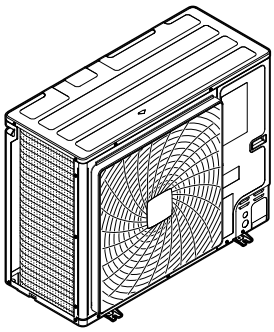
Service manual

Sky Air Advance-series



RZA200D7Y1B
RZA250D7Y1B

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Version log

Version code	Description	Date
ESIE19-13	Document release	April 2020
ESIE19-13A	Document release	May 2020

Table of Contents

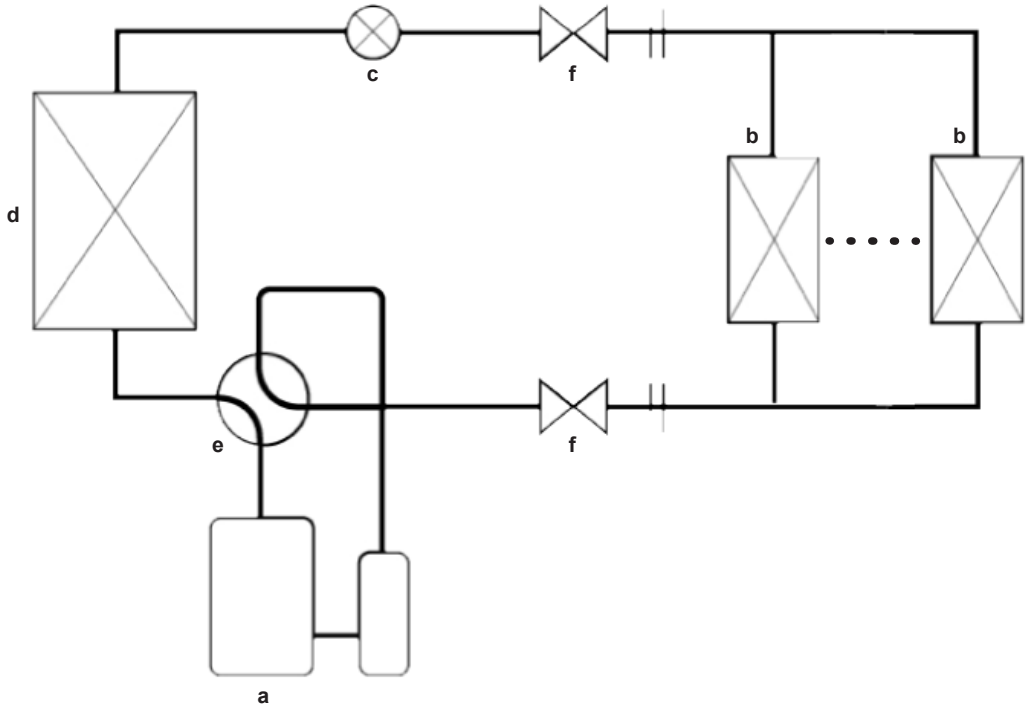
1 General operation

The Sky-Air is typically used for cooling or heating in commercial applications. Some units also have settings to perform technical cooling. The medium which is used to transfer the heat from inside to outside or vice versa, is refrigerant. In case of the RZA200+250D7, the refrigerant which is used, is R32.

There are four different piping combinations to indoor units:

- Pair
- Twin
- Triple
- double twin.

They all have the same operation principle. Unlike multi-system, they have only one main expansion valve controlling the refrigerant flow to all indoor unit(s).



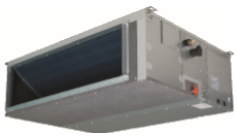
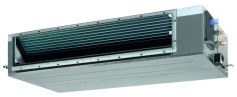
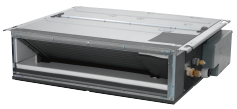
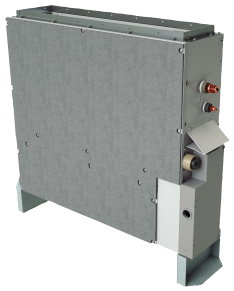
a Compressor
b Indoor heat exchanger (up to 4 indoor units)
c Expansion valve
d Outdoor heat exchanger
e 4-way valve
f Stop valve

In case of heating, the compressor builds up pressure and hence the temperature of the refrigerant is increased. The hot refrigerant is blown into the room by fan(s) which blow over heat exchanger(s). Colder refrigerant flows back to the outdoor unit, where temperature is further decreased by expansion through an expansion valve. After the expansion valve, the refrigerant is capable of taking up heat again. This is enabled by a fan that sucks outdoor air over a heat exchanger. This refrigerant is then transported to the compressor where temperature is further built up again and the cycle starts again. For cooling, it's just the other way round.

Indoor units

Sky-Air 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.

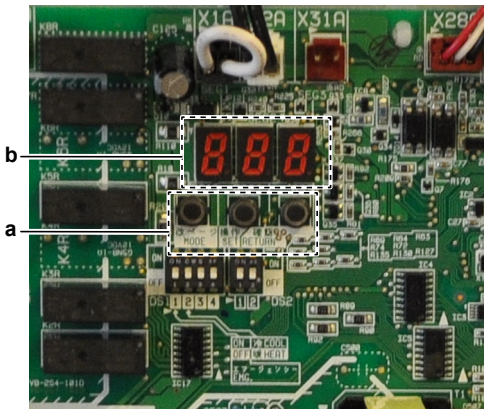
Duct FDA200+250		High cassette FCAHG-H	
Thin cassette FCAG-B		2x2 cassette FFA-A	
Duct (medium ESP) FBA-A		Ceiling suspended FHA-A	
Ceiling mounted 4-way blow FUA-A		Wall mounted type FAA-A	
Duct (high ESP) FDA125A		Slim duct FDXM-F	
Floor standing type FVA-A		Concealed floor standing type FNA-A	

2 Troubleshooting

2.1 To access push buttons and 7-segment display

1 Remove the service plate, see "3.12 Plate work" [▸ 111].

Result: The push buttons and 7-segment display are located on A1P behind the service plate.



a Push buttons
b 7-segment display

2.2 To retrieve error codes and check error history

2.2.1 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

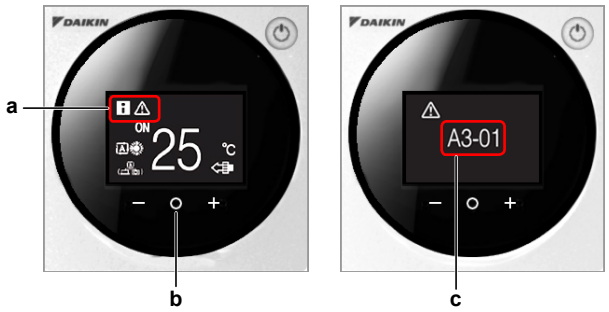
2.2.2 Via the indoor unit remote controller BRC1H

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

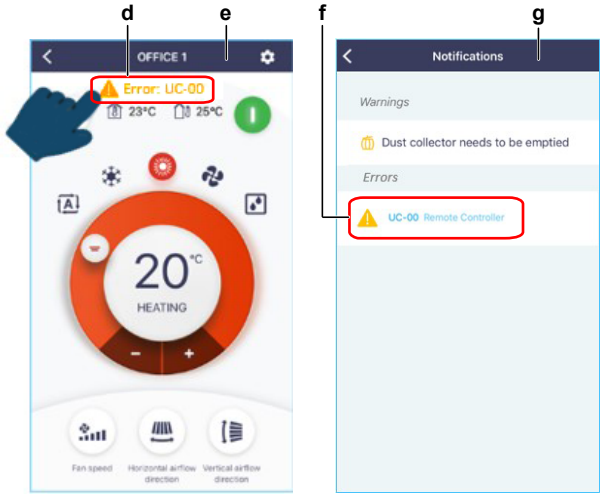
1 Press the middle button to enter the main menu from the home screen.

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.



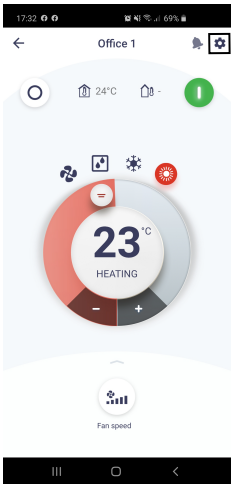
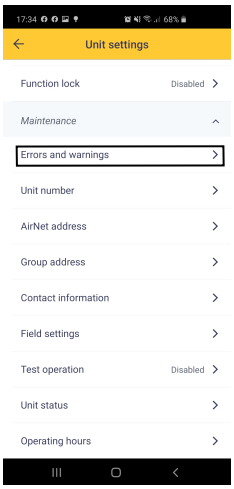
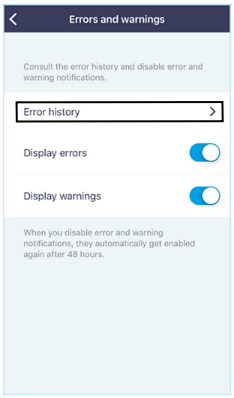
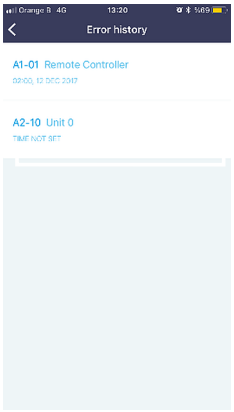
d Active error
e Home screen
f Error(s) details
g Notifications screen

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.
2	Tap Errors and warnings.		The Errors and warnings screen is displayed.
3	Tap Error history.	 	The Error history screen is displayed.

2.2.3 Via the outdoor unit

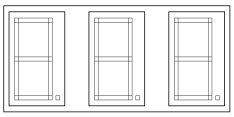
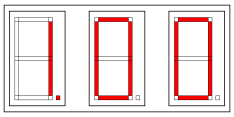
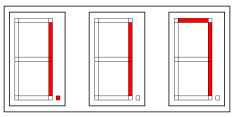
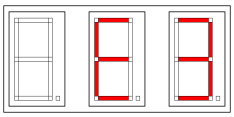
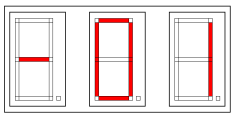
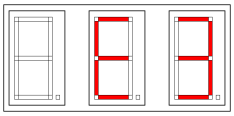
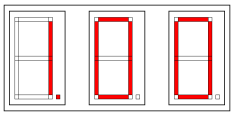
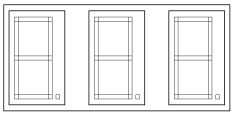
Error code descriptions are accessible on “Mode 1: Monitor Mode”.

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

When an error is generated, the unit performs a forced off until the error is retrieved. The current error code will be shown on the 7-segment display. You can also access the error history on “Mode 1: Monitor Mode”.

Mode	Setting	Description
Mode 1: Monitor mode	4	Last error code
	5	2nd last error code
	6	3rd last error code

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.	

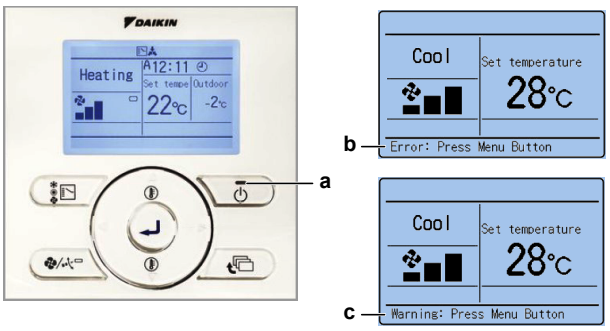
2.2.4 Via the wired remote control BRC1E

INFORMATION

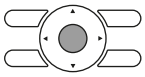
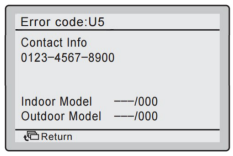
Images are in English and for reference ONLY. For more details on the BRC1E please refer to the user manual.

To retrieve the error code

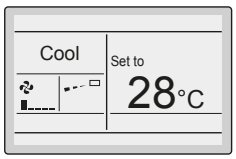
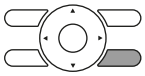
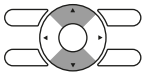
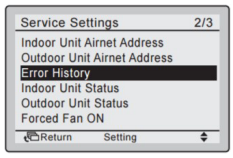
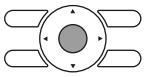
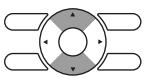
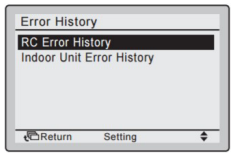
In case of an error or warning, the operation lamp on the ON/OFF button blinks and an error message or warning is displayed at the bottom of the screen.

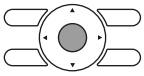
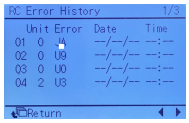
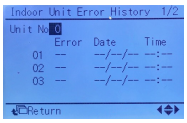


a Operation lamp on the ON/OFF button
b Error message
c Warning

#	Action	Result
1	Press. 	The error code appears on the screen. The content of the error/ warning is displayed. 

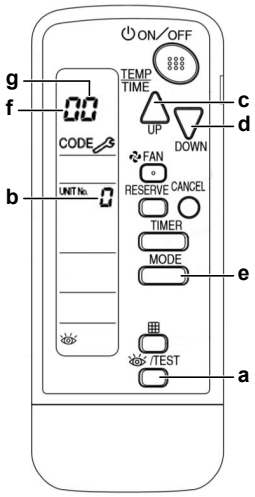
To Check the error history

#	Action	Result
1	Go to the basic screen.	
2	Press at least 4 seconds while the backlight of the screen is lit. 	The Service Settings screen is displayed.
3	Select Error History 	
4	Press. 	The Error History screen is displayed.
5	Select RC Error History or Indoor Unit Error History. 	

#	Action	Result
6	Press. 	▪ The RC Error History screen shows error history for all units in case of group control ▪ The Indoor Unit Error History screen shows error history of the selected indoor unit  

2.2.5 Via the wireless controller BRC7

To retrieve the error code



a INSPECTION/TEST button
b Unit No.
c UP button
d DOWN button
e MODE button
f Left digit
g Right digit

1 Press and hold INSPECTION/TEST button for 5 seconds.

Result: The "unit indication" is displayed on screen and Unit No. is displayed as "0", blinking.

2 Set the Unit No. via UP/DOWN buttons until a buzzer sound* is generated from the indoor unit.

Result: *Possible buzzer sounds:

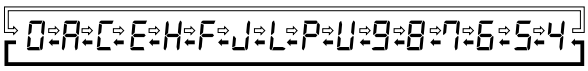
- 3 short beeps; conduct all items of the following procedure.
- 1 short beep; conduct steps 3 and 4. Continue the operation in step 4 until the buzzer sounds continuously.
- Continuous buzzer; indicates the error code is confirmed.

3 Press the MODE button.

Result: The left digit of the error code on display will blink.

4 Press UP/DOWN buttons to change the left digit of the error code.

Result: The left digit changes as indicated below.



⇨ UP button
⇦ DOWN button

5 Continue to change until the matching buzzer sound** is generated.

Result: **Possible buzzer sounds:

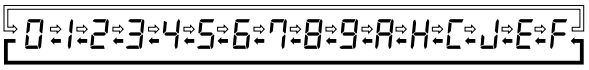
- Continuous buzzer; both digits match with the error code.
- 2 short beeps; left digit matches with the error code.
- 1 short beep; right digit matches with the error code.

6 Press the MODE button.

Result: The right digit of the error code on display will blink.

7 Press UP/DOWN buttons to change the right digit of the error code.

Result: The right digit changes as indicated below.



⇨ UP button
⇦ DOWN button

8 Continue to change until the matching buzzer sound*** is generated.

Result: ***Possible buzzer sounds:

- Continuous buzzer; both digits match with the error code.
- 2 short beeps; left digit matches with the error code.
- 1 short beep; right digit matches with the error code.

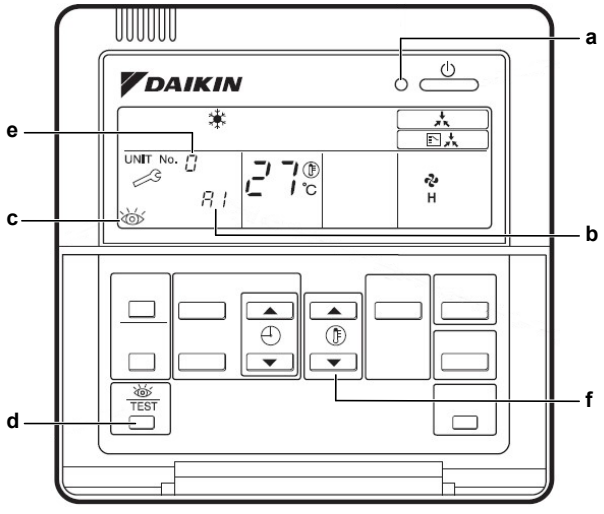
To check the error history

INFORMATION

It is not possible to acces the error history with the wireless controller BRC7.

2.2.6 Via the wired remote control BRC1D

To retrieve the error code



a Remote controller's operation LED
b Error code
c Inspection display

d TEST button
e Unit No.
f Temperature set button

If operation stops due to a malfunction, the remote controller's operation LED will blink and an error code will be displayed.

The error code will stay available at inspection mode even after forced off operation or after the error is reset.

The inspection display and error code blink while an error is active.

To access the error code while in normal operation; follow the procedure below:

1 Press TEST button once.

Result: Error code for corresponding Unit No will be displayed.

2 Press TEST button.

Result: Indoor unit model code will be displayed.

3 Press TEST button.

Result: Outdoor unit model code will be displayed.

4 Press TEST button.

Result: TEST operation will be displayed.

5 Press TEST button for the last time to return to home screen.

Result: The home screen appears.

To check the error history

To check the malfunction history, you will need to access Mode 40 on the BRC1D. Mode 40 stands for malfunction history display.

1 While in home screen, press TEST button for 5 seconds.

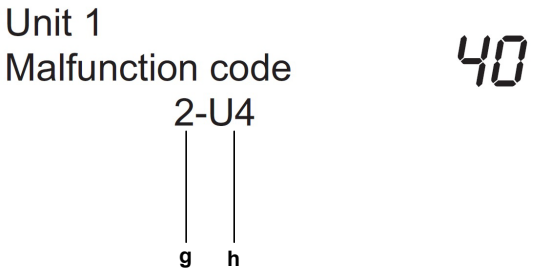
Result: Field settings mode is accessed.

2 While in field settings mode, press TEST button for 5 seconds.

Result: Mode 40 is accessed.

3 Push the temperature set button to change the History No. No 1 stands for the latest error.

Result: The History No. and error code are displayed.



g History No.
h Error code

4 Press TEST button to return to the home screen.

2.3 To activate emergency operation

The table below describes the purpose of the emergency operation.

If…	Then…
Remote controller is defective	Emergency operation can be used to go to cooling or heating. In emergency operation, the compressor is forced to operate until the defective indoor or outdoor unit PCB is back online.
Indoor unit PCB is defective	
Outdoor unit PCB is defective	

Starting conditions

In case the customer strongly needs the heating/cooling operation while waiting for the next service visit, you can manually operate the system by changing the emergency switch on the indoor unit and outdoor unit PCB from "normal" to "emergency". When emergency operation is active, the system CANNOT control the room temperature.

Both the indoor and outdoor unit MUST be set to "emergency" while the power is OFF.

Ending conditions

You can end the emergency operation by changing the emergency switch on the indoor unit and outdoor unit PCB back to "normal" while the power is OFF.

Below table explains what will happen when the emergency switch is set to "emergency":

Changing the emergency switch on the…	Switches ON the…
Indoor unit	▪ Indoor unit fan ▪ Drain pump
Outdoor unit	▪ Compressor ▪ Outdoor unit fan

Activate emergency operation

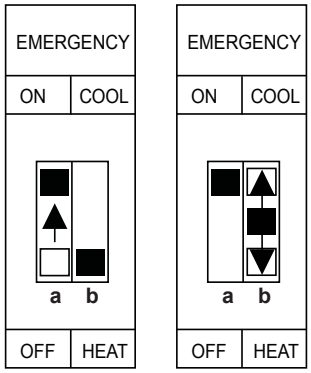
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1 Set the emergency switch on the indoor unit PCB to the "emergency" position, see indoor unit service manual for more information.

2 Set the emergency DIP switch DS1-1 on the outdoor unit PCB to the "ON" position.



a DS1-1
b DS1-2
EMERGENCY Emergency
ON On
OFF Off

COOL Cool
HEAT Heat

3 Set the emergency DIP switch DS1-2 on the outdoor unit PCB to the desired forced operating mode (Cooling or Heating).

4 Turn ON the power using the respective circuit breaker.

5 Turn ON the unit.

Result: The system starts operating in emergency operation.

Active components

Component	Forced cooling	Forced heating	Forced defrost
Compressor	ON	ON	ON
4-way valve	OFF	ON	OFF
Outdoor unit fan	Steady-state control	Steady-state control	OFF
Indoor unit fan	Steady-state control	Steady-state control	OFF
Drain pump	ON	ON	ON

Additional info

- The unit will NOT regulate the temperature during emergency operation.
- During emergency operation, do NOT attempt to operate the system using the remote controller. The remote controller shows "88" while emergency operation is active on the indoor unit.
- If a safety device is activated during emergency operation, all actuators are turned OFF.
- In cooling operation, the unit runs for 20 minutes and then stops for 10 minutes in order to avoid freeze-up of the indoor unit coil.
- In heating operation, defrost is activated for 3 minutes, once every hour.
- Emergency operation CANNOT be carried out when the PCB itself is seriously damaged.
- Make sure to set the emergency switch on both the outdoor and indoor unit PCB.
- Change the position of the emergency switch ONLY when the power is turned OFF.
- When the communication between the indoor unit(s) and outdoor unit is repaired, emergency operation will stop and the system returns to normal operation.

2.4 Error based troubleshooting

2.4.1 E1-00 – Outdoor unit: PCB defect

Trigger	Effect	Reset
Main PCB detects that EEPROM is abnormal.	Unit will stop operating.	Manual reset via user interface.
		Power reset.

To solve the error code

INFORMATION

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

1 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

2 Check if the power supply is conform with the regulations. See "4.1 Electrical circuit" [▸ 135].

Possible cause:
- Faulty or disturbance of the power supply (imbalance >10%),
- Power drop,
- Short circuit.

3 Perform a check of the outdoor unit fan motor. See "3.11 Outdoor unit fan motor" [▸ 107].

Possible cause: Faulty outdoor unit fan motor.

4 Perform a check of the compressor. See "3.2 Compressor" [▸ 56].

Possible cause: Faulty compressor.

Prerequisite: Stop the unit operation via the user interface.

5 Turn OFF the respective circuit breaker.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To check the rectifier voltage" [▸ 135].

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

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

INFORMATION

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

2.4.2 E2-00 – Open circuit on earth leakage detection core

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 "3.9 Main PCB" [▸ 95].

Possible cause: Open circuit on connector X101A.

2 Perform a check of the current sensor. See "3.3 Current sensor" [▸ 65].

Possible cause: Faulty current sensor.

3 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

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

2.4.3 E3-00 – Outdoor unit: Actuation of high pressure switch

Trigger	Effect	Reset
High pressure switch opens due to measured pressure above high pressure switch operating point.	Unit will stop operating.	Manual reset via user interface.
High pressure control (measured pressure just below high pressure switch operating point) occurs 16 times within 300 minutes.		

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 "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Perform a check of the high pressure switch. See "3.6 High pressure switch" [▸ 78].

Possible cause: Faulty high pressure switch.

3 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

4 Check if the refrigerant circuit is correctly charged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Refrigerant overcharge.

5 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "4.2 Refrigerant circuit" [▸ 137].

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

6 Check if the refrigerant circuit is clogged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Clogged refrigerant circuit.

7 Perform a check of the outdoor unit fan motor. See "3.11 Outdoor unit fan motor" [▸ 107].

Possible cause: Faulty outdoor unit fan motor.

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

2.4.4 E4-00 – Abnormal suction pressure

Trigger	Effect	Reset
Refrigerant suction pressure is too low for 5 minutes.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

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

1. Perform a check of the suction pipe thermistor. See "3.15 Thermistors" [▸ 128].

   Possible cause: Faulty suction pipe thermistor or connector fault.

2. Check that all stop valves of the refrigerant circuit are open. See "4.2 Refrigerant circuit" [▸ 137].

   Possible cause: Closed stop valve in the refrigerant circuit.

3. Check if the refrigerant circuit is correctly charged. See "4.2 Refrigerant circuit" [▸ 137].

   Possible cause: Refrigerant shortage.

4. Check for the presence of humidity in the refrigerant circuit. See "4.2 Refrigerant circuit" [▸ 137].

   Possible cause: Humidity in the refrigerant circuit.

5. Check if the refrigerant circuit is clogged. See "4.2 Refrigerant circuit" [▸ 137].

   Possible cause: Clogged refrigerant circuit.

6. Perform a check of all expansion valves. See "3.4 Expansion valve" [▸ 68].

   Possible cause: Faulty expansion valve.

7. Check the required space around the outdoor unit heat exchanger. See "4.3 External factors" [▸ 147].

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

8. Clean the outdoor heat exchanger. See "5 Maintenance" [▸ 149].

   Possible cause: Dirty outdoor heat exchanger.

9. Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

   Possible cause: Faulty main PCB.

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

2.4.5 E5-00 – Outdoor unit: Overheat of inverter compressor motor

Trigger	Effect	Reset
Compressor overload is detected.	Unit will NOT stop operating.	Automatic reset if the unit runs without warning for 60 seconds.

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 "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Perform a check of the discharge pipe thermistor. See "3.15 Thermistors" [▸ 128].

Possible cause: Faulty discharge pipe thermistor or connector fault.

3 Perform a check of the outdoor unit fan motor. See "3.11 Outdoor unit fan motor" [▸ 107].

Possible cause: Faulty outdoor unit fan motor.

4 Perform a check of the compressor. See "3.2 Compressor" [▸ 56].

Possible cause: Faulty compressor.

5 Perform a check of all expansion valves. See "3.4 Expansion valve" [▸ 68].

Possible cause: Faulty expansion valve.

6 Perform a check of the 4-way valve. See "3.1 4-way valve" [▸ 50].

Possible cause: Faulty 4-way valve.

7 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

8 Perform a check of the inverter PCB. See "3.7 Inverter PCB" [▸ 81].

Possible cause: Faulty inverter PCB.

9 Check if the refrigerant circuit is correctly charged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Refrigerant shortage.

10 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "4.2 Refrigerant circuit" [▸ 137].

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

11 Check if the refrigerant circuit is clogged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Clogged refrigerant circuit.

INFORMATION

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

2.4.6 E7-00 – Outdoor unit: Malfunction of outdoor unit fan motor

Trigger	Effect	Reset
Fan does NOT start 15~30 seconds after ON signal. It can occur that the error code is triggered when the fan motor is running caused by a faulty rotating sensor signal.	Unit will NOT stop operating.	Automatic reset after a continuous run.
	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 outdoor unit fan motor. See "3.11 Outdoor unit fan motor" [▸ 107].

Possible cause: Faulty outdoor unit fan motor.

2 Perform a check of the fan inverter PCB. See "3.5 Fan inverter PCB" [▸ 74].

Possible cause: Faulty fan inverter PCB.

INFORMATION

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

2.4.7 E9-00 – Malfunction of electronic expansion valve

Trigger	Effect	Reset
No continuity of the expansion valve.	Unit will stop operating.	Manual reset via user interface.
Minimum expansion valve opening and suction superheat <4 K and discharge superheat <5 K.		Power reset via outdoor unit.

To solve the error code

INFORMATION

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

1 Perform a check of all refrigerant side thermistors. See "3.15 Thermistors" [▸ 128].

Possible cause: Faulty refrigerant side thermistor(s).

2 Perform a check of all expansion valves. See "3.4 Expansion valve" [▸ 68].

Possible cause: Faulty expansion valve.

3 Check that all stop valves of the refrigerant circuit are open. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Closed stop valve in the refrigerant circuit.

4 Check if the refrigerant circuit is clogged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Clogged refrigerant circuit.

5 Check if the refrigerant circuit is correctly charged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Refrigerant overcharge.

6 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "4.2 Refrigerant circuit" [▸ 137].

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

7 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

8 Check if the power supply is conform with the regulations. See "4.1 Electrical circuit" [▸ 135].

Possible cause:
- Faulty or disturbance of the power supply (imbalance >10%),
- Power drop,
- Short circuit.

INFORMATION

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

2.4.8 EA-00 – Cooling/Heating switch abnormality

Trigger	Effect	Reset
Room thermistor is NOT functioning within operation range.	Unit will NOT stop operating.	Automatic reset after a continuous operation for some time.
	If the error occurs too soon: unit will stop operating.	Manual reset via user interface.

To solve the error code

INFORMATION

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

1 Perform a check of the 4-way valve. See "3.1 4-way valve" [▸ 50].

Possible cause: Faulty 4-way valve.

2 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

3 Perform a check of the room thermistor. See service manual of the specific indoor unit.

Possible cause: Faulty room thermistor.

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

Possible cause: Faulty indoor unit PCB.

5 Check that all stop valves of the refrigerant circuit are open. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Closed stop valve in the refrigerant circuit.

6 Check if the refrigerant circuit is clogged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Clogged refrigerant circuit.

7 Check if the refrigerant circuit is correctly charged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Refrigerant overcharge or shortage.

8 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "4.2 Refrigerant circuit" [▸ 137].

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

INFORMATION

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

2.4.9 F3-00 – Outdoor unit: Malfunction of discharge pipe temperature/compressor body thermistor

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

To solve the error code

INFORMATION

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

1 Check that all stop valves of the refrigerant circuit are open. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Check if the refrigerant circuit is correctly charged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Refrigerant overcharge or shortage.

3 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "4.2 Refrigerant circuit" [▸ 137].

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

4 Check if the refrigerant circuit is clogged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Clogged refrigerant circuit.

5 Perform a check of the 4-way valve. See "3.1 4-way valve" [▸ 50].

Possible cause: Faulty 4-way valve.

6 Perform a check of all expansion valves. See "3.4 Expansion valve" [▸ 68].

Possible cause: Faulty expansion valve.

7 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

8 Perform a check of all refrigerant side thermistors. See "3.15 Thermistors" [▸ 128].

Possible cause: Faulty refrigerant side thermistor(s).

INFORMATION

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

2.4.10 H3-00 – Outdoor unit: Malfunction of high pressure switch

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

To solve the error code

INFORMATION

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

1 Perform a check of the high pressure switch. See "3.6 High pressure switch" [▸ 78].

Possible cause: Faulty high pressure switch.

2 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

3 Check if the power supply is conform with the regulations. See "4.1 Electrical circuit" [▸ 135].

Possible cause:
- Faulty or disturbance of the power supply (imbalance >10%),
- Power drop,
- Short circuit.

INFORMATION

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

2.4.11 H4-00 – Low pressure switch abnormality

Trigger	Effect	Reset
When there is no continuity in the low pressure switch during compressor start.	Unit will stop operating.	Automatic reset.

To solve the error code

INFORMATION

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

1 Check that all stop valves of the refrigerant circuit are open. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Check if the refrigerant circuit is correctly charged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Refrigerant shortage.

3 Perform a check of the low pressure switch. See "3.8 Low pressure switch" [▸ 91].

Possible cause: Faulty low pressure switch.

4 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

5 Perform a check of all expansion valves. See "3.4 Expansion valve" [▸ 68].

Possible cause: Faulty expansion valve.

INFORMATION

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

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

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

To solve the error code

INFORMATION

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

1 Perform a check of the outdoor air thermistor. See "3.15 Thermistors" [▸ 128].

Possible cause: Faulty ambient air thermistor.

2 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

INFORMATION

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

2.4.13 J3-00 – Outdoor unit: Malfunction of discharge pipe thermistor/compressor body thermistor

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

To solve the error code

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

1 Perform a check of the discharge pipe thermistor. See "3.15 Thermistors" [▸ 128].

Possible cause: Faulty discharge pipe thermistor or connector fault.

2 Perform a check of the compressor body thermistor. See "3.15 Thermistors" [▸ 128].

Possible cause: Faulty compressor body thermistor or connector fault.

3 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

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

2.4.14 J5-00 – Malfunction of suction pipe thermistor

Trigger	Effect	Reset
Suction pipe thermistor input is out of range range.	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 suction pipe thermistor. See "3.15 Thermistors" [▸ 128].

Possible cause: Faulty suction pipe thermistor or connector fault.

2 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

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

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

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

To solve the error code

INFORMATION

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

1 Perform a check of the heat exchanger thermistor. See "3.15 Thermistors" [▸ 128].

Possible cause: Faulty heat exchanger thermistor.

2 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

INFORMATION

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

2.4.16 J7-00 – Outdoor unit: Intermediate heat exchanger thermistor abnormality

Trigger	Effect	Reset
Heat exchanger (middle) thermistor detects an abnormal value (open or short circuit).	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 heat exchanger (middle) thermistor. See "3.15 Thermistors" [▸ 128].

Possible cause: Faulty heat exchanger (middle) thermistor.

2 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

INFORMATION

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

2.4.17 J8-00 – Malfunction of refrigerant liquid thermistor

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

To solve the error code

INFORMATION

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

1. Perform a check of the refrigerant liquid thermistor. See "3.15 Thermistors" [▸ 128].

   Possible cause: Faulty refrigerant liquid thermistor.

2. Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

   Possible cause: Faulty main PCB.

INFORMATION

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

2.4.18 L1-00 – Outdoor unit: Main PCB abnormality

Trigger	Effect	Reset
Outdoor unit main PCB detects current/voltage errors.	Unit will stop operating.	Manual reset via user interface.
		Power reset.

To solve the error code

INFORMATION

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

1. Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

   Possible cause: Faulty main PCB.

2. Perform a check of the inverter PCB. See "3.7 Inverter PCB" [▸ 81].

   Possible cause: Faulty inverter PCB.

3. Perform a check of the compressor. See "3.2 Compressor" [▸ 56].

   Possible cause: Faulty compressor.

4. Perform a check of all expansion valves. See "3.4 Expansion valve" [▸ 68].

   Possible cause: Faulty expansion valve.

5. Check if the refrigerant circuit is correctly charged. See "4.2 Refrigerant circuit" [▸ 137].

   Possible cause: Refrigerant overcharge or shortage.

6. Perform a check of the outdoor unit fan motor. See "3.11 Outdoor unit fan motor" [▸ 107].

Possible cause: Faulty outdoor unit fan motor.

7 Check if the power supply is conform with the regulations. See "4.1 Electrical circuit" [▸ 135].

Possible cause:
- Faulty or disturbance of the power supply (imbalance >10%),
- Power drop,
- Short circuit.

INFORMATION

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

2.4.19 L4-00 – Inverter radiation fin overheat

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 user interface.

1 Turn OFF the respective circuit breaker.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To check the rectifier voltage" [▸ 135].

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 "3.4 Expansion valve" [▸ 68].

Possible cause: No refrigerant flow through the radiant cooling refrigerant circuit.

5 Perform a check of the liquid cooling expansion valve. See "3.4 Expansion valve" [▸ 68].

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 "3.7 Inverter PCB" [▸ 81].

Possible cause: Faulty inverter PCB.

INFORMATION

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

2.4.20 L5-00 – Outdoor unit: Inverter instantaneous overcurrent

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

To solve the error code

INFORMATION

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

1 Check that all stop valves of the refrigerant circuit are open. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Check if the refrigerant circuit is clogged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Clogged refrigerant circuit.

3 Check if the refrigerant circuit is correctly charged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Refrigerant overcharge or shortage.

4 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "4.2 Refrigerant circuit" [▸ 137].

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

5 Perform a check of the inverter PCB. See "3.7 Inverter PCB" [▸ 81].

Possible cause: Faulty inverter PCB.

6 Perform a check of the compressor. See "3.2 Compressor" [▸ 56].

Possible cause: Faulty compressor.

7 Check if the power supply is conform with the regulations. See "4.1 Electrical circuit" [▸ 135].

Possible cause:
- Faulty or disturbance of the power supply (imbalance >10%),
- Power drop,
- Short circuit.

Prerequisite: Stop the unit operation via the user interface.

8 Turn OFF the respective circuit breaker.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To check the rectifier voltage" [▸ 135].

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

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

INFORMATION

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

2.4.21 L8-00 – Malfunction triggered by a thermal protection in the inverter PCB

Trigger	Effect	Reset
When compressor overload (except during start-up) is detected.	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 "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Check if the refrigerant circuit is clogged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Clogged refrigerant circuit.

3 Check if the refrigerant circuit is correctly charged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Refrigerant overcharge or shortage.

4 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "4.2 Refrigerant circuit" [▸ 137].

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

5 Perform a check of the inverter PCB. See "3.7 Inverter PCB" [▸ 81].

Possible cause: Faulty inverter PCB.

6 Perform a check of the compressor. See "3.2 Compressor" [▸ 56].

Possible cause: Faulty compressor.

INFORMATION

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

2.4.22 L9-00 – Stall prevention time lag

Trigger	Effect	Reset
Outdoor unit inverter PCB detects compressor overload 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 Perform a check of the compressor. See "3.2 Compressor" [▸ 56].

Possible cause: Faulty compressor.

2 Check if the power supply is conform with the regulations. See "4.1 Electrical circuit" [▸ 135].

Possible cause:
- Faulty or disturbance of the power supply (imbalance >10%),
- Power drop,
- Short circuit.

3 Perform a check of the inverter PCB. See "3.7 Inverter PCB" [▸ 81].

Possible cause: Faulty inverter PCB.

4 Check that all stop valves of the refrigerant circuit are open. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Closed stop valve in the refrigerant circuit.

5 Check if the refrigerant circuit is clogged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Clogged refrigerant circuit.

6 Check if the refrigerant circuit is correctly charged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Refrigerant overcharge or shortage.

7 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "4.2 Refrigerant circuit" [▸ 137].

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

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

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

Trigger	Effect	Reset
No transmission between the outdoor unit main PCB and the outdoor unit inverter PCB.	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 "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

2 Perform a check of the inverter PCB. See "3.7 Inverter PCB" [▸ 81].

Possible cause: Faulty inverter PCB.

3 Perform a check of the outdoor unit fan motor. See "3.11 Outdoor unit fan motor" [▸ 107].

Possible cause: Faulty outdoor unit fan motor.

