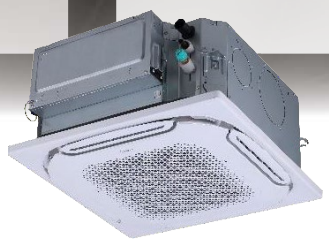
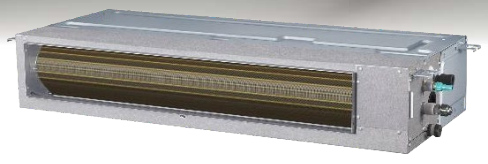
Ultima Series
Mini VRF Indoor Unit
Service Manual





CONTENTS

1 R32 System Service

Indoor units in this manual can be used with both R410A and R32 refrigerant systems. When repairing systems that use R32 refrigerant, the following warnings and operating requirements should be noted.

1.1 Warning about the R32 refrigerant

⚠ WARNING

The following information indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

The following applies to R32 refrigerant systems.

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized.

For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.

Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided. The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.

Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

No person carrying out work in relation to a refrigeration system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.

All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which flammable refrigerant can possibly be released to the surrounding space.

Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using flammable refrigerants:

– the charge size is in accordance with the room size within which the refrigerant containing parts are installed;
– the ventilation machinery and outlets are operating adequately and are not obstructed;
– if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;
– marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
– refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.

If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include:

-that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
-that no live electrical components and wiring are exposed while charging, recovering or purging the system;
-that there is continuity of earth bonding.

During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.

Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres.

Replacement parts shall be in accordance with the manufacturer's specifications.

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

Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.

Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of ageing or continual vibration from sources such as compressors or fans.

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, it is important that best practice is followed.

Since flammability is a consideration. The following procedure shall be adhered to:

- remove refrigerant;
- purge the circuit with inert gas;
- evacuate;
- purge again with inert gas;
- open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders. The system shall be "flushed" with OFN to render the unit safe. This process may need to be repeated several times. Compressed air or oxygen shall not be used for this task.

Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.

This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.

This operation is absolutely vital if brazing operations on the pipe-work are to take place.

Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available. Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them. Prior to recharging the system it shall be pressure tested with OFN.

DD.12 Decommissioning:

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

a) Become familiar with the equipment and its operation.
b) Isolate system electrically.
c) Before attempting the procedure ensure that:

- mechanical handling equipment is available, if required, for handling refrigerant cylinders;
- all personal protective equipment is available and being used correctly;
- the recovery process is supervised at all times by a competent person;
- recovery equipment and cylinders conform to the appropriate standards.

d) Pump down refrigerant system, if possible.
e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
f) Make sure that cylinder is situated on the scales before recovery takes place.
g) Start the recovery machine and operate in accordance with manufacturer's instructions.
h) Do not overfill cylinders. (No more than 80 % volume liquid charge).
i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

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

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

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

Warning: disconnect the appliance from its power source during service and when replacing parts.

These units are partial unit air conditioners, complying with partial unit requirements of this International Standard, and must only be connected to other units that have been confirmed as complying to corresponding partial unit requirements of this International Standard.

1.2 Qualification requirements for maintenance personnel

The following information indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

These instructions are exclusively intended for qualified contractors and authorised installers

Work on the refrigerant circuit with flammable refrigerant in safety group A2L may only be carried out by authorised heating contractors. These heating contractors must be trained in accordance with EN 378 Part 4 or IEC 60335-2-40, Section HH. The certificate of competence from an industry accredited body.

Brazing/soldering work on the refrigerant circuit may only be carried out by contractors certified in accordance with ISO 13585 and AD 2000, Datasheet HP 100R. And only by contractors qualified and certified for the processes to be carried out. The work must fall within the range of applications purchased and be carried out in accordance with the prescribed procedures. Soldering/brazing work on accumulator connections requires certification of personnel and processes by a notified body according to the Pressure Equipment Directive (2014/68/EU).

Work on electrical equipment may only be carried out by a qualified electrician.

Before initial commissioning, all safety relevant points must be checked by the particular certified heating contractors. The system must be commissioned by the system installer or a qualified person authorised by the installer.

2 Main PCB Ports

2.1 Compact Four-way Cassette

Figure 3.1:Compact Four-way Cassette main PCB port

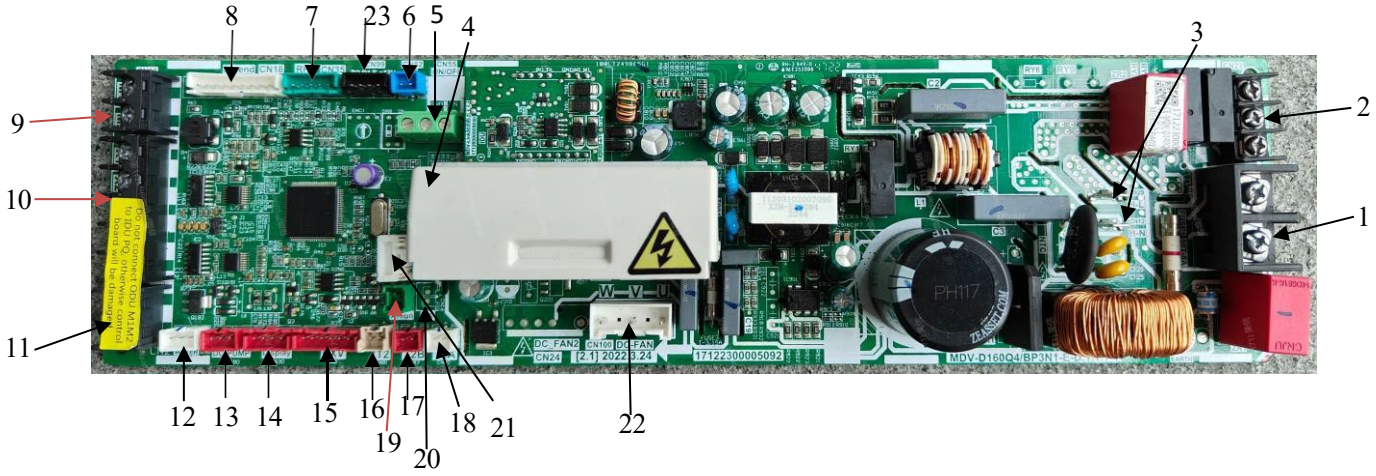


Table 3.1: Compact Four-way Cassette main PCB ports

Label in Figure 3.1	Code	Content	Port voltage	Note
1	CN1(L,N)	AC power input	220V AC	Standard
2	CN22 (ALARM,N,AC2)	AC power output used for customization function: alarm/strong electric sterilization module	220V AC	Standard
3	CN12(H-L) CN29(H-N)	Reserved	220V AC	Reserved
4	CN4	Program burning port(fan motor)	5V DC[5]	Standard
5	CN55	Remote on/off switch connection	Note 5	Standard
6	CN21	T1 Ambient temperature sensor connection	3.3V DC	Standard
7	CN35	Humidity sensor connection	3.3V DC	Standard
8	CN18	Switch Board	5V/12V DC[5]	Standard
9	CN10(M1M2)	M1 M2 communication port(with ODU by HyperLink)	24V DC	Standard
10	CN6(X1X2,PQ)	X1 X2 communication port(with wire controller); P Q communication port(with ODU by RS-485)	X1 X2:18V DC ; P,E or Q,E: 2.5-2.7V DC	Standard
11	CN2(D1D2)	D1 D2 communication port(with Central controller)	2.5 - 2.7V DC	Standard
12	CN5	Water level port	3.3V DC	Standard
13	CN190	DC Drainage pump port	12V DC	Standard
14	CN30	Display panel connection	12V DC	Standard
15	CN8	EEV drive port	12V DC[5]	Standard
16	CN11	T2 Temperature sensor connection	3.3V DC	Standard
17	CN15	T2B Temperature sensor connection	3.3V DC	Standard
18	CN80	T2A Temperature sensor connection	3.3V DC	Standard
19	CN-A	Sterilization module port	12V DC	Standard
20	CN16	Reserved	3.3V DC	Reserved
21	CN25	Program burning port(indoor unit)	3.3V DC	Standard
22	CN100	Power supply for fan motor	Actual voltage	Standard
23	CN99	After-sale Kit communication port	12VDC	Standard

Notes:

1. **Standard**: The port is standard, the customers can connect corresponding device through this port, such as water pump and Humidity sensor etc.
   Customized: The port is not available on the mainboard. If necessary, you need to customize the port
   Reserved: This port can not be used.
2. When repairing, PQ connects after-sales tooling
3. PQ and M1M2 communication ports both are used for indoor and outdoor communication, and only one of them can be used at a time. Meanwhile, be sure to connect the same communication ports (PQ to PQ; M1M2 to M1M2) in case of damage of the main control board.
4. D1D2 communication ports are used for group control communication. When connecting the group controller, the D1D2 port of the indoor units that are to be group controlled must be connected in daisy chain, and the group controller must be connected to the X1X2 port of one of the indoor units in the group control, and set to group control mode. In addition, D1D2 communication ports can also be connected to the central controller.
5. Refer to *Table 3.2* for voltage test instructions of some ports.

Table 3.2: voltage test instructions

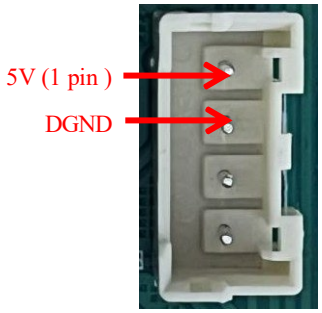
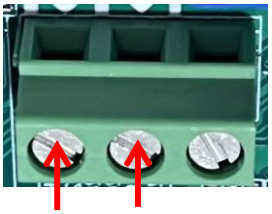
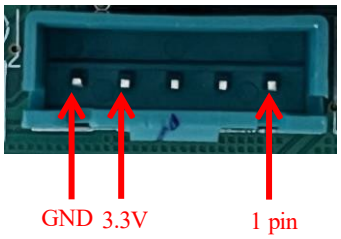
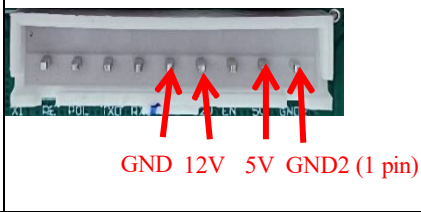
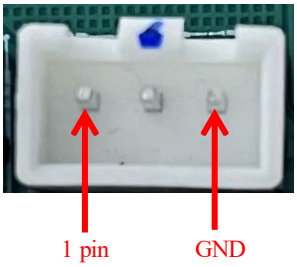
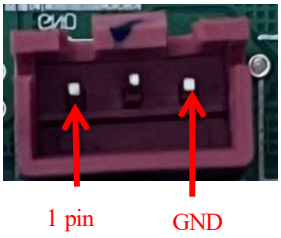
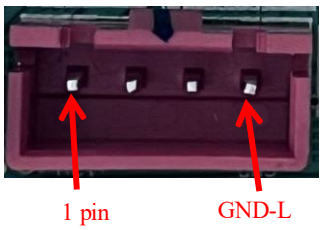
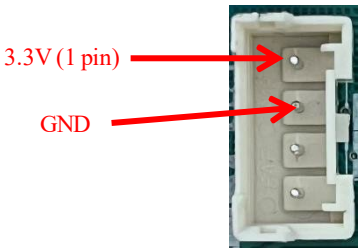
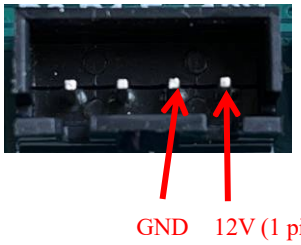
Code	Content	Description	Picture
CN4	Program burning port(fan motor)	/	
CN55	Remote on/off switch connection	Shorting pins 2 and 3, forced shutdown of the internal machine (default), can be set by controller (N38)	
CN35	Humidity sensor connection	Using the DC voltage gear of the multimeter to test pin 4 and 5, the value should be 3.3V	
CN18	Switch Board connection	Using the DC voltage gear of the multimeter to test pin 1 and 2, the value should be 5V; Using the DC voltage gear of the multimeter to test pin 4 and 5, the value should be 12V	
CN5	Water level port	The water level is normal, the water level switch is in the channel state; when the water level is full, the water level switch is in the disconnected state	

Table 3.2: voltage test instructions (continue)

Code	Content	Description	Description
CN190	Drainage pump port	When the water pump is running, pin 2 and 3 output 12V DC	
CN30	Display panel connection	Using the DC voltage gear of the multimeter to test pin 1 and 4, the value should be 12V;	
CN8	EEV drive port	Using the DC voltage gear of the multimeter to test pin 5 and GND (use other ports' GND) , the value should be 12V;	 Using other ports' GND
CN25	Program burning port(indoor unit)	/	
CN99	After-sale Kit communication port	Using the DC voltage gear of the multimeter to test pin 1 and 2, the value should be 12V;	

2.2 Duct

Figure 3.2: 05~24 model Duct main PCB ports

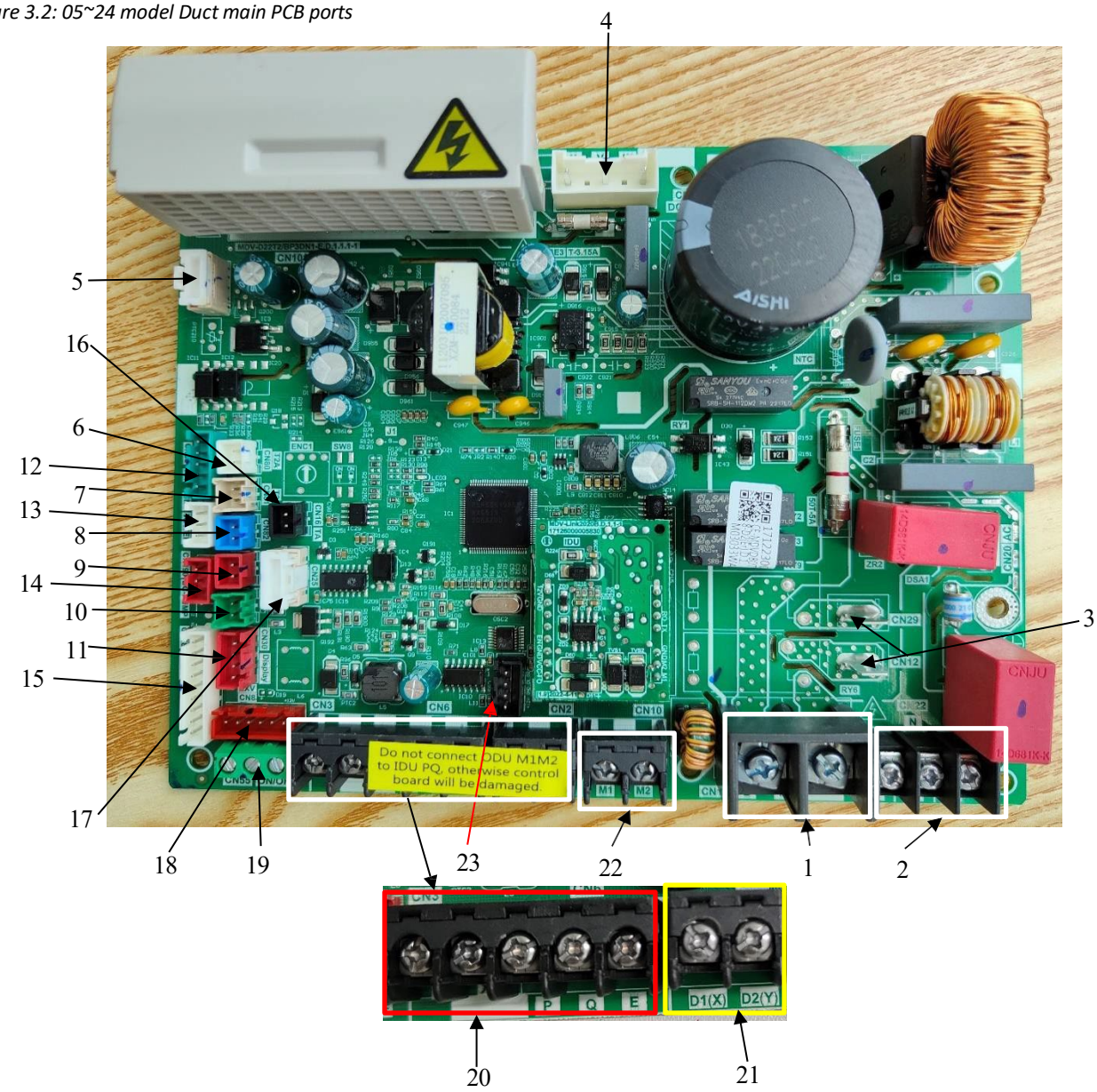


Table 3.3: 05~24 model Duct main PCB ports

Label in Figure 3.3	Code	Content	Port voltage	Note
1	CN1(L.N)	AC power input	220V AC	Standard
2	CN22 (ALARM,N,AC2)	AC power output Used for customization function: alarm/Strong electric sterilization module	220V AC	Standard
3	CN12(H-L) CN29(H-N)	Reserved	220V AC	Reserved
4	CN100	Power supply for fan motor	Actual voltage	Standard
5	CN4	Program burning port(fan motor)	5V DC[5]	Standard
6	CN80	T2A Temperature sensor connection	3.3V DC	Standard

Table continued on next page ...

Label in Figure 3.3	Code	Content	Port voltage	Note
7	CN81	T2 Temperature sensor connection	3.3V DC	Standard
8	CN82	T1 Ambient Temperature sensor connection	3.3V DC	Standard
9	CN83	T2B Temperature sensor connection	3.3V DC	Standard
10	CN-A	Sterilization module port	12V DC	Standard
11	CN30	Display Panel connection	12V DC[5]	Standard
12	CN35	Humidity sensor connection	3.3V DC[5]	Standard
13	CN5	Water level port	3.3V DC[5]	Standard
14	CN190	Drainage pump port	12V DC[5]	Standard
15	CN18	Switch Board	5V/12V DC[5]	Standard
16	CN16	Reserved	12V DC	Reserved
17	CN25	Program burning port(indoor unit)	3.3V DC[5]	Standard
18	CN8	EEV drive port	12V DC[5]	Standard
19	CN55	Remote on/off switch connection	Note 5	Standard
20	CN6(X1X2,PQE)	X1 X2 communication port(with wire controller); P Q communication port(with ODU by RS-485)	X1 X2:18V DC ; P,E or Q,E: 2.5-2.7V DC	Standard
21	CN2(D1D2)	D1 D2 communication port(with Central controller)	D1,E or D2,E 2.5 - 2.7V DC	Standard
22	CN10(M1M2)	M1 M2 communication port(with ODU by HyperLink)	24V DC	Standard
23	CN99	After-sale Kit communication port	12V DC[5]	Standard

Notes:

1. **Standard**: The port is standard, the customers can connect corresponding device through this port, such as water pump and Humidity sensor etc.
   Customized: The port is not available on the mainboard. If necessary, you need to customize the port
   Reserved: This port can not be used.
2. When repairing, PQ connects after-sales tooling
3. PQ and M1M2 communication ports both are used for indoor and outdoor communication, and only one of them can be used at a time. Meanwhile, be sure to connect the same communication ports (PQ to PQ; M1M2 to M1M2) in case of damage of the main control board.
4. D1D2 communication ports are used for group control communication. When connecting the group controller, the D1D2 port of the indoor units that are to be group controlled must be connected in daisy chain, and the group controller must be connected to the X1X2 port of one of the indoor units in the group control, and set to group control mode. In addition, D1D2 communication ports can also be connected to the central controller.
5. Refer to *Table 3.2* for voltage test instructions of some ports.

