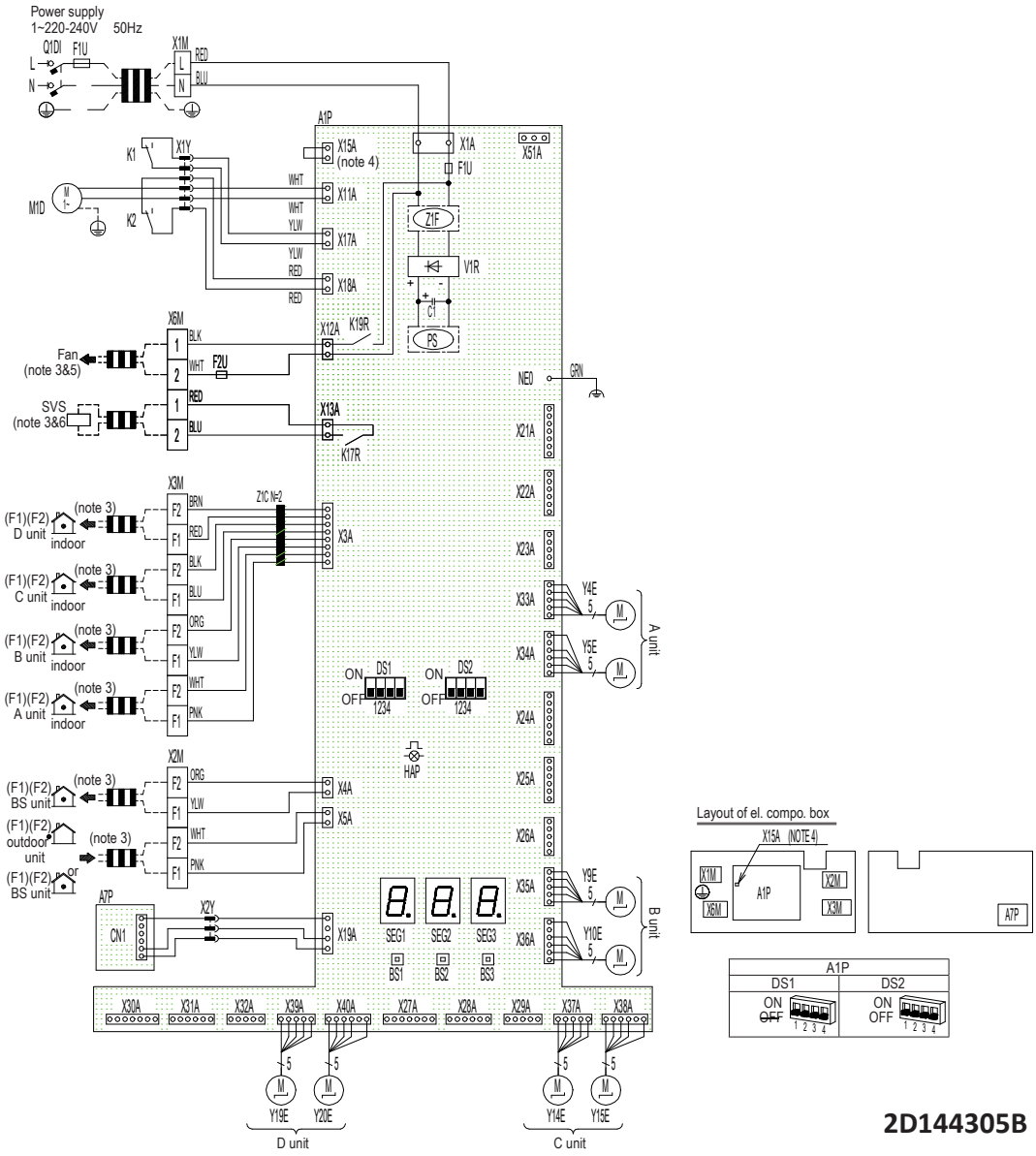
7 The factory settings of DIP switch (DS1, DS2) are as follows:

Model	DS1, DS2 factory settings
SV1A	
SV4A	
SV6A	
SV8A	
To set the DIP switches (DS1~2) and push buttons (BS1~3), see the installation manual	

SV box SV1A

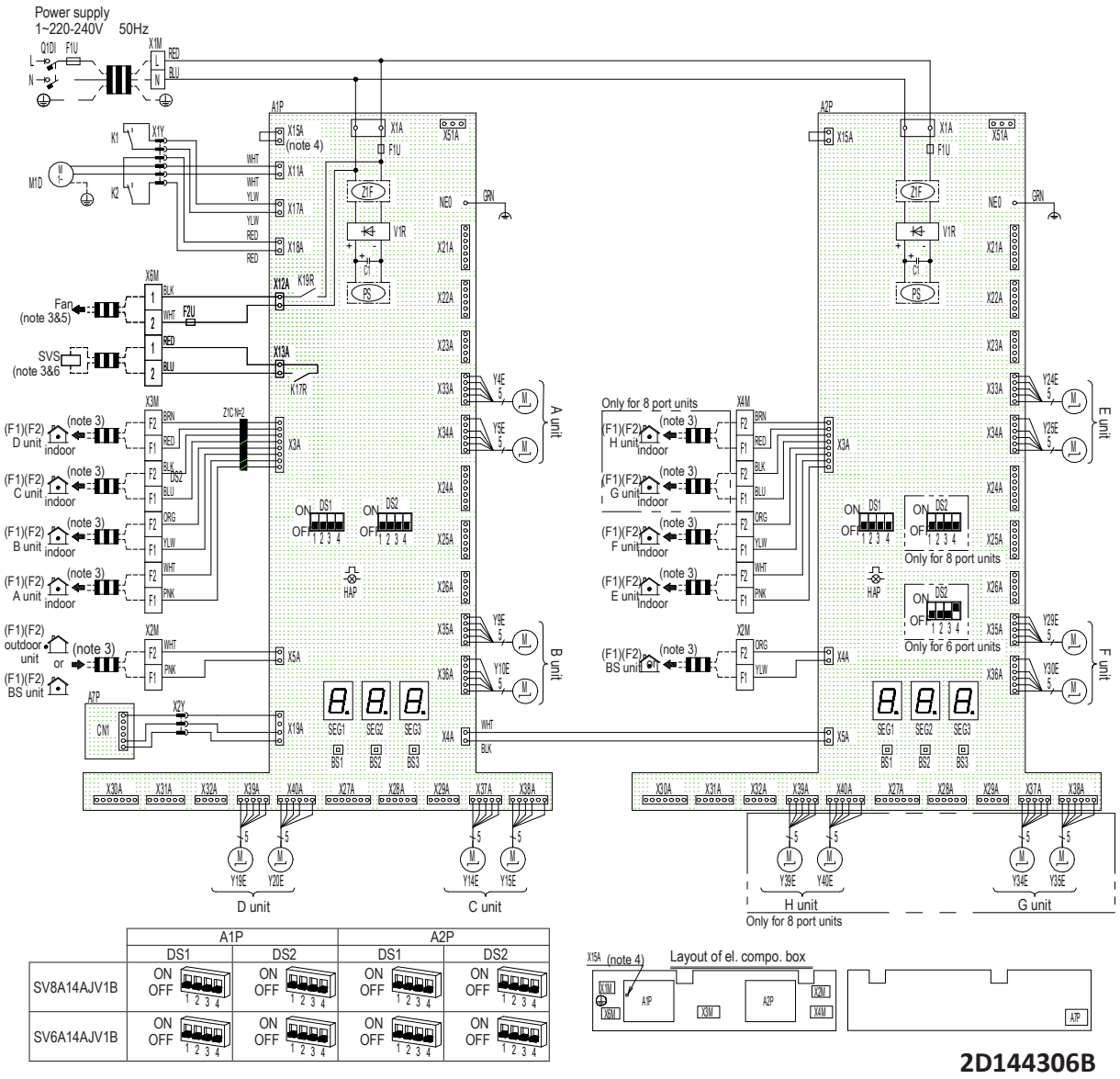

Power supply
1~220-240V 50Hz
Q1DI
F1U
X1M
L
N
RED
BLU
A1P
X15A
(note 4)
X1A
X51A
F1U
K1
K2
X1Y
M1D
WHT
X11A
WHT
YLW
X17A
YLW
RED
X18A
RED
Z1F
V1R
C1
PS
X12A
K19R
X6M
Fan
(note 3&5)
BLK
WHT
F2U
SVS
(note 3&6
RED
BLU
X13A
K17R
NE0
GRN
X21A
X22A
X23A
X33A
Y4E
5
X34A
Y5E
5
A unit
X3A
Z1C N-2
DS1
DS2
ON
OFF
1234
HAP
X3M
(F1)(F2)
A unit
indoor
(note 3)
BRN
RED
(F1)(F2)
BS unit
(note 3)
ORG
YLW
(F1)(F2)
outdoor
unit
or
(note 3)
WHT
PNK
(F1)(F2)
BS unit
X4A
X5A
X24A
X25A
X26A
X35A
X36A
A7P
CN1
X2Y
X19A
SEG1
SEG2
SEG3
BS1
BS2
BS3
X30A
X31A
X32A
X39A
X40A
X27A
X28A
X29A
X37A
X38A
Layout of el. compo. box
(note 4)
X1M
X6M
A1P
X3M
A7P
A1P
DS1
DS2
ON
OFF
2D144304B

SV box SV4A



2D144305B

SV box SV6~8A



	A1P		A2P	
	DS1	DS2	DS1	DS2
SV8A14AJV1B	ON OFF 1 2 3 4	ON OFF 1 2 3 4	ON OFF 1 2 3 4	ON OFF 1 2 3 4
SV6A14AJV1B	ON OFF 1 2 3 4	ON OFF 1 2 3 4	ON OFF 1 2 3 4	ON OFF 1 2 3 4

7.2.3 Wiring diagram: Drain-up kit

(1) Wiring diagram

English	Translation
Wiring diagram	Wiring diagram
Drain up kit	Drain up kit
Circuit board	Circuit board
Float switch (For operation)	Float switch (For operation)
Float switch (For abnormalities)	Float switch (For abnormalities)
Air conditioner stop signal	Air conditioner stop signal
Drain up	Drain up
Relay harness	Relay harness
BS/SV	BS/SV unit
leftmost PCB	Leftmost PCB
Power terminal	Power terminal
Power supply wire	Power supply wire

(2) Notes

English	Translation
NOTE	NOTE
⏚	Protective earth
⊗	Screw connection

NOTES:

1 Be sure to turn on the drain up kit power supply. If the power supply is not turned on, the air conditioner will stop abnormally and operation will not be possible.

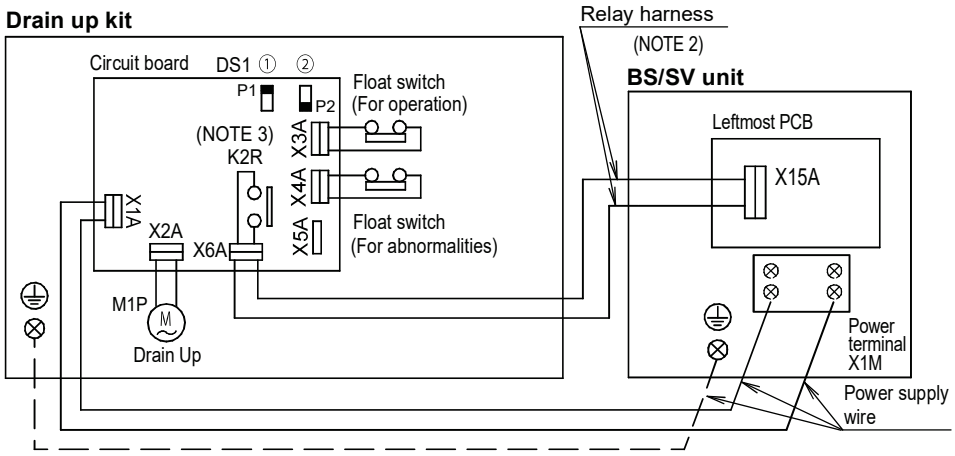
2 The relay harness cannot be extended. (It may malfunction due to noise)

3 When the power supply is turned on, the K2R contact closes and becomes a non-voltage constant B contact.

(3) Legend

DS1	DIP switch
K2R	Contact
M1P	Drain pump
P1, P2	DIP switch position
X1A~X15A	Connector
Z*C	Noise filter (ferrite core)

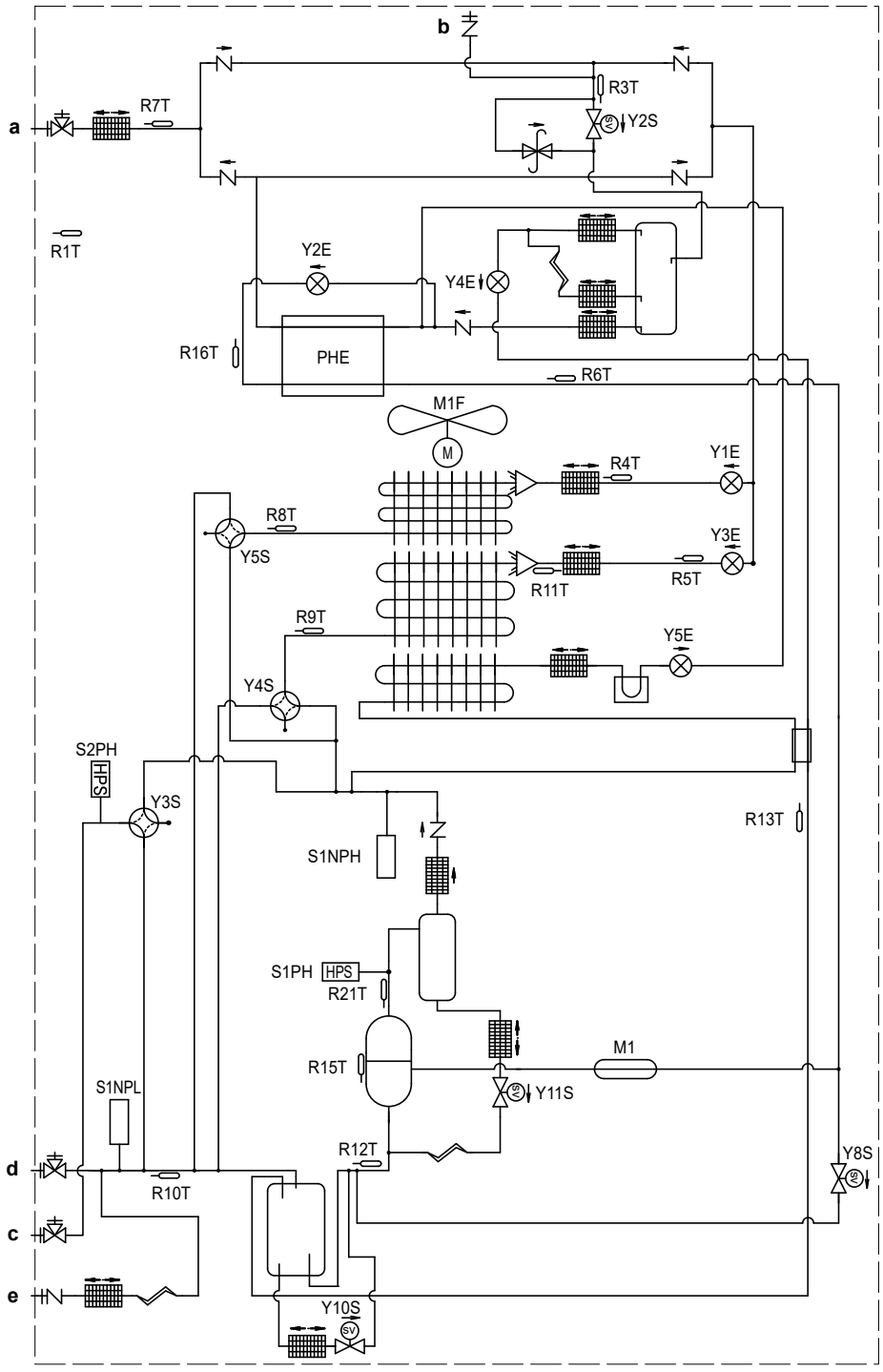
Wiring diagram



7.3 Piping diagram

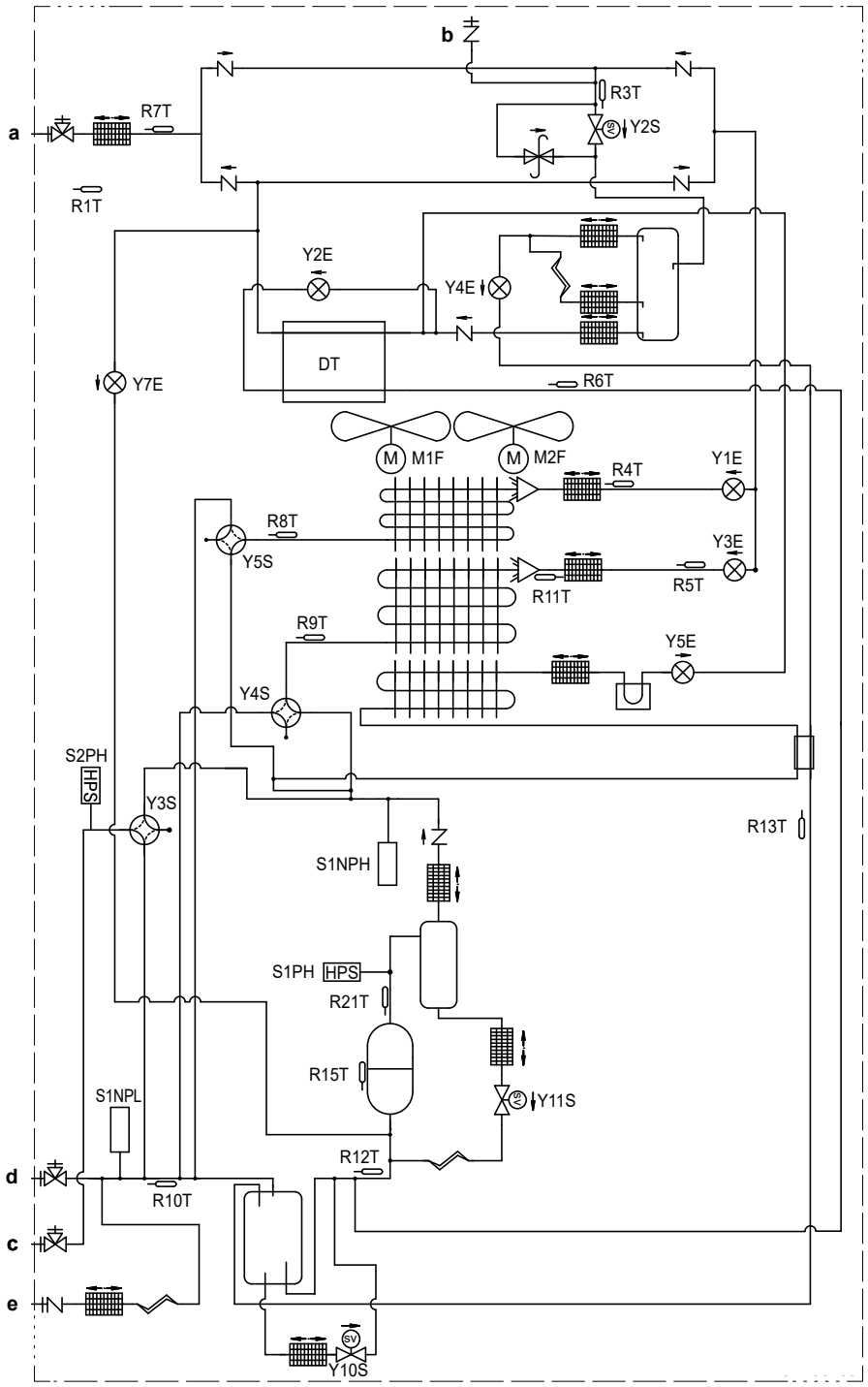
7.3.1 Piping diagram: Outdoor unit

Piping diagram: 5~12 HP



a Stop valve (liquid)
b Service port
c Stop valve (gas)
d Stop valve (equalising pipe)
e Charge port

Piping diagram: 14~20 HP



a Stop valve (liquid)
b Service port
c Stop valve (gas)
d Stop valve (equalising pipe)
e Charge port


Charge port / Service port


Stop valve


Filter


Check valve


Pressure relief valve

Thermistor



Solenoid valve


Heat sink (PCB)


Capillary tube


Expansion valve


4-way valve



Propeller fan



High pressure switch


*PL: low pressure sensor

*PH: high pressure sensor


Oil separator


Accumulator


Heat exchanger


Compressor


PHE: plate heat exchanger

DT: double tube heat exchanger


Distributor


Liquid receiver


Muffler

Component functionalities

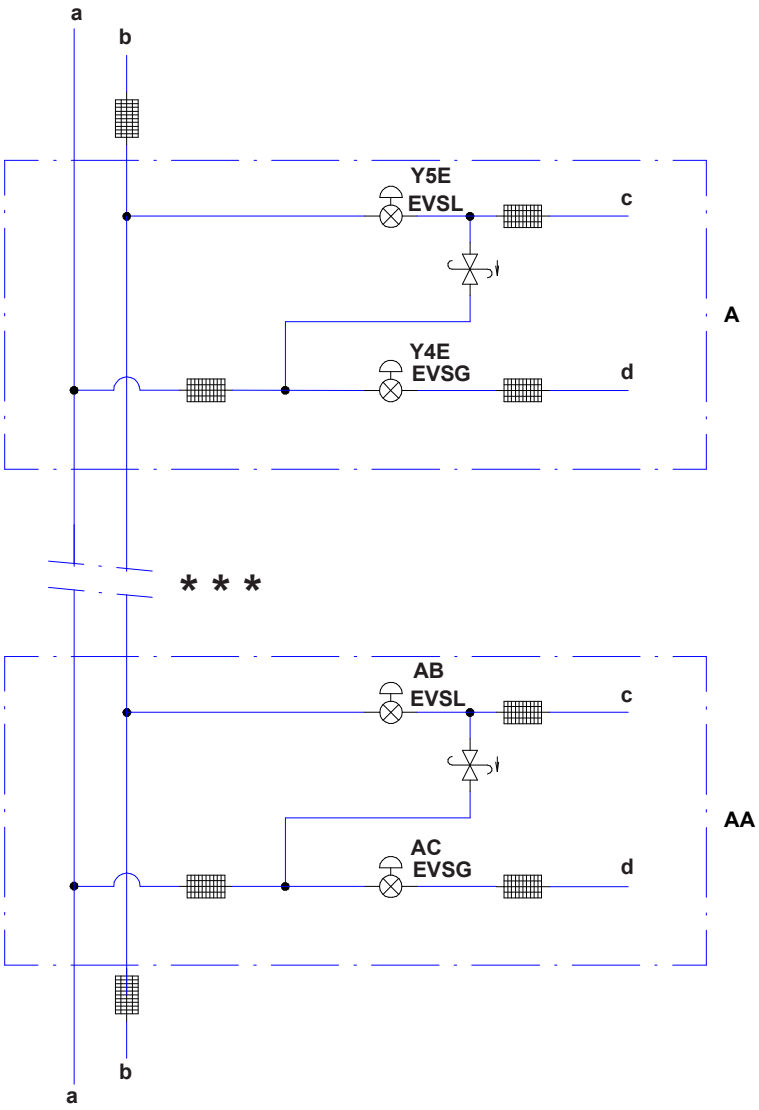
Symbol	Component	Major function
M1C	Compressor	Inverter driven compressor operates in multi-steps according to T_e for cooling and T_c for heating.
M1F	Fan motor	When outdoor coil is used as condenser, the fan operation is controlled by T_c, in heating mode the fan operates in full steps.
M2F	Fan motor	When outdoor coil is used as condenser, the fan operation is controlled by T_c, in heating mode the fan operates in full steps.
Y1E	Electronic expansion valve (upper heat exchanger)	While in heating operation, PI (proportional integral) control is applied to keep the outlet superheat degree of upper heat exchanger constant.
Y2E	Electronic expansion valve (sub-cool)	PI (proportional integral) control to keep outlet superheat on sub-cool heat exchanger.
Y3E	Electronic expansion valve (lower heat exchanger)	While in heating operation, PI (proportional integral) control is applied to keep the outlet superheat degree of lower heat exchanger constant.
Y4E	Electronic expansion valve (receiver gas purge)	Used to collect refrigerant to the receiver.
Y5E	Electronic expansion valve (liquid cooling)	Controls the amount of refrigerant flowing through the cooling plate that cools PCB.
Y7E	Electronic expansion valve (liquid injection)	For 14~20 HP units, liquid injection is required when operating condition becomes critical: ▪ High discharge superheat ▪ Low suction pressure
Y2S	Solenoid valve (liquid pipe)	Liquid shut-off valve.
Y3S	4-way valve (high pressure/low pressure gas pipe)	This is used to switch dual pressure gas pipe to high pressure or low pressure. OFF (0 V AC) = High pressure to SV box. ON (230 V AC) = Low pressure to SV box.
Y4S	4-way valve (lower heat exchanger)	Used to switch heat exchanger as evaporator or condenser. OFF (0 V AC) = Condenser. ON (230 V AC) = Evaporator.
Y5S	4-way valve (upper heat exchanger)	Used to switch heat exchanger as evaporator or condenser. OFF (0 V AC) = Condenser. ON (230 V AC) = Evaporator.

Symbol	Component	Major function
Y8S	Solenoid valve (gas cooler compressor)	For 5~12 HP units, ▪ If closed (0 V AC) during compressor operation: gas outlet of sub-cool heat exchanger flows to compressor gas cooler inlet when operating condition becomes critical: - high discharge superheat - low suction pressure. ▪ solenoid valve is opened (energized 230 V AC) in normal compressor operation to return gas outlet of sub-cool heat exchanger to suction inlet of suction accumulator.
Y10S	Solenoid valve (oil return suction accumulator)	Controls amount of oil return from accumulator to compressor.
Y11S	Solenoid Valve (oil separator 1 oil return)	Controls amount of oil return from oil separator to compressor.
S1NPH	Pressure sensor (high)	Detects discharge pressure. In cooling: mainly to control fan speed of outdoor unit. In heating: mainly to control compressor capacity.
S1NPL	Pressure sensor (low)	Detects suction pressure. In cooling: mainly to control compressor capacity. In heating: mainly for the calculation of suction superheat.
S1PH	Pressure switch (high, M1C discharge)	Prevents excess high pressure during malfunction. Stops operation when triggered.
S2PH	Pressure switch (high, M1C discharge)	Prevents excess high pressure during malfunction. Stops operation when triggered.
R1T	Thermistor (air)	Detects ambient temperature. Used for correction of discharge temperature and judging defrost condition. Disable heating operation if temperature >27°C (reset <25°C).
R21T	Thermistor (M1C discharge)	Detects discharge temperature of the compressor
R3T	Thermistor (liquid, main)	Used to detect pipe temperature of receiver inlet.
R4T	Thermistor (upper heat exchanger, liquid pipe)	This detects temperature of liquid pipe between the air heat exchanger and upper heat exchanger electronic expansion valve. Used to make judgements on recovering or discharging refrigerant to the refrigerant regulator.

Symbol	Component	Major function
R5T	Thermistor (lower heat exchanger, liquid pipe)	This detects temperature of liquid pipe between the air heat exchanger and lower heat exchanger electronic expansion valve. Used to make judgements on recovering or discharging refrigerant to the refrigerant regulator.
R6T	Thermistor (sub-cool heat exchanger, gas pipe)	Detects sub-cool heat exchanger outlet temperature on injection line. Used to keep the sub-cool heat exchanger outlet superheat constant.
R7T	Thermistor (sub-cool heat exchanger, liquid pipe)	Detects liquid pipe temperature of outdoor unit to indoor units. Mainly used to calculate sub-cool.
R8T	Thermistor (upper heat exchanger, gas pipe)	This detects temperature of gas pipe for air heat exchanger. Used to exercise the constant control of superheated degree when an evaporator is used for outdoor unit heat exchanging.
R9T	Thermistor (lower heat exchanger, gas pipe)	This detects temperature of gas pipe for air heat exchanger. Used to exercise the constant control of superheated degree when an evaporator is used for outdoor unit heat exchanging.
R10T	Thermistor (suction)	Detects suction pipe temperature.
R11T	Thermistor (heat exchanger, de-icer)	Detects liquid pipe temperature of outdoor heat exchanger. Used to judge defrost ON and defrost OFF operation.
R12T	Thermistor (compressor suction)	Detects compressor suction pipe temperature.
R13T	Thermistor (receiver gas purge)	Detects gas pipe temperature of receiver.
R15T	Thermistor (M1C body)	Detects compressor body temperature. Acts as safety for overheated operation of compressor.
R16T	Thermistor (liquid temperature between Y2E and sub-cool heat exchanger)	For 5~12 HP units; To judge refrigerant flow at inlet of sub-cool heat exchanger.
	Liquid service port	Service port – liquid pipe to field liquid piping
	Dual gas service port	Service port – dual gas pipe to field dual gas piping
	Low pressure gas service port	Service port – low pressure gas pipe to field low pressure gas piping.

Symbol	Component	Major function
	Refrigerant charge port	Service port
	Accumulator	Serves as a storage for not-required refrigerant at partial capacity. Prevents liquid back to the compressor.
	Receiver	Serves as a liquid receiver.
	Pressure regulating valve	During transportation, storage or stand-still, if pressure > 4.0 MPa, this valve opens to balance pressure inside the unit, to prevent any equipment damage due to pressure increase.
	Sub-cool heat exchanger	For 5~12 HP units; Plate heat exchanger. For 14~20 HP units, Tube-in-tube heat exchanger. Sub-cools liquid refrigerant in cooling mode.
	Heat sink (PCB)	Cools the PCB, through cooling plate, cooled by refrigerant.

7.3.2 Piping diagram: Safety valve box



a Gas pipe
b Liquid pipe
c Liquid pipe to indoor unit
d Gas pipe to indoor unit
EVSG Electronic expansion valve (gas shut-off valve)
EVSL Electronic expansion valve (liquid shut-off valve)
Y*E Electronic expansion valve
A Branch pipe port (to indoor unit A)
AA See table below
AB See table below
AC See table below
*** * *** This pattern is repeated AD times (see below) in total

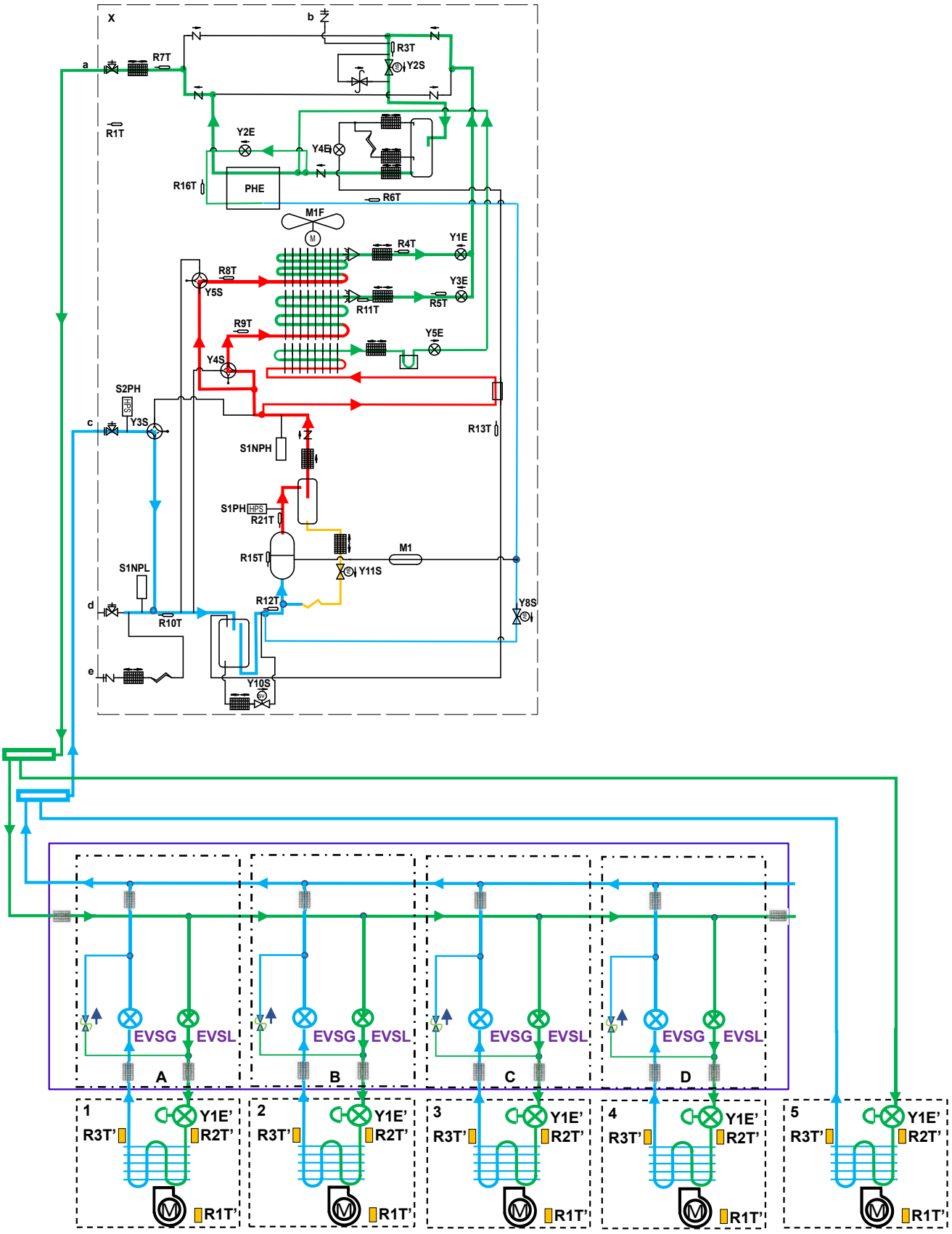
SV box	AA	AB	AC	AD
SV1A	A	Y4E	Y5E	1
SV4A	D	Y19E	Y20E	4
SV6A	F	Y29E	Y30E	6
SV8A	H	Y39E	Y40E	8


Filter


Pressure relief valve

7.3.3 Refrigerant flow diagram

Cooling mode single module – 8~12 HP units



X RXYA8~12

	Unit X: 8~12 HP	
Symbol	**Status**	**Control**
Y1E	Condenser (min~max pulses)	Tc min
Y2E	Evaporator	R6T–Te and R21T–Tc
Y3E	Condenser (min~max pulses)[a]	Tc min
Y4E	Open=purge	Tc–R7T
Y5E	Condenser	A3P °C
Y2S	On pre-start M1F medium	Off 0 Hz M1C +180 seconds
Y3S	On	Low pressure
Y4S	Off	Condenser
Y5S	Condenser[a]	Tc min
Y8S	Off=closed On=open	Off if R21T–Tc >limit or M1C 0 Hz.
Y10S	Off=closed On=open	Open M1C >0 Hz and R21T–Tc >15°
Y11S	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa
M1F	Off~Max. rpm.	Tc min

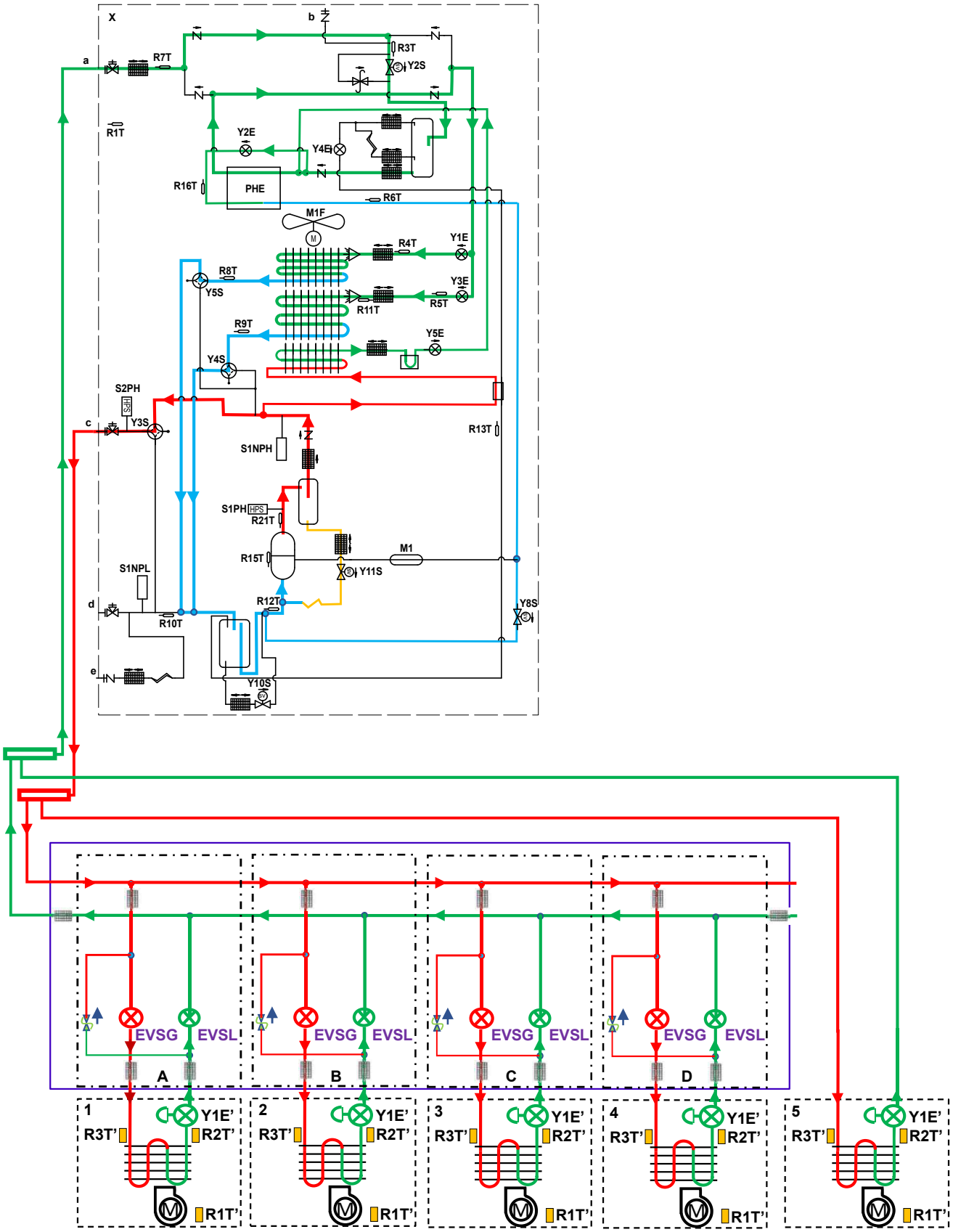
[a] Coil change to evaporator (Y5S On + Y3E = 0 pulses) if Tc <Tc min (at low load when Te drop).