INFORMATION

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

2.4.24 P1-00 – Open phase power supply imbalance

Trigger	Effect	Reset
Outdoor unit inverter PCB detects incorrect power supply.	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 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

2 Perform a check of the inverter PCB. See "3.7 Inverter PCB" [▸ 81].

Possible cause: Faulty inverter PCB.

3 Check if the power supply is conform with the regulations. See "4.1 Electrical circuit" [▸ 135].

Possible cause:
- Faulty or disturbance of the power supply (imbalance >10%),
- Power drop,
- Short circuit.

INFORMATION

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

2.4.25 P4-00 – Outdoor unit: Malfunction of radiating fin temperature sensor

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

To solve the error code

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

1 Perform a check of the inverter PCB. See "3.7 Inverter PCB" [▸ 81].

Possible cause: Faulty inverter PCB.

2 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

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

2.4.26 PJ-00 – Capacity setting mismatch

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

To solve the error code

1 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

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

2.4.27 U0-00 – Outdoor unit: Shortage of refrigerant

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

To solve the error code

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

1 Perform a check of all refrigerant side thermistors. See "3.15 Thermistors" [▸ 128].

Possible cause: Faulty refrigerant side thermistor(s).

2 Check that all stop valves of the refrigerant circuit are open. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Closed stop valve in the refrigerant circuit.

3 Check if the refrigerant circuit is clogged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Clogged refrigerant circuit.

4 Check if the refrigerant circuit is correctly charged. See "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Refrigerant shortage.

5 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "4.2 Refrigerant circuit" [▸ 137].

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

6 Perform a check of the compressor. See "3.2 Compressor" [▸ 56].

Possible cause: Faulty compressor.

7 Perform a check of all expansion valves. See "3.4 Expansion valve" [▸ 68].

Possible cause: Faulty expansion valve.

8 Check for leaks in the refrigerant circuit. Look for oil traces on the unit(s). Check the brazing points on the field piping. Perform a pressure test, see "4.2 Refrigerant circuit" [▸ 137].

Possible cause: Leak in the refrigerant circuit.

INFORMATION

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

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

Trigger	Effect	Reset
Outdoor unit main PCB detects incorrect power supply.	Unit will stop operating.	Power reset via outdoor unit.

To solve the error code

INFORMATION

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

1 Check if the power supply is conform with the regulations. See "4.1 Electrical circuit" [▸ 135].

Possible cause:
- Faulty or disturbance of the power supply (imbalance >10%),
- Power drop,
- Short circuit.

2 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

INFORMATION

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

2.4.29 U2-00 – Outdoor unit: Defect of power supply voltage

Trigger	Effect	Reset
There is no zero-cross detected in approximately 10 seconds (indoor unit PCB).	Unit will stop operating.	Power reset.
Abnormal voltage drop is detected by the DC voltage detection circuit.	Unit will stop operating.	Automatic restart after compressor stand-by of 3 minutes.
Abnormal voltage rise is detected by the overvoltage detection circuit.	Unit will stop operating.	Automatic restart after compressor stand-by of 3 minutes.

To solve the error code

INFORMATION

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

1 Check if the power supply is conform with the regulations. See "4.1 Electrical circuit" [▸ 135].

Possible cause:
- Faulty or disturbance of the power supply (imbalance >10%),
- Power drop,
- Short circuit.

2 Perform a check of the compressor. See "3.2 Compressor" [▸ 56].

Possible cause: Faulty compressor.

3 Perform a check of the outdoor unit fan motor. See "3.11 Outdoor unit fan motor" [▸ 107].

Possible cause: Faulty outdoor unit fan motor.

4 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

5 Perform a check of the inverter PCB. See "3.7 Inverter PCB" [▸ 81].

Possible cause: Faulty inverter PCB.

6 Perform a check of the fan inverter PCB. See "3.5 Fan inverter PCB" [▸ 74].

Possible cause: Faulty fan inverter PCB.

7 Perform a check of the noise filter PCB. See "3.10 Noise filter PCB" [▸ 101].

Possible cause: Faulty noise filter PCB.

8 Wait until the compressor restarts.

Possible cause:
- Momentary drop of voltage,
- Momentary power failure.

INFORMATION

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

2.4.30 U4-00 – Indoor/outdoor unit communication problem

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

To solve the error code

INFORMATION

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

1 Check if the power supply is conform with the regulations. See "4.1 Electrical circuit" [▸ 135].

Possible cause:
- Faulty or disturbance of the power supply (imbalance >10%),
- Power drop,
- Short circuit.

2 Perform a check of the power supply, connections, wiring,... between the outdoor unit and the indoor unit. See "4.1 Electrical circuit" [▸ 135].

Possible cause: Faulty wiring between the outdoor unit and the indoor unit.

3 Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

Possible cause: Faulty main PCB.

4 Perform a check of the outdoor unit fan motor. See "3.11 Outdoor unit fan motor" [▸ 107].

Possible cause: Faulty outdoor unit fan motor.

5 Check that "standby electricity saving mode" is OFF. See installation manual.

Possible cause: "Standby electricity saving mode" is ON, while this mode is ONLY compatible with Split indoor units.

Prerequisite: Stop the unit operation via the user interface.

6 Turn OFF the respective circuit breaker.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To check the rectifier voltage" [▸ 135].

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

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

INFORMATION

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

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

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

To solve the error code

INFORMATION

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

1. Check for improper combination of the indoor unit and the outdoor unit. See the combination table in the Databook for more information.
2. Perform a check of the power supply, connections, wiring,... between the outdoor unit and the indoor unit. See "4.1 Electrical circuit" [▸ 135].

   Possible cause: Faulty wiring between the outdoor unit and the indoor unit.
3. Perform a check of the main PCB. See "3.9 Main PCB" [▸ 95].

   Possible cause: Faulty main PCB.
4. Check that "standby electricity saving mode" is OFF. See installation manual.

   Possible cause: "Standby electricity saving mode" is ON, while this mode is ONLY compatible with Split indoor units.

INFORMATION

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

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

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

To solve the error code

INFORMATION

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

1. Check that all stop valves of the refrigerant circuit are open. See "4.2 Refrigerant circuit" [▸ 137].

   Possible cause: Closed stop valve in the refrigerant circuit.
2. Check that the piping and wiring connections of the system are correctly installed. See "6.3 Piping diagram" [▸ 156] and "6.2 Wiring diagram" [▸ 151].

   Possible cause: Piping and/or wiring mismatch.

INFORMATION

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

2.4.33 Indoor unit related error codes

Error code	Description
A0-11	Detection of refrigerant leak
A1-01	Indoor unit PCB abnormality
A3-00	Drain water level system abnormality
A6-00	Indoor unit fan motor abnormality
AJ-00	Capacity setting abnormality
C1-00	Transmission error (indoor and adaptor PCB)
C4-00	Indoor heat exchanger thermistor abnormality
C5-00	Intermediate heat exchanger thermistor abnormality
C9-00	Suction thermistor abnormality
CC-00	Humidity sensor system abnormality
CH-01	Refrigerant leakage sensor abnormality
CJ-00	Remote controller thermistor abnormality

2.5 Symptom based troubleshooting

2.5.1 Operation does not start

Check	Detail
When the operation lamp is off, there is a power failure. Check the power supply.	▪ Is the power supply breaker ON? ▪ Do other electrical appliances work? ▪ Is the rated voltage (± 10%) supplied? ▪ Check the insulation of the electric system.
Check the type of the indoor unit.	Is the indoor unit type compatible with the outdoor unit?
Check the transmission between indoor and outdoor.	▪ Connection wires.
Check the outdoor air thermistor.	▪ Check the resistance of the outdoor air thermistor. ▪ Check the connection of the outdoor air thermistor.
When the operation lamp blinks, there may be an error code, activating the protection device. Diagnose with remote controller indication.	See "2.4 Error based troubleshooting" [▸ 18].
Check the operation circuit.	▪ Is the thermal fuse blown. ▪ Are wire size and wire connections OK?.
Check fan motor.	▪ Is the magnetic switch defective? ▪ Is the overcurrent relay defective?
Check compressor.	▪ Is the contact defective? ▪ Is the protection thermostat defective? ▪ Is the compressor itself defective?

2.5.2 Operation sometimes stops

Check	Detail
When the operation lamp is off, there is a power failure. Check the power supply.	▪ A power failure of 2 to 10 cycles stops air conditioner operation.
Check the outdoor air thermistor.	▪ Check the resistance of the outdoor air thermistor. ▪ Check the connection of the outdoor air thermistor.

Check	Detail
When the operation lamp blinks, there may be an error code, activating the protection device. Diagnose with remote controller indication.	See "2.4 Error based troubleshooting" [▶ 18].

2.5.3 Operation starts but the unit does not cool/heat

Check	Detail
Check the electrical power supply.	Is the rated voltage (± 10%) supplied?
Check for piping and wiring errors in the connection between the indoor unit and outdoor unit.	▪ Refrigerant piping is too long; is the length within specified range? ▪ Field piping is defective; is there a refrigerant leakage? ▪ Is there capacity loss over the condensor, saturation pressure or sound because of air mixed in to the circuit? ▪ Incorrect size of connection wiring.
When the operation lamp blinks, there may be a thermistor detection error code, activating the protection device.	▪ Check the resistance of all thermistors. ▪ Check the connection of all thermistors. ▪ Is there a malfunction in the room temperature thermistor or outdoor temperature thermistor?
Check for faulty operation of the electronic expansion valve.	Set the unit to cooling operation, and check the temperature of the liquid pipe to see if the electronic expansion valve works.
Diagnose by service port pressure and operating current.	Check for refrigerant shortage.
Check if the set temperature is appropriate.	thermostat "off" can be activated, set the appropriate temperature.
Check the type of the indoor and outdoor units.	Is the indoor unit type compatible with the outdoor unit?
Check the air filter.	Is the air filter clean?
Check the installation conditions (specified in the installation manual).	▪ Does the installed model has sufficient capacity? ▪ Is there a short circuit air flow caused by insufficient installation space?

Check	Detail
Check the internal leakage of the 4-way valve	▪ After compressor running for 10 minutes, is there a temperature difference between the suction pipe and the discharge pipe? ▪ Is the pressure difference between the internal service port (small) and the gas pipe service port sufficient (>0.3MPa)?

2.5.4 Operating noise and vibrations

Check	Detail
Check the installation conditions (specified in the installation manual).	▪ Use general vibration prevention where needed. ▪ If the mounting wall is too thin, you must use cushion material or rubber, or change the installation place. ▪ Refrigerant piping is too short; is the length within specified range? ▪ Due to bad installation or general conditions there may be deformation of the unit. ▪ Are all the screws installed and tightened properly? ▪ Is all piping secured, fixed and supported by inserting a cushion material where needed? ▪ Install piping weights or correct by hand if any piping is in contact with other parts. ▪ Is the fan in contact with other parts? If so separate the fan from the other parts.
Check refrigerant charge.	▪ Is the unit filled with the specified refrigerant volume? ▪ Is there a flushing noise, due to refrigerant shortage? ▪ Is there air in the system?
Check the expansion valve.	If a passing sound is heard from the pressure reducing valve, apply sound insulation sheets of putty to reduce the valve noise.

2.5.5 Abnormal high pressure

In cooling mode

Check item	Detail
Does the outdoor unit fan run normally?	Visual inspection
Is the outdoor unit heat exchanger clogged?	Visual inspection
Is there clogging before or after the expansion valve (capillary)?	▪ Check if there is a temperature difference before and after expansion valve (capillary). ▪ Check if the main valve unit of expansion valve operates (by noise, vibration).
Is the High Pressure Switch normal?	Check continuity by using a tester.
Is the outdoor unit installed under such conditions that short circuit easily occurs?	Visual inspection
Is the minimum piping length respected?	Visual inspection
Does air enter the refrigerant system?	Conduct refrigerant collection and vacuum drying, and then add proper amount refrigerant.
Is the refrigerant overcharged?	Conduct refrigerant collection and vacuum drying, and then add proper amount refrigerant.

In heating mode

Check item	Detail
Does the indoor unit fan run normally?	Visual inspection
Is the indoor unit heat exchanger clogged?	Visual inspection
Is the indoor unit installed under such conditions that short circuit easily occurs?	Visual inspection
Is there clogging before or after the expansion valve (capillary)?	▪ Check if there is a temperature difference before and after expansion valve (capillary). ▪ Check if the main valve unit of expansion valve operates (by noise, vibration).
Is the High Presure Switch normal?	Check continuity by using a tester.
Is the minimum piping length respected?	Visual inspection
Does air enter the refrigerant system?	Conduct refrigerant collection and vacuum drying, and then add proper amount refrigerant.

Check item	Detail
Is the refrigerant overcharged?	Conduct refrigerant collection and vacuum drying, and then add proper amount refrigerant.

2.5.6 Abnormal low pressure

Abnormally low pressure level is mostly caused by the evaporator side. The following contents are provided based on field checking of service engineer. Further, the number is listed in the order of degree of influence.

In cooling mode

Check item	Detail
Does the indoor unit fan run normally?	Visual inspection
Is the indoor unit heat exchanger clogged?	Visual inspection
Is the indoor unit installed under such conditions that short circuit easily occurs?	Visual inspection
Is there clogging before or after the expansion valve (capillary)?	▪ Check if there is a temperature difference before and after expansion valve (capillary). ▪ Check if the main valve unit of expansion valve operates (by noise, vibration).
Is the check valve (if applicable) clogged?	Check if there is a temperature difference before and after check valve. If YES, the check valve is clogged.
Is there a shortage of refrigerant?	Conduct refrigerant collection and vacuum drying, and then add proper amount refrigerant.

In heating mode

Check item	Detail
Does the outdoor unit fan run normally?	Visual inspection
Is the outdoor unit heat exchanger clogged?	Visual inspection
Is there clogging before or after the expansion valve (capillary)?	▪ Check if there is a temperature difference before and after expansion valve (capillary). ▪ Check if the main valve unit of expansion valve operates (by noise, vibration).
Is the check valve (if applicable) clogged?	Check if there is a temperature difference before and after check valve. If YES, the check valve is clogged.

Check item	Detail
Is the outdoor unit installed under such conditions that short circuit easily occurs?	Visual inspection
Is there a shortage of refrigerant?	Conduct refrigerant collection and vacuum drying, and then add proper amount refrigerant.

2.5.7 Indoor fan starts operating but the compressor does not operate

Check	Detail
Check the power supply.	▪ Is the rated voltage (± 10%) supplied? ▪ Check the insulation of the electric system.
Check the thermistor.	▪ Connection witch PCB. ▪ Output.
Check PCB's HAP LED's (if applicable).	▪ if green led on the control PCB is not blinking, then the microprocessor is not working. ▪ if the green led on the main PCB is not blinking, then the microprocessor is not working. ▪ if first green LED on the service monitor PCB is not blinking, then the microprocessor is not working.
Check the magnetic switch.	
Check the power transistor.	
Check the compressor.	▪ Defective contact. ▪ Defective compressor. ▪ Defective protection thermostat.
Check the outdoor temperature.	▪ Heating operation cannot be used when the outdoor temperature is 18°C WB or higher. ▪ Cooling operation cannot be used when the outdoor temperature is below –10°C DB.

2.5.8 Operation starts and the unit stops immediately

Check	Detail
Check the power supply.	▪ Is the capacity of the safety breaker as specified? ▪ If the earth leakage breaker is too sensitive, then increase the set value of the earth leakage current of the breaker or replace the breaker. ▪ Is the circuit exclusive? ▪ Is the rated voltage (± 10%) supplied? ▪ Is there an incorrect size of connection wiring?
Check the refrigerant charge.	▪ Overcharge. ▪ Air in the system. ▪ Water in the system.
Check the fan motor.	▪ Check the magnetic switch. ▪ Check the overcurrent relay.
Check the four way valve coil.	▪ Is there a short circuit? ▪ Is the four way valve coil broken?
Check the outdoor PCB.	▪ Is there a short circuit? ▪ Is the outdoor PCB broken?
Check the heat exchanger.	Soiled heat exchanger, obstruction.
Check the airflow.	Soiled air filter, obstruction, installation space.

2.5.9 Operation stops, unit cannot start for a while

Check	Detail
Check if standby function is activated.	▪ Compressor delay timer is counting. ▪ Wait for minimum 3 minutes.
Check the power supply.	▪ Low voltage? ▪ Is the size of the power cable sufficient?
Check the refrigerant charge.	▪ Incorrect charge. ▪ Air in the system. ▪ Water in the system. ▪ Obstruction in the system.
Check compressor.	▪ Overcurrent relay. ▪ Protection thermostat.

2.5.10 Unit discharges white mist

Check	Detail
Check installation conditions.	▪ Humid site. ▪ Dirty site. ▪ Oil mist.
Check installation conditions.	Dirty heat exchanger.
Air filter.	Dirty air filter.
Fan motor.	Defective fan motor.

3 Components

3.1 4-way valve

3.1.1 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 user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

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 4-way valve coil firmly fixed and not visually damaged?	Action
Yes	Perform an electrical check of the 4-way valve, see "3.1.1 Checking procedures" [▸ 50].
No	Fix or replace the 4-way valve coil, see "3.1.2 Repair procedures" [▸ 53].

To perform an electrical check of the 4-way valve

Prerequisite: First perform a mechanical check of the 4-way valve, see "3.1.1 Checking procedures" [▸ 50].

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

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

Is the measured value correct?	Action
Yes	Continue with the next step.
No	Replace the 4-way valve coil, see "3.1.2 Repair procedures" [▸ 53].

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.

3. Connect the 4-way valve connector to the appropriate PCB.
4. Turn ON the power using the respective circuit breaker.
5. Activate `Heating` operation via the user interface.

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 230 V AC.

7 De-activate **Heating** and activate **Cooling** operation via the user interface.

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

Result: The measured voltage MUST be 0 V AC.

Are the measured voltages correct?	Action
Yes	Perform a position check of the 4-way valve, see "3.1.1 Checking procedures" [▸ 50].
No	Perform a check the main PCB, see "3.9 Main PCB" [▸ 95].

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.

9 Connect the 4-way valve connector to the appropriate PCB.

10 Turn ON the power using the respective circuit breaker.

11 With the unit operating, connect the service monitoring tool to the unit and check whether the unit is operating in **Heating** or **Cooling** mode.

12 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 when operating in **Heating** mode
- 0 V AC when operating in **Cooling** mode

Is the measured voltage correct?	Action
Yes	Perform a position check of the 4-way valve, see "3.1.1 Checking procedures" [▸ 50].
No	Perform a check the main PCB, see "3.9 Main PCB" [▸ 95].

To perform a position check of the 4-way valve

1 First perform an electrical check of the 4-way valve, see "3.1.1 Checking procedures" [▸ 50].

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.

2 Activate **Heating** operation via the 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.

3 Check with a contact thermometer (or by touching) if the flow through the 4-way valve corresponds with the flow shown in the flow diagram. (See "6.3 Piping diagram" [▸ 156]).

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

4 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 "3.1.2 Repair procedures" [▸ 53].
No	Leaks may be found in the refrigerant circuit. Perform a pressure test of the refrigerant circuit, see "4.2.1 Checking procedures" [▸ 137].

5 De-activate `Heating` and activate `Cooling` operation via the user interface.

6 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 "6.3 Piping diagram" [▸ 156]).

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 "3.1.2 Repair procedures" [▸ 53].

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.

7 With the unit operating, connect the service monitoring tool to the unit and check whether the unit is operating in `Heating` or `Cooling` mode.

8 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 "6.3 Piping diagram" [▸ 156]).

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.

9 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 "3.1.2 Repair procedures" [▸ 53].
No	Leaks may be found in the refrigerant circuit. Perform a pressure test of the refrigerant circuit, see "4.2.1 Checking procedures" [▸ 137].

3.1.2 Repair procedures

To remove the 4-way valve coil

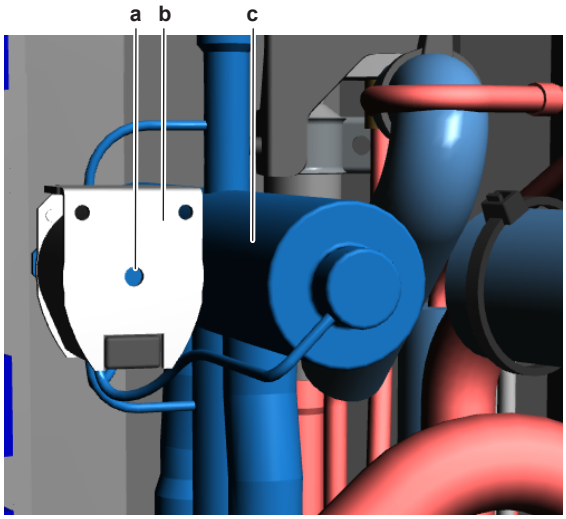
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

Prerequisite: If needed, remove any parts to create more space for the removal of the 4-way valve coil.

1 Remove the screw and remove the 4-way valve coil from the 4-way valve body.



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

2 Cut all tie straps that fix the 4-way valve coil harness.

3 Disconnect the 4-way valve coil connector from the appropriate PCB.

4 To install the 4-way valve coil, see "3.1.2 Repair procedures" [▸ 53].

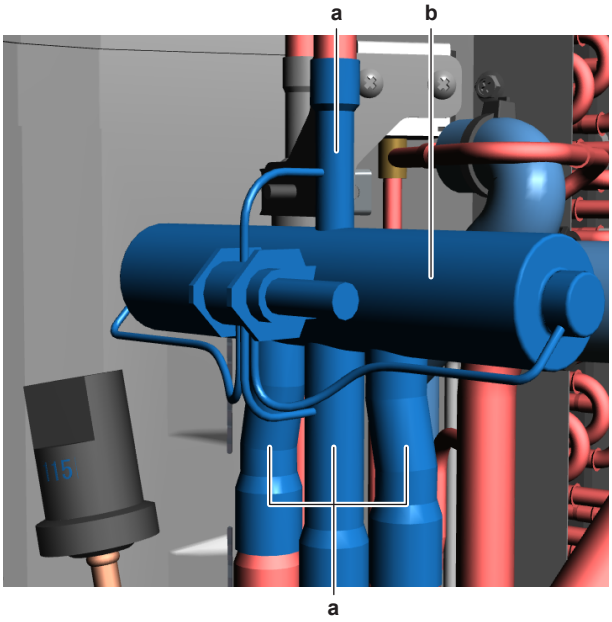
To remove the 4-way valve body

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "4.2.2 Repair procedures" [▸ 142].

1 Remove the 4-way valve coil from the 4-way valve body, see "3.1.2 Repair procedures" [▸ 53].

2 Cut the 4-way valve pipes using a pipe cutter.

> **INFORMATION**
>
> The cutting locations of the 4-way valve pipes can differ due to the pipe cutter needing sufficient space to go around the pipes. It is up to the technician to define the best cutting locations. If any refrigerant pipes are cut, these need to be replaced during installation of the 4-way valve body.



a 4-way valve pipe
b 4-way valve

3 Remove the 4-way valve.

4 Keep the putty (if installed) and the insulation (if installed) for re-use.

5 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

6 Heat the ends of the 4-way valve pipes using an oxygen acetylene torch and remove the expansion valve pipe ends.

7 Stop the nitrogen supply when the piping has cooled down.

8 To install the 4-way valve body, see "3.1.2 Repair procedures" [▸ 53].

To install the 4-way valve body

1 Install the 4-way valve in the correct location.

> **INFORMATION**
>
> If any refrigerant pipes were cut during removal of the 4-way valve body, ALWAYS install new pipes.

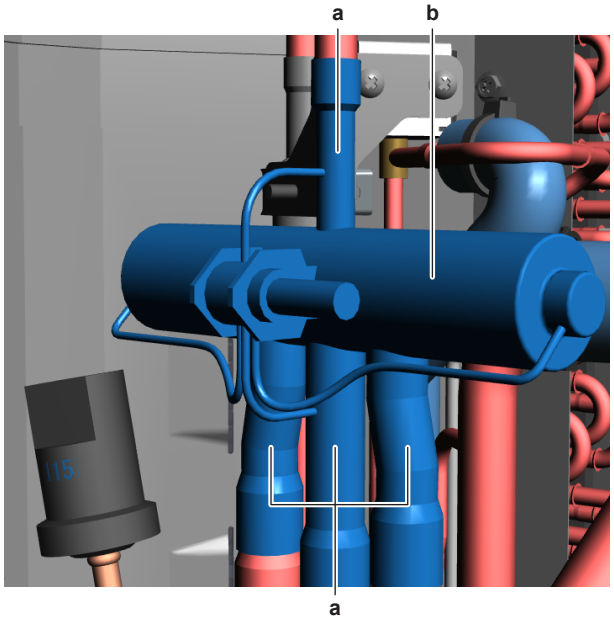
2 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

3 Wrap a wet rag around the 4-way valve and solder the 4-way valve pipes to the 4-way valve.

CAUTION

Overheating the valve will damage or destroy it.

4 After soldering is done, stop the nitrogen supply after the component has cooled-down.



a 4-way valve pipe
b 4-way valve

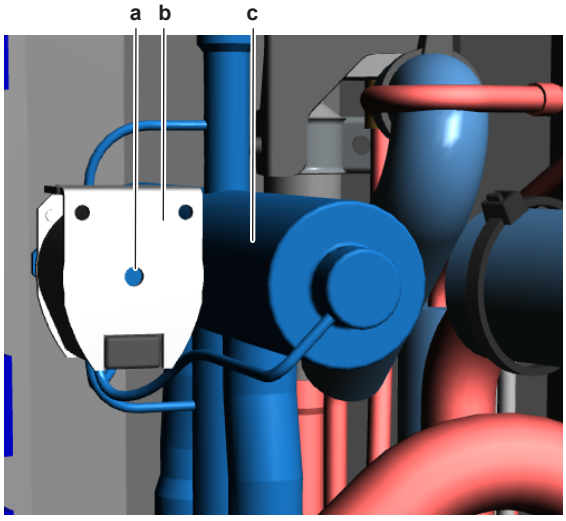
5 Install the putty (if available) and the insulation (if available) in their original location.

6 Install the 4-way valve coil on the 4-way valve body, see "3.1.2 Repair procedures" [▸ 53].

7 Add refrigerant to the refrigerant circuit, see "4.2.2 Repair procedures" [▸ 142].

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 coil connector to the PCB.

WARNING

When reconnecting a connector to the PCB, 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.

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.

3.2 Compressor

3.2.1 Checking procedures

INFORMATION

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

To perform an auditive check of the compressor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1 Open the compressor insulation.

2 Turn ON the power using the respective circuit breaker.

3 Start the unit operation via the user interface.

4 Listen to the compressor when it tries to operate. Judge if a mechanical lock is present.

INFORMATION

If a mechanical lock is present, also check for the root cause of impurities in the refrigerant causing mechanical lock of the compressor. See "4.2.1 Checking procedures" [▸ 137].

A mechanical lock is present on the compressor?	Action
Yes	Replace the compressor, see "3.2.2 Repair procedures" [▸ 61].
No	Perform an mechanical check of the compressor, see "3.2.1 Checking procedures" [▸ 56].

To perform a mechanical check of the compressor

Prerequisite: First perform an auditive check of the compressor, see "3.2.1 Checking procedures" [▸ 56].

Prerequisite: Stop the unit operation via the user interface.

1 Turn OFF the respective circuit breaker.

2 Check the compressor dampers and piping for any damage.

1 Damper

INFORMATION

The compressor dampers may look different.

Compressor dampers and piping are in a good condition?	Action
Yes	Perform an electrical check of the compressor, see "3.2.1 Checking procedures" [▸ 56].
No	Replace the compressor, see "3.2.2 Repair procedures" [▸ 61].

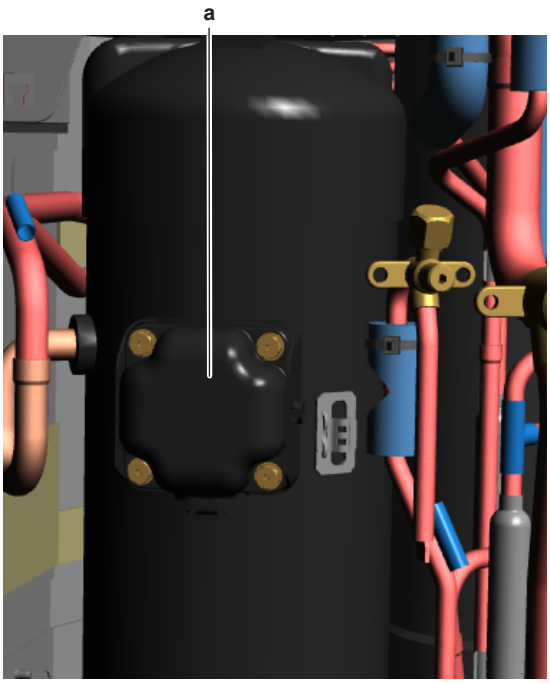
To perform an electrical check of the compressor

1 First perform a mechanical check of the compressor, see "3.2.1 Checking procedures" [▸ 56].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To check the rectifier voltage" [▸ 135].

2 Remove the cover of the compressor wire terminals.

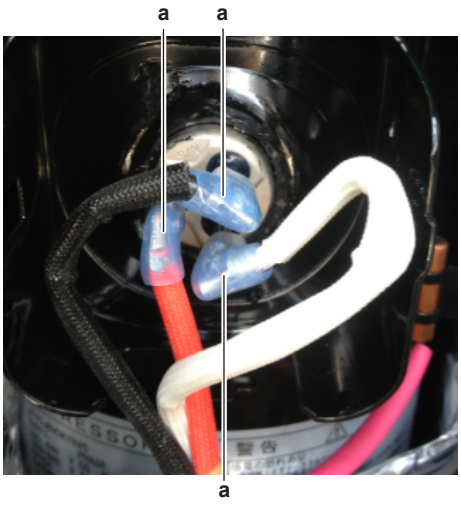


a Compressor wire terminals cover

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

INFORMATION

Note the position of the Faston connectors on the compressor wire terminals to allow correct connection during installation.



a Faston connector

CAUTION

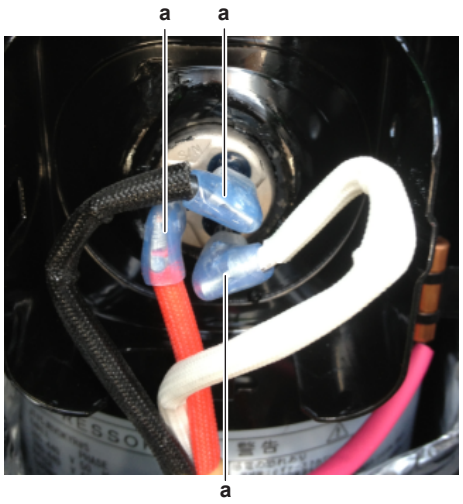
Before measuring the compressor motor windings resistance, measure the resistance of the multimeter probes by holding the probes against each other. If the measured resistance is NOT 0 Ω, this value MUST be substracted from the measured winding resistance.

4 Measure the resistance between the compressor motor windings U-V, V-W and U-W.

Result: All measurements MUST be 0.9±10% Ω and equal.

Compressor motor winding measurements are correct?	Action
Yes	Continue with the next step.
No	Replace the compressor, see "3.2.2 Repair procedures" [▸ 61].

5 Connect the Faston connectors to the compressor wire terminals U, V and W



a Faston connector

6 Install the compressor insulation.

7 Turn ON the power using the respective circuit breaker.

8 Start the unit operation via the user interface.

9 Once the compressor operates, measure the U-V-W inverter voltages. All measurements MUST be the same.

Inverter voltage measurements are correct?	Action
Yes	Continue with the next step.
No	Replace the inverter PCB, see "3.7 Inverter PCB" [▸ 81].

10 Measure the current in each phase U-V, V-W and U-W. All measurements MUST be the same.

Compressor motor winding current measurements are correct?	Action
Yes	Perform an insulation check of the compressor, see "3.2.1 Checking procedures" [▸ 56].
No	Preventively replace the compressor, see "3.2.2 Repair procedures" [▸ 61].

To perform an insulation check of the compressor

Prerequisite: First perform an electrical check of the compressor, see "3.2.1 Checking procedures" [▸ 56].

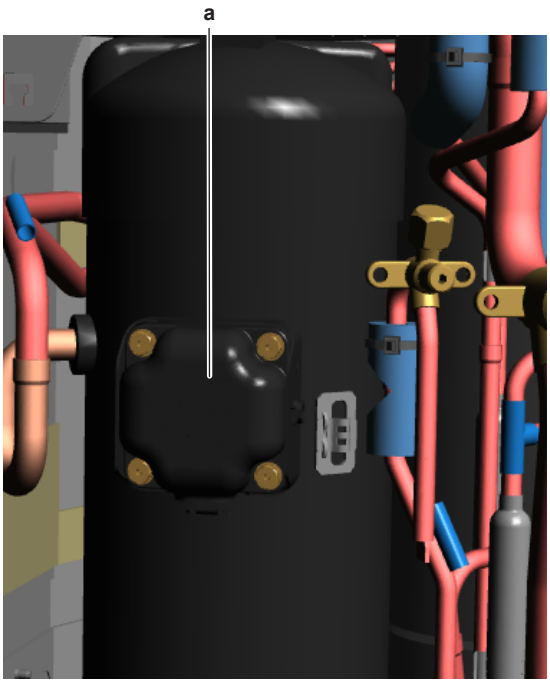
Prerequisite: Stop the unit operation via the user interface.

1 Turn OFF the respective circuit breaker.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To check the rectifier voltage" [▶ 135].

2 Remove the cover of the compressor wire terminals.

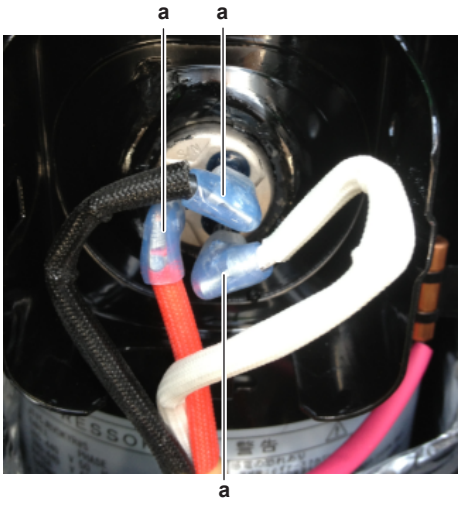


a Compressor wire terminals cover

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

INFORMATION

Note the position of the Faston connectors on the compressor wire terminals to allow correct connection during installation.



a Faston connector

4 Set the Megger voltage to 500 V DC or 1000 V DC.

5 Measure the insulation resistance between the following terminals. The measured insulation resistance MUST be >3 MΩ.

- U–ground,
- V–ground,
- W–ground.

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 "3.2.2 Repair procedures" [▸ 61].

3.2.2 Repair procedures

To remove the compressor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

Prerequisite: Remove the compressor insulation.

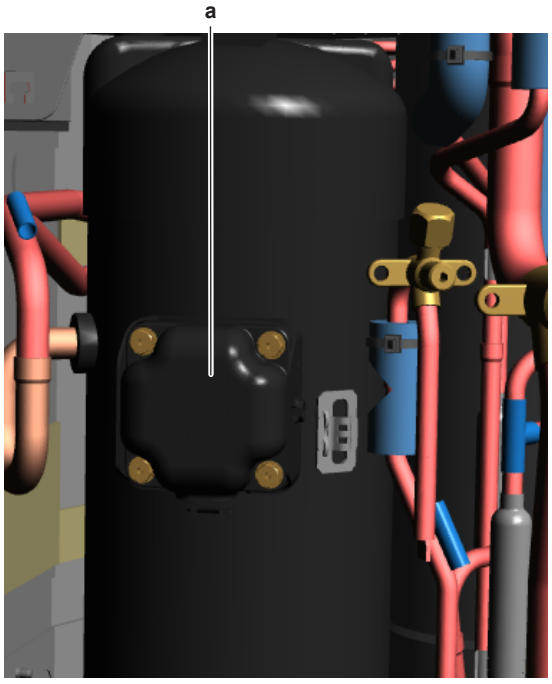
Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "4.2.2 Repair procedures" [▸ 142].

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 check the rectifier voltage" [▸ 135].

2 Remove the cover of the compressor wire terminals.

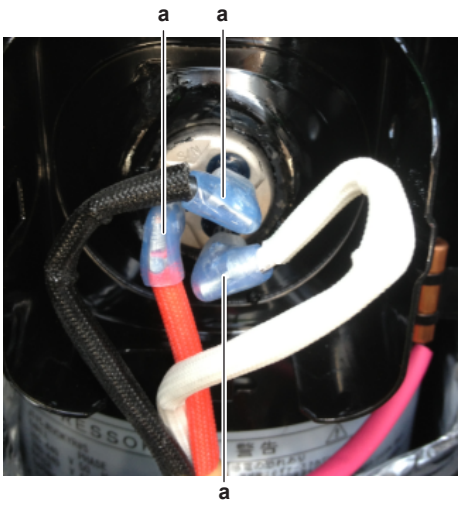


a Compressor wire terminals cover

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

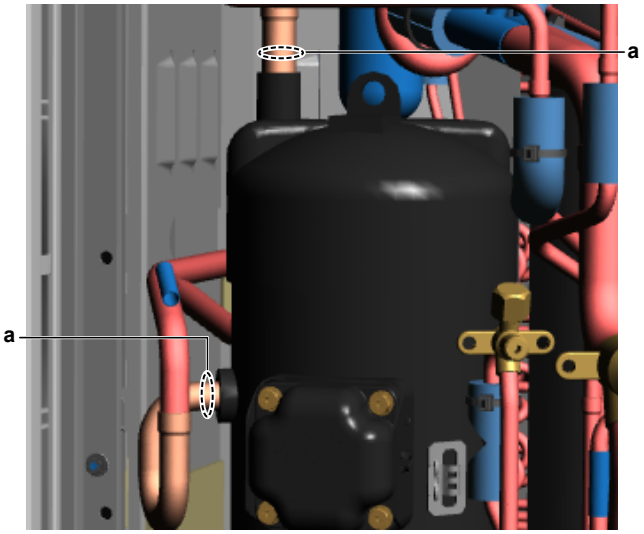
INFORMATION

Note the position of the Faston connectors on the compressor wire terminals to allow correct connection during installation.