Figure 3.3: 28~40 model Duct main PCB ports

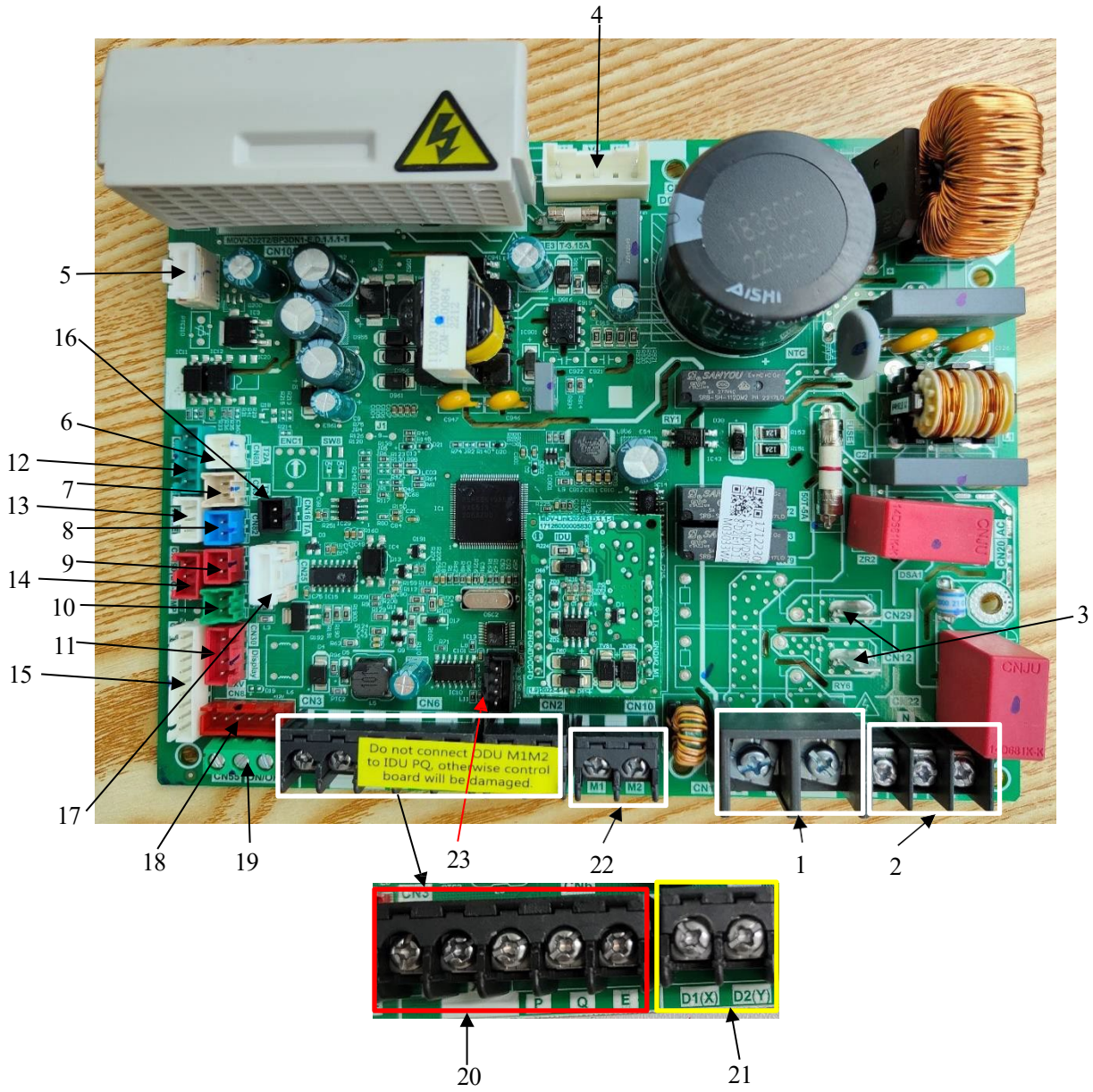


Table 3.5: 28~40 model Duct main PCB ports

Label in Figure 3.4	Code	Content	Port voltage	Note
1	CN1(L.N)	AC power input	220V AC	Standard
2	CN22 (ALARM,N,AC2)	AC power output Used for customization function: alarm/Strong electric sterilization module	220V AC	Standard
3	CN12(H-L) CN29(H-N)	Reserved	220V AC	Reserved
4	CN100	Power supply for fan motor	Actual voltage	Standard
5	CN4	Program burning port(fan motor)	5V DC[5]	Standard
6	CN80	T2A Temperature sensor connection	3.3V DC	Standard

Table continued on next page ...

Table 3.5: 28~40 model Duct main PCB ports (continued)

Label in Figure 3.4	Code	Content	Port voltage	Note
7	CN81	T2 Temperature sensor connection	3.3V DC	Standard
8	CN82	T1 Ambient Temperature sensor connection	3.3V DC	Standard
9	CN83	T2B Temperature sensor connection	3.3V DC	Standard
10	CN-A	Sterilization module port	12V DC	Standard
11	CN30	Display Panel connection	12V DC[5]	Standard
12	CN35	Humidity sensor connection	3.3V DC[5]	Standard
13	CN5	Water level port	3.3V DC[5]	Standard
14	CN190	Drainage pump port	12V DC[5]	Standard
15	CN18	Switch Board	5V/12V DC[5]	Standard
16	CN16	Reserved	12V DC	Reserved
17	CN25	Program burning port(indoor unit)	3.3V DC[5]	Standard
18	CN8	EEV drive port	12V DC[5]	Standard
19	CN55	Remote on/off switch connection	Note 5	Standard
20	CN6(X1X2,PQE)	X1 X2 communication port(with wire controller); P Q communication port(with ODU by RS-485)	X1 X2:18V DC ; P,E or Q,E: 2.5-2.7V DC	Standard
21	CN2(D1D2)	D1 D2 communication port(with Central controller)	D1,E or D2,E 2.5 - 2.7V DC	Standard
22	CN10(M1M2)	M1 M2 communication port(with ODU by HyperLink)	24V DC	Standard
23	CN99	After-sale Kit communication port	12V DC[5]	Standard

Notes:

1. **Standard**: The port is standard, the customers can connect corresponding device through this port, such as water pump and Humidity sensor etc.
   Customized: The port is not available on the mainboard. If necessary, you need to customize the port
   Reserved: This port can not be used.
2. When repairing, PQ connects after-sales tooling
3. PQ and M1M2 communication ports both are used for indoor and outdoor communication, and only one of them can be used at a time. Meanwhile, be sure to connect the same communication ports (PQ to PQ; M1M2 to M1M2) in case of damage of the main control board.
4. D1D2 communication ports are used for group control communication. When connecting the group controller, the D1D2 port of the indoor units that are to be group controlled must be connected in daisy chain, and the group controller must be connected to the X1X2 port of one of the indoor units in the group control, and set to group control mode. In addition, D1D2 communication ports can also be connected to the central controller.
5. Refer to *Table 3.2* for voltage test instructions of some ports.

2.3 Wall Mounted

Figure 3.4: Wall Mounted main PCB ports

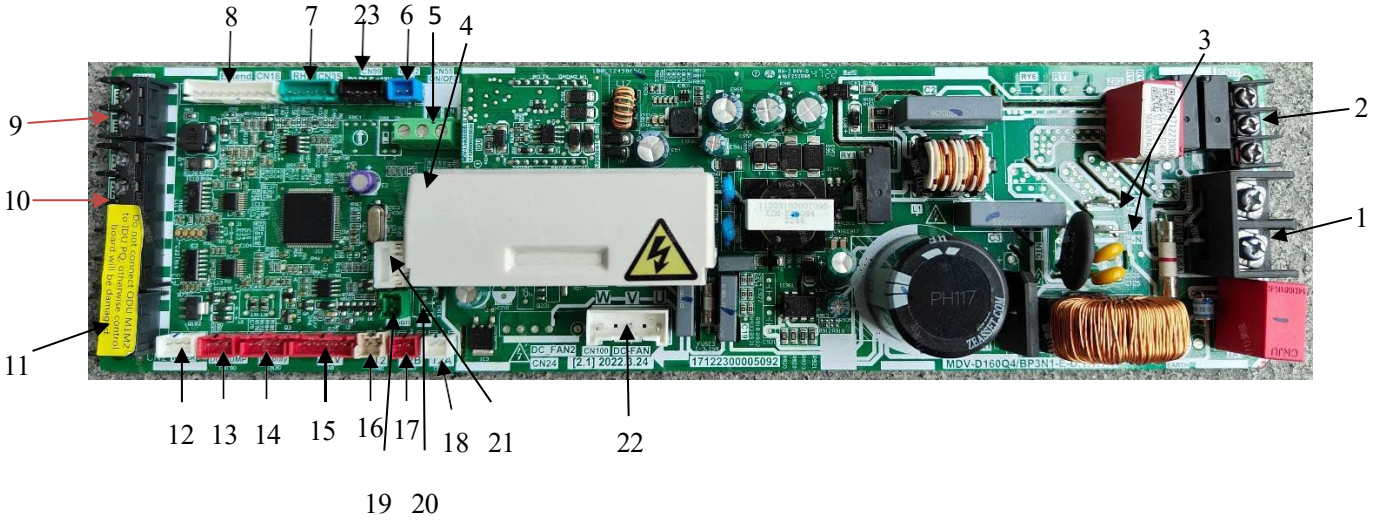


Table 3.6: Wall Mounted main PCB ports

Label in Figure 3.5	Code	Content	Port voltage	Note
1	CN1(L,N)	AC power input	220V AC	Standard
2	CN22 (ALARM,N,AC2)	AC power output used for customization function: alarm/strong electric sterilization module	220V AC	Standard
3	CN12(H-L) CN29(H-N)	Reserved	220V AC	Reserved
4	CN4	Program burning port(fan motor)	5V DC[5]	Standard
5	CN55	Remote on/off switch connection	Note 5	Standard
6	CN21	T1 Ambient temperature sensor connection	3.3V DC	Standard
7	CN35	Humidity sensor connection	3.3V DC	Standard
8	CN18	Switch Board	5V/12V DC[5]	Standard
9	CN10(M1M2)	M1 M2 communication port(with ODU by HyperLink)	24V DC	Standard
10	CN6(X1X2,PQ)	X1 X2 communication port(with wire controller); P Q communication port(with ODU by RS-485)	X1 X2:18V DC ; P,E or Q,E: 2.5-2.7V DC	Standard
11	CN2(D1D2)	D1 D2 communication port(with Central controller)	2.5 - 2.7V DC	Standard
12	CN5	Water level port	3.3V DC	Standard
13	CN190	DC Drainage pump port	12V DC	Standard
14	CN30	Display panel connection	12V DC	Standard
15	CN8	EEV drive port	12V DC[5]	Standard
16	CN11	T2 Temperature sensor connection	3.3V DC	Standard
17	CN15	T2B Temperature sensor connection	3.3V DC	Standard
18	CN80	T2A Temperature sensor connection	3.3V DC	Standard
19	CN-A	Sterilization module port	12V DC	Standard
20	CN16	Reserved	3.3V DC	Reserved
21	CN25	Program burning port(indoor unit)	3.3V DC	Standard
22	CN100	Power supply for fan motor	Actual voltage	Standard
23	CN99	After-sale Kit communication port	12VDC	Standard

Notes:

1. **Standard**: The port is standard, the customers can connect corresponding device through this port, such as water pump and Humidity sensor etc.
   Customized: The port is not available on the mainboard. If necessary, you need to customize the port
   Reserved: This port cannot be used.
2. When repairing, PQ connects after-sales tooling
3. PQ and M1M2 communication ports are both used for indoor and outdoor communication, and only one of them can be used at a time. Meanwhile, be sure to connect the same communication ports (PQ to PQ; M1M2 to M1M2) in case of damage of the main control board.
4. D1D2 communication ports are used for group control communication. When connecting the group controller, the D1D2 port of the indoor units that are to be group controlled must be connected in daisy chain, and the group controller must be connected to the X1X2 port of one of the indoor units in the group control, and set to group control mode. In addition, D1D2 communication ports can also be connected to the central controller.
5. Refer to *Table 3.2* for voltage test instructions of some ports.

3 Indoor unit settings

3.1 Parameter settings

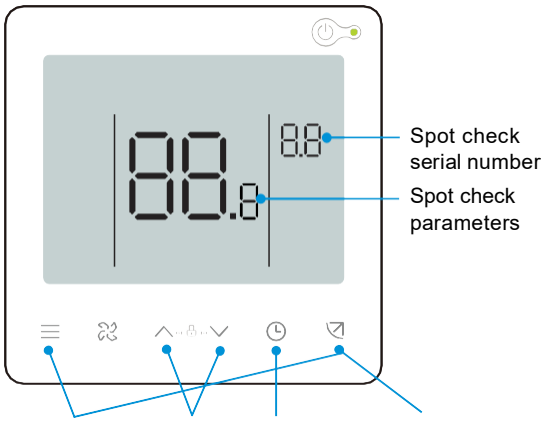
Taking KJR-86S/BK as an example, the parameters can be set in the power-on or power-off state.

①Hold " ◹ " and " ☰ " for 3 seconds to enter the parameter setting interface, and the main interface will display "CC"

②

a) Wired controller Parameter Settings (Cxx)

When display "CC", press " ◹ " will enter the wired controller Parameter Settings "Cxx". Press "∧" and "∨" to switch the parameter code and press" ◹ " to enter Parameter value setting interface. Then press "∧" and "∨"to change Parameter value and press " ◹ " to save changes.(For example "CC" to "C03" to "01")



b) Indoor unit Parameter Settings (Nxx)

When display "CC", press "∨", then the indoor unit number will be displayed ("n00-n63" is displayed, and the last two digits are the indoor unit addresses). Press the " ◹ " to enter the indoor unit parameter setting interface, and "n00" will be displayed. Use "∧" and "∨" to adjust to "Nxx" and press the " ◹ " to confirm. Finally, press "∧" and "∨"to change Parameter value and press " ◹ " to save changes. (For example "CC" to "n03" to "N25" to "01").

③Press the "🕒" button to return to the previous page until exiting the parameter setting or exiting the parameter setting after 60s without any operation.

Table 4.1: Wired controller Parameter Settings

Parameter Code	Parameter Name	Parameter Range	Default Value	Remarks
C00	Main and secondary wired controller setting	0 indicates the main wired controller 1 indicates a secondary wired controller	0	If two wired controllers control one IDU, addresses for two wired controllers must be different. You are not allowed to set IDU parameters via the secondary wired controller (address 1), but can set the wired controller.
C01	Cooling only/cooling and heating setting	00: Cooling and Heating 01: Cooling Only	00	Heating mode is not available in cooling only setting
C02	Power failure memory function setting for the wired controller	00: None 01: Available	00	For a two-way wired controller, this parameter is used to store the status of Follow Me.
C03	Time to remind users to clean the filter on the wired controller	00/01/02/03/04	01	00: No reminder to clean filter 01: 500h, 02: 1000h 03: 2500h 04: 5000h
C04	Settings for infrared receiver of wired controller	00: Disable 01: Enable	01	When "Disable the infrared receiver of the wired controller" is on, the wired controller cannot receive remote control signal.
C05	Whether indoor ambient temperature is displayed	00: No 01: Yes	00	

Table 4.1: Wired controller Parameter Settings(continues)

Parameter Code	Parameter Name	Parameter Range	Default Value	Remarks
C06	LED indicator of wired controller	00: Off 01: On	01	When it is on, LED indicator shows the on/off state of the indoor unit. When it is off, LED indicator is off.
C07	Wired controller Follow Me temperature correction	-5.0 to 5.0°C	Celsius: -1.0	Note: Accuracy is 0.5°C.
C08	Lower limit of cooling temperature	16°C to 30°C	16°C	
C09	Upper limit of cooling temperature	16°C to 30°C	30°C	
C10	Lower limit of heating temperature	16°C to 30°C	16°C	
C11	Upper limit of heating temperature	16°C to 30°C	30°C	
C12	Set to display 0.5°C	00/01	01	00: No 01: Yes
C13	Wired controller button light setting	00/01	01	00: Off 01: On
C15	Buzzer of the wired controller rings	00/01	01	00: No 01: Yes
C16	Backlight time	00/01/02	00	00: 15s 01: 30s 02: 60s
C17	Whether energy efficiency attenuation is displayed when power off	00/01	00	00: No 01: Yes
C18	Whether IDU filter blockage is displayed when power off	00/01	00	00: No 01: Yes
C19	T1 temperature selection	F0/F1/F2/F3/...#IDU	F1	F0: IDU T1 temperature sensor F1: Follow Me, #IDU (IDUs connected to the system, ranging from 0 to 63) (Note: The secondary wired controller does not respond to Follow Me) F2: Second temperature sensor (reserved) F3: Ground sensor (reserved)

Table 4.2: Indoor unit Parameter Settings

Parameter Code	Parameter Name	Parameter Range	Default Value	Remarks
N00	Static pressure of IDU	IDU static pressure level: 00/01/02/03/ 04/05/06/07/08/ 09/~/19/FF	FF	The IDU sets the selected corresponding static pressure (FF-there may be different default values for different series of indoor units)
N01	Power failure memory function setting for the IDU	00/01	01	00: None 01: Available
N04	Whether the display board of IDU receives remote control signals	00/01	00	00: Yes 01: No
N05	Buzzer of the IDU rings	00/01/02	02	00: No 01: Yes 02: remote controller only
N06	Light (display panel) setting	00/01	01	00: Off 01: On
N07	Temperature unit	00/01	00	00: Celsius 01: Fahrenheit
N08	Mode changeover time interval in the auto mode (min)	00/01/02/03	00	00: 15min 01: 30min 02: 60min 03: 90min
N11	Set outdoor temperature value when auxiliary heater is on	-25°C to 20°C	0°C	Note: The values are accurate to 1°C or 1°F. °F: (-13)~68°F
N12	Indoor temperature when auxiliary heater is on	10°C to 30°C	24°C	(Accuracy is 1°C)
N13	T1 temperature difference when auxiliary heater is on	0-7	3	0-7 indicates 0 - 7°C (Accuracy is 1°C)
N14	T1 temperature difference when auxiliary heater is off	0-10	5	0-10 indicates -4 - 6°C (Accuracy is 1°C)
N15	Auxiliary heater used alone	00/01	00	00: No 01: Yes
N16	Auxiliary heater on/off	00/01/02	00	00: Auto 01: Forced on 02: Forced off
N17	IDU cold draft prevention temperature settings	00/01/02/03/04	00	0: 15, 01: 20, 02: 24, 03: 26, 04: anti-cold wind invalid

Parameter Code	Parameter Name	Parameter Range	Default Value	Remarks
N18	Fan speed setting in Cooling standby mode	00/01/02/03/04/ 05/06/07/14	01	00: Start/Stop delay 01: Speed 1 02: Speed 2 03: Speed 3 04: Speed 4 05: Speed 5 06: Speed 6 07: Speed 7 14: Fan speed before going to standby mode
N19	Standby fan speed range in dry mode	00/01/02/03	01	00: Fan off 01: L1 02: L2 03: Speed 1
N20	Fan speed setting in heating standby mode	0/1/14	0	0: Termal 1: Speed 1 14: Speed 1
N21	Time to stop the fan of IDU (Termal)	01/02/03/04	01	00: Fan shutdown 01: 4min 02: 8min 03: 12min 04: 16min
N22	EEV opening selection during heating standby	00/01/02/14	14	00: 56P 01: 72P 02: 0P 14: Auto regulation
N23	Cooling return difference temperature	00/01/02/03/04	00	00: 1°C 01: 2°C 02: 0.5°C 03: 1.5°C 04: 2.5°C
N24	Heating return difference temperature	00/01/02/03/04	00	00: 1°C 01: 2°C 02: 0.5°C 03: 1.5°C 04: 2.5°C
N25	IDU heating mode temperature compensation	00/01/02/03/04	00	00: 6°C 01: 2°C 02: 4°C 03: 8°C 04: 0°C