SV circuit	EVSG	EVSL
A	Open – max.	Open – max.
B	Open – max.	Open – max.
C	Open – max.	Open – max.
D	Open – max.	Open – max.

VRV Indoor	Mode	Operation	Thermostat	Expansion valve	Fan motor
1	Cooling	On	On	Superheat (R3T–R2T)	Set
2	Cooling	On	On	Superheat (R3T–R2T)	Set
3	Cooling	On	Off	Closed (0 pulses)	Set[a]
4	Cooling	Off	Off	Closed (0 pulses)	Off
5	Cooling	On	On	Superheat (R3T–R2T)	Set

[a] Can be changed Off / Low load / Set by indoor unit field setting (see indoor unit service manual).

Heating mode single module – 8~12 HP units



X RXYA8~12

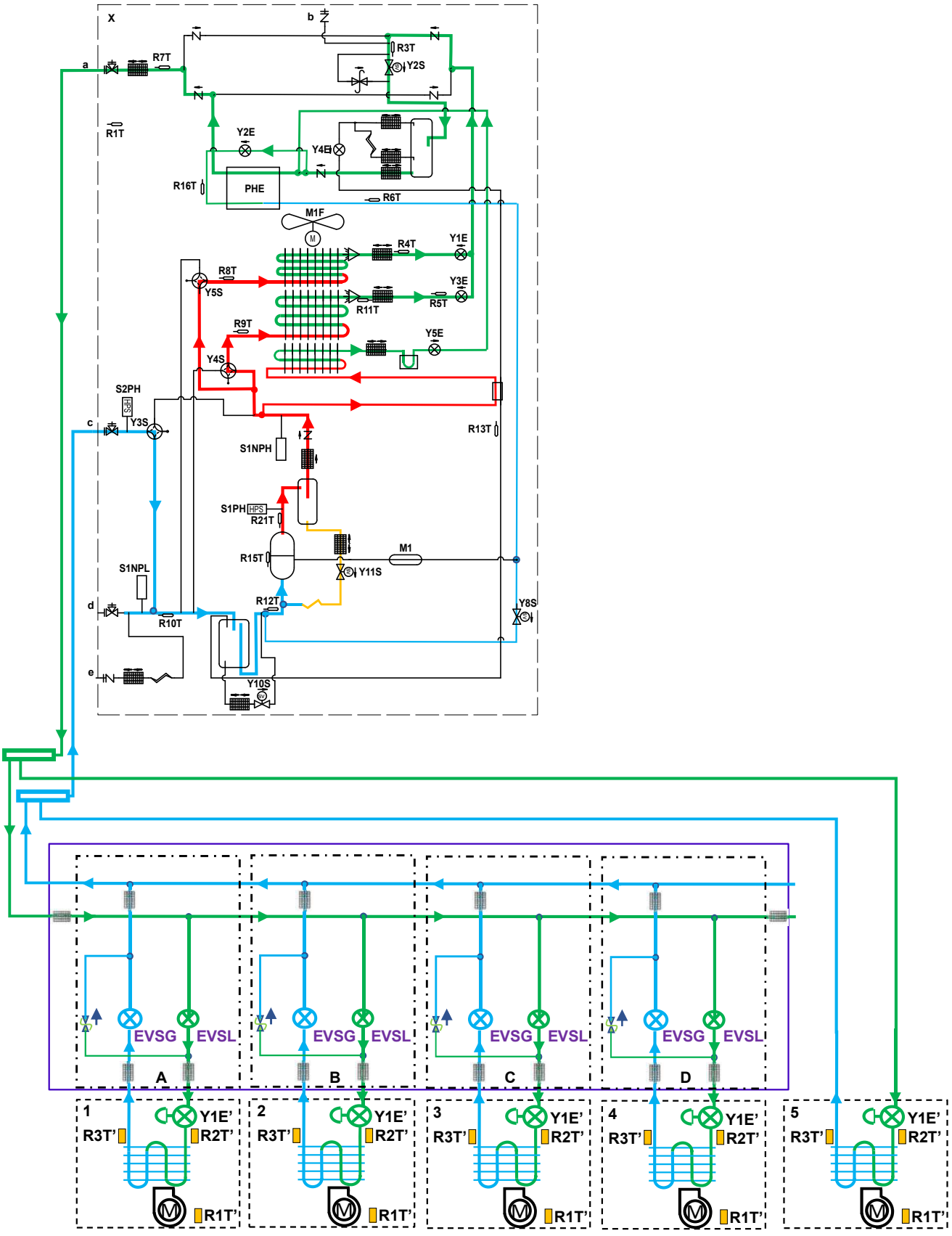
	Unit X: 8~12 HP	
Symbol	**Status**	**Control**
Y1E	Evaporator (0~max pulses)	R8T–Te
Y2E	Evaporator	R6T–Te and R21T–Tc
Y3E	Evaporator (0~max pluses)	R9T–Te
Y4E	Open=purge (0~max pulses)	Tc–R7T
Y5E	Condenser	A3P °C
Y2S	On pre-start M1F medium	Off 0 Hz M1C +180 seconds
Y3S	Off	High pressure
Y4S	On	Evaporator
Y5S	On	Evaporator
Y8S	Off=closed On=open	Off if R21T–Tc >limit
Y10S	Off=closed On=open	Off if R21T–Tc >limit or M1C 0 Hz.
Y11S	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa
M1F	Max. rpm.	Off if Tc >Tc max

SV circuit	EVSG	EVSL
A	Open – max.	Open – max.
B	Open – max.	Open – max.
C	Open – max.	Open – max.
D	Open – max.	Open – max.

VRV Indoor	Mode	Operation	Thermostat	Expansion valve	Fan motor
1	Heating	On	On	Subcool (Tc-R2T)	Set
2	Heating	On	On	Subcool (Tc-R2T)	Set
3	Heating	On	Off	Minimum open	Low Load[(a)]
4	Heating	Off	Off	Minimum open	Off
5	Heating	On	On	Subcool (Tc-R2T)	Set

[(a)] Can be changed Off / Low load / Set by indoor unit field setting (see indoor unit service manual).

Oil return cooling mode single module – 8~12 HP units



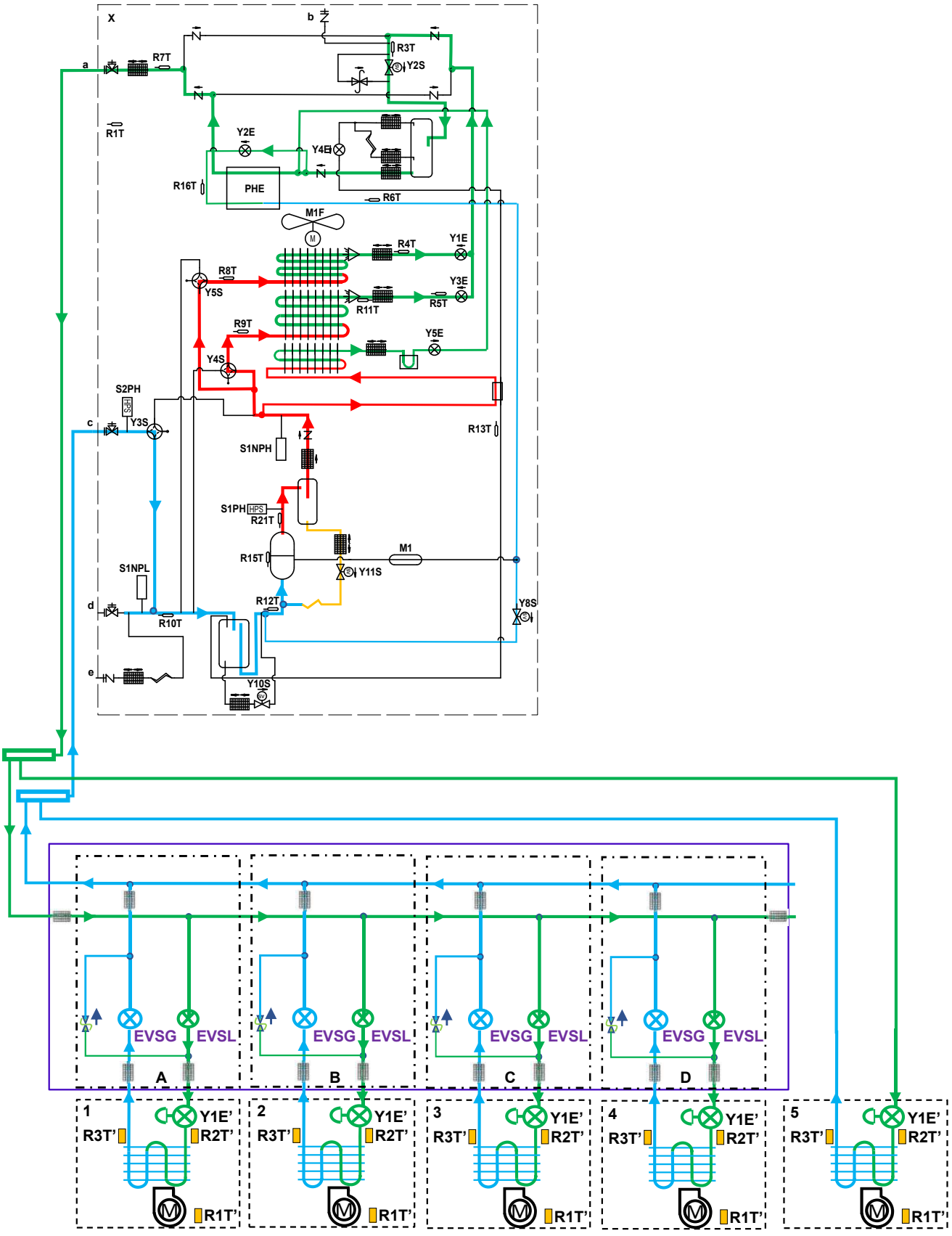
X RXYA8~12

	Unit X: 8~12 HP	
Symbol	**Status**	**Control**
Y1E	Condenser (min~max pulses)	Tc min
Y2E	Evaporator	R6T–Te and R21T–Tc
Y3E	Condenser (min~max pulses)	Tc min
Y4E	Open=purge	Tc–R7T
Y5E	Condenser	A3P °C
Y2S	On pre-start M1F medium	Off 0 Hz M1C +180 seconds
Y3S	On	Low pressure
Y4S	Off	Condenser
Y5S	Condenser	Tc min
Y8S	Off=closed On=open	Off if R21T–Tc >limit or M1C 0 Hz.
Y10S	Off=closed On=open	Open M1C >0 Hz and R21T–Tc >15°
Y11S	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa
M1F	Off~Max. rpm.	Tc min

SV circuit	EVSG	EVSL
A	Open – max.	Open – max.
B	Open – max.	Open – max.
C	Open – max.	Open – max.
D	Open – max.	Open – max.

VRV Indoor	Mode	Operation	Thermostat	Expansion valve	Fan motor
1	Cooling	On	On	Superheat (R3T–R2T)	Set
2	Cooling	On	On	Superheat (R3T–R2T)	Set
3	Cooling	On	Off	Superheat (R3T–R2T)	Set
4	Cooling	Off	Off	Superheat (R3T–R2T)	Set
5	Cooling	On	On	Superheat (R3T–R2T)	Set

Defrost/oil return heating mode single module – 8~12 HP units



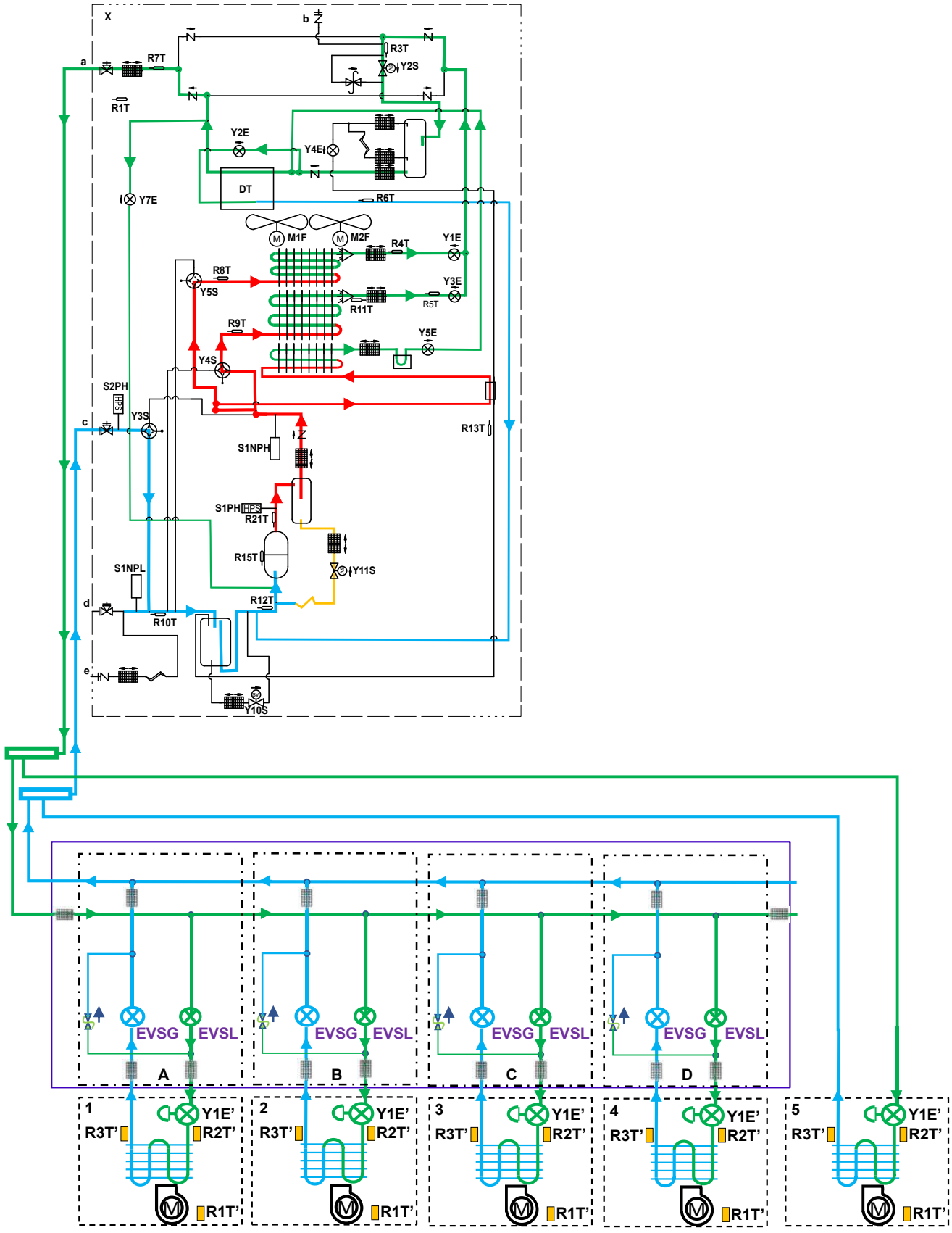
X RXYA8~12

	Unit X: 8~12 HP	
Symbol	**Status**	**Control**
Y1E	Condenser (max pulses)	
Y2E	Evaporator	R6T–Te and R21T–Tc
Y3E	Condenser (max pulses)	
Y4E	Open=purge	Tc–R7T
Y5E	Condenser	A3P °C
Y2S	On pre-start M1F medium	Off 0 Hz M1C +180 seconds
Y3S	On	Low pressure
Y4S	Off	Condenser
Y5S	Condenser	Tc min
Y8S	Off=closed On=open	Off if R21T–Tc >limit or M1C 0 Hz.
Y10S	Off=closed On=open	Open M1C >0 Hz and R21T–Tc >15°
Y11S	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa
M1F	Off~Max. rpm.	Tc min

SV circuit	EVSG	EVSL
A	Open – max.	Open – max.
B	Open – max.	Open – max.
C	Open – max.	Open – max.
D	Open – max.	Open – max.

VRV Indoor	Mode	Operation	Thermostat	Expansion valve	Fan motor
1	Heating	On	On	Superheat (R3T–R2T)	Off
2	Heating	On	On	Superheat (R3T–R2T)	Off
3	Heating	On	Off	Superheat (R3T–R2T)	Off
4	Heating	Off	Off	Superheat (R3T–R2T)	Off
5	Heating	On	On	Superheat (R3T–R2T)	Off

Cooling mode single module – 14~20 HP units



X RXYA14~20

	Unit X: 14~20 HP	
Symbol	**Status**	**Control**
Y1E	Condenser	Tc min
Y2E	Evaporator	R6T–Te and R21T–Tc
Y3E	Condenser[a]	Tc min
Y4E	Open=purge	Tc–R7T
Y5E	Condenser	A3P °C
Y7E	0~max I-pulses	R21T–Tc
Y2S	On pre-start M1F medium	Off 0 Hz M1C +180 seconds
Y3S	On	Low pressure
Y4S	Off	Condenser
Y5S	Condenser[a]	Tc min
Y10S	Off=closed On=open	Open M1C >0 Hz and R21T–Tc >15°
Y11S	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa
M1F	Off~Max. rpm.	Tc min
M2F	Off~Max. rpm.	Tc min.

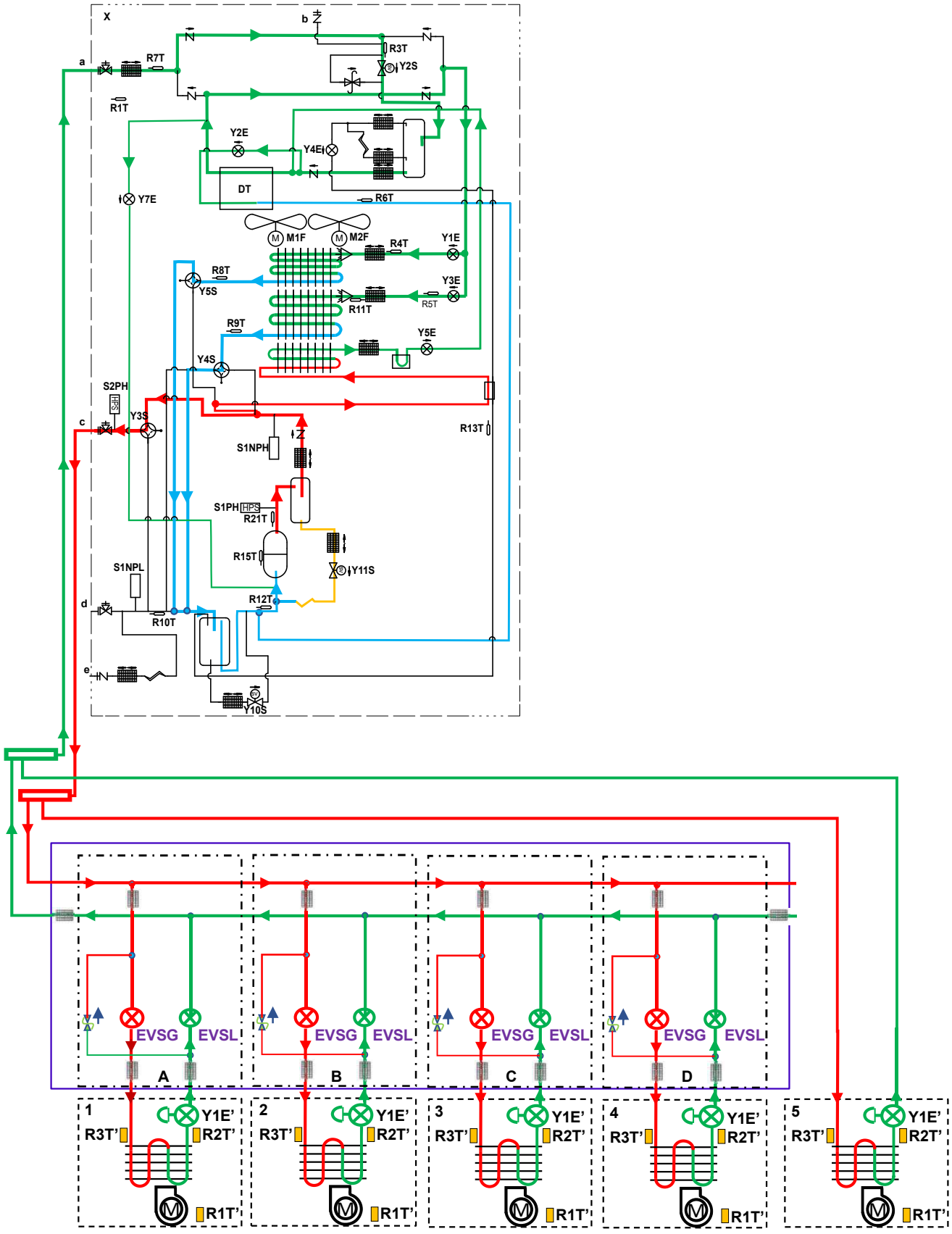
[a] Lower coil can be set to evaporator (Y5S On + Y3E = 0 pulses) if Tc <Tc min (at low load when Te drop).

SV circuit	EVSG	EVSL
A	Open – max.	Open – max.
B	Open – max.	Open – max.
C	Open – max.	Open – max.
D	Open – max.	Open – max.

VRV Indoor	Mode	Operation	Thermostat	Expansion valve	Fan motor
1	Cooling	On	On	Superheat (R3T–R2T)	Set
2	Cooling	On	On	Superheat (R3T–R2T)	Set
3	Cooling	On	Off	Closed (0 pulses)	Set[a]
4	Cooling	Off	Off	Closed (0 pulses)	Off
5	Cooling	On	On	Superheat (R3T–R2T)	Set

[a] Can be changed Off / Low load / Set by indoor unit field setting (see indoor unit service manual).

Heating mode single module – 14~20 HP units



X RXYA14~20

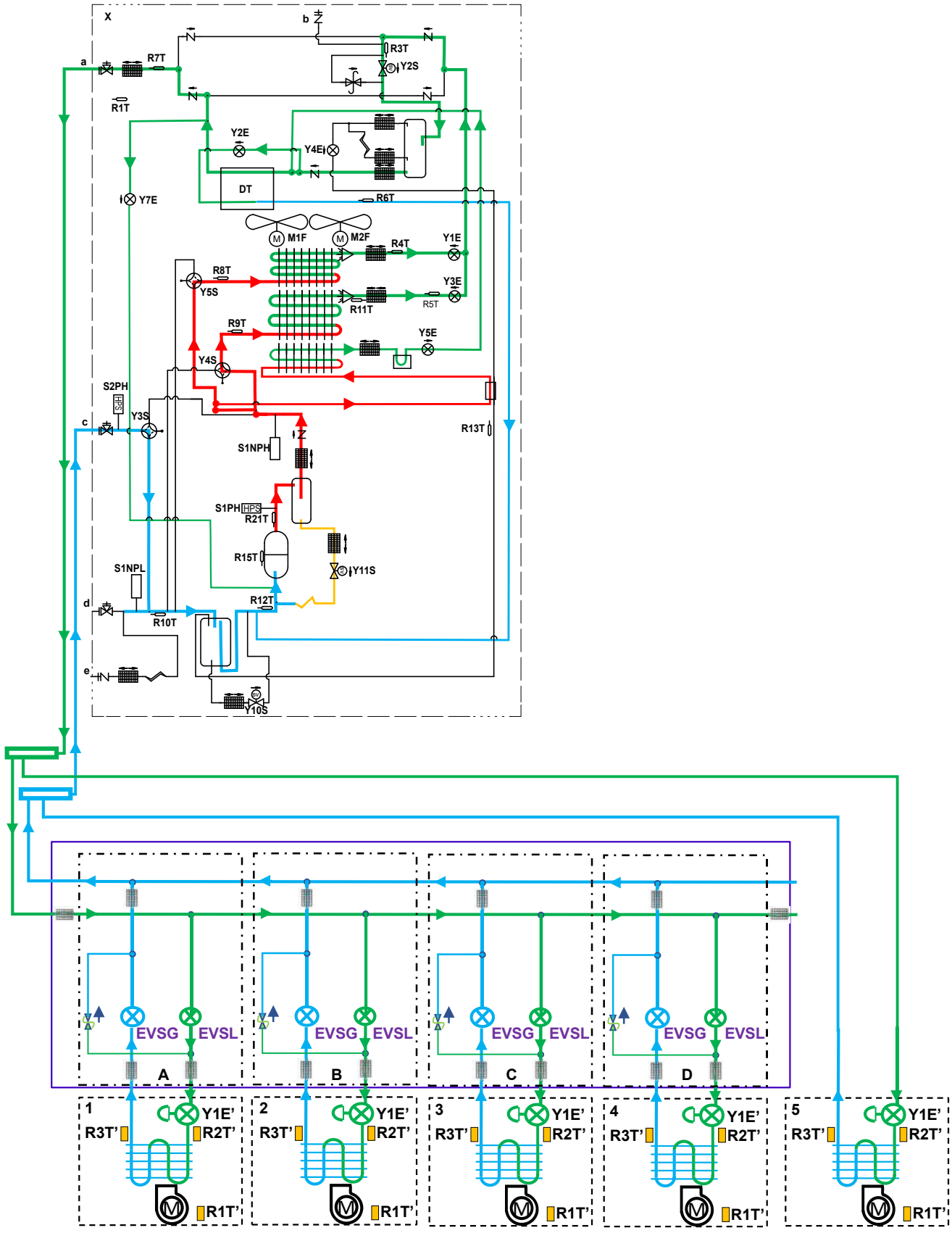
	Unit X: 14~20 HP	
Symbol	**Status**	**Control**
Y1E	Evaporator (0~max pulses)	R8T–Te
Y2E	Evaporator	R6T–Te and R21T–Tc
Y3E	Evaporator (0~max pluses)	R9T–Te
Y4E	Open=purge (0~max pulses)	Tc–R7T
Y5E	Condenser	A3P °C
Y7E	0~max I-pulses	R21T–Tc
Y2S	On pre-start M1F medium	Off 0 Hz M1C +180 seconds
Y3S	On	Low pressure
Y4S	Off	Condenser
Y5S	Condenser	Tc min.
Y10S	Off=closed On=open	Open M1C >0 Hz and R21T–Tc >15°
Y11S	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa
M1F	Off~Max. rpm.	Tc min.
M2F	Off~Max. rpm.	Tc min.

SV circuit	EVSG	EVSL
A	Open – max.	Open – max.
B	Open – max.	Open – max.
C	Open – max.	Open – max.
D	Open – max.	Open – max.

VRV Indoor	Mode	Operation	Thermostat	Expansion valve	Fan motor
1	Heating	On	On	Subcool (Tc-R2T)	Set
2	Heating	On	On	Subcool (Tc-R2T)	Set
3	Heating	On	Off	Minimum open	Low Load[(a)]
4	Heating	Off	Off	Minimum open	Off
5	Heating	On	On	Subcool (Tc-R2T)	Set

[(a)] Can be changed Off / Low load / Set by indoor unit field setting (see indoor unit service manual).

Oil return cooling mode single module – 14~20 HP units



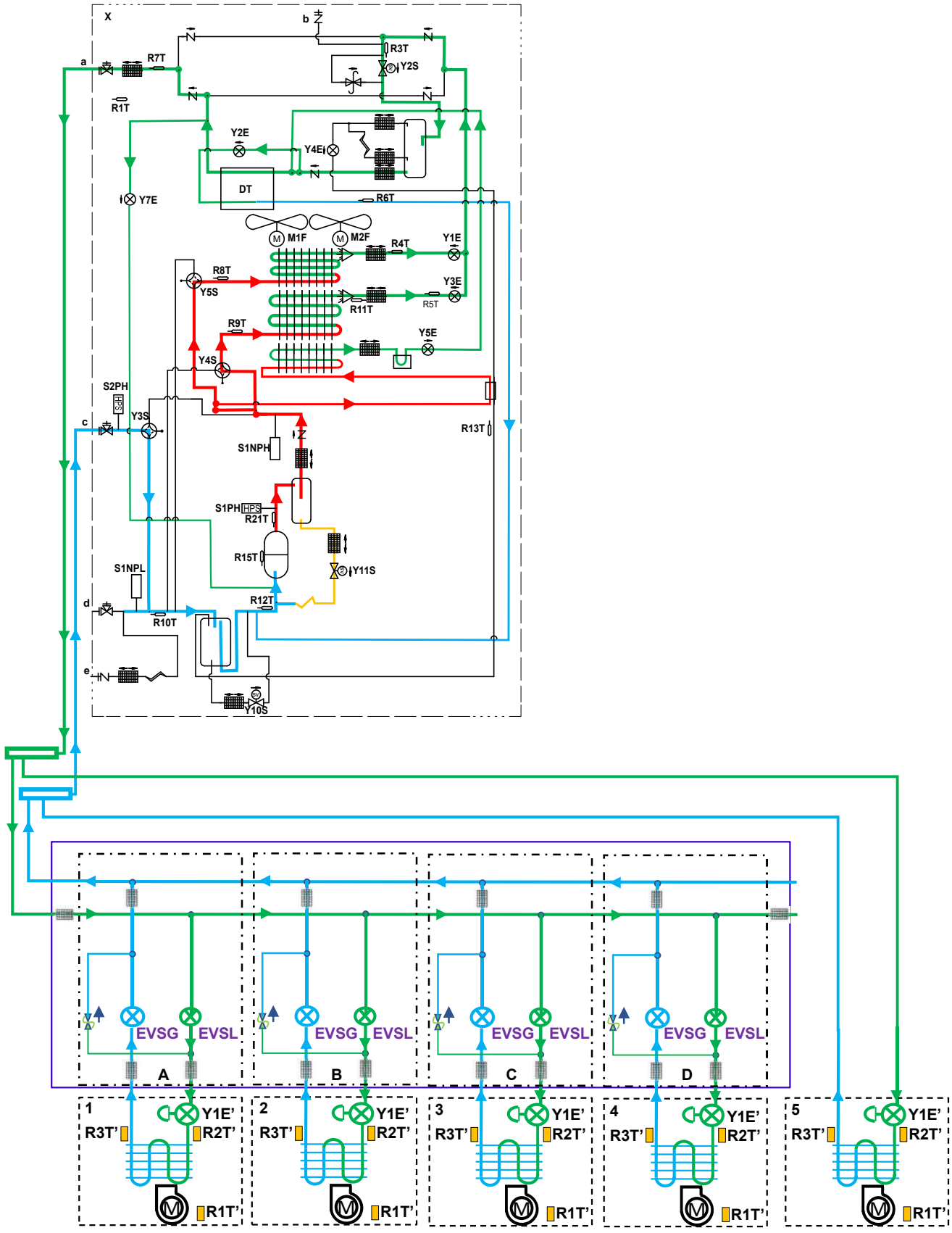
X RXYA14~20

	Unit X: 14~20 HP	
Symbol	**Status**	**Control**
Y1E	Condenser	Tc min
Y2E	Evaporator	R6T–Te and R21T–Tc
Y3E	Condenser	Tc min
Y4E	Open=purge	Tc–R7T
Y5E	Condenser	A3P °C
Y7E	0~max I-pulses	R21T–Tc
Y2S	On pre-start M1F medium	Off 0 Hz M1C +180 seconds
Y3S	On	Low pressure
Y4S	Off	Condenser
Y5S	Condenser	Tc min
Y10S	Off=closed On=open	Open M1C >0 Hz and R21T–Tc >15°
Y11S	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa
M1F	Off~Max. rpm.	Tc min
M2F	Off~Max. rpm.	Tc min.

SV circuit	EVSG	EVSL
A	Open – max.	Open – max.
B	Open – max.	Open – max.
C	Open – max.	Open – max.
D	Open – max.	Open – max.