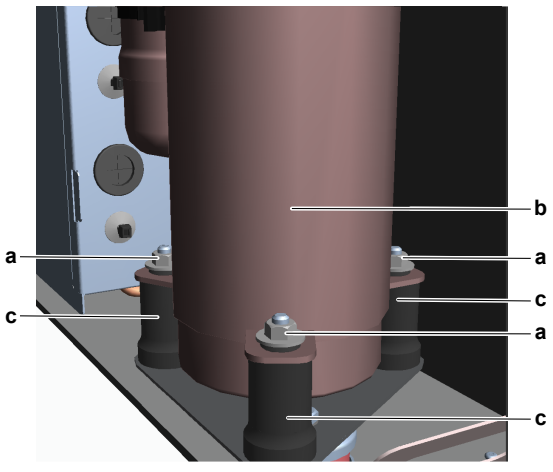
a Faston connector

4 Cut the compressor pipes (below the soldered joint) using a pipe cutter.



a Compressor pipe

5 Remove the all the nuts and remove the compressor from the unit.



a Nut
b Compressor
c Damper

6 Remove the 3 dampers from the compressor.

> **INFORMATION**
>
> The compressor dampers may look different.

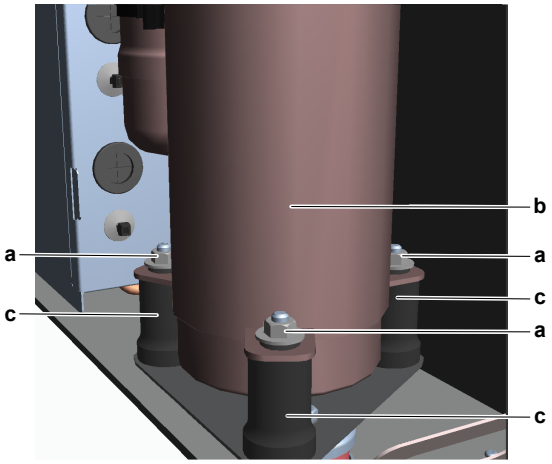
7 Remove the bushings and keep them for re-use.

8 To install the compressor, see "3.2.2 Repair procedures" [▸ 61].

To install the compressor

1 Check the state of the dampers. Replace if worn.

2 Install the 3 dampers in the correct location on the unit.



a Nut
b Compressor
c Damper

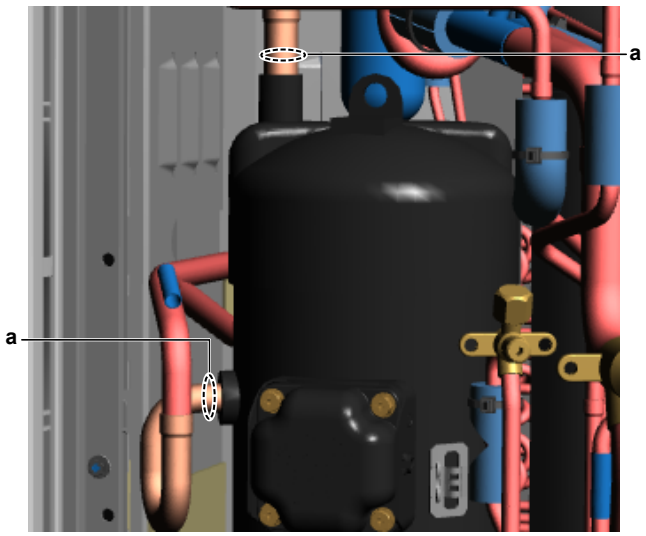
> **INFORMATION**
>
> The compressor dampers may look different.

3 Remove the caps from the compression pipe and suction pipe.

> **CAUTION**
>
> The oil in the compressor is hygroscopic. Therefore remove the caps from the compressor pipes as late as possible.

4 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

5 Wrap a wet rag around the compressor pipes and solder the compressor pipes to the refrigerant pipes.



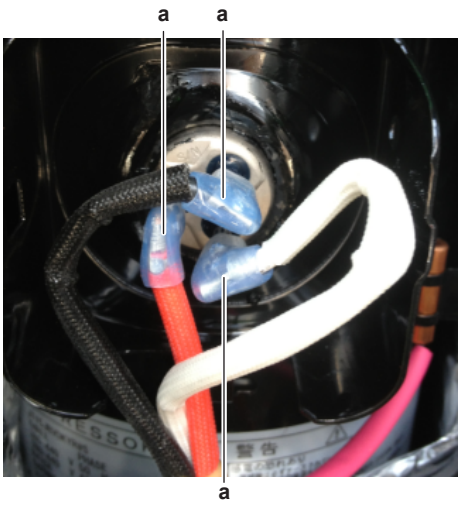
a Compressor pipe

CAUTION

Overheating the compressor pipes (and the oil inside the compressor pipes) will damage or destroy the compressor.

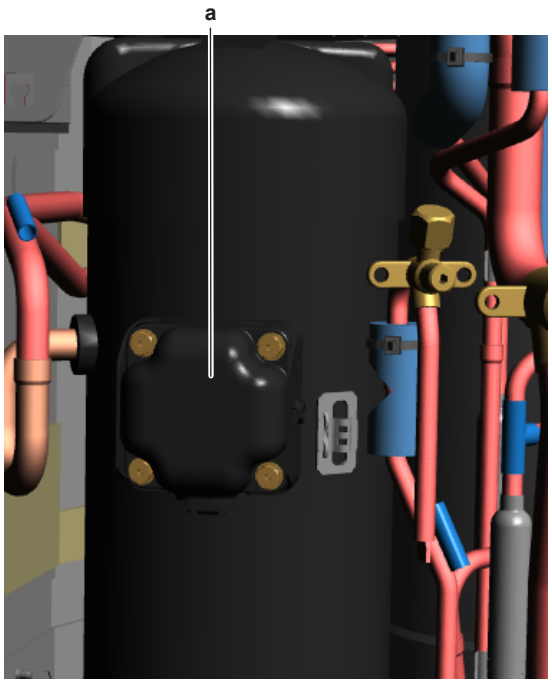
6 After soldering is done, stop the nitrogen supply after the component has cooled-down.

7 Connect the Faston connectors to the compressor wire terminals U, V and W



a Faston connector

8 Install the cover of the compressor wire terminals.



a Compressor wire terminals cover

9 Add refrigerant to the refrigerant circuit, see "4.2.2 Repair procedures" [▸ 142].

10 Install the compressor insulation, see "3.2.2 Repair procedures" [▸ 61].

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.

3.3 Current sensor

3.3.1 Checking procedures

To perform an electrical check of the current sensor

Prerequisite: Stop the unit operation via the user interface.

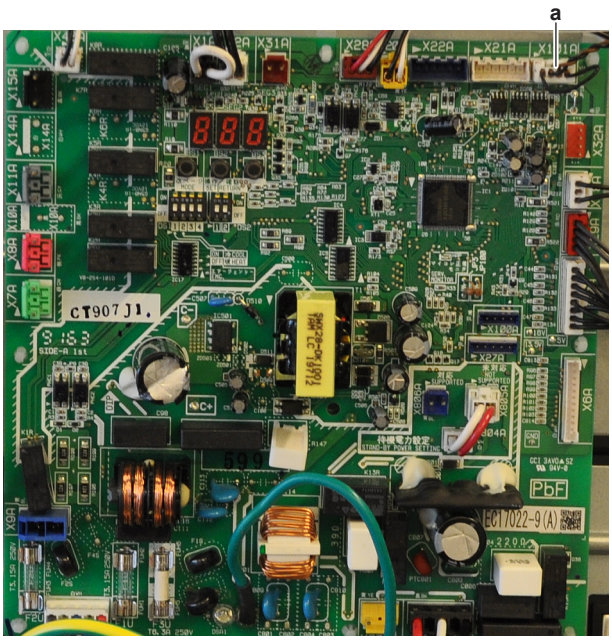
Prerequisite: Turn OFF the respective circuit breaker.

1 Remove the required plate work, see "3.12 Plate work" [▸ 111].

2 Locate the current sensor connector on the main PCB, see "6.2 Wiring diagram" [▸ 151].

3 Check that pins 1 and 4 on connector X101A are bridged.

Result: If the pins are NOT bridged, install the bridge.



a Connector X101A

4 Check the wiring from pins 2 and 3 of 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 pins 2 and 3 of the current sensor connector.

Result: The measured value MUST be 45~50 Ω.

Is the measured resistance correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the current sensor, see "3.3.2 Repair procedures" [▸ 66].

3.3.2 Repair procedures

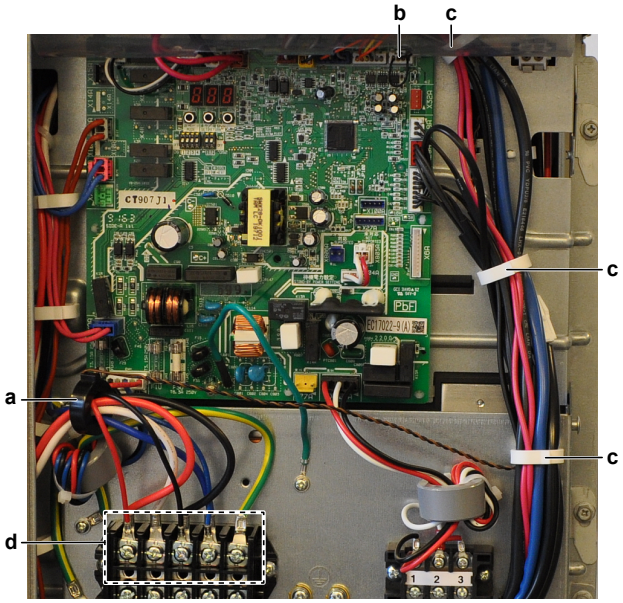
To remove the current sensor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1 Disconnect the current sensor connector from the connector X101A on the main PCB.



a Current sensor
b Connector X101A
c Tie wrap
d Screw connections

2 Remove the current sensor wiring harness from the tie wraps.

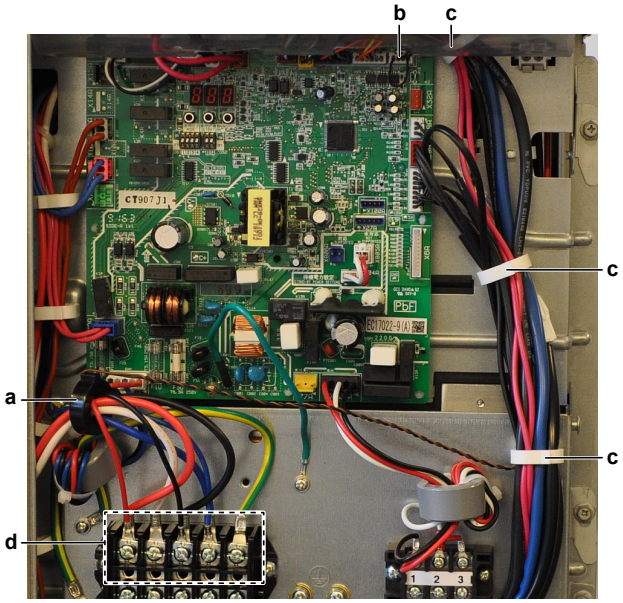
3 Loosen the screw connections to disconnect the power wiring.

4 Slide the current sensor on the power wiring and remove the current sensor.

5 To install the current sensor, see "3.3.2 Repair procedures" [▸ 66].

To install the current sensor

1 Slide the current sensor on the power wiring and install the current sensor in place.



a Current sensor
b Connector X101A
c Tie wrap
d Screw connections

2 Install the power wiring in the connections and fasten the screws.

3 Route the current sensor wiring inside the tie wraps.

4 Connect the current sensor wiring harness to the connector X101A on the main PCB.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

3.4 Expansion valve

3.4.1 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 "3.4.1 Checking procedures" [▸ 68].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1 Remove the expansion valve coil from the expansion valve body, see "3.4.2 Repair procedures" [▸ 70].

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 firmly slid onto the expansion valve body.

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.

Does the expansion valve open?	Action
Yes	Perform an electrical check of the expansion valve, see "3.4.1 Checking procedures" [▸ 68].
No	Replace the expansion valve body, see "3.4.2 Repair procedures" [▸ 70].

To perform an electrical check of the expansion valve

1 First perform a mechanical check of the expansion valve, see "3.4.1 Checking procedures" [▸ 68].

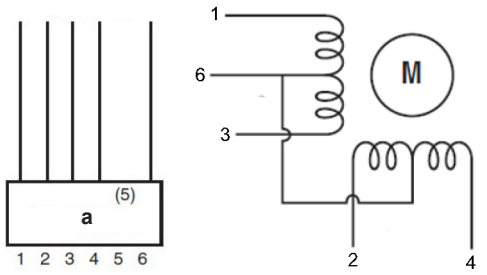
2 Disconnect the electrical connector of the expansion valve coil from the appropriate PCB and measure the resistance of all windings (between the pins of each phase (wire) and the common wire) using a multi meter. All measurements MUST be approximately the same.

Name	Symbol	Location (PCB)	Connector	Winding resistance
Main expansion valve	Y1E	Main	X21A	46±3 Ω
Injection expansion valve	Y2E	Main	X22A	46±3 Ω

INFORMATION

Below is an example of the resistance measurements in which the common wire is connected to pin 6 of the expansion valve motor connector. Connections may differ according to the type of expansion valve.

- Connector pin 1-6,
- Connector pin 2-6,
- Connector pin 3-6,
- Connector pin 4-6.



a Connector

Is the measured resistance correct?	Action
Yes	Perform an operation check of the expansion valve, see "3.4.1 Checking procedures" [▸ 68].
No	Replace the expansion valve coil, "3.4.2 Repair procedures" [▸ 70].

To perform an operation check of the expansion valve

Prerequisite: First perform an electrical check of the expansion valve, see "3.4.1 Checking procedures" [▸ 68].

1 Turn ON the power of the unit.

INFORMATION

When power is switched ON, PCB checks all expansion valve coil windings by current check. If winding is short or open, expansion valve error is triggered.

2 Start the unit operation via the user interface.

3 With the unit operating, connect the service monitoring tool to the unit.

4 When the expansion valve is closed, check the valve inlet and outlet for any leaks. Replace the valve body if any leaks are found, see "3.4.2 Repair procedures" [▸ 70].

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 (when it is supposed to), perform a check of the appropriate thermistors and pressure sensors (expansion valves are driven by superheat or subcool value calculated through the thermistors).

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.

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 expansion valve, see "3.4.2 Repair procedures" [▸ 70].

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.

3.4.2 Repair procedures

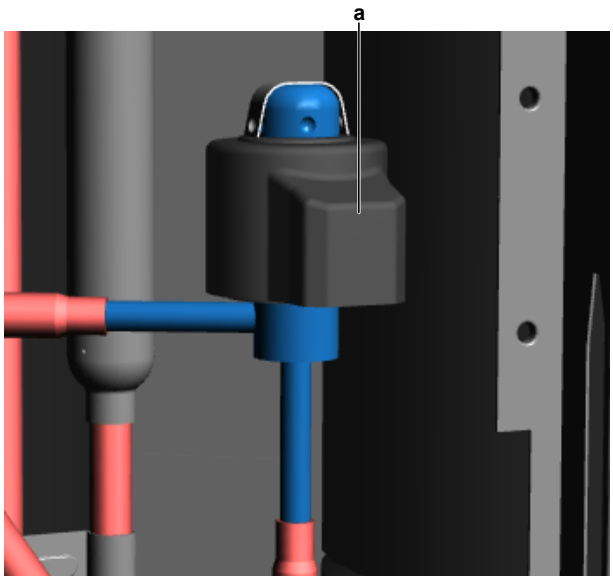
To remove the expansion valve motor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1 If needed, remove any parts or insulation to create more space for the removal.



a Expansion valve motor

2 Pull the expansion valve motor 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 motor harness.

4 Disconnect the expansion valve motor connector (X21A for main expansion valve Y1E and X22A for injection expansion valveY2E) from the main PCB.

5 To install the expansion valve motor, see "3.4.2 Repair procedures" [▸ 70].

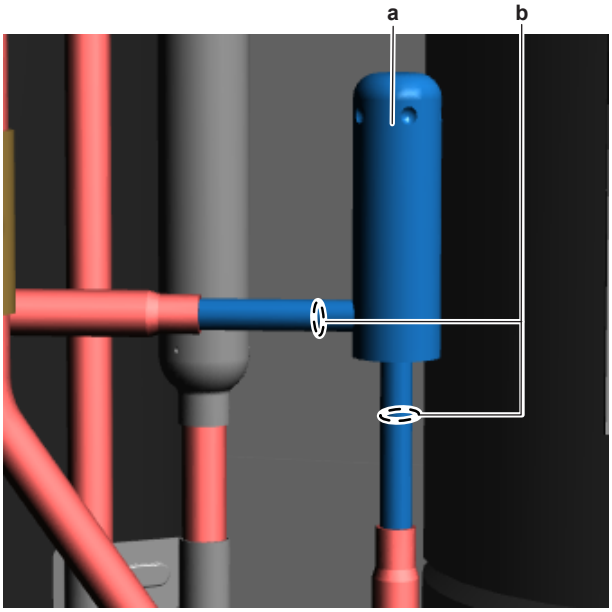
To remove the expansion valve body

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "4.2.2 Repair procedures" [▸ 142].

Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

1 Remove the expansion valve motor, see "3.4.2 Repair procedures" [▸ 70].

2 Cut the expansion valve pipes using a pipe cutter.



a Expansion valve body
b Expansion valve pipe

3 Remove the expansion valve body.

4 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

5 Heat the ends of the expansion valve pipes using an oxygen acetylene torch and remove the expansion valve pipe ends.

6 Stop the nitrogen supply when the piping has cooled down.

7 To install the expansion valve body, see "3.4.2 Repair procedures" [▸ 70].

To install the expansion valve body

1 Install the expansion valve body in the correct location and correctly oriented.

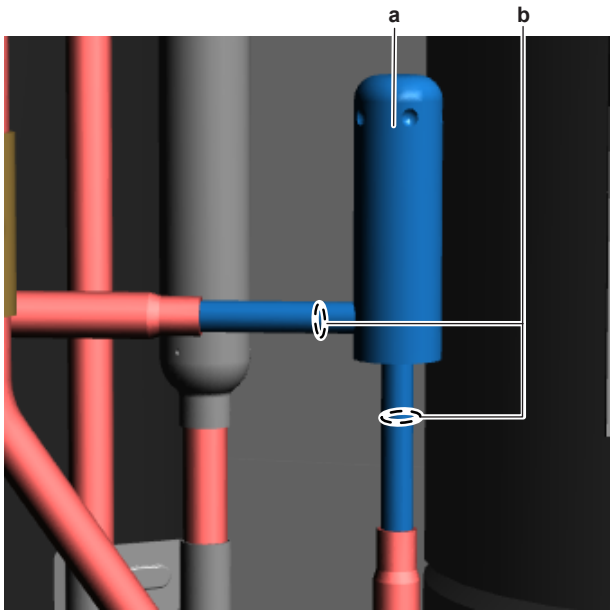
2 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

3 Wrap a wet rag around the expansion valve body and solder the refrigerant pipes to the expansion valve body.

CAUTION

Overheating the valve will damage or destroy it.

4 After soldering is done, stop the nitrogen supply after the component has cooled-down.



a Expansion valve body
b Expansion valve pipe

5 To install the expansion valve motor, see "3.4.2 Repair procedures" [▸ 70].

6 Add refrigerant to the refrigerant circuit, see "4.2.2 Repair procedures" [▸ 142].

To install the expansion valve motor with bracket

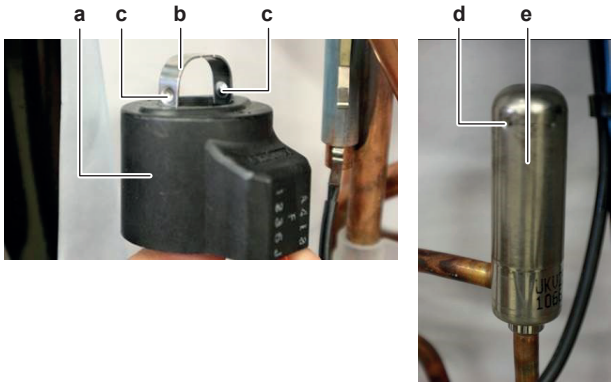
1 Install the expansion valve motor on the expansion valve body.

INFORMATION

The expansion valve motor 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 motor in the correct position (orientation).



a Expansion valve motor
b Metal bracket
c Nipple
d Notch
e Expanion valve body

2 Route the expansion valve motor harness towards the appropriate PCB.

3 Connect the expansion valve motor connector to the appropriate PCB.

WARNING

When reconnecting a connector to the PCB, do NOT apply force, as this may damage the connector or connector pins of the PCB.

4 Fix the expansion valve motor harness using new tie straps.

5 Install the insulation cap on the expansion valve motor (if applicable).

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "3.4.1 Checking procedures" [▸ 68] of the expansion valve and continue with the next procedure.

3.5 Fan inverter PCB

3.5.1 Checking procedures

INFORMATION

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

To perform a power check of the fan inverter PCB

Prerequisite: Stop the unit operation via the user interface.

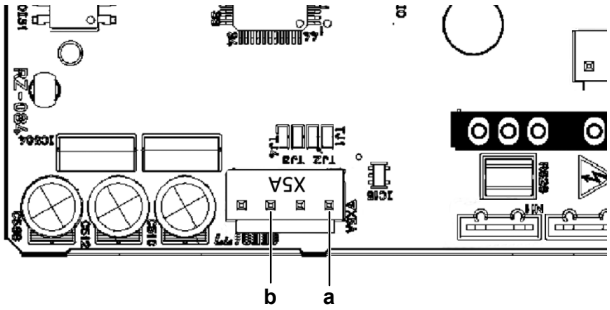
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

Prerequisite: Access the back side of the switch box, see "3.12 Plate work" [▸ 111].

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 "3.5.1 Checking procedures" [▸ 74] 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.

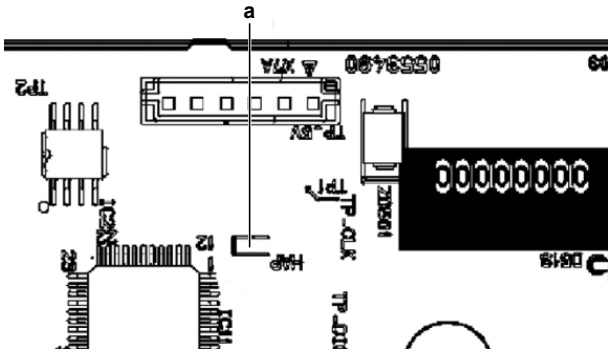
Result: The measured voltage MUST be 18 V DC.

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 "4.1.2 Repair procedures" [▸ 137].
No	Perform a check of the inverter PCB, see "3.7.1 Checking procedures" [▸ 81].

To check the HAP LED of the fan inverter PCB

1 First perform a power check of the fan inverter PCB, see "3.5.1 Checking procedures" [▸ 74].

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 "3.5.1 Checking procedures" [▸ 74] of the fan inverter PCB and continue with the next procedure.
No	Replace the fan inverter PCB, see "3.5.2 Repair procedures" [▸ 78].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the fan inverter PCB, see "3.5.1 Checking procedures" [▸ 74].

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 "3.5.1 Checking procedures" [▸ 74] of the fan inverter PCB and continue with the next procedure.
No	Replace the fan inverter PCB, see "3.5.2 Repair procedures" [▸ 78].

To check the wiring of the fan inverter PCB

Prerequisite: First perform all earlier checks of the fan inverter PCB, see "3.5.1 Checking procedures" [▸ 74].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

1 Check that all wires are properly connected and that all connectors are fully plugged-in.

2 Check that no connectors or wires are damaged.

3 Check that the wiring corresponds with the wiring diagram, see "6.2 Wiring diagram" [▸ 151].

INFORMATION

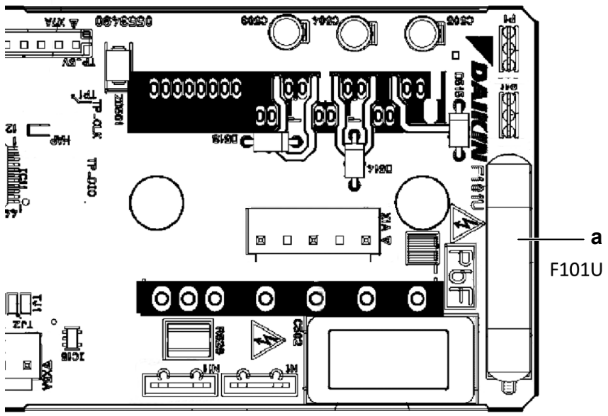
Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "3.5.1 Checking procedures" [▸ 74] 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 "3.5.1 Checking procedures" [▸ 74].

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 "3.5.2 Repair procedures" [▸ 78].
No	Return to "3.5.1 Checking procedures" [▸ 74] of the fan inverter PCB and continue with the next procedure.

To perform a power transistor check of the fan inverter PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

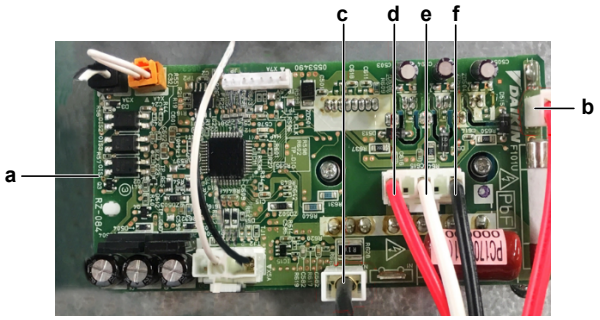
Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1 Set the multimeter to diode measurement.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To check the rectifier voltage" [▸ 135].

2 Check the fan inverter PCB in reference with the tables below.



a Fan inverter PCB A4P
b Connector P1
c Connector N1
d Connector X1A, pin U
e Connector X1A, pin V
f Connector X1A, pin W

VDC	Com	Ref	VDC	Com	Ref
P1	X1A, pin U	O.L	N1	X1A, pin V	0,45
P1	X1A, pin V	O.L	N1	X1A, pin W	0,45
P1	X1A, pin W	O.L	X1A, pin U	N1	O.L
X1A, pin U	P1	0,45	X1A, pin V	N1	O.L
X1A, pin V	P1	0,45	X1A, pin W	N1	O.L
X1A, pin W	P1	0,45	P1	N1	O.L
N1	X1A, pin U	0,45	N1	P1	0,75

Are the test results OK?	Action
Yes	Power transistors are OK. Return to "3.5.1 Checking procedures" [▸ 74].
No	Replace the fan inverter PCB, see "3.5.2 Repair procedures" [▸ 78].

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.

3.5.2 Repair procedures

To remove the fan inverter PCB

1 As there is no separate spare part for the inverter PCB and fan inverter PCB, these need to be replaced as one complete assembly. See "3.7.2 Repair procedures" [▸ 89].

To install the fan inverter PCB

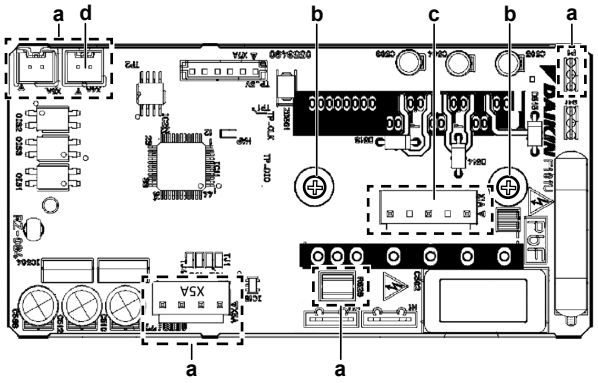
1 As there is no separate spare part for the inverter PCB and fan inverter PCB, these need to be replaced as one complete assembly. See "3.7.2 Repair procedures" [▸ 89].

2 Clean the heat sink surface and apply a thin layer of heat sink compound to the heat sink surface.

3 Install the fan inverter PCB on its correct location.

4 Latch the PCB supports using a small pair of pliers to fix the PCB.

5 Install and tighten the 2 screws to fix the fan inverter PCB to the heat sink plate.



a Connector
b Screw
c Connector X1A
d Connector X4A

6 Connect all connectors to the fan inverter PCB.

7 Reinstall connector X4A which you recuperated from the removed PCB.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "3.5.1 Checking procedures" [▸ 74] of the fan inverter PCB and continue with the next procedure.

3.6 High pressure switch

3.6.1 Checking procedures

To perform an electrical check of the high pressure switch

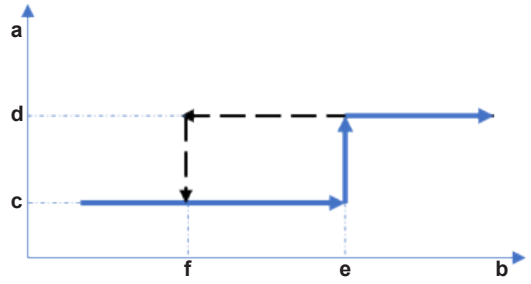
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1 Recuperate the refrigerant from the refrigerant circuit, see "4.2.2 Repair procedures" [▸ 142].

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	4.15	3.2

3 Disconnect the Faston connectors from the high pressure switch.

INFORMATION

Measure the continuity of all wiring between the high pressure switch and the appropriate PCB. If NO continuity is measured, repair as needed, see "6.2 Wiring diagram" [▸ 151].

4 Measure the resistance between the Faston connections of the high pressure switch.

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 Faston connections of the high pressure switch.

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 Faston connections of the high pressure switch.

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 Faston connections of the high pressure switch.

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 "3.6.2 Repair procedures" [▸ 80].

3.6.2 Repair procedures

To remove the high pressure switch

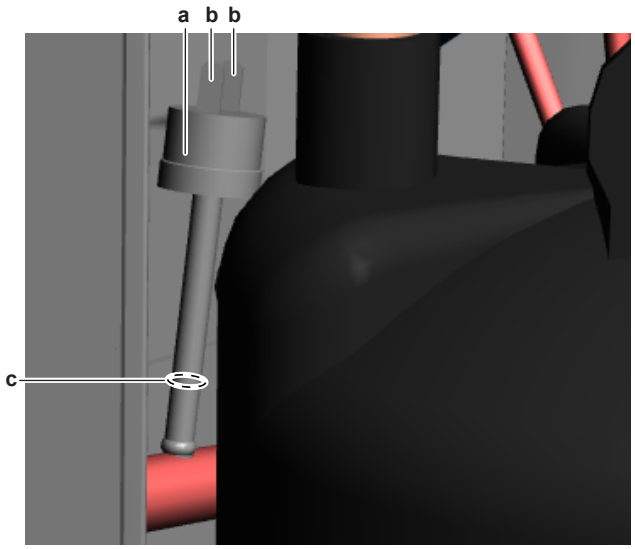
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "4.2.2 Repair procedures" [▸ 142].

1. If needed, remove any parts to create more space for the removal of the high pressure switch.
2. Disconnect the Faston connectors from the high pressure switch.



a High pressure switch
b Faston connector
c High pressure switch pipe

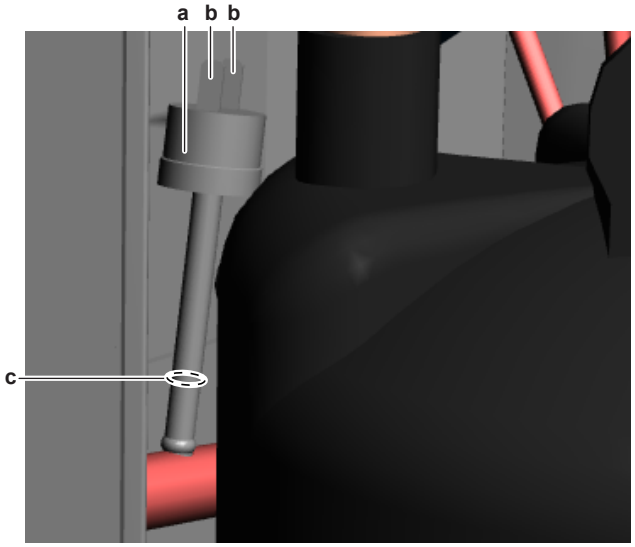
3. Cut the high pressure switch pipe using a pipe cutter.
4. Remove the high pressure switch from the unit.
5. Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
6. Heat the end of the high pressure switch pipe using an oxygen acetylene torch and remove the high pressure switch pipe end.
7. Stop the nitrogen supply when the piping has cooled down.
8. To install the high pressure switch, see "3.6.2 Repair procedures" [▸ 80].

To install the high pressure switch

1. Install the high pressure switch in the correct location.

2 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

3 Wrap a wet rag around the high pressure switch and solder the high pressure switch pipe to the high pressure switch.



a High pressure switch
b Faston connector
c High pressure switch pipe

CAUTION

Overheating the pressure switch will damage or destroy it.

4 After soldering is done, stop the nitrogen supply after the component has cooled-down.

5 Connect the Faston connectors to the high pressure switch.

6 Add refrigerant to the refrigerant circuit, see "4.2.2 Repair procedures" [▸ 142].

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.

3.7 Inverter PCB

3.7.1 Checking procedures

INFORMATION

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

To perform a power check of the inverter PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

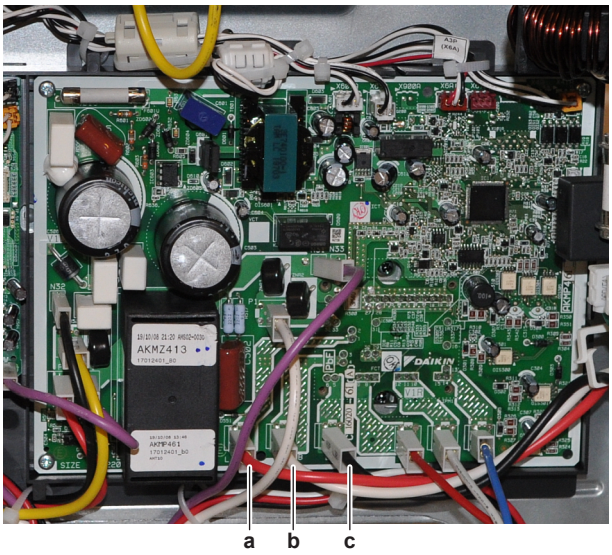
1 Access the back side of the switch box, see "3.12 Plate work" [▸ 111].

2 Turn ON the power of the unit.

3 Measure the voltage between the following wires on the inverter PCB.

Result: All measurements MUST be 400 V AC.

- L1B–L2B
- L1B–L3B
- L2B–L3B



a L1B
b L2B
c L3B

Is the measured voltage correct?	Action
Yes	Return to "3.7.1 Checking procedures" [▸ 81] of the PCB and continue with the next procedure.
No	Continue with the next step.

4 Measure the output voltage between the following wires on the noise filter PCB.

Result: All measurements MUST be 400 V AC.

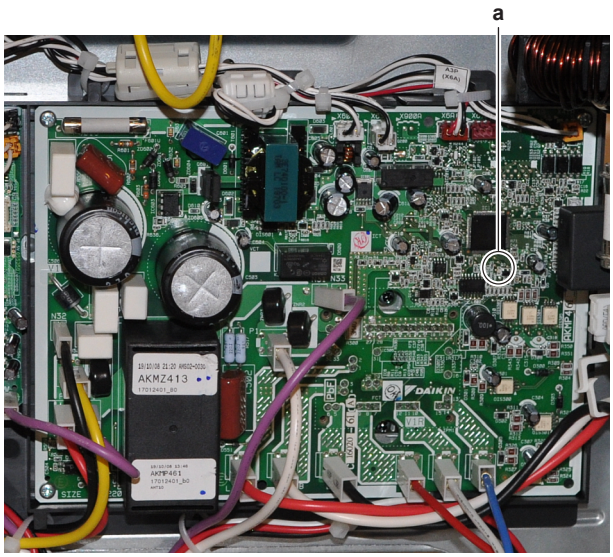
- L1B–L2B
- L1B–L3B
- L2B–L3B

Is the measured output voltage on the noise filter PCB correct?	Action
Yes	Correct the wiring between the inverter PCB and the noise filter PCB, see "4.1.2 Repair procedures" [▸ 137].
No	Perform a check of the noise filter PCB, see "3.10.1 Checking procedures" [▸ 101].

To check the HAP LED of the inverter PCB

Prerequisite: First perform a power check of the inverter PCB, see "3.7.1 Checking procedures" [▸ 81].

1 Locate the HAP LED on the inverter PCB.



a HAP LED

Does the HAP LED blink in regular intervals (1 second ON/1 second OFF)?	Action
Yes	Return to "3.7.1 Checking procedures" [▸ 81] of the inverter PCB and continue with the next procedure.
No	Replace the inverter PCB, see "3.7.2 Repair procedures" [▸ 89].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the inverter PCB, see "3.7.1 Checking procedures" [▸ 81].

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 "3.7.1 Checking procedures" [▸ 81] of the inverter PCB and continue with the next procedure.
No	Replace the inverter PCB, see "3.7.2 Repair procedures" [▸ 89].

To check the wiring of the inverter PCB

Prerequisite: First perform all earlier checks of the inverter PCB, see "3.7.1 Checking procedures" [▸ 81].

Prerequisite: Stop the unit operation via the user interface.

1 Turn OFF the respective circuit breaker.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To check the rectifier voltage" [▸ 135].

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 "6.2 Wiring diagram" [▸ 151].

INFORMATION

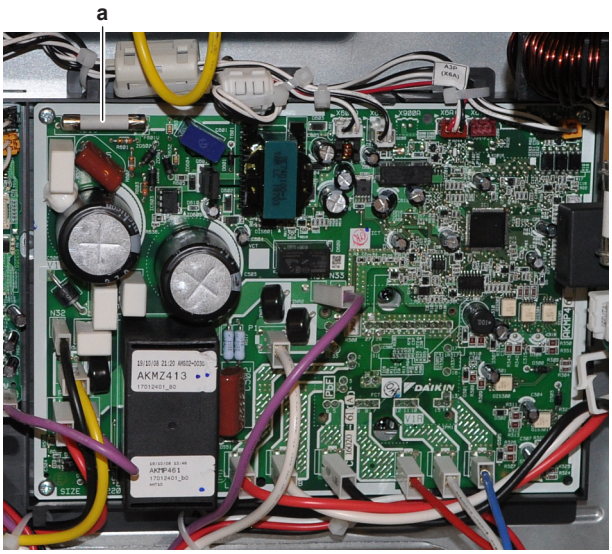
Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "3.7.1 Checking procedures" [▸ 81] 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 "3.7.1 Checking procedures" [▸ 81].