Parameter Code	Parameter Name	Parameter Range	Default Value	Remarks
N26	IDU cooling mode temperature compensation	00/01/02/03/04	00	00: 0°C 01: 1°C 02: 2°C 03: 3°C 04: -1°C
N27	Maximum indoor temperature drop in dry mode	00/01/02/03/04	01	00: 03°C 01: 04°C 02: 05°C 03: 06°C 04: 07°C
N30	Constant air flow setting	00/01	01	00: Constant speed 01: Constant air flow
N31	High ceiling setting	00/01/02	00	Set IDU height, 00: 3m 01: 4m 02: 4.5m
N32	Q4/Q4C air outlet 1 setting	00/01	00	00 - Free control 01 - Off
N33	Q4/Q4C air outlet 2 setting	00/01	00	00 - Free control 01 - Off
N34	Q4/Q4C air outlet 3 setting	00/01	00	00 - Free control 01 - Off
N35	Q4/Q4C air outlet 4 setting	00/01	00	00 - Free control 01 - Off
N36	Cooling only for IDU	00/01	00	00: Cooling and heating 01: Cooling only
N37	One-to-more of wired controller enabled	00/01	00	00: No 01: Yes
N38	Long-distance on/off function setting	00/01	00	00: Turn off the IDU when closed 01: Turn off the IDU when open Note: When turn off the IDU by long-distance on/off port, the wired controller will display “d61”
N39	Delay time setting (Using long-distance on/off port to turn off the IDU)	00/01/…/06	00	00 - No delay 01 - 1min delay 02 - 2min 03- 3min 04- 4min 05- 5min 06- 10min

Parameter Code	Parameter Name	Parameter Range	Default Value	Remarks
N40	Long-distance alarm function setting	00/01	00	00: Alarm when closed 01: Alarm when open
N41	Turbo	00/01	00	00: Off 01: On (Rapid cooling/Rapid heating)
N42	Sterilization function	00/01	00	00: No sterilization function (default) 01: Plasma disinfection
N43	Sterilization setting	00/01/02	00	00: Auto on 01: Forced on 02: Forced off
N44	Silent mode setting	00/01	00	00: Off 01: On
N45	ECO	00/01	01	00: Off 01: On
N46	Drying time at self-cleaning	0/1/2/3	0	0: 10 min 1: 20 min 2: 30 min 3: 40 min
N47	Mildew-proof fan operation duration (power off in cooling/dry mode, except power off due to faults)	00/01/02/03	00	00 - 40s 01 - 120s 02 - 300s 03 - 600s
N48	Dirt proof for ceiling	00/01	00	00: Invalid 01: Valid
N49	Condensation proof	00/01	00	00: Invalid 01: Valid
N50	Human Detect Sensor	00/01/02	~~0~~1	00: Invalid 01: Used to adjust the set temperature when unattended 02: Used to turn off the unit when unattended
N51	Setting temperature adjustment interval when unattended	00/01/02/03/04/05	00	00: 15 min 01: 30 min 02: 45 min 03: 60 min 04: 90 min 05: 120 min
N52	Setting maximum temperature adjustment when unattended	00/01/02/03	00	00: 1°C 01: 2°C 02: 3°C 03: 4°C

Parameter Code	Parameter Name	Parameter Range	Default Value	Remarks
N53	Stop delay when unattended	00/01/02/03/04/05	01	00: 15 min 01: 30 min 02: 45 min 03: 60 min 04: 90 min 05: 120 min
N54	Midea ETA function setting	00/01	01	00: Off 01: On
N55	Energy rating of cooling Midea ETA	00/01/02	00	00: Level 1 01: Level 2 02: Level 3
N56	Energy rating of heating Midea ETA	00/01/02	00	00: Level 1 01: Level 2 02: Level 3
N57	On-site fan speed adjustment factor	00/01/02/03/04/05/06	00	00: 1 01: 1.05 02: 1.1 03: 1.15 04: 0.95 05: 0.9 06: 0.85
N58	Initial static pressure detection	00/01	00	00: Not reset 01: Reset
N59	Filter ending - initial static pressure setting	00/01/.../19	00	00-10Pa/ 01-20Pa/ 02~19-30Pa ~200Pa
N60	Ambient temperature when preheating is turned on	00/01/02	00	00: 5°C 01: 0°C 02: (-5)°C
N61	Reserved			--
N62	Reserved			--
N63	Reserved			--
N66	Auto Dry Function	00/01	00	00: Invalid(default) 01: Valid Note: Only applicable to operations in Cool or Auto mode
N67	Auto Dry Target relative humidity	40%/41%/42%/.../7 65% 0%	65%	
N68	Refrigerant leakage fault reset	00/01	00	00: Not reset; 01: reset

Notes:

If use other controllers, parameter settings need refer to the corresponding manual.

3.2 Indoor unit parameter query

Taking KJR-86S/BK as an example

①Hold " ☰ " and " ∧ " for 2 seconds to enter the query interface, "u00-u03" indicates ODUs, "n00-n63" indicates IDUs (the last two digits are the ODU or IDU addresses), and "CC" indicates the wired controller . Press "∧" and "∨" to switch the IDU code (For example n02), then press " ⧄ " to enter the parameter query page.
②In the parameter query page, use "∧" and "∨" to query parameters, and the parameters can be queried cyclically.
③The check list serial number is displayed in upper right corner of the wire controller, while the parameter value is displayed in the middle of the wire controller.
④Press "🕒" to exit the query page. The parameter query page automatically closes if no button is pressed within the next 60 seconds.

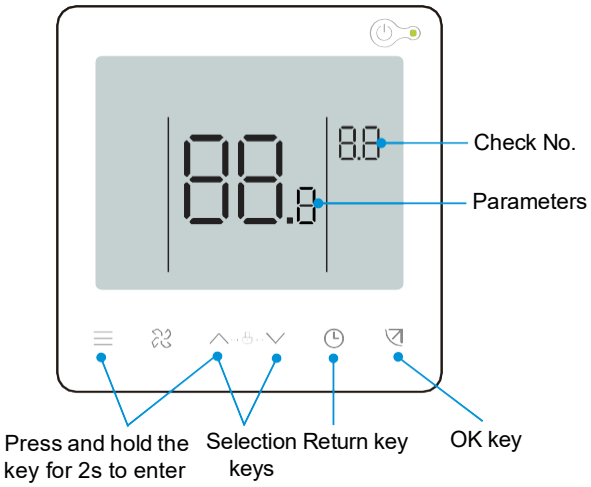


Table 4.3: Indoor unit parameters check list

Check No.	Parameters	Remarks
1	IDU address[1]	0 - 63
2	Capacity of indoor unit	Unit: HP
3	Actual set temperature Ts	Unit:℃
4	Current running set temperature Ts	Unit:℃
5	Actual T1 indoor temperature	Actual value = value displayed
6	Modified indoor temperature T1	Actual value = value displayed
7	T2 heat exchanger intermediate temperature	Actual value = value displayed
8	T2A heat exchanger liquid pipe temperature	Actual value = value displayed
9	T2B heat exchanger gas pipe temperature	Actual value = value displayed
10	Actual set humidity RHs	Actual value = value displayed
11	Actual RH indoor humidity	Actual value = value displayed
12	Actual fresh air processing unit TA air supply temperature	Actual value = value displayed
13	Air-blow pipe temperature	Actual value = value displayed
14	Compressor discharge temperature	Actual value = value displayed
15	Target superheat	Actual value = value displayed
16	EEV opening (actual opening/8)	Actual value/8 = value displayed
17	Software version No.	Actual value = value displayed
18	Historical error code (recent)	Actual value = value displayed
19	Historical error code (sub-recent)	Actual value = value displayed
20	[———] is displayed	

Notes:
1. For indoor units, the communication address and network address are the same and are routinely referred to simply as the unit's "address".
2. If use other controllers, please refer to the corresponding manual.

3.3 Function Descriptions

3.3.1 Power failure memory function

The power failure memory function can be used to ensure that, in the event of a power outage, the indoor units, which was in operation before, automatically restart once the power returns. When the power returns following a power outage, units with Power failure memory function enabled restart with the same operating mode, fan speed and remote control lock status settings as before the power outage. If, during this timed delay, the remote or wired controller is used to send a command to a unit, that unit starts-up immediately with those new settings. Indoor units with this function disabled go into standby once the power returns following a power outage.

3.3.2 Heating mode temperature compensation setting

Since indoor units are often installed at ceiling level, and since warm air rises, the ambient temperature sensed at the unit can be higher than the ambient temperature where users are standing or sitting. To compensate for this, in heating mode the indoor units target a temperature that is higher than the set temperature. The heating mode temperature compensation setting sets the difference between the set temperature and the target temperature. For example, if the set temperature is 20°C and the heating mode compensation setting is 4°C, the units target an ambient temperature (sensed at the unit) of 24°C

Depending on a variety of factors including the height of the room and the position of the units, different values may be appropriate for the heating mode temperature compensation setting. Values of heating mode temperature compensation can be selected by controller.

3.3.3 Cooling mode temperature compensation setting

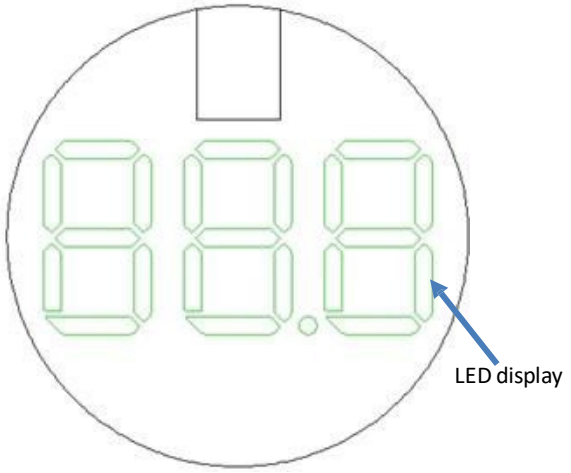
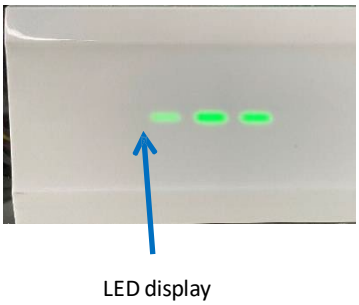
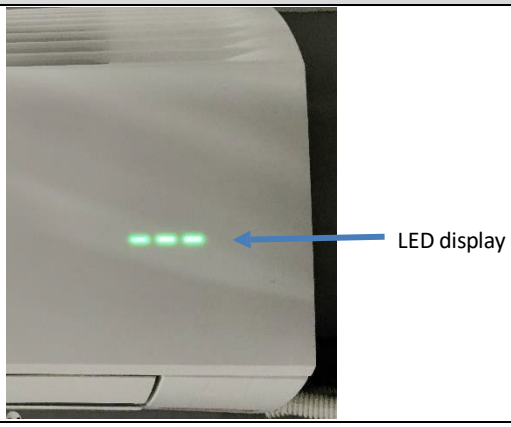
With cooling mode temperature compensation, in cooling mode the indoor units target a temperature that is lower than the set temperature. The cooling mode temperature compensation setting sets the difference between the set temperature and the target temperature. For example, if the set temperature is 26°C and the cooling mode compensation setting is 2°C, the units target an ambient temperature (sensed at the unit) of 24°C. Values of cooling mode temperature compensation can be selected by controller.

4 Display Panels

4.1 Appearance of Display Panel

The appearance of the digital display panel used is shown in Figure 5.1.

Figure 5.1: Digital display panel[1]

Display panel for Compact Four-way Cassette	Display panel for Duct (Optional)
	
Display panel for Wall Mounted	
	

4.2 Output under Normal Operating Conditions

Unit state		Digital display
Standby		
Operating	Normal operation	Cooling and heating : set temperature
		dehumidify mode: set temperature
		Fan only mode: indoor ambient temperature
	Special operation[1]	Mode code
Error[2]		Error code

Notes:

1. The special operation modes refer to *Table 7.2:Operating Status Codes*
2. The error code refer to *Table 7.1:Error code*

5 Control

5.1 Temperature Compensation Control

Because of the installation position of Indoor Unit and different layout, indoor temperature detected by Indoor Unit may not consist with actual temperature. Indoor temperature could be compensated by controller (The parameter code is"N25" "N26")

5.2 EEV Control

When the IDU is powered on again or the ODU is stopped, the system automatically enters initialization mode. After initialization is completed, the system enters the normal start mode. The IDU EEV uses superheat degree control in cooling mode and uses supercool degree control in heating mode. If the IDU receives a protection control or special control command, this command is executed in priority.

- **Superheat Degree Control in Cooling Mode**

During cooling (dry), the IDU calculates the difference between the heat exchanger gas pipe temperature (T2B) and the heat exchanger liquid pipe temperature (T2A) detected by the temperature sensors and write this difference as the current superheat degree (SH). By comparing the current superheat degree (SH) with the set superheat degree (SHS), the opening adjustment trend of the EEV can be decided.

SH＝T2B-T2A

- When SH > SHS, the EEV opening increases
- When SH = SHS, the EEV opening unchanged
- When SH < SHS, the EEV opening decreases

- **Supercool Degree Control in Heating Mode**

During heating, the IDU calculates the difference between the High pressure equivalent saturation temperature (Tc) and the heat exchanger liquid pipe temperature (T2A) detected by temperature sensors and write this difference as the current supercool degree (SC). By comparing the current supercool degree (SC) with the set supercool degree (SCS), the opening adjustment trend of the EEV can be determined.

SC＝max（T1+6,Tc_max-2）-T2A

- When SC > SCS, the EEV opening increases
- When SC = SCS, the EEV opening unchanged
- When SC < SCS, the EEV opening decreases

- **EEV Operating in other Situations**

The EEV decides its operating opening based on the IDU operating mode, IDU working mode, and ODU working mode. For details, see the following table:

<table>
<tr><td rowspan="2">IDU Status</td><td colspan="2">Cooling Mode</td><td colspan="2">Heating Mode</td></tr>
<tr><td>ODU Operating</td><td>ODU Stopped</td><td>ODU Operating</td><td>ODU Stopped</td></tr>
<tr><td>Operating</td><td>Superheat control</td><td rowspan="4">B PLS</td><td>Supercool control</td><td rowspan="4">D PLS</td></tr>
<tr><td>Standby</td><td rowspan="3">A PLS</td><td rowspan="3">C PLS</td></tr>
<tr><td>Off</td></tr>
<tr><td>Fault</td></tr>
</table>

Note:

1. PLS indicates the unit of pulses regarding the EEV opening.

2. The values of A,B,C and D are depend on IDUs' series.

5.3 Start and Stop Control

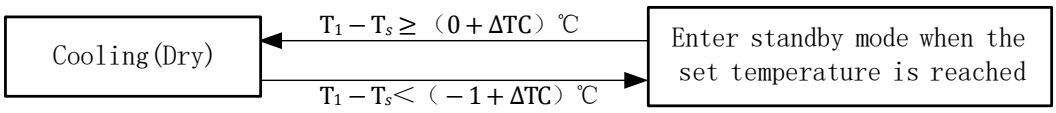
Indoor Unit judges the operation state according to the temperature compensation value (ΔTC) and the difference value between detected indoor temperature (T1) and set temperature (TS).

When the indoor temperature reaches the set one, Indoor Unit shut down; when the indoor temperature exceeds the set one, Indoor Unit start running.

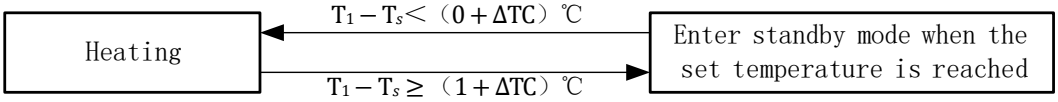
- **Objective**

1. Ensure comfort. When the indoor temperature of indoor return air reaches the temperature range set by the user, if the IDU fails to shut down, the room temperature will deviate from the expected value of the user and reduce the comfort of the room.
2. Energy saving. When the temperature of the return air reaches the temperature range set by the user, if the IDU fails to shut down, the air conditioning system will continue to operate inefficiently under the condition of low indoor load, with low energy efficiency and no energy saving.
3. The use of temperature compensation values is to solve the problem of differences in the distribution of the room temperature field. The room due to structural differences, room heat source distribution differences, solar radiation, hot air uplift, cold air sink and other factors will cause the temperature detected by the indoor unit's own return air temperature sensor(T1) and the user's human activity area temperature deviation, temperature compensation value(ΔTC) is used to repair this deviation
4. Ensure compressor reliability. The control will prevent frequent start/stop and the temperature compensation in the temperature shutdown control will inhibit frequent opening and closing of the air conditioning system, extending the service life of the air conditioning system;

- **Cooling (Dry)**



- **Heating**



Note:

The temperature compensation value (ΔTC) of cooling and heating operation can be found in the specifications of each model. For details, please contact local technical support personnel

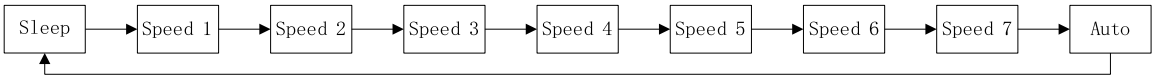
5.4 Fan Control

5.4.1 Fan speeds control

The IDU can work in seven-speeds or three-speeds.

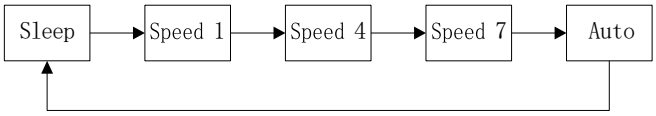
- **Seven-speeds**

When the Indoor Unit detects seven wind speeds the wind speed is set as follows.



- **Three-speeds**

When the Indoor Unit detects only three wind speeds the wind speed is set as follows.



For the specific IDU series, please consult the technical manual of each series. The following table describes the fan control in different situations

- **Fan control in different situations**

	IDU Status	Cooling Mode	Dry Mode	Heating Mode	Fan Mode	Speed Switch
Operating in Set Speed	Operating	Set speed	Speed 1	Set speed	Set speed	User set
	Standby	Set speed	Speed 1	Termal	/	
	Off	Stop fan	Stop fan	Stop fan	Stop fan	
	Fault	Stop fan	Stop fan	Stop fan	Stop fan	

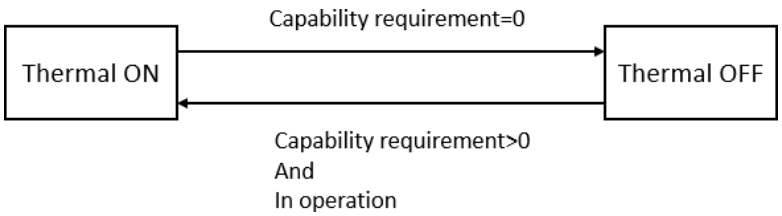
	IDU Status	Cooling Mode	Heating Mode	Auto Mode	Fan Mode	Speed Switch
Automatic Fan Speed	Operating	Automatic	Automatic	Automatic	Speed 1	Switch fan speed based on the difference of the set temperature and return air temperature
	Standby	Automatic	Termal	Automatic cooling, automatic fan speed, automatic heating, and Termal mode operating	/	
	Off	Stop fan	Stop fan	Stop fan	Stop fan	
	Fault	Stop fan	Stop fan	Stop fan	Stop fan	

Note:

Termal: In the heating mode, The IDU in the standby state heating mode will run fan periodically at speed 1 for one minute (the period can be set by controlle)

5.4.2 Auto fan control mode

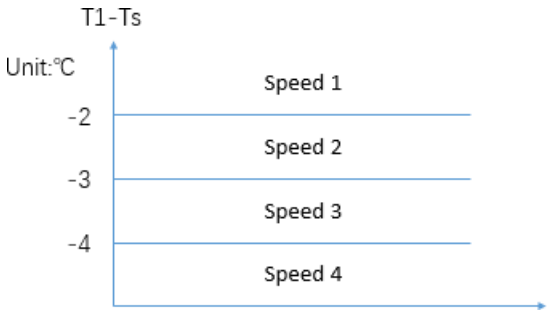
1. When set auto fan control in cooling or heating mode. After operation in the initial speed for a period of time, when Thermal ON, IDUs enter the auto mode and the fan speed will be changed every 2 minutes or when Ts change.
2. When Thermal OFF, IDUs enter the standby mode. When Thermal ON, IDUs enters the initial fan speed again.
3. The default speed is speed 1 when IDUs are set auto fan mode in Air supply only mode.