VRV Indoor	Mode	Operation	Thermostat	Expansion valve	Fan motor
1	Cooling	On	On	Superheat (R3T–R2T)	Set
2	Cooling	On	On	Superheat (R3T–R2T)	Set
3	Cooling	On	Off	Superheat (R3T–R2T)	Set
4	Cooling	Off	Off	Superheat (R3T–R2T)	Off
5	Cooling	On	On	Superheat (R3T–R2T)	Set

Defrost/oil return heating mode single module – 14~20 HP units



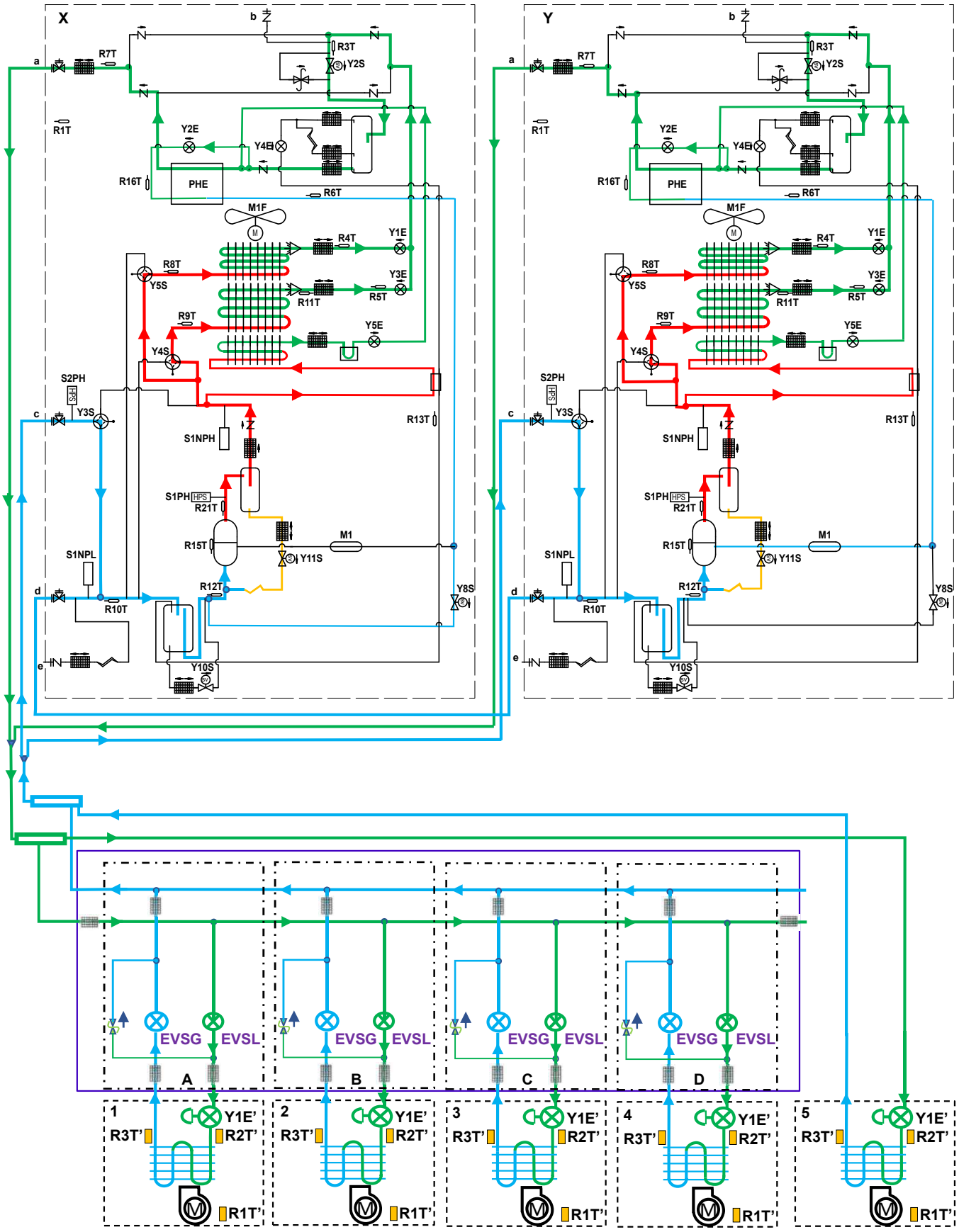
X RXYA14~20

	Unit X: 14~20 HP	
Symbol	**Status**	**Control**
Y1E	Condenser	Tc min
Y2E	Evaporator	R6T–Te and R21T–Tc
Y3E	Condenser	Tc min
Y4E	Open=purge	Tc–R7T
Y5E	Condenser	A3P °C
Y7E	0~max I-pulses	R21T–Tc
Y2S	On pre-start M1F medium	Off 0 Hz M1C +180 seconds
Y3S	On	Low pressure
Y4S	Off	Condenser
Y5S	Condenser	Tc min
Y10S	Off=closed On=open	Open M1C >0 Hz and R21T–Tc >15°
Y11S	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa
M1F	Off~Max. rpm.	Tc min
M2F	Off~Max. rpm.	Tc min.

SV circuit	EVSG	EVSL
A	Open – max.	Open – max.
B	Open – max.	Open – max.
C	Open – max.	Open – max.
D	Open – max.	Open – max.

VRV Indoor	Mode	Operation	Thermostat	Expansion valve	Fan motor
1	Heating	On	On	Superheat (R3T–R2T)	Off
2	Heating	On	On	Superheat (R3T–R2T)	Off
3	Heating	On	Off	Superheat (R3T–R2T)	Off
4	Heating	Off	Off	Superheat (R3T–R2T)	Off
5	Heating	On	On	Superheat (R3T–R2T)	Off

Cooling mode multi outdoor – 5~8 HP and 8~12 HP units



System	Unit X	Unit Y	System	Unit X	Unit Y
RXYA10	RYMA5	RYMA5	RXYA18	RXYA10	RXYA8
RXYA13	RXYA8	RYMA5	RXYA20	RXYA10	RXYA10
RXYA16	RXYA8	RXYA8		RXYA12	RXYA8

	Unit X: 5~12 HP		Unit Y: 5~10 HP	
Symbol	Status	Control	Status	Control
Y1E	Condenser (min~max pulses)	Tc min.	Condenser[a] (min~max pulses)	Tc min.
Y2E	Evaporator	R6T–Te and R21T–Tc	Evaporator	R6T–Te and R21T–Tc
Y3E	Condenser[a] (min~max pulses)	Tc min.	Condenser[a] (min~max pulses)	Tc min.[a]
Y4E	Open=purge	Tc–R7T	Open=purge	Tc–R7T
Y5E	Condenser	A3P °C	Condenser	A3P °C
Y2S	On pre-start M1F medium	Off 0 Hz M1C +180 seconds	On pre-start M1F medium	Off 0 Hz M1C +180 seconds
Y3S	On	Low pressure	On	Low pressure
Y4S	Off	Condenser	Off[a]	Condenser[a]
Y5S	Condenser[a]	Tc min.	Condenser[a]	Tc min.
Y8S	Off=closed On=open	Off if R21T–Tc >limit or M1C 0 Hz.	Off=closed On=open	Off if R21T–Tc >limit or M1C 0 Hz.
Y10S	Off=closed On=open	Open M1C >0 Hz and R21T–Tc >15°	Off=closed On=open	Open M1C >0 Hz and R21T–Tc >15°
Y11S	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa
M1F	Off~Max. rpm.	Tc min.	Off~Max. rpm.	Tc min.

[a] Coil change to evaporator (Y5S on + Y3E =0 pulses) if Tc<Tc min (at low load when Te drop).

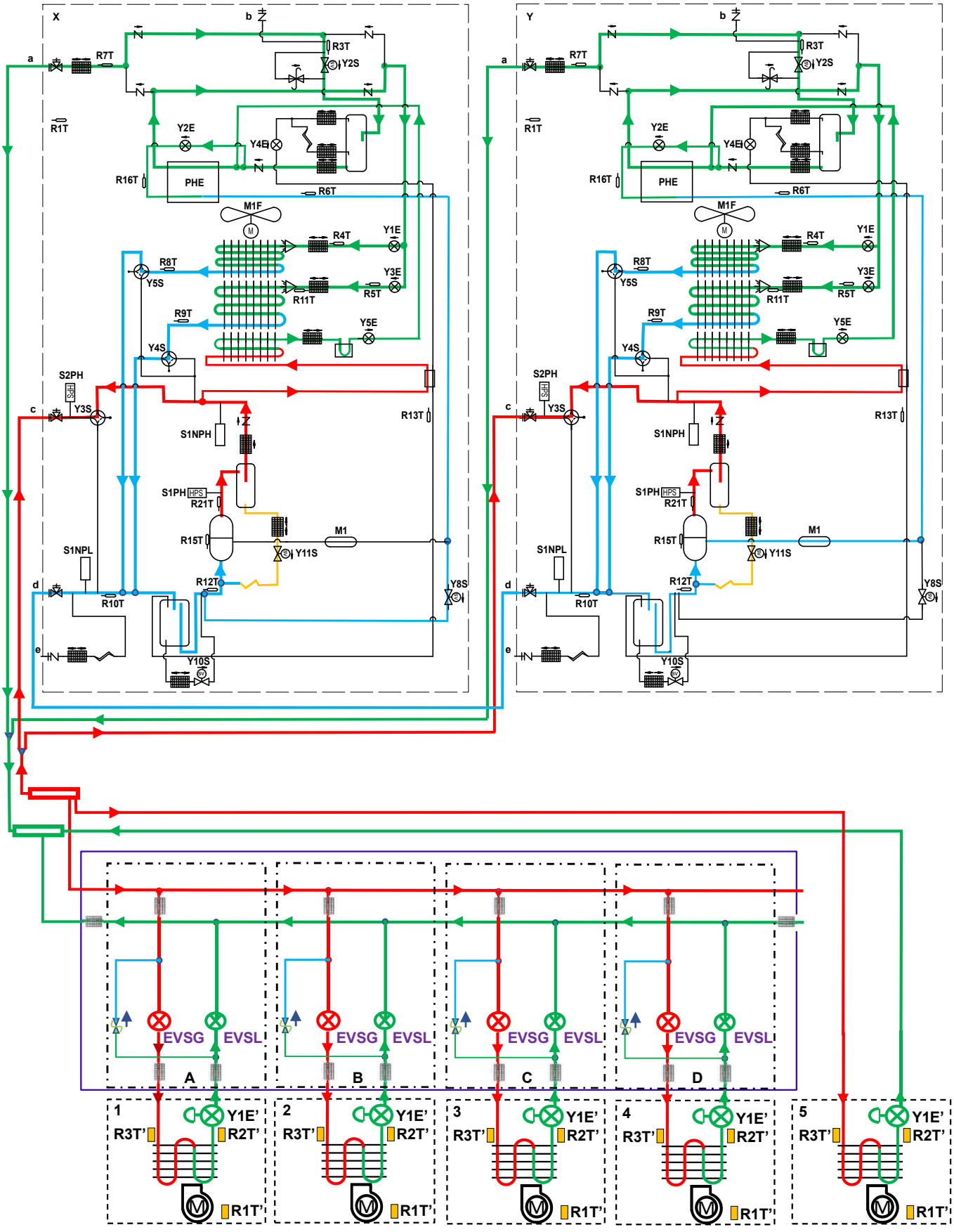
Possible combinations:
- Upper condenser + lower condenser,
- Upper condenser + lower evaporator,
- Upper evaporator + lower evaporator.

SV circuit	EVSG	EVSL	SV circuit	EVSG	EVSL
A	Open – max.	Open – max.	C	Open – max.	Open – max.
B	Open – max.	Open – max.	D	Open – max.	Open – max.

VRV Indoor	Mode	Operation	Thermostat	Expansion valve	Fan motor
1	Cooling	On	On	Superheat (R3T–R2T)	Set
2	Cooling	On	On	Superheat (R3T–R2T)	Set
3	Cooling	On	Off	Closed (0 pulses)	Set[a]
4	Cooling	Off	Off	Closed (0 pulses)	Off
5	Cooling	On	On	Superheat (R3T–R2T)	Set

[a] Can be changed Off / Low load / Set by indoor unit field setting (see indoor unit service manual).

Heating mode multi outdoor – 5~8 HP and 8~12 HP units



System	Unit X	Unit Y	System	Unit X	Unit Y
RXYA10	RYMA5	RYMA5	RXYA18	RXYA10	RXYA8
RXYA13	RXYA8	RYMA5	RXYA20	RXYA10	RXYA10
RXYA16	RXYA8	RXYA8		RXYA12	RXYA8

	Unit X: 5~12 HP		Unit Y: 5~10 HP	
Symbol	Status	Control	Status	Control
Y1E	Evaporator[a] (0~max pulses)	R8T–Te	Evaporator[a] (0~max pulses)	R8T–Te
Y2E	Evaporator	R6T–Te and R21T–Tc	Evaporator	R6T–Te and R21T–Tc
Y3E	Evaporator (0~max pluses)	R9T–Te	Evaporator (0~max pluses)	R9T–Te
Y4E	Open=purge (0~max pulses)	Tc–R7T	Open=purge (0~max pulses)	Tc–R7T
Y5E	Condenser	A3P °C	Condenser	A3P °C
Y2S	On pre-start M1F medium	Off 0 Hz M1C +180 seconds	On pre-start M1F medium	Off 0 Hz M1C +180 seconds
Y3S	Off	High pressure	Off	High pressure
Y4S	On[a]	Evaporator[a]	On[a]	Evaporator[a]
Y5S	On	Evaporator	On	Evaporator
Y8S	Off=closed On=open	Off if R21T–Tc >limit	Off=closed On=open	Off if R21T–Tc >limit
Y10S	Off=closed On=open	Off if R21T–Tc >limit or M1C 0 Hz.	Off=closed On=open	Off if R21T–Tc >limit or M1C 0 Hz.
Y11S	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa
M1F	Max. rpm.	Off if Tc >Tc max	Max. rpm.	Off if Tc >Tc max

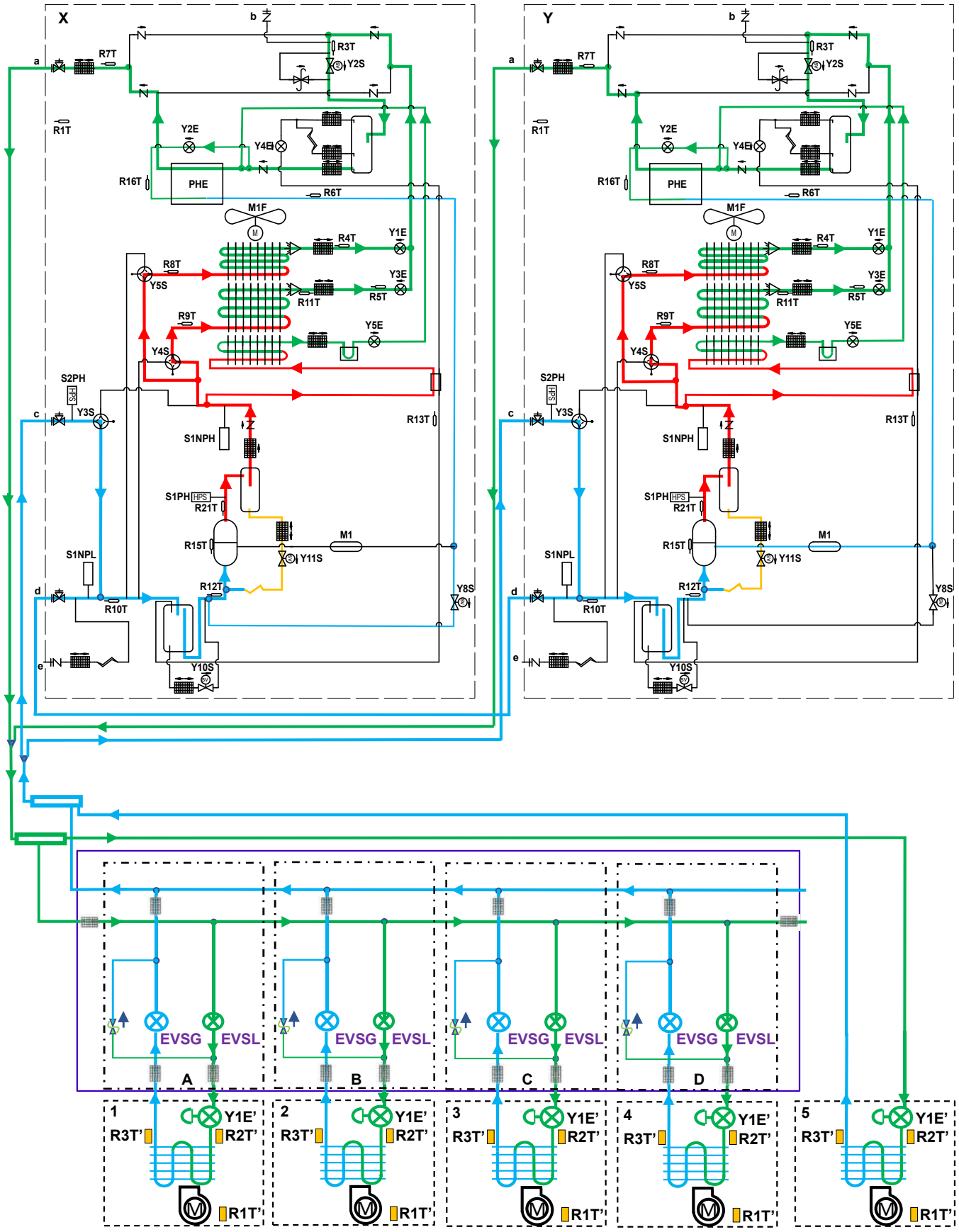
[a] Upper coil change to condenser (Y5S off + Y3E =min~max pulses) if Tc >Tc max. (at low load when Tc raise).

SV circuit	EVSG	EVSL	SV circuit	EVSG	EVSL
A	Open – max.	Open – max.	C	Open – max.	Open – max.
B	Open – max.	Open – max.	D	Open – max.	Open – max.

VRV Indoor	Mode	Operation	Thermostat	Expansion valve	Fan motor
1	Heating	On	On	Subcool (Tc-R2T)	Set
2	Heating	On	On	Subcool (Tc-R2T)	Set
3	Heating	On	Off	Minimum open	Low Load[a]
4	Heating	Off	Off	Minimum open	Off
5	Heating	On	On	Subcool (Tc-R2T)	Set

[a] Can be changed Off / Low load / Set by indoor unit field setting (see indoor unit service manual).

Oil return cooling mode multi outdoor – 5~8 HP and 8~12 HP units



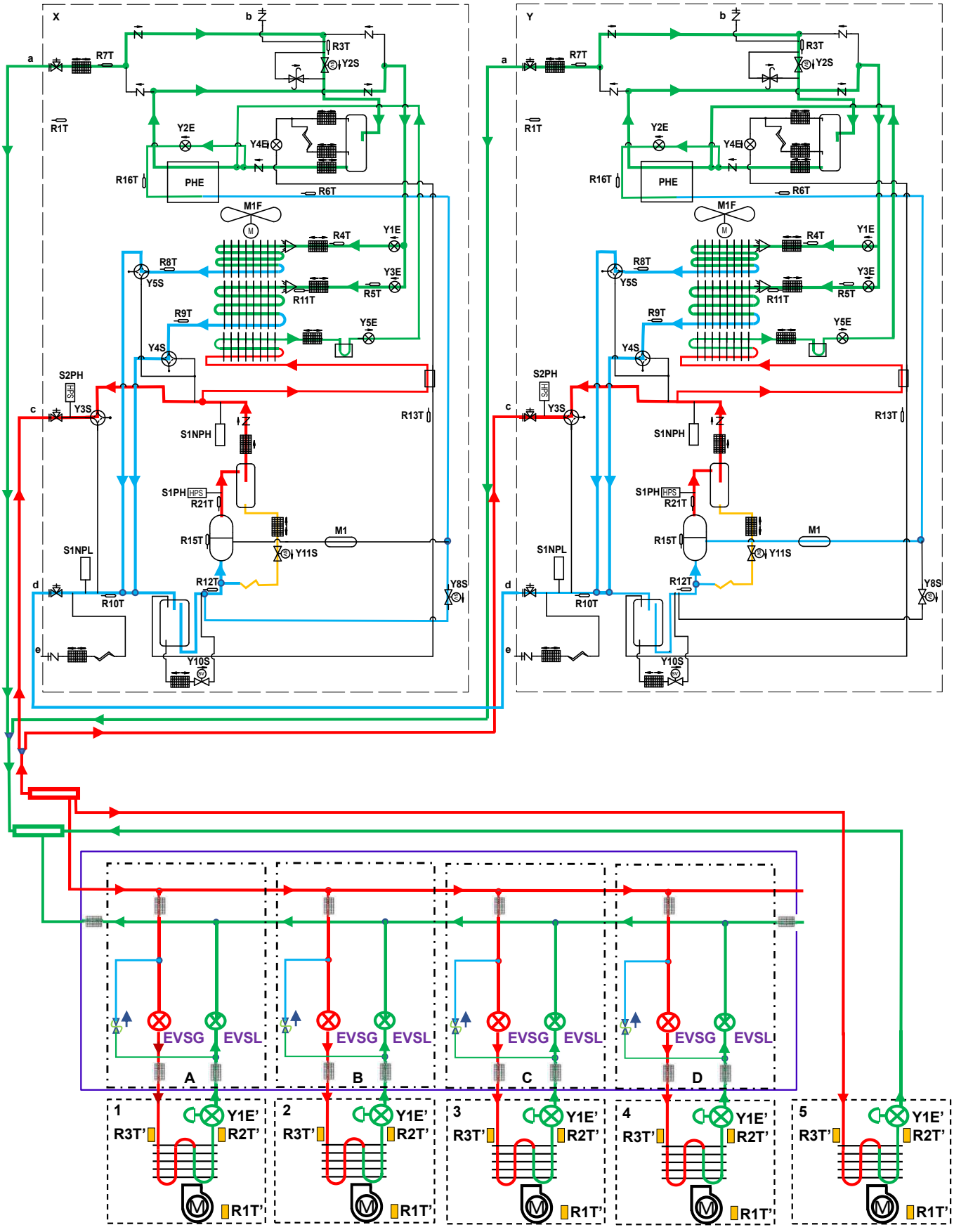
System	Unit X	Unit Y	System	Unit X	Unit Y
RXYA10	RYMA5	RYMA5	RXYA18	RXYA10	RXYA8
RXYA13	RXYA8	RYMA5	RXYA20	RXYA10	RXYA10
RXYA16	RXYA8	RXYA8		RXYA12	RXYA8

	Unit X: 5~12 HP		Unit Y: 5~10 HP	
Symbol	Status	Control	Status	Control
Y1E	Condenser (min~max pulses)	Tc min.	Condenser (min~max pulses)	Tc min.
Y2E	Evaporator	R6T–Te and R21T–Tc	Evaporator	R6T–Te and R21T–Tc
Y3E	Condenser (min~max pulses)	Tc min.	Condenser (min~max pulses)	Tc min.
Y4E	Open=purge	Tc–R7T	Open=purge	Tc–R7T
Y5E	Condenser	A3P °C	Condenser	A3P °C
Y2S	On pre-start M1F medium	Off 0 Hz M1C +180 seconds	On pre-start M1F medium	Off 0 Hz M1C +180 seconds
Y3S	On	Low pressure	On	Low pressure
Y4S	Off	Condenser	Off	Condenser
Y5S	Off	Condenser	Off	Condenser
Y8S	Off=closed On=open	Off if R21T–Tc >limit or M1C 0 Hz.	Off=closed On=open	Off if R21T–Tc >limit or M1C 0 Hz.
Y10S	Off=closed On=open	Open M1C >0 Hz and R21T–Tc >15°	Off=closed On=open	Open M1C >0 Hz and R21T–Tc >15°
Y11S	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa
M1F	Off~Max. rpm.	Tc min.	Off~Max. rpm.	Tc min.

SV circuit	EVSG	EVSL	SV circuit	EVSG	EVSL
A	Open – max.	Open – max.	C	Open – max.	Open – max.
B	Open – max.	Open – max.	D	Open – max.	Open – max.

VRV Indoor	Mode	Operation	Thermostat	Expansion valve	Fan motor
1	Cooling	On	On	Superheat (R3T–R2T)	Set
2	Cooling	On	On	Superheat (R3T–R2T)	Set
3	Cooling	On	Off	Superheat (R3T–R2T)	Set
4	Cooling	Off	Off	Superheat (R3T–R2T)	Off
5	Cooling	On	On	Superheat (R3T–R2T)	Set

Oil return heating mode multi outdoor – 5~8 HP and 8~12 HP units



System	Unit X	Unit Y	System	Unit X	Unit Y
RXYA10	RYMA5	RYMA5	RXYA18	RXYA10	RXYA8
RXYA13	RXYA8	RYMA5	RXYA20	RXYA10	RXYA10
RXYA16	RXYA8	RXYA8		RXYA12	RXYA8

	Unit X: 5~12 HP		Unit Y: 5~10 HP	
Symbol	Status	Control	Status	Control
Y1E	Evaporator[a] (0~max pulses)	R8T–Te	Evaporator[a] (0~max pulses)	R8T–Te
Y2E	Evaporator	R6T–Te and R21T–Tc	Evaporator	R6T–Te and R21T–Tc
Y3E	Evaporator (0~max pluses)	R9T–Te	Evaporator (0~max pluses)	R9T–Te
Y4E	Open=purge (0~max pulses)	Tc–R7T	Open=purge (0~max pulses)	Tc–R7T
Y5E	Condenser	A3P °C	Condenser	A3P °C
Y2S	On pre-start M1F medium	Off 0 Hz M1C +180 seconds	On pre-start M1F medium	Off 0 Hz M1C +180 seconds
Y3S	Off	High pressure	Off	High pressure
Y4S	On[a]	Evaporator[a]	On[a]	Evaporator[a]
Y5S	On	Evaporator	On	Evaporator
Y8S	Off=closed On=open	Off if R21T–Tc >limit	Off=closed On=open	Off if R21T–Tc >limit
Y10S	Off=closed On=open	Off if R21T–Tc >limit or M1C 0 Hz.	Off=closed On=open	Off if R21T–Tc >limit or M1C 0 Hz.
Y11S	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa
M1F	Max. rpm.	Off if Tc >Tc max	Max. rpm.	Off if Tc >Tc max

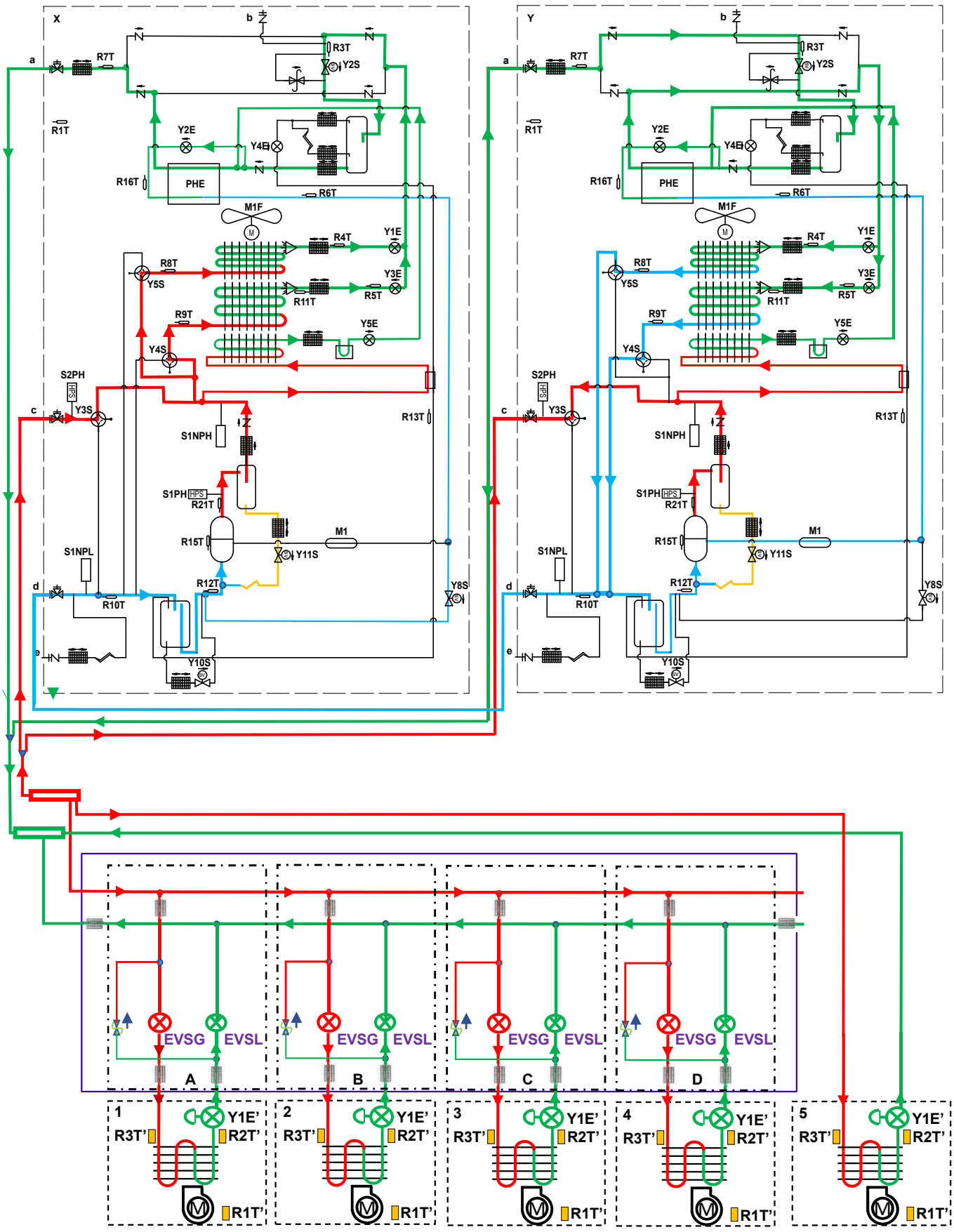
[a] Upper coil change to condenser (Y5S off + Y3E =min~max pulses) if Tc >Tc max. (at low load when Tc raise).

SV circuit	EVSG	EVSL	SV circuit	EVSG	EVSL
A	Open – max.	Open – max.	C	Open – max.	Open – max.
B	Open – max.	Open – max.	D	Open – max.	Open – max.

VRV Indoor	Mode	Operation	Thermostat	Expansion valve	Fan motor
1	Heating	On	On	Subcool (Tc-R2T)	Set
2	Heating	On	On	Subcool (Tc-R2T)	Set
3	Heating	On	Off	Minimum open	Low Load[a]
4	Heating	Off	Off	Minimum open	Off
5	Heating	On	On	Subcool (Tc-R2T)	Set

[a] Can be changed Off / Low load / Set by indoor unit field setting (see indoor unit service manual).

Defrost heating mode step 1 – 5~8 HP and 8~12 HP units



System	Unit X	Unit Y	System	Unit X	Unit Y
RXYA10	RYMA5	RYMA5	RXYA18	RXYA10	RXYA8
RXYA13	RXYA8	RYMA5	RXYA20	RXYA10	RXYA10
RXYA16	RXYA8	RXYA8		RXYA12	RXYA8

	Unit X: 5~12 HP		Unit Y: 5~10 HP	
Symbol	Status	Control	Status	Control
Y1E	Condenser	Max. pulses	Evaporator (min~max pulses)	R9T–Te
Y2E	Evaporator	R6T–Te and R21T–Tc	Evaporator	R6T–Te and R21T–Tc
Y3E	Condenser	Max. pulses	Evaporator (min~max pulses)	R9T–Te
Y4E	Open=purge	Tc–R7T	Open=purge	Tc–R7T
Y5E	Condenser	A3P °C	Condenser	A3P °C
Y2S	On pre-start M1F medium	Off 0 Hz M1C +180 seconds	On pre-start M1F medium	Off 0 Hz M1C +180 seconds
Y3S	Off	High pressure	Off	High pressure
Y4S	Off	Condenser	On	Evaporator
Y5S	Off	Condenser	On	Evaporator
Y8S	Off=closed On=open	R21T–Tc	Off=closed On=open	R21T–Tc
Y10S	Off=closed On=open	Open M1C >0 Hz and R21T–Tc >15°	Off=closed On=open	Open M1C >0 Hz and R21T–Tc >15°
Y11S	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa
M1F	Condenser	Off	Evaporator	Max. rpm

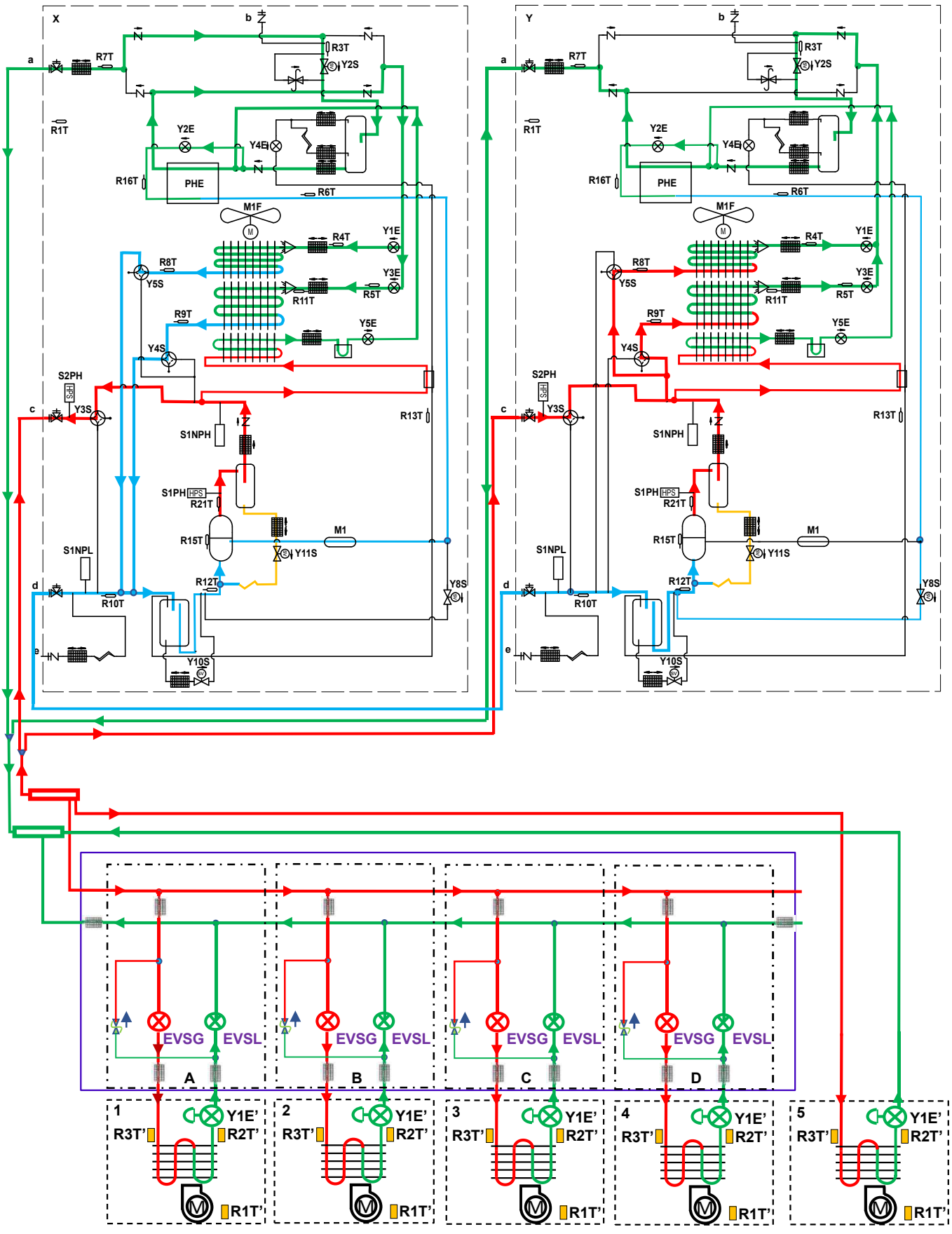
Defrost end if R11T Condenser >12.5°C or defrost time >7 minutes or Tc >Tc max.

SV circuit	EVSG	EVSL	SV circuit	EVSG	EVSL
A	Open – max.	Open – max.	C	Open – max.	Open – max.
B	Open – max.	Open – max.	D	Open – max.	Open – max.