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



a Fuse

Any blown fuses on the inverter PCB?	Action
Yes	Replace the inverter PCB, see "3.7.2 Repair procedures" [▸ 89].
No	Return to "3.7.1 Checking procedures" [▸ 81] 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 "3.7.1 Checking procedures" [▸ 81].

1 Unplug the rectifier voltage check connector X3A from the fan inverter PCB.

2 Turn ON the power of the unit.

3 Measure the voltage on the unplugged rectifier voltage check connector X3A.

Result: The measured voltage MUST be approximately 560 V DC.

a Connector X3A

Is the measured voltage approximately 560 V DC?	Action
Yes	Diode module and power module are OK. Perform a power transistor check of the inverter PCB, see "3.7.1 Checking procedures" [▸ 81].
No	Perform a diode module and power module check, see "3.7.1 Checking procedures" [▸ 81].

To perform a diode module and power module check

Prerequisite: First check the rectifier voltage of the inverter PCB, see "3.7.1 Checking procedures" [▸ 81].

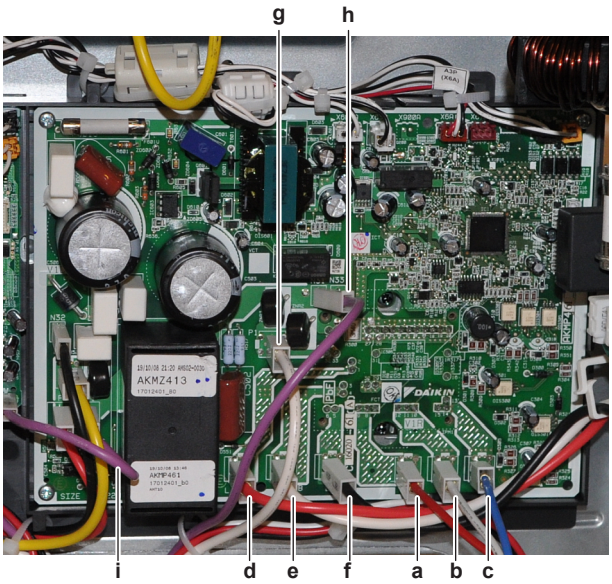
Prerequisite: Stop the unit operation via the user interface.

1 Turn OFF the respective circuit breaker.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To check the rectifier voltage" [▸ 135].

2 Disconnect the Faston connectors U, V, W, L1B, L2B, L3B, P1, N31 and P11 from the inverter PCB.



a Faston connector terminal U
b Faston connector terminal V
c Faston connector terminal W
d Faston connector terminal L1B
e Faston connector terminal L2B
f Faston connector terminal L3B
g Faston connector terminal P1
h Faston connector terminal N31
i Faston connector terminal P11

3 Check the diode module and the power module in reference with the tables below.

Diode module check

VDC	Com	Ref	VDC	Com	Ref
P1	L1B	O.L	N31	L1B	0,50
P1	L2B	O.L	N31	L2B	0,50
P1	L3B	O.L	N31	L3B	0,50
L1B	P1	0,50	L1B	N31	O.L
L2B	P1	0,50	L2B	N31	O.L
L3B	P1	0,50	L3B	N31	O.L
			N31	P1	0,90
			P1	N31	O.L

Power module check

VDC	Com	Ref	VDC	Com	Ref
P11	U	O.L	N31	U	0,43
P11	V	O.L	N31	V	0,43
P11	W	O.L	N31	W	0,43
U	P11	0,43	U	N31	O.L
V	P11	0,43	V	N31	O.L
W	P11	0,43	W	N31	O.L
			N31	P11	0,78
			P11	N31	O.L

Are the test results OK?	Action
Yes	Diode module and power module are OK. Perform a power transistor check of the inverter PCB, see "3.7.1 Checking procedures" [▸ 81].
No	Replace the inverter PCB, see "3.7.2 Repair procedures" [▸ 89].

To perform a power transistor check of the inverter PCB

Prerequisite: First check the rectifier voltage of the inverter PCB, see "3.7.1 Checking procedures" [▸ 81].

Prerequisite: Stop the unit operation via the user interface.

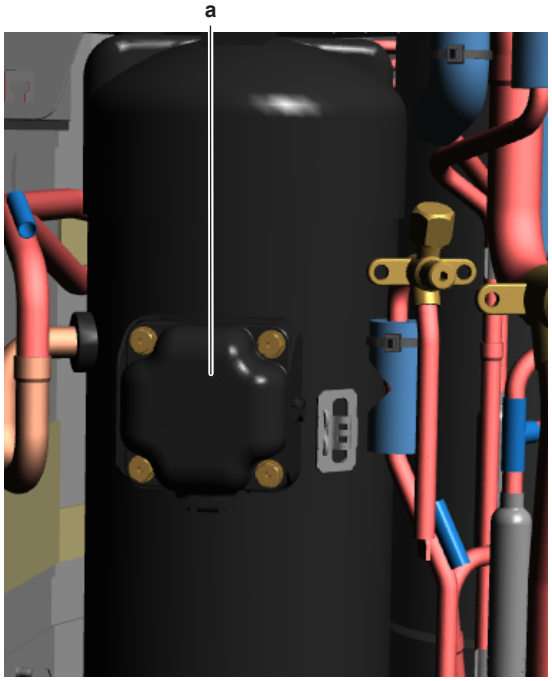
Prerequisite: Turn OFF the respective circuit breaker.

1 Open the compressor insulation.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To check the rectifier voltage" [▸ 135].

2 Remove the cover of the compressor wire terminals.

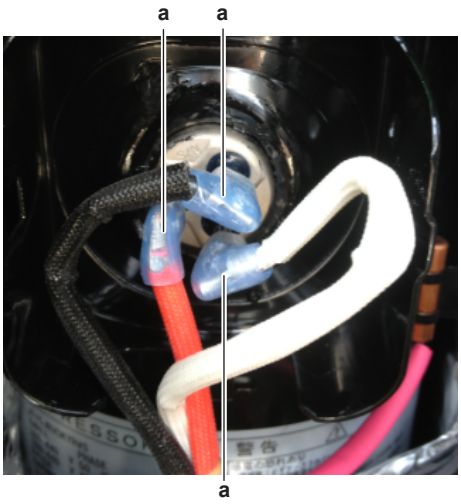


a Compressor wire terminals cover

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

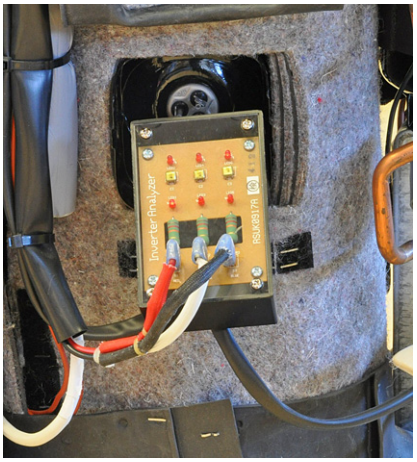
INFORMATION

Note the position of the Faston connectors on the compressor wire terminals to allow correct connection during installation.



a Faston connector

4 Connect the Faston connectors to the Inverter Analyzer (SPP number 2238609).



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

5 Turn ON the power of the unit.

6 Activate power transistor check mode by applying field setting 2-18=2.

Result: If all 6 LEDs on inverter checker module blink, then it means that the transistors on the inverter PCB switch correctly.

7 To exit the power transistor check mode, set 2-18=1.

Result: 2 LEDs on inverter checker module for V phase will indicate the discharge status of the DC voltage.

8 Wait until the LEDs are OFF before disconnecting U, V and W connections from the inverter checker.

9 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 check the rectifier voltage" [▶ 135].

10 Disconnect the Inverter Analyzer from the Faston connectors.

11 Connect the Faston connectors 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 "3.7.1 Checking procedures" [▸ 81].
No	Replace the inverter PCB, see "3.7.2 Repair procedures" [▸ 89].

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.

3.7.2 Repair procedures

To remove the inverter PCB

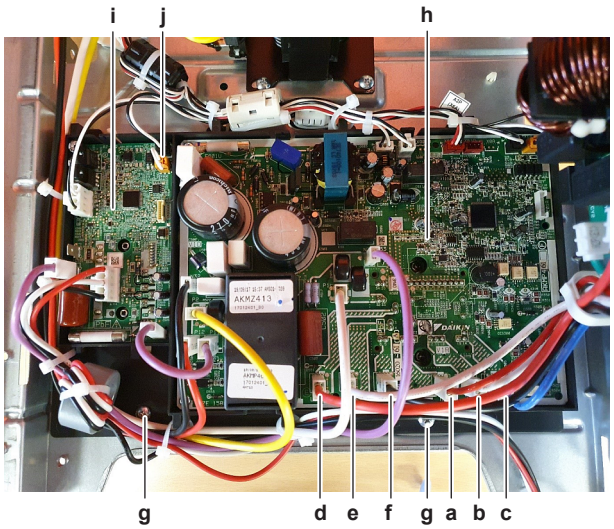
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1 Remove the switch box, see "3.12 Plate work" [▸ 111].

2 Disconnect the Faston connectors from the U, V and W terminals on the inverter PCB.



a U terminal
b V terminal
c W terminal
d L1B
e L2B
f L3B
g Screw
h Inverter PCB
i Fan inverter PCB
j Bridge connector X4A

3 Disconnect the Faston connectors from the L1B, L2B and L3B terminals on the inverter PCB.

4 Disconnect all other Faston connectors from the inverter PCB.

5 Disconnect all remaining connectors from the inverter PCB.

6 Disconnect all connectors from the fan inverter PCB.

INFORMATION

As there is no separate spare part for the inverter PCB and fan inverter PCB, these need to be replaced as one complete assembly.

7 Unplug the bridge connector X4A on the fan inverter PCB and keep it for reuse.

8 Remove the inverter PCB and fan inverter PCB assy fixation screws.

9 Remove the inverter PCB and fan inverter PCB assy from the switch box.

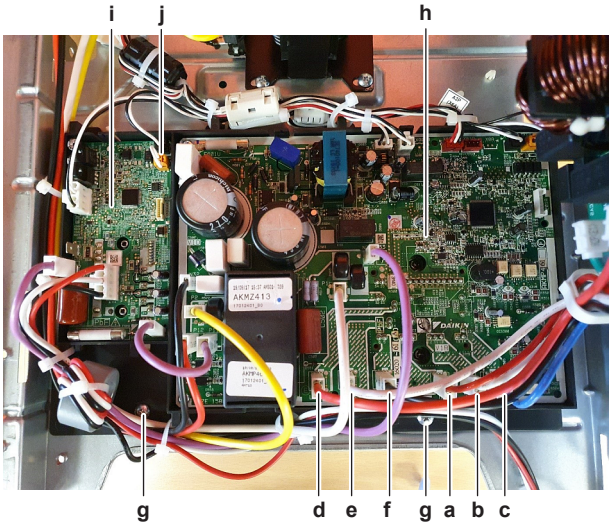
10 To install the inverter PCB, see "3.7.2 Repair procedures" [▸ 89].

To install the inverter PCB

INFORMATION

As there is no separate spare part for the inverter PCB and fan inverter PCB, these need to be replaced as one complete assembly.

1 Install the inverter PCB and fan inverter PCB assy in the correct location.



a U terminal
b V terminal
c W terminal
d L1B
e L2B
f L3B
g Screw
h Inverter PCB
i Fan inverter PCB
j Bridge connector X4A

2 Install and tighten the two fixation screws.

3 Plug the Faston connectors to the U, V and W terminals on the inverter PCB.

4 Plug the Faston connectors to the L1B, L2B and L3B terminals on the inverter PCB.

5 Connect all other Faston connectors to the inverter PCB.

6 Connect all remaining connectors to the inverter PCB.

7 Connect all connectors to the fan inverter PCB.

8 Install the bridge connector X4A on the fan inverter PCB.

INFORMATION

Use the wiring diagram and connection diagram for correct installation of the connectors, see "6.2 Wiring diagram" [▸ 151].

WARNING

When reconnecting a connector to the PCB, do NOT apply force, as this may damage the connector or connector pins of the PCB.

9 Install the switch box, see "3.12 Plate work" [▸ 111].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "3.7.1 Checking procedures" [▸ 81] of the inverter PCB and continue with the next procedure.

3.8 Low pressure switch

3.8.1 Checking procedures

To perform an electrical check of the low pressure switch

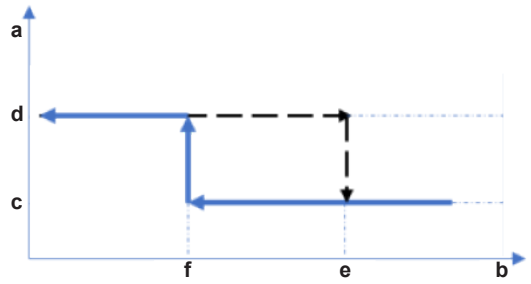
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1 Recuperate the refrigerant from the refrigerant circuit, see "4.2.2 Repair procedures" [▸ 142].

2 Connect a vacuum pump to the gas service port of the refrigerant circuit and vacuum to just above operating pressure of the low pressure switch.



a Low pressure switch protection control
b Pressure
c Low pressure switch closed
d Low pressure switch open
e Low pressure switch reset pressure
f Low pressure switch operating pressure

Low pressure switch	Operating pressure (MPa)	Reset pressure (MPa)
S1PL	−0.05~−0.01	0.02~0.08

3 Disconnect the low pressure switch connector from the appropriate PCB.

4 Measure contacts between the pins 1-2 of the low pressure switch connector.

Result: The switch MUST be closed.

5 Vacuum until pressurized just below operating pressure of the low pressure switch.

6 Measure again contacts between the pins 1-2 of the low pressure switch connector.

Result: The switch MUST be open.

> **INFORMATION**
>
> If the low pressure switch was triggered open, it will stay open until the refrigerant pressure rises above the reset pressure of the low pressure switch.

7 Fill the refrigerant circuit with nitrogen until pressurized just below reset pressure of the low pressure switch.

8 Measure again contacts between the pins 1-2 of the low pressure switch connector.

Result: The switch MUST be open.

9 Fill the refrigerant circuit with nitrogen until pressurized just above reset pressure of the low pressure switch.

10 Measure again contacts between the pins 1-2 of the low pressure switch connector.

Result: The switch MUST be closed.

Low pressure switch connector measurements are correct?	Then
Yes	Low pressure switch is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the low pressure switch, see "3.8.2 Repair procedures" [▸ 92].

3.8.2 Repair procedures

To remove the low pressure switch

Prerequisite: Stop the unit operation via the user interface.

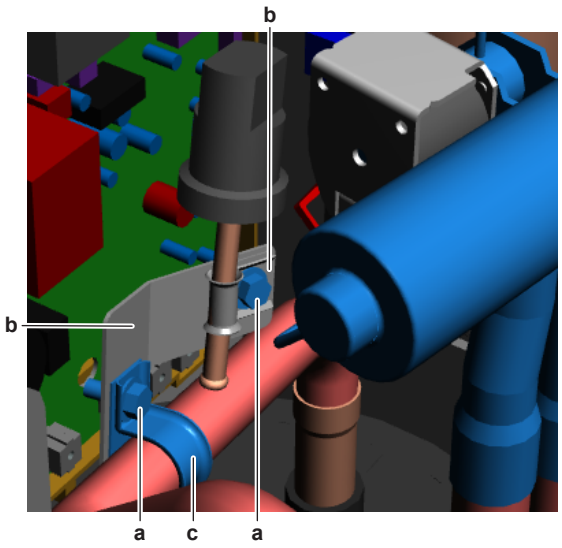
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "4.2.2 Repair procedures" [▸ 142].

1 If needed, remove any parts to create more space for the removal of the low pressure switch.

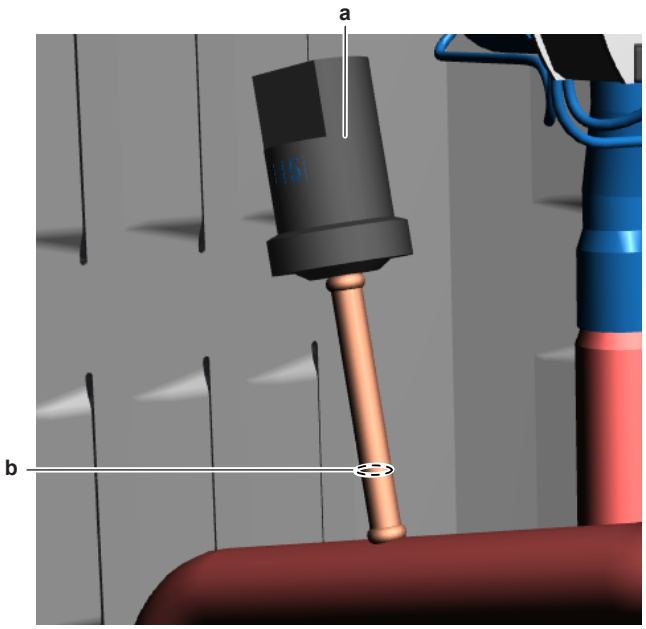
2 Remove the screws and remove the brackets and clip from the low pressure switch and pipe.



a Screw
b Bracket
c Clip

3 Disconnect the low pressure switch connector from the appropriate PCB.

4 Cut all tie straps that fix the low pressure switch harness.



a Low pressure switch
b Low pressure switch pipe

5 Cut the low pressure switch pipe using a pipe cutter.

6 Remove the low pressure switch from the unit.

7 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

8 Heat the end of the low pressure switch pipe using an oxygen acetylene torch and remove the low pressure switch pipe end.

9 Stop the nitrogen supply when the piping has cooled down.

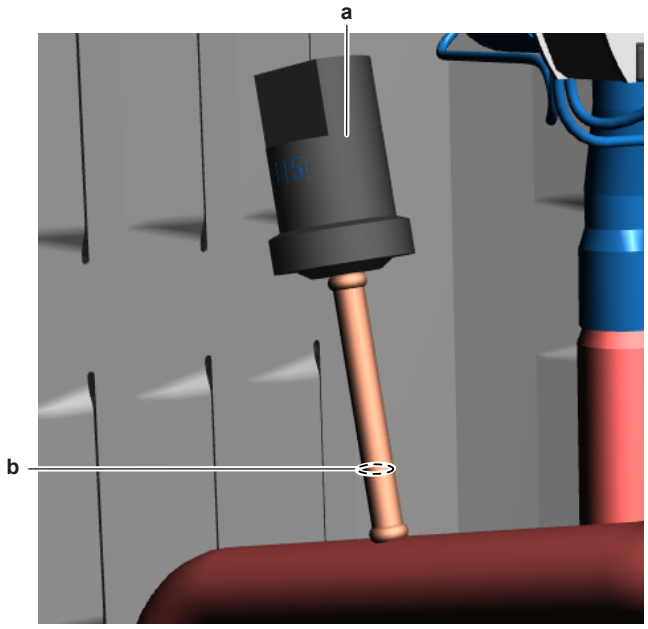
10 To install the low pressure switch, see "3.8.2 Repair procedures" [▸ 92].

To install the low pressure switch

1 Install the low pressure switch in the correct location.

2 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

3 Wrap a wet rag around the low pressure switch and solder the low pressure switch pipe to the low pressure switch.



a Low pressure switch
b Low pressure switch pipe

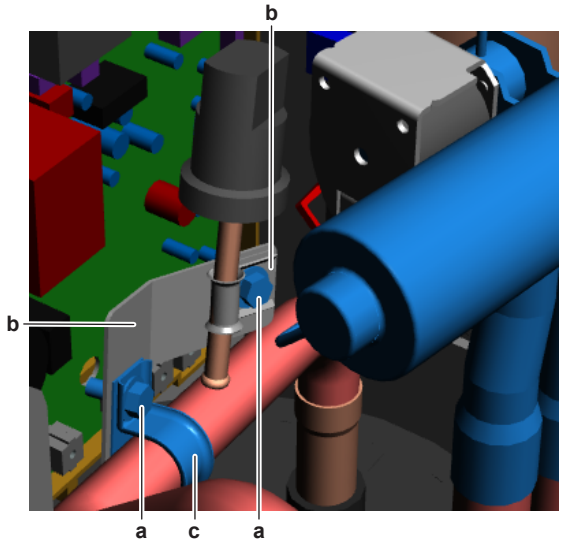
CAUTION

Overheating the pressure switch will damage or destroy it.

4 After soldering is done, stop the nitrogen supply after the component has cooled-down.

5 Install the brackets and clip on the low pressure switch and pipe.

6 Install and tighten the screws.



a Screw
b Bracket
c Clip

7 Route the low pressure switch harness towards the appropriate PCB.

8 Fix the harness using new tie straps.

9 Connect the low pressure switch connector to the appropriate PCB.

10 Add refrigerant to the refrigerant circuit, see "4.2.2 Repair procedures" [▸ 142].

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.

3.9 Main PCB

3.9.1 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 user interface.

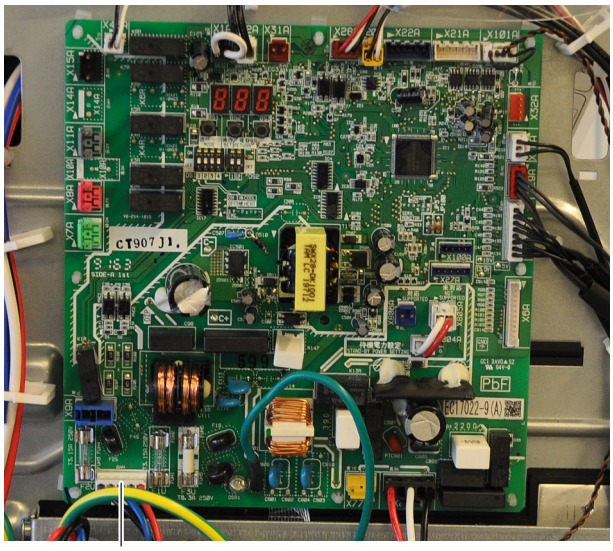
Prerequisite: Turn OFF the respective circuit breaker.

1 Remove the required plate work, see "3.12 Plate work" [▸ 111].

2 Turn ON the power of the unit.

3 Measure the voltage between pin 1-3 on connector X801A on the main PCB.

Result: The measured voltage MUST be 230 V AC ± 10%.



a Connector X801A

Is the measured voltage on the PCB correct?	Action
Yes	Return to "3.9.1 Checking procedures" [▸ 95] of the PCB and continue with the next procedure.
No	Continue with the next step.

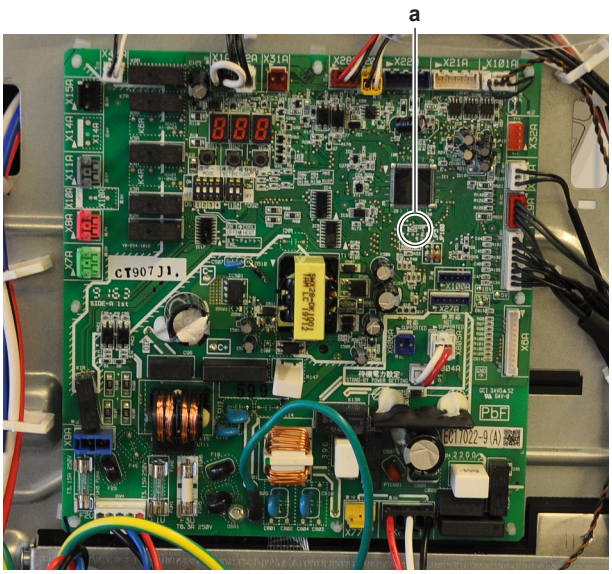
4 Check the power supply to the unit, see "4.1.1 Checking procedures" [▸ 135].

Does the unit receive power?	Action
Yes	Correct the wiring from the main power supply terminal to the main PCB, see "3.9.2 Repair procedures" [▸ 98].
No	Adjust the power supply to the unit, see "4.1.2 Repair procedures" [▸ 137].

To check the HAP LED of the main PCB

Prerequisite: First check the power supply to the main PCB, see "3.9.1 Checking procedures" [▸ 95].

1 Locate the HAP LED on the main PCB.



a HAP LED

Does the HAP LED blink in regular intervals (1 second ON/1 second OFF)?	Action
Yes	Return to "3.9.1 Checking procedures" [▸ 95] of the main PCB and continue with the next procedure.
No	Replace the main PCB, see "3.9.2 Repair procedures" [▸ 98].

To check if the correct spare part is installed

Prerequisite: First perform all earlier main PCB checks, see "3.9.1 Checking procedures" [▸ 95].

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.

NOTICE

Also check that the correct spare part is installed for the capacity adapter.

Is the correct spare part for the PCB installed?	Action
Yes	Return to "3.9.1 Checking procedures" [▸ 95] of the main PCB and continue with the next procedure.
No	Replace the main PCB, see "3.9.2 Repair procedures" [▸ 98].

To check the wiring of the main PCB

Prerequisite: First perform all earlier main PCB checks, see "3.9.1 Checking procedures" [▸ 95].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

1. Check that all wires are properly connected and that all connectors are fully plugged-in.
2. Check that no connectors or wires are damaged.
3. Check that the wiring corresponds with the wiring diagram, see "6.2 Wiring diagram" [▸ 151].

INFORMATION

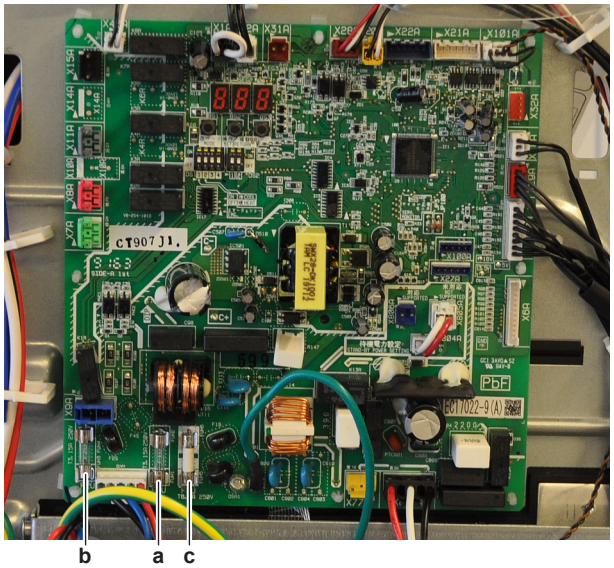
Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "3.9.1 Checking procedures" [▸ 95] of the PCB and continue with the next procedure.

To check the fuse of the main PCB

Prerequisite: First perform all earlier main PCB checks, see "3.9.1 Checking procedures" [▸ 95].

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



a Fuse F1U
b Fuse F2U
c Fuse F3U

Blown fuse on the main PCB?	Action
Yes	Replace the blown fuse, see "3.9.2 Repair procedures" [▸ 98].
No	Return to "3.9.1 Checking procedures" [▸ 95] of the main PCB and continue with the next procedure.

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

3.9.2 Repair procedures

To correct the wiring from the main power supply terminal to the main PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

1. Remove the required plate work, see "3.12 Plate work" [▸ 111].
2. Make sure that all wires are firmly and correctly connected, see "6.2 Wiring diagram" [▸ 151].
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 "3.9.1 Checking procedures" [▸ 95] of the PCB and continue with the next procedure.

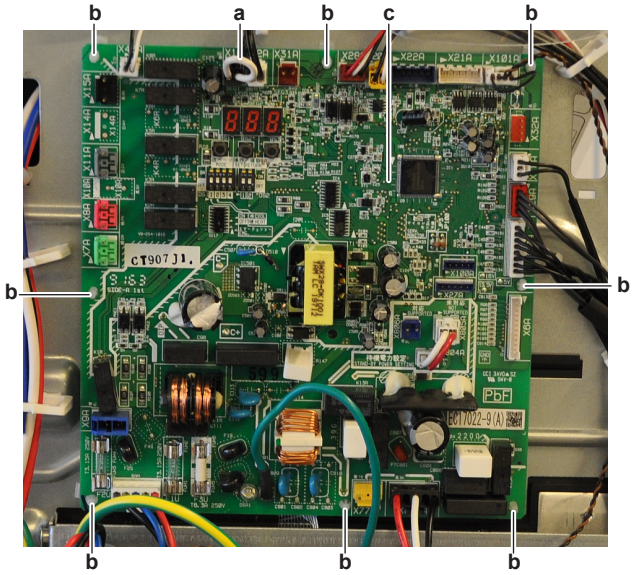
To remove the main PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1. Disconnect all connectors from the main PCB.



a Bridge connector X1A
b Main PCB support
c Main PCB

2 Unplug the bridge connector X1A and keep it for reuse.

3 Carefully pull the main PCB and unlatch the main PCB supports one by one using a small pliers.

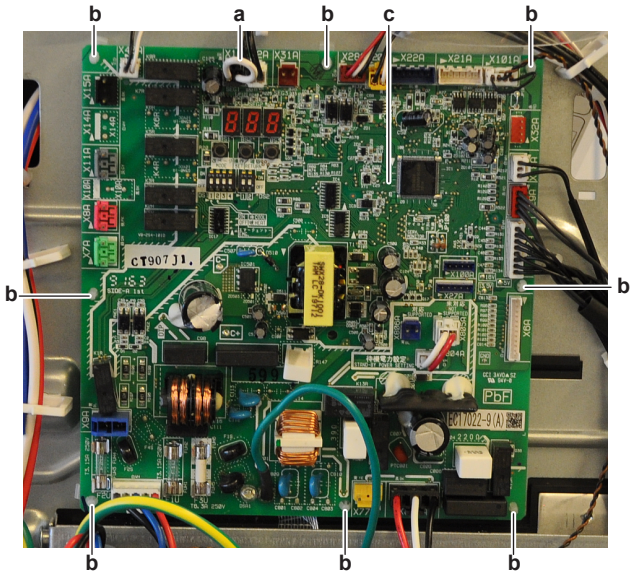
4 Remove the main PCB from the unit.

5 To install the main PCB, see "3.9.2 Repair procedures" [▸ 98].

To install the main PCB

1 Install the main PCB on its mounting plate in the correct location.

2 Connect all connectors to the main PCB.



a Bridge connector X1A
b Main PCB support
c Main PCB

INFORMATION

Use the wiring diagram and connection diagram for correct installation of the connectors, see "6.2 Wiring diagram" [▸ 151].

WARNING

When reconnecting a connector to the PCB, 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 "3.9.1 Checking procedures" [▸ 95] of the PCB and continue with the next procedure.

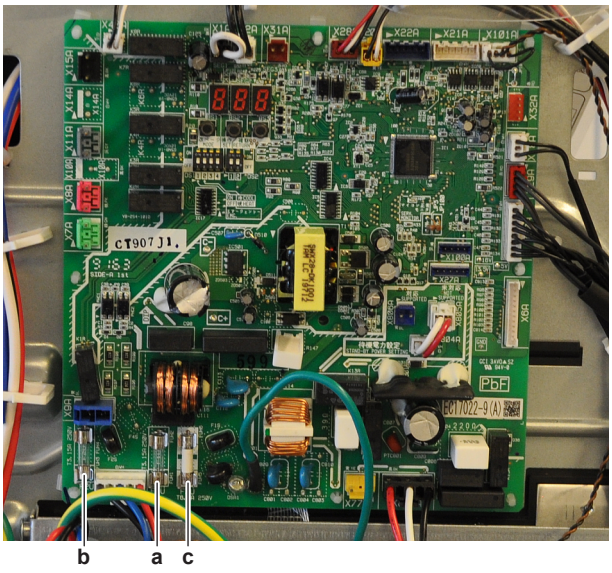
To remove a fuse of the main PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1 Remove the fuse from the PCB.



a Fuse F1U
b Fuse F2U
c Fuse F3U

2 To install a fuse on the main PCB, see "3.9.2 Repair procedures" [▸ 98].

To install a fuse on the main PCB

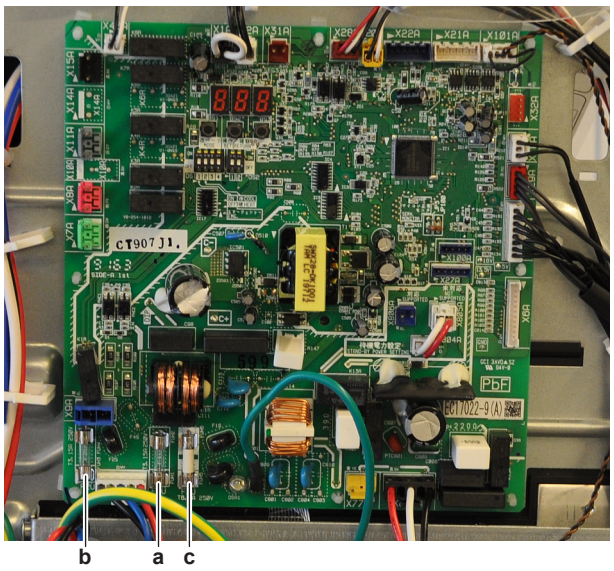
WARNING

For continued protection against risk of fire, replace only with same type and rating of fuse.

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
b Fuse F2U
c Fuse F3U

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "3.9.1 Checking procedures" [▸ 95] of the PCB and continue with the next procedure.

3.10 Noise filter PCB

3.10.1 Checking procedures

INFORMATION

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

To perform a power check of the noise filter PCB

Prerequisite: Stop the unit operation via the user interface.

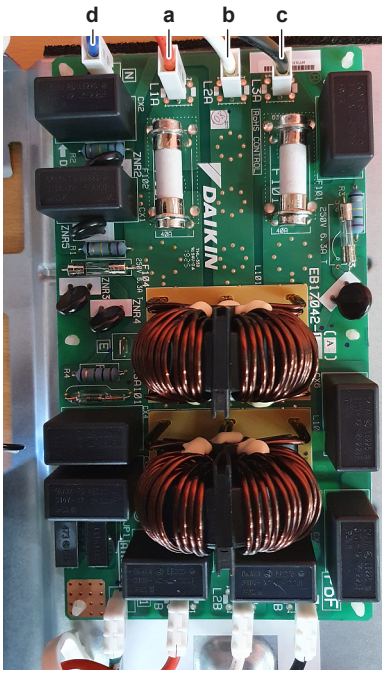
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1. Access the back side of the switch box, see "3.12 Plate work" [▸ 111].
2. Turn ON the power of the unit.
3. Measure the voltage between the phases L1A-L2A-L3A on the noise filter PCB.

   Result: All measurements MUST be 400 V AC ± 10%.
4. Measure the voltage between each phase and N on the noise filter PCB.

   Result: The measured voltages MUST be 230 V AC ± 10%.



a L1A
b L2A
c L3A
d N

Is the measured voltage on the PCB correct?	Action
Yes	Return to "3.10.1 Checking procedures" [▸ 101] of the PCB and continue with the next procedure.
No	Continue with the next step.

5 Check the power supply to the unit, see "4.1.1 Checking procedures" [▸ 135].

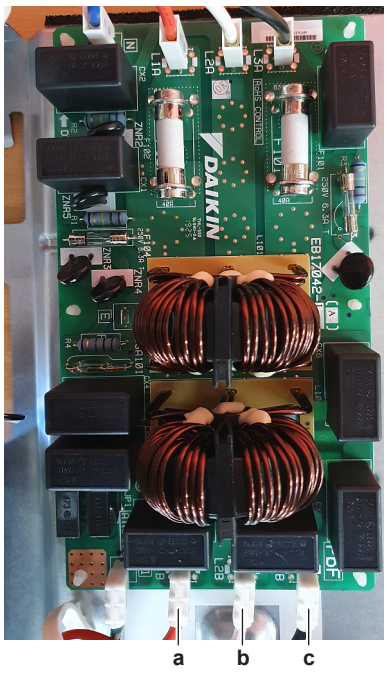
Does the unit receive power?	Action
Yes	Correct the wiring from the main power supply terminal to the noise filter PCB, see "3.10.2 Repair procedures" [▸ 105].
No	Adjust the power supply to the unit, see "4.1.2 Repair procedures" [▸ 137].

To perform an electrical check of the noise filter PCB

Prerequisite: First check the power supply to the noise filter PCB, see "3.10.1 Checking procedures" [▸ 101].

1 Measure the voltage between output wires L1B-L2B-L3B on the noise filter PCB.

Result: All measurements MUST be 400 V AC ± 10%.



a L1B
b L2B
c L3B

Is the output voltage on the noise filter PCB correct?	Action
Yes	Return to "3.10.1 Checking procedures" [▸ 101] of the noise filter PCB and continue with the next procedure.
No	Replace the noise filter PCB, see "3.10.2 Repair procedures" [▸ 105].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the noise filter PCB, see "3.10.1 Checking procedures" [▸ 101].

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 "3.10.1 Checking procedures" [▸ 101] of the noise filter PCB and continue with the next procedure.
No	Replace the noise filter PCB, see "3.10.2 Repair procedures" [▸ 105].

To check the wiring of the noise filter PCB

Prerequisite: First perform all earlier checks of the noise filter PCB, see "3.10.1 Checking procedures" [▸ 101].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

1 Check that all wires are properly connected and that all connectors are fully plugged-in.

2 Check that no connectors or wires are damaged.

3 Check that the wiring corresponds with the wiring diagram, see "6.2 Wiring diagram" [▸ 151].

INFORMATION

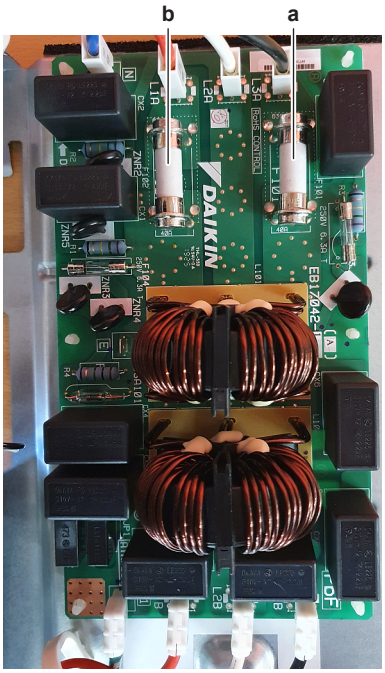
Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "3.10.1 Checking procedures" [▸ 101] 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 "3.10.1 Checking procedures" [▸ 101].