- **Determine the initial fan speed of auto fan control**

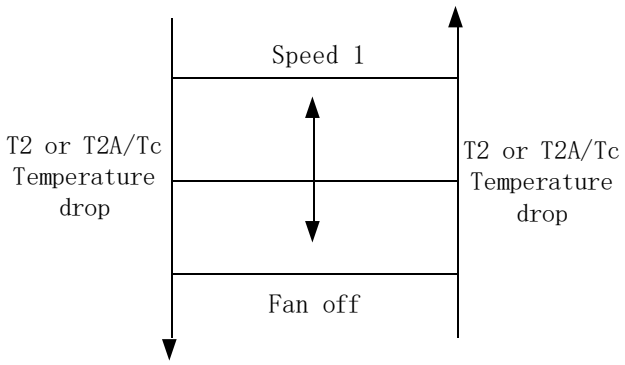
The initial fan speed is determined according to the difference between ambient indoor temperature (T1) and set temperature (TS), and it updates in the following situations:

1) The first time enter this mode
2) TS is changed
3) When switching between normal operation and silent operation



5.4.3 Anti-cold Air Control

This function only be used in heating mode, fan speed is changed according to value changes of the heat exchanger intermediate temperature (T2) of the heat exchanger liquid pipe temperature (T2A) and High pressure equivalent saturation temperature (TC). While in anti-cold air mode, set temperature (Ts) is displayed normally. Anti-cold air control is valid during the oil return or defrosting period. If the IDU is turned off, the fan is turned off as well.



Note: The switching temperature of the heat exchanger intermediate temperature (T2), the heat exchanger liquid pipe temperature (T2A) and the condensing temperature(TC) is determined by T_fanoff.
T_fanoff is the switch temperature point between Breeze and Fan off can be adjusted by controller.

5.4.4 Standby fan speed Control

- **Cooling standby**

The default cooling standby fan speed is Speed 1. You can change the cooling standby fan speed from speed 1 to speed 7 through the controller.
The parameter setting code is “N18”.

- **Heating standby**

The default heating standby is Termal wind speed. The speed 1 runs for 1 minute and stops for X minutes (X is the set value by the controller) which can be set from 4 minutes (default), 8 minutes, 12 minutes and 16 minutes (The parameter setting code is “N21”) . And You can change the heating standby fan speed through the controller (The parameter setting code is “N20”).

Termal: In the heating mode, The IDU in the standby state heating mode will run fan periodically at speed 1 for one minute (the period can be set by controller)

5.5 Swing control

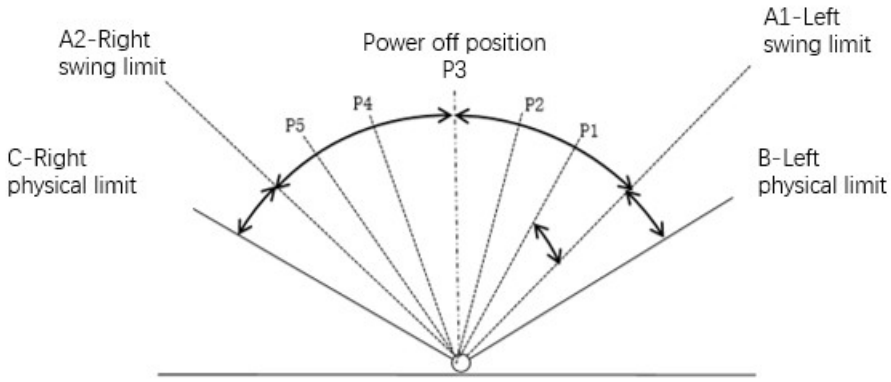
5.5.1 Horizontal swing control

- **Angle range of horizontal swing**

Table 6.1: Angle range of horizontal swing

	heating	cooling
adjustable range	A1+A2	A1+A2
shutdown angle	A1+B/A2+C	A1+B/A2+C

Figure 6.1 Horizontal swing angle



A1:Starting angle or power-on reset position(Swing from the left)
A2:Starting angle or power-on reset position(Swing from the right)
B:Angle limit of left end structure
C:Angle limit of right end structure

Note: Wall mounted(G) have Horizontal swing control

Table 6.2: Angle range of Horizontal swing

		Heating	Cooling/Dehumidification		Ventilation
		Heating	Cooling	Anti-condensation	Ventilation
Wall-mounted	Adjustable range	P1-P5	P1-P5	P2-P5	P1-P5
	The default gear	P3	P3	P3	P3

5.5.2 Vertical swing control

Different IDU series have different adjustable swing angle and default swing angle under different functions.

And each operation mode has its default adjustable range of swing angle. P1-P5 values vary because of the different operation modes and IDU series.

For details, please refer to Table 6.3, Table 6.4 and Figure 6.2.

Figure 6.2 Vertical swing control

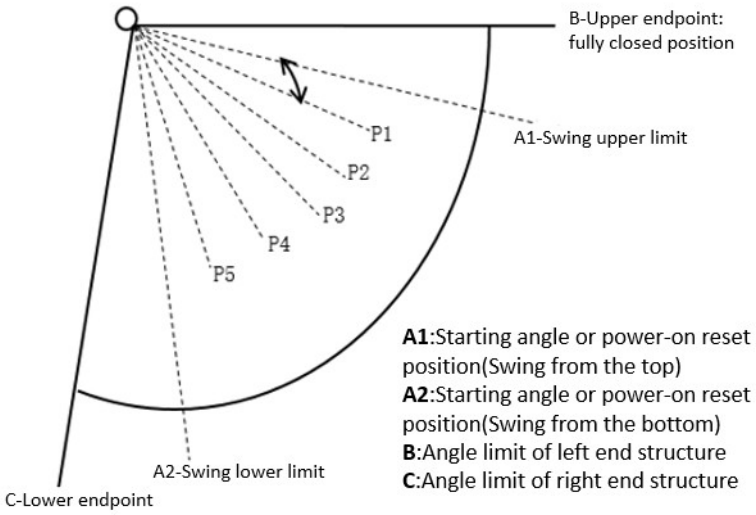


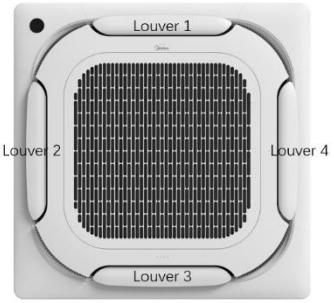
Table 6.3: Angle range of vertical swing.

		Heating	Cooling/Dehumidification		Ventilation	Function operation	
		Heating	Cooling	Anti-condensation	Ventilation	Static pressure detection, Leakage alarm	Self-cleaning
Wall-mounted	Adjustable range	P1-P5	P1-P5	P2-P5	P1-P5	non-adjustable	non-adjustable
	The default gear	P3	P3	P3	P3	P5	P5

Table 6.4: Angle range of vertical swing in Compact Four-way cassette.

		Heating	Cooling/ventilation	Function operation	
		heating/anti-blowing/ anti-dirty of ceiling/ High ceiling setting	cooling/ Dehumidification /ventilation/anti-condensation/anti-blowing/ anti-dirty of ceiling/ High ceiling setting	Static pressure detection, leakage	Self-cleaning
Compact Four-way Cassette	Adjustable range	P1-P5		non-adjustable	non-adjustable
	The default gear	P5	P3	P5	P5

5.5.3 Individual louver control



Compact Four-way Cassette have the individual louver control and the detail according to the following:

a) Louver selection: After entering the louver selection operation, all air flap immediately stop at the current spot and record the current spot. If there is no parameter setting within 3s, exit the louver selection state and all air flap return to the previous spot.

b) The corresponding digital tube will flash when the louver is selected.

If no other operation is carried out within 1s, the current option will be confirmed.

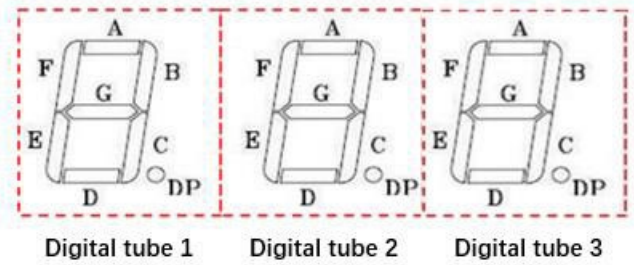


Table 6.5: Digital tube display instructions.

Louver	Digital tube 1	Digital tube 2	Digital tube 3
Louver 1	A flash	A flash	A flash
Louver 2	E/F flash	-	-
Louver 3	D flash	D flash	D flash
Louver 4	-	-	B/C flash
Louver 1+2+3+4	A/D/E/F flash	A/D flash	A/B/C/D flash

Note: If there are more than 2 louvers are set to close, only the first and second will close.

5.5.4 Anti-condensation control

In order to prevent the problem of hanging water and blowing water caused by excessive temperature difference. When the risk of condensation is detected, the Compact Four-way Cassette adjusts the louver to the default minimum angle and limits the angle adjustment range; Other IDUs will adjust the louver to the default condensation angle and lock angle.

5.5.5 Ceiling anti-dirty control

In order to prevent flow of Compact Four-way Cassette towards ceiling, you could open the function of control of ceiling anti-dirty, which will limit the angle that the louver allows to be set so that the airflow avoids the ceiling.

5.6 Operation mode control

- **Outdoor Unit is Heat Pump**

①When the mode is set by ODU to VIP priority, Voting priority, Capability requirements priority, Cooling priority, heating priority, the Indoor Unit can be set to cooling, heating, dehumidification, ventilation modes. When the IDU set mode different from the mode of ODU, the indoor unit will enters the standby mode, and the "**No permission**" displays in the upper left corner of the controller.

②When the mode is set by ODU to **changeover**, VIP IDU can be set to cooling, heating, dehumidification, ventilation modes, while non-VIP IDUS can only follow the operation mode of VIP's.

- **Outdoor Unit is Heat Recovery**

①When the ODU is Heat recovery, VIP IDUs and others can have different modes such as automatic, cooling, heating, dehumidification and ventilation mode.

②**Auto mode** is only available to Heat Recovery ODU. In auto mode, user should set the Tsc(cooling setting temperature) and Tsh(heating setting temperature), which should meet the following conditions Tsc≥Tsh. The setting steps are as follows.

<1>when enter the auto mode, the mode icon Auto and Cool (or Auto and Heat) will flash at the same time

<2> Press "∧" and "∨" to switch mode (Cool or Heat) and press" " to enter temperature setting interface (In Cool is Tsc, and Tsh in Heat). Then press "∧" and "∨"to change value and press " " to save changes.

<3>In auto mode, Icons Auto and Cool light up during cooling operation, when Icons Auto and Heat light up during heating operation.

<4>The heating mode and cooling mode are switched according to the following 3 conditions.

Ⅰ The setting temperature **Tsc=Tsh**

When the return air temperature **T1>Tsc+2℃,** the IDU will run the **cooling mode.**

When the return air temperature **T1<Tsh-2℃,** the IDU will run the **heating mode.**

Ⅱ The setting temperature **Tsc>Tsh, and Tsc-Tsh<3℃**

When the return air temperature **T1>Tsc+1.5℃,** the IDU will run the **cooling mode.**

When the return air temperature **T1<Tsh-1.5℃,** the IDU will run the **heating mode.**

Ⅲ The setting temperature **Tsc>Tsh, and Tsc-Tsh≥3℃**

When the return air temperature **T1>Tsc,** the IDU will run the **cooling mode.**

When the return air temperature **T1<Tsh,** the IDU will run the **heating mode.**

- **Set Temperature Display**

1) When switching between cooling, heating or auto modes, if temperature Ts is not reset, the temperature after switching is the same as the temperature before switching.

2) In auto mode, switching between cooling and heating mode takes some time. The time can be set through the controller.

5.7 Human Detect control

The Human detect sensor is optional.

The operation mode of human detect control can be set by controller (N50).

1) When set the mode "Used to adjust the set temperature when unattended" and enter the unattended state[1], the following logic is executed

① When the cooling/automatic cooling mode operates, the correction value[2] of the set temperature Ts is + 1 every A[3] minute.

② During heating/automatic heating mode operation, the correction value of the set temperature Ts is - 1 every A minute;

③ Fan speed 1

④ The fan louver maintains the previous angle.

⑤ Resume normal control when someone is detected

2) When set the mode " Used to turn off the unit when unattended " and enter the unattended state[1], the following logic is executed

① Turn off the unit

② Resume normal control when someone is detected

Note:

1. The unattended state will only be entered after the unattended state is detected for X minutes. X can be set by the controller (N53)
2. The value of maximum temperature adjustment can be set by controller (N52)
3. The value of A can be set by controller (N51)

5.8 Controlling the Condensate Water Pump and Water Level Switch

1) When the IDU is powered on the first time, the water pump is forced to operate for 5 minutes.
2) When the IDU and ODU are in cooling, dehumidification and self-cleaning mode, the water pump starts immediately and operates continuously. After this mode is stopped (stop or mode switch), the water pump turns off five minutes later.
3) If the water level rises, causing the water level switch to be disconnected, the condensate water pump immediately starts and operates. Five minutes later, if the water level drops to lower than the alarm level, the system restores operation based on the originally set mode. Otherwise, the IDU and water pump stop operating, and a water level alarm is reported. When the water level switch is connected again, the protection is released, and the system restores operation based on the mode that was originally set.

Note:

This function is reserved for the unit models without drainage pumps and water level switches and it is disabled by default.

5.9 Anti-freeze Control

The IDU will close Electronic expansion valve, and the wind shift into speed 1.

Condition:

A) Entry conditions: Coil temperature ≤A continuous T1 or coil temperature ≤B continuous T2, and in any mode of forced cooling, cooling, dehumidification, self-cleaning(Except for the second stage);

B) Exit condition: coil temperature ≥C continuous T3, and not in any mode of forced cooling, cooling, dehumidification, or at the second stage of self-cleaning mode;

5.10 Alarm control

Both IDU'S main control board and 1# Expansion board (Optional) have ALARM port, and can be used simultaneously.

- **Setting positive or negative logic**

①Port on IDU'S main control board

The positive and negative logic of the IDU main control board is set by the wired controller or central controller. (N40)

②Port on 1# Expansion board (Optional)

The positive and negative logic of the 1# expansion board is set by the S2-1/S2-2/S2-3 DIP switch on the 1# expansion board.

- **Remote on/off port setting status and its corresponding function**

Outdoor unit Set	Port status	Functional interpretation
Set to Positive logic (Default)	The port is connected	outputs alarm signals
Set to negative logic	The port is disconnected	outputs alarm signals

5.11 High ceiling setting

For embedded IDU series, such as Compact Four-way Cassette, when the installation exceeds the specified height (default 3 meters), can enter the High ceiling setting (The parameter code is"N31") to change . 3 meters high height, 4 meters high height or 4.5 meters high height can be set. When the high ceiling control is entered, the fan speed limits the minimum speed 3 operation.

*Note: Refer to the IDU manual for detail

5.12 Remote on/off control

Both IDU'S main control board and 1# Expansion board (Optional) have remote on/off control port

- **Remote on/off control port selection**

①Port on IDU'S main control board

Port CN55 connects the passive switch signal

Note:

The port on the main board will be disabled when the port on the expansion board is enabled

②Port on 1# Expansion board (Optional)

Port CN7 connects the 220V switch signal. For detail refer to Expansion board manual

- **Setting positive or negative logic**

①Port on IDU'S main control board

The positive and negative logic of the IDU main control board is set by the wired controller or central controller. (N38)

②Port on 1# Expansion board (Optional)

The positive and negative logic of the 1# expansion board is set by the S4-1 DIP switch on the 1# expansion board.

- **Remote on/off port setting status and its corresponding function**

Outdoor unit	Port status	Corresponding function	Functional interpretation
Set to Positive logic (Default)	The port is connected, Input Low level	Remote delay OFF control	Shut down after the delay time, the controller can send commands normally, but the indoor unit remains off.
		Remote OFF control	Direct shutdown without delay, the controller can send commands normally, but the indoor unit remains off.
Set to negative logic	The port is disconnected, Input High level	Remote delay OFF control	Shut down after the delay time, the controller can send commands normally, but the indoor unit remains off.
		Remote OFF control	Direct shutdown without delay, the controller can send commands normally, but the indoor unit remains off.

The remote OFF delay time can be set through the wired controller (N39), the default value is 0

5.13 Dry mode control

There is a difference between the control with humidity sensor and the control without humidity sensor, when the humidity sensor is damaged, the indoor unit automatically switches to the state without humidity sensor.

- **Without humidity sensor**

Related settings: ① The temperature of dry mode; ②Maximum indoor temperature drop in dry mode (N27); ③Standby fan speed in dry mode(N19)

Enter Standby: When Ts-T1>ΔT, the IDU will Enter Dry standby mode.

Fan speed (operation): Automatic adjustment, cannot be set.

Fan speed (Standby): Can be set by controller (N19)

- **With humidity sensor(customized)**

Related settings: ① The temperature and humidity of dry mode; ②Maximum indoor temperature drop in dry mode;③ Standby fan speed in dry mode

Enter Standby: When Ts-T1>ΔT or actual humidity is lower than the set humidity 5%, the IDU will Enter Dry standby mode.

Fan speed (operation): Automatic adjustment, cannot be set

Fan speed (Standby): Can be set by controller (N19)

Note:

1. Ts: Dehumidification setting temperature
2. T1: IDU air return temperature
3. △T: Maximum indoor temperature drop can be set(N27)

- **Auto dry function**

Prerequisites for function: ① Only IDU with humidity sensor (customized) can use this function.
②Need to enter the IDU parameter setting menu to enable this function (N66).

Entry method: Cooling or Auto mode.

Operation Logic: Priority cooling, when the room temperature reaches the set temperature, automatically switch to dry mode, to approximate the purpose of dual control of temperature and humidity.