VRV Indoor	Mode	Operation	Thermostat	Expansion valve	Fan motor
1	Heating	On	On	Subcool (Tc-R2T) / closed[(a)]	Low Load[(a)]
2	Heating	On	On	Subcool (Tc-R2T) / closed[(a)]	Low Load[(a)]
3	Heating	On	Off	Minimum open / closed[(a)]	Low Load[(a)]
4	Heating	Off	Off	Minimum open / closed[(a)]	Off
5	Heating	On	On	Subcool (Tc-R2T) / closed[(a)]	Low Load[(a)]

[(a)] Fan can be changed Off + expansion valve closed by outdoor unit field setting (see "7.9 Field settings" [▶ 489]).

Defrost heating mode step 2 – 5~8 HP and 8~12 HP units



System	Unit X	Unit Y	System	Unit X	Unit Y
RXYA10	RYMA5	RYMA5	RXYA18	RXYA10	RXYA8
RXYA13	RXYA8	RYMA5	RXYA20	RXYA10	RXYA10
RXYA16	RXYA8	RXYA8		RXYA12	RXYA8

	Unit X: 5~12 HP		Unit Y: 5~10 HP	
Symbol	Status	Control	Status	Control
Y1E	Evaporator (min~max pulses)	R9T–Te	Condenser	Max. pulses
Y2E	Evaporator	R6T–Te and R21T–Tc	Evaporator	R6T–Te and R21T–Tc
Y3E	Evaporator (min~max pulses)	R9T–Te	Condenser	Max. pulses
Y4E	Open=purge	Tc–R7T	Open=purge	Tc–R7T
Y5E	Condenser	A3P °C	Condenser	A3P °C
Y2S	On pre-start M1F medium	Off 0 Hz M1C +180 seconds	On pre-start M1F medium	Off 0 Hz M1C +180 seconds
Y3S	Off	High pressure	Off	High pressure
Y4S	On	Evaporator	Off	Condenser
Y5S	On	Evaporator	Off	Condenser
Y8S	Off=closed On=open	R21T–Tc	Off=closed On=open	R21T–Tc
Y10S	Off=closed On=open	Open M1C >0 Hz and R21T–Tc >15°	Off=closed On=open	Open M1C >0 Hz and R21T–Tc >15°
Y11S	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa	Off=closed On=open	Open pre-start Close M1C=0 Hz and Pc–Pe <0.3 MPa
M1F	Evaporator	Max. rpm	Condenser	Off

Defrost end if R11T Condenser >12.5°C or defrost time >7 minutes or Tc >Tc max.

SV circuit	EVSG	EVSL	SV circuit	EVSG	EVSL
A	Open – max.	Open – max.	C	Open – max.	Open – max.
B	Open – max.	Open – max.	D	Open – max.	Open – max.

VRV Indoor	Mode	Operation	Thermostat	Expansion valve	Fan motor
1	Heating	On	On	Subcool (Tc-R2T) / closed[(a)]	Low Load[(a)]
2	Heating	On	On	Subcool (Tc-R2T) / closed[(a)]	Low Load[(a)]
3	Heating	On	Off	Minimum open / closed[(a)]	Low Load[(a)]
4	Heating	Off	Off	Minimum open / closed[(a)]	Off
5	Heating	On	On	Subcool (Tc-R2T) / closed[(a)]	Low Load[(a)]

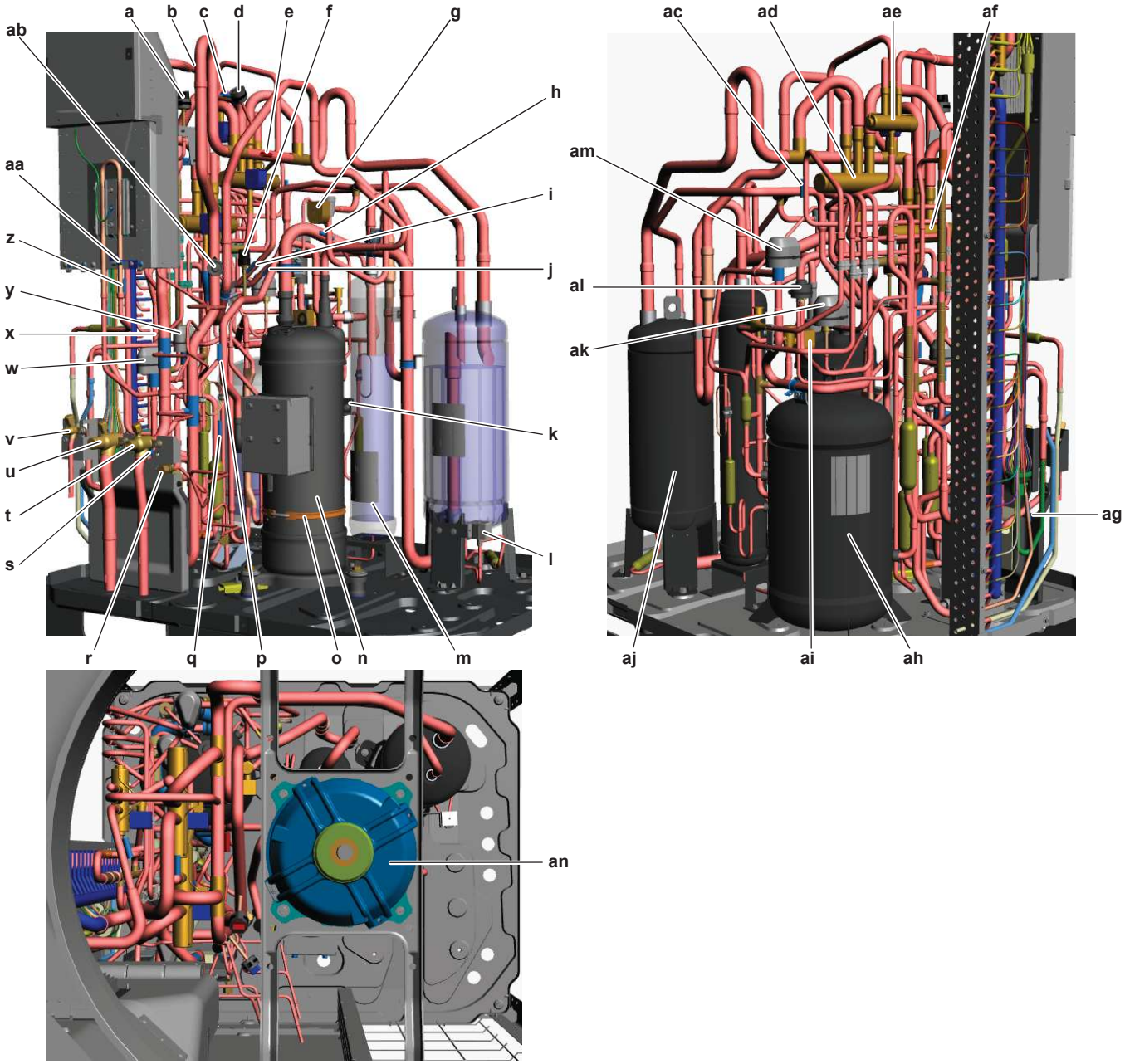
[(a)] Fan can be changed Off + expansion valve closed by outdoor unit field setting (see "7.9 Field settings" [▶ 489]).

Legend

	High pressure, high temperature gas	R7T	Thermistor (liquid pipe, subcool heat exchanger)
	High pressure, high temperature liquid	R8T	Thermistor (upper heat exchanger gas temperature)
	Low pressure, low temperature gas	R9T	Thermistor (lower heat exchanger gas temperature)
	Oil return line	R10T	Thermistor (suction temperature)
1	Indoor unit 1	R11T	Thermistor (de-icer)
2	Indoor unit 2	R12T	Thermistor (compressor suction temperature)
3	Indoor unit 3	R13T	Thermistor (receiver gas)
4	Indoor unit 4	R15T	Thermistor (compressor body)
5	Indoor unit 5	R16T	Thermistor (gas injection)
A	SV box circuit A	R21T	Thermistor (compressor discharge)
B	SV box circuit B	S1NPH	High pressure sensor
C	SV box circuit C	S1NPL	Low pressure sensor
D	SV box circuit D	S1PH	High pressure switch
a	Field piping (liquid)	S2PH	High pressure switch
b	Service port	Y1E	Electronic expansion valve (upper heat exchanger)
c	Field piping (gas)	Y2E	Electronic expansion valve (sub-cool)
d	Field piping (equalising pipe)	Y3E	Electronic expansion valve (lower heat exchanger)
e	Refrigerant charge port	Y4E	Electronic Expansion Valve (receiver gas)
DT	Double tube heat exchanger	Y5E	Electronic Expansion Valve (liquid cooling)
M1	Muffler	Y7E	Electronic Expansion Valve (liquid injection)
M1F	Fan motor 1	Y2S	Solenoid valve (liquid pipe)
M2F	Fan motor 2	Y3S	4-way valve (high pressure / low pressure)
PHE	Plate heat exchanger	Y4S	4-way valve (lower heat exchanger)
R1T	Thermistor (air)	Y5S	4-way valve (upper heat exchanger)
R3T	Thermistor (main liquid pipe)	Y8S	Solenoid valve (gas injection)
R4T	Thermistor (upper heat exchanger liquid temperature)	Y10S	Oil return valve (accumulator)
R5T	Thermistor (lower heat exchanger liquid temperature)	Y11S	Oil return valve (compressor)
R6T	Thermistor (gas pipe, subcool heat exchanger)		

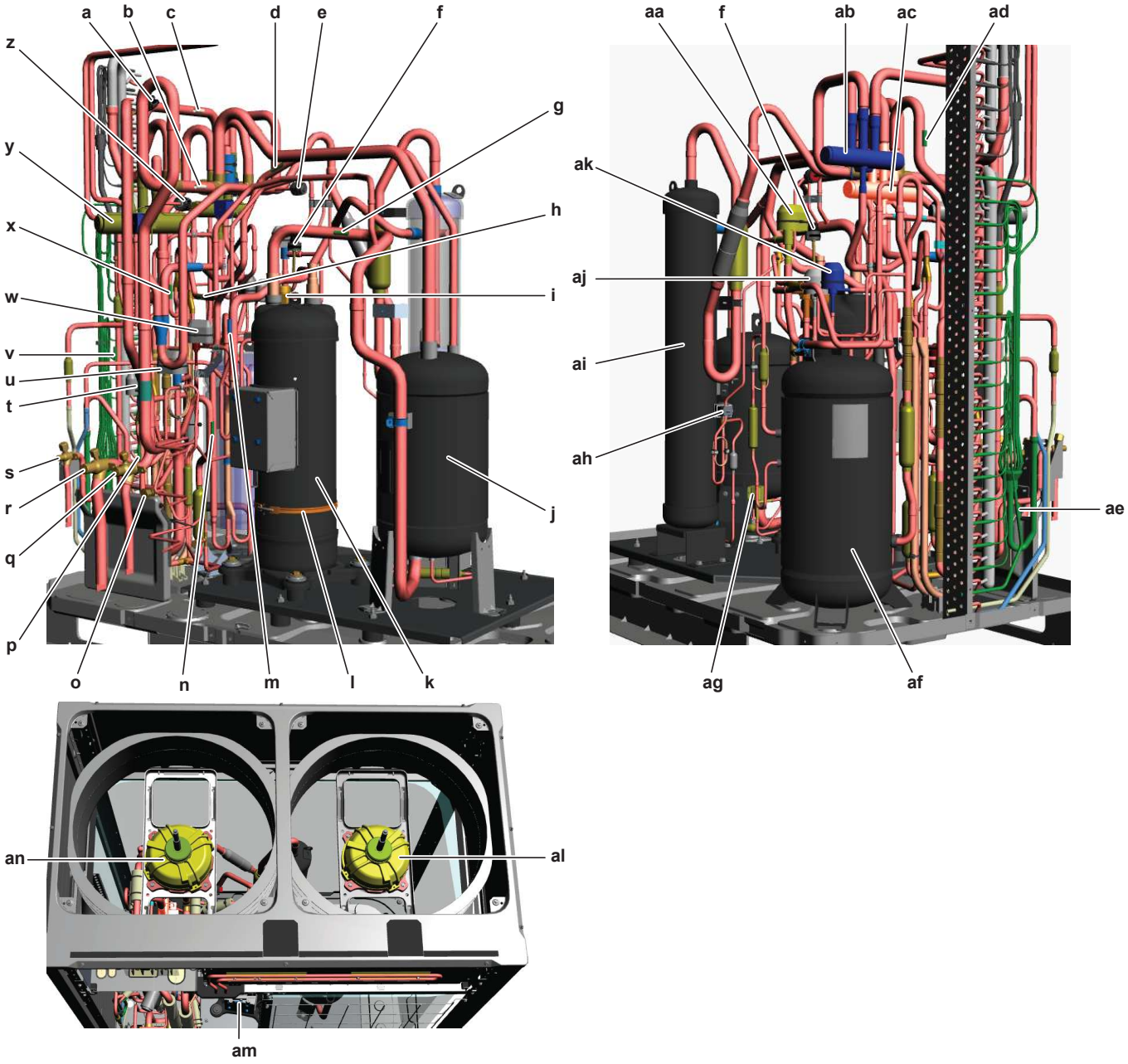
7.4 Component overview

7.4.1 Component overview: 5~12HP outdoor units



a	High pressure switch S2PH
b	Upper heat exchanger gas thermistor R8T
c	Lower heat exchanger gas thermistor R9T
d	Refrigerant high pressure sensor S1NPH
e	Suction temperature thermistor R10T
f	High pressure switch S1PH
g	Gas injection solenoid valve Y8S
h	Compressor suction thermistor R12T
i	Gas pipe thermistor of the subcool heat exchanger R6T
j	Receiver gas thermistor R13T
k	Compressor oil return valve Y11S
l	Accumulator oil return valve Y10S
m	Oil separator
n	Compressor M1C + compressor body thermistor R15T
o	Crankcase heater E1HC
p	Compressor discharge thermistor R21T
q	Liquid pipe thermistor of the subcool heat exchanger R7T
r	Charge port
s	Lower heat exchanger liquid thermistor R5T
t	Gas stop valve
u	Equalising pipe stop valve (ONLY used if multi outdoor)
v	Liquid stop valve
w	Electronic expansion valve (lower heat exchanger) Y3E
x	Gas injection thermistor R16T
y	Electronic expansion valve (upper heat exchanger) Y1E
z	Upper heat exchanger liquid thermistor R4T
aa	Air thermistor R1T
ab	Refrigerant low pressure sensor S1NPL
ac	Main liquid pipe thermistor R3T
ad	Lower heat exchanger 4-way valve Y4S
ae	Upper heat exchanger 4-way valve Y5S
af	High pressure/low pressure gas pipe 4-way valve Y3S
ag	De-icer thermistor R11T
ah	Liquid receiver
ai	Liquid pipe solenoid valve Y2S
aj	Accumulator
ak	Electronic expansion valve (liquid cooling) Y5E
al	Electronic expansion valve (subcool) Y2E
am	Electronic expansion valve (receiver gas) Y4E
an	Fan motor M1F

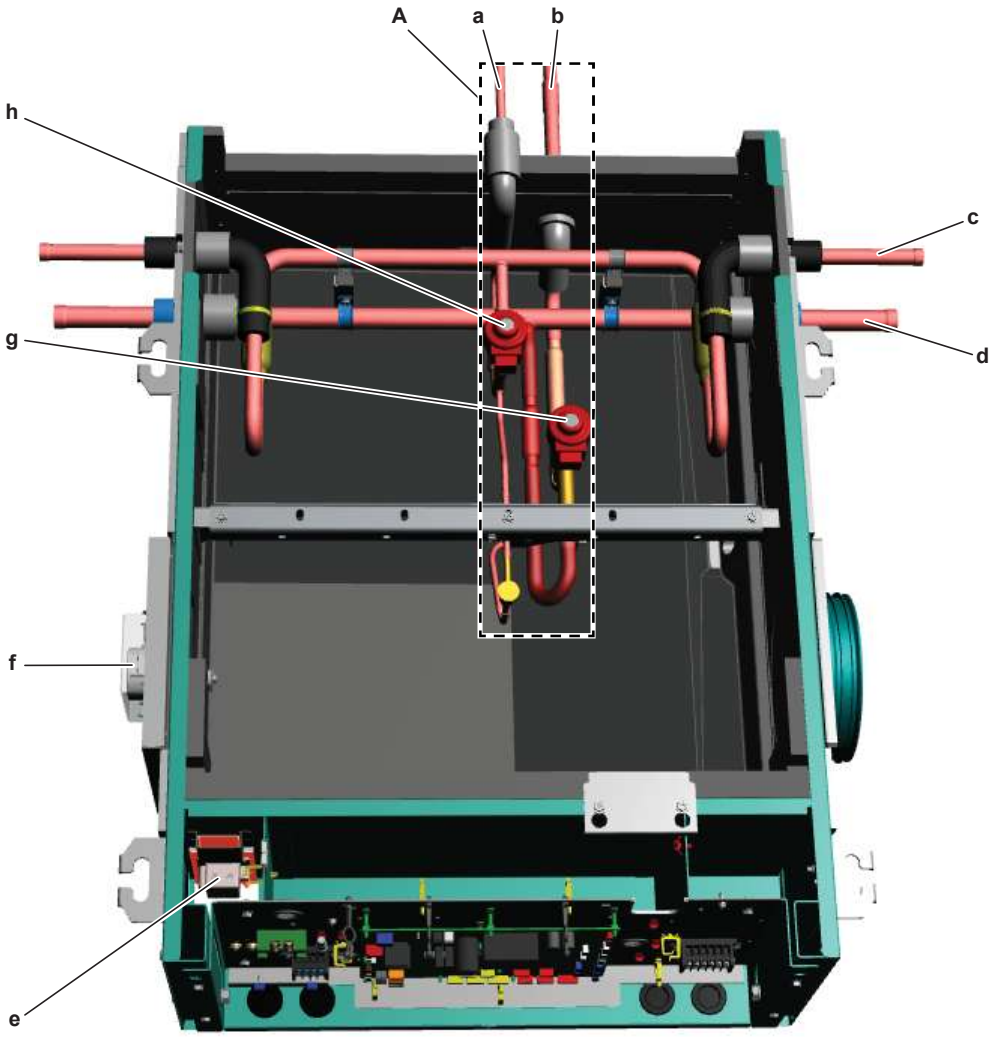
7.4.2 Component overview: 14~20HP outdoor units



- **a** High pressure switch S2PH
- **b** Suction temperature thermistor R10T
- **c** Upper heat exchanger gas thermistor R8T
- **d** Receiver gas thermistor R13T
- **e** Refrigerant high pressure sensor S1NPH
- **f** High pressure switch S1PH
- **g** Compressor suction thermistor R12T
- **h** Gas pipe thermistor of the subcool heat exchanger R6T
- **i** Liquid pipe solenoid valve Y2S
- **j** Accumulator
- **k** Compressor M1C + compressor body thermistor R15T
- **l** Crankcase heater E1HC
- **m** Compressor discharge thermistor R21T
- **n** Liquid pipe thermistor of the subcool heat exchanger R7T
- **o** Charge port
- **p** Lower heat exchanger liquid thermistor R5T
- **q** Gas stop valve
- **r** Equalising pipe stop valve (ONLY used if multi outdoor)
- **s** Liquid stop valve
- **t** Electronic expansion valve (lower heat exchanger) Y3E
- **u** Electronic expansion valve (upper heat exchanger) Y1E
- **v** Upper heat exchanger liquid thermistor R4T
- **w** Electronic expansion valve (liquid injection) Y7E
- **x** Main liquid pipe thermistor R3T
- **y** High pressure/low pressure gas pipe 4-way valve Y3S
- **z** Refrigerant low pressure sensor S1NPL
- **aa** Electronic expansion valve (receiver gas) Y4E
- **ab** Upper heat exchanger 4-way valve Y5S
- **ac** Lower heat exchanger 4-way valve Y4S
- **ad** Lower heat exchanger gas thermistor R9T
- **ae** De-icer thermistor R11T
- **af** Liquid receiver
- **ag** Accumulator oil return valve Y10S
- **ah** Compressor oil return valve Y11S
- **ai** Oil separator
- **aj** Electronic expansion valve (subcool) Y2E
- **ak** Electronic expansion valve (liquid cooling) Y5E
- **al** Fan motor M2F
- **am** Air thermistor R1T
- **an** Fan motor M1F

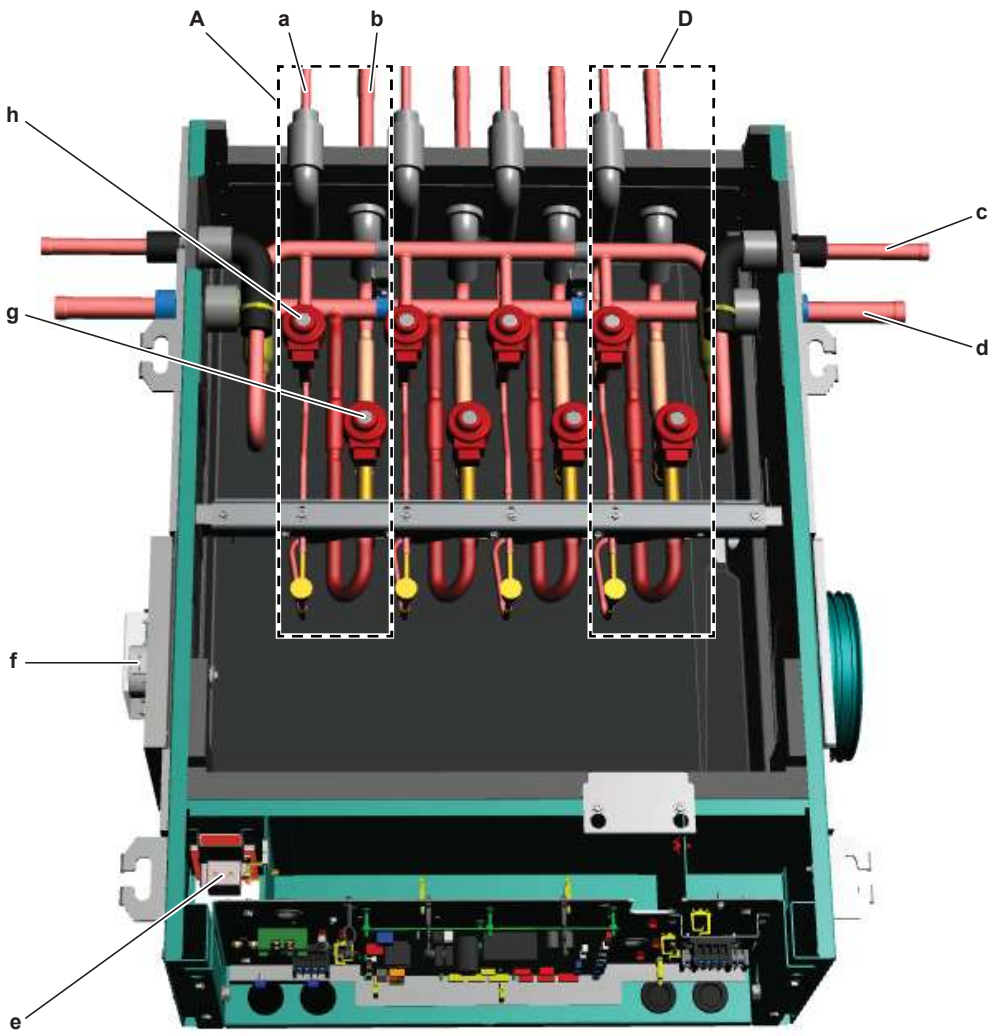
7.4.3 Component overview: Safety valve box

SV1A



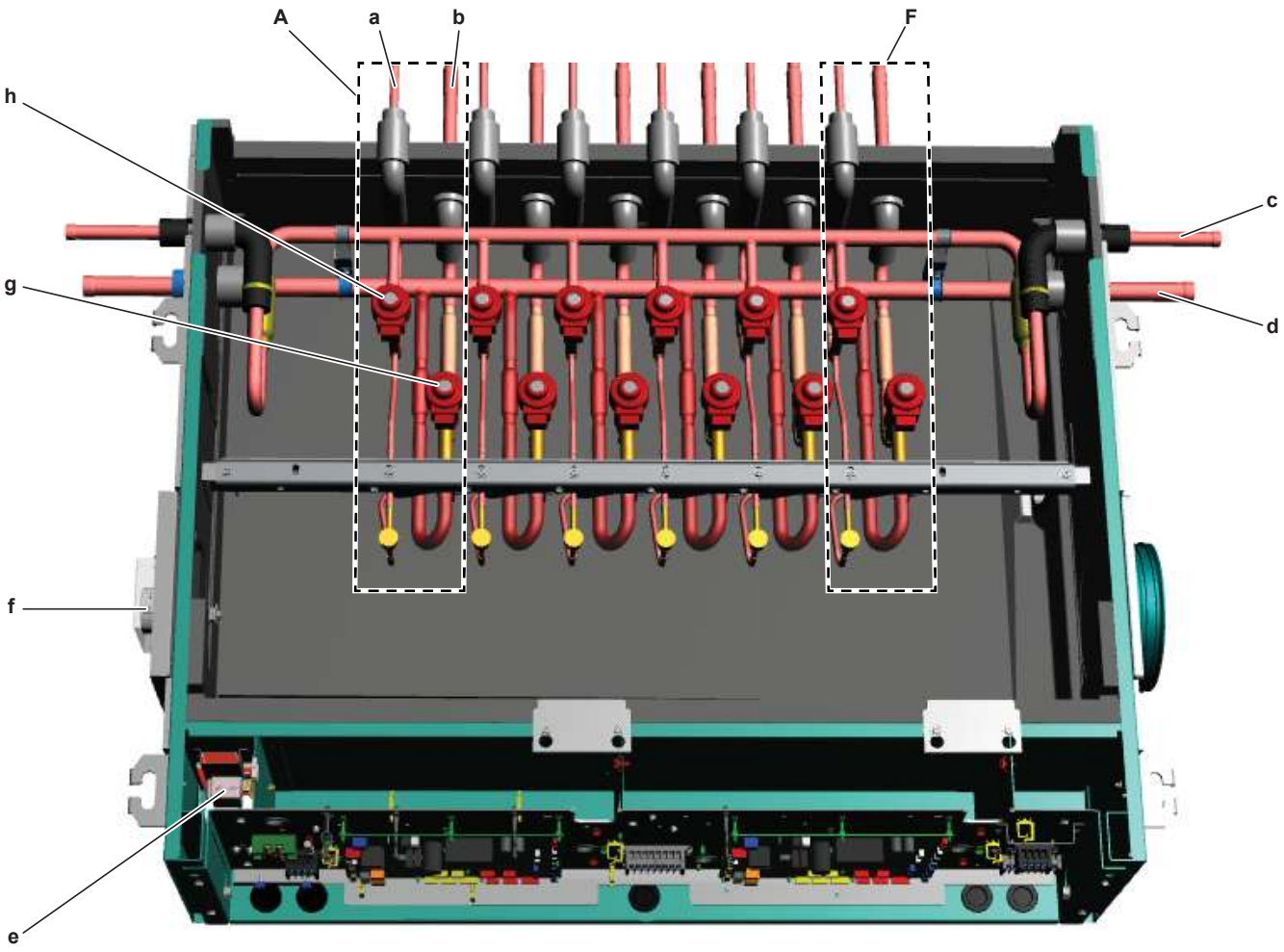
A For indoor units of circuit A
a Liquid pipe to indoor units
b Gas pipe to indoor units
c Liquid pipe (to outdoor unit)
d Gas pipe (to outdoor unit)
e R32 leak detection sensor
f Damper motor M1D + limit switches (K1 and K2)
g Safety gas expansion valve EVSG
h Safety liquid expansion valve EVSL

SV4A



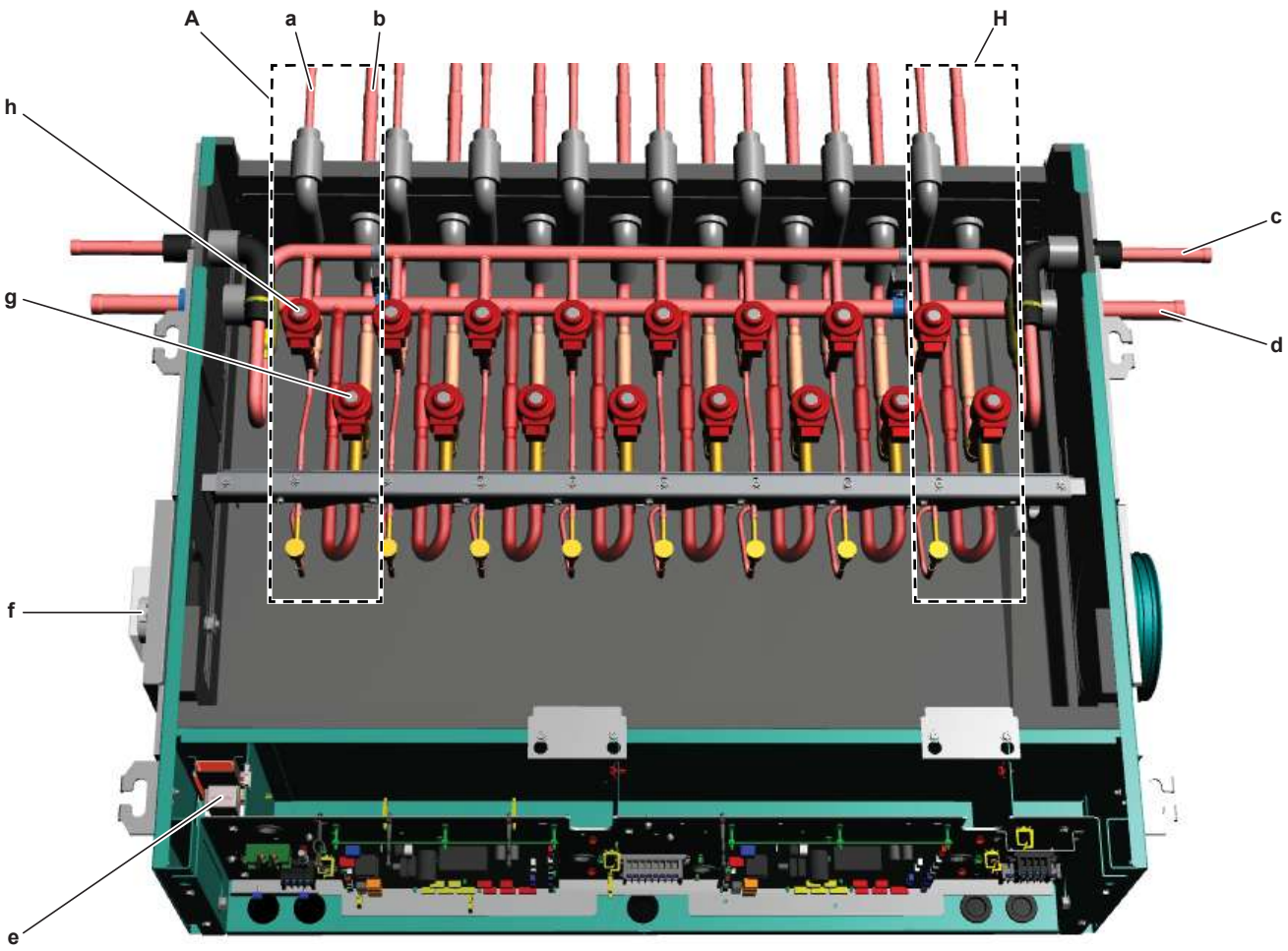
A For indoor units of circuit A
D For indoor units of circuit D
a Liquid pipe to indoor units
b Gas pipe to indoor units
c Liquid pipe (to outdoor unit)
d Gas pipe (to outdoor unit)
e R32 leak detection sensor
f Damper motor M1D + limit switches (K1 and K2)
g Safety gas expansion valve EVSG
h Safety liquid expansion valve EVSL

SV6A



A For indoor units of circuit A
F For indoor units of circuit F
a Liquid pipe to indoor units
b Gas pipe to indoor units
c Liquid pipe (to outdoor unit)
d Gas pipe (to outdoor unit)
e R32 leak detection sensor
f Damper motor M1D + limit switches (K1 and K2)
g Safety gas expansion valve EVSG
h Safety liquid expansion valve EVSL

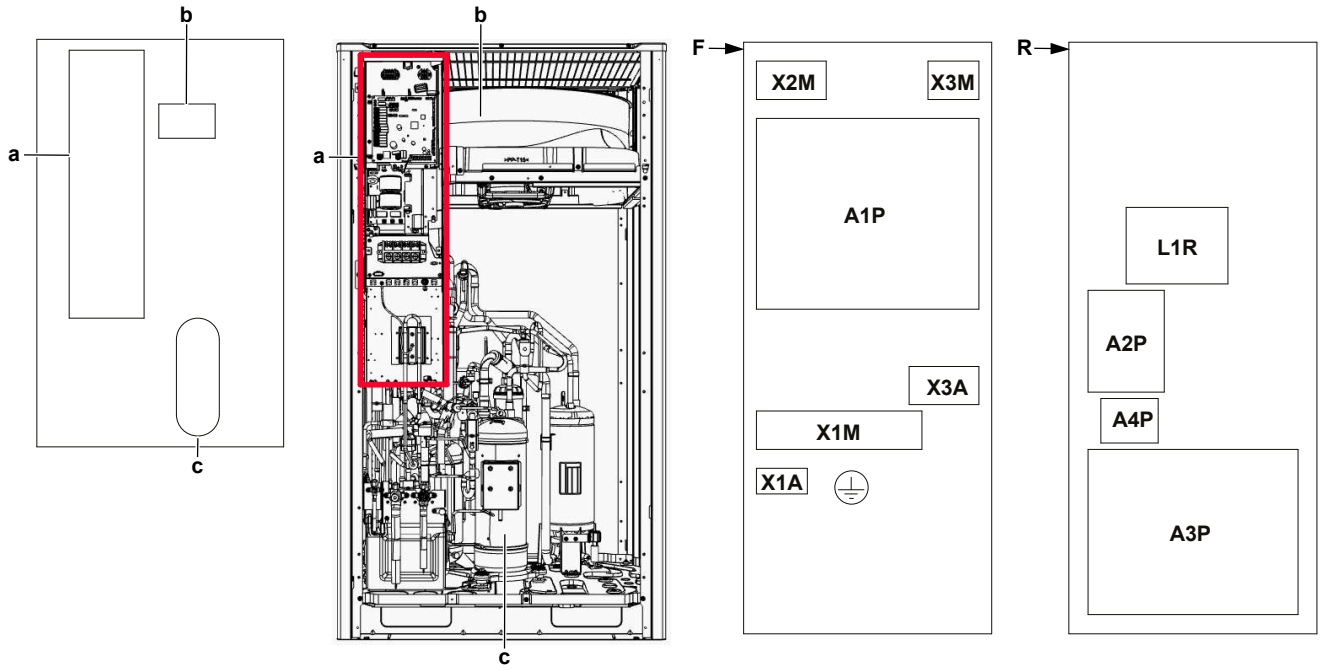
SV8A



A For indoor units of circuit A
H For indoor units of circuit H
a Liquid pipe to indoor units
b Gas pipe to indoor units
c Liquid pipe (to outdoor unit)
d Gas pipe (to outdoor unit)
e R32 leak detection sensor
f Damper motor M1D + limit switches (K1 and K2)
g Safety gas expansion valve EVSG
h Safety liquid expansion valve EVSL