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



a Fuse F101U
b Fuse F102U

Blown fuse on the noise filter PCB?	Action
Yes	Replace the noise filter PCB, see "3.10.2 Repair procedures" [▸ 105].
No	Return to "3.10.1 Checking procedures" [▸ 101] 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.

3.10.2 Repair procedures

To correct the wiring from the main power supply terminal to the noise filter PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

1. Remove the required plate work, see "3.12 Plate work" [▸ 111].
2. Make sure that all wires are firmly and correctly connected, see "6.2 Wiring diagram" [▸ 151].
3. Check the continuity of all wires.
4. Replace any damaged or broken wires.

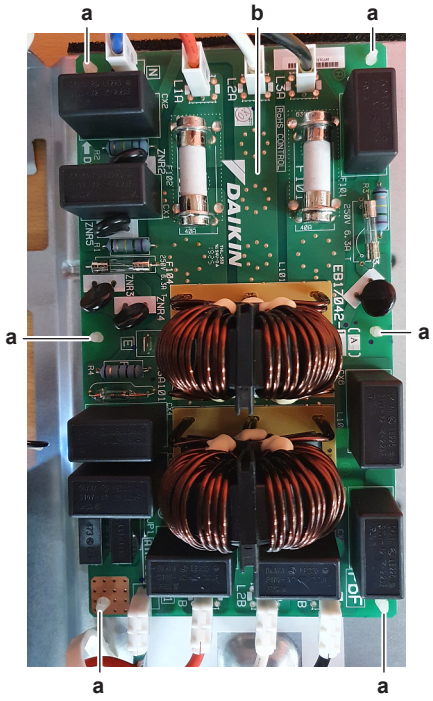
Is the problem solved?	Action
Yes	No further actions required.
No	Return to "3.10.1 Checking procedures" [▸ 101] of the noise filter PCB and continue with the next procedure.

To remove the noise filter PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

1. Remove the required plate work, see "3.12 Plate work" [▸ 111].
2. Remove the switch box, see "3.12 Plate work" [▸ 111].
3. Disconnect all Faston connectors from the noise filter PCB.
4. Carefully pull the PCB at the side and unlatch the PCB supports one by one using a small pair of pliers.
5. Remove the noise filter PCB from the main PCB mounting plate.

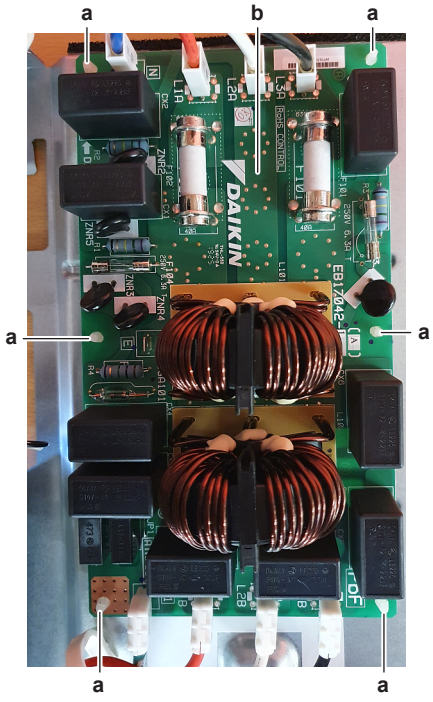


a PCB support
b Noise filter PCB

6 To install the new noise filter PCB, see "3.10.2 Repair procedures" [▸ 105].

To install the noise filter PCB

1 Install the noise filter PCB on its correct location.



a PCB support
b Noise filter PCB

2 Connect all Faston connectors to the noise filter PCB.

Is the problem solved?	Action
Yes	No further actions required.

Is the problem solved?	Action
No	Return to "3.10.1 Checking procedures" [▸ 101] of the noise filter PCB and continue with the next procedure.

3.11 Outdoor unit fan motor

3.11.1 Checking procedures

INFORMATION

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

To perform a mechanical check of the propeller fan blade assembly

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1 If propeller fan blade touches the bellmounth, check if the fan motor is correctly mounted on its base, see "3.11.2 Repair procedures" [▸ 108].

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 "3.11.2 Repair procedures" [▸ 108].
No	Perform a mechanical check of the DC fan motor assembly, see "3.11.1 Checking procedures" [▸ 107].

To perform a mechanical check of the DC fan motor assembly

Prerequisite: First perform a mechanical check of the propeller fan blade assembly, see "3.11.1 Checking procedures" [▸ 107].

1 Manually rotate the fan motor shaft. Check that it rotates smoothly.

2 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 "3.11.1 Checking procedures" [▸ 107].
No	Replace the DC fan motor assembly, see "3.11.2 Repair procedures" [▸ 108].

To perform an electrical check of the DC fan motor assembly

1 First perform a mechanical check of the DC fan motor assembly, see "3.11.1 Checking procedures" [▸ 107].

2 Turn ON the power of the unit.

3 Activate **Cooling** or **Heating** operation via the user interface.

4 Check the functioning of the outdoor unit fan.

Outdoor unit fan …	Action
Rotates continuously (without interruption)	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 Turn OFF the unit via the user interface.

6 Turn OFF the respective circuit breaker.

7 Check that the DC fan motor connector 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 7.6 Ω±10% at 20°C.

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 Measure the insulation resistance for the motor terminals. Measurements between each phase and ground must be >1°MΩ.

Are the measured resistance values correct?	Action
Yes	Perform a check of the main PCB, see "3.9.1 Checking procedures" [▸ 95].
No	Replace the DC fan motor, see "3.11.2 Repair procedures" [▸ 108].

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.

3.11.2 Repair procedures

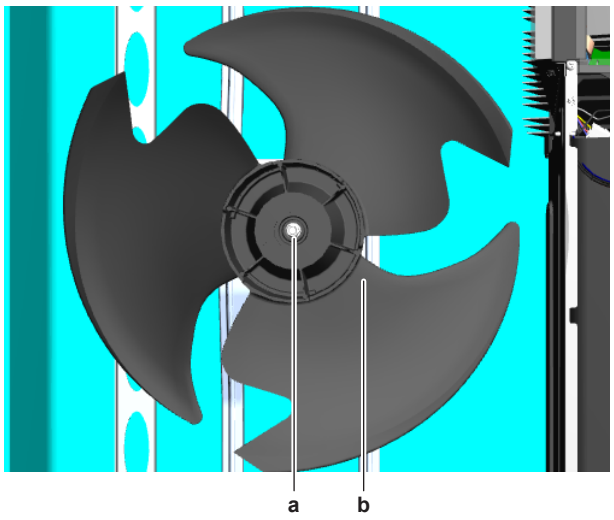
To remove the propeller fan blade assembly

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

1 Remove the required plate work, see "3.12 Plate work" [▸ 111].

2 Remove the nut that fixes the propeller fan blade assembly.



a Nut
b Propeller fan blade assembly

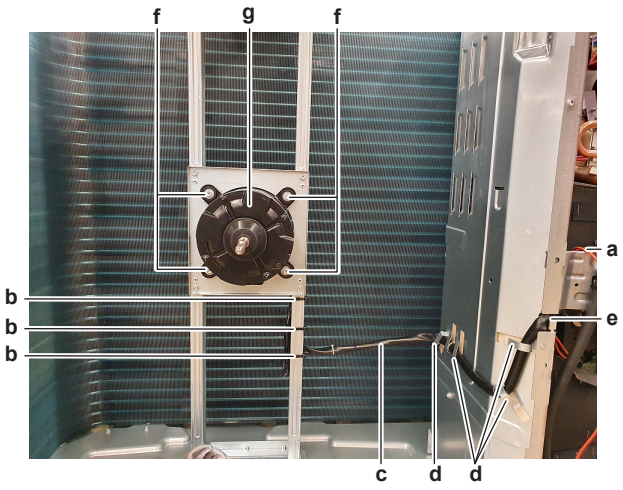
3 Pull and remove the propeller fan blade assembly from the DC fan motor assembly.

> **INFORMATION**
>
> Use a pulley remover if the propeller cannot be removed manually.

4 To install the propeller fan blade assembly, see "3.11.2 Repair procedures" [▸ 108].

To remove the DC fan motor assembly

1 Remove the propeller fan blade assembly from the DC fan motor assembly, see "3.11.2 Repair procedures" [▸ 108].



a Connector X1A
b Tie strap
c DC fan motor harness
d Harness retainer
e Opening in partition plate
f Screw
g DC fan motor assy

2 Disconnect the DC fan motor connector X1A.

3 Cut the tie straps that fix the DC fan motor harness.

4 Slightly bend the harness retainers to detach the DC fan motor harness.

5 Guide the DC fan motor harness though the opening in the partition plate.

6 Remove the 4 screws that fix the DC fan motor assembly.

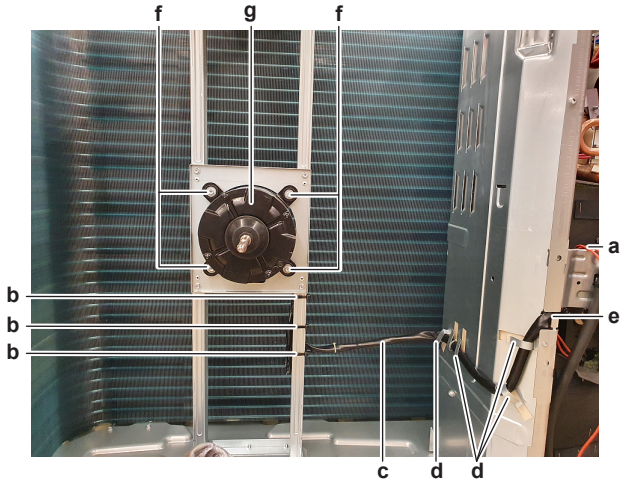
7 Remove the DC fan motor assembly from the unit.

8 To install the DC fan motor assembly, see "3.11.2 Repair procedures" [▸ 108].

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.



a Connector X1A
b Tie strap
c DC fan motor harness
d Harness retainer
e Opening in partition plate
f Screw
g DC fan motor assy

3 Route the DC fan motor harness through the opening in the partition plate.

4 Route the DC fan motor harness through the harness retainers and bend the harness retainers to attach the DC fan motor harness.

5 Install new tie straps to fix the DC fan motor harness.

CAUTION

Tie up the excessive DC fan motor harness using the tie straps to avoid the harness from being cut by the propeller fan blade.

6 Connect the DC fan motor connector to the connector X1A.

7 Install the propeller fan blade assembly, see "3.11.2 Repair procedures" [▸ 108].

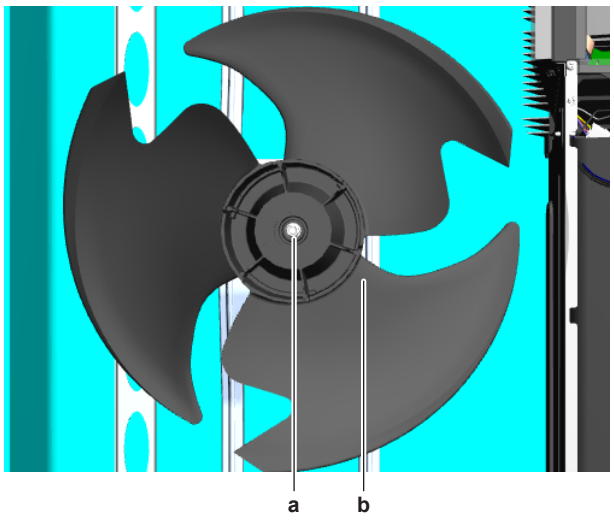
To install the propeller fan blade assembly

1 Install the propeller fan blade assembly on the DC fan motor assembly.

CAUTION

Do NOT install a damaged propeller fan blade assembly.

2 Install and tighten the nut to fix the propeller fan blade assembly.



a Nut
b Propeller fan blade assembly

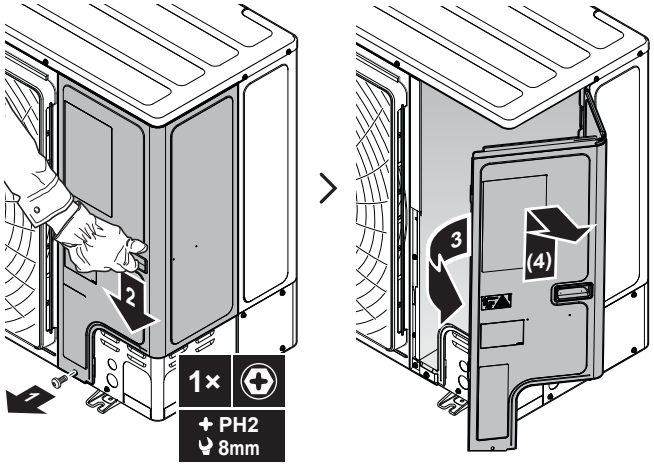
Is the problem solved?	Action
Yes	No further actions required.
No	Return to "3.11.1 Checking procedures" [▸ 107] of the outdoor unit fan motor and continue with the next procedure.

3.12 Plate work

3.12.1 To open the outdoor unit

DANGER: RISK OF ELECTROCUTION

DANGER: RISK OF BURNING



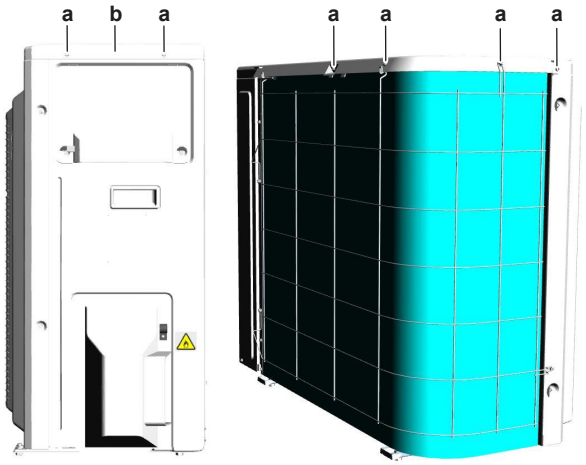
3.12.2 To remove the top plate

> **INFORMATION**
> This procedure is just an example and may differ on some details for your actual unit.

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

1 Loosen and remove the screws that fix the top plate.



a Screw
b Top plate

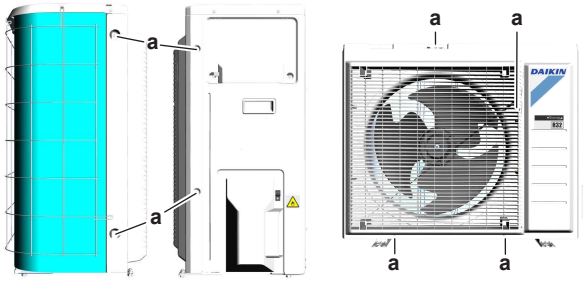
2 Remove the top plate.

3.12.3 To remove the front plate

> **INFORMATION**
> This procedure is just an example and may differ on some details for your actual unit.

Prerequisite: Remove the top plate, see "3.12 Plate work" [▸ 111].

1 Loosen and remove the screws that fix the front plate.



a Screw
b Front plate

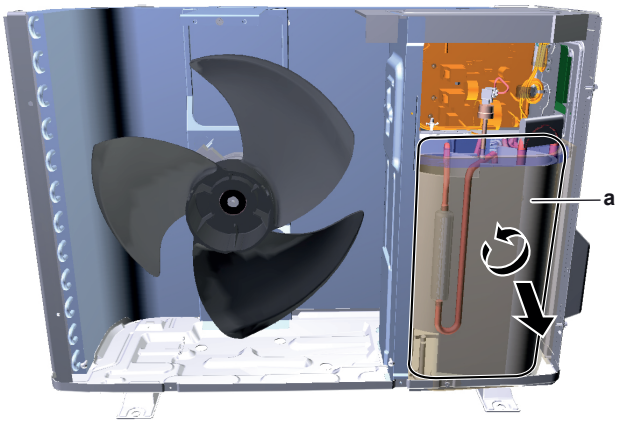
2 Remove the front plate.

3.12.4 To remove the compressor sound insulation

> **INFORMATION**
> This procedure is just an example and may differ on some details for your actual unit.

Prerequisite: Remove the front plate, see "3.12 Plate work" [▸ 111].

1 Untwist the cord and remove the compressor sound insulation.



a Compressor sound insulation

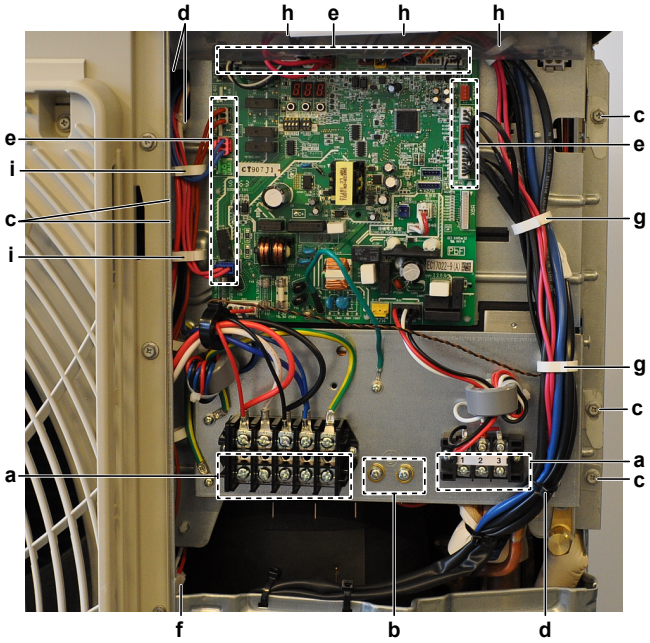
3.12.5 To remove the switch box

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1 Disconnect all field wiring (electrical power supply wiring, wiring to indoor unit(s), ground wires, …) from the wire terminals.



a Wire terminal
b Ground wire
c Screw
d Tie strap
e Connectors
f Fan motor connector X1A
g Wire clip (left side)
h Wire clip (upper side)
i Wire clip (right side)

2 Remove the five screws that fix the switch box mounting plate.

3 Cut the tie straps.

4 Disconnect all connectors from the main PCB.

5 Disconnect the fan motor connector X1A.

6 Remove all wires on the left hand side and upper side from the wire clips and leave them aside.

7 On the right hand side, remove all wires for which a connector was unplugged from the wire clips and push these wires through the hole to the back side of the mounting plate.

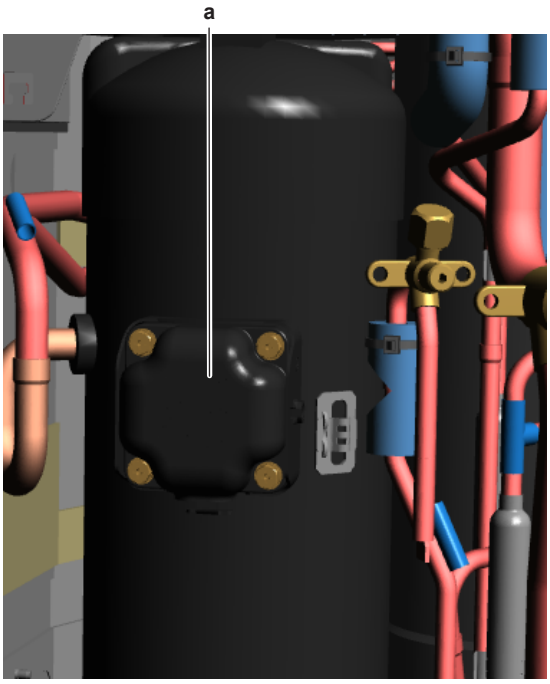
INFORMATION

The power supply cables (from the power supply wire terminal to the noise filter PCB) can stay in the wire clips.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To check the rectifier voltage" [▸ 135].

8 Remove the cover of the compressor wire terminals.

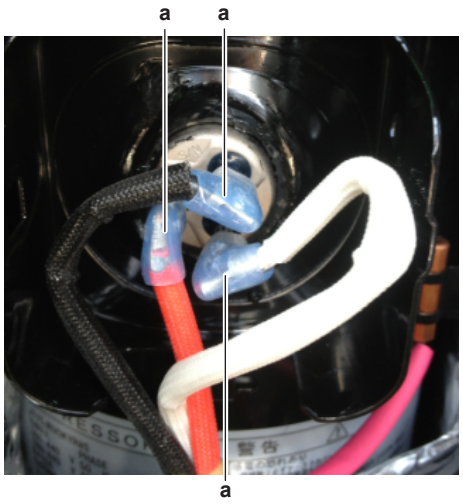


a Compressor wire terminals cover

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

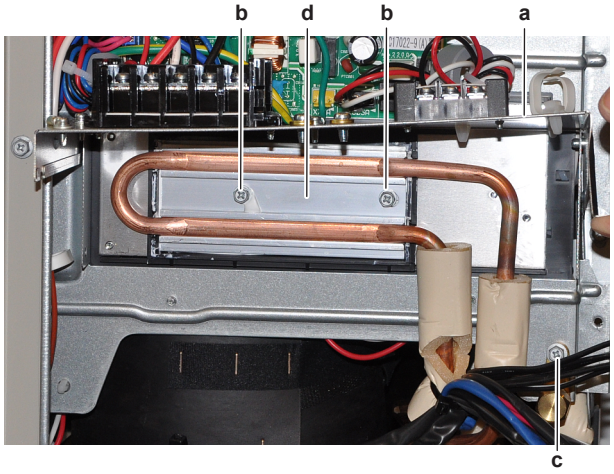
INFORMATION

Note the position of the Faston connectors on the compressor wire terminals to allow correct connection during installation.



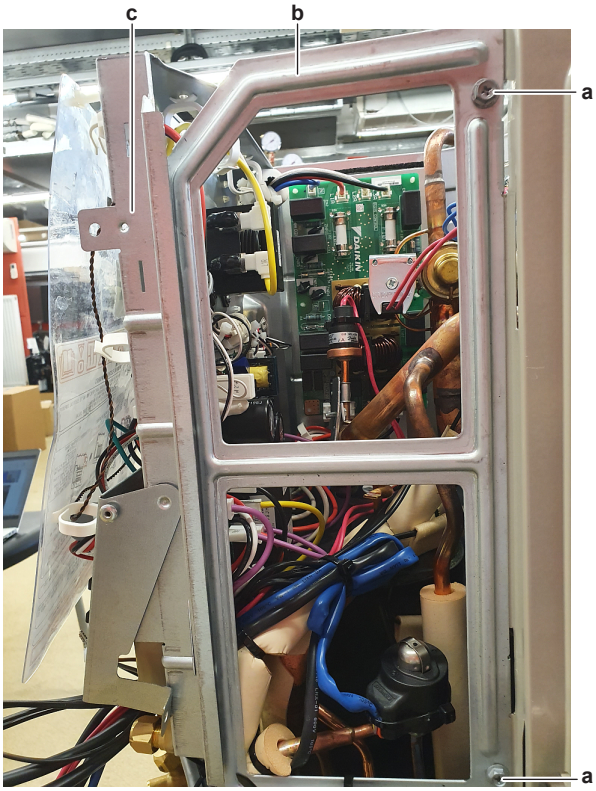
a Faston connector

10 Rotate the terminal plate upwards and remove the two screws from the heat sink and the screw from the service port.



a Terminal plate
b Screw (heat sink)
c Screw (service port)
d Heat sink

11 Remove the 2 screws that fix the switch box supporting plate to the unit.



a Screw
b Switch box supporting plate
c Switch box

12 Lift and remove (unhook from the switch box) the switch box supporting plate from the outdoor unit.

13 Slightly tilt the heat sink forward (±10°) to create space for the switch box removal.

14 Lift and remove (unhook from the support plate on the right hand side) the switch box from the outdoor unit.

CAUTION

Take care that the thermal interface grease (applied on the heat sink) does NOT smear everything.

15 To install the switch box, see "3.12 Plate work" [▸ 111].

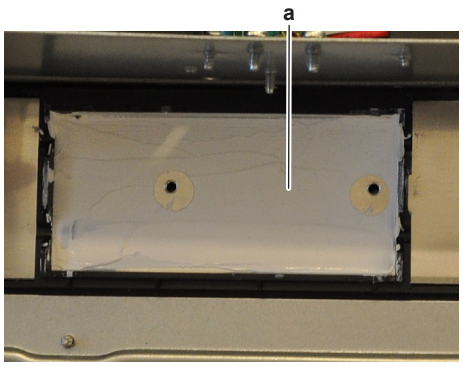
3.12.6 To install the switch box

1 Use a piece of cloth to remove the old thermal interface grease and clean the heat sink surface(s).

2 Apply new thermal interface grease on the heat sink surface on the switch box.

INFORMATION

Use 10~11 g of thermal interface grease and spread evenly over the heat sink surface. Avoid too much grease inside the screw holes.

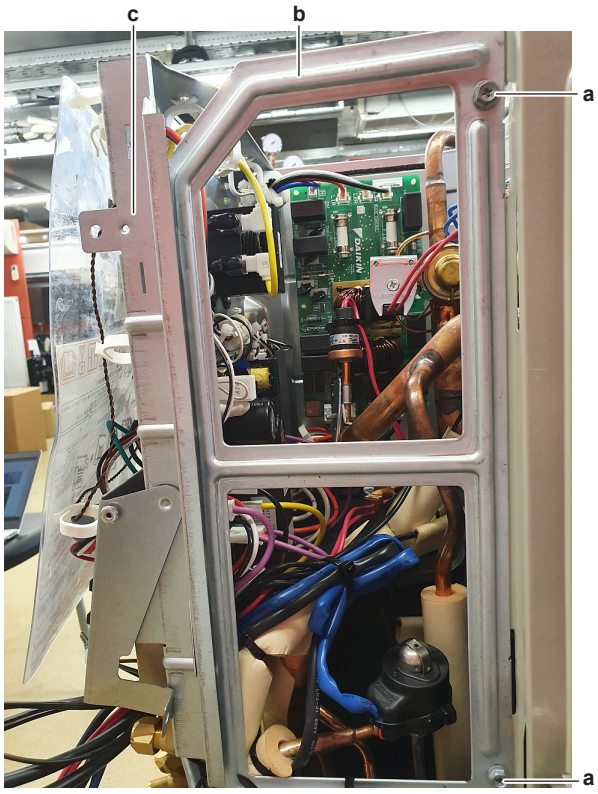


a Thermal interface grease on heat sink

3 Install the switch box on the correct location in the outdoor unit. Take the following into account:

- Route the DC fan motor harness in front of the switch box to easily connect it later on.
- Route the compressor wiring harness (Faston connectors) downwards between the compressor body and the discharge pipe.
- Guide the sheet metal plate of the service port behind the switch box mounting plate to correctly install the service port and avoid pipe bending.
- Slightly tilt the heat sink forward (±10°) and avoid that the thermal interface grease gets smeared everywhere.
- Hook the switch box mounting plate in the support plate on the right hand side.

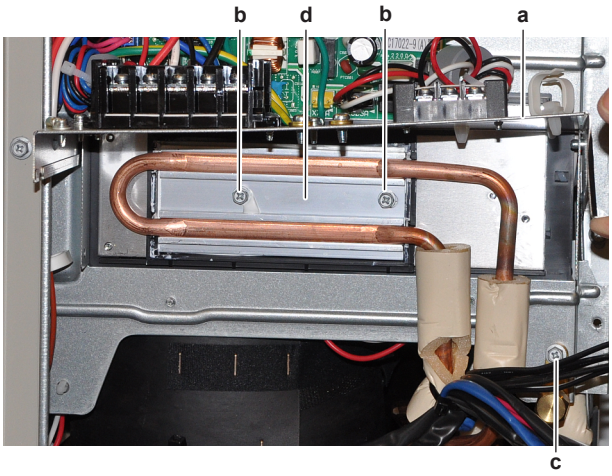
4 Install the hooks of the switch box supporting plate in the openings of the switch box.



a Screw
b Switch box supporting plate
c Switch box

5 Install and tighten the 2 screws to fix the switch box supporting plate to the unit.

6 Install and tighten the screw to fix the service port to the switch box mounting plate.



a Terminal plate
b Screw (heat sink)
c Screw (service port)
d Heat sink

7 Install and alternately (in two steps) tighten the two screws to fix the heat sink to the switch box. Tighten to 2.5 Nm torque.

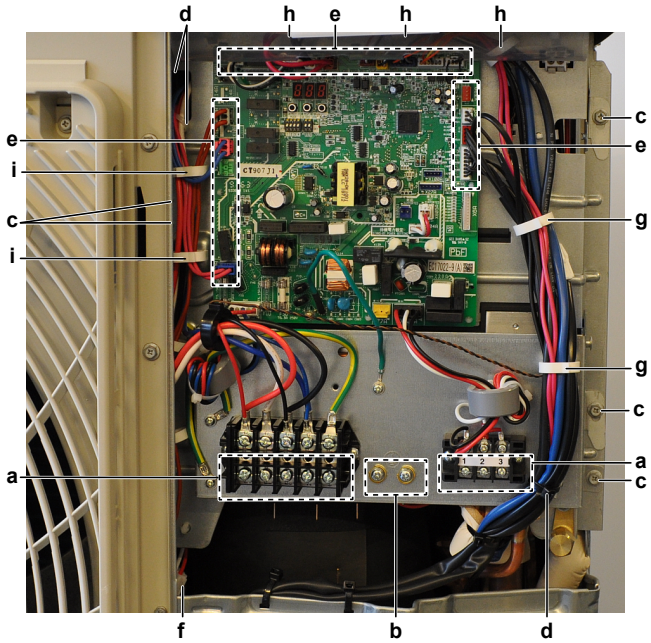
8 Close the terminal plate. Make sure no wires get stuck in the hinge mechanism.

9 Connect the Faston connectors to the compressor wire terminals U, V and W and install the cover of the compressor wire terminals.

INFORMATION

Use the notes made during disconnection to connect the compressor wiring to the correct wire terminals of the compressor.

10 On the right hand side, pull the wires through the hole to the front side of the mounting plate and route them inside the wire clips.



a Wire terminal
b Ground wire
c Screw
d Tie strap
e Connectors

f Fan motor connector X1A
g Wire clip (left side)
h Wire clip (upper side)
i Wire clip (right side)

11 Route all wires in the wire clips on the left side and upper side.

12 Connect all connectors to the main PCB.

13 Connect the fan motor connector X1A.

14 Install new tie straps.

15 Install and tighten the five screws to fix the switch box mounting plate.

16 Connect all field wiring (electrical power supply wiring, wiring to indoor unit(s), ground wires, …) to the wire terminals.

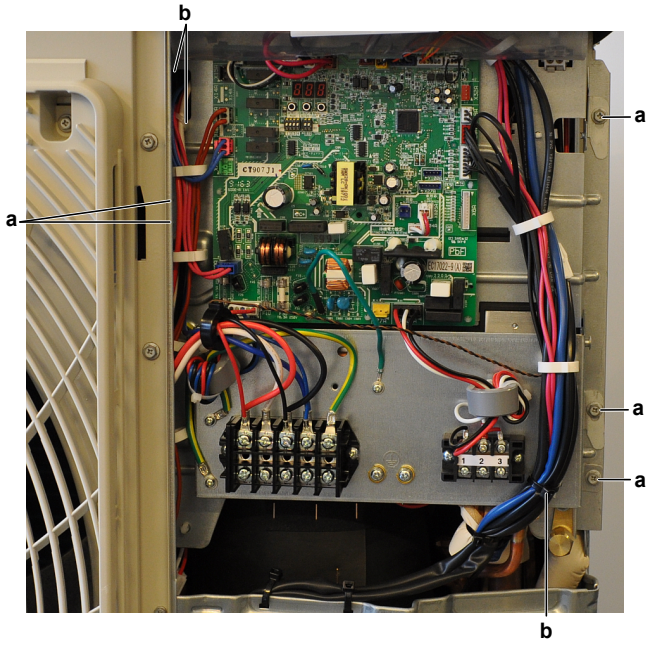
3.12.7 To access the back side of the switch box

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

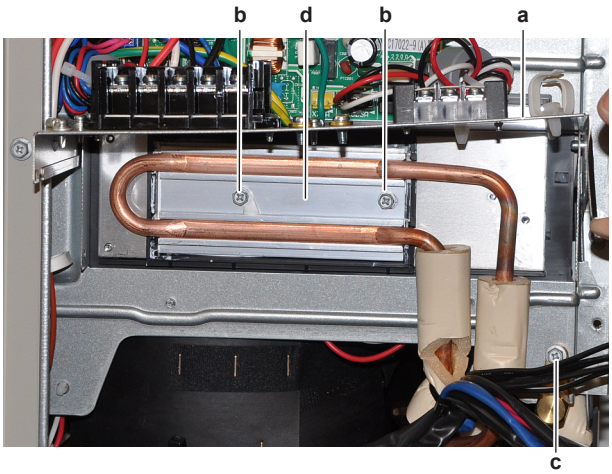
1 Remove the five screws that fix the switch box mounting plate.



a Screw
b Tie strap

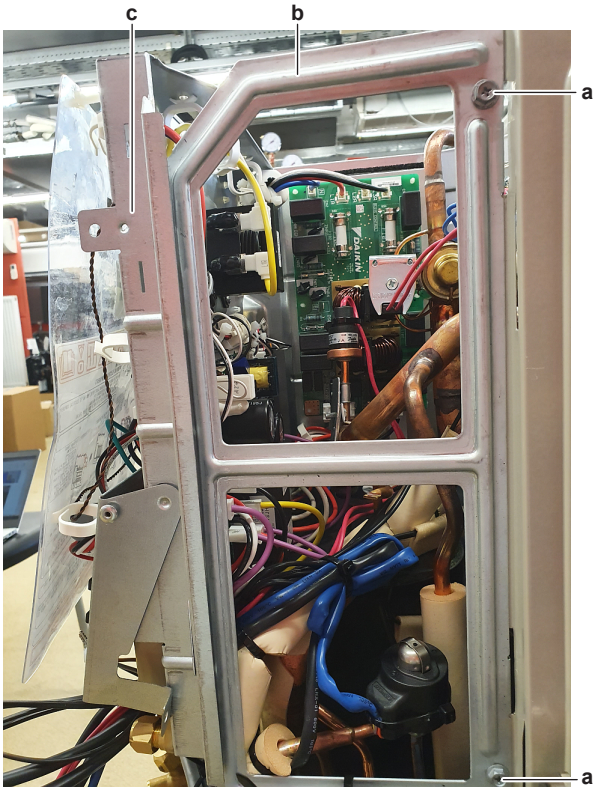
2 Cut the tie straps.

3 Rotate the terminal plate upwards and remove the two screws from the heat sink and the screw from the service port.



a Terminal plate
b Screw (heat sink)
c Screw (service port)
d Heat sink

4 Remove the 2 screws that fix the switch box supporting plate to the unit.



a Screw
b Switch box supporting plate
c Switch box

5 Lift and remove (unhook from the switch box) the switch box supporting plate from the outdoor unit.

6 Lift and remove (unhook from the support plate on the right hand side) the switch box from the outdoor unit.

CAUTION

Take care that the thermal interface grease (applied on the heat sink) does NOT smear everything.

CAUTION

Take care NOT to damage the wiring or cables when repositioning the siwth box.

3.13 Reactor

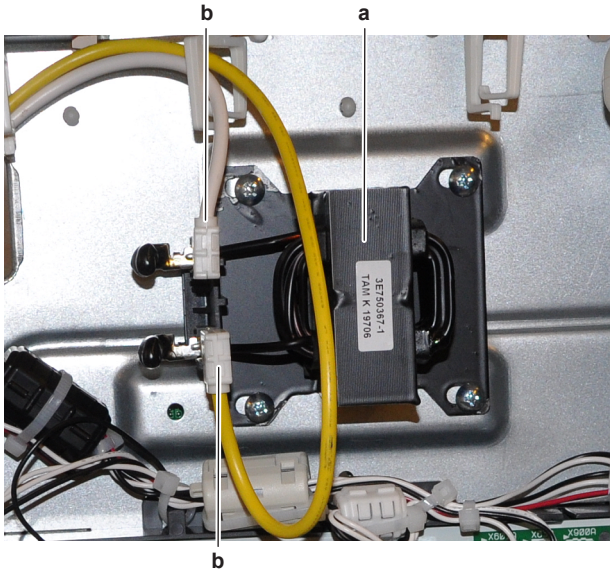
3.13.1 Checking procedures

To perform an electrical check of the reactor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

1. Remove the required plate work, see "3.12 Plate work" [▸ 111].
2. Check the connections of the reactor on the inverter PCB, see "6.2 Wiring diagram" [▸ 151].
3. Remove the Faston connectors from the reactor.



a Reactor
b Faston connector

4. 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 "3.13.2 Repair procedures" [▸ 122].

5. Measure the continuity of the reactor.

Is the continuity measurement correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next step.
No	Replace the reactor, see "3.13.2 Repair procedures" [▸ 122].

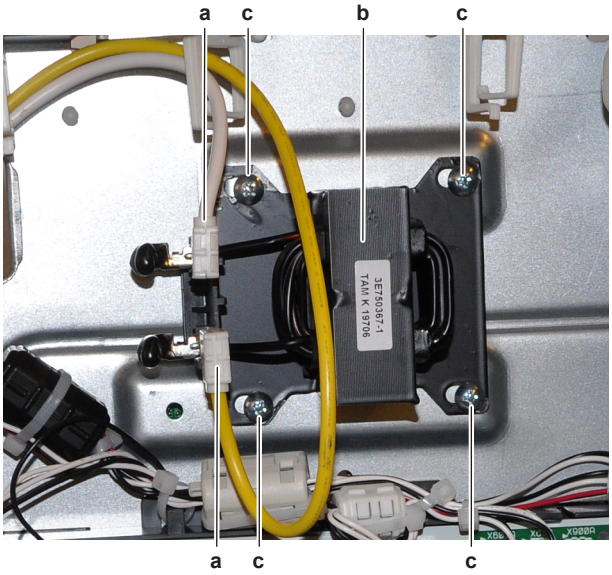
3.13.2 Repair procedures

To remove the reactor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

1. Remove the required plate work, see "3.12 Plate work" [▸ 111].
2. Remove the Faston connectors to disconnect the wires from the reactor.
3. Remove the 4 screws that fix the reactor to the switch box.
4. Remove the reactor.



a Faston connector
b Reactor
c Screw

5. To install the reactor, see "3.13.2 Repair procedures" [▸ 122].

To install the reactor

1. Install the reactor on the correct location on the inverter mounting plate.
2. Install the 4 screws that fix the reactor to the inverter mounting plate.
3. Connect the 2 power rails to the reactor terminals using the 2 screws.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

3.14 Solenoid valve

3.14.1 Checking procedures

INFORMATION

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

To perform a mechanical check of the solenoid valve

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

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 solenoid valve coil firmly fixed and not visually damaged?	Action
Yes	Perform an electrical check of the solenoid valve, see "3.14.1 Checking procedures" [▸ 122].
No	Fix or replace the solenoid valve coil, see "3.14.2 Repair procedures" [▸ 124].