Note:

1. For Auto Dry Target relative humidity, the Default value is 65% and can be set (N67).

6 Errors and operation code

6.1 Error Code Table

Table 7.1: Error code

Error code	Content	Error code	Content
A01	Emergency stop	C52	Abnormal communication between the IDU and Wi-Fi Kit
A11	R32 refrigerant leaks, requiring shutdown immediately	C61	Abnormal communication between the IDU main control board and display board
A51	Outdoor unit fault	C71	Abnormal communication between the AHU Kit slave unit and master unit
A71	The fault of the linked FAPU is transmitted to the master IDU (series setting)	C72	Number of AHU Kits is not the same as the set number
A72	The fault of the linked humidifying IDU is transmitted to the master IDU	C73	Abnormal communication between the linked humidifying IDU and master IDU
A73	The fault of the linked FAPU is transmitted to the master IDU (non-series setting)	C74	Abnormal communication between the linked FAPU and master IDU (series setting)
A74	The fault of the AHU Kit slave unit is sent to the master unit	C75	Abnormal communication between the linked FAPU and master IDU (non-series setting)
A81	Self-check fault	C76	Abnormal communication between the main wired controller and secondary wired controller
A82	MS (refrigerant flow direction switching device) fault	C77	Abnormal communication between the IDU main control board and 1# Expansion board
A91	Mode conflict	C78	Abnormal communication between the IDU main control board and 2# Expansion board
b11	1# EEV coil fault	C79	Abnormal communication between the IDU main control board and Switch board
b12	1# EEV body fault	C81	The indoor unit is in a power-off state
b13	2# EEV coil fault	d16	Air inlet temperature of the IDU is too low in heating mode
b14	2# EEV body fault	d17	Air inlet temperature of the IDU is too high in cooling mode
b34	Stall protection on 1# water pump	d81	Alarm for exceeding temperature and humidity range
b35	Stall protection on 2# water pump	dE1	Sensor control board fault
b36	Water level switch alarm	dE2	PM2.5 sensor fault
b71	Reheating electric heater fault	dE3	CO2 sensor fault
b72	Preprocessing electric heater fault	dE4	Formaldehyde sensor fault
b81	Humidifier fault	dE5	Human Detect sensor fault
C11	Duplicate IDU address code	E21	T0 (fresh inlet air temperature sensor) short-circuits or cuts off
C21	Abnormal communication between the IDU and ODU	E22	The upper dry bulb temperature sensor short-circuits or cuts off
C41	Abnormal communication between the IDU main control board and fan drive board	E23	The lower dry bulb temperature sensor short-circuits or cuts off
C51	Abnormal communication between the IDU and wired controller	E24	T1 (IDU return air temperature sensor) short-circuits or cuts off

Table 7.1: Error code(continues)

Error code	Content	Error code	Content
E31	The built-in room temperature sensor of the wired controller short-circuits or cuts off	U01	Locked (electronic lock)
E32	The wireless temperature sensor short-circuits or cuts off	U11	Unit model code not set
E33	The external room temperature sensor short-circuits or cuts off	U12	Capacity(HP) code not set
E61	Tcp (pre-cooled fresh air temperature sensor) short-circuits or cuts off	U14	Capacity(HP) code setting error
E62	Tph (pre-heated fresh air temperature sensor) short-circuits or cuts off	U15	AHU Kit fan control input signal DIP setting error
E81	TA (outlet air temperature sensor) short-circuits or cuts off	U26	Mismatch between indoor unit model and outdoor unit model
EA1	Outlet air humidity sensor fault	U38	Address code not detected
EA2	Return air humidity sensor fault	J01	Motor failed more than once
EA3	Upper wet bulb sensor fault	J1E	IPM (fan module) overcurrent protection
EA4	Lower wet bulb sensor fault	J11	Instantaneous overcurrent protection for phase current
EC1	R32 refrigerant leakage sensor fault	J3E	Low bus voltage fault
F01	T2A (heat exchanger liquid pipe temperature sensor) short-circuits or cuts off	J31	High bus voltage fault
F11	T2 (heat exchanger middle temperature sensor) short-circuits or cuts off	J43	Phase current sample bias error
F12	T2 (heat exchanger middle temperature sensor) over temperature protection	J45	Motor and IDU are unmatched
F21	T2B (heat exchanger gas pipe temperature sensor) short-circuits or cuts off	J47	IPM and IDU are unmatched
P71	Main control board EEPROM fault	J5E	Motor startup failure
P72	IDU display control board EEPROM fault	J52	Motor blocking protection
P31/P34	Fan drive board AC side overcurrent protection	J55	Speed control mode setting error
P52	The voltage of the power supply is too low	J6E	Phase lack protection of motor

6.2 Operating Status Codes

Table 7.2:Operating Status Codes

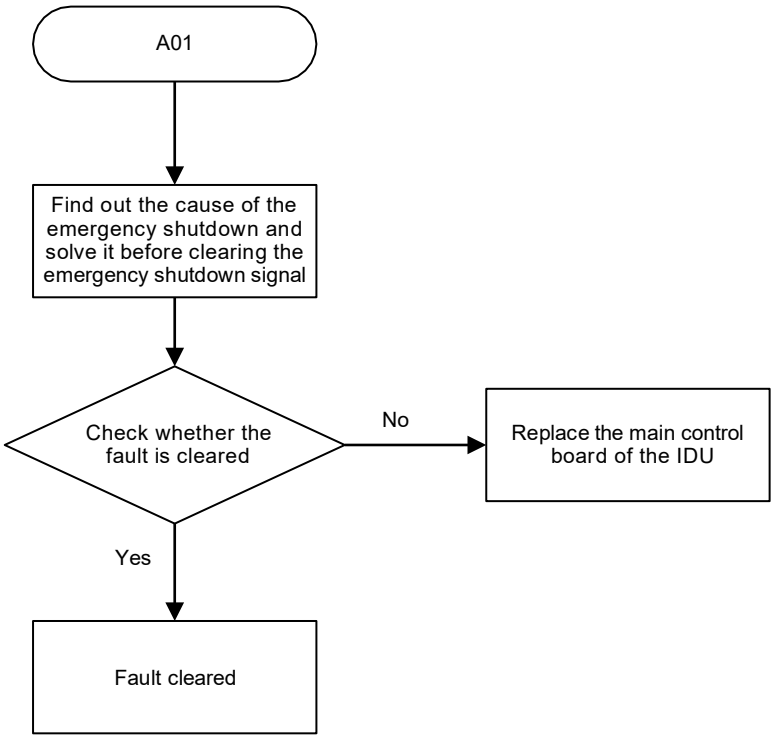
Code	Content	Code	Content
d0	Oil return or preheating operation	d61	Remote shutdown
dC	Self-cleaning	d71	IDU backup operation
dd	Mode conflict	d72	ODU backup operation
dF	Defrosting	OTA	Main control program upgrading
d51	Static pressure detection	dH	Hot water mode(Specific series)

7 Troubleshooting

Warning

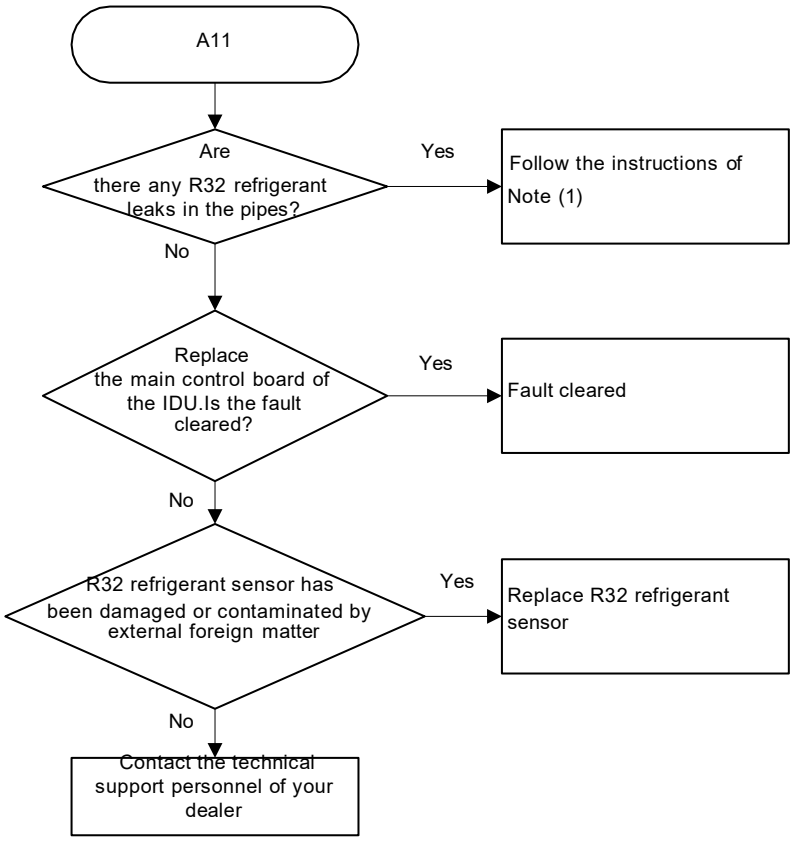
- All electrical work must be carried out by competent and suitably qualified, certified and accredited professionals and in accordance with all applicable legislation (all national, local and other laws, standards, codes, rules, regulations and other legislation that apply in a given situation).
- Power-off the unit before connecting or disconnecting any connections or wiring, otherwise electric shock (which can cause physical injury or death) may occur or damage to components may occur.

8.1.1 A01 – Emergency shutdown

<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position</td></tr>
<tr><td>  </td><td>Panel, display box, and wired controller</td></tr>
<tr><td rowspan="2">Error impact</td><td colspan="2">The faulty IDU and other IDUs of the same system: stop running, displaying code "A01" (V6 platform indoor unit displays "A0" code)</td></tr>
<tr><td colspan="2">ODU of the same system: stop running, displaying code "A01" (V6 platform outdoor unit displays "A0" code)</td></tr>
<tr><td>Error trigger</td><td colspan="2">When the IDU receives an emergency shutdown signal from the ODU</td></tr>
<tr><td>Error recovery</td><td colspan="2">When the IDU automatically recovers after receiving an emergency shutdown signal from the ODU.</td></tr>
<tr><td>Possible cause</td><td colspan="2">■ An emergency shutdown signal is received.
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 

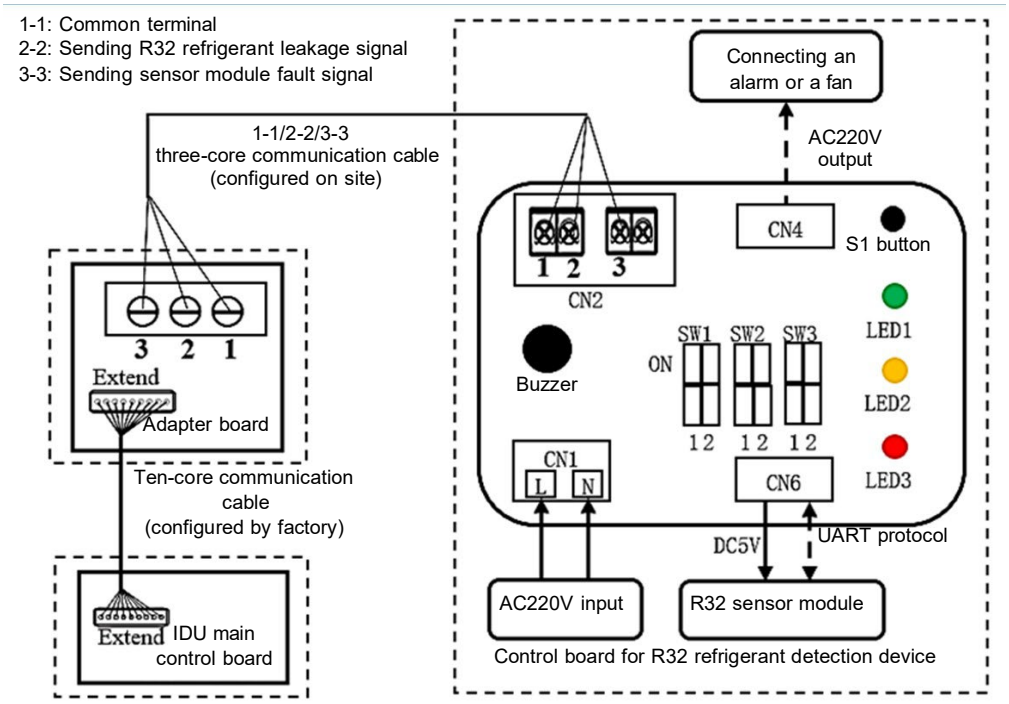
Note:
1.Emergency shutdown is usually caused by the outdoor unit receiving an emergency shutdown command sent by the central controller or external reasons. For detailed handling instructions, please refer to the corresponding outdoor unit troubleshooting manual.</td></tr>
</table>

8.1.2 A11 - R32 refrigerant leaks, requiring shutdown immediately

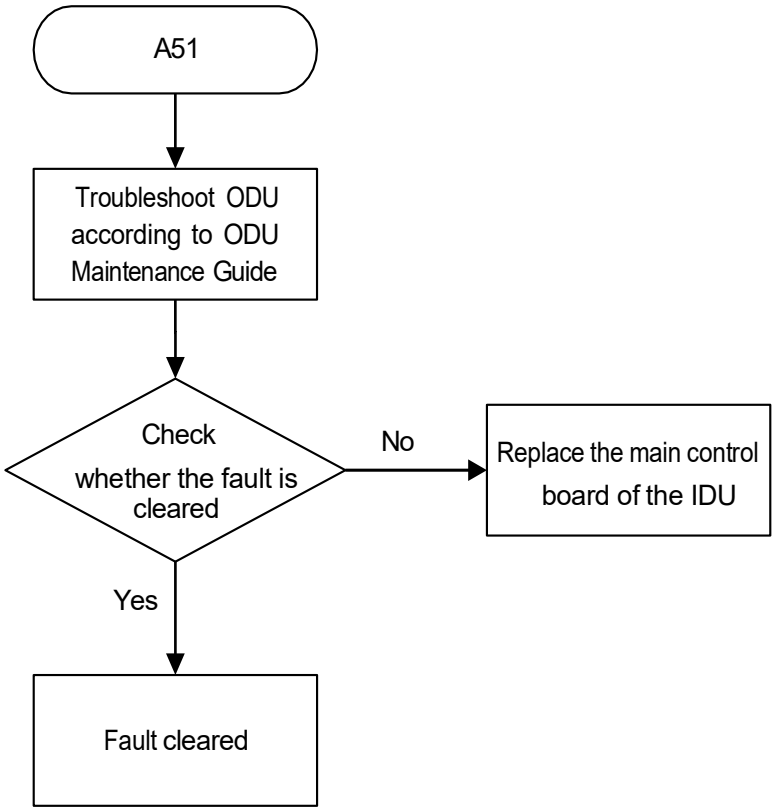
<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position</td></tr>
<tr><td>  </td><td>Panel, display box, and wired controller</td></tr>
<tr><td rowspan="2">Error impact</td><td colspan="2">■ Faulty IDU: The fan operates at the highest speed, the EEV is closed (Note: Fault persists after power on again), and buzzer of the display control board of the faulty IDU and buzzer of wired controller connected to the faulty IDU keep beeping.
■ Other IDUs of the same system: Refrigerant is recycled to ODU. After recycling is completed, other IDUs stop running, displaying code "A51" - ODU fault</td></tr>
<tr><td colspan="2">ODU of the same system: It stops running after recycling is completed, displaying code "A11" - IDU refrigerant leaks.</td></tr>
<tr><td>Error trigger</td><td colspan="2">When the IDU main control board receives a refrigerant leakage signal from R32 refrigerant detection device (See Figure 1 below)</td></tr>
<tr><td>Error recovery</td><td colspan="2">Has not detected the refrigerant leak signal and has received the signal of refrigerant fault rectification</td></tr>
<tr><td>Possible cause</td><td colspan="2">■ R32 refrigerant of IDUs leaks.
■ R32 refrigerant sensor is damaged or contaminated with external foreign matter (e.g. steam, oil)
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 
</td></tr>
</table>

	Note 1: **Step 1: Check whether pipes are leaking refrigerant.** Method: If the system is connected with the refrigerant cutoff device, use the refrigerant pressure gauge to connect the check valve of refrigerant cut-off device liquid or gas pipe; If the system is not connected with a refrigerant cut-off device, use the refrigerant pressure gauge to connect the check valve of refrigerant cut-off device liquid or gas pipe. Measuring the refrigerant saturation pressure in the pipeline on site. (1) If the measured refrigerant saturation pressure on the liquid side or gas side is lower than the standard saturation pressure (see Table of Ambient Temperature and Standard Saturation Pressure of R32 attached to this manual), there is a refrigerant leak. Follow the steps below to repair refrigerant leaks: ■ Use a refrigerant recovery machine to recover refrigerant left in the unit (When the refrigerant leaks, the refrigerant shut-off device is closed. Therefore, the refrigerant needs to be recovered from the service port of the refrigerant cut-off device of the outdoor stop valve . When recovering the refrigerant, the outdoor unit needs to enter the vacuum mode to ensure the effect of refrigerant recovery.) ■ Locate and repair pipeline leaks. ■ After the repair is completed, the system is tested for gas tightness, refer to the Owner's and installation manual for details. If the gas tightness test is passed, go to the next step, otherwise repeat the step above until the gas tightness test is passed ■ Replace the R32 sensor model of the faulty IDU. ■ Recharge refrigerant according to the ODU Installation Manual. (2) If the measured refrigerant saturation pressure on the liquid side or gas side is equal to the standard saturation pressure (see Table of Ambient Temperature and Standard Saturation Pressure of R32 attached to this manual), confirm whether there is a refrigerant leak by using refrigerant testing instruments. If it is determined that there is a refrigerant leak, please operate the refrigerant leak handling procedure above. **Step 2: Reset the R32 refrigerant detection device.** As shown in Figure 1 below, after an alarm is triggered for refrigerant leaks, the red LED indicator of the R32 refrigerant detection device (LED3) flashes twice every second. After leaks are repaired, press and hold the S1 button on the control board for 20s to reset the refrigerant detection device. After the device has been reset, all the LED indicators are lit for 2s before they become dimmed. Time the R32 sensor has been used will be cleared.

Figure 1 Schematic diagram of the R32 refrigerant leakage detection system



8.1.3 A51 - ODU fault

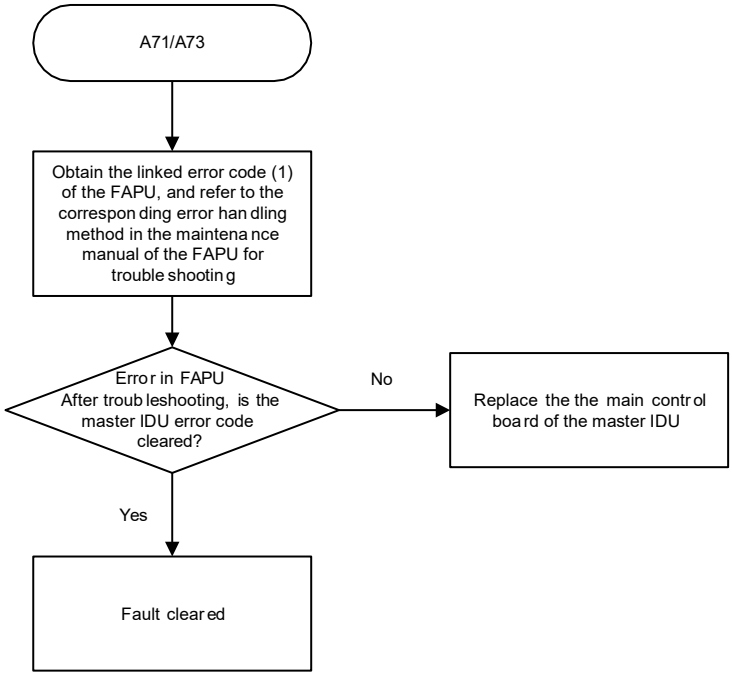
Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU and other IDUs of the same system: The fan continues running, the EEV is closed, and code "A51" is displayed (V6 platform IDU displays the code "Ed")	
	ODU of the same system: ■ stops. ■ The displayed code depends on the error type of the ODU. For the meaning of the code, please refer to the error table specific to the model of the ODU.	
Error trigger	Duration of ODU error ≥ 10 minutes	
Error recovery	Automatic recovery	
Possible cause	■ The ODU error is transmitted to the IDU. ■ The IDU main control board is damaged.	
Troubleshooting		

8.1.4 A71 - The error of the linked FAPU is transmitted to the master IDU (series setting)

Note:

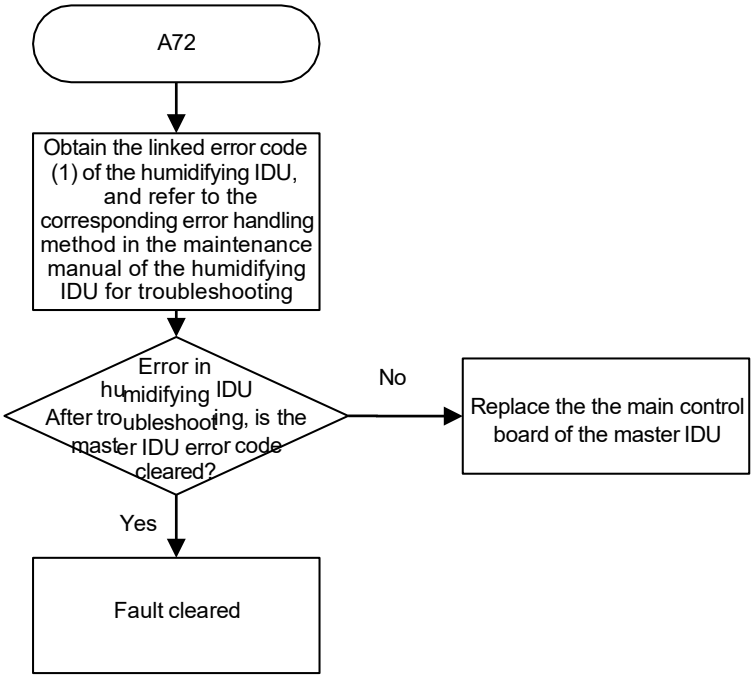
1) The type of FAPU may be HRV, VRF fresh air IDU and so on.