7.5 Switchbox overview

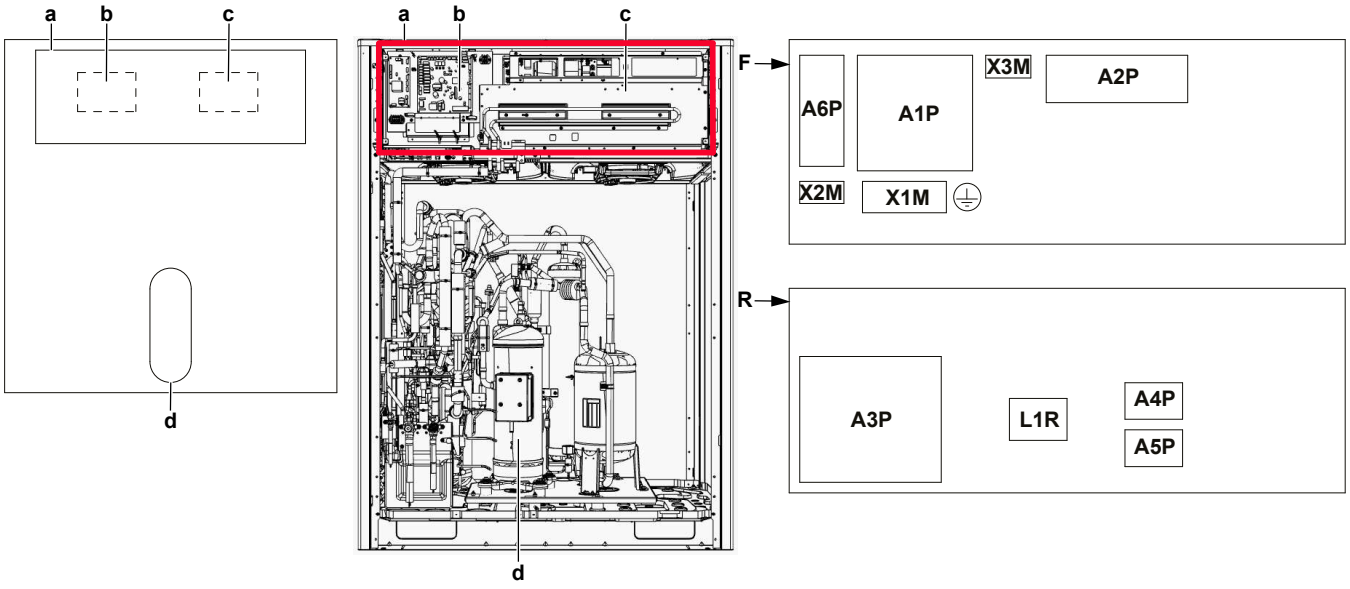
7.5.1 Single fan units



a Switchbox
b Fan motor (M1F)
c Compressor (M1C)

F Front view
R Rear view
A1P Main PCB
A2P Noise filter PCB
A3P Inverter PCB
A4P Fan inverter PCB
L1R Reactor
X1A Connector for M1F
X3A Rectifier voltage check connector
X1M Power supply wire terminal
X2M Wire terminal
X3M Wire terminal (mechanical ventilation error input)

7.5.2 Double fan units

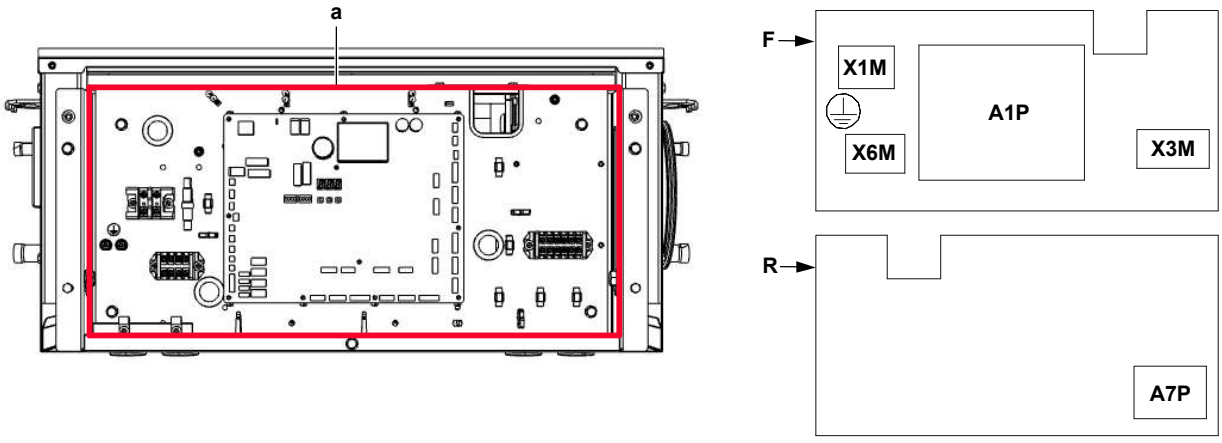


a Switchbox
b Fan motor (M1F)
c Fan motor (M2F)
d Compressor (M1C)

F Front view
R Rear view
A1P Main PCB
A2P Noise filter PCB
A3P Inverter PCB
A4P Fan inverter PCB for M1F
A5P Fan inverter PCB for M2F
A6P Sub PCB
L1R Reactor
X1M Power supply wire terminal
X2M Wire terminal
X3M Wire terminal (mechanical ventilation error input)

7.5.3 Safety valve box

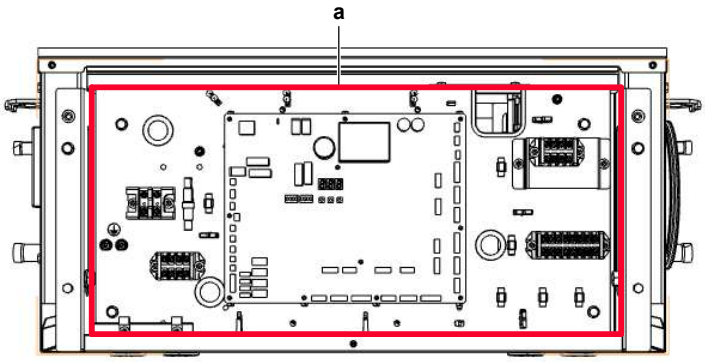
SV1A

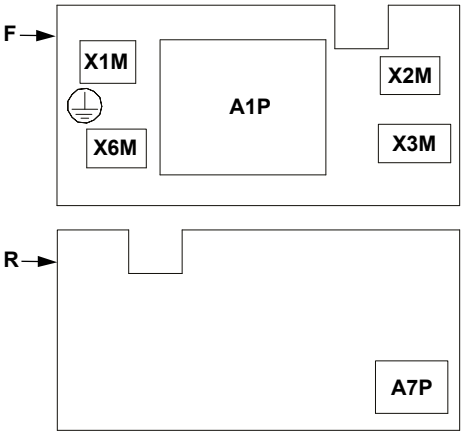


a Switchbox

F Front view
R Rear view
A1P Main PCB
A7P R32 leak detection sensor
X1M Terminal strip (power)
X3M Terminal strip (transmission)
X6M Terminal strip (external output)

SV4A

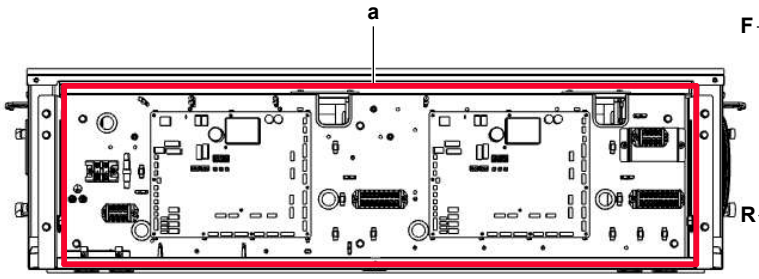


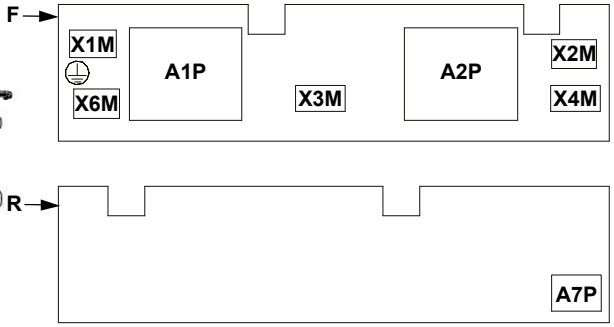


a Switchbox

F Front view
R Rear view
A1P Main PCB
A7P R32 leak detection sensor
X1M Terminal strip (power)
X2M Terminal strip (transmission)
X3M Terminal strip (transmission)
X6M Terminal strip (external output)

SV6~8A



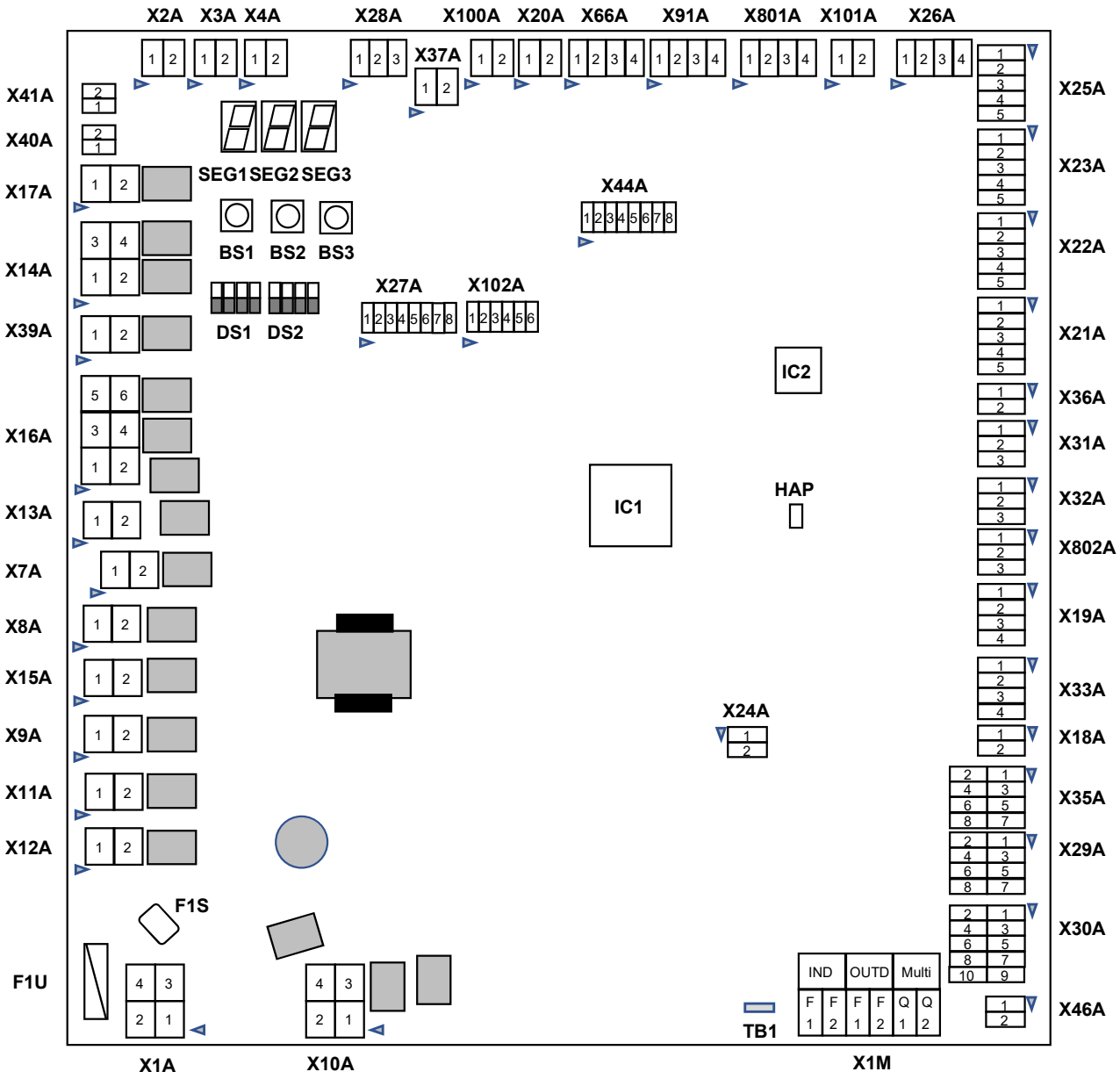


a Switchbox

F Front view
R Rear view
A1P Main PCB
A2P Sub PCB
A7P R32 leak detection sensor
X1M Terminal strip (power)
X2M Terminal strip (transmission)
X3M Terminal strip (transmission)
X4M Terminal strip (transmission)
X6M Terminal strip (external output)

7.5.4 PCB Overview

Outdoor unit main PCB

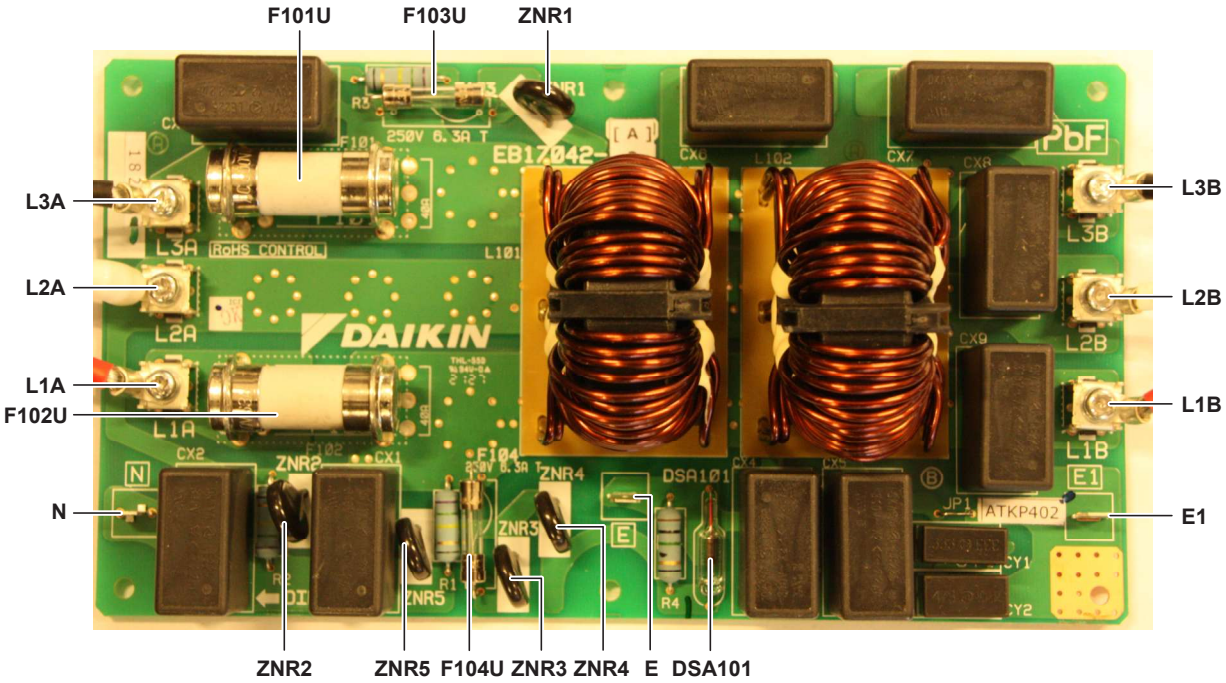


Reference	Color	Description	Wiring symbol	Pins
DS1	-	Disable indoor circuit	DS1	-
DS2	-	Combination setting	DS2	-
F1U	Glass	Fuse 230 V AC T10 A	F1U	-
F1S	Black	Varistor	F1S	-
HAP	Green	Service monitor	HAP	-
SEG*	-	7-segment 3 digits	SEG*	-
TB1	-	Earth connection PCB	TB1	-
X1A	Blue	Power 230 V AC L1	-	2+4
		Power 230 V AC N	-	1+3

Reference	Color	Description	Wiring symbol	Pins
X2A	Red	Input high pressure switch	S1PH	1+2
X3A	Red	Jumper	-	1+2
X4A	Grey	Input high pressure switch	S2PH	1+2
X7A	Green	Output 230 V AC solenoid valve oil separator	Y11S	2 (L)+1 (N)
X8A	Grey	Output 230 V AC 4-way valve dual pressure	Y3S	2 (L)+1 (N)
X9A	Blue	Output 230 V AC solenoid valve upper coil	Y5S	2 (L)+1 (N)
X10A	Black	Output 230 V AC optional drain pan heater	E3H	2 (L)+1 (N)
X11A	Red	Not used	-	2 (L)+1 (N)
X12A	Yellow	Output 230 V AC solenoid valve oil accumulator	Y10S	2 (L)+1 (N)
X13A	Pink	Output 230 V AC solenoid valve lower coil	Y4S	2 (L)+1 (N)
X14A	White	Output 230 V AC error leak operation	SVEO	3 (L)+1 (N)
		Output 230 V AC leak sensor (SV box or VRV indoor)	SVS	4 (L)+2 (N)
X15A	White	Output 230 V AC solenoid valve gas injection	Y8S	2 (L)+1 (N)
X16A	White	Output 230 V AC crankcase heater	E1HC	2 (L)+1 (N)
X17A	Black	Not used	-	-
X18A	Black	Input thermistor	R1T	1+2
X19A	Red	Not used (input thermistor free ports)	-	1~4
X20A	Orange	Communication main PCB <-> inverter PCB: 5~12 HP: A1P <-> A3P X2A, 14~20 HP: A1P <-> A6P X2A	-	1+2
X21A	Red	Output 12 V DC expansion valve upper heat exchanger	Y1E	1~5
X22A	Black	Output 12 V DC expansion valve lower heat exchanger	Y3E	1~5
X23A	Blue	Output 12 V DC expansion valve inverter cooling	Y5E	1~5
X24A	White	Forced defrost	-	1+2
X25A	Orange	Output 12 V DC expansion valve purge receiver	Y4E	1~5
X26A	White	Output 12 V DC expansion valve Sub-cool circuit	Y2E	1~5
X27A	White	RAM & D-checker data + EEPROM write	-	1~8
X28A	Red	<-> A3P X6A (high pressure switch ok)	-	1~3
X29A	Blue	Input thermistor gas upper heat exchanger	R8T	1+2
		Input thermistor gas lower heat exchanger	R9T	3+4
		Input thermistor suction accumulator inlet	R10T	5+6
X30A	White	Input thermistor liquid inlet liquid receiver	R3T	1+2
		Input thermistor main liquid upper heat exchanger	R4T	3+4
		Input thermistor main liquid lower heat exchanger	R5T	5+6
		Input thermistor gas outlet sub-cool heat exchanger	R6T	7+8
		Input thermistor liquid stop valve	R7T	9+10
X31A	Blue	Low pressure sensor	S1NPL	1~3
X32A	Red	High pressure sensor	S1NPH	1~3

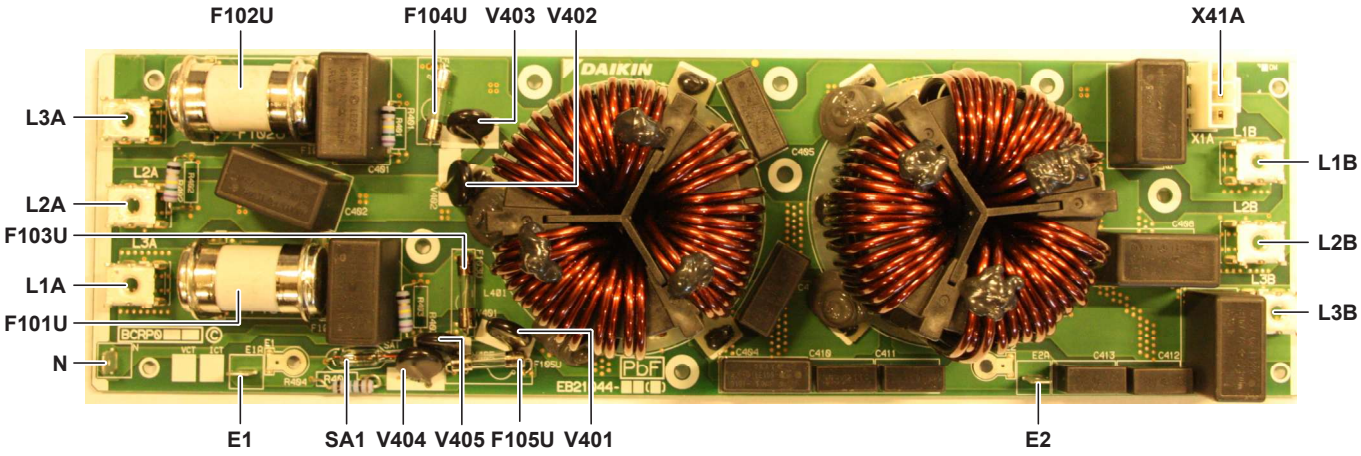
Reference	Color	Description	Wiring symbol	Pins
X33A	Orange	Input thermistor discharge pipe compressor	R21T	1+2
		Input thermistor body compressor	R15T	3+4
X35A	Red	Input thermistor heat exchanger bottom (defrost)	R11T	1+2
		Input thermistor suction compressor inlet	R12T	3+4
		Input thermistor liquid inlet sub-cool heat exchanger	R16T	5+6
X36A	Black	Not used	-	1+2
X37A	White	Output 16 V DC	-	1+2
X39A	Orange	Output 230 V AC solenoid valve liquid	Y2S	2 (L)+1 (N)
X40A	White	<-> A3P X63A (high pressure switch 1 ok = closed input inverter 1)	-	-
X41A	White	Not used (high pressure switch 2 ok = closed input inverter 2)	-	-
X44A	White	Write software sub processor	-	1~8
X46A	Red	Input thermistor liquid receiver gas purge	R13T	1+2
X66A	White	Not used (Option PCB cool/heat switch Heat-pump)	-	1~4
X91A	Orange	Not used (RS-485)	-	1~4
X100A	Blue	Not used (<-> inverter ACS2)	-	1+2
X101A	White	Current sensor earth leakage T1A	T1A	1+2
X102A	White	Write software main processor	-	1~6
X801A	White	Not used	-	1~5
X802A	White	Not used	-	1~3
X1M	-	Communication F1/F2ind, F1/F2outd, Q1Q2 multi	-	F1, F2, Q1, Q2

5~12 HP unit noise filter PCB



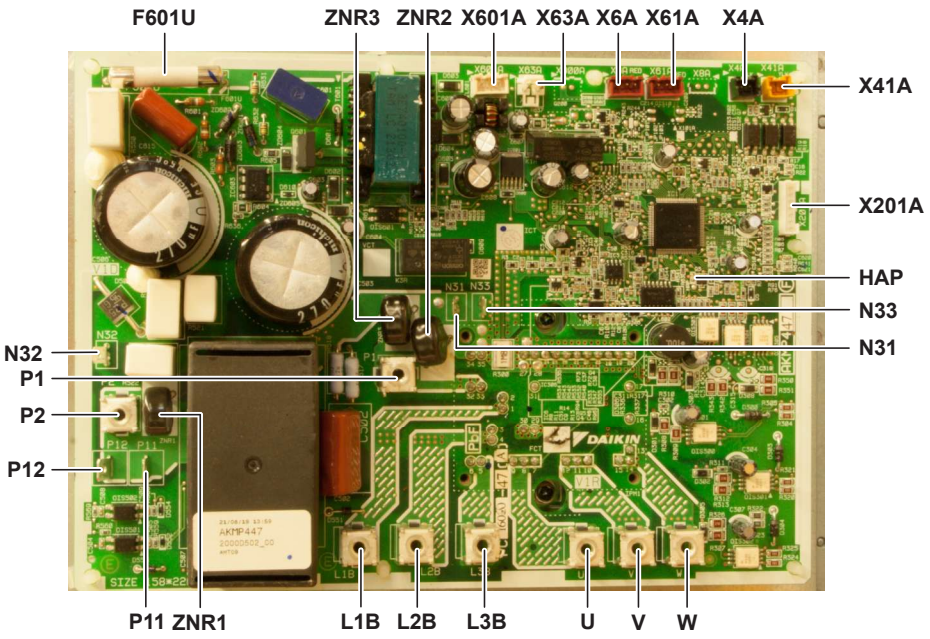
Reference	Color wire	Description	Wiring symbol
DSA101	Solder	Surge arrestor A2P <-> casing switchbox	DSA101
E	Green/ Yellow	Earth connection	E
E1	Green/ Yellow	Earth connection	E1
F101U	Solder	Fuse L3 input	F101U
F102U	Solder	Fuse L1 input	F102U
F103U	Solder	Fuse L3 <-> ZNR1	F103U
F104U	Solder	Fuse L1 <-> ZNR3	F104U
L1A	Red	L1 phase input A2P <-> X1M – L1	L1A
L2A	White	L2 phase input A2P <-> X1M – L2	L2A
L3A	Black	L3 phase input A2P <-> X1M – L3	L3A
L1B	Red	L1 phase output A2P <-> A3P L1A	L1B
L2B	White	L2 phase output A2P <-> A3P L2A	L2B
L3B	Black	L3 phase output A2P <-> A3P L3A	L3B
N	Blue	Neutral input A2P <-> X1M – N	N
ZNR1	Solder	Zener diode – over voltage protection L3 <-> ZNR4	ZNR1
ZNR2	Solder	Zener diode – over voltage protection L2 <-> ZNR4	ZNR2
ZNR3	Solder	Zener diode – over voltage protection L1 <-> ZNR4	ZNR3
ZNR4	Solder	Zener diode – over voltage protection DSA101 <-> Ground	ZNR4
ZNR5	Solder	Zener diode – over voltage protection N <-> ZNR4	ZNR5

14~20 HP unit noise filter PCB



Reference	Color wire	Description	Wiring symbol
E1	Green/ Yellow	Earth connection	E1
E2	Green/ Yellow	Earth connection	E2
F101U	Solder	Fuse L3 input	F101U
F102U	Solder	Fuse L1 input	F102U
F103U	Solder	Fuse L3 <-> V401	F103U
F104U	Solder	Fuse L1 <-> V403	F104U
F105U	Solder	Fuse V401~V403 <-> V404 +V405	F105U
L1A	Red	L1 phase input A2P <-> X1M – L1	L1A
L2A	White	L2 phase input A2P <-> X1M – L2	L2A
L3A	Black	L3 phase input A2P <-> X1M – L3	L3A
L1B	Red	L1 phase output A2P <-> A3P L1A	L1B
L2B	White	L2 phase output A2P <-> A3P L2A	L2B
L3B	Black	L3 phase output A2P <-> A3P L3A	L3B
N	Blue	Neutral input A2P <-> X1M – N	N
SA1	Solder	Surge arrestor A2P <-> casing switchbox	SA1
V401	Solder	Zener diode – over voltage protection L3 <-> V401	ZNR1
V402	Solder	Zener diode – over voltage protection L2 <-> V402	ZNR2
V403	Solder	Zener diode – over voltage protection L1 <-> V403	ZNR3
V404	Solder	Zener diode – over voltage protection SA1 <-> Ground	ZNR4
V405	Solder	Zener diode – over voltage protection N <-> V404	ZNR5
X41A	White	Output voltage A2P – Not used Δ1=L1, 2=L2, 3+L3	X41A

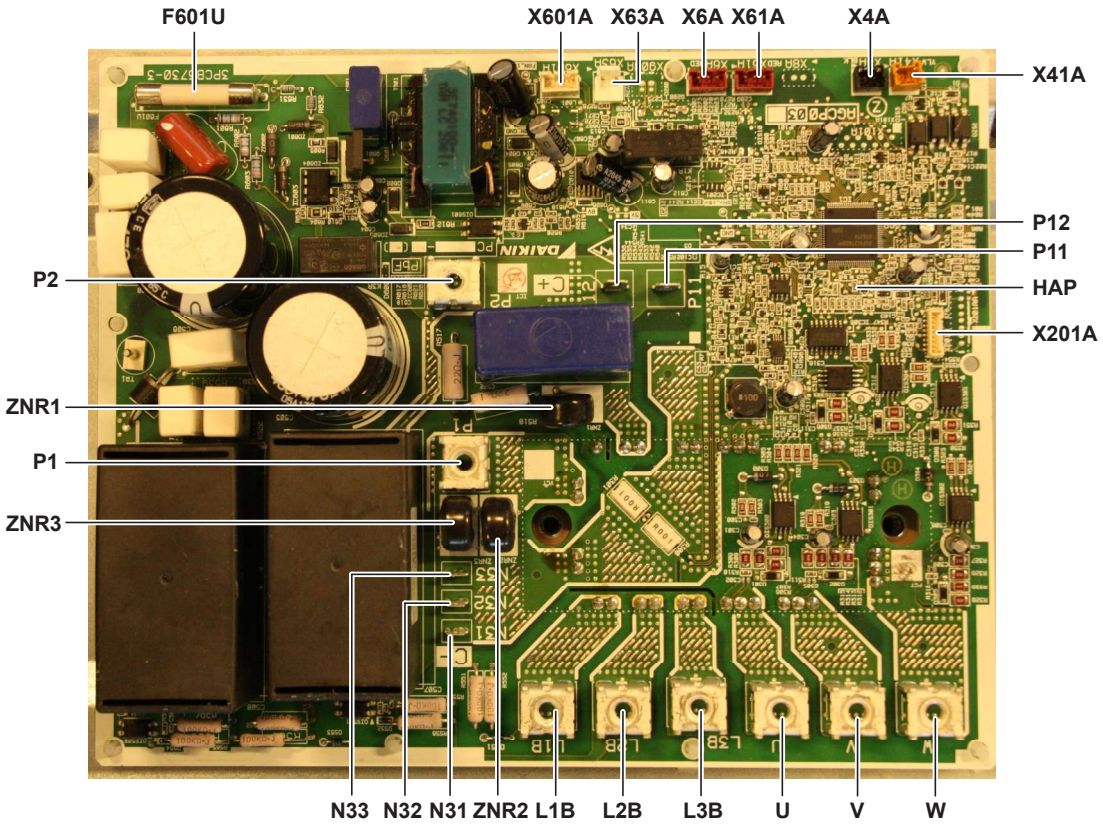
5~12 HP unit inverter PCB



Reference	Color wire	Description	Wiring symbol	Pins
F601U	-	Fuse 500 V DC control circuit (soldered type)	F601U	-
HAP	Green	Service monitor LED	HAP	-
L1B	-	Power input phase L1 (from A2P)	L1B	-
L2B	-	Power input phase L2 (from A2P)	L2B	-
L3B	-	Power input phase L3 (from A2P)	L3B	-
N31	-	0 V DC (diode module) A3P <-> A4P	N31	-
N32	-	0 V DC (diode module) A3P <-> X3A	N32	-
N33	-	Not used	N33	-
P1	-	A3P <-> L1R 500 V DC IN	P1	-
P2	-	A3P <-> L1R 500 V DC OUT	P2	-
P11	-	500 V DC (diode module) A3P <-> A4P	P11	-
P12	-	500 V DC (diode module) A3P <-> X3A	P12	-
U	-	Output Power module <-> M1C U phase	U	-
V	-	Output Power module <-> M1C V phase	V	-
W	-	Output Power module <-> M1C W phase	W	-
X4A	Black	Communication A1P <-> A3P: 0.5~10 V DC	X4A	Δ1+2
X6A	Red	A3P <-> A1P X28A (High pressure switch OK) 13.8 V DC	X6A	Δ1+2
X41A	Orange	Communication A3P <-> A4P X3A: 0.5~10 V DC	X41A	Δ1+2
X61A	Red	Not used	X61A	-
X63A	White	A3P <-> A1P X40A (High pressure switch OK = closed input inverter 1)	X63A	Δ1+2
X201A	White	Rewrite software	X201A	Δ1~8
X601A	White	A3P <-> A4P X5A 18 V DC power control	X601A	Δ1+3

Reference	Color wire	Description	Wiring symbol	Pins
ZNR1	-	Zener diode (Over-voltage protection) L1R <-> diode module	ZNR1	-
ZNR2	-	Zener diode (Over-voltage protection) diode module <-> L1R	ZNR2	-
ZNR3	-	Zener diode (Over-voltage protection) diode module <-> L1R	ZNR3	-

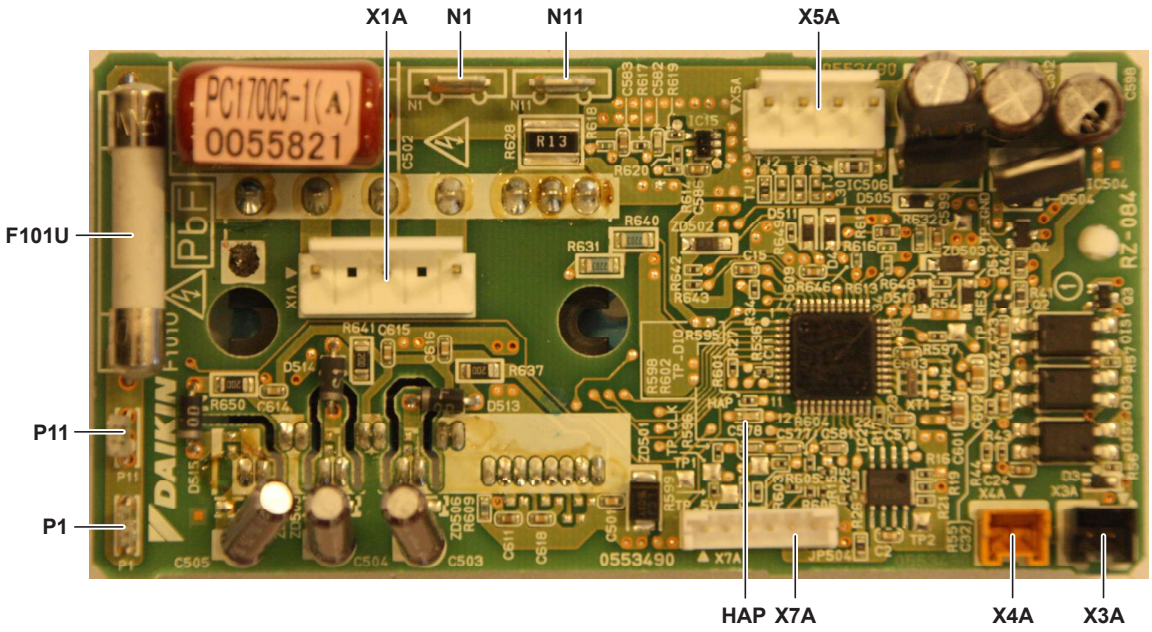
14~20 HP unit inverter PCB



Reference	Color wire	Description	Wiring symbol	Pins
F601U	-	Fuse 500 V DC control circuit (soldered type)	F601U	-
HAP	Green	Service monitor LED	HAP	-
L1B	-	Power input phase L1 (from A2P)	L1B	-
L2B	-	Power input phase L2 (from A2P)	L2B	-
L3B	-	Power input phase L3 (from A2P)	L3B	-
N31	-	0 V DC (diode module) A3P <-> X3A	N31	-
N32	-	0 V DC (diode module) A3P <-> A4P	N32	-
N33	-	Not used	N33	-
P1	-	A3P <-> L1R 500 V DC IN	P1	-
P2	-	A3P <-> L1R 500 V DC OUT	P2	-
P11	-	500 V DC (diode module) A3P <-> X3A	P11	-
P12	-	500 V DC (diode module) A3P <-> A4P	P12	-
U	-	Output Power module <-> M1C U phase	U	-
V	-	Output Power module <-> M1C V phase	V	-