To perform an electrical check of the solenoid valve

Prerequisite: First perform a mechanical check of the solenoid valve, see "3.14.1 Checking procedures" [▸ 122].

1 Unplug the solenoid valve connector from the main PCB.

2 Measure the resistance of the solenoid valve coil.

Name	Symbol	Location (PCB)	Connector	Winding resistance
Pressure equalization valve	Y3S	Main	X8A	2.2 kΩ±10%

Is the measured value correct?	Action
Yes	Continue with the next step.
No	Replace the solenoid valve coil, see "3.14.2 Repair procedures" [▸ 124].

3 Re-connect the solenoid valve connector to the main PCB.

4 Turn ON the power using the respective circuit breaker.

5 Turn on the unit using the user interface.

6 Connect the service monitoring tool to the unit and check if the specific solenoid valve is activated or NOT.

INFORMATION

The solenoid valve is used for pressure equalization before start-up control. The solenoid valve is activated (ON) for some time before the compressor starts (after the power reset) and is de-activated (OFF) shortly after the compressor starts.

7 Measure the voltage (power supply) on the solenoid valve connection on the PCB. The measured voltage MUST be:

- 0 V AC when the solenoid valve is NOT activated
- 230 V AC when the solenoid valve is activated

8 Wait for the activation or deactivation of the specific solenoid valve and again measure the voltage (power supply) on the solenoid valve connection on the PCB.

Are the measured voltages correct?	Action
Yes	Perform a position check of the solenoid valve, see "3.14.1 Checking procedures" [▸ 122].
No	Perform a check of the main PCB, see "3.9 Main PCB" [▸ 95].

To perform an operation check of the solenoid valve

Prerequisite: First perform an electrical check of the solenoid valve, see "3.14.1 Checking procedures" [▸ 122].

1 Connect the service monitoring tool to the unit and check if the specific solenoid valve is activated or NOT.

INFORMATION

The solenoid valve is used for pressure equalization before start-up control. The solenoid valve is activated (ON) for some time before the compressor starts (after the power reset) and is de-activated (OFF) shortly after the compressor starts.

2 Check the position of the specific solenoid valve. The solenoid valve MUST be:
- In closed position (NOT energized) when NOT activated
- In open position (energized) when activated

3 If the solenoid valve is closed, check the valve inlet and outlet for any leaks. Replace the valve body if any leaks are found, see "3.14.2 Repair procedures" [▸ 124].

4 If the solenoid valve is open, check with a contact thermometer (or by touching) if refrigerant flows through the solenoid valve.

5 Wait for the activation or deactivation of the specific solenoid valve and again perform the above checks.

Is the solenoid valve operating correctly?	Action
Yes	Component is OK. Return to the troubleshooting of the specific error and continue with the next step.
No	Replace the solenoid valve body, see "3.14.2 Repair procedures" [▸ 124].

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.

3.14.2 Repair procedures

To remove the solenoid valve coil

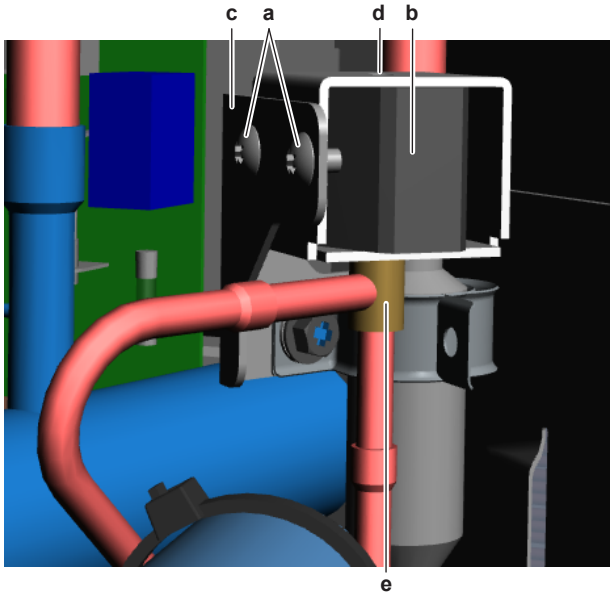
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

1 Remove the screws that fix the solenoid valve to the bracket.



a Screw
b Solenoid valve coil
c Bracket
d Screw
e Solenoid valve body

2 Remove the screw that fixes the solenoid valve coil to the solenoid valve body.

3 Remove the solenoid valve coil from the solenoid valve body.

4 Disconnect the solenoid valve connector from the main PCB.

5 Cut all tie straps that fix the solenoid valve harness.

6 To install the solenoid valve coil, see "3.14.2 Repair procedures" [▸ 124].

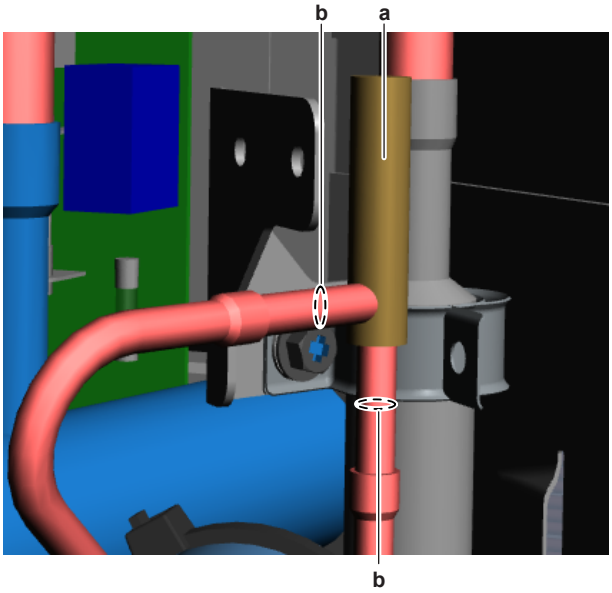
To remove the solenoid valve body

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "4.2.2 Repair procedures" [▸ 142].

Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

1 Remove the solenoid valve coil, see "3.14.2 Repair procedures" [▸ 124].

2 Cut the solenoid valve body pipes using a pipe cutter.



a Solenoid valve body
b Pipe

3 Remove the solenoid valve body.

4 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

5 Heat the end of the solenoid valve pipe using an oxygen acetylene torch and remove the solenoid valve pipe end.

6 Stop the nitrogen supply when the piping has cooled down.

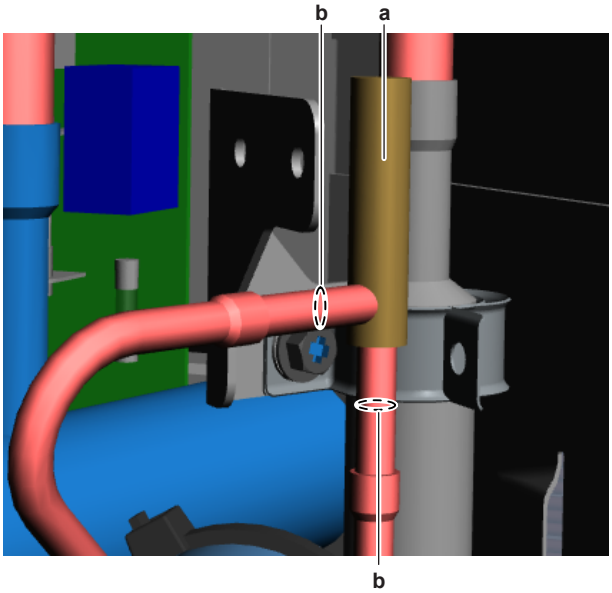
7 To install the solenoid valve body, see "3.14.2 Repair procedures" [▸ 124].

To install the solenoid valve body

1 Install the solenoid valve body in the correct location.

2 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

3 Wrap a wet rag around the solenoid valve body and solder the refrigerant pipes to the solenoid valve body.



a Solenoid valve body
b Pipe

CAUTION

Overheating the valve will damage or destroy it.

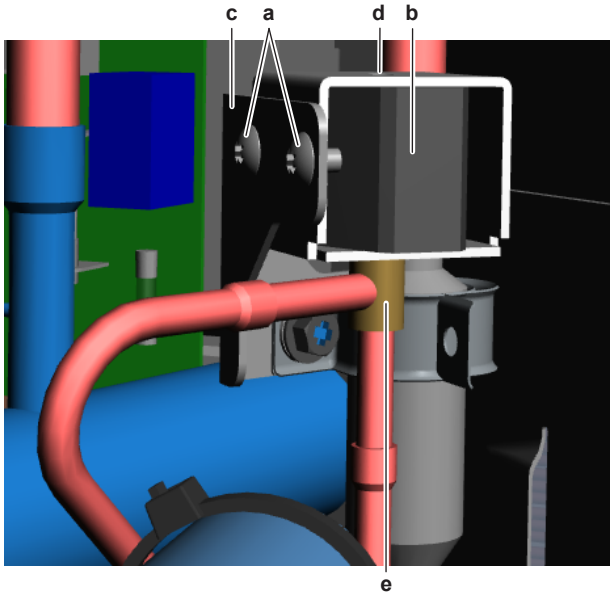
4 After soldering is done, stop the nitrogen supply after the component has cooled-down.

5 To install the solenoid valve coil, see "3.14.2 Repair procedures" [▸ 124].

6 Add refrigerant to the refrigerant circuit, see "4.2.2 Repair procedures" [▸ 142].

To install the solenoid valve coil

1 Install the solenoid valve coil on the solenoid valve body.



a Screw
b Solenoid valve coil
c Bracket
d Screw
e Solenoid valve body

2 Install and tighten the screw to fix the solenoid valve coil to the solenoid valve body.

3 Install and tighten the screws to fix the solenoid valve to the bracket.

4 Route the solenoid valve harness towards the switch box.

5 Connect the solenoid valve connector to the main PCB.

WARNING

When reconnecting a connector to the PCB, do NOT apply force, as this may damage the connector or connector pins of the PCB.

6 Fix the solenoid valve harness using new tie straps.

INFORMATION

Replace all cable ties that were cut during removal.

Is the problem solved?	Action
Yes	No further actions required.

Is the problem solved?	Action
No	Return to "3.14.1 Checking procedures" [▸ 122] of the solenoid valve and continue with the next procedure.

3.15 Thermistors

3.15.1 Refrigerant side thermistors

Checking procedures

INFORMATION

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

To perform a mechanical check of the specific thermistor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

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" [▸ 128].
No	Correctly install the thermistor, see "Repair procedures" [▸ 131].

To perform an electrical check of the specific thermistor

1 First perform a mechanical check of the thermistor, see "Checking procedures" [▸ 128].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To check the rectifier voltage" [▸ 135].

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)	Type
Air thermistor	R1T	Main (O/U)	X18A:1-3	1
Discharge pipe thermistor	R2T	Main (O/U)	X29A:1-2	3
Suction thermistor	R3T	Main (O/U)	X30A:1-2	2
Heat exchanger thermistor	R4T	Main (O/U)	X30A:3-4	1
Heat exchanger (middle) thermistor	R5T	Main (O/U)	X30A:5-6	1
Refrigerant liquid thermistor	R6T	Main (O/U)	X30A: 7-8	1
Compressor body thermistor	R7T	Main (O/U)	X29A: 3-4	3

4 Determine the thermistor resistance that matches the measured temperature.

Type 1 thermistor

T °C	kΩ	T °C	kΩ	T °C	kΩ	T °C	kΩ
–20	197.81	10	39.96	40	10.63	70	3.44
–19	186.53	11	38.08	41	10.21	71	3.32
–18	175.97	12	36.30	42	9.81	72	3.21
–17	166.07	13	34.62	43	9.42	73	3.11
–16	156.80	14	33.02	44	9.06	74	3.01
–15	148.10	15	31.50	45	8.71	75	2.91
–14	139.94	16	30.06	46	8.37	76	2.82
–13	132.28	17	28.70	47	8.05	77	2.72
–12	125.09	18	27.41	48	7.75	78	2.64
–11	118.34	19	26.18	49	7.46	79	2.55
–10	111.99	20	25.01	50	7.18	80	2.47

T °C	kΩ	T °C	kΩ	T °C	kΩ	T °C	kΩ
–9	106.03	21	23.91	51	6.91		
–8	100.41	22	22.85	52	6.65		
–7	95.14	23	21.85	53	6.41		
–6	90.17	24	20.90	54	6.65		
–5	85.49	25	20.00	55	6.41		
–4	81.08	26	19.14	56	6.18		
–3	76.93	27	18.32	57	5.95		
–2	73.01	28	17.54	58	5.74		
–1	69.32	29	16.80	59	5.14		
0	65.84	30	16.10	60	4.87		
1	62.54	31	15.43	61	4.70		
2	59.43	32	14.79	62	4.54		
3	56.49	33	14.18	63	4.38		
4	53.71	34	13.59	64	4.23		
5	51.09	35	13.04	65	4.08		
6	48.61	36	12.51	66	3.94		
7	46.26	37	12.01	67	3.81		
8	44.05	38	11.52	68	3.68		
9	41.95	39	11.06	69	3.56		

Type 2 thermistor

T °C	kΩ	T °C	kΩ	T °C	kΩ	T °C	kΩ
0	635.1	40	106.2	80	24.9	120	7.5
5	496.6	45	87.1	85	21.1	125	6.5
10	391	50	71.8	90	18	130	5.7
15	310	55	59.5	95	15.4	135	5
20	247.3	60	49.5	100	13.3	140	4.4
25	198.5	65	41.4	105	11.4	145	3.9
30	160.2	70	34.8	110	9.9	150	3.4
35	130.1	75	29.3	115	8.6		

Type 3 thermistor

T °C	kΩ	T °C	kΩ	T °C	kΩ	T °C	kΩ
0	806.5	50	78.3	100	13.1	150	3.2
10	478.8	60	52.8	110	9.6	160	2.5
20	292.9	70	36.3	120	7.1	170	1.9
30	184.1	80	25.4	130	5.4	180	1.5
40	118.7	90	18.1	140	4.1		

5 Disconnect the thermistor connector from the appropriate PCB.

6 Measure the resistance between the appropriate pins of the thermistor connector.

7 Check that the measured resistance value matches the resistance determined through the measured temperature (earlier step in the procedure).

- E.g. R1T thermistor:
- Measured temperature with contact thermometer: 23.1°C,
- Resistance value determined through temperature (using the table for type 1 thermistors):
  Resistance at 23°C: 21.85 kΩ,
  Resistance at 24°C: 20.90 kΩ,
- Disconnect connector and measure resistance between X18A pin 1-3:
  Measured resistance: 21.86 kΩ,
- Measured resistance value is inside the range. R1T thermistor passes the check.

INFORMATION

All thermistors have a resistance tolerance of 3%.

INFORMATION

In most cases, the user interface allows to monitor the thermistors.

If the measured resistance value matches the resistance determined through the measured temperature, but the temperature for the corresponding thermistor is NOT correct on the user interface display, replace the applicable PCB.

Does the measured resistance of the thermistor match with the temperature determined resistance?	Action
Yes	Thermistor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the specific thermistor, see "Repair procedures" [▸ 131].

Repair procedures

To remove the thermistor

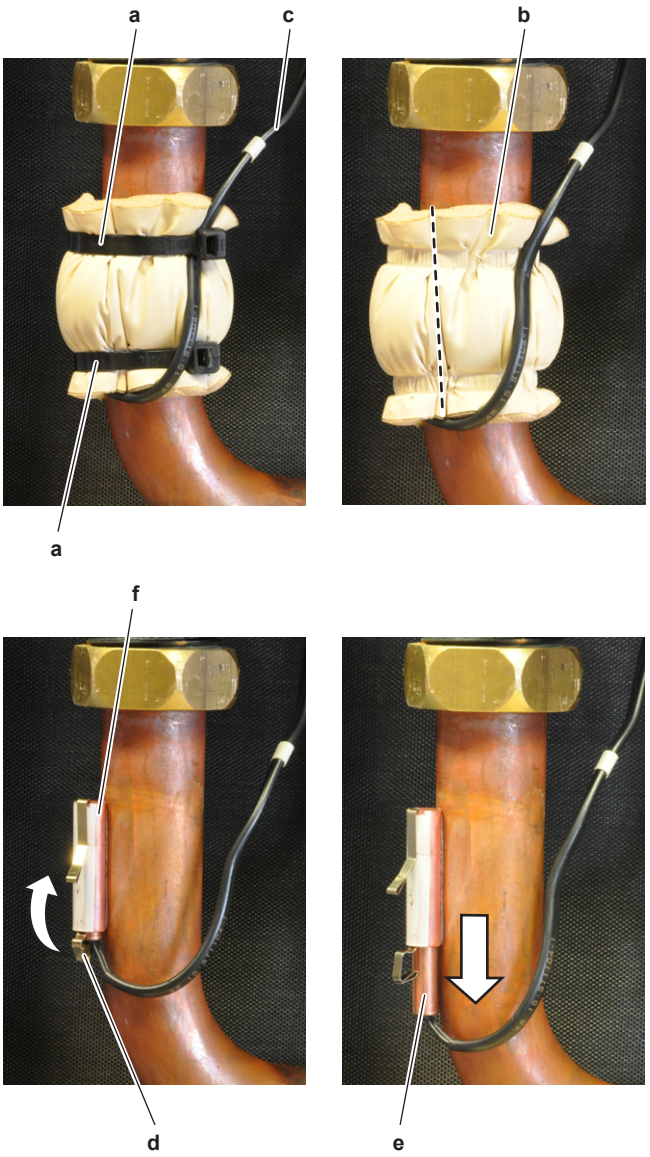
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1 Locate the thermistor that needs to be removed.

2 Cut the tie straps that fix the insulation and the thermistor wire.



a Tie strap
b Insulation
c Thermistor wire
d Clip
e Thermistor
f Thermistor holder

3 Cut and remove the insulation.

4 Pull the clip that fixes the thermistor.

5 Remove the thermistor from the thermistor holder.

6 Cut all tie straps that fix the thermistor harness.

7 Disconnect the thermistor connector from the appropriate PCB and remove the thermistor.

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 "6.2 Wiring diagram" [▸ 151]. ALWAYS replace the complete set of thermistors wired to the same connector.

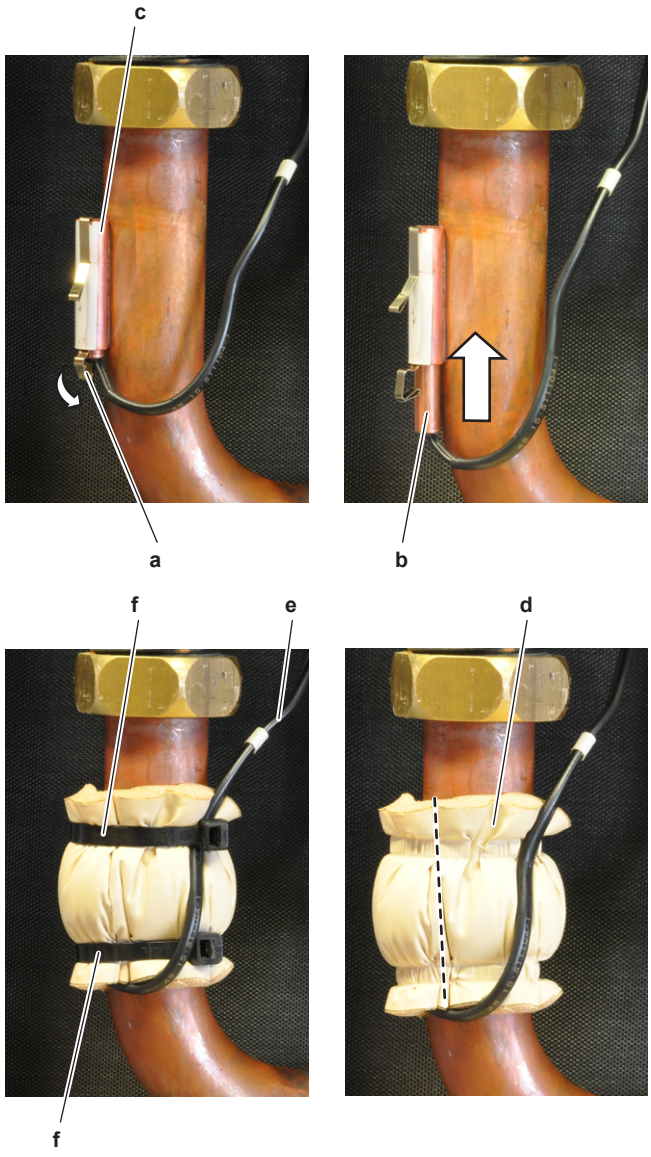
8 When removing the complete set of thermistors wired to the same connector:

- Remove all other thermistors wired to the connector from their thermistor holder,
- Disconnect the thermistor connector from the appropriate PCB,
- Remove the complete set of thermistors.

9 To install the thermistor, see "Repair procedures" [▸ 131].

To install the thermistor

1 Pull the clip and install the thermistor in the specific thermistor holder. Make sure the clip is in the correct position (blocking the thermistor).



a Clip
b Thermistor
c Thermistor holder
d Insulation
e Thermistor wire
f Tie strap

2 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 "6.2 Wiring diagram" [▸ 151]. ALWAYS replace the complete set of thermistors wired to the same connector.

3 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,
- Connect the thermistor connector to the appropriate PCB.

WARNING

When reconnecting a connector to the PCB, do NOT apply force, as this may damage the connector or connector pins of the PCB.

4 Fix the thermistor harness using new tie straps

5 Install the insulation around the thermistor.

6 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 Third party components

4.1 Electrical circuit

4.1.1 Checking procedures

To check the power supply of the unit

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

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 using the respective circuit breaker.

4 Measure the voltage between the phases L1-L2-L3 on the power supply terminal X1M. The voltage MUST be 400 V AC ± 10%.

5 Measure the voltage between each phase and N on the power supply terminal X1M. 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 "4.1.2 Repair procedures" [▸ 137].

To check if the power supply is conform with the regulations

1 Check that the power source is in line with the requirements described in the databook.

Is the power supply conform 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 "4.1.2 Repair procedures" [▸ 137].

To check the rectifier voltage

Prerequisite: Stop the unit operation via the user interface.

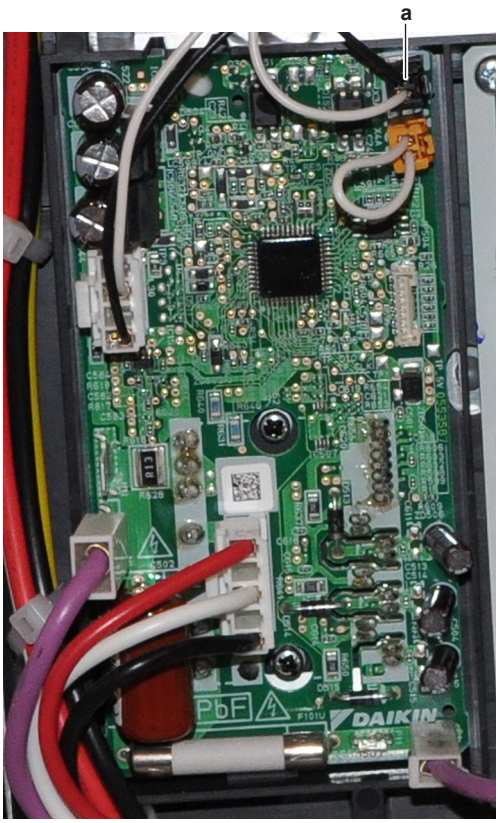
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1 Unplug the rectifier voltage check connector X3A from the fan inverter PCB.

2 Measure the voltage on the unplugged rectifier voltage check connector X3A.

Result: The measured voltage MUST be below 10 V DC.



a Connector X3A

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding.

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 "6.2 Wiring diagram" [▸ 151].

INFORMATION

Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.1.2 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 correct the wiring between PCB's

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1 Make sure that all wires are firmly and correctly connected, see "6.2 Wiring diagram" [▸ 151].

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.

4.2 Refrigerant circuit

4.2.1 Checking procedures

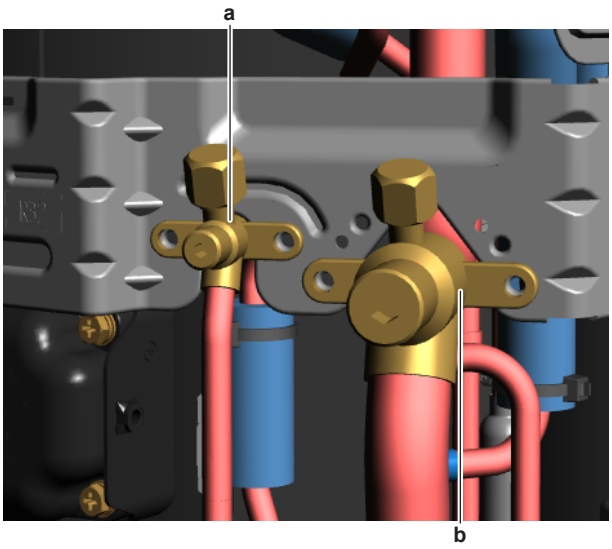
INFORMATION

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 "3.12 Plate work" [▸ 111].

1 Remove the caps.



a Liquid stop valve
b 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 "4.2.2 Repair procedures" [▸ 142].

To check if the refrigerant circuit is clogged

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

1 Wait for the refrigerant to reach the outdoor temperature.

2 Connect a manometer to the high pressure and low pressure service ports.

3 Turn ON the power of the unit.

4 Activate `Heating` operation via the user interface.

5 Read the pressure on the high and low pressure gauges. If there is a significant difference between high and low pressure, the refrigerant circuit might be clogged.

6 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 "4.2.2 Repair procedures" [▶ 142].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To check if the refrigerant circuit is correctly charged

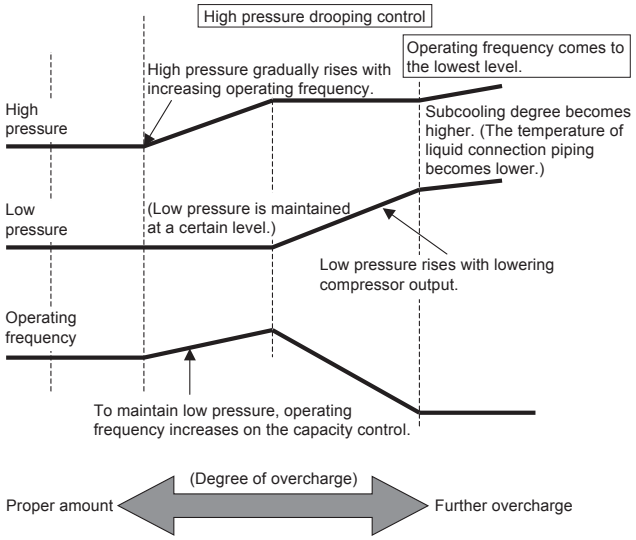
Due to the relationship to pressure control and electronic expansion valve control, the amount of refrigerant needs to be examined according to operating conditions.

Refer to the procedures shown below for correct examination.

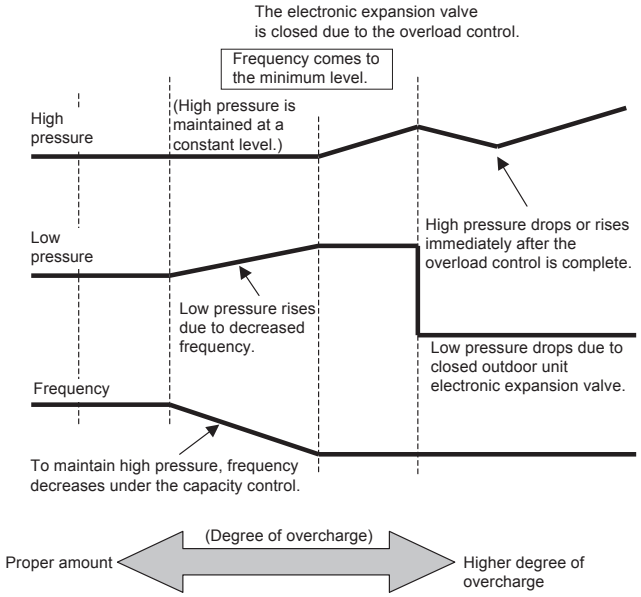
Refrigerant overcharge diagnosis

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 refriferant in liquid form rises (values >4~5K are NOT normal).

Cooling



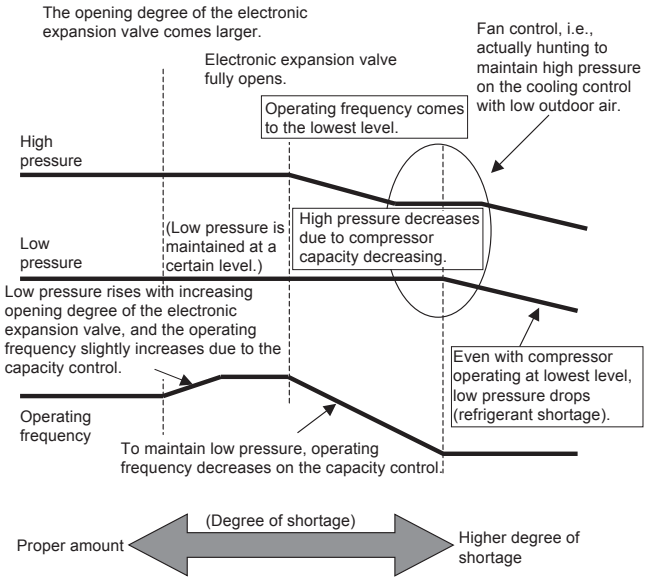
Heating



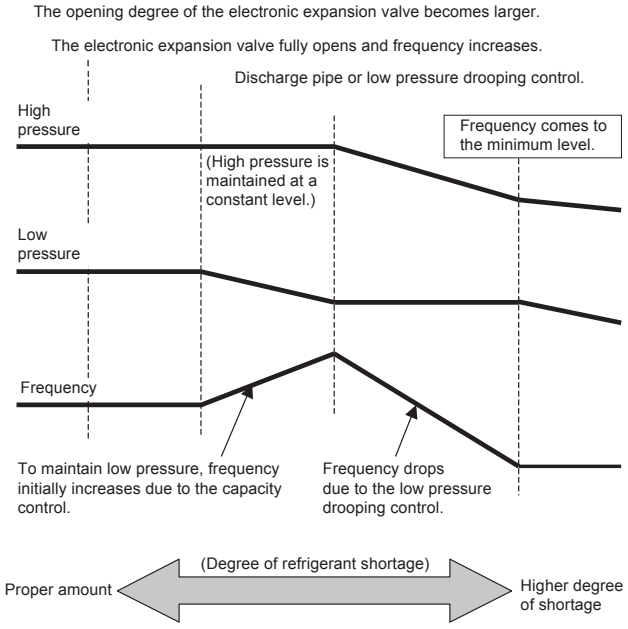
Refrigerant shortage diagnosis

1. The superheated degree of suction gas rises. Consequently, the compressor discharge gas temperature becomes higher than normal.
2. The superheated degree of suction gas rises. Consequently, the electronic expansion valve turns open more than normal or completely open for average output.
3. Low pressure drops to cause the unit not to reach cooling capacity (or heating capacity).

Cooling



Heating



Is the refrigerant circuit charged correctly?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Add or recuperate refrigerant until correctly charged, see "4.2.2 Repair procedures" [▸ 142].

To check for non-condensables in the refrigerant circuit

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

1. Wait for the refrigerant to reach the outdoor temperature.
2. Connect a manometer to the service port.

3 Measure the pressure of the refrigerant. The measured pressure converted into saturated temperature MUST be in line with the expected pressure / saturated temperature at current ambient temperature.

4 If the measured pressure 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 "4.2.2 Repair procedures" [▸ 142].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To perform a pressure test of the refrigerant circuit

1 Perform a pressure test in line with local legislation.

CAUTION

Perform a pressure test only when leaks are expected.

Is the pressure in the refrigerant circuit correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the leaking part of the refrigerant circuit, see "4.2.2 Repair procedures" [▸ 142].

To check if the refrigerant field piping is conform with the regulations

1 Check if the refrigerant field piping is conform with the regulations. Adjust as needed. See installation manual for field piping specifications.

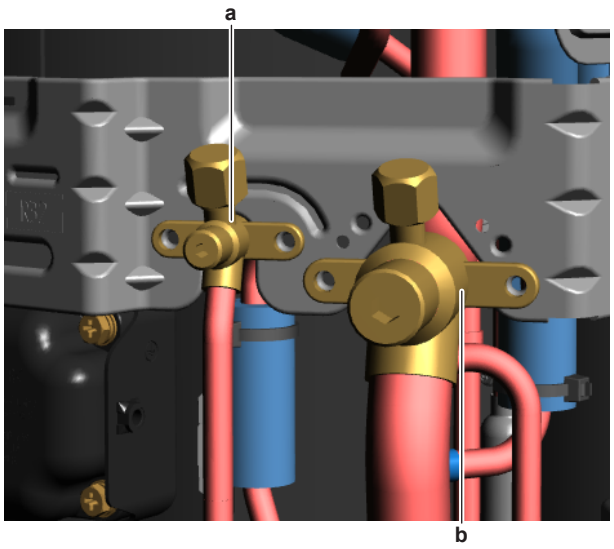
Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.2.2 Repair procedures

To open the stop valves of the refrigerant circuit

Prerequisite: Remove the required plate work, see "3.12 Plate work" [▸ 111].

1 Remove the caps.



a Liquid stop valve
b 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" [▶ 146] for more details.

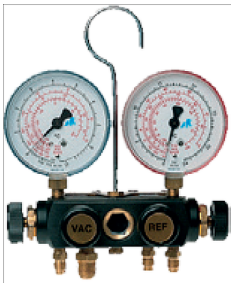
Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To recuperate the refrigerant

Prerequisite: Stop the unit operation via the user interface.

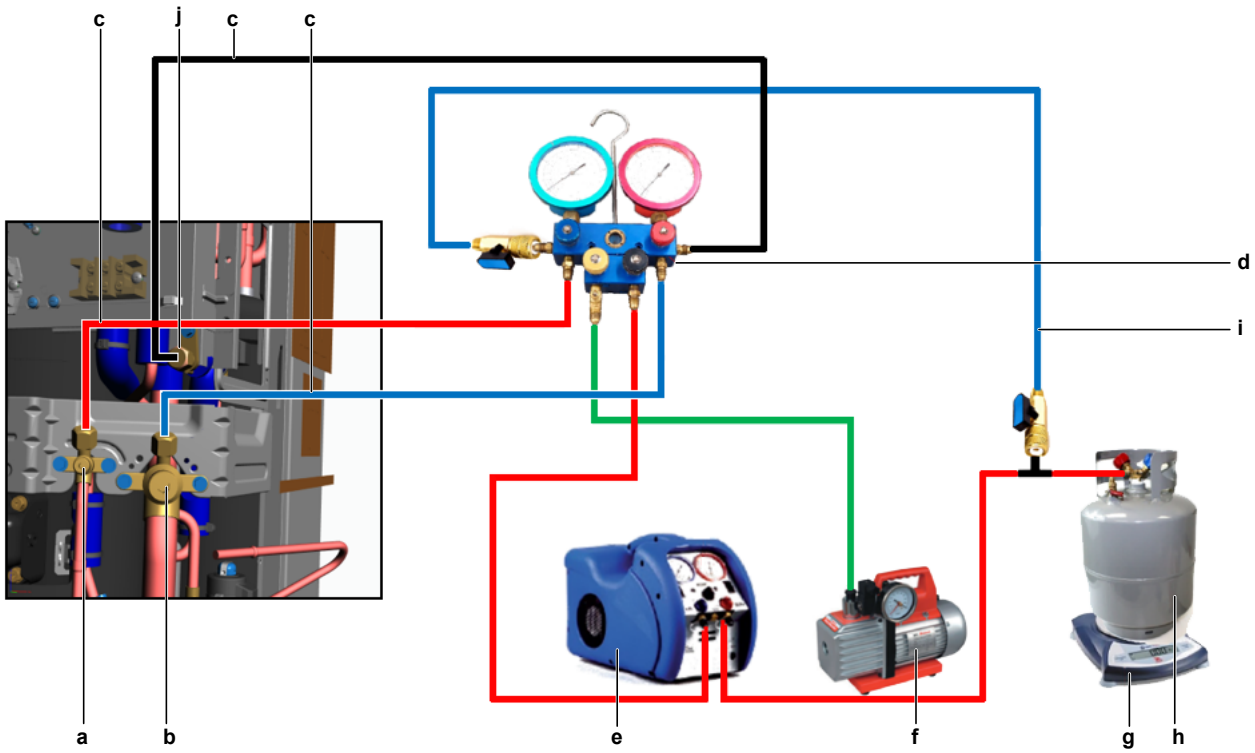
1 Necessary tools:

Service tool		Remark
	Refrigerant recovery unit	Compatible with the refrigerant to be recovered

Service tool		Remark
	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 service port
b Gas service port
c Flexible hose
d Manifold
e Recovery unit
f Vacuum pump
g Scale
h Recovery cylinder
i Vacuum setup
j Internal service port

4 Activate vacuum mode via the field settings (see field settings in installation manual or installer reference guide).

To make sure that refrigerant cycle is completely connected and there are no dead-zones because of closed expansion- or solenoid valves, entering the vacuum mode ensures that:

- all outdoor unit expansion valves get fully opened,
- the solenoid valve gets fully opened.