2) Series setting: The air supply side of the linked FAPU is directly connected to the air return side of the master IDU through an air duct. A wired controller is used to set this installation method as a series connection.

<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position (master IDU)</td></tr>
<tr><td>  </td><td>Panel, display box, and wired controller</td></tr>
<tr><td rowspan="2">Error impact</td><td colspan="2">The master IDU and the linked FAPU: stop. Other IDUs of the same system: operate normally.</td></tr>
<tr><td colspan="2">ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="2">The error of the linked FAPU is transmitted to the master IDU</td></tr>
<tr><td>Error recovery</td><td colspan="2">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="2">■ The FAPU is faulty.
■ The master IDU's main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 

Note:
1. The error code can be queried after the FAPU is connected to the wired controller or the display box.</td></tr>
</table>

8.1.5 A72 - The error of the linked humidifying IDU is transmitted to the master IDU

<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position (master IDU)</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td rowspan="2">Error impact</td><td colspan="3">Master IDU: operates normally. Humidifying IDUs: stop. Other IDUs of the same system: operate normally.</td></tr>
<tr><td colspan="3">ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="3">The error of the linked humidifying IDU is transmitted to the master IDU</td></tr>
<tr><td>Error recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="3">■ The humidifying IDU is faulty.
■ The master IDU's main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="3"> 

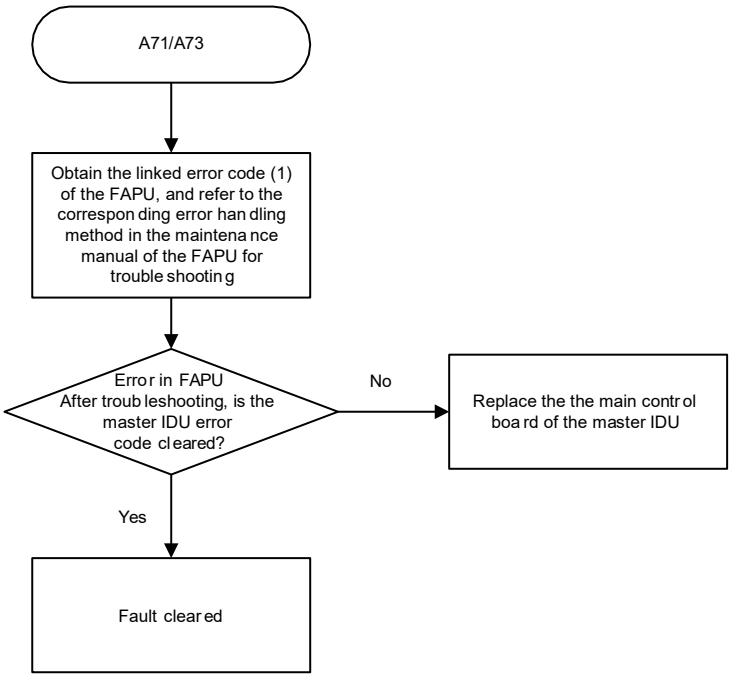
Note:
1. The error code can be queried after the humidifying IDU is connected to the wired controller or the display box.</td></tr>
</table>

8.1.6 A73 - The error of the linked FAPU is transmitted to the master IDU (non-series connection)

Note:

1) The type of FAPU may be HRV, VRF fresh air IDU and so on.

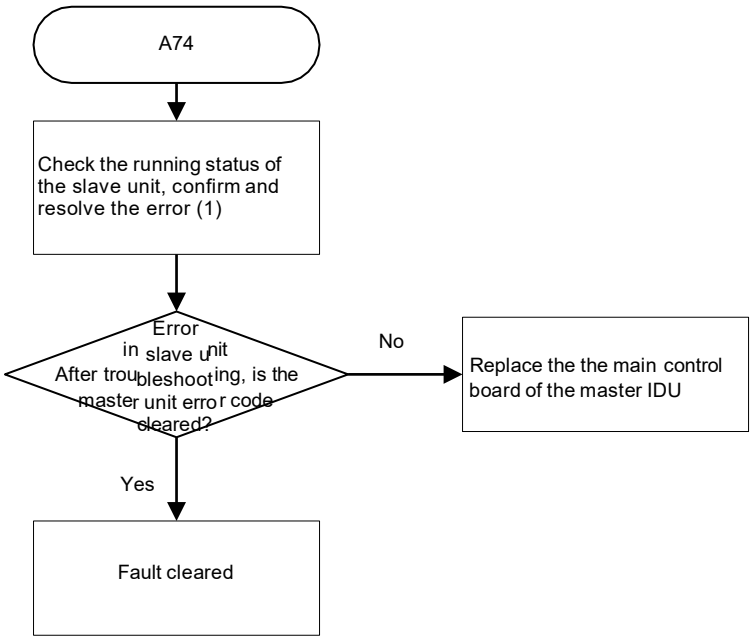
2) Series setting: The linked FAPU and the master IDU are connected to the air supply duct and air return duct respectively and separately. A wired controller is used to set this installation method as a non-series connection.

<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position (master IDU)</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td>Error impact</td><td colspan="3">Master IDU: operates normally. FAPU: stops. Other IDUs of the same system: operate normally.
ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="3">The error of the linked FAPU is transmitted to the master IDU</td></tr>
<tr><td>Error recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="3">■ The FAPU is faulty.
■ The master IDU's main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="3"> 

Note:
1. The error code can be queried after the FAPU is connected to the wired controller or the display box.</td></tr>
</table>

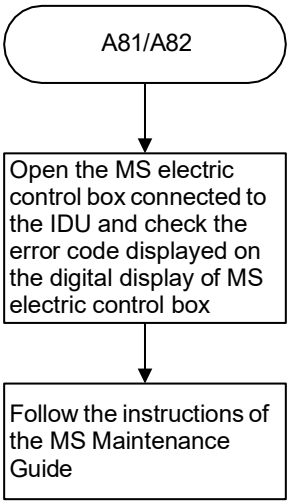
8.1.7 A74 - The error of the AHU Kit slave unit is sent to the master unit

Note: When multiple AHU Kits are connected in parallel, the master AHU Kit (referred to as the master) communicates with the ODU, and the slave AHU Kit (referred to as the slave) communicates with the master unit. When the slave fails, the slave unit sends a fault signal to the master unit, and the master unit displays 'A74' (the slave fault).

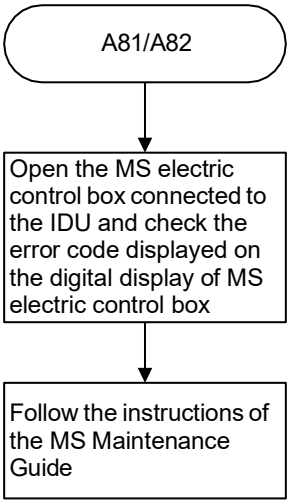
<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position (master)</td></tr>
<tr><td>  </td><td>Display box and wired controller</td></tr>
<tr><td>Error impact</td><td colspan="2">Master unit and slave unit: stop. Other IDUs of the same system: operate normally.</td></tr>
<tr><td></td><td colspan="2">ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="2">The error of the slave unit is sent to the master unit</td></tr>
<tr><td>Error recovery</td><td colspan="2">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="2">■ The slave unit is faulty.
■ The master unit's main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 

Note:
1. The error code can be queried after the slave is connected to the display box (during field service, the display box can be temporarily removed from the master unit and connected to the slave unit)</td></tr>
</table>

8.1.8 A81 - Self-check fault

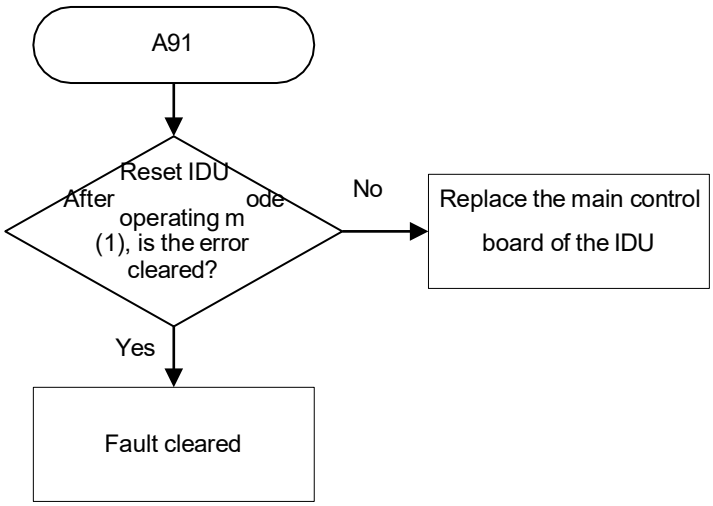
Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	Faulty IDU: stops. Other IDUs of the same system: ■ IDUs that share the same MS with the faulty IDU will stop operating, while other IDUs remain in operation. ■ IDUs that share the same MS with the faulty IDU display the code "A81" (V6 platform IDU displays the code "U4"). Meaning of the code: MS self-check fault); IDUs that are connected to other MSs work properly.	
	ODU of the same system: ■ stops. ■ V8 Atom platform ODU displays the code "A81", and V6 platform ODU displays the code "U4". Meaning of the code: MS self-check fault)	
Error trigger	The MS self-check fault lasts for at least 10 min	
Error recovery	The fault is cleared if one of the following conditions is met: ■ Automatic recovery 30 min after the MS fault is cleared ■ Power on again	
Possible cause	■ A fault may occur during the MS self-check process.	
Troubleshooting		

8.1.9 A82 - MS (refrigerant flow direction switching device) fault

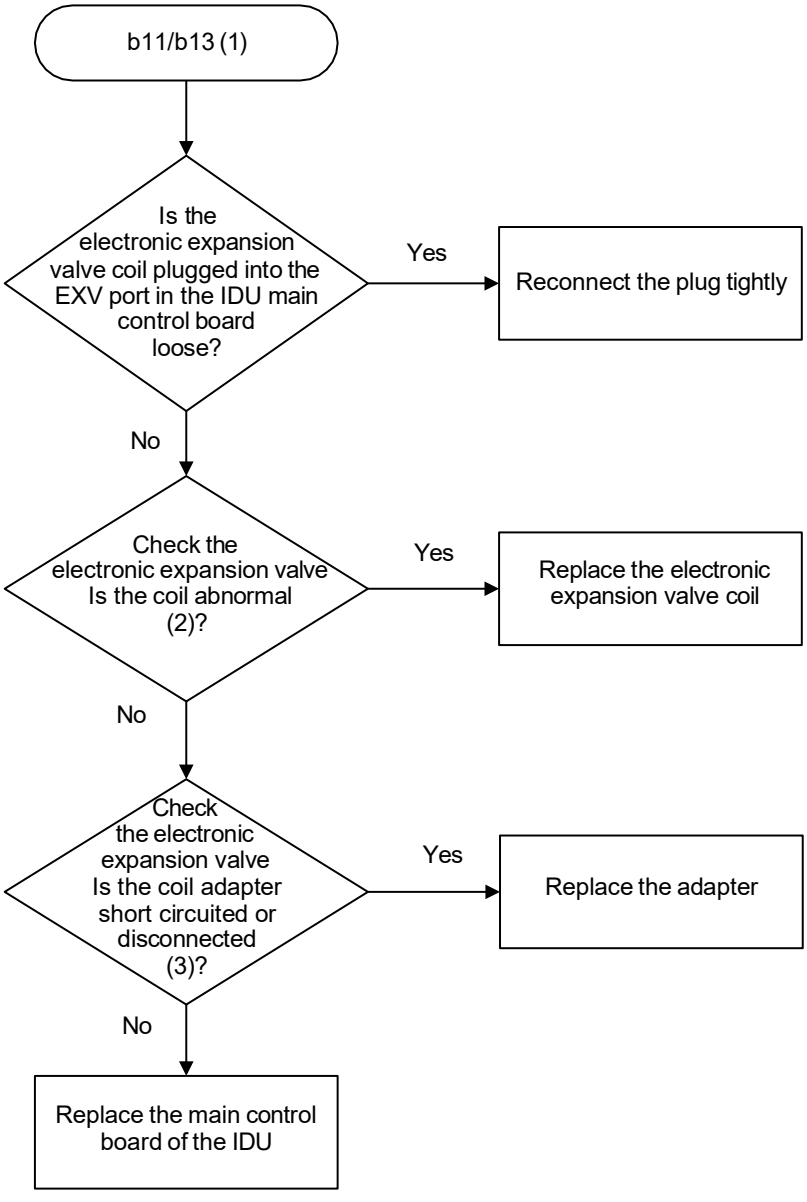
<table>
<tr><td rowspan="2">Faulty IDU</td><td>Digital display</td><td>Display position</td></tr>
<tr><td>  </td><td>Panel, display box, and wired controller</td></tr>
<tr><td rowspan="2">Error impact</td><td colspan="2">Faulty IDU: The fan continues running, and the EEV is closed. Other IDUs of the same system:
■ IDUs that share the same MS with the faulty IDU: The fan continues running, and the EEV is closed. Other IDUs remain in operation.
■ IDUs that share the same MS with the faulty IDU: V8 Atom platform IDU displays the code "A82", and V6 platform IDU displays the code "F8". Meaning of the code: MS fault. IDUs that are connected to other MSs work properly.</td></tr>
<tr><td colspan="2">ODU of the same system:
■ Shutdown
■ V8 Atom platform ODU displays the code "A82" (V6 platform ODU displays the code "F8". Meaning of the code: MS fault)</td></tr>
<tr><td>Error trigger</td><td colspan="2">When the IDU receives a fault signal from MS</td></tr>
<tr><td>Error recovery</td><td colspan="2">Automatic recovery (Note: Duration from fault triggering to automatic recovery is at least 30 min)</td></tr>
<tr><td>Possible cause</td><td colspan="2">The MS is faulty.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 
</td></tr>
</table>

8.1.10 A91 - Mode conflict (V6 communication protocol adopted)

Available when using V6 platform wired controller.

Error display	Digital display	Display position
		Panel, display box, and wired controller (Note: Error codes are displayed 2 minutes after faults are triggered)
Error impact	Faulty IDU: The fan continues running, and the EEV is closed. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	■ The ODU is running in heating mode, and the IDU is running in cooling mode or dehumidification mode. ■ The ODU is running in heating mode, and the IDU is running in fan mode (note: the wired controller can be used to set whether the heating mode conflicts with the fan mode). ■ The ODU is running in cooling mode, and the IDU is running in heating mode.	
Error recovery	Automatic recovery	
Possible cause	■ The operation mode of IDU conflicts with that of the ODU. ■ The IDU main control board is damaged.	
Troubleshooting	 Note: 1. For all IDUs in the heat pump system (Except for DC Fresh Air Processing Unit): 1) When the ODU is running in heating mode, the IDU can only operate in heating mode. If you would like to use the fan mode for the IDU, the wired controller needs to be used to change the settings (for more instructions on how to change settings, refer to "Instruction for Use of the wired controller"). 2) When the ODU is running in cooling mode, the IDU can operate in cooling mode or fan mode.	

8.1.11 b11, b13 - Error in 1# electronic expansion valve coil, error in 2# electronic expansion valve coil

Error display	Digital display		Display position
			Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.		
	ODU of the same system: operate normally.		
Error trigger	The IDU main control board cannot detect the feedback signal from the electronic expansion valve coil for no less than 4 seconds.		
Error recovery	After the unit is powered on again, the main control program detects a feedback signal from the electronic expansion valve.		
Possible cause	■ The electronic expansion valve coil plugged into the EEV port in the IDU main control board is loose. ■ The IDU main control board is damaged. ■ The electronic expansion valve coil is faulty. ■ The electronic expansion valve coil is short circuited or disconnected.		
Troubleshooting			

Note:

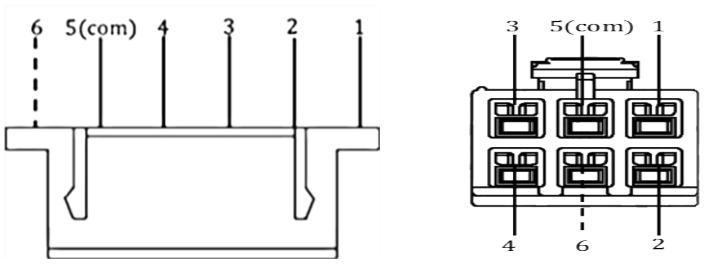
1. The error code corresponds to the following two situations:

a. If there is only one electronic expansion valve port on the main control board of the IDU, when an error occurs in the electronic expansion valve coil connected to the EEV port, the error code is b05.

b. If there are two electronic expansion valve ports on the main control board of the IDU named EEV1 and EEV2, when an error occurs in the electronic expansion valve coil connected to port EEV1, the error code is b05; when an error occurs in the electronic expansion valve coil connected to port EEV2, the error code is b07.

2. In Figure 1 below: The numbers 1 to 5 stand for the pins of different colours paired with individual wires which have the same colour as the pin. 5(com) is a pin of the common terminal, and number 6 is a null pin without any wire connected; an XHP coil plug is used to connect to the EEV port of the main control board, and an APM coil plug is used to connect to the A-direction plug of the adapter wire (see Figure 2 below). Table 1 shows the resistance between pin 1-4 and pin 5 (the common terminal) when the electronic expansion valve coil is in a normal state. If the resistance is near zero or significantly deviates from its normal state, the coil is damaged.

Figure 1: Electronic expansion valve coil plug illustration and pin sequence



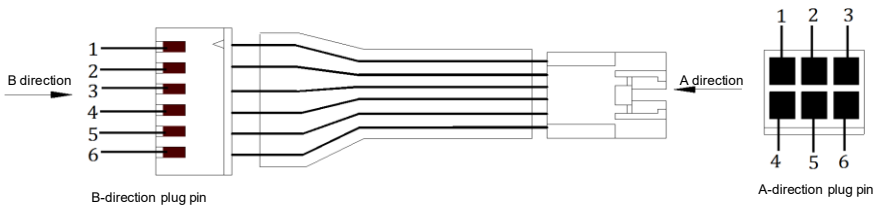
XHP plug | AMP plug

Table 1: Resistance between pins with an electronic expansion valve coil in normal condition

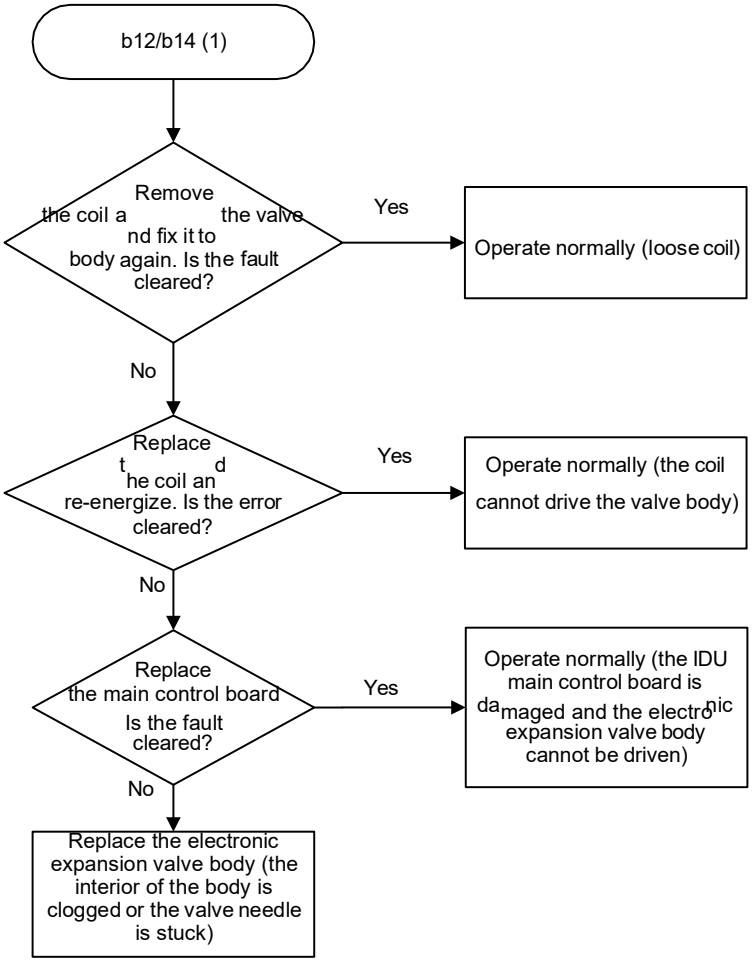
Pin measured	Resistance in normal status
1-5	40-50Ω
2-5	40-50Ω
3-5	40-50Ω
4-5	40-50Ω

3. When the distance between the throttle part and the main control board of the IDU in need of connection is too great, you will need an adapter wire for the electronic expansion valve coil. This is shown in Figure 2 below: Use a multimeter to measure the resistance between the pin in the plug at end A of each wire and at end B. A resistance value close to 0 indicates a short circuit has occurred in the wire, and a resistance value close to infinity indicates an open circuit of the wire.