Reference	Color wire	Description	Wiring symbol	Pins
W	-	Output Power module <-> M1C W phase	W	-
X4A	Black	Communication A1P <-> A3P: 0.5~10 V DC	X4A	Δ1+2
X6A	Red	A3P <-> A1P X28A (High pressure switch OK) 13.8 V DC	X6A	Δ1+2
X41A	Orange	Communication A3P <-> A4P X3A: 0.5~10 V DC	X41A	Δ1+2
X61A	Red	Not used	X61A	-
X63A	White	A3P <-> A1P X40A (High pressure switch OK = closed input inverter 1)	X63A	Δ1+2
X201A	White	Rewrite software	X201A	Δ1~8
X601A	White	A3P <-> A4P X5A 18 V DC power control	X601A	Δ1+3
ZNR1	-	Zener diode (Over-voltage protection) L1R <-> diode module	ZNR1	-
ZNR2	-	Zener diode (Over-voltage protection) diode module <-> L1R	ZNR2	-
ZNR3	-	Zener diode (Over-voltage protection) diode module <-> L1R	ZNR3	-

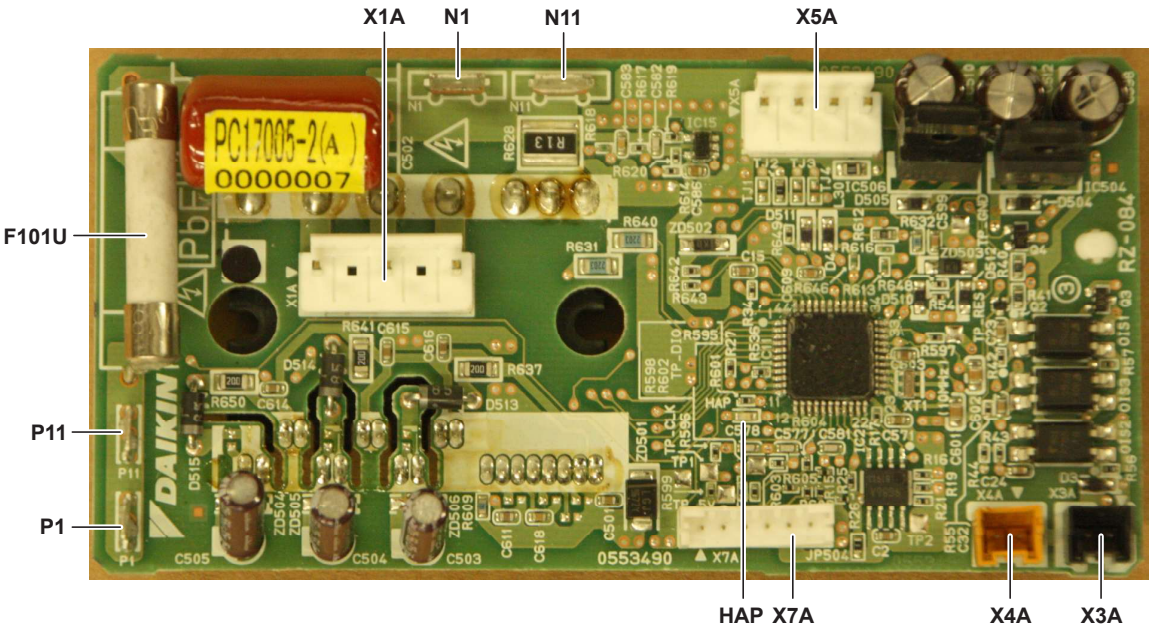
Outdoor unit fan inverter PCB A4P



Reference	Color	Description	Wiring symbol	Pins
F101U	-	Fuse 500 V DC control circuit (soldered type)	F101U	-
HAP	Green	Service monitor LED	HAP	-
N1	-	0 V DC (diode module) A4P <-> A3P N31 or N32	N1	-
N11	-	5~12 HP: Not used 14~20 HP: 0 V DC (diode module) A4P <-> A5P N1	N11	-
P1	-	500 V DC (diode module) A4P <-> A3P P11 or P12	P1	-
P11	-	5~12 HP: Not used 14~20 HP: 500 V DC (diode module) A4P <-> A5P P1	P11	-
X1A	White	Output U(1)/V(2)/W(3) fan motor M1F	X1A	Δ1+2+3

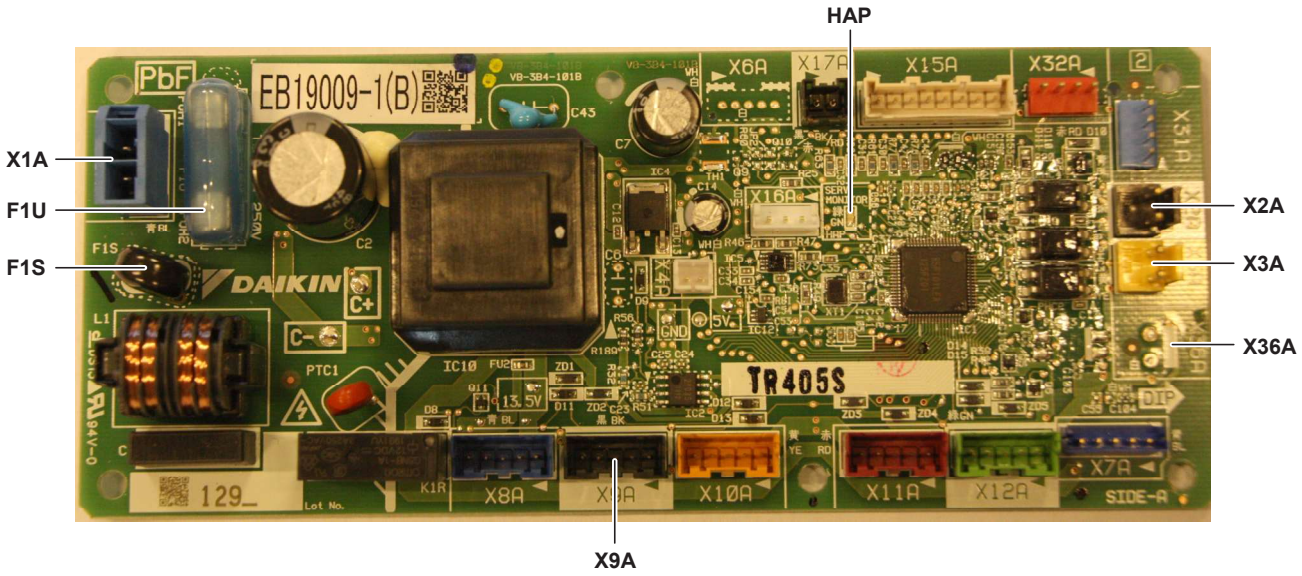
Reference	Color	Description	Wiring symbol	Pins
X3A	Black	Communication A4P <-> A3P X41A: 0.5~10 V DC	X3A	Δ1+2
X4A	Orange	5~12 HP:jumper 14~20 HP:Communication A4P <-> A5P X3A: 0.5~10 V DC	X4A	Δ1+2
X5A	White	18 V DC power control 5~20 HP: A4P <-> A3P X601A 14~20 HP A4P <-> A5P X5A	X5A	Δ1 and 2 + 3 and 4
X7A	White	Rewrite software	X7A	Δ1~8

Outdoor unit fan inverter PCB A5P



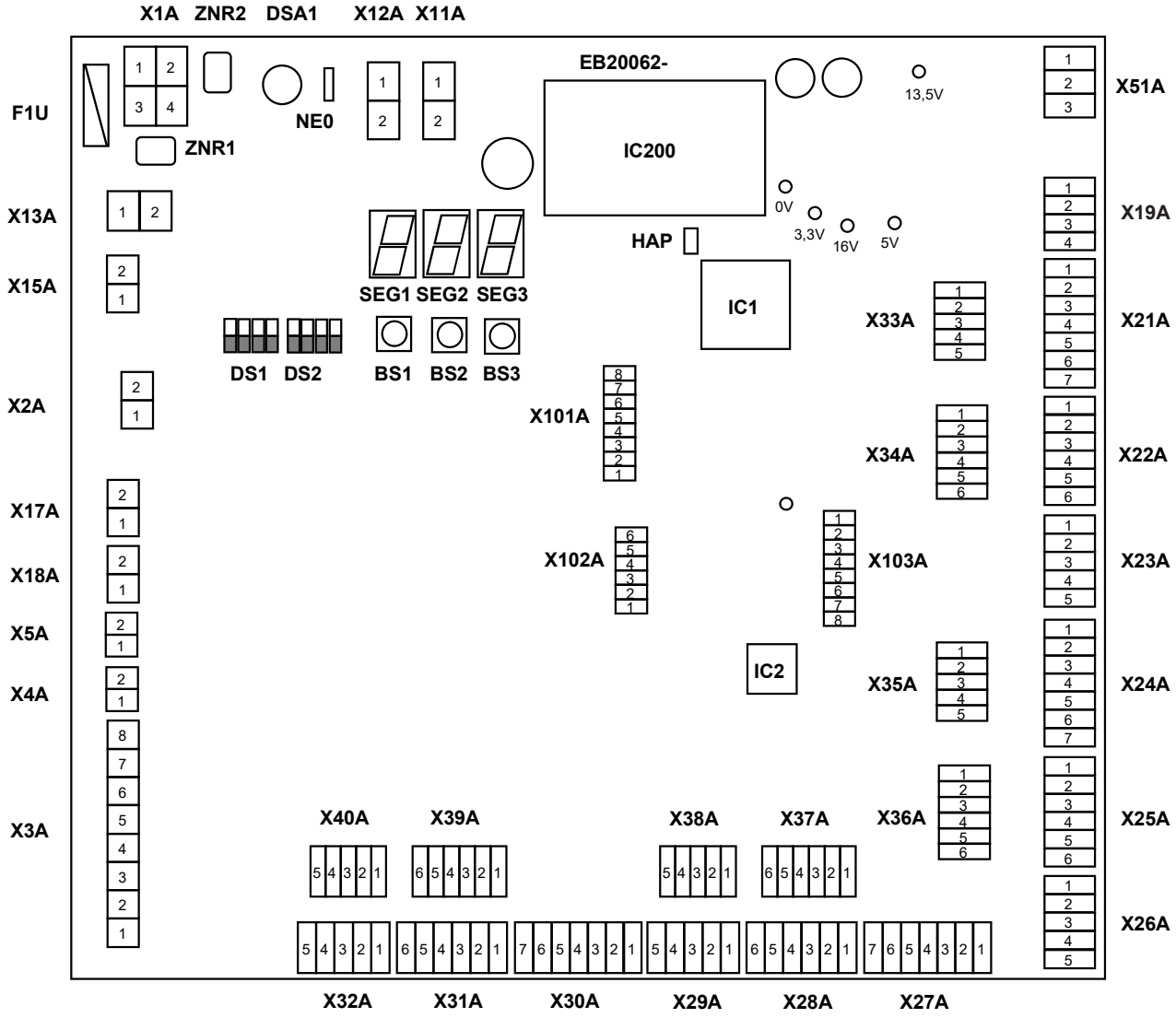
Reference	Color	Description	Wiring symbol	Pins
F101U	-	Fuse 500 V DC control circuit (soldered type)	F101U	-
HAP	Green	Service monitor LED	HAP	-
N1	-	0 V DC (diode module) A5P <-> A4P N11	N1	-
N11	-	Not used	N11	-
P1	-	500 V DC (diode module) A5P <-> A4P P11	P1	-
P11	-	Not used	P11	-
X1A	White	Output U(1)/V(2)/W(3) fan motor M2F	X1A	Δ1+2+3
X3A	Black	Communication A5P <-> A4P X4A: 0.5~10 V DC	X3A	Δ1+2
X4A	Orange	Jumper	X4A	Δ1+2
X5A	White	18 V DC power control A5P <-> A4P X5A	X5A	Δ1 and 2 + 3 and 4
X7A	White	Rewrite software	X7A	Δ1~8

Outdoor unit Sub PCB



Reference	Color	Description	Wiring symbol	Pins
F1U	-	Fuse T 3.15 A	F1U	-
F1S	Black	Varistor	F1S	-
HAP	Green	Service monitor LED	HAP	-
X1A	Blue	Power 230 V AC	X1A	1+2
X2A	Black	Communication A1P <-> A6P	X2A	1+2
X3A	Yellow	Communication A6P <-> A3P	X3A	1+2
X9A	White	Y7E liquid injection expansion valve	X9A	1~5
X36A	-	16 V DC Δ=+	X36A	-

SV box main and sub PCB



Reference	Color	Description	Wiring symbol		Pins
			A1P	A2P[a]	
DS1	-	Disable indoor circuit	DS1		-
DS2	-	Combination setting	DS2		-
DSA1	Glass	Surge arrestor	-		-
F1U	Glass	Fuse 230 V AC T3.15 A	F1U		-
HAP	Green	Service monitor LED	HAP		-
NE0	-	Earth terminal Faston connection	NE0		-
SEG1	-	7-segment indication left	SEG1		-
SEG2	-	7-segment indication middle	SEG2		-
SEG3	-	7-segment indication right	SEG3		-
X1A	Blue	Power 230 V AC L	-		1+3
		Power 230 V AC N	-		2+4
X2A	White	16 V DC output	-		1+2

Reference	Color	Description	Wiring symbol		Pins
			A1P	A2P[a]	
X3A	White	F1/F2 communication indoor circuits 1	A	E	1+2
		F1/F2 communication indoor circuits 2	B[b]	F	3+4
		F1/F2 communication indoor circuits 3	C[b]	G[c]	5+6
		F1/F2 communication indoor circuits 4	D[b]	H[c]	7+8
X4A	White	F1/F2 communication other SV box	F1/F2 SV box		1+2
X5A	Black	F1/F2 communication outdoor <-> SV box	F1/F2 outdoor unit		1+2
X11A	White	Output damper motor M1D 230 V AC	M1D		2 (L)+1 (N)
X12A	Black	Fan output 230 V AC	Fan		2 (L)+1 (N)
X13A	Red	SVS output (voltage free)	SVS		1+2
X15A	White	default jumper, Float-switch (option K-KDU303KVE)	X6A (option K-KDU303KVE)		1+2
X17A	Orange	Limit switch K1 damper	K1		1+2
X18A	Red	Limit switch K2 damper	K2		1+2
X19A	Blue	R32 leak sensor SV box	A7P		-
X21A	White	NOT used	-		-
X22A	White	NOT used	-		-
X23A	White	NOT used	-		-
X24A	Blue	NOT used	-		-
X25A	Blue	NOT used	-		-
X26A	Blue	NOT used	-		-
X27A	Red	NOT used	-		-
X28A	Red	NOT used	-		-
X29A	Red	NOT used	-		-
X30A	Black	NOT used	-		-
X31A	Orange	NOT used	-		-
X32A	Orange	NOT used	-		-
X33A	White	12 V DC expansion valve EVSG circuit 1	Y4E	Y24E	1~5
X34A	White	12 V DC expansion valve EVSL circuit 1	Y5E	Y25E	1~6
X35A	White	12 V DC expansion valve EVSG circuit 2	Y9E[b]	Y29E	1~5
X36A	White	12 V DC expansion valve EVSL circuit 2	Y10E[b]	Y30E	1~6
X37A	White	12 V DC expansion valve EVSG circuit 3	Y14E[b]	Y34E[c]	1~5
X38A	White	12 V DC expansion valve EVSL circuit 3	Y15E[b]	Y35E[c]	1~6
X39A	White	12 V DC expansion valve EVSG circuit 4	Y19E[b]	Y39E[c]	1~5
X40A	White	12 V DC expansion valve EVSL circuit 4	Y20E[b]	Y40E[c]	1~6
X51A	Red	NOT used	-		-
X101A	White	EEPROM writing	-		-

Reference	Color	Description	Wiring symbol		Pins
			A1P	A2P[a]	
X102A	White	Write software main processor	-		-
X103A	White	Write software sub processor	-		1~8
ZNR2	Black	Varistor	Z1F		-

[a] ONLY for SV6~8A SV boxes.
[b] ONLY for SV4~8A SV boxes.
[c] ONLY for SV8A SV boxes.

7.6 Safety devices

Outdoor unit

Wiring symbol	Component	Description	Trigger	Error	Action type
F1U	Fuse A1P	Fuse (holder)	T 10 A	U4 / UH	Forced stop
F101U	Fuse A2P X1M <-> A2P	Fuse (soldered)	63 A	U1	Forced stop
F102U	Fuse A2P X1M <-> A2P	Fuse (soldered)	90 A	U1	Forced stop
F103U F104U F105U	Fuse A2P (protection circuit varistors)	Fuse (soldered)	T 6.3 A		Continue operation
F601U	Fuse A3P (control)	Fuse (soldered)	1 A	LC	Forced stop
F101U	Fuse A4P, A5P	Fuse (soldered)	3 A	LC	Forced stop
T1A	Current sensor	Earth leakage protection	T1A >75 mA (±25%)	E2	Drop control
S1PH	High pressure switch	High pressure protection	High pressure >4.0 MPa (+0.00, -0.15) Reset: high pressure <3.0 MPa±0.15	E3	Forced stop
S2PH	High pressure switch	High pressure protection	High pressure >3.73 MPa (+0.00, -0.15) Reset: high pressure <2.75 MPa±0.15	E3	Forced stop
S1NPH	High pressure sensor	High pressure protection	High pressure >3.72 MPa Retry 3 times in 40 minutes	E3	Forced stop
			High pressure >3.55 MPa in cooling mode Reset: High pressure <3.04 MPa		Drop control
			High pressure >3.04 MPa in cooling mode Reset: High pressure <2.89 MPa		Drop control
			High pressure >4.15 MPa (means high pressure switch failed to open)	JA	Forced stop
S1NPL	Low pressure sensor	Low pressure protection	Low pressure <0.07 MPa Retry 3 times in 60 minutes	E4	Drop control
			Low pressure <0.35 MPa in cooling mode Reset: Low pressure >0.4 MPa		Drop control
			Low pressure <0.17 MPa in heating mode Reset: Low pressure >0.23 MPa		Drop control
			Low pressure <0.07 MPa 4th retry in 60 minutes	E4	Forced stop

Wiring symbol	Component	Description	Trigger	Error	Action type
M1C	Compressor JP057BEAYMP (5~12 HP)	Current protection	Current >28 A	L8	Forced stop
	Compressor JP098BLAYSP (14~20 HP)	Current protection	Current >40 A		
R21T	Discharge pipe thermistor	Overheat protection	Temperature >135℃ for 2 times within 100 minutes Reset: Temperature <95℃	F3	Forced stop
			Temperature >108℃ Reset: Temperature <95℃		Drop control
R15T	Compressor body thermistor	Overheat protection	Temperature >108℃		Drop control
R15T	Compressor body thermistor	Overheat protection	Temperature >135℃ for 3 times within 100 minutes Reset: Temperature <100℃	F3	Forced stop
R15T	Compressor body thermistor	Overheat protection	Temperature >120℃ for 2 times within 10 minutes Reset: Temperature <100℃	F3	Forced stop
A3P, A4P, A5P	Radiation fin temperature	Overheat protection	Temperature >110℃ Reset: Temperature <107℃	L4	Drop control
			Temperature >114℃	L4	Forced stop

Drop control is visible through service checker tool.

Retries are monitored by field setting Mode 1 (monitor mode): 1-23/24/25. See "7.9 Field settings" [▶ 489].

Forced stops will trigger error codes. Active errors are visible on the outdoor unit 7-Segment LED Display, remote controller displays and central controller devices. To consult the error history, see "To check the error history" in "3 Troubleshooting" [▶ 27].

SV box

Wiring symbol	Component	Description	Trigger	Error	Action type
F1U	Fuse A1P, A2P	Fuse (holder)	T 3.15 A	UA-62	Forced stop

7.7 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:
Piping layout / Wiring layout (simple schematic):

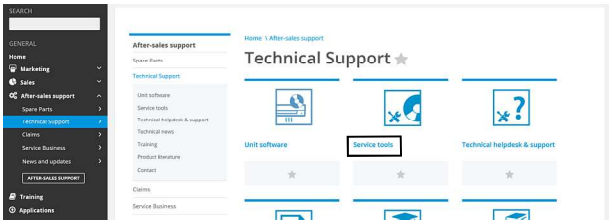
Unit / Installation information	
Model name:	Serial number:
Installation / commissioning date:	Software version user interface:
Software version outdoor PCB:	

Provide pictures of the field settings overview (viewable on the user interface).

7.8 Service tools

1 For an overview of the available service tools, check the Daikin Business Portal (authentication required).

2 Go to the tab After-sales support on the left navigation pane and select Technical support.



3 Click the button Service tools. An overview of the available service tools for the different products is shown. Also additional information on the service tools (instruction, latest software) can be found here.

7.9 Field settings

7.9.1 To access mode 1 or 2

1 Check if the unit is in normal mode. If NOT in normal mode, push BS1 to return to normal mode. 7-segment display indication state will be as shown:

Result: 

2 7-segment display indications:

Off

Blinking

On

3 BS1 is used to change the mode you want to access.

Access	Action
Mode 1	Push BS1 one time. 7-segment display indication changes to: 
Mode 2	Push BS1 for at least 5 seconds. 7-segment display indication changes to: 

INFORMATION

To access the field settings on BRC1H controller, see the installer reference guide of the specific controller and the indoor unit installer reference guide for more information.

7.9.2 To use mode 1

Outdoor units

Mode 1 is used to monitor the status of the unit.

What	How
Changing and accessing the setting in mode 1	Once mode 1 is selected (push BS1 one time), you can select the wanted setting. It is done by pushing BS2. Accessing the selected setting's value is done by pushing BS3 one time.
To quit and return to the initial status	Press BS1.

Example:

Checking the content of parameter [1-10] (to know how many indoor units are connected to the system).

[A-B]=C in this case defined as: A=1; B=10; C=the value we want to know/monitor:

1 Make sure the 7-segment display indication is as during normal operation (default situation when shipped from factory). 7-segment display indications:

Off

Blinking

On

2 Push BS1 one time.

Result: Mode 1 is accessed: 

3 Push BS2 10 times.

Result: Mode 1 setting 10 is addressed: 

4 Push BS3 one time; the value which is returned (depending on the actual field situation), is the amount of indoor units which are connected to the system.

Result: Mode 1 setting 10 is addressed and selected, return value (e.g. 15) is monitored information (15 indoor units connected to the system).

5 To leave the monitoring function, push BS1 one time.

SV box

Mode 1 is used to set basic settings and to monitor the status of the unit.

What	How
Changing and accessing the setting in mode 1	1 Push BS1 one time to select mode 1. 2 Push BS2 to select the required setting. 3 Push BS3 one time to access the selected setting's value.
To quit and return to the initial status	Push BS1.

Example:

Checking the content of parameter [1-2] (to know the software version).

[Mode-Setting]=Value in this case defined as: Mode=1; Setting=2; Value=the value we want to know/monitor:

1 Make sure the 7-segment display indication is in the default situation (normal operation).

2 Push BS1 one time.

Result: Mode 1 is accessed: 

3 Push BS2 two times.

Result: Mode 1 setting 2 is addressed: 

4 Push BS3 one time. The displays shows the software version.

Result: Mode 1 setting 2 is addressed and selected, return value is monitored information.

5 Push BS1 one time to quit mode 1.

7.9.3 To use mode 2

Outdoor units

The master unit should be used to input field settings in mode 2.

Mode 2 is used to set field settings of the outdoor unit and system.

What	How
Changing and accessing the setting in mode 2	Once mode 2 is selected (push BS1 for more than 5 seconds), you can select the wanted setting. It is done by pushing BS2. Accessing the selected setting's value is done by pushing BS3 1 time.
To quit and return to the initial status	Press BS1.
Changing the value of the selected setting in mode 2	▪ Once mode 2 is selected (push BS1 for more than 5 seconds) you can select the wanted setting. It is done by pushing BS2. ▪ Accessing the selected setting's value is done by pushing BS3 1 time. ▪ Now BS2 is used to select the required value of the selected setting. ▪ When the required value is selected, you can define the change of value by pushing BS3 1 time. ▪ Press BS3 again to start operation according to the chosen value.

Example:

Checking the content of parameter [2-18] (to define the high static pressure setting of the outdoor unit's fan).

[A-B]=C in this case defined as: A=2; B=18; C=the value we want to know/change

1 Make sure the 7-segment display indication is as during normal operation (default situation when shipped from factory). 7-segment display indications:

   Off

   Blinking

   On

2 Push BS1 for over 5 seconds.

   Result: Mode 2 is accessed: 

3 Push BS2 18 times.

   Result: Mode 2 setting 18 is addressed: 

4 Push BS3 1 time; the value which is returned (depending on the actual field situation), is the status of the setting. In the case of [2-18], default value is "0", which means the function is not active.

   Result: Mode 2 setting 18 is addressed and selected, return value (e.g. 0) is the current setting situation.

5 To change the value of the setting, push BS2 till the required value appears on the 7-segment display indication. When achieved, define the setting value by pushing BS3 1 time. To start operation according to the chosen setting, confirm again by pushing BS3.

6 To leave the monitoring function, push BS1 1 time.

SV box

Mode 2 is used to set field settings of the SV unit.

What	How
Changing and accessing the setting in mode 2	▪ Push BS1 for more than five seconds to select mode 2. ▪ Push BS2 to select the required setting. ▪ Push BS3 one time to access the selected setting's value.
To quit and return to the initial status	Push BS1.
Changing the value of the selected setting in mode 2	▪ Push BS1 for more than five seconds to select mode 2. ▪ Push BS2 to select the required setting. ▪ Push BS3 one time to access the selected setting's value. ▪ Push BS2 to select the required value of the selected setting. ▪ Push BS3 one time to validate the change. ▪ Push BS3 again to start operation with the chosen value.

Example:

Checking the content of parameter [2-7] (to enable or disable the ventilated enclosure function).

[Mode-Setting]=Value in this case is defined as: Mode=2; Setting=7; Value=the value we want to know/change.

1. Make sure the 7-segment display indication is in the default situation (normal operation).
2. Push BS1 for more than five seconds.

   Result: Mode 2 is accessed: 
3. Push BS2 seven times (or push BS2 until seven appears on the 7-segment display).

   Result: Mode 2 setting 7 is addressed: 
4. Push BS3 one time. The display shows the status of the setting (depending on the actual field situation). In the case of [2-7], the default value is "1", which means the ventilated enclosure function is enabled.

   Result: Mode 2 setting 7 is addressed and selected, return value is the current setting situation.
5. To change the value of the setting, push BS2 until the required value appears on the 7-segment display.
6. Push BS3 one time to validate the change.
7. Push BS3 to start operation according to the chosen setting.
8. Push BS1 one time to quit mode 2.

7.9.4 Mode 1: Field settings

Outdoor unit

In mode 1 you can monitor operation of the unit. The LEDs give a binary representation of the setting/value number.
(*) This column shows the number of times you have to push the SET button (BS2) to access the field setting.

N°(*)	Item	Display	Content	
0	Main/sub outdoor unit	1.00	-	Undefined
			0	Main unit
			1	Sub 1 unit
			2	Sub 2 unit
1	Low noise operation status	1.01	0	Not in low noise operation
			1	In low noise operation
2	Demand operation status	1.02	0	Not in demand operation
			1	In demand operation
3	Automatic back up operation status	1.03	0	Off
			1	On
4	Defrost selection set	1.04	0	Slow
			1	Normal
			2	Quick
5	Te set	1.05	0	Automatic
			1	3°C
			2	6°C
			3	7°C
			4	8°C
			5	9°C
			6	10°C
			7	11°C
6	Tc set	1.06	0	Automatic
			1	41°C
			2	42°C
			3	43°C
			4	44°C
			5	45°C
			6	46°C
			7	48°C
7	Cool/heat unified address	1.07		Possible 0~31
8	Low noise / demand address	1.08		Possible 0~31
9	Airnet address	1.09		Possible 0~63

N°(*)	Item	Display	Content	
10	Number of indoor units	1.10		Shows total amount of connected indoor units on a single F1/F2 in line. Possible 0~63
11	Number of ports used SV unit(s) same outdoor	1.11		Possible 0~63
12	Number of connected zone units	1.12		Other than outdoor/SV Possible 0~63
13	Number of outdoor units	1.13		Shows total amount of outdoor units connected on a single F1/F2 out line. Possible 0~63
14	Number of all ports	1.14		Used ports of BSVQ + SV + BSSV on all outdoor wired to F1/F2 outdoor loop Possible 0~128
15	Number of all ports on BSVQ + SV + BSSV on all outdoor wired to F1/F2 outdoor loop	1.15		Possible 0~63
16	Number of all indoor units	1.16		Shows total amount of indoor units of several systems if F1/F2 out is wired between systems. Possible 0~128
17	Latest error code	1.17		Displays latest error causing forced stop
18	2nd latest error code	1.18		Displays 2nd latest error causing forced stop
19	3rd latest error code	1.19		Displays 3rd latest error causing forced stop
20	Software ID upper code	1.20		Use set (BS2) to view full code
21	Outdoor unit capacity	1.21	0	No data
			3	8 HP
			4	10 HP
			5	12 HP
			6	14 HP
			7	16 HP
			8	18 HP
			9	20 HP
22	Software id lower code	1.22		Displays lower code for software ID
23	Latest retry	1.23		Displays latest reason causing retry
24	2nd latest retry	1.24		Displays 2nd latest reason causing retry
25	3rd latest retry	1.25		Displays 3rd latest reason causing retry
26	Number of D3Net transmission retry	1.26		Possible 0~63
27	Number of ACCNS transmission retry	1.27		Possible 0~63
28	Number of outdoor units on a multi system	1.28		Number of outdoor units on Q1/Q2 line in multi combination
29	Result of last manual refrigerant leak check	1.29		Possible 0~9.9

N°(*)	Item	Display	Content	
30	Result of 2nd last manual refrigerant leak check	1.30		Possible 0~9.9
31	Result of 3rd last manual refrigerant leak check	1.31		Possible 0~9.9
32	Outdoor board status judgement	1.32	0	Standard judgement
			1	Normal
			2	Abnormal
33	Number of abnormal outdoor board status judgement	1.33		Possible 0~15
34	Remaining days until next refrigerant leak check operation	1.34		Off: refrigerant leak check not active or possible 1~366
35	Result of last automatic refrigerant leak check	1.35	1	Normal
			2	Outdoor temperature out of range
			3	Indoor temperature out of range
36	Result of 2nd last automatic refrigerant leak check	1.36	1	Normal
			2	Outdoor temperature out of range
			3	Indoor temperature out of range
37	Result of 3rd last automatic refrigerant leak check	1.37	1	Normal
			2	Outdoor temperature out of range
			3	Indoor temperature out of range
38	Number of connected RA units	1.38		RA units connected through BP unit. Possible 0~63
39	Number of connected HXY-A unit	1.39		VRV LT Hydrobox unit. Possible 0~63
40	Cooling comfort set	1.40		Setting by mode 2-81. Possible 0~3
41	Heating comfort set	1.41		Setting by mode 2-82. Possible 0~3
42	High pressure [MPa]	1.42		S1NPH
43	Low pressure [MPa]	1.43		S1NPL
44	Compressor frequency [Hz]	1.44		Total frequency of 1 module
45	Y1E opening pulse	1.45		Pulses/10
46	Y3E opening pulse	1.46		Pulses/10
47	Discharge temperature [℃]	1.47		R21T
48	Discharge temperature [℃]	1.48		R22T
49	Compressor body temperature [℃]	1.49		R15T
50	Ambient temperature [℃]	1.50		R1T
51	Compressor suction temperature [℃]	1.51		R12T
52	Gas temperature, subcool outlet [℃]	1.52		R6T
53	Upper heat exchanger gas temperature [℃]	1.53		R8T

N°(*)	Item	Display	Content	
54	Lower heat exchanger gas temperature [℃]	1.54		R9T
55	De-icer thermistor temperature [℃]	1.55		R11T
56	Total operating time for own compressor	1.56		M1C
57	Own machine Tc (gas)? Target?	1.57		Tc (S1NPH) – (R4T+R5T)/2
59	Own machine Tc (gas) corrected	1.59		
61	Thermistor liquid stop-valve	1.61		R7T
62	Thermistor suction accumulator inlet	1.62		R10T
63	Thermistor liquid inlet liquid receiver	1.63		R3T
64	Thermistor main liquid upper heat-exchanger	1.64		R4T
65	Thermistor main liquid lower heat-exchanger	1.65		R5T
66	NOT used (indication -85)	1.66		NOT used
67	NOT used (indication -85)	1.67		NOT used
68	NOT used (indication -85)	1.68		NOT used
69	Compressor average load	1.69		
70	Thermistor purge receiver	1.70		R13T
71	Thermistor liquid inlet sub-cool	1.71		R16T

SV box

In mode 1 you can monitor operation of the unit. The LEDs give a binary representation of the setting/value number.

(*) This column shows the number of times you have to push the SET button (BS2) to access the field setting.

N°(*)	Description	Data
0	Remaining lifetime (months) of R32 sensor	0~120
1	Display the micon ID	01~999
2	Software number	01~999

7.9.5 Mode 2: Field settings

Outdoor unit

In mode 2 you can make field settings to configure the system. The LEDs give a binary representation of the setting/value number.
(*) This column shows the number of times you have to push the SET button (BS2) to access the field setting.
(**) The bold content is the default setting.