5 To add refrigerant, see "4.2.2 Repair procedures" [▸ 142].

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	Perform a pressure test of the refrigerant circuit, see "4.2.1 Checking procedures" [▸ 137].

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:
  - –0.1 MPa / –760 mm Hg / –750 Torr / –1 bar for at least 1 hour.
  - Connect the unit according to the available service ports.
  - Use related field setting where necessary to open expansion valve / solenoid valve.

To perform refrigerant pump down operation

The unit is equipped with an automatic pump down operation which will collect all refrigerant from the field piping and indoor unit in the outdoor unit. To protect the environment, make sure to perform the following pump down operation when relocating the unit.

DANGER: RISK OF EXPLOSION

Pump down – Refrigerant leakage. If you want to pump down the system, and there is a leak in the refrigerant circuit:

- Do NOT use the unit's automatic pump down function, with which you can collect all refrigerant from the system into the outdoor unit. **Possible consequence:** Self-combustion and explosion of the compressor because of air going into the operating compressor.
- Use a separate recovery system so that the unit's compressor does NOT have to operate.

CAUTION

Some outdoor units are equipped with a low pressure switch to protect the compressor by switching it off. NEVER short-circuit the low pressure switch during pump down operation.

1. Remove the refrigerant connection cover, see "3.12 Plate work" [▸ 111].
2. Remove the cap from the stop valves.
3. Perform pump down operation, see installer reference guide for the correct procedure.
4. After 5~10 minutes (after only 1~2 minutes in case temperature <–10°C), close the liquid stop valve using a hexagonal wrench.

5 Check the manifold if vacuum is reached. Close the gas stop valve and stop forced cooling operation.

Refrigerant piping repair

- Make sure to cover open pipe ends during repair so no dust or moisture can enter.
- Make sure to re-apply insulation removed during repair.
- Pipe expansion / flare making:
  - Remove any burrs on the cut surface using the correct tool such as reamer or scraper (note that excessive deburring can thin the pipe walls and cause cracking of the pipe).
  - Make sure the flare has the correct size (use a flare gauge).
  - Make sure no particles remain in the piping.
  - Apply just a drop of refrigerant oil on the inner surface of the flare.
  - Make sure the flare connection is tightened with the correct torque (torque values refer to installation manual).
- Brazing:
  - Use the correct brazing tool.
  - Use a phosphor copper filler metal (silver composition of 0 to 2%). Do not use flux material.
  - Flush the piping before brazing with nitrogen to avoid oxidation of the inside of the copper tubes (nitrogen purity ≥99.99%).

4.3 External factors

4.3.1 Checking procedures

To check the outdoor temperature

1 The temperature ranges for the different operation modes of the unit can be found in the databook on Business Portal.

INFORMATION

If the outdoor temperature is outside the range of operation, the unit may NOT operate or may NOT deliver the required capacity.

Is the outdoor temperature within the operating range?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Wait for the outdoor temperature to return within the operating range.

To check the required space around the outdoor unit heat exchanger

1 Check if the space around the outdoor unit heat exchanger is sufficient. See the installation manual for the required space specifications. Adjust as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

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.

5 Maintenance

5.1 To clean the outdoor unit heat exchanger

1. Straighten the hair 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 hair fins of the outdoor unit heat exchanger during the cleaning process.

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 Technical data

6.1 Detailed information setting mode

6.1.1 Detailed information setting mode: Outdoor unit

See the installer reference guide on business portal for more information.

6.2 Wiring diagram

6.2.1 Wiring diagram: Outdoor unit

The wiring diagram is delivered with the unit, located at the inside of the service cover.

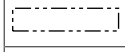
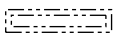
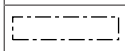
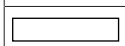
(1) Connection diagram

English	Translation
Connection diagram	Connection diagram
Only for ***	Only for ***
See note ***	See note ***
Outdoor	Outdoor
Indoor	Indoor
Upper EEV	Upper electronic expansion valve
Lower EEV	Lower electronic expansion valve
Fan	Fan
ON	ON
OFF	OFF

(2) Layout

English	Translation
Layout	Layout
Front	Front
Left	Left
Back	Back
Position of compressor terminal	Position of compressor terminal

(3) Notes

English	Translation
Notes	Notes
	Connection
X1M	Indoor/outdoor communication
	Earth wiring
	Field supply
	Protective earth
	Field wire
	Wiring depending on model
	Option
	Switch box
	PCB

NOTES:

1 Refer to the wiring diagram sticker (on the back of the front plate) for how to use the BS1~BS3 and DS1+DS2 switches.

2 When operating, do not short-circuit protective devices S1PH and S1PL.

3 Refer to the combination table and the option manual for how to connect the wiring to X6A, X15A and X77A.

4 Colours: BLK: black, RED: red, BLU: blue, WHT: white, GRN: green

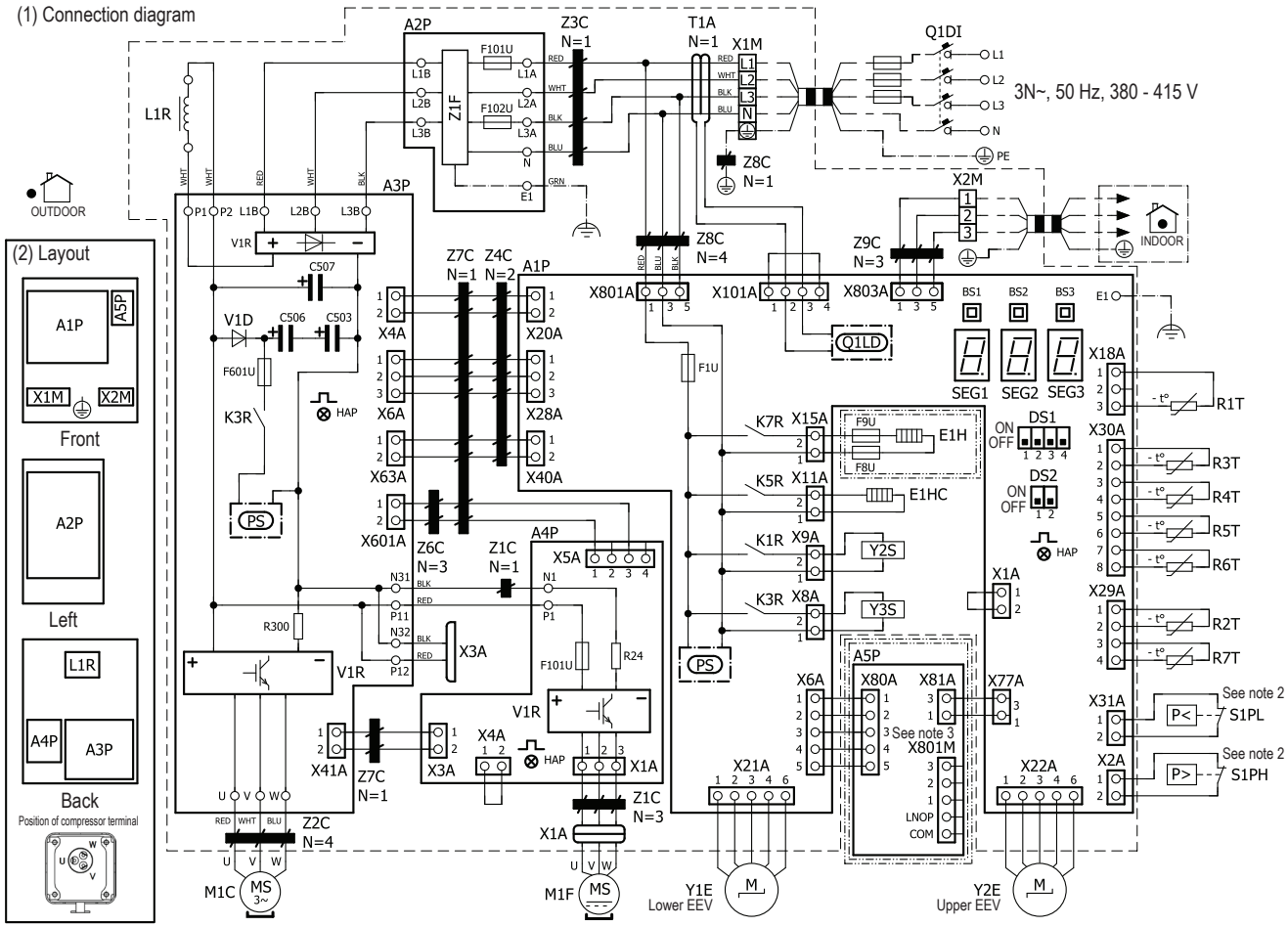
(4) Legend

English	Translation
Legend	Legend
Optional	Optional
Part n°	Part n°
Description	Description

A1P		Printed circuit board (main)
A2P		Printed circuit board (noise filter)
A3P		Printed circuit board (inverter)
A4P		Printed circuit board (fan)
A5P	*	Printed circuit board (demand)
C503, C506 C507 (A3P)		Capacitor
DS1,DS2 (A1P)		DIP switch
E1H	*	Bottom plate heater
E1HC		Crankcase heater
F1U (A1P)		Fuse (T 3.15 A 250 V)
F8U, F9U	*	Fuse (F)
F101U (A4P)		Fuse
F101U, F102U (A2P)		Fuse
F601U (A3P)		Fuse
HAP (A1P, A3P, A4P)		LED (service monitor is green)
K1R (A1P)		Magnetic relay (Y2S)
K3R (A3P)		Magnetic relay
K3R (A1P)		Magnetic relay (Y3S)
K5R (A1P)		Magnetic relay (E1HC)
K7R (A1P)		Magnetic relay (E1H)
L1R		Reactor
M1C		Compressor motor
M1F		Fan motor
PS (A1P,A3P)		Switching power supply
Q1DI		Earth leakage circuit breaker
Q1LD (A1P)		Earth current detector

R1T (A1P)	Thermistor (air)
R2T	Thermistor (discharge pipe)
R3T	Thermistor (suction pipe)
R4T	Thermistor (heat exchanger exit)
R5T	Thermistor (heat exchanger branch)
R6T	Thermistor (liquid pipe)
R7T	Thermistor (M1C body)
R24 (A4P)	Resistor (current sensor)
R300 (A3P)	Resistor (current sensor)
S1PH	High pressure switch
S1PL	Low pressure switch
SEG1~SEG3 (A1P)	7-segment display
T1A	Current sensor
V1D (A3P)	Diode
V1R (A3P, A4P)	Diode module
X*A	Connector
X*M	Terminal block
Y1E	Electronic expansion valve (main)
Y2E	Electronic expansion valve (injection)
Y2S	Solenoid valve (4-way valve)
Y3S	Solenoid valve (pressure equalization)
Z*C	Noise filter (ferrite core)
Z1F	Noise filter

(1) Connection diagram



4D124870

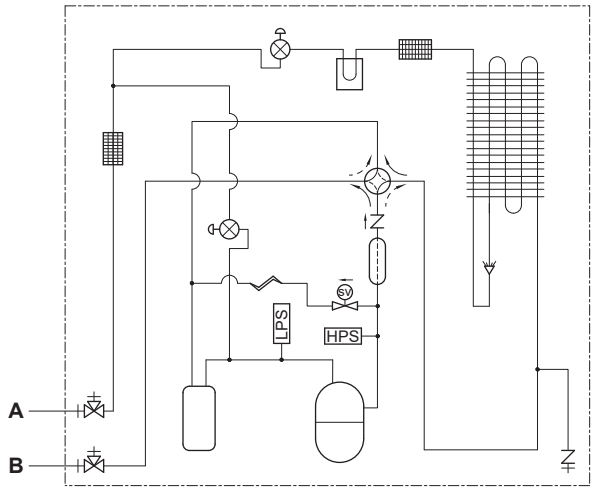
6.2.2 Wiring diagram: Indoor unit

INFORMATION

See the service manual of the compatible indoor units for more information.

6.3 Piping diagram

6.3.1 Piping diagram: Outdoor unit



	Service port (with 5/16" flare)
	Stop valve
	Filter
	Check valve
	Muffler
	Solenoid valve
	PCB cooling
	Capillary tube
	Electronic expansion valve
	4-way valve
HPS	High pressure switch
LPS	Low pressure switch
	Heat exchanger
	Compressor
	Distributor
	Accumulator
A	Field piping (liquid: Ø9.5 mm pinched pipe)
B	Field piping (gas: Ø25.4 mm pinched pipe)
	Heating
	Cooling

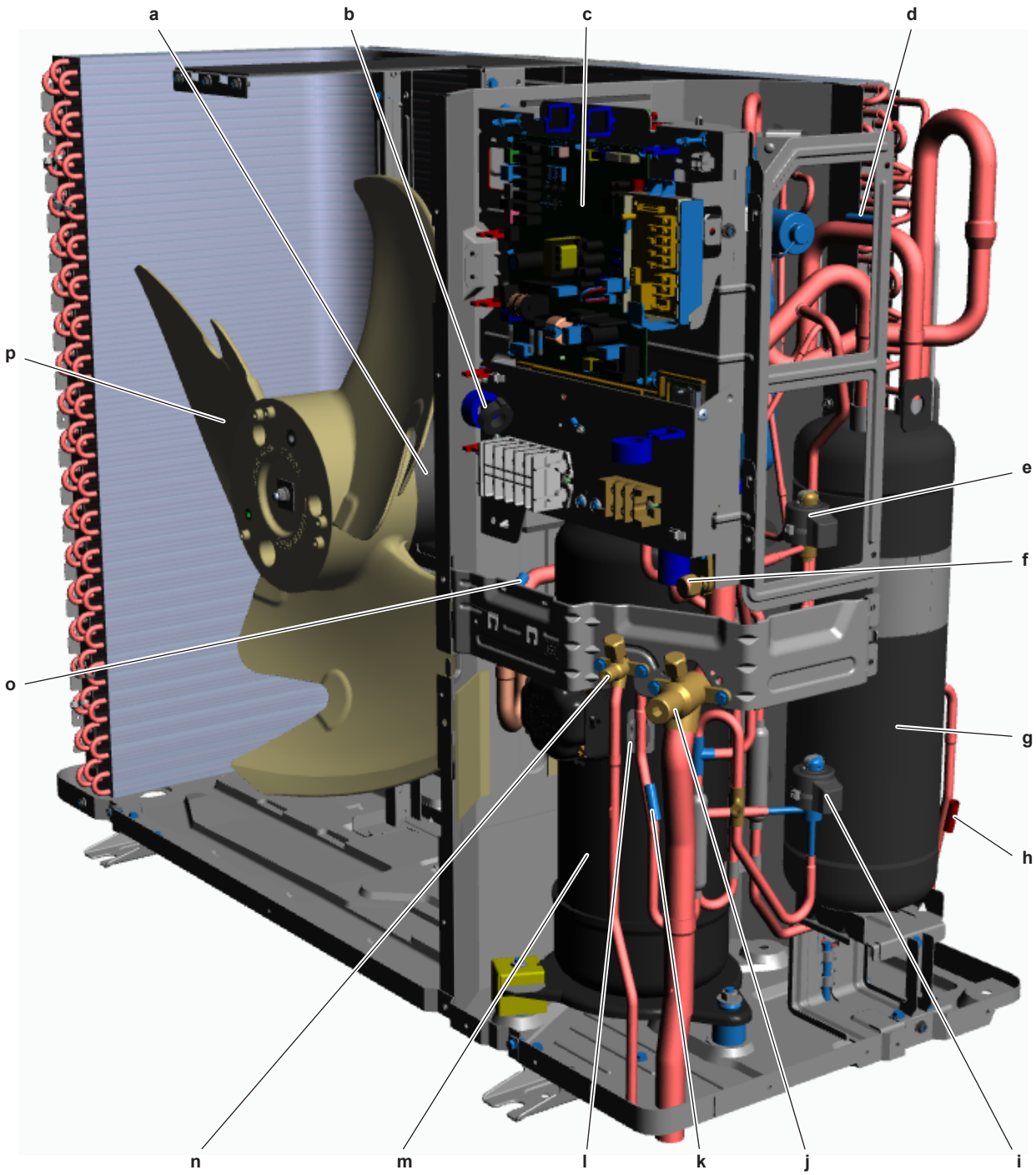
6.3.2 Piping diagram: Indoor unit

INFORMATION

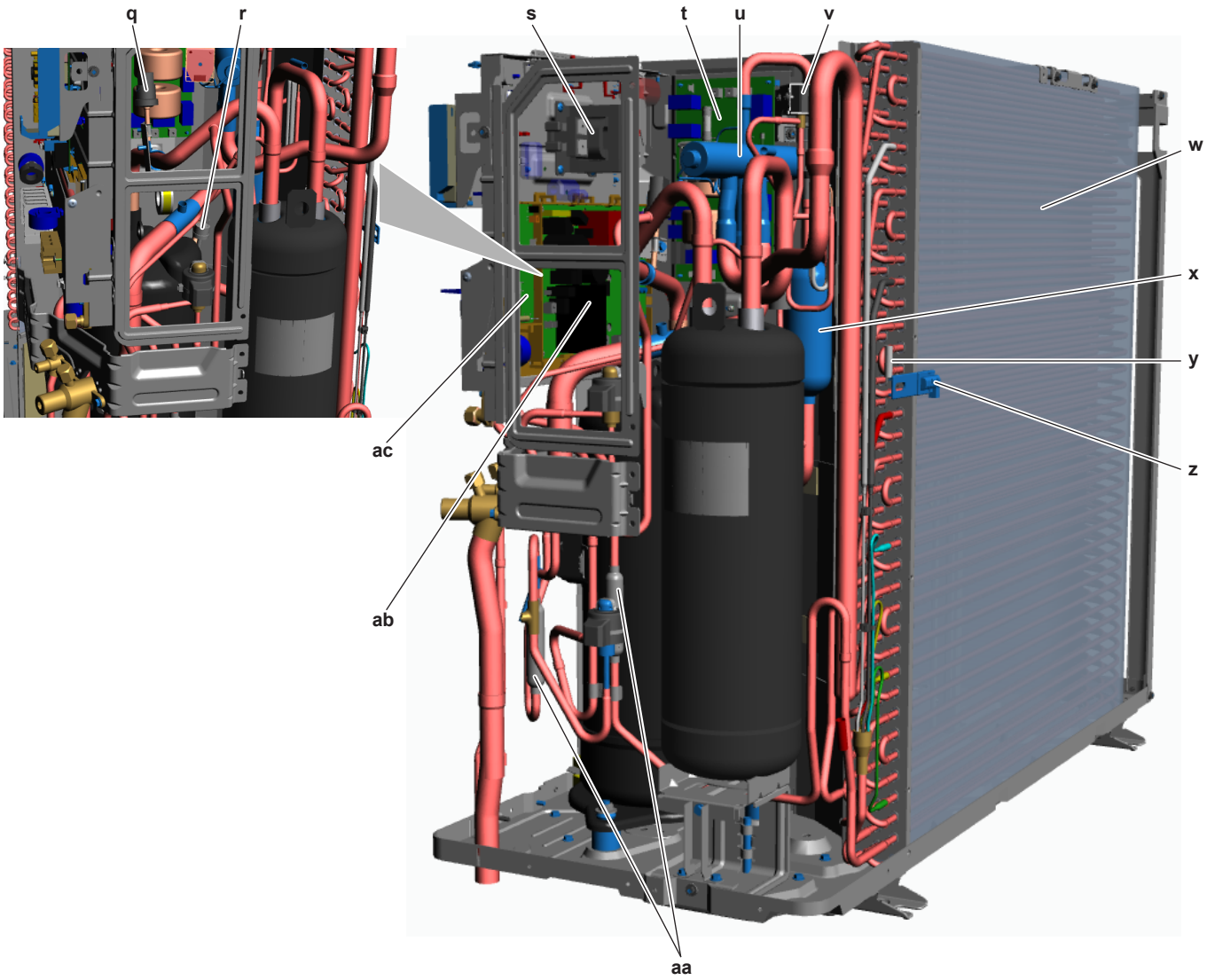
See the service manual of the compatible indoor units for more information.

6.4 Component overview

6.4.1 Component overview: Outdoor unit



a	Fan motor
b	Current sensor
c	Main PCB
d	Suction thermistor R3T
e	Expansion valve (injection) Y2E
f	Service port
g	Accumulator
h	Heat exchanger thermistor R4T
i	Expanion valve (main) Y1E
j	Gas stop valve (with service port)
k	Refrigerant liquid thermistor R6T
l	Compressor body thermistor R7T
m	Compressor M1C
n	Liquid stop valve (with service port)
o	Discharge pipe thermistor R2T
p	Fan



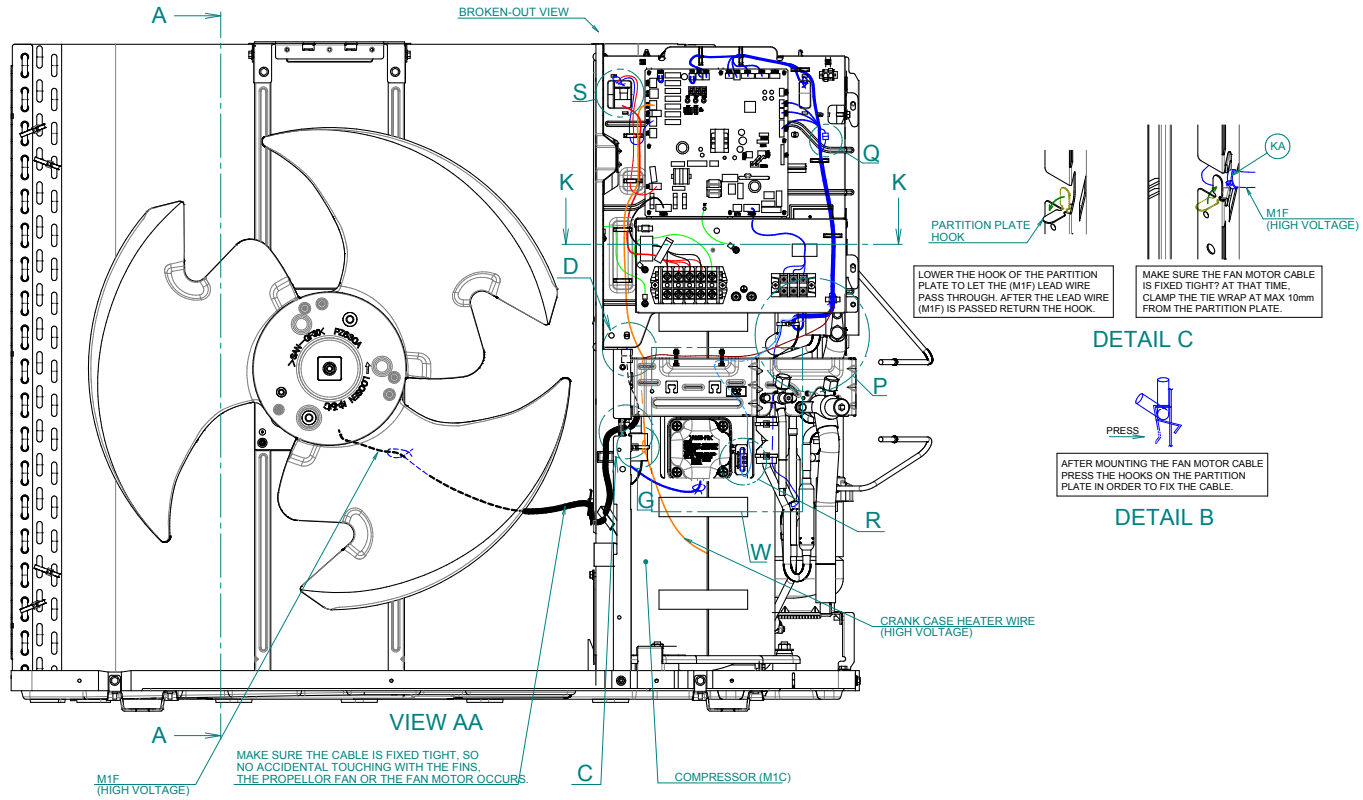
q	Low pressure switch S1PL	**x**	Muffler
r	High pressure switch S1PH	**y**	Heat exchanger (middle) thermistor R5T
s	Reactor	**z**	Air thermistor R1T
t	Noise filter PCB	**aa**	Filter
u	4-way valve Y2S	**ab**	Inverter PCB
v	Solenoid valve Y3S	**ac**	Fan inverter PCB
w	Heat exchanger		

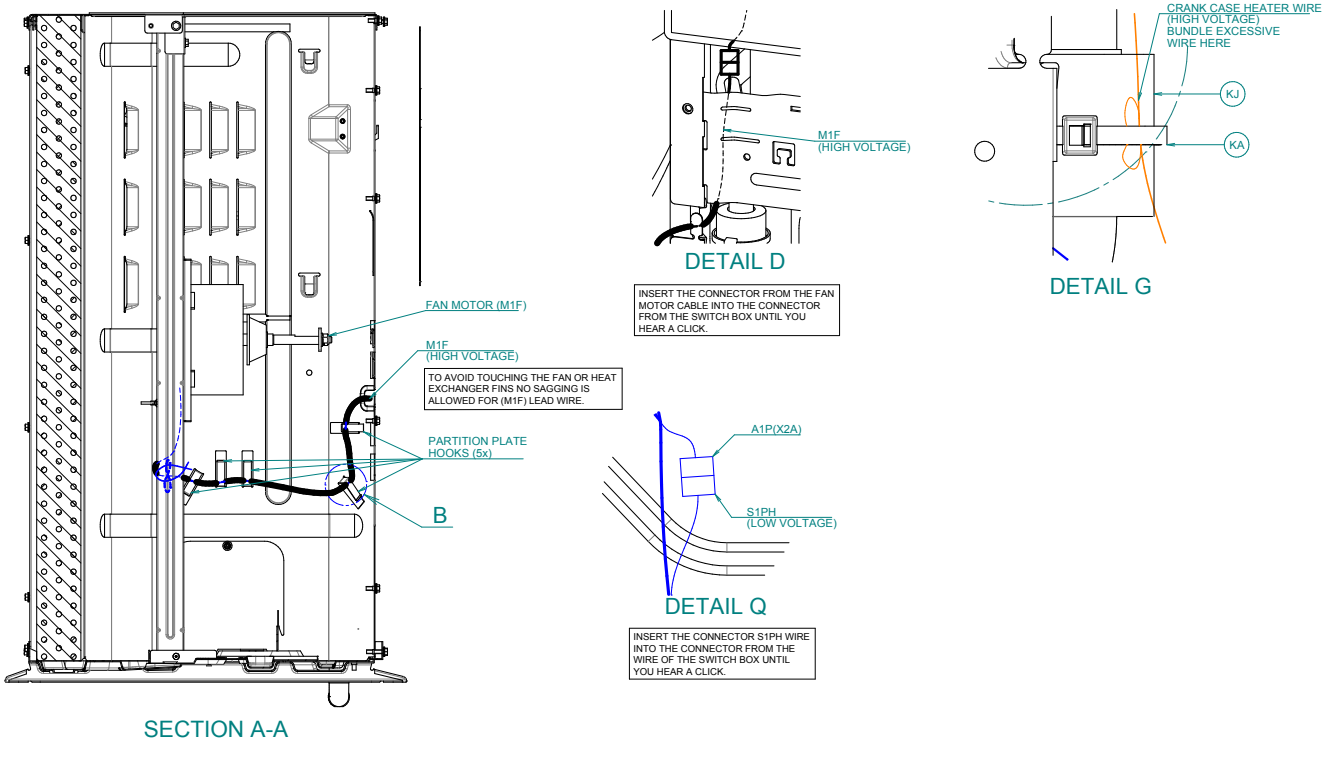
6.4.2 Component overview: Indoor unit

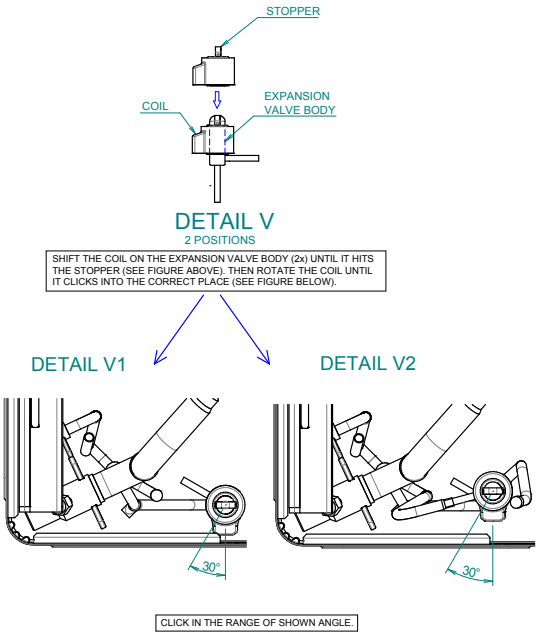
INFORMATION

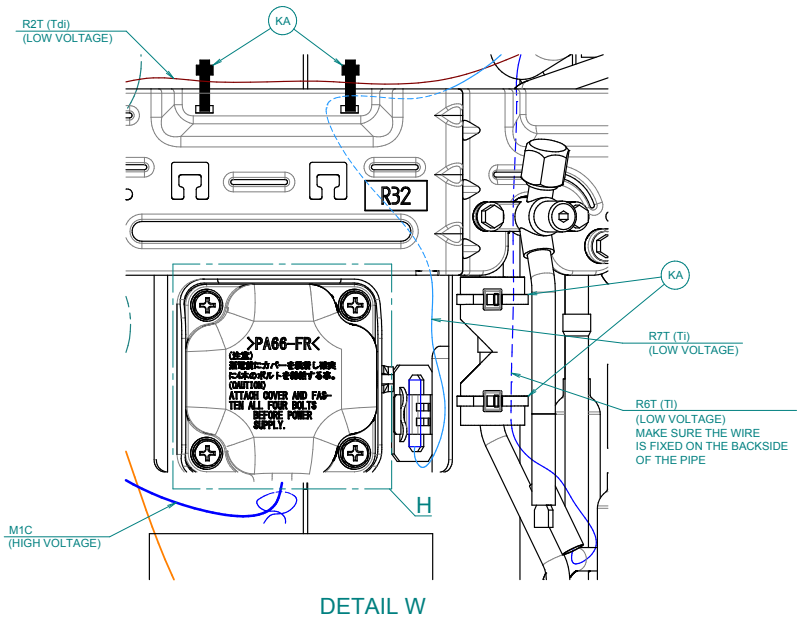
See the service manual of the compatible indoor units for more information.

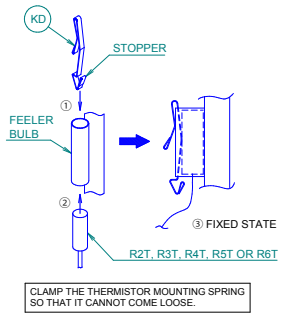
6.5 Wiring overview

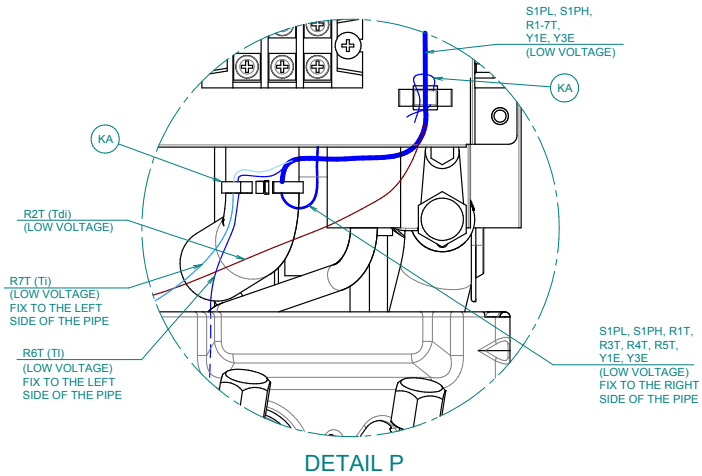


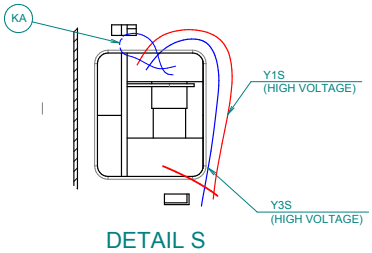


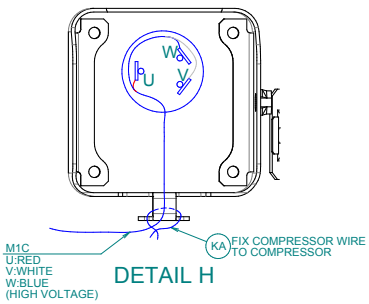

STOPPER
COIL
EXPANSION VALVE BODY
DETAIL V
2 POSITIONS
SHIFT THE COIL ON THE EXPANSION VALVE BODY (2x) UNTIL IT HITS THE STOPPER (SEE FIGURE ABOVE). THEN ROTATE THE COIL UNTIL IT CLICKS INTO THE CORRECT PLACE (SEE FIGURE BELOW).
DETAIL V1
DETAIL V2
30°
30°
CLICK IN THE RANGE OF SHOWN ANGLE.