Figure 2: Adapter wire for electronic expansion valve coil

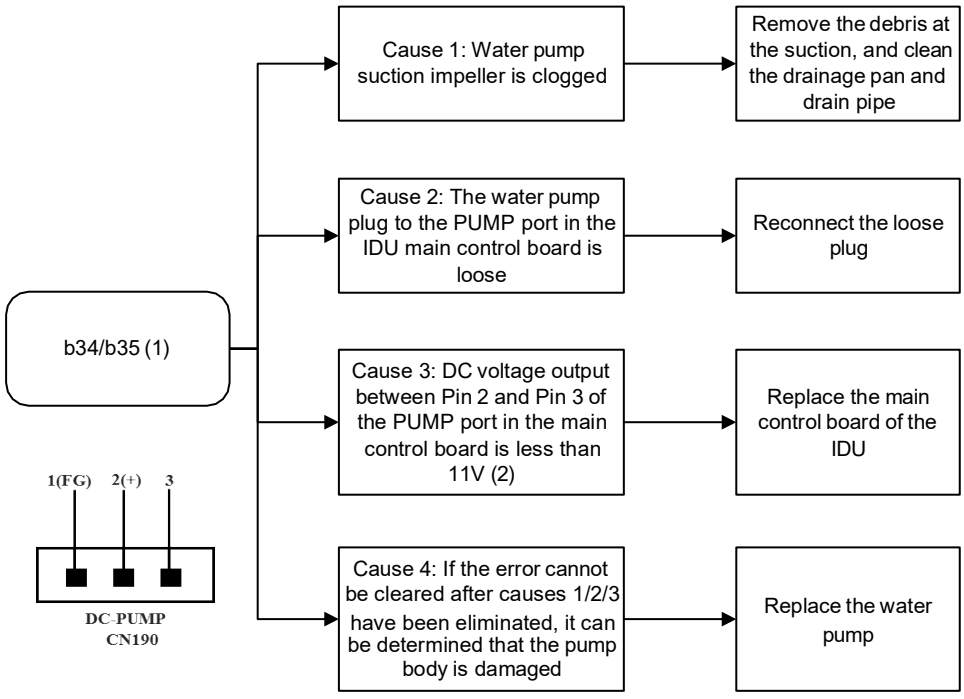


8.1.12 b12, b14 - Error in 1# electronic expansion valve body, error in 2# electronic expansion valve body

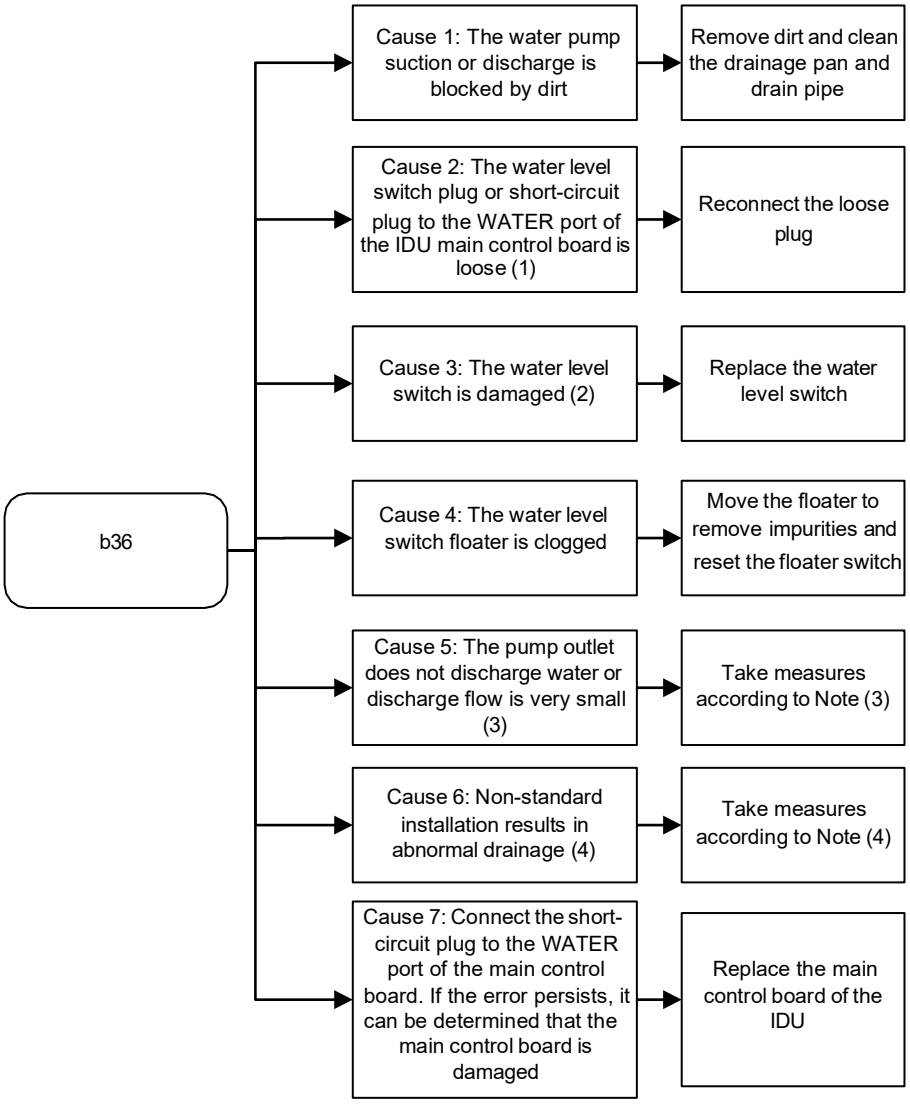
<table>
<tr><td rowspan="3">Error display</td><td colspan="2">Digital display</td><td colspan="2">Display position</td></tr>
<tr><td rowspan="2">  </td><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td>Error impact</td><td colspan="4">The faulty IDU and other IDUs of the same system: operate normally.
ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="4">■ Return air temperature(T1) - Heat exchanger liquid pipe temperature (T2A) > Set value
■ IDU EEV=0, ODU running in cooling mode and compressor speed ≠0</td></tr>
<tr><td>Error recovery</td><td colspan="4">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="4">■ The electronic expansion valve needle is stuck or clogged.
■ The electronic expansion valve coil is damaged and unable to drive the valve body.
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="4"> 

Note:
1. The error code corresponds to the following two situations:
1) If there is only one electronic expansion valve port on the main control board of the IDU, when an internal leakage error occurs in the electronic expansion valve body connected to the EEV port, the error code is b12.
2) If there are two electronic expansion valve ports on the main control board of the IDU named EEV1 and EEV2, when there is a leak inside the electronic expansion valve body connected to port EEV1, the error code is b12; when there is a leak inside the electronic expansion valve body connected to port EEV2, the error code is b14.</td></tr>
</table>

8.1.13 b34, b35 - Stall protection for 1# water pump, stall protection on 2# water pump

Error display	Digital display	Display position
	 	Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	The main control board of the IDU detects the pump rotation speed ≤ 100 rpm for 10 seconds	
Error recovery	Automatic recovery	
Possible cause	■ The water pump suction impeller is clogged. ■ The water pump plug to the PUMP port in the IDU main control board is loose. ■ The pump body is damaged (due to motor damage, control drive circuit damage, etc.). ■ The IDU main control board is damaged.	
Troubleshooting	 Note: 1. The error code corresponds to the following two situations: 1) If there is only one PUMP port on the main control board of the IDU, when a stall error occurs in the water pump connected to the PUMP port, the error code is b34. 2) If there are two PUMP ports on the main control board of the IDU named PUMP1 and PUMP2, when a stall error occurs in the water pump connected to PUMP1 port, the error code is b34; when a stall error occurs in the water pump connected to PUMP2 port, the error code is b35. 2. Figure 1 above shows the pins of the PUMP port. The output voltage between pin 2 and pin 3 can be measured with a multimeter in DC voltage gear. If the output voltage is less than 11 V, the water pump cannot be driven.	

8.1.14 b36 - Water level switch alarm error

Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	The water level switch alarm is triggered when the floater of the water level switch rises to the warning water level and lasts for 5 min.	
Error recovery	Automatic recovery	
Possible cause	■ The drain pump/water level switch is damaged. ■ Water level switch float is stuck by a foreign object ■ The water level switch plug or short-circuit plug to the WATER port of the IDU main control board is loose. ■ Non-standard installation results in abnormal drainage: The drain pipe is blocked; the improperly sloped drain pipe causes the condensate water to flow backwards; and the lift of the drain pipe exceeds the allowable value. ■ The IDU main control board is damaged.	
Troubleshooting		

Note:

1. The plug attached to the WATER port of the main control board corresponds to the following two cases:

a. The factory default of IDUs without a water level switch uses a short-circuit plug to seal the WATER port.

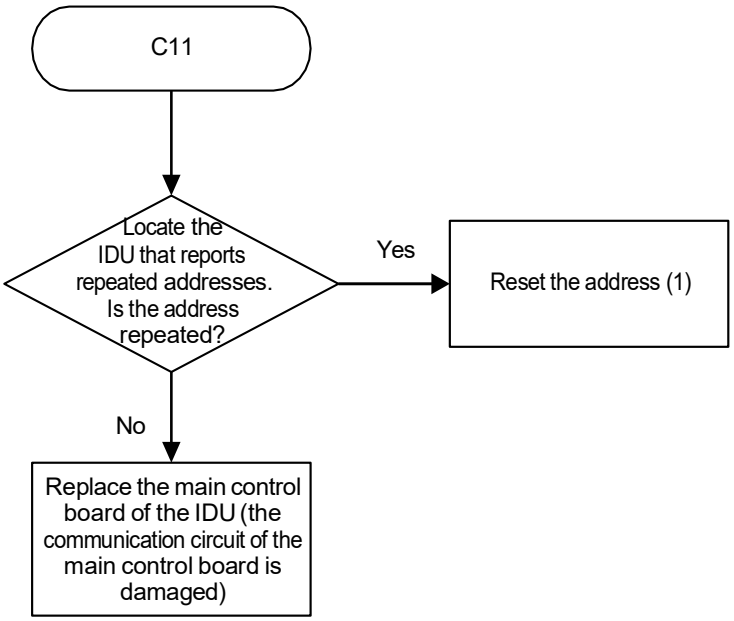
b. IDUs with a water level switch use a water level switch plug to seal the WATER port.

2. Use a multimeter to measure the resistance between the pins corresponding to the two wires of the water level switch plug. 1) After the floater of the water level switch is moved upwards to the highest position, the water level switch is in a short-circuited state, and the resistance value is infinite. 2) After the floater of the water level switch is moved downwards to the lowest position, the water level switch is closed, and the resistance value is less than 1 Ω. If the detected resistance value does not meet the above values, the water level switch is damaged.

3. Possible causes and solutions for the situation where the pump outlet does not discharge water or the discharge flow is very small: 1) The water pump plug to the PUMP port in the IDU main control board is loose. Reconnect it firmly. 2) The drain pump suction impeller is clogged. Remove the debris causing the clog to make the pump continue running. 3) If the error cannot be cleared after implementing solutions for causes 1) and 2), the drain pump body is damaged. Replace the drain pump.

4. Possible causes and solutions for abnormal drainage due to non-standard installation: 1) If the drain pipe is blocked, remove the debris and clean the drainage pan and the drain pipe of the IDU. 2) If the drain pipe is improperly installed, which causes the condensate water to flow backward, tilt the IDU to the drainage side by a certain gradient (inclination ≥ 1%). The centralized drain pipe must be lower than the drainage outlet of the unit. Air outlets must be placed at the highest horizontal pipeline (see Installation and Operation Manual of IDUs). 3) If the lift of the drain pipe exceeds the allowable value, reduce the vertical height of the drain pipe or replace the drain pump with the one which has a higher lift.

8.1.15 C11 - Duplicate IDU address code

<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Error code and address code are displayed alternately (2)</td><td>Error code and address code flash simultaneously</td></tr>
<tr><td>Error impact</td><td colspan="3">Faulty IDU: The fan continues running, and the EEV is closed. Other IDUs of the same system: The fan continues running, the EEV is closed, and error code "A51" is displayed (V6 platform IDU displays the code "Ed"). Meaning of the code: ODU fault
ODU of the same system:
■ Stop.
■ Error code "C26" is displayed (V6 platform ODU displays the code "H7"). Meaning of the code: IDU qty decrease fault</td></tr>
<tr><td>Error trigger</td><td colspan="3">Repeated address codes for IDU</td></tr>
<tr><td>Error recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="3">■ Duplicate IDU address code（▲）
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="3"> 

(▲): The common reasons for address code duplication are as follows:
1. After replacing the main control board, the address was not reset, resulting in address duplication. The address can be manually set using the controller or the indoor unit address can be cleared at the outdoor unit and then automatically addressed again.
2. In systems where the nominal capacity of an indoor unit is greater than or equal to 20KW, the indoor unit usually occupies more than two addresses (one real address + several virtual addresses, see Note 1 below), which may cause the addresses of other indoor units in the system to duplicate with the virtual addresses of the large indoor unit. In this case, the indoor unit address can be cleared at the outdoor unit and then automatically addressed again, or the controller can be used to manually set the address to avoid duplicate codes when the duplicate address code is known.</td></tr>
</table>

Note:

1. The following table shows the number of addresses and address codes for any IDU with different HP/capabilities.

Nominal capacity (kW)	capacity (HP)	Number of IDUs (N)	Number of addresses (N)	Address code	Address code to be queried at the centralized controller or wired controller (★)
kW<20	HP<7	1	1	Address code can be any integer from 0 to 63, denoted by X	X
20≤kW<40	7≤HP<14	1	2	The address code can be any integer from 0 to 62, denoted by X, and the virtual address following it is X+1	X
40≤kW<78.5	14≤HP<28	1	4	The address code can be any integer from 0 to 60, denoted by X, and the virtual addresses following it are: X+1, X+2, X+3	X
78.5≤kW<101	28≤HP<36	1	5	The address code can be any integer from 0 to 59, denoted by X, and the virtual addresses following it are: X+1, X+2, X+3, X+4	X
101≤kW<112	36≤HP<40	1	6	The address code can be any integer from 0 to 58, denoted by X, and the virtual addresses following it are: X+1, X+2, X+3, X+4, X+5	X
kW>112	HP>40	1	8	The address code can be any integer from 0 to 56, denoted by X, and the virtual addresses following it are: X+1, X+2, X+3, X+4, X+5, X+6, X+7	X

★Example: If one IDU is 5 HP and the address code is set to 1, then the query address at the centralized controller side or wired controller side is 1. If one IDU is 20 HP and the address code is set to 5, then this IDU has four address codes, which are 5, 6, 7, and 8, but the query address at the centralized controller side or wired controller side is 5.

2. Repeated display of address codes and confirmation of repeated address codes

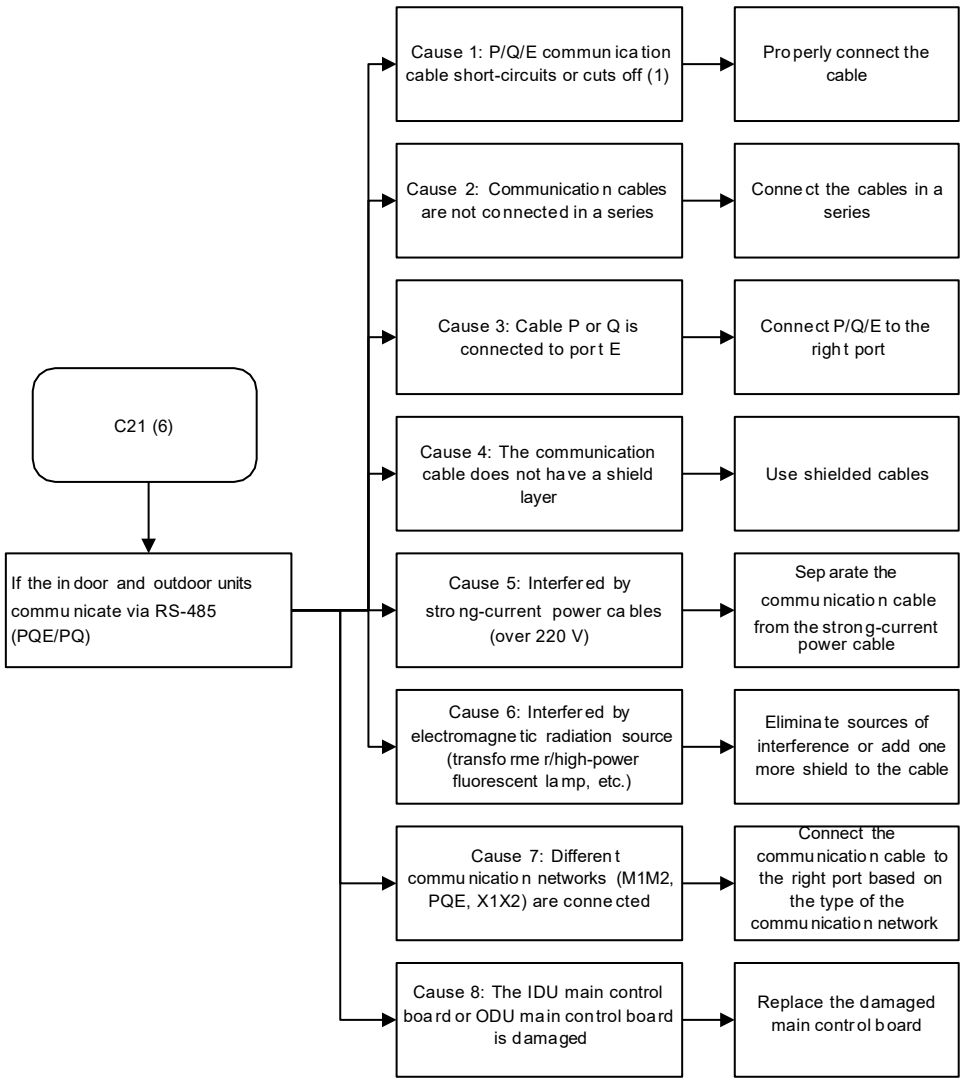
	Error code	Display box/panel	Wired controller
IDU with repeated address codes (number of addresses N = 1)	C11	Error code "C11" and address code are displayed alternately every 1s (★1)	Error code "C11" is displayed
IDU with repeated address codes (number of addresses N>1)	C11	If the number of repeated address codes is 1, then the error code "C11" is displayed alternately with the minimum address code every 1s. If the number of repeated address codes is >1, then the error code "C11" is displayed alternately with the minimum address code every 1s; (★2)	Error code "C11" is displayed

★ Example 1: If IDU 1 is 5 HP and the address code is set to 1, and IDU 2 is 5 HP and the address code is set to 1 too, then the display box or panel of IDU 1 and IDU 2 will alternately display the code C11 and the address code 1.

★Example 2: If IDU 1 is 20 HP and the address code is set to 1 (the addresses actually occupied are 1, 2, 3, and 4), IDU 2 is 5 HP and the address code is set to 2, IDU 3 is 5 HP and the address code is set to 3, then the display box or panel of IDU 1 will alternately display the code C11 and the address code 2 (If there are multiple repeated addresses, then the minimum address code is displayed); the display box or panel of IDU 2 will alternately display the code C11 and the address code 2; and the display box or panel of IDU 3 will alternately display the code C11 and the address code 3.