N°(*)	Item	Display	Content(**)	
0	Cool/heat selection	2.00	0	**Individual**
			1	Master (DTA104A6* option required)
			2	Slave (DTA104A6* option required)
1	Cool/heat unified address	2.01	**0**	Possible 0-31
2	Low noise/demand address	2.02	**0**	Possible 0-31
5	Indoor unit forced fan H	2.05	**0**	**Disabled**
			1	Enabled
6	Indoor unit forced thermo ON	2.06	**0**	**Disabled**
			1	Enabled
8	Te setting	2.08	**0**	**Auto**
			1	3 ℃
			2	6 ℃
			3	7 ℃
			4	8 ℃
			5	9 ℃
			6	10 ℃
			7	11 ℃
9	Tc setting	2.09	**0**	**Auto**
			1	41 ℃
			2	42 ℃
			3	43 ℃
			4	44 ℃
			5	45 ℃
			6	46 ℃
			7	48 ℃
10	Defrost selection setting	2.10	0	Short
			1	**Normal**
			2	Long
12	Low noise/demand operation by external input	2.12	**0**	**Disabled**
			1	Enabled
13	AirNet address	2.13	**0**	Possible 0-63 (0 is not a valid airnet address)

N°(*)	Item	Display	Content(**)	
14	Additional refrigerant charge amount	2.14	**0**	See "Additional refrigerant charge amount" [▶ 402]
15	High pressure reset method BS3 manual reset	2.15	0	Disabled
			1	**Enabled**
16	Heating output Y1 option PCB (E)KRP1 outdoor operation disabled	2.16	**0**	**Deactivated**
			1	Activated
18	Outdoor unit fan high static pressure setting	2.18	**0**	**Deactivated**
			1	Activated
19	Output A1P-X10A pin 1-3: ▪ Set 1: no output ▪ Set 2~4: Y3S OFF (≥1 indoor heating)	2.19	**0**	**No output**
			1	Do NOT set (no output)
			2	ON if preparation Defrost and R1T <3°C OFF end Defrost + 3 minutes
			3	Rps (M1C) >0 and R1T <3°C OFF rps=0 OR R1T >5°C
			4	ON if R1T <3°C OFF if R1T >5°C
20	Forced cooling operation	2.20	**0**	**Off**
			1	R32 additional charge (forced cooling target Tevapo−15°C maximum 30 minutes)
			2	Cross piping check SV <-> indoor port
21	Refrigerant recovery mode	2.21	**0**	**Off**
			1	On
22	Nighttime low noise operation level setting (combined with 2-26 and 2-27) [level1 > level2 > level3]	2.22	**0**	**Off**
			1	Level 1
			2	Level 2
			3	Level 3
			4	Level 4
			5	Level 5
23	Refrigerant recovery mode after detection of refrigerant	2.23	**0**	**Off**
			1	On
24	System unlock setting (after R32 leak detection)	2.24	**0**	**Unlocked**
			1	Compressor operation disabled (error UA-55)
25	Low noise operation level setting (if LNO triggered by external input) (combined with 2-12) [level1 > level2 > level3]	2.25	1	Level 1
			2	**Level 2**
			3	Level 3
			4	Level 4
			5	Level 5

N°(*)	Item	Display	Content(**)	
26	Nighttime low noise operation start time setting (combined with 2-22)	2.26	1	20h00
			2	**22h00**
			3	24h00
27	Nighttime low noise operation stop time setting (combined with 2-22)	2.27	1	6h00
			2	7h00
			3	**8h00**
28	Power transistor check mode	2.28	**0**	**Off**
			1	On
29	Capacity priority in low noise operation mode	2.29	**0**	**Off**
			1	On
30	Level setting for demand control step 1	2.30	1	60%
			2	65%
			3	**70%**
			4	75%
			5	80%
			6	85%
			7	90%
			8	95%
31	Level setting for demand control step 2	2.31	**1**	**40%**
			2	50%
			3	55%
32	Forced demand setting	2.32	**0**	**Off**
			1	Step 1 (2-30) on
			2	Step 2 (2-31) on
34	Forced low fan speed to thermo on indoor units if total indoor thermo on > 130% connection ratio	2.34	**0**	**Cooling and heating**
			1	Heating only
			2	Never
			3~8	NOT used
35	Outdoor unit is lower than the indoor units and height difference > 40m	2.35	0	40m < height difference < 90m
			1	**Height difference < 40m**
38	Emergency operation - main unit	2.38	**0**	**Not in emergency operation**
			1	Inverter 1 - M1C - OFF
			2	Inverter 2 - M2C - OFF: Do NOT set
			3	Main unit off

N°(*)	Item	Display	Content(**)	
39	Emergency operation - sub 1 unit	2.39	**0**	**Not in emergency operation**
			1	Inverter 1 - M1C - OFF
			2	Inverter 2 - M2C - OFF: Do NOT set
			3	Sub 1 unit OFF
40	Emergency operation - sub 2 unit	2.40	**0**	**Not in emergency operation**
			1	Inverter 1 - M1C - OFF
			2	Inverter 2 - M2C - OFF: Do NOT set
			3	Sub 2 unit OFF
45	SV box safety valves forced closed	2.45	**0**	**Safety valves fully open**
			1	Safety valves fully closed
48	Snow sensor	2.48	**0**	**Off**
			1	On (fan M-speed when DTA104 option input LNO)
49	Outdoor unit is above the indoor units and height difference > 50m	2.49	**0**	**Height difference <50 m**
			1	50 m <height difference <90 m
50	Priority during defrost on continuous heating models	2.50	**0**	**Indoor priority (indoor expansion valve minimum, fan low load)**
			1	Defrost priority (indoor expansion valve closed, fan OFF)
51	Multi outdoor main/sub setting	2.51	**0**	**Auto**
			1	Forced master
			2	Forced sub 1
			3	Forced sub 2
52	Output X17A	2.52	**0**	**Off**
			1	Compressor (M1C) >0 rps
54	Indoor unit connection method	2.54	**0**	**Connection through** SV **box**
			1	Connection without SV box
58	Maintenance cycle for SV box AFR check	2.58	**0**	**Timer disabled**
			1	1 year
			2	2 years
			3	5 years
			4	10 years
			5	1 year with warning reset after 60 days
			6	2 years with warning reset after 60 days
			7	5 years with warning reset after 60 days
			8	10 years with warning reset after 60 days
60	Supervisor remocon presence	2.60	**0**	**NOT present**
			1	Present

N°(*)	Item	Display	Content(**)	
65	Timer - refrigerant leak detection function operation	2.65	**0**	**365**
			1	180
			2	90
			3	60
			4	30
			5	7
			6	1
81	Cooling comfort setting	2.81	0	Eco
			1	**Mild**
			2	Quick
			3	Powerful
82	Heating comfort setting	2.82	0	Eco
			1	**Mild**
			2	Quick
			3	Powerful
85	R32 safety measures setting	2.85	**0**	**Disabled**
			1	Enabled
86	Abnormal level setting when indoor unit leak is confirmed	2.86	**0**	**Continue system operation**
			1	System stop
88	Automatic containment check	2.88	**0**	**Disabled**
			1	Once by interval setting 2-66
			2	Repeat by interval setting 2-66
90	Multi tenant setting (soft)	2.90	**0**	**Disabled**
			1	Enabled [24 hours]

SV box

In mode 2 you can make field settings to configure the SV box. The LEDs give a binary representation of the setting/value number.

(*) This column shows the number of times you have to push the SET button (BS2) to access the field setting.

N°(*)	Description	Field setting			Default	
		0	1	2	-1 (A1P)	-3 (A2P)
0	SV box part of cluster	No	Yes	-	0	0
1	SV box cluster number	0~63			0	0
2	SV box type cluster	Parallel	Serial	-	0	0
3	Simulate R32 leak	No	Yes	-	0	0
4	Extra safety measures	No	Yes	No ≤24 hours	1	0
5	R32 sensor replacement completed	Normal	Reset	-	0	0
6	Test safety measure confirmed	No	Yes	-	0	1
7	Ventilation enclosure	No	Yes	-	1	0
8	Address supervisor user interface	00~FF			0	0
9	Address error handling	0~63			0	0
10	Disable output Error	No	Yes	-	0	0

7.9.6 Overview of field settings for indoor units

The overview lists all possible settings for the indoor units. The availability of the setting depends on the indoor unit type, see "Field settings as per type indoor unit". **Bold content is default setting**.
See indoor unit or remote controller manuals for more detailed information to access the field settings.

Setting	1st code	Description function	2nd code	Description setting	Note
10/20	0	Filter contamination (time between 2 filter cleaning display indications)	**01**	**Light**	Ultra-long life filter: ±10.000 hrs Long-life filter: ±2.500 hrs Standard filter: ±200 hrs
			02	Heavy	Ultra-long life filter: ±5.000 hrs Long-life filter: ±1.250 hrs Standard filter: ±100 hrs
	1	Long life filter type	**01**	**Long life filter**	Filterclass G1
			02	Ultra long life filter (option)	Filter type F6 high efficiency 64 for FXCQ, FXUQ, FXFQ, FXZQ, FXKQ, FXSQ, FXDQ, FXMQ Filter type F7 for VAM (additional filter) Filter type F8 very high efficiency 90 for FXCQ, FXFQ, FXSQ, FXMQ
			03	No maintenance filter	
			04	Oil guard filter	For installations in greasy environment
	2	Indoor thermostat sensor selection (no effect when used in conjunction with presence sensor BRYQ)	**01**	**Use both the unit sensor (or remote sensor if installed) AND the remote controller sensor.**	Note: If setting 10-6-02 + 10-2-01 or 10-2-02 or 10-2-03 are set at the same time, then setting 10-2-01,10-2-02 or 10-2-03 have priority. Note: If setting 10-6-01 + 10-2-01 or 10-2-02 or 10-2-03 are set at the same time, then setting for group connection, 10-6-01 has priority and for individual connection, 10-2-01, 10-2-02 or 10-2-03 have priority.
			02	Use return air sensor only (or remote sensor if installed) (Default EKEACB).	
			03	Use remote controller sensor only.	
	3	Filter sign display	**01**	**Display**	
			02	Do not display	
	4	Filter switching	**01**	**Standard**	
			02	Oil mysterious filter	
			03	Roll oil mist filter	
	5	Remote controller thermistor visible by central control device in group wiring P1/P2	**01**	**No**	
			02	Yes	
	6	Air thermistor selection in group wiring P1/P2	**01**	**Return air thermistor (individual units)**	
			02	Thermistor designated by field setting 20-2	
	7	Absence delay detecting time (presence sensor)	**01**	**30 minutes**	
			02	60 minutes	
	8	Compensation air sensor heating	**01**	**Reduce 2°C to measurement air sensor**	
			02	Measurement air sensor	
	9	central control	**01**	**Accept**	
			02	Ignore	
	10	Switching time dry operation => cooling when Eco Mode is Set	01	30 minutes	
			02	60 minutes	
			03	90 minutes	
			04	**No change (keep dry keep)**	
	11	Cooling thermo OFF operation change setting	**01**	**Disabled**	
			02	Enabled	
	12	Internal clean valid invalid / Streamer control valid invalid	01	Valid/invalid at connection	
			02	Enabled/enabled at connection	
			03	**Disabled/Disabled**	
			04	Disabled / Enabled	
			05	Enable/disable	
			06	Enabled/Enabled	
	13	Target superheat (Cooling mode) for X, Y and W control (only EKEACB)	**01**	**5°C**	
			02	10°C	
			03	15°C	
	14	Target sub-cool (Heating mode) for X, Y and W control (only EKEACB)	**01**	**3°C**	
			02	5°C	
			03	10°C	
	15	Operation mode restriction (only EKEACB)	**01**	**Heat-pump (cooling and heating possible)**	
			02	Cooling only	
			03	Heating only	

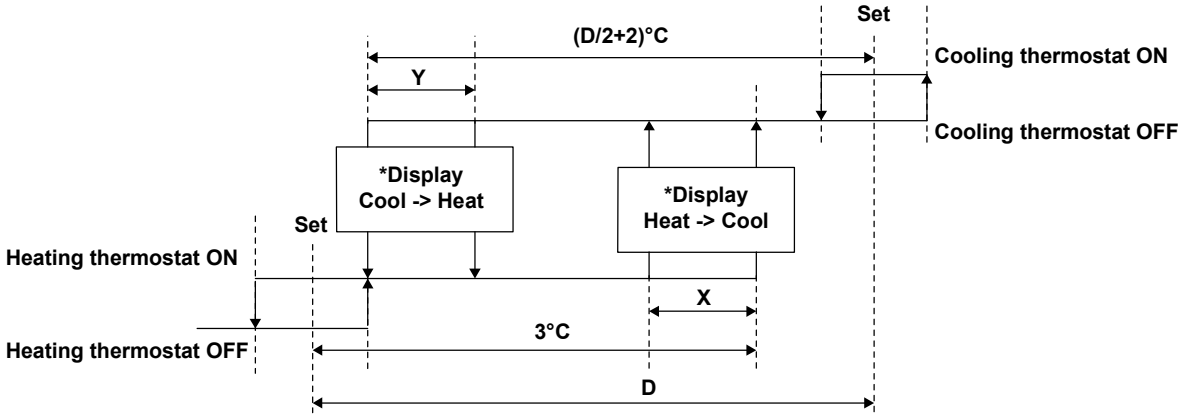
Setting	1st code	Description function	2nd code	Description setting	Note
11/21	0	Not used	-		
	1	Not used	-		
	2	Not used	-		
	3	Fan setting of heating	**01**	**Standard**	
			02	Slight increase (* 1.05)	
			03	Increase (* 1.10)	
	4	Not used	-		
	5	EKEACB update time target TeS cooling/TcS heating	**01**	**60 seconds**	
			02	120 seconds	
			03	180 seconds	
			04	240 seconds	
	6	Sensitivity presence sensor	01	High sensitive	Only when BRYQ is present
			02	Low Sensitive	
			03	**Standard**	
			04	Disable presence sensor	
	7	External static pressure setting: Automatic air flow adjustment function	**01**	**Automatic aif flow adjustment is OFF**	Then unit will refer to setting 23-6
			02	Completion of automatic airflow adjustment	Only for FXSQ, FXMQ
			03	Start of automatic airflow adjustment	1. Turn off the indoor unit 2. Set indoor unit to fan operation mode. 3. Choose desired fanspeed (L, H, HH) 4. Change setting 21-7-00 to 21-7-03 and exit setting menu 5. Activate indoor unit to start the learning function 6. Learn
	8	VRV: Compensation by floor sensor (% Air °C/ % floor °C)	01	Floor sensor disabled (100/0)	VRV: Only when BRYQ is present
			02	Air suction temperature priority (70/30)	
			03	**Standard (50/50)**	
			04	Floor temperature priority (30/70)	
		EKEACB: Correction target TeC cooling/TcS heating (W-control)	**01**	**1 minute**	
			02	3 minutes	
			03	5 minutes	
	9	VRV: Correction of floor temperature (heating)	01	-4℃	VRV: Only when BRYQ is present
			02	-2℃	
			03	**No correction**	
			04	+2℃	
		EKEACB: Correction target TeS cooling W control	**01**	**0°C**	
			02	-1°C	
			03	-2°C	
			04	+1°C	
	10	EKEA-A : correction target TcS cooling W control	**01**	**0°C**	
			02	+1°C	
			03	+2°C	
			04	-1°C	

Setting	1st code	Description function	2nd code	Description setting	Note
11/21	11	EKEACB: expansion valve kit capacity class	**01**	**0**	
			02	50	
			03	63	
			04	80	
			05	100	
			06	125	
			07	140	
			08	200	
			09	250	
			10	300	
			11	350	
			12	400	
			13	450	
			14	500	
	12	EKEACB: setpoint source Z-control	**01**	**User interface BRC1H52**	Unit with lowest unit number in group is reference unit
			02	C1-C2 input (0~10 V DC)	
	13	EKEACB: operation mode source	**01**	**User interface BRC1H52**	
			02	T3-T4 input (open = Cooling, closed = Heating)	
	14	EKEACB: centralised control	01	Enabled	
			02	**Disabled**	
	15	Not used	-		
12/22	0	Output signal X1-X2 of the optional KRP1 PCB kit	**01**	**Indoor unit Thermo ON Output**	
			02	Option	
			03	Operation Output	
			04	Malfunction Output	
	1	External ON/OFF (T1/T2 input) = setting when forced ON/OFF is operated from outside.	**01**	**Forced OFF**	
			02	ON/OFF Operation	
			03	Emergency	
			04	Forced OFF - multi tenant (only VRV)	
			05	Interlocking setting A (only VRV)	
			05	Interlocking setting B (only VRV)	
	2	Thermostat differential (for set temperature button increase/decrease increments)	**01**	**1℃**	default for FXFQ/A, FXZQ/A, FXCQ, FXKQ, FXUQ/A, FXHQ/A, VKM, "biddle", EKEACB
			02	0,5℃	default for FXSQ/A, FXMQ/A, FXAQ/A, FXLQ, FXNQ, FXDQ/A, EKEQM
	3	VRV: Fan speed Thermo OFF heating mode	**01**	**LL**	
			02	Set speed by remocon	
			03	OFF	Use ONLY in combination with optional remote sensor or when setting 10-2-03 is used.
			04	Monitoring LL	fan 6 minutes off-2 minutes LL
			05	Monitoring L	fan 6 minutes off-2 minutes L
			06	Monitoring H	fan 6 minutes off-2 minutes H
		EKEACB: Fan speed output K3-K4 Thermo OFF heating mode	01	ON	
			02	**ON**	
			03	OFF	

Setting	1st code	Description function	2nd code	Description setting	Note
12/22	4	Differential ("D") for automatic changeover. Temperature difference between cooling setpoint and heating setpoint in automatic mode. Differential is cooling setpoint minus heating setpoint.	**01**	**0℃ (Default when HP Outdoor)**	Example: Cooling 24℃ / Heating 24℃ (see note setting 17/27-7 and 18/28-8)
			02	1℃	Example: Cooling 24℃ / Heating 23℃ (see note setting 17/27-7 and 18/28-8)
			03	2℃	Example: Cooling 24℃ / Heating 22℃ (see note setting 17/27-7 and 18/28-8)
			04	**3℃ (Default when HR Outdoor)**	Example: Cooling 24℃ / Heating 21℃ (see note setting 17/27-7 and 18/28-8)
			05	**4℃ (Default when VKM)**	Example: Cooling 24℃ / Heating 20℃ (see note setting 17/27-7 and 18/28-8)
			06	5℃	Example: Cooling 24℃ / Heating 19℃ (see note setting 17/27-7 and 18/28-8)
			07	6℃	Example: Cooling 24℃ / Heating 18℃ (see note setting 17/27-7 and 18/28-8)
			08	7℃	Example: Cooling 24℃ / Heating 17℃ (see note setting 17/27-7 and 18/28-8)
	5	Auto-restart after power failure	01	Disabled	Restart operation only if switched on prior to power failure.
			02	**Enabled**	
	6	VRV: Fan speed Thermo OFF cooling mode	01	LL	
			02	**Set speed by remote controller**	
			03	OFF	Use ONLY in combination with optional remote sensor or when setting 10-2-03 is used.
			04	Monitoring LL	fan 6 minutes off-2 minutes LL
			05	Monitoring L	fan 6 minutes off-2 minutes L
			06	Monitoring H	fan 6 minutes off-2 minutes H
		EKEACB: Fan speed ouput K3-K4 Thermo OFF cooling mode	01	ON	
			02	**ON**	
			03	OFF	
	7	Cooling switching temperature "X" point setting	**01**	**0.0°C**	(a)
			02	0.5°C	
			03	1.0°C	
			04	1.5°C	
			05	2.0°C	
			06	2.5°C	
			07	3.0°C	
	8	Heating switching temperature "Y" point setting	**01**	**0.0°C**	
			02	0.5°C	
			03	1.0°C	
			04	1.5°C	
			05	2.0°C	
			06	2.5°C	
			07	3.0°C	
	9	Forced Cool/Heat Master	**01**	**Disabled (select by cool/heat selection button controller)**	Only when HP Outdoor
			02	Enabled (not possible by cool/heat selection button controller)	
	10	Absence confirmation time (wiring remodeling output)	01	0 minutes	
			02	5 minutes	
			03	**10 minutes**	
			04	15 minutes	
	11	VRV: Floor temperature correction TA (other than heating)	01	+4°C	
			02	+2°C	
			03	**0°C (no correction)**	
			04	–2°C	
		EKEACB: Hot start maximum time	01	0 minutes	
			02	3 minutes	
			03	**5 minutes**	
			04	10 minutes	

Setting	1st code	Description function	2nd code	Description setting	Note
12/22	12	VRV: C value correction (actual floor temperature)	01	0.0 °C	
			02	0.25°C	
			03	**0.5°C**	
			04	1.0°C	
		EKEA: temperature hot start ending	01	34°C	
			02	37°C	
			03	40°C	
			04	**43°C**	
	13	Not used	-		
	14	Not used	-		
	15	Not used	-		

[a] Cooling switching temperture "X" point setting and Heating switching temperature "Y" point setting:



Setting	1st code	Description function	2nd code	Description setting	Note
13/23	0	Airflow setting (Ceiling height)	**01**	**Normal ceiling (H <2.7 m)**	Depends on indoor unit, check indoor unit installation manuals
			02	Slightly higher ceiling 2.7 m <H <3 m	
			03	High ceiling (3 m <H <3.5 m)	
	1	Selection of number airflow direction	**01**	**4 directions**	Only for BRYQ60A7
			02	3 directions	
	1	Selection of airflow direction (set when an optional blocking path kit has been installed, 4-way blow panel)	**01**	**4 directions**	Freeze-up protection will be triggered when R2T <–1°C for 10 minutes.
			02	3 directions	Freeze-up protection will be triggered when R2T <0°C for 1 minute OR R2T <1°C for 15 minutes
			03	2 directions	
	2	VRV: Swing pattern setting if 4 swing motors	**01**	**All directions, simultaneous swing**	
			02	No meaning	
			03	Synchronized swing, opposite sides	
		EKEACB: Fan output K7-K8 defrost/oil-return heating	**01**	**OFF (open contact)**	
			02	ON (closed contact)	
	3	Output to flap motor	**01**	**Enabled**	When using a decoration panel for outlet
			02	Disabled	
	4	Setting of airflow direction adjustment range	01	Draft prevention	High position (10°-40°)
			02	**Standard**	Standard position (10°-65°)
			03	Ceiling soiling prevention	Low position (30°-65°)
	5	Fanspeed setting	**01**	**Standard**	Only for FXFQ, FXHQ and FXZQ
			02	level 1	
			03	level 2	
			04	level 3	
			05	level 4	
			06	level 5	
	5	External static pressure setting	**01**	**Standard (10/15 Pa)**	Only for FXDQ and FXNQ
			02	High (30/44 Pa)	
			03	Medium external static pressure	
			04	Medium external static pressure	
	6	External static pressure setting	**01**	**Normal**	
			02	High external static pressure	
			03	Low external static pressure	
	6	External static pressure setting	**01**	**30 Pa**	Only for FXMQ40
			02	50 Pa	For FXSQ, FXMQ, FXTQ External static pressure value based on nominal airflow rate @HH Speed Some setting values depend on the indoor unit. See indoor Unit installation manual for setting range and values.
			03	60 Pa	
			04	70 Pa	
			05	80 Pa	
			06	90 Pa	
			07	100 Pa	
			08	110 Pa	
			09	120 Pa	
			10	130 Pa	
			11	140 Pa	
			12	150 Pa	
			13	160 Pa	
			14	180 Pa	Only for FXMQ50~125
			15	200 Pa	
	7	Thermostat swing cooling thermostat-off	**01**	**set 1**	Fixed => Settings, Swing => Swing
			02	set 2	Fixed => setting, swing => P0
			03	set 3	Fixed => P0, swing => P0
			04	set 4	Fixed => Settings, Swing => Swing
			05	set 5	Fixed => Setting, Swing => P2
			06	set 6	Fixed => P2, swing => P2
			07	set 7	Fixed => Settings, Swing => Swing
	8	Not used	-		

Setting	1st code	Description function	2nd code	Description setting	Note
13/23	9	Switch timer cooling <-> heating (minutes)	**01**	**0**	
			02	1	
			03	2	
			04	3	
			05	4	
			06	5	
			07	6	
			08	7	
			09	8	
			10	9	
			11	10	
			12	15	
			13	20	
			14	25	
			15	30	
	10	Dust box full sign / reset control	**01**	**No reset filter sign**	Only if BYCQ140E2GF (self-cleaning) decoration panel is mounted.
			02	Reset filter sign	
	11	Duct air inlet	**01**	**Rear**	
			02	Bottom	
	12	Error history switching setting	**01**	**Abnormality**	
			02	Retry	
	13	VRV: Circulating air flow control	01	Disabled	
			02	**Enabled**	
		EKEACB: Temperature control method	**01**	**X-control**	
			02	Y-control	
			03	W-control	
			04	Z-control (air return)	
			05	Z'-control (0~10 V DC)	
	14	VRV: Circulating air flow state switching time	**01**	**Pattern 1**	
			02	Pattern 2	
			03	Pattern 3	
			04	Pattern 4	
			05	Pattern 5	
			06	Pattern 6	
			07	Pattern 7	
			08	Pattern 8	
		EKEACB: Target TeS (cooling) Y-control	01	5°C	
			02	6°C	
			03	7°C	
			04	**8°C**	
			05	9°C	
			06	10°C	
			07	11°C	
			08	12°C	
	15	VRV: Panel type	**01**	**Standard**	
			02	Flat	
			03	Standard	
			04	Flat	
		EKEACB: Target TeC (heating) Y-control	01	43°C	
			02	44°C	
			03	45°C	
			04	**46°C**	
			05	47°C	
			06	48°C	
			07	49°C	

Setting	1st code	Description function	2nd code	Description setting	Note
14/24	0	Not used	-		
	1	D3gate array width detecion mode setting	01	Outdoor judgment	
			02	**Always ON**	
			03	Always OFF	
	2	VRV: Display cleaning requirement on the remote control according to number of operating hours	01	Display after 1250 hours	Only for "BEA..."
			02	Display after 2500 hours	
			03	**Display after 2500 hours**	
		EKEACB: Correction R4T (input X2M/R7-R8)	**01**	**0.0°C**	
			02	0.5°C	
			03	1.0°C	
			04	1.5°C	
			05	2.0°C	
			06	2.5°C	
			07	3.0°C	
			08	3.5°C	
			09	4.0°C	
			10	4.5°C	
			11	5.0°C	
			12	5.5°C	
			13	6.0°C	
			14	6.5°C	
			15	7.0°C	
	3	VRV: Brush/filter check sign display presence/ absence setting	**01**	**No display**	Only for "BEA..."
			02	Display after 32000 hours	
			03	Display after 48000 hours	
			04	Display after 72000 hours	
		EKEACB: Master/slave multi layer coil	**01**	**Not active**	
			02	Master	
			03	Slave	
	4	Panel indicator (green)	01	ON while unit is ON or filter cleaning is ON	Only for "BEA..."
			02	ON while filter cleaning ONLY	
			03	**OFF**	
			04	ON	
	5	Self cleaning during operation	**01**	**Disabled**	Only for "BEA..."
			02	Heating only	
			03	Cooling only	
			04	Heating and cooling	
	6	Fan switching delay in hot-start	01	0 minutes (fan starts immediately)	Only for Air Curtain CAV/CYV
			02	1 minute	
			03	**3 minutes**	
			04	5 minutes	
	7	Domestic/overseas	**01**	**Overseas**	All exept Air Curtain CAV/CYV
			02	Domestic	
	7	Fan switching delay for hotstart in °C depending on the condensing temperature	01	34°C	Only for Air Curtain CAV/CYV
			02	37°C	
			03	40°C	
			04	**43°C**	
	8	Fanspeed during defrost and oil return	01	OFF	Only for Air Curtain CAV/CYV
			02	**LL**	
			03	Set speed by remocon	

Setting	1st code	Description function	2nd code	Description setting	Note
14/24	8	Auto cleaning program	01	User choice from remocon (between AUTO and schedule)	Only for "BEA..."
			02	ONLY Schedule (Auto not available in remocon settings)	
			03	12 hours automatic fixing	
			04	48 hours auto fixing	
			05	96 hours automatic fixing	
			06	**Automatic fixing 168 hours**	
			07	Not fixed automatically 168 hours	
	9	Filter movement angle setting Fan setting during cleaning	**01**	**Moving angle L Fan L**	Only for "BEA..."
			02	Moving angle S Fan L	
			03	Moving angle L Fan OFF	
			04	Moving angle S Fan OFF	
	10	EKEACB: Setpoint discharge temperature cooling	**01**	**13°C**	
			02	15°C	
			03	16°C	
			04	17°C	
			05	18°C	
			06	19°C	
			07	20°C	
			08	21°C	
			09	22°C	
			10	23°C	
			11	24°C	
			12	25°C	
			13	26°C	
			14	28°C	
			15	30°C	
	11	EKEACB: Setpoint discharge temperature heating	01	24°C	
			02	24°C	
			03	24°C	
			04	24°C	
			05	24°C	
			06	30°C	
			07	31°C	
			08	32°C	
			09	33°C	
			10	35°C	
			11	37°C	
			12	**39°C**	
			13	41°C	
			14	43°C	
			15	45°C	
	12	Not used	-		
	13	Not used	-		
	14	Not used	-		
	15	Deodorizing filter integrated setting	**01**	**Accumulated**	
			02	Not accumulated	

Setting	1st code	Description function	2nd code	Description setting	Note
15/25	0	Drain pump operation cooling thermostat-off	01	Delay off	5 minutes off after cooling thermostat-off
			02	**Keep operation**	
	1	Humidification during Thermo OFF (heating)	**01**	**OFF**	
			02	ON	
	2	Direct duct connection to indoor unit (i.e Fresh air connection)	**01**	**Not equipped**	
			02	Equipped	Fan must be operated from indoor unit
	3	Drain pump operation if humidifier is used (heating)	**01**	**Not equipped**	
			02	Heating operation: continuous operation,	Heating stop: always ON.
			03	Heating operation: 3 minutes ON/5 minutes OFF	Heating stop: always ON.
			04	Heating operation: 3 minutes ON/5 minutes OFF,	Heating stop: 480 minutes ON/1 minute OFF
			05	Heating operation: 3 minutes ON/5 minutes OFF,	Heating stop: 120 minutes ON/1 minute OFF
			06	Heating operation: 3 minutes ON/5 minutes OFF	
	4	Filter sign	**01**	**By timer**	
			02	By external input	
	5	Independent ventilation	**01**	**Not equipped**	Only for VKM
			02	Equipped	
	5	Ventilation only	**01**	**disabled**	
			02	enabled	
	6	Independent unit	**01**	**No**	Only for VKM
			02	Yes	
	6	Cleaning only	**01**	**No**	
			02	Yes	
	7	Not used	-		
	8	Not used	-		
	9	Demand control	**01**	**Level 0**	
			02	Level 1	
			03	Level 2	
			04	Level 3	
			05	Level 4	
			06	Level 5	
			07	Level 6	
			08	Level 7	
	10	Not used	-		
	11	Not used	-		
	12	Expansion valve fully closed control	**01**	**disabled**	
			02	enabled	
	13	R32 leak safety system setting	01	Do NOT set	
			02	**enabled**	
			03	disabled max.24 hours	
	14	R32 Sensor replacement completion setting	**01**	**Normal**	
			02	Reset	
	15	VRV: External contact output setting EKEACB: R32 safety output (X1M/K9-K10)	**01**	**disabled**	
			02	enabled	

HRV VAM-FB/J7 and VKM-GB

Setting	1st code	Description function	2nd code	Description setting	Note
17/27	0	Interval time for filter sign indication	**01**	**2500 hours**	Only for VKM
			02	1250 hours	
			03	No counting	
	1	Night time free cooling operation setting	**01**	**No free cooling possible**	Only for VKM. Free cooling starts when outdoor temperature is below indoor temperature and when minimum stop-time has expired. Ambient temperature is checked 1x per hour. (combination with setting 27-6 and 27-7)
			02	Free cooling 2 hours after unit OFF	
			03	Free cooling 4 hours after unit OFF	
			04	Free cooling 6 hours after unit OFF	
			05	Free cooling 8 hours after unit OFF	
	2	Pre-Cool/Pre-Heat function	**01**	**Disabled**	In case of group wiring (P1/P2) to VRV DX indoor: - when operation off for minimum 2 hours, - when ON command given, HRV ventilation starts delayed to limit load in the room.
			02	Enabled	
	3	Pre-cool/Pre-heat timer	**01**	**30 minutes**	
			02	45 minutes	
			03	60 minutes	
	4	Fan speed initial setting	**01**	**Normal**	Possibility to use SS1 on VKM PCB
			02	Ultra High	
	5	Direct duct connection with VRV indoor unit	**01**	**No direct duct**	VKM works independent from VRV indoor units
			02	With direct duct (Fan OFF)	The fan of the VKM stops immediately when indoor unit fan stops (remocon off, defrost, oil return and hot start)
			04	No direct duct	The fan of VKM goes to low speed when the fan of indoor unit stops (thermo off, defrost, oil return and hot start)
			06	With direct duct (Fan OFF)	The fan of VKM goes to low speed when the fan of indoor unit stops (thermo off, defrost, oil return and hot start)
			08	No direct duct (Fan OFF)	
	5	Fan speed setting when Heating Thermo OFF, Defrost and Oil Return (Cold Areas, VKM only)	**01**	**Set speed by remocon**	Only for VKM, in case independent operation. Do NOT use set 03 / 05 / 07
			02	Heating Thermo OFF: Set speed by remocon Defrost: Fan OFF / Oil Return: Fan OFF	
			04	Heating Thermo OFF: Fan Low Defrost: Fan OFF / Oil Return: Fan OFF	
			06	Heating Thermo OFF: Fan Low Defrost: Fan OFF / Oil Return: Fan OFF	
			08	Heating Thermo OFF: Set speed by remocon Defrost: Fan OFF / Oil Return: Fan OFF	
	6	Ventilation airflow setting when night time free cooling is activated	**01**	**High**	Only for VKM
			02	Ultra High	
	7	target temperature for independent night purge	01	18°C	
			02	19°C	
			03	20°C	
			04	21°C	
			05	22°C	
			07	23°C	
			08	24°C	
			09	**25°C**	
			10	26°C	
			11	27°C	
			12	28°C	
			13	30°C	
	8	Centralized zone interlock setting	**01**	**Disabled**	
			02	Enabled	
	9	Pre-heat time extension setting	**01**	**0 minutes**	
			02	30 minutes	
			03	60 minutes	
			04	90 minutes	
	10 through 15	Not used	-		

Setting	1st code	Description function	2nd code	Description setting	Note
18/28	0	External signal setting (J2-JC)	**01**	**Last Command**	
			02	Priority external command	
			03	Priority on operation	
			04	disable night time purge (forced stop)	
			05	not used	
			06	24 Ventilation	
	1	Operation ON at power ON	**01**	**Disabled**	When operation required when power on (example without BRC nor Central control used)
			02	Enabled	
	2	Auto restart after power failure	**01**	**Disabled**	
			02	Enabled	
	3	Opton BRP4A50A signal X3-X4	01	Not used	
			02	Not used	
			03	**Only heating**	
			04	Heating + Cooling	
	4	Display for ventilation mode	**01**	**Show**	Only for VKM
			02	Hide	
	5	Not used	-		
	6	Automatic ventilation mode	**01**	**Linear**	
			02	Not sued	
			03	Tap A	
			04	Tab B	
	7	Fresh air supply/ Air exhaust indication	**01**	**No indication supply**	Only for VKM
			02	No indication exhaust	
			03	Indication supply	
			04	Indication exhaust	
	8	External input terminal function selection (J1-JC)	**01**	**Fresh-up**	Fresh-up Operation
			02	Error input	Error Code 60 displayed
			03	Error input + forced stop	
			04	Forced off	
			05	Fan forced off	
			06	Air flow increase	Fan speed is increased 1 step (L -> H, H -> HH)
			07	Humidifier drain error	
	9	KRP50-2 or BRP4A50A output signal X1-X2 / X3-X4	**01**	**Operation / Humidifier**	
			02	Operation / Error	
			03	Operaton / Fan L-H-UH	
			04	Operation / Fan H-UH	
			05	24hr vent+operation / Fan operation	
			06	24 hr vent / fan operation	
			07	Humidifier / H_2O valve ON	
			08		
			09		
			10		
			11		
	10	Not used	-		
	11	Not used	-		
	12	Not used	-		
	13	Not used	-		
	14	Not used	-		
	15	Not used	-		

Setting	1st code	Description function	2nd code	Description setting	Note
19/29	0	Ventilation air flow setting	01	Low	Only for VKM
			02	Low	
			03	Low	
			04	Low	
			05	High	
			06	**High**	
	1	Low tap setting 1/xx /hr (min off, min on)	**01**	**Off**	
			02	operate 1/15 hr (28/2)	
			03	operate 1/10 hr (27/3)	
			04	Operate 1/6 (25/5)	
			05	Operate 1/4 (22,5/7,5)	
			06	Operate 1/3 (20/10)	
			07	Operate 1/2 (15/15)	
			08	Always step 1	
			09	Always step 2	
			10	Always step 3	
			11	Always step 4	
			12	Always step 5	
			13	Always step 6	
			14	Always step 7	
			15	Always step 8	
	2	Supply fan step	01	1	
			02	2	
			03	3	
			04	4	
			05	5	
			06	6	
			07	7	
			08	**8**	
			09	9	
			10	10	
			11	11	
			12	12	
			13	13	
			14	14	
			15	15	
	3	Exhaust fan step	01	1	
			02	2	
			03	3	
			04	4	
			05	5	
			06	6	
			07	7	
			08	**8**	
			09	9	
			10	10	
			11	11	
			12	12	
			13	13	
			14	14	
			15	15	