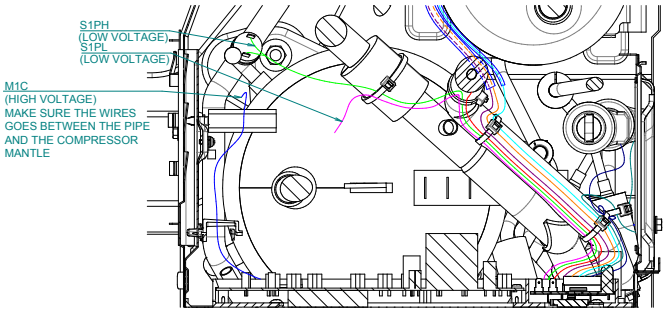

R2T (Tdi)
(LOW VOLTAGE)
KA
R32
KA
R7T (Ti)
(LOW VOLTAGE)
R6T (Tl)
(LOW VOLTAGE)
MAKE SURE THE WIRE IS FIXED ON THE BACKSIDE OF THE PIPE
PA66-FR
ATTACH COVER AND FASTEN ALL FOUR BOLTS BEFORE POWER SUPPLY.
M1C
(HIGH VOLTAGE)
H
DETAIL W


KD
STOPPER
FEELER BULB
①
②
③ FIXED STATE
R2T, R3T, R4T, R5T OR R6T
CLAMP THE THERMISTOR MOUNTING SPRING SO THAT IT CANNOT COME LOOSE.
DETAIL R
5 POSITIONS

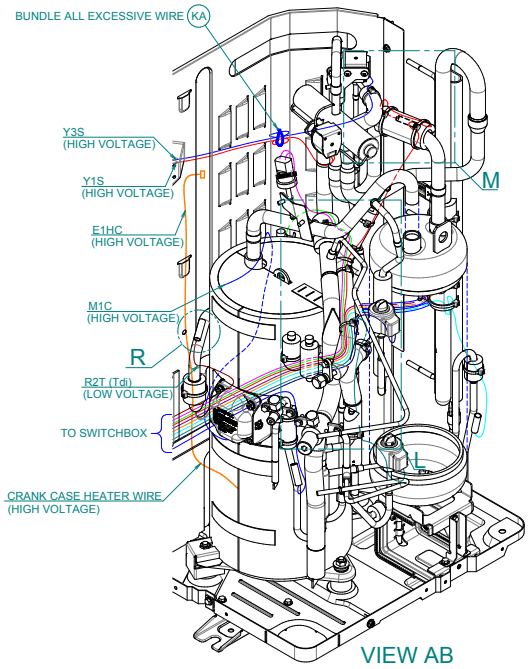

S1PL, S1PH, R1-7T, Y1E, Y3E
(LOW VOLTAGE)
KA
KA
R2T (Tdi)
(LOW VOLTAGE)
R7T (Ti)
(LOW VOLTAGE)
FIX TO THE LEFT SIDE OF THE PIPE
R6T (Tl)
(LOW VOLTAGE)
FIX TO THE LEFT SIDE OF THE PIPE
S1PL, S1PH, R1T, R3T, R4T, R5T, Y1E, Y3E
(LOW VOLTAGE)
FIX TO THE RIGHT SIDE OF THE PIPE
DETAIL P


KA
Y1S
(HIGH VOLTAGE)
Y3S
(HIGH VOLTAGE)
DETAIL S

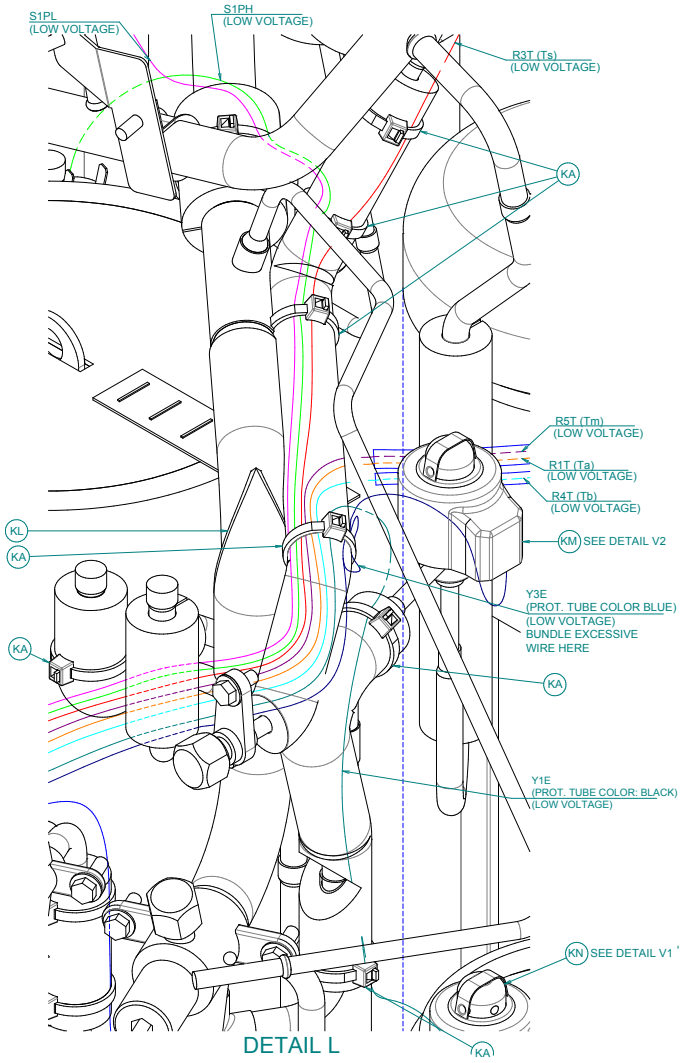

U
V
W
M1C
U:RED
V:WHITE
W:BLUE
(HIGH VOLTAGE)
KA
FIX COMPRESSOR WIRE TO COMPRESSOR
DETAIL H



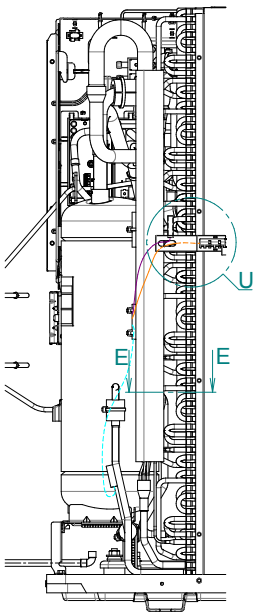
SECTION K-K

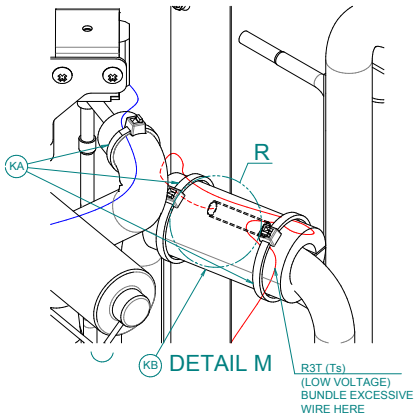


VIEW AB

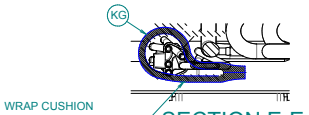


DETAIL L

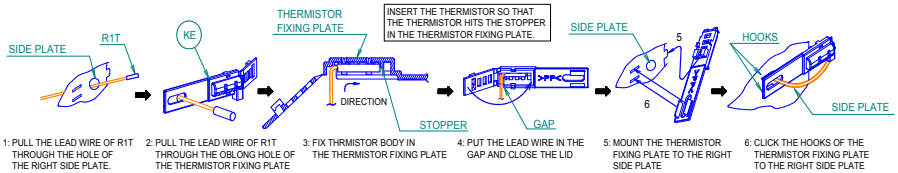




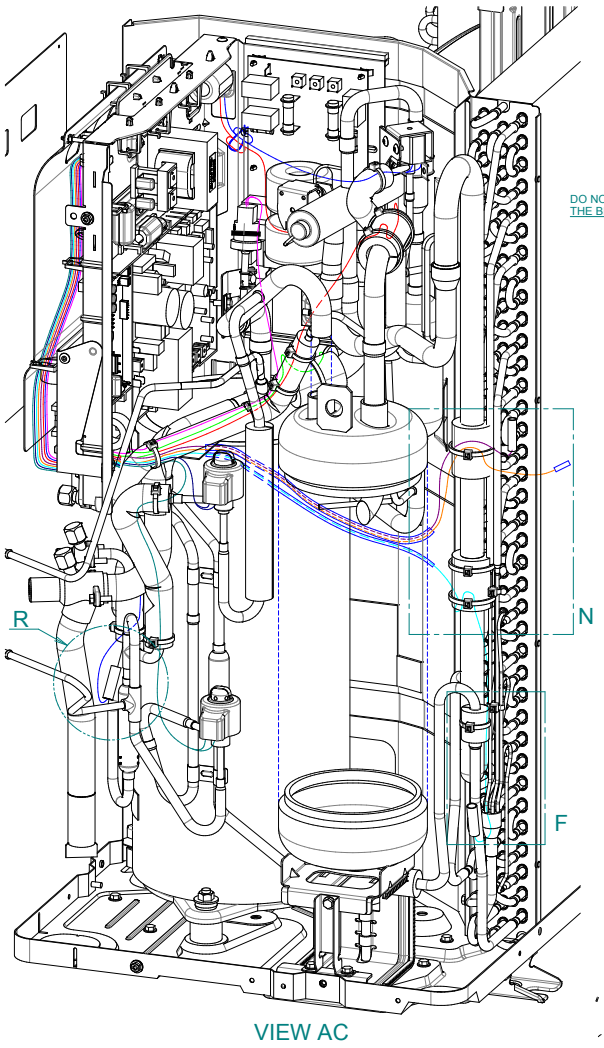
DETAIL M



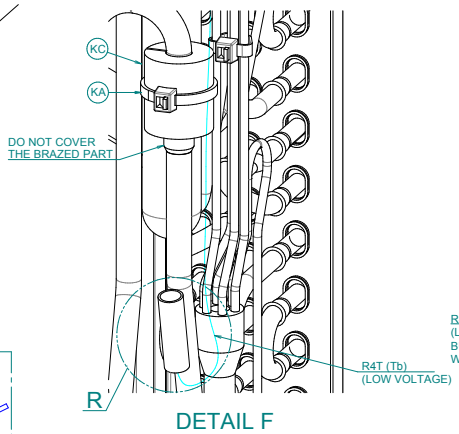
SECTION E-E



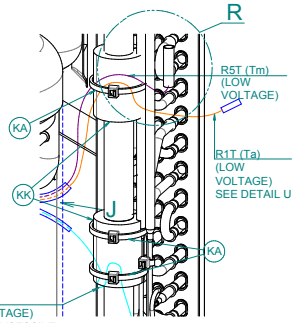
DETAIL U
(THERMISTOR R1T FIXING METHOD)



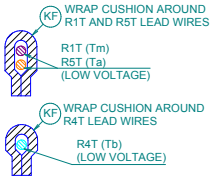
VIEW AC



DETAIL F

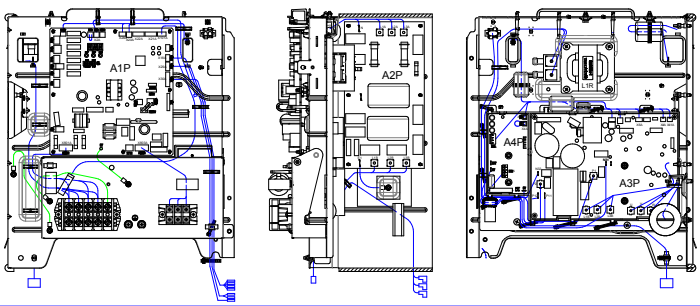


DETAIL N

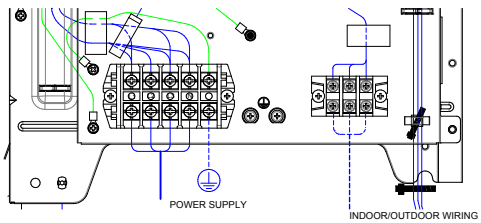


VIEW J

EL COMPO BOX ASSY



FIELD WIRING CONNECTION
FOR SWITCHBOX



NOTE:
MAKE SURE THE WIRES DOES NOT TOUCH ANY COPPER PIPE.

Wiring symbol	Component name	Thermistor diameter	Marking color	Component connector	PCB connector		Voltage	Routing (views)
R1T	Air thermistor	5 mm	None	White	X18A	White	Low	J-L-N-P-U-AD
R3T	Suction thermistor	6 mm	Green	White	X30A	White	Low	L-M-P
R4T	Heat exchanger thermistor	7 mm	Red					F-J-L-N-P
R5T	Heat exchanger (middle) thermistor	6 mm	White					J-L-N-P
R6T	Refrigerant liquid thermistor	7 mm	Blue					P-W
R2T	Discharge pipe thermistor	8 mm	Yellow	Red	X29A	Red	Low	P-W-AB
R7T	Compressor body thermistor	8 mm	None					P-W
Y1E	Electronic expansion valve (main)	-	-	White	X21A	White	Low	L-P-V
Y3E	Electronic expansion valve (liquid injection)	-	-	Blue	X22A	Blue	Low	L-P-V
S1PL	Low pressure switch	-	-	Red	X31A	Red	Low	K-L-P
S1PH	High pressure switch	-	-	White	X2A	White	Low	K-L-P-Q
Y1S	4-way valve	-	-	Blue	X9A	Blue	High	S-AB
Y3S	Solenoid valve	-	-	Pink	X8A	Pink	High	S-AB
M1F	Fan motor	-	-	White	X1A	White	High	A-C-D-AA
E1HC	Cranckase heater	-	-	Grey	X11A	Grey	High	G-AB
M1C	Compressor	-	-	Red, White, Blue	U, V, W	None	High	K-AB

6.6 Field information report

See next page.

In case a problem occurred on the unit which could not be resolved by using the content of this service manual or in case you have a problem which could be resolved but of which the manufacturer should be notified, we advise you to contact your distributor.
To facilitate the investigation, additional information is required. Please fill out the following form before contacting your distributor.

FIELD INFORMATION REPORT	
Key person information	
Name:	Company name:
Your contact details Phone number:	E-mail address:
Site address:	
Your reference:	Date of visit:
Claim information	
Title:	
Problem description:	
Error code:	Trouble date:
Problem frequency:	
Investigation steps done:	
Insert picture of the trouble.	
Current situation (solved, not solved,…):	
Countermeasures taken:	
Comments and proposals:	
Part available for return (if applicable):	

Application information
Application (house, apartment, office,…):
New project or reimbursement:
Heat emitters (radiators / under floor heating / fan coils /…):
Hydraulic layout (simple schematic):

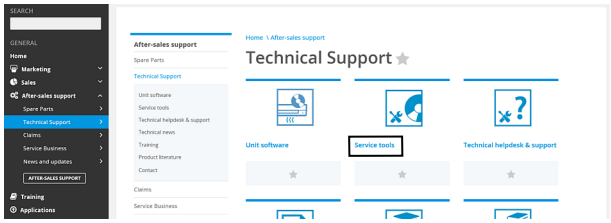
Unit / Installation information	
Model name:	Serial number:
Installation / commissioning date:	Software version hydro PCB A1P
	Software version hydro PCB A5P
Software version user interface:	Software version outdoor PCB:
Minimum water volume:	Maximum water volume:
Brine composition and mixture:	
Brine freeze up temperature:	
Space heating control (leaving water temperature, room thermostat, external room thermostat):	
Space heating setpoint:	
Domestic hot water control (reheat only, schedule only, reheat + schedule):	
Domestic hot water setpoint:	

Provide pictures of the field settings overview (viewable on the user interface).

6.7 Service tools

1 For an overview of the available service tools, check the Business Portal: http://www.mydaikin.eu.

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.

6.8 Field settings

6.8.1 Field settings: Outdoor unit

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: 

To use mode 1

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 [1-20] (to know the outdoor unit air sensor temperature).

[A-B]=C in this case defined as: A=1; B=20; 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 20 times.

Result: Mode 1 setting 20 is addressed: 

4 Push BS3 one time; the value which is returned is the outdoor unit air sensor temperature.

Result: Mode 1 setting 20 is addressed and selected, return value (e.g. 25°C) is monitored information (outdoor unit air sensor temperature).

5 To leave the monitoring function, push BS1 one time.

To use 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 power transistor check mode setting).

[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 "1" 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.

Mode 1: Field settings

In mode 1 you can monitor the status of the system.
(*) This column shows the number of times you have to push the SET button (BS2) to access the field setting.

Setting No°(*)	Setting item
0	Indication of low noise
1	Indication of demand operation
2	Indication of oil return
3	Indication of capacity class
4	Last error code
5	2nd last error code
6	3rd last error code
7	Software number
8	Software version (e.g.: version 01/02/...)
9	Compressor stepping down protection
10	(Empty)
11	Outdoor unit cumulative operating time (Unit: Hours/100)
12	Compressor cumulative operating time (Unit: Hours/100)
13	Inverter secondary current
14	Outdoor fan speed step
15	Inverter output Hz
16	Expansion valve opening 1
17	Expansion valve opening 2
18	Outdoor unit discharge sensor temperature
19	Outdoor unit suction pipe sensor temperature
20	Outdoor unit air sensor temperature
21	Outdoor unit liquid pipe sensor temperature
22	Outdoor unit middle coil sensor temperature
23	Outdoor unit coil sensor temperature
24	Outdoor unit compressor surface temperature
25	Indoor unit suction air temperature
26	Indoor unit liquid pipe temperature
27	Indoor unit gas pipe temperature
28	High pressure sensor
29	Low pressure sensor
30	High external-static-pressure-mode level

Mode 2: Field settings

In mode 2 you can make field settings to configure the system.
Make sure to perform a power reset via the outdoor unit after changing the field settings.
(*) 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	Night time low noise setting	2.00	**1**	**Off**
			2	On
1	Capacity priority setting	2.01	**1**	**Off**
			2	On
2	Capacity up setting	2.02	**1**	**Off**
			2	On
3	Low noise setting (see diagram below) (low noise level, start and end time of automatic low noise during nighttime)	2.03	1	Level 1, 22h00~6h00
			2	Level 1, 22h00, 8hhh00
			3	Level 2, 22h00, 6h00
			4	**Level 2, 22h00, 8hhh00**
			5	Level 2, 20h00~8h00
			6	Level 3, 22h00, 8h00
			7	Level 3, 20h00, 8h00
7	Defrost slow starting setting	2.07	**1**	**Off**
			2	On
8	Defrost quick starting setting	2.08	**1**	**Off**
			2	On
17	Refrigerant recovery mode setting (vacuum mode field setting)	2.17	**1**	**Off**
			2	On
18	Power transistor check mode settings	2.18	**1**	**Off**
			2	On
56	Drain pan heater ON time after defrost operation	2.56	1	1 min
			2	5 min
			3	**10 min**
			4	15 min
			5	25 min
			6	30 min
			7	45 min
79	High external-static-pressure-mode setting	2.79	**1**	**Enabled**
			2	Disabled
			3	Re-judgement disabled

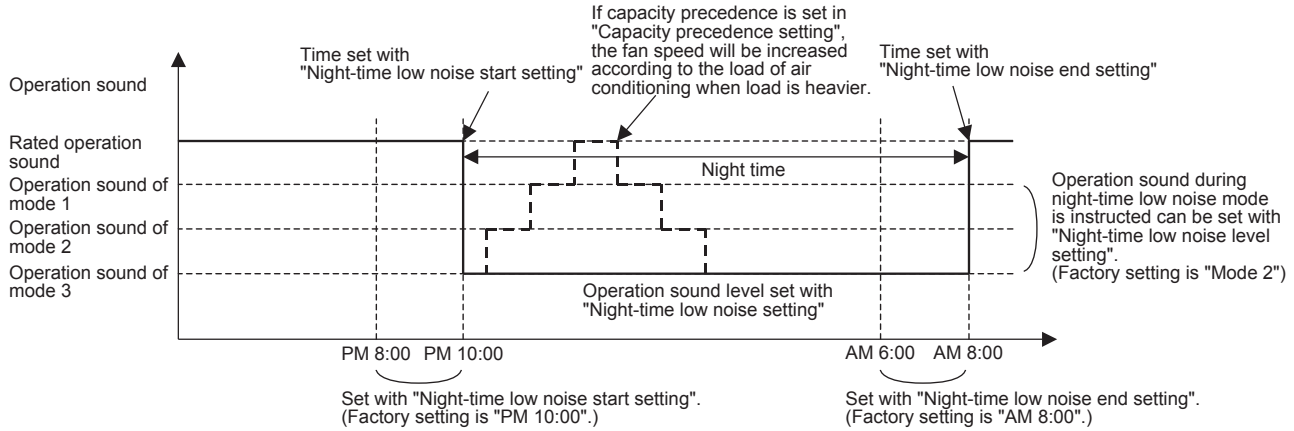


Image of "low noise operation" by external input + operation during "nighttime low noise setting" and "required capacity prior" set by remote controller.
Image of concurrent operation of A and B.
* "Start time" and "End time" MUST be regarded as a guide because they are estimated based on the outside temperature.

To activate night time low noise operation

Lower the operation sound of the outdoor unit.

Model	RZA200	RZA250
Sound reduction	8 dBA	8 dBA

INFORMATION

Sound reduction was measured on the condition of Level 3 low noise setting in cooling mode.

Night time low noise operation can be activated by:

- Automatic control (by field setting from outdoor unit)
- External activation (from optional PCB KRP58M51 with mounting plate EKMKSA2)

CAUTION

Do NOT change the field settings for night time low noise operation via the remote controller as this might cause interference with the settings made through the outdoor unit or optional PCB KRP58M51.

Night time low noise operation by automatic control

Night time low noise operation can be set by field setting from the outdoor unit:

N°	Item	Display	Content	
0	Night time low noise setting	2.00	**1**	**Off**
			2	On
1	Capacity priority setting	2.01	**1**	**Off**
			2	On

N°	Item	Display	Content	
3	Low noise setting (see diagram below) (low noise level, start and end time of automatic low noise during nighttime)	2.03	1	Level 1, 22h00~6h00
			2	Level 1, 22h00, 8hhh00
			3	Level 2, 22h00, 6h00
			4	**Level 2, 22h00, 8hhh00**
			5	Level 2, 20h00~8h00
			6	Level 3, 22h00, 8h00
			7	Level 3, 20h00, 8h00

In case that the time is NOT obtained by the remote controller or other control devices:

The night time low noise control (setting mode 2.00-02) will be carried out by presuming the current time in accordance with the outside temperature.

The maximum outdoor temperature is supposed to occur at 14:00h.

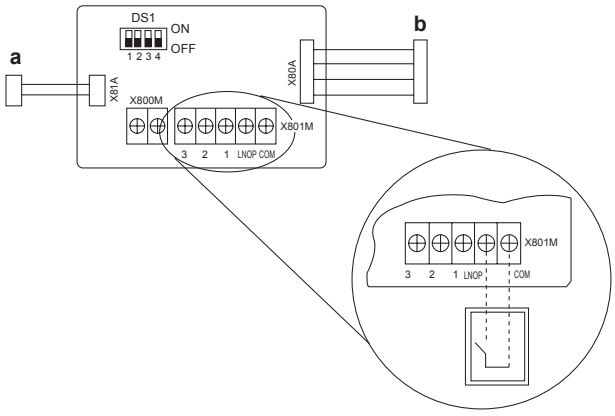
However, the current time will be adjusted by the average time ,which is calculated by the maximum temperature occurred in the past 10 days after power ON.

As the time judgement is made in accordance with the outdoor temperature, the above mentioned timing is an estimation only.

When setting mode 2.00-02 in combination with 2.01-02, the night time low noise operation will be stopped when the heating or cooling load increases. In that case, the operation will return to normal operation. The unit will return to night time low noise operation when the heating or cooling load decreases again.

Night time low noise operation from optional PCB

Night time low noise operation can also be activated from the optional PCB KRP58M51.



a Power supply connector (on outdoor PCB X77A)
b Transmission connector (on outdoor PCB X6A)

Specification	Value
Output on terminal X801M	▪ 12 V DC ▪ 12 mA
Maximum wire length	100 m

Night time low noise operation starts when the contact on LNOP-COM of the X801M terminal is closed and will remain active as long as the contact is closed. No field setting on the outdoor unit is required.

Night time low noise operation ends when the contact is opened.

Use of the optional PCB KRP58M51 enables the use of an external time clock.

Same as with the automatic control, priority for capacity can be set. Priority for capacity will be activated by changing field setting 2.01-02 in combination with the closed contact on KRP58M51.

N°	Item	Display	Content	
1	Capacity priority setting	2.01	**1**	**Off**
			2	On

The night time low noise operation will be overruled in the following conditions:

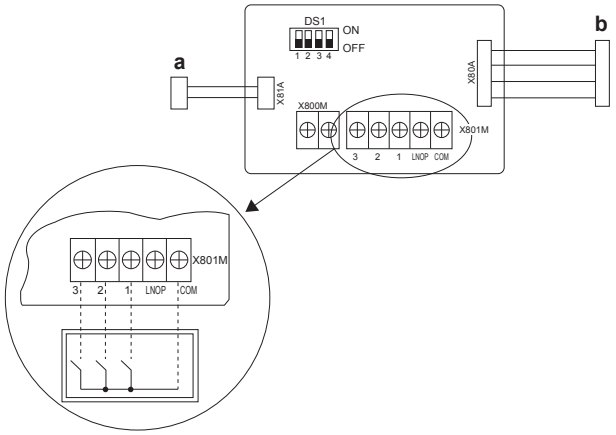
- Pump down residual operation
- Startup control
- Defrost operation
- Oil recovery

To control I-demand function

Set a limitation towards the power consumption of the system (e.g. budget control, limit power consumption during peak moments, ...).

3 different demand settings can be selected by using terminal X801M:

- Demand 1: Close the contact between COM and contact 1 of the X801M terminal.
- Demand 2: Close the contact between COM and contact 2 of the X801M terminal.
- Demand 3: Close the contact between COM and contact 3 of the X801M terminal.



a Power supply connector (on outdoor PCB X77A)
b Transmission connector (on outdoor PCB X6A)

Specification	Value
Output on terminal X801M	▪ 12 V DC ▪ 12 mA
Maximum wire length	100 m

Demand 1

Power consumption limitation in function of setting on DS1.

a Shows the position of a switch

ON ON
OFF OFF

DS1 setting			Maximum power consumption
1	2	Image	
OFF	OFF		60%
ON	OFF		70%
OFF	ON		80%
ON	ON		100%

Demand 2

Power consumption limitation set to 40%.

Demand 3

Forced thermostat OFF.

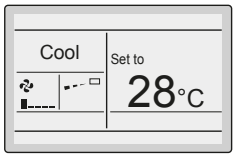
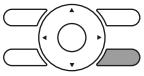
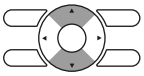
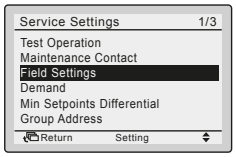
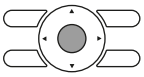
6.8.2 Field settings: Indoor unit

To retrieve the field settings

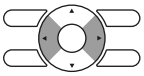
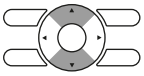
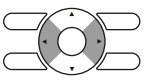
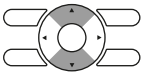
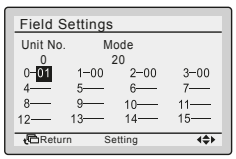
Via the wired remote controller BRC1E

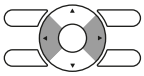
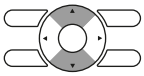
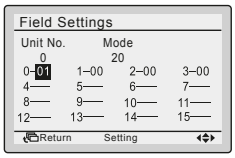
> **INFORMATION**
>
> Images are in English and for reference ONLY. For more details on the BRC1E please refer to the user manual.

To access the field settings screen

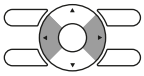
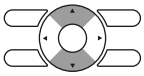
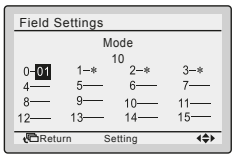
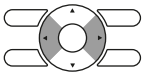
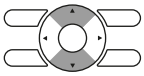
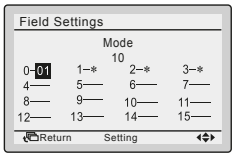
#	Action	Result
1	Go to the basic screen.	
2	Press at least 4 seconds while the backlight of the screen is lit. 	The Service Settings menu is displayed.
3	Select Field Settings. 	
4	Press. 	The Field Settings screen is displayed.

In case of individual setting per indoor unit

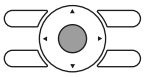
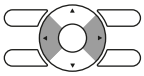
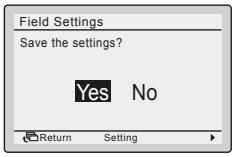
#	Action	Result
1	Highlight the Mode.  Select the desired Mode No. 	The desired field setting mode is selected.
2	When Mode No. such as 20, 21, 22, 23, 25 are selected, highlight the Unit No..  Select the Indoor unit No. to be set. 	▪ The indoor unit for which you want to set the field settings is selected. ▪ Current settings are displayed. ▪ Second Code No. "-" means no function. 

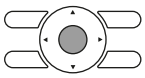
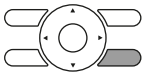
#	Action	Result
3	Highlight the Second Code No. of the First Code No. to be changed.  Select the desired Second Code No.  Multiple identical mode number settings are available.	

In case of group total settings

#	Action	Result
1	Highlight the Mode.  Select the desired Mode No. 	▪ The desired field setting mode is selected. ▪ All Second Code No. which may be set are displayed as "*". ▪ Second Code No. "-" means no function. 
2	Highlight the Second Code No. of the First Code No. to be changed.  Select the desired Second Code No.  Multiple identical mode number settings are available.	"*" is changed to the set Second Code No. 

To save the field settings

#	Action	Result
1	Press. 	Setting confirmation screen is displayed.
2	Select Yes. 	

#	Action	Result
3	Press. 	Setting details are determined and Field Settings screen is displayed.
4	In case of multiple settings, repeat previous steps to change the settings	
5	Press twice. 	▪ Backlight is lit. ▪ Once initialization is done, the basic screen is displayed.

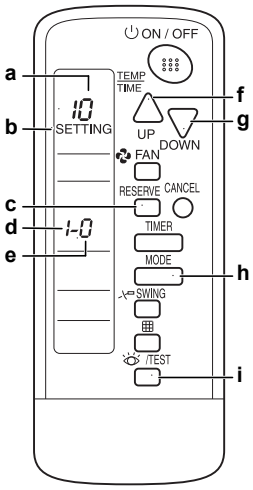
INFORMATION

- The connection of optional accessories to the indoor unit might cause changes to some field settings. For more information, see the installation manual of the optional accessory.
- For details about the specific field settings of each type of indoor unit, see the installation manual of the indoor units.
- Field settings that are not available for a connected indoor unit are not displayed.
- Field setting default values are different depending on the indoor unit model. For more information, see the service manual of the indoor units.

Via the wireless controller BRC7

To set the field settings, you have to change:

- Mode No.
- First Code No.
- Second Code No.



a Mode No.
b Field setting mode
c RESERVE button
d First Code No.
e Second Code No.
f UP button
g DOWN button
h MODE button
i INSPECTION/TEST button

1 Press the INSPECTION/TEST button for at least 4 seconds during normal mode.

Result: Field setting mode is entered.

2 Press the MODE button to select the desired Mode No.

3 Press the UP button to select the First Code No.

4 Press the DOWN button to select the Second Code No.

5 Press the RESERVE button to set the present settings.

6 Press the INSPECTION/TEST button.

Result: Return to normal mode.

Via the indoor unit remote controller BRC1H

BRC1H remote controller

See the installer and user reference guide of the Madoka wired remote controller for correct procedure.

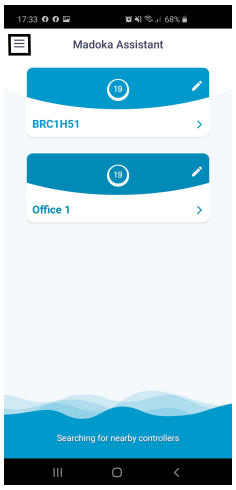
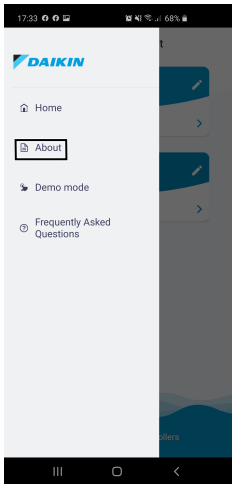
Madoka Assistant for BRC1H

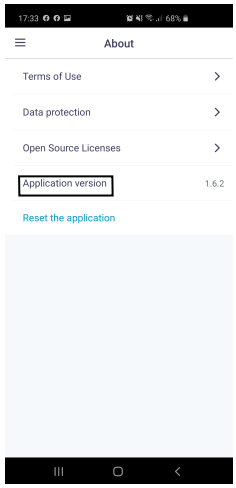
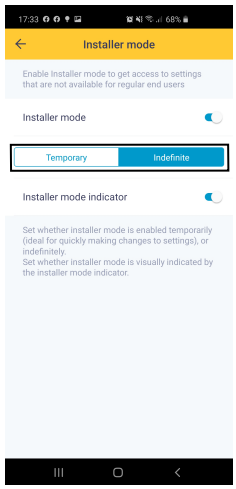
INFORMATION

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.

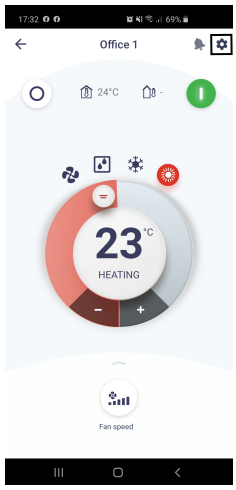
To set as installer mode

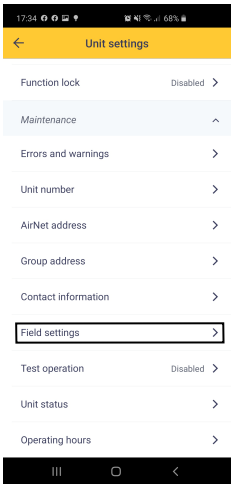
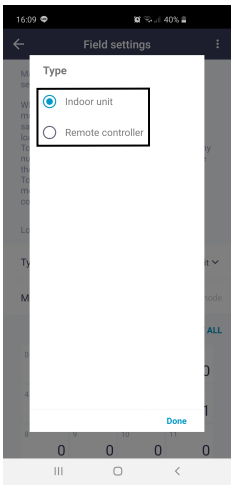
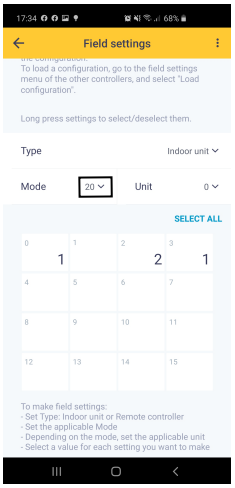
In order to retrieve the field settings, the Madoka Assistant app has to be set as installer mode. If already set as, skip to "To retrieve field settings".

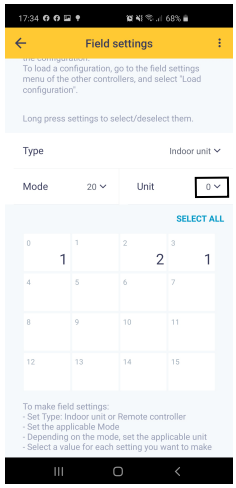
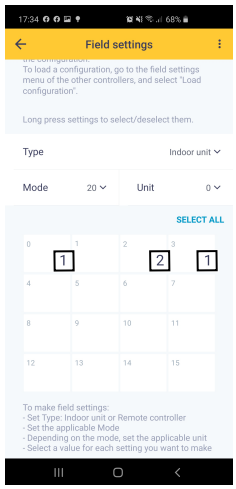
#	Action	Image	Result
1	Tap the menu icon.		The menu screen is diaplyed.
2	Tap About in the menu screen.		The About menu screen is displayed.

#	Action	Image	Result
3	Tap Application version 5 times.		Installer mode screen is displayed.
4	Select (tap) the length of time the Madoka Assistant app is set as installer mode: ▪ Temporary for 30 minutes ▪ Indefinite for unlimited time		The Madoka Assistant app is set as installer mode.

To retrieve field settings

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

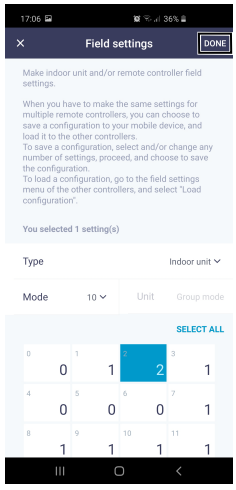
#	Action	Image	Result
2	Tap Field settings.		The Field settings screen is displayed.
3	Tap and select the type for which you want to set the field settings: ▪ Indoor unit ▪ Remote controller		Field settings can now be set for the selected type.
4	Tap and select the desired Mode No. from the drop down list.		The field setting mode is now selected.

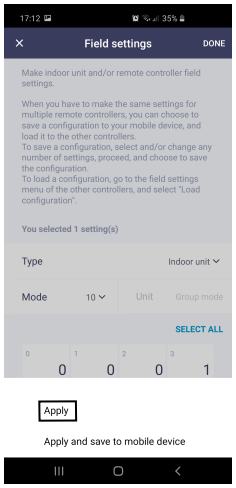
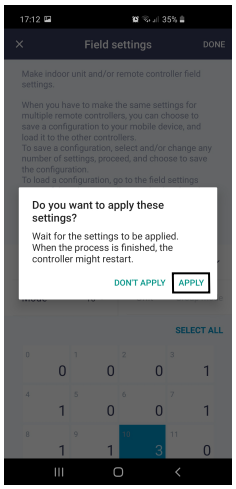
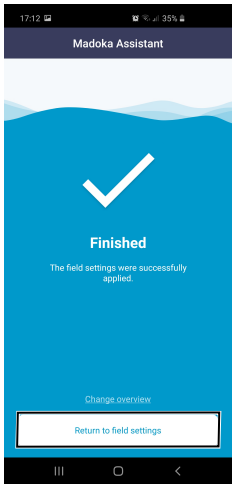
#	Action	Image	Result
5	In the case of setting per indoor unit during group control (When Mode No. such as 20, 21, 22, 23, 25 are selected), tap and select the Indoor unit No. which is required to set. In the case of group total setting, this operation is NOT needed.		▪ In the case of individual setting per indoor unit, current settings are displayed. ▪ In the case of group total setting, all of Second Code No. which may be set are displayed as "*". ▪ Second Code No. "-" means no function.
6	Tap the Second Code No. of the First Code No. to be changed. Select the desired Second Code No. Multiple identical mode number settings are available.		Field settings are now set as desired, but still need to be saved.

INFORMATION

In case of multiple settings, repeat previous steps to change the settings.

To save field settings

#	Action	Image	Result
1	Tap Done.		The screen to apply the field settings is displayed.

#	Action	Image	Result
2	Tap Apply.		Changes are applied to the field settings.
3	Tap Apply.		Changes to the field settings are confirmed.
4	Tap Return to field settings.		Field settings are saved.

Overview of field settings for indoor units

The overview lists the field settings for the indoor unit FCAG-B. For more detailed field settings and field settings of other indoor units, see service manual of the indoor units. **Bold content is default setting**.

Mode	1st code	Description function	2nd code	Description selection
10(20)	0	Filter cleaning sign interval / Long life filter	**01**	2500 hr
			02	1250 hr
	1	Filter type	**01**	Long
			02	Super long
	2	Remote controller thermistor	01	Enabled
			02	Disabled
	3	Filter cleaning sign	**01**	Display
			02	No display
	7(3)	Detection time for NOT presence	**01**	30 minutes
			02	60 minutes
	8(4)	Compensation of suction air temperature in heating mode	**01**	COMPENSATE Temperature [A+2]°C which an air conditioner controls when the temperature of a remote controller is A°C)
			02	NO COMPENSATION Temperature [A]°C which an air conditioner controls when the temperature of a remote controller is A°C)
11(21)	2	Fan OFF at thermostat OFF	**01**	Normal
			02	OFF
	3	Airflow rate setting during heating	**01**	Standard
			02	Slight up
			03	Up
	4	Automatic operation mode control	**01**	Available
			02	Prohibition
	6(5)	Sensitivity of presence sensor	01	High
			02	Low
			03	Standard
			04	Sensor does not work

Mode	1st code	Description function	2nd code	Description selection
11(22)	0	Optional (KRP1B…) output	**01**	Compressor
			02	Option
			03	Operation
			04	Malfunction
	7(5)	Compensation of temperature around human body	01	Floor sensor does not work
			02	Higher priority on the air temperature
			03	Standard
			04	Highre priority on the floor temperature
	8(5)	Compensation of floor temperature	01	−4°C
			02	−2°C
			03	±0°C
			04	+2°C
12(22)	3	Fan speed heating thermostat OFF	**01**	LL speed
			02	Set speed
	5	Automatic restart after power failure reset	01	Disabled
			02	Enabled
	6	Fan speed cooling thermostat OFF OFF	01	LL speed
			02	Set speed
13(23)	0	High air outlet velocity (for high ceiling applications)	**01**	Standard
			02	Slightly up
			03	Up
	1	Selection of airflow direction	**01**	4-way flow
			02	3-way flow
	2	Flap moving in the swing mode	01	All 4 flaps synchronized
			02	--
			03	Two opposite flaps synchronized
	4	Airflow range setting	01	Upper
			02	Normal
			03	Lower

Mode	1st code	Description function	2nd code	Description selection
14(24)	2	The largest time interval for Dust Collection Sign Display for "self cleaning decoration panel"	01	About 1250 hr (dusty place)
			02	About 2500 hr
			03	About 5000 hr (less dusty place)
	4	Display or non-display of green lamp on the selfcleaning decoration panel	01	Display both: ▪ Airconditioning operation ▪ Filter auto cleaning
			02	Non display: ▪ Airconditioning operation Display: ▪ Filter auto cleaning
			03	Display: ▪ Airconditioning operation Non display: ▪ Filter auto cleaning
	8	Auto control operation for Filter Auto Cleaning	01	Auto control operation
			02	Not auto control operation
	9	Filter cleaning time for "selfcleaning decoration panel"	**01**	Normal place in terms of dust (normal office)
			02	In case of dusty place
15(25)	5	Individual setting of ventilation	**01**	Normal
			02	Individual operation
1b(2b)	14	Wind block[6] enable / disable setting	**01**	Enable
			05	Disable

1 Settings are made simultaneously for the entire group, however, if you select the Mode No. inside parentheses, you can also set by each individual unit. Setting changes however CANNOT be checked except in the individual mode for those in parentheses. (Even if the settings are made for the entire group, the display always indicates "01".)

2 "88" may be displayed to indicate the remote controller is resetting when returning to the normal mode.

3 This function does not work when "SET BACK Function" is set by remote controller.

4 This is the case when the remote sensor (optional kit) is used.

5 This is the case when the sensor option (optional kit) is used.

6 Wind block: one of 4 flaps can be set a block position (block position = closed position).
Wind CANNOT be blocked 100% but mostly blocked without additional parts.

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