Setting	1st code	Description function	2nd code	Description setting	Note
19/29	4	forced van operation 1/xx /hr (min off, min on)	**01**	**Off**	
			02	operate 1/15 hr (28/2)	
			03	operate 1/10 hr (27/3)	
			04	Operate 1/6 (25/5)	
			05	Operate 1/4 (22,5/7,5)	
			06	Operate 1/3 (20/10)	
			07	Operate 1/2 (15/15)	
			08	Always step 1	
			09	Always step 2	
			10	Always step 3	
			11	Always step 4	
			12	Always step 5	
			13	Always step 6	
			14	Always step 7	
			15	Always step 8	
	5	Not used	-		
	6	Not used	-		
	7	Reference concentration shift for ventilation air flow control (ppm)	**01**	**0**	
			02	+200	
			03	+400	
			04	+600	
			05	-200	
			06	-400	
			07	-600	
	8	Stop ventilation by automatic ventilation/Fan residual operation	01	Enabled / Disabled	
			02	**Disabled / Disabled**	
			03	Enabled / Enabled	
			04	Disabled / Enabled	
	9	Normal ventilation tap on automatic ventilation air flow control	**01**	**Independent UH**	
			02	Independent H	
			03	VRV Control UH	
			04	VRV control H	
			05	Option CO_2 sensor	
	1A	Permanent Fresh up	**01**	**Disabled**	
			02	Enabled	

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Setting	1st code	Description function	2nd code	Description setting	Note
1b	0	Permission Level	**01**	**Level 2**	On-Off, Set Temp, Delay, Min-Max Operation, Fan speed, Swing
			02	Level 3	On-Off, Set Temp, Fan Speed
	0	Quiet Mode display	**01**	**Show**	Depends on Remocon type, see installer reference guide for Remote Controller
			02	Hide	
	1	Setback function	**01**	**Not available**	Older remocons equipped Home Leave Function, basicly same as setback function but only available in Heating Mode.
			02	Available	
	2	Thermistor in remocon (only for limit operation and setback function	**01**	**Use**	
			02	Do not use	
	3	Start setback function	05	5°C	Depends on Remocon type, see installer reference guide for Remote Controller
			06	6°C	
			07	7°C	
			08	8°C	
			09	9°C	
			10	**10°C**	
			11	11°C	
			12	12°C	
			13	13°C	
			14	14°C	
			15	15°C	
	4	Stop setback function	**01**	**1K**	Depends on Remocon type, see installer reference guide for Remote Controller
			02	2K	
			03	3K	
			04	4K	
			05	5K	
	4	Error code detail	01	Without subcode	Depends on Remocon type, see installer reference guide for Remote Controller
			02	With subcode in service mode	
			03	With subcode in basic mode	
			04	**Without subcode on main screen and with subcode on error screen**	
	5	Usage of 'limited' function in combination with centralised control	**01**	**Not available**	'Limited' function = additional mode to permit keeping the temperature between a minimum and maximum value.
			02	Available	
	7	Display symbol for defrost and hot-start	**01**	**ON**	
			02	OFF	
	8	Daylight saving time	01	Not active	
			02	**Automatic**	
			03	Manual	
			04	According to central controller	
	11	Clock display in remocon	**01**	**ON**	
			02	OFF	
	13	Display method	01	Text	
			02	**Symbols**	
	14	Number of flaps that can be blocked by remocon setting	**01**	**1**	Only for FXFQ. It is strongly advised not to use setting 2,3 and 4
			02	2	
			03	3	
			04	4	
			05	None	
	15	Swing setting	**01**	**Swing can be set by remocon**	Depends on indoor unit, check indoor unit installation manuals
			02	Swing setting disabled to set by remocon	

Setting	1st code	Description function	2nd code	Description setting	Note
1c	0	Display of room temperature	01	OFF	
			02	**ON**	
	1	Which thermistor to show on remocon	01	R1T on indoor unit	For Auto-function and Setback Function
			02	**Thermistor on remocon**	
	2	Selection mode display in auto mode	01	OFF	Whether or not 'heating/cooling' is displayed during automatic mode (otherwise only 'automatic' is mentioned on remocon)
			02	**ON**	
	3	Permission Level Setting	**01**	**Level 2**	Depends on indoor unit, check indoor unit installation manuals
			02	Level 3	
	4	Backlight of remocon	01	Permanently OFF	
			02	**ON for 30 seconds after 1st push**	Goes OFF after 20 seconds when no button pushed
			03	Always ON	
	5	Operation when bakclight is OFF	**01**	**No**	When pushing a button, first backlight is activated, function of button is not activated
			02	Yes	When pushing a button, backlight is activated and immediately function of button is activated
	6	Display of remocon	**01**	**Permanent display**	The screen always shows values
			02	Screen goes blank after 5 minutes	Touching any button re-activates screen
	7	RC prohibited backup	**01**	**Disabled**	
			02	Enabled	
	8	Switching selection when there are main and sub Remote controller	**01**	**BRC air sensor**	
			02	Air return air sensor	
	9	Sensor selection when there are Main & Sub Remocon	**01**	**Main Remocon**	Setting 1c-1 is taken into consideration of the selected remocon
			02	Sub Remocon	
	10	Sensor offset for Main Remocon	01	–3°C	Offset for temperature display Depends on Remocon type, see installer reference guide for Remote Controller
			02	–2.5°C	
			03	–2°C	
			04	–1.5°C	
			05	**–1°C**	
			06	–0.5°C	
			07	0°C	
			08	+0.5°C	
			09	+1°C	
	11	Sensor offset for Sub Remocon	01	–3°C	Offset for temperature display Depends on Remocon type, see installer reference guide for Remote Controller
			02	–2.5°C	
			03	–2°C	
			04	–1.5°C	
			05	**–1°C**	
			06	–0.5°C	
			07	0°C	
			08	+0.5°C	
			09	+1°C	
	12	External input BC-B1 for window contact for BRP7A option	**01**	**Do not use**	Only when BRP7A
			02	Use	
	13	External input BC-B2 for keycard contact for BRP7A option	**01**	**Do not use**	Only when BRP7A
			02	Use	
	14	ΔT primary	**01**	**1K**	
			02	2K	
			03	3K	
			04	4K	
	15	ΔT secondary	**01**	**1K**	
			02	2K	
			03	3K	
			04	4K	

Setting	1st code	Description function	2nd code	Description setting	Note
1e	0	Set temp mode changeover' visibility in the menu	**01**	**Visible in menu**	
			02	Hidden	
	1	Temperature unit selection between C and F	**01**	**Disabled**	From factory, unit is locked to °C
			02	Enabled	Selection visible in the menu to switch between temperature units
	2	Setback function	01	Disabled	Only for older remocons, where Home Leave function is present. Home Leave Function is basically Setback function but only in heating mode.
			02	**Enabled**	
	2	Setback Function	01	Disabled	
			02	Enabled for heating	
			03	Enabled for cooling	
			04	**Enabled for heating and cooling**	
	3	Selection set temperature in limit operation when power on/off	01	Do not keep	
			02	**Keep**	
	4	Timer setting in case central controller present	**01**	**Not visible**	To avoid conflict between timer of central controller and remocon
			02	Visible	
	5	Hour display selection between 24h and 12h	**01**	**Disabled**	From factory, unit is locked to 24h
			02	Enabled	Selection visible in the menu to switch between 24h and 12h
	6	Count-down timer	01	Hidden	
			02	**Visible in menu**	
	7	Rotation overlap time	01	30 minutes	
			02	15 minutes	
			03	**10 minutes**	
			04	5 minutes	
	8	Home screen setpoint	**01**	**Numeric**	
			02	Symbolic	
	9	Change-over' and 'Centralized' Symbol display	01	Not visible	
			02	**Visible**	
	10	Display for prohibited function when remocon is locked through centralised control	01	Key-symbol	
			02	**Text message**	
	11	Switching delay in automatic mode	01	15 minutes	
			02	30 minutes	
			03	**60 minutes**	
			04	90 minutes	
	12	Symbol view reference value (Cooling / upper)	**01**	**Fixed 10°C**	
			02	10°C+	
			03	20°C+	
			04	30°C+	
	13	Symbol view reference value (Cooling / lower)	**01**	**+1°C**	
			02	+2°C	
			03	+3°C	
			04	+4°C	
			05	+5°C	
			06	+6°C	
			07	+7°C	
			08	+8°C	
			09	+9°C	
			10	+10°C	
	14	Symbol view reference value (Heating / upper)	**01**	**Fixed 10°C**	
			02	10°C+	
			03	20°C+	
			04	30°C+	

Setting	1st code	Description function	2nd code	Description setting	Note
1e	15	Symbol view reference value (Heating / lower)	**01**	**+1°C**	
			02	+2°C	
			03	+3°C	
			04	+4°C	
			05	+5°C	
			06	+6°C	
			07	+7°C	
			08	+8°C	
			09	+9°C	
			10	+10°C	

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Setting	1st code	Description function	2nd code	Description setting	Note
R1	0	Not used	-		
	1	Not used	-		
	2	Not used	-		
	3	Controller thermistor adjustment Cooling	00	−3°C	
			01	−2.5°C	
			02	−2°C	
			03	**−1.5°C**	
			04	−1°C	
			05	−0.5°C	
			06	0°C	
			07	+0.5°C	
			08	+1°C	
			09	+1.5°C	
			10	+2°C	
			11	+2.5°C	
			12	+3°C	
	4	Controller thermistor adjustment Heating	00	−3°C	
			01	−2.5°C	
			02	−2°C	
			03	**−1.5°C**	
			04	−1°C	
			05	−0.5°C	
			06	0°C	
			07	+0.5°C	
			08	+1°C	
			09	+1.5°C	
			10	+2°C	
			11	+2.5°C	
			12	+3°C	
	5	Controller thermistor adjustment Auto change-over	00	−3°C	
			01	−2.5°C	
			02	−2°C	
			03	**−1.5°C**	
			04	−1°C	
			05	−0.5°C	
			06	0°C	
			07	+0.5°C	
			08	+1°C	
			09	+1.5°C	
			10	+2°C	
			11	+2.5°C	
			12	+3°C	

Setting	1st code	Description function	2nd code	Description setting	Note
R1	5	Controller thermistor adjustment Fan-only	00	–3°C	
			01	–2.5°C	
			02	–2°C	
			03	**–1.5°C**	
			04	–1°C	
			05	–0.5°C	
			06	0°C	
			07	+0.5°C	
			08	+1°C	
			09	+1.5°C	
			10	+2°C	
			11	+2.5°C	
			12	+3°C	
	6	Not used	-		
	7	Home screen	00	Detailed	
			01	**Standard**	
	8	Back-light no operation timer	**00**	**5 seconds**	
			01	10 seconds	
			02	20 seconds	
	9	Status indicator faintness	00	0% - OFF	
			01	1%	
			02	2%	
			03	3%	
			04	5%	
			05	7%	
			06	9%	
			07	11%	
			08	13%	
			09	**15%**	
			10	17%	
			11	20%	
	10	Back-light faintness	00	0% - OFF	
			01	1%	
			02	2%	
			03	3%	
			04	4%	
			05	**5%**	
	11	Status indicator mode	00	Normal	
			01	Hotel setting 1	
			02	**Hotel setting 2**	
	12	Bluetooth Low Energy Advertising	00	Disable	
			01	**Enabled**	
	13	BLE advertising signal transmission	**00**	**Always ON**	
			01	Enable manually	
	14	Display of numeric comparison	**00**	**Always visible**	
			01	Fixed screen	
	15	Status display of BLE setting screen	**00**	**Disabled**	
			01	Enabled	
R2	0	Buzzer	**00**	**Disabled**	
			01	Enabled	
	1	Touch button indicator on screen	00	None	
			01	**Small**	
			02	Medium	
			03	Large	

Setting	1st code	Description function	2nd code	Description setting	Note
R2	2	Touch switch sensitivity threshold (left and center)	00	No correction	
			01	1	
			02	2	
			03	3	
			04	4	
			05	5	
			06	6	
			07	7	
			08	8	
			09	9	
			10	**10**	
			11	11	
			12	12	
			13	13	
			14	14	
			15	15	
	3	Touch switch sensitivity threshold (right and center)	00	No correction	
			01	1	
			02	2	
			03	3	
			04	4	
			05	5	
			06	6	
			07	**7**	
			08	8	
			09	9	
			10	10	
			11	11	
			12	12	
			13	13	
			14	14	
			15	15	
	4	Touch switch sensitivity threshold (left + center + right)	00	No correction	
			01	1	
			02	2	
			03	3	
			04	4	
			05	5	
			06	6	
			07	7	
			08	8	
			09	9	
			10	**10**	
			11	11	
			12	12	
			13	13	
			14	14	
			15	15	
	5	Type controller R32 safety system	**00**	**Normal mode**	Full control
			01	Only buzzer	Only sound
			02	Superviser mode	Sound + error
	6	Alarm (only if BRC1H52*)	**01**	**Enabled**	
			02	Disabled	
	7	Not used	-		

Setting	1st code	Description function	2nd code	Description setting	Note
R2	8	Not used	-		
	9	Not used	-		
	10	Not used	-		
	11	Not used	-		
	12	Not used	-		
	13	Not used	-		
	14	Bluetooth Low Energy module connection interval setting	**00**	**35.0 ms**	
			01	37.5 ms	
			02	40.0 ms	
			03	42.5 ms	
			04	45.0 ms	
			05	47.5 ms	
			06	50.0 ms	
			07	52.5 ms	
			08	55.0 ms	
			09	57.5 ms	
			10	32.5 ms	
			11	30.0 ms	
			12	27.5 ms	
			13	25.0 ms	
			14	22.5 ms	
			15	20.0 ms	
	15	Not used	-		

7.9.7 Overview of field settings for DX units

EKVDX field settings (user interface: indoor unit 0)

Mode	SW	SW description	SW position[a]														
			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
10 (20)[b]	13	Discharge temperature correction factor (°C)	0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7
12(22)[c]	1	External input switching (T1 T2)	Forced stop (default)	External Input (ON:OFF operation)	Protective device input	Forced stop B (multi-tenant setting)	—	—	—	—	—	—	—	—	—	—	—
14 (24)[d]	10	Cooling blowout temperature setpoint	13°C	15°C	16°C	17°C	18°C	19°C	20°C	21°C	22°C	23°C	24°C	25°C	26°C	28°C	30°C
14 (24)[d]	11	Heating blowout temperature setpoint	24°C	26°C	27°C	28°C	29°C	30°C	31°C	32°C	33°C	35°C	37°C	39°C	41°C	43°C	45°C
15 (25)	00	Drain pump output when cooling thermo OFF	Drain pump OFF	Drain pump ON	—	—	—	—	—	—	—	—	—	—	—	—	—
	13	R32 safety system[e]	OFF	ON	OFF for 24 hours	—	—	—	—	—	—	—	—	—	—	—	—
	14	Sensor replacement completion setting	Normal	Reset	—	—	—	—	—	—	—	—	—	—	—	—	—
	15	External contact output settings[f]	Disable	Enable	—	—	—	—	—	—	—	—	—	—	—	—	—

[a] Factory settings are marked with a grey background.
[b] This field setting cannot be modified via the remote controller menu.
[c] In case of R32 refrigerant, terminal connections T1 T2 are for fire alarm input ONLY.
[d] The VAM field setting 18(28)-13/-14 (see table below) MUST be identical to the EKVDX field setting. Set the EKVDX first (EKVDX=primary, VAM=secondary)
[e] In case R410A is used, set to 15(25)-13-1.
[f] 15(25)-15-2 is required when R32 refrigerant is used.

VAM field settings (user interface: indoor unit 1)

Mode	SW	SW description	SW position														
			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
17(27)	4	Initial fan speed[a]	High	Ultra-high	—	—	—	—	—	—	—	—	—	—	—	—	—
	5[b]	Yes/No setting for duct connection with VRV system	Without duct	With duct	Without duct		With duct		Without duct		With duct	—	—	—			
		Setting for cold areas when heater thermostat is OFF[c]	—	—	Stop/Stop	Low/Low	Stop/stop	Low/Low	—	—	—	—	—	—	—	—	—
		Fan operation when defrost/oil return/hot start[c]	—	—	Stop/Stop	Stop/Stop	Stop/Stop	Stop/Stop	Stop/—	Stop/ Stop	Stop/—	—	—	—	—	—	—
	6	Nighttime free cooling (fan settings)[d]	High	Ultra-high	—	—	—	—	—	—	—	—	—	—	—	—	—

Mode	SW	SW description	SW position														
			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
18(28)	0	External signal[e] JC/J2	Last command	Priority on external input	Priority on operation	Disable nighttime free cooling / Perform forced stop	—	24 hours ventilation ON/ OFF	Disable JC/J2	—	—	—	—	—	—	—	—
	1	Direct power ON[f]	OFF	ON	—	—	—	—	—	—	—	—	—	—	—	—	—
	2	Auto restart[f]	OFF	ON	—	—	—	—	—	—	—	—	—	—	—	—	—
	8	External input terminal function selection[g] (JC/J1)	Fresh-up	Error output	Error output and stop operation	Forced off	Fan forced off	Air-flow up	—	—	—	—	—	—	—	—	—
	10	EKVDX connected?[h]	No	Yes	—	—	—	—	—	—	—	—	—	—	—	—	—
	13	Cooling set point (with EKVDX)	13°C	15°C	16°C	17°C	18°C	19°C	20°C	21°C	22°C	23°C	24°C	25°C	26°C	28°C	30°C
	14	Heating set point (with EKVDX)	24°C	26°C	27°C	28°C	29°C	30°C	31°C	32°C	33°C	35°C	37°C	39°C	41°C	43°C	45°C
19(29)	15	R32 safety system[i]	OFF	ON	—	—	—	—	—	—	—	—	—	—	—	—	—

[a] When connected to an EKVDX, set to 2 or 4.
[b] When connected to an EKVDX, 17(27)-5 can be set to 1, 3, 4, 7 or 8.
[c] (Supply air/Exhaust air), e.g. Low/Low means: Supply air low/Exhaust air low.
[d] In case VAM and EKVDX are combined and the R32 safety system of the VAM is active, the nighttime free cooling is disabled.
[e] When connected to an EKVDX, JC/J2 cannot be used. Set to 18(28)-0-7. Instead, use T1 T2 of the EKVDX. See the EKVDX Installation and operation manual.
[f] When connected to an EKVDX, do not change the default settings.
[g] When connected to an EKVDX, JC/J1 cannot be used. Instead, use T1 T2 of the EKVDX. See the EKVDX Installation and operation manual.
[h] When connected to an EKVDX, set to 18(28)-10-2.
[i] When connected to an EKVDX, setting 2 (safety ON) is required in case R32 refrigerant is used. Setting 1 (safety OFF) is required in case R410A refrigerant is used.

7.9.8 Overview of field settings for heat reclaim ventilation units

Mode	SW	SW description	SW position[a]														
			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
17(27)	0	Filter cleaning time	±2500 hours	±1250 hours	—	—	—	—	—	—	—	—	—	—	—	—	—
	1	Nighttime free cooling timer (after stop)[b]	OFF	ON after 2 hours	ON after 4 hours	ON after 6 hours	ON after 8 hours	—	—	—	—	—	—	—	—	—	—
	2	Precool/preheat[c]	OFF	ON	—	—	—	—	—	—	—	—	—	—	—	—	—
	3	Precool/preheat duration[c]	30 minutes	45 minutes	60 minutes	—	—	—	—	—	—	—	—	—	—	—	—
	4	Initial fan speed[d]	High	Ultra-high	—	—	—	—	—	—	—	—	—	—	—	—	—
	5[e]	Yes/No setting for duct connection with VRV system	Without duct	With duct	Without duct		With duct		Without duct		With duct	—	—	—	—	—	—
		Setting for cold areas (fan operation when heater thermostat is OFF)[f]	—	—	Stop/Stop	Low/Low	Stop/stop	Low/Low	—	—	—	—	—	—	—	—	—
		Fan operation during defrost/oil return/hot start[f]	—	—	Stop/Stop	Stop/Stop	Stop/Stop	Stop/Stop	Stop/—	Stop/ Stop	Stop/—	—	—	—	—	—	—

Mode	SW	SW description	SW position[a]														
			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
17(27)	6	Nighttime free cooling (fan settings)[b]	High	Ultra-high	—	—	—	—	—	—	—	—	—	—	—	—	—
	7	Target temperature for independent nighttime free cooling[b]	18°C	19°C	20°C	21°C	22°C	23°C	24°C	25°C	26°C	27°C	28°C	29°C	30°C	—	—
	8	Central zone link	No	Yes	—	—	—	—	—	—	—	—	—	—	—	—	—
	9	Preheat time extension[c]	0 minutes	30 minutes	60 minutes	90 minutes	—	—	—	—	—	—	—	—	—	—	—
18(28)	0	External signal[g] JC/J2	Last command	Priority on external input	Priority on operation	Disable nighttime free cooling/ Perform forced stop	—	24 hours ventilation ON/ OFF	Disable JC/J2	—	—	—	—	—	—	—	—
	1	Direct power ON	OFF	ON	—	—	—	—	—	—	—	—	—	—	—	—	—
	2	Auto restart[h]	OFF	ON	—	—	—	—	—	—	—	—	—	—	—	—	—
	3	Output signal to external damper (X24A)	—	—	Damper output (fan operation)	Damper output (fan operation)	—	—	—	—	—	—	—	—	—	—	—
	4	Indication of ventilation mode	ON	OFF	—	—	—	—	—	—	—	—	—	—	—	—	—
18(28)	6	Automatic ventilation air flow mode	Linear	—	Fixed A	Fixed B	—	—	—	—	—	—	—	—	—	—	—
	7	Fresh-up mode	Supply – no indication	Exhaust – no indication	Supply – indication	Exhaust – indication	—	—	—	—	—	—	—	—	—	—	—
	8	External input terminal function selection[i] (JC/J1)	Fresh-up	Error output	Error output and stop operation	Forced off	Fan forced off	Air-flow up	—	—	—	—	—	—	—	—	—
	9	BRP4A50A output switching selection (between X3 and X4)	Heater output	Error output	Fan output (Low/ High/Ultra-high)	Fan output (High/ Ultra-high)	Fan output (Ultra-high)	Fan output (Low/High/Ultra-high)		—	—	—	—	—	—	—	—
		(between X1 and X2)	Operation output	Operation output				—	—	—	—	—	—	—	—	—	—
	10	EKVDX connected?[j]	No	Yes	—	—	—	—	—	—	—	—	—	—	—	—	—
18(28)	11	Filter contamination check	No action	Reset filter check	Force filter check	—	—	—	—	—	—	—	—	—	—	—	—
	13	Cooling set point (with EKVDX)	13°C	15°C	16°C	17°C	18°C	19°C	20°C	21°C	22°C	23°C	24°C	25°C	26°C	28°C	30°C
	14	Heating set point (with EKVDX)	24°C	26°C	27°C	28°C	29°C	30°C	31°C	32°C	33°C	35°C	37°C	39°C	41°C	43°C	45°C
19(29)	0	Filter contamination inspection[k]	Pressure-based check with fan step 1-15	Pressure-based check with new fan step	Timer based check	Filter contamination target detection with fan step 1-15	Auto ESP selection and filter contamination target detection with new fan step	—	—	—	—	—	—	—	—	—	—
	1	Low tap[l]	OFF	Run 1/15 (28 min. OFF/2 min. ON)	Run 1/10 (27 min. OFF/3 min. ON)	Run 1/6 (25 min. OFF/5 min. ON)	Run 1/4 (22.5 min. OFF/7.5 min. ON)	Run 1/3 (20 min. OFF/10 min. ON)	Run 1/2 (15 min. OFF/15 min. ON)	Continuous operation							
										Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8
	2	Supply fan step[m]	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10	Step 11	Step 12	Step 13	Step 14	Step 15
	3	Exhaust fan step[m]	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10	Step 11	Step 12	Step 13	Step 14	Step 15
	4	24-hour ventilation[l]	OFF	Run 1/15 (28 min. OFF/2 min. ON)	Run 1/10 (27 min. OFF/3 min. ON)	Run 1/6 (25 min. OFF/5 min. ON)	Run 1/4 (22.5 min. OFF/7.5 min. ON)	Run 1/3 (20 min. OFF/10 min. ON)	Run 1/2 (15 min. OFF/15 min. ON)	Continuous operation							
										Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8

Mode	SW	SW description	SW position[a]														
			01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
19(29)	5	Humidification ON/OFF setting	ON	OFF	–	–	–	–	–	–	–	–	–	–	–	–	–
	7	Reference concentration shift for ventilation air flow control (ppm)	0	+200	+400	+600	–200	–400	–600	–	–	–	–	–	–	–	–
	8	Stop ventilation by automatic ventilation air flow control	Allowed	NOT allowed	Allowed	NOT allowed	–	–	–	–	–	–	–	–	–	–	–
	8	Fan residual operation	OFF	OFF	Heater operation	Heater operation	–	–	–	–	–	–	–	–	–	–	–
	9	Normal ventilation tap on automatic ventilation air flow control	–	–	–	–	Control by CO_2 sensor	–	–	–	–	–	–	–	–	–	–
	15	R32 safety system[n]	OFF	ON	–	–	–	–	–	–	–	–	–	–	–	–	–
1A	0	Fresh-up operation[k]	OFF	ON	–	–	–	–	–	–	–	–	–	–	–	–	–

[a] Factory settings are marked with a grey background.
[b] In case VAM and EKVDX are combined and the R32 safety system of the VAM is active, the nighttime free cooling is disabled.
[c] The preheating/precooling function of the heat reclaim ventilation unit is disabled when it is connected to an EKVDX.
[d] When connected to an EKVDX, set to 2 or 4.
[e] When connected to an EKVDX, 17(27)-5 can be set to 1, 3, 4, 7 or 8.
[f] (Supply air/Exhaust air), e.g. Low/Low means: Supply air low/Exhaust air low.
[g] When connected to an EKVDX, JC/J2 cannot be used. Set to 18(28)-0-7. Instead, use T1 T2 of the EKVDX. See the EKVDX Installation and operation manual.
[h] When connected to an EKVDX, do not change the default settings.
[i] When connected to an EKVDX, JC/J1 cannot be used. Instead, use T1 T2 of the EKVDX. See the EKVDX Installation and operation manual.
[j] When connected to an EKVDX, set to 18(28)-10-2.
[k] When connected to an EKVDX, a filter contamination check is performed automatically and is timer based. This setting CANNOT be done with BRC301B61
[l] When connected to an EKVDX, this field setting will always be OFF.
[m] See the technical data book for pressure drop curves and selection of fan curves (step 1 to 15).
[n] When connected to an EKVDX, setting 2 (safety ON) is required in case R32 refrigerant is used. Setting 1 (safety OFF) is required in case R410A refrigerant is used.

Note: When connected to an EKVDX, SS1 cannot be used. Instead, use T1 T2 of the EKVDX. See the EKVDX Installation and operation manual.

Note: The setting modes are mentioned as group settings, between parentheses are the setting modes for individual unit control or when connected to the EKVDX option. Group number setting for central controller: mode 00=group controller / mode 30=individual controller. For the setting procedure, see "Group number setting for central control" in the operation manual of either the ON/OFF controller or the central controller.

7.9.9 Field settings as per type of indoor unit

The overview lists the availability of the setting per indoor unit type.

Field setting		Unit									
Upper	Lower	FXFA	FXZA	FXDA	FXSA	FXMA	FXAA	FXUA	FXHA	FXKA	EKEA
10 (20)	0	01	01	01	01	01	01	01	01	01	01
	1	01	01	04	01	01	01	01	01	01	01
	2	02	02	01	02	02	01	02	01	01	02
	3	01	01	01	01	01	01	01	01	01	01
	4	spare									
	5	01	01	01	01	01	01	01	01	01	01
	6	01	01	01	01	01	01	01	01	01	01
	7	01	01	01	01	01	na	01	na	na	na
	8	01	01	01	na	na	01	01	01	01	na
	9	spare									
	10	04	04	04	04	04	04	04	04	04	04
	11	01	01	01	01	01	01	01	01	01	na
	12	03	na	na	na	na	na	na	na	na	na
	13	na	na	na	na	na	na	na	na	na	01
	14	na	na	na	na	na	na	na	na	na	01
	15	na	na	na	na	na	na	na	na	na	01
11 (21)	0	spare									
	1	spare									
	2	spare									
	3	01	01	01	na	na	01	01	01	01	na
	4	spare									
	5	na	na	na	na	na	na	na	na	na	01
	6	03	03	04	04	04	na	03	na	na	na
	7	na	na	na	01	01	na	na	na	na	na
	8	03	03	01	na	na	na	03	na	na	01
	9	03	03	03	na	na	na	03	na	na	01
	10	na	na	na	na	na	na	na	na	na	01
	11	na	na	na	na	na	na	na	na	na	01
	12	na	na	na	na	na	na	na	na	na	01
	13	na	na	na	na	na	na	na	na	na	01
	14	na	na	na	na	na	na	na	na	na	02
	15	spare									
12 (22)	0	01	01	01	01	01	01	01	01	01	01
	1	04	01	01	01	01	01	01	01	01	02
	2	01	01	02	01	01	02	01	02	01	01
	3	01	01	01	01	01	01	01	01	01	02
	4	01	01	01	01	01	01	01	01	01	na
	5	02	02	02	02	02	02	02	02	02	na
	6	02	02	02	02	02	02	02	02	02	02
	7	01	01	01	01	01	01	01	01	01	na
	8	01	01	01	01	01	01	01	01	01	na
	9	01	01	01	01	01	01	01	01	01	01
	10	03	03	03	03	03	na	03	na	na	03
	11	03	03	03	na	na	na	03	na	na	03
	12	03	na	na	na	na	na	na	na	na	04
	13	spare									
	14	spare									
	15	spare									

Field setting		Unit									
Upper	Lower	FXFA	FXZA	FXDA	FXSA	FXMA	FXAA	FXUA	FXHA	FXKA	EKEA
13 (23)	0	01	01	01	01	01	01	01	01	01	01
	1	01	01	na	na	na	01	01	na	na	01
	2	03	03	na	na	na	na	03	na	na	01
	3	na	01	na	na	na	01	na	na	na	na
	4	01	02	02	na	na	02	03	03	02	na
	5	01	01	01	01	04	01	01	01	01	01
	6	na	na	na	01	07	na	na	na	na	01
	7	04	01	01	na	na	01	01	01	01	na
	8	spare									
	9	01	01	01	01	01	01	01	na	01	01
	10	spare									
	11	na	na	na	01	01	na	na	na	na	01
	12	01	na	na	01	01	na	na	na	na	01
	13	02	na	na	na	na	na	na	na	na	01
	14	01	na	na	na	na	na	na	na	na	04
	15	01	na	na	na	na	na	na	na	na	04
14 (24)	0	spare									
	1	02	02	02	02	02	02	02	02	02	02
	2	02	na	na	na	na	na	na	na	na	01
	3	01	na	01	na	na	na	na	na	na	01
	4	03	na	04	na	na	na	na	na	na	na
	5	01	na	na	na	na	na	na	na	na	na
	6	spare									
	7	01	01	01	01	01	01	01	01	01	01
	8	06	na	02	na	na	na	na	na	na	na
	9	03	Na	02	na	na	na	na	na	na	na
	10	01	na	na	na	na	na	na	na	02	01
	11	na	na	na	na	na	na	na	na	na	12
	12	spare									
	13	spare									
	14	spare									
	15	01	na	na	na	na	na	na	na	na	na
15 (25)	0	02	02	02	02	02	02	02	02	02	na
	1	01	01	01	01	01	01	01	01	01	01
	2	01	01	01	na	na	01	01	01	01	na
	3	01	01	01	01	01	01	01	01	01	01
	4	01	01	01	01	01	01	01	01	01	01
	5	01	01	01	01	01	01	01	01	01	01
	6	01	01	01	01	01	01	01	01	01	01
	7	spare									
	8	spare									
	9	01	01	01	01	01	01	01	01	01	01
	10	spare									
	11	spare									
	12	01	01	01	01	01	01	01	01	01	01
	13	02	02	02	02	02	02	02	02	02	na
	14	01	01	01	01	01	01	01	01	01	na
	15	01	01	01	01	01	01	01	01	01	01

Field setting		Unit									
Upper	Lower	FXFA	FXZA	FXDA	FXSA	FXMA	FXAA	FXUA	FXHA	FXKA	EKEA
50	0	na	00	na	08	na	na	na	na	10	10
	1	na	00	na	00	na	na	na	na	00	08
	2	na	00	na	00	na	na	na	na	00	00
	3	na	00	na	00	na	na	na	na	00	00
	4	na	00	na	00	na	na	na	na	00	00
	5	na	00	na	00	na	na	na	na	00	00
	6	na	04	na	04	na	na	na	na	04	04
	7	na	00	na	00	na	na	na	na	00	00
	8	na	00	na	00	na	na	na	na	00	00
	9	na	00	na	00	na	na	na	na	00	00
	10	na	08	na	08	na	na	na	na	08	00
	11	na	00	na	00	na	na	na	na	00	00
	12	na	00	na	00	na	na	na	na	00	05
	13	na	00	na	00	na	na	na	na	00	08
	14	na	00	na	00	na	na	na	na	00	00
	15	na	00	na	00	na	na	na	na	00	00
51	0	na	02	na	02	na	na	na	na	02	02
	1	na	03	na	03	na	na	na	na	03	03
	2	na	12	na	00	na	na	na	na	00	00
	3	na	07	na	01	na	na	na	na	01	00
	4	na	00	na	00	na	na	na	na	00	00
	5	na	00	na	00	na	na	na	na	00	00
	6	na	00	na	00	na	na	na	na	00	01
	7	na	00	na	08	na	na	na	na	00	08
	8	na	01	na	00	na	na	na	na	01	01
	9	na	05	na	00	na	na	na	na	06	00
	10	na	04	na	04	na	na	na	na	04	04
	11	na	01	na	01	na	na	na	na	01	01
	12	na	00	na	00	na	na	na	na	02	00
	13	na	00	na	00	na	na	na	na	00	00
	14	na	00	na	00	na	na	na	na	00	00
	15	na	00	na	00	na	na	na	na	00	00
53	0	na	02	na	00	na	na	na	na	00	00
	1	na	01	na	00	na	na	na	na	00	00
	2	na	01	na	00	na	na	na	na	00	00
	3	na	01	na	00	na	na	na	na	01	02
	4	na	00	na	00	na	na	na	na	00	05
	5	na	00	na	00	na	na	na	na	00	00
	6	na	00	na	00	na	na	na	na	00	00
	7	na	00	na	00	na	na	na	na	00	00
	8	na	00	na	00	na	na	na	na	00	00
	9	na	00	na	00	na	na	na	na	01	00
	10	na	00	na	01	na	na	na	na	04	01
	11	na	00	na	00	na	na	na	na	00	00
	12	na	02	na	00	na	na	na	na	02	00
	13	na	12	na	08	na	na	na	na	12	08
	14	na	00	na	00	na	na	na	na	00	00
	15	na	02	na	00	na	na	na	na	02	02

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Field setting (lower)	Field setting (upper)				
	1b	1c	1e	R1	R2
0	01	02	na	na	na
1	01	02	na	na	01
2	na	02	04	na	10
3	na	na	02	03	07
4	04	02	02	03	00
5	01	01	01	03	00
6	01	na	02	03	00
7	01	02	03	00	00
8	02	01	01	00	na
9	01	na	02	09	na
10	na	02	01	05	na
11	02	05	03	02	na
12	01	02	01	01	na
13	na	02	01	00	na
14	01	01	01	00	00
15	na	01	01	00	na

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Field setting (lower)	Field setting (upper)		
	1b	1c	1e
0	01	02	na
1	01	02	01
2	na	02	04
3	na	na	02
4	04	02	01
5	01	01	02
6	01	na	02
7	01	02	03
8	02	01	01
9	01	01	02
10	na	07	02
11	01	07	03
12	01	02	na
13	01	02	na
14	01	na	na
15	01	na	na





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