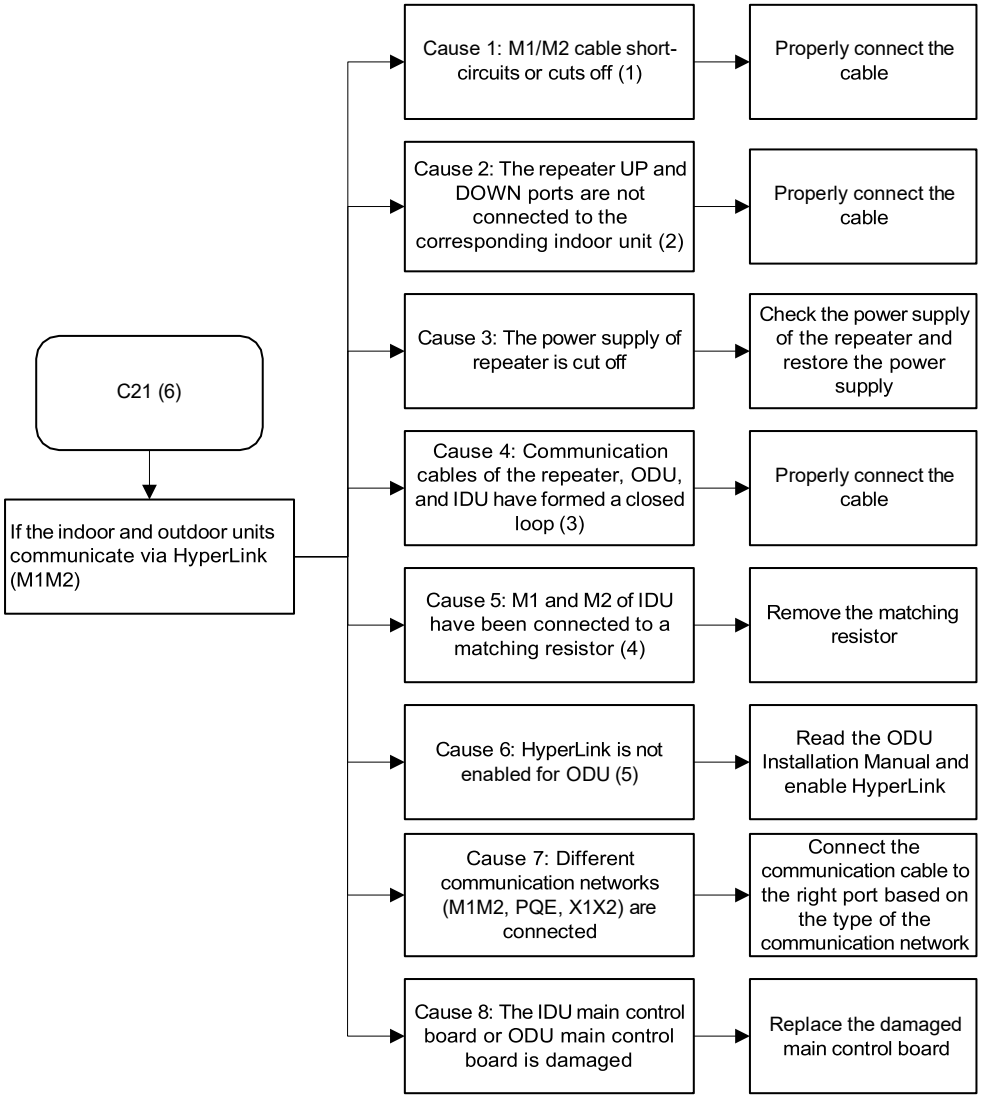
8.1.16 C21 - Abnormal communication between IDU and ODU

Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	Faulty IDU: The fan continues running, and the EEV is closed. Other IDUs of the same system: The fan continues running, the EEV is closed, and error code "A51" is displayed (V6 platform IDU displays the code "Ed"). Meaning of the code: ODU fault	
	ODU of the same system: ■ stops. ■ Error code "C26" is displayed (V6 platform ODU displays the code "H7"). Meaning of the code: IDU qty decrease fault	
Error trigger	If the IDU has not received any communication signal from ODU for 3 min	
Error recovery	Automatic recovery	
Possible cause	See the Troubleshooting section.	
Troubleshooting	■ If the indoor and outdoor units communicate via RS-485(PQE/PQ):	



Note 1: If you measure the resistance between ports P, Q, and E of the IDU main control board, normally the resistance between P and Q is 120 Ω, the resistance between P and E is infinite, and the resistance between Q and E is infinite.

■ If the indoor and outdoor units communicate via HyperLink (M1M2):



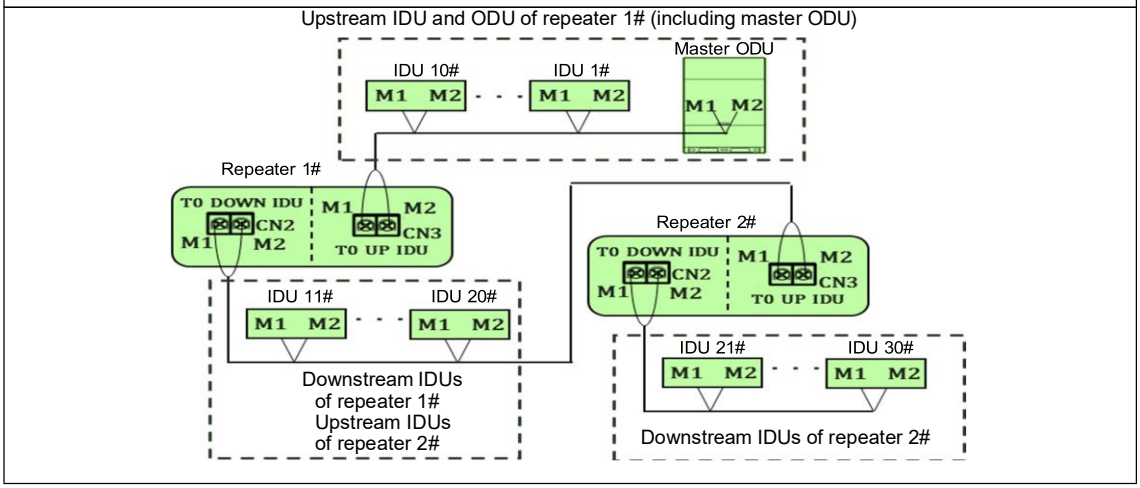
Troubleshooting

Note:

1. If you measure the resistance between terminal blocks M1 and M2 of the IDU main control board, normally this resistance is greater than 1 MΩ.

2. Figure 1 shows the schematic diagram of HyperLink communication line connection. The connection of repeater wires must comply with the following requirements. Otherwise, an IDU communication fault may occur.

Figure 1 Schematic diagram of HyperLink communication cable connection



1) The UP communication port of 1# repeater is connected to the communication port of 10# IDU, and the DOWN communication port of 1# repeater is connected to the communication port of 11# IDU.

2) The UP communication port of 2# repeater is connected to the communication port of 20# IDU, and the DOWN communication port of 2# repeater is connected to the communication port of 21# IDU.

3) For each repeater added, 10 IDUs and 200 m communication distance can be added. A refrigerant system allows the addition of a maximum of 2 repeaters and can connect to up to 30 IDUs. If more than 30 IDUs are connected, please allocate separate refrigerant systems.

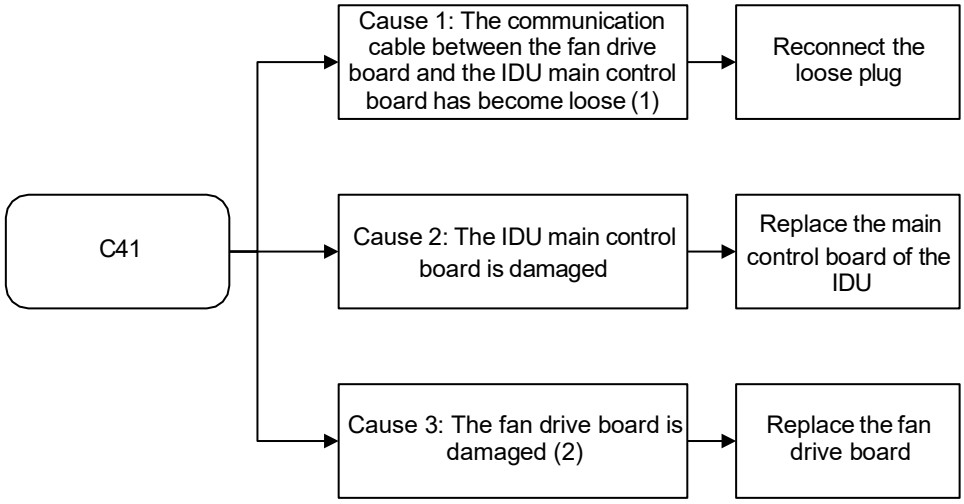
3. If communication cables connecting the communication ports of the repeater, IDU and ODU form a closed loop, it will cause a communication fault.

4. RS-485 communication cables must be connected hand in hand. If communication is unstable, a matching resistor needs to be added to the last IDU on the PQ (in the accessory bag of the ODU). However, a matching resistor should not be added between M1 and M2. Otherwise, a communication fault may occur.

5. To select the communication mode HyperLink (M1M2), users must go to the ODU menu item to change the mode (For the setting method, refer to the ODU Installation Manual). Otherwise, communication faults may occur.

6. The V8 Atom platform ODU typically uses the V8 communication protocol. If there are any IDUs that use a non-V8 platform, users must go to the ODU menu item to change the communication protocol (Please refer to the ODU Installation Manual for setup instructions). Otherwise, these IDUs will display communication fault codes (For the code number, please refer to the IDU wiring nameplate).

8.1.17 C41 - Abnormal communication between IDU main control board and fan drive board

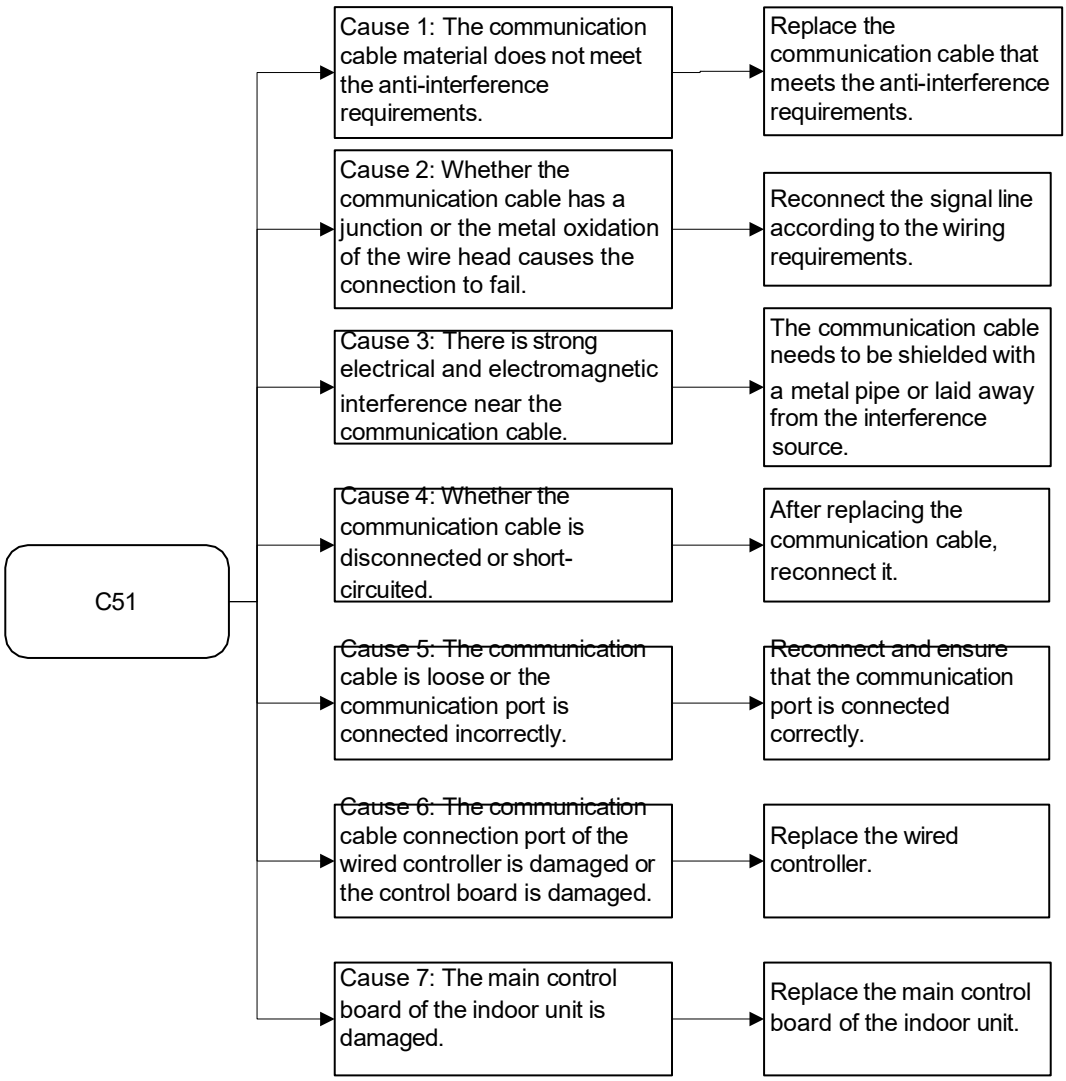
Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	If the main control board of an IDU has lost communication with the fan drive board for 2 min (3)	
Error recovery	Automatic recovery	
Possible cause	■ The fan drive board is damaged. ■ The IDU main control board is damaged. ■ The communication cable between the fan drive board and the IDU main control board has become loose.	
Troubleshooting	 Note: 1. Communication cables are only provided for units whose fan drive board is independent of the IDU main control board. 2. For units whose fan drive board is welded onto the main control board, if either the fan drive board or main control board becomes faulty, the whole control board has to be replaced.	

8.1.18 C51 - Abnormal communication between the IDU and wired controller

Note: The error code C51 can be triggered either at the IDU side or at the wired controller side.

<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position</td></tr>
<tr><td rowspan="2">  </td><td>Triggered at the IDU side</td><td>Triggered at the wired controller side</td></tr>
<tr><td>The error code "C51" can be queried by entering the spot check interface of the panel or display box, but the error code is not displayed on the wired controller.</td><td>The error code "C51" is displayed only on the wired controller rather than on the panel or display box.</td></tr>
<tr><td rowspan="2">Error impact</td><td colspan="3">■ Triggered at the IDU side: The faulty IDU and other IDUs of the same system: operate normally.
■ Triggered at the wired controller side: The wired controller is unavailable.</td></tr>
<tr><td colspan="3">ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="3">■ Triggered at the IDU side: If the main control board of an IDU has lost communication with wired controller for 2 min
■ Triggered at the wired controller side: If the wired controller has not received any reply from the main control board of an IDU for 1 min</td></tr>
<tr><td>Error recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="3">■ The wired controller is damaged
■ The IDU main control board is damaged.
■ Communication cables are loose or the communication port is faulty.
■ Communication cables have short-circuited or been cut off.
■ The communication cable material does not meet the anti-interference requirements or is subject to strong electrical interference</td></tr>
</table>

Troubleshooting

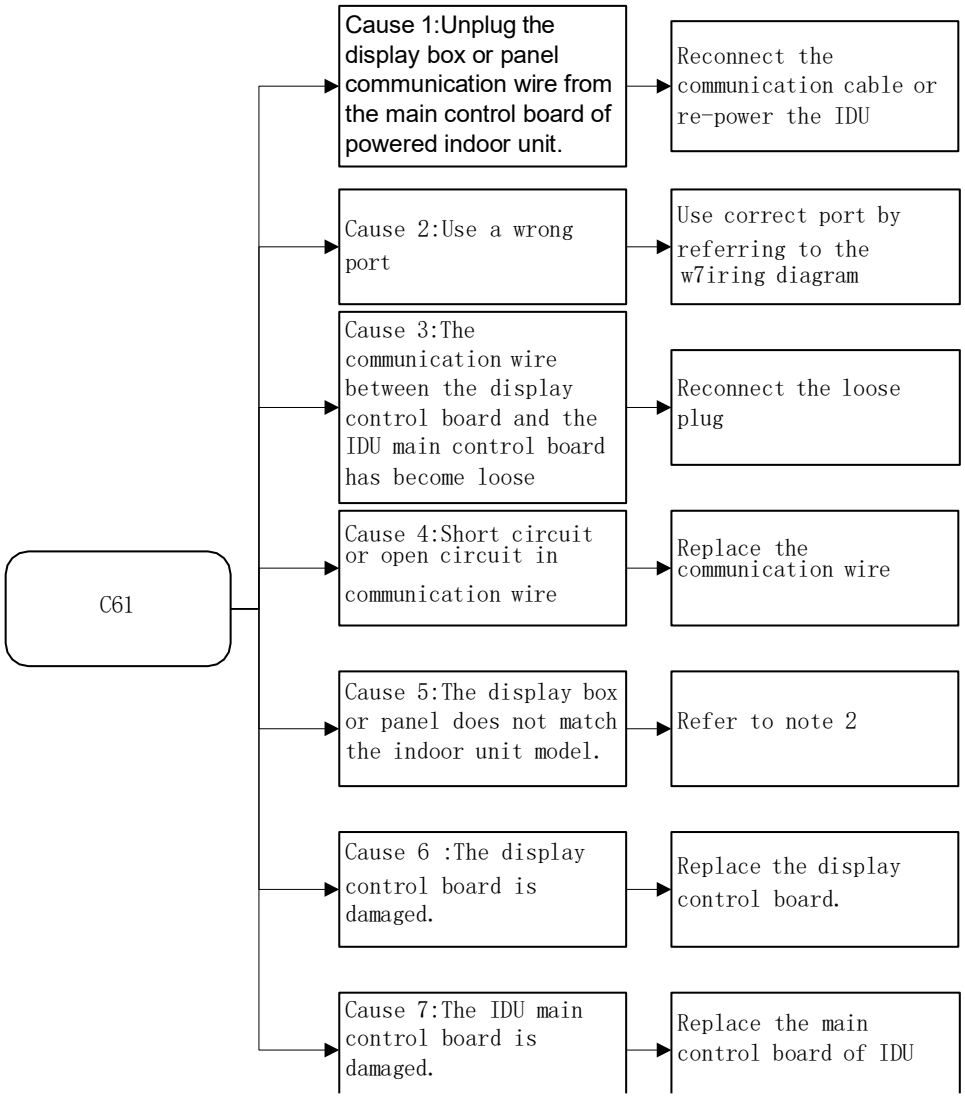


8.1.19 C61 - Abnormal communication between the IDU main control board and display control board

Note: The error code C61 can be triggered either at the IDU side or at the panel or display box side.

<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position</td></tr>
<tr><td rowspan="2">  </td><td>Triggered at the IDU side</td><td>Triggered at the panel or display box side</td></tr>
<tr><td>Panel, display box, and wired controller</td><td>Panel, display box, and wired controller</td></tr>
<tr><td>Error impact</td><td colspan="3">The faulty IDU and other IDUs of the same system: operate normally.
ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="3">■ Triggered at the IDU side: If the main control board of the IDU has been connected to the display board but has not communicated with the display board for 2 min;
■ Triggered at panel or display box side: If the display board has not received any reply from the main control board of an IDU for 1 min</td></tr>
<tr><td>Error recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="3">■ Unplug the display box or panel communication wire from the main control board of powered indoor unit.
■ Use a wrong port to connect display control board and IDU main control board.
■ The communication wire between the display control board and the IDU main control board has become loose.
■ Short circuit or open circuit in communication wire
■ The display box or panel does not match the indoor unit model.
■ The display control board is damaged.
■ The IDU main control board is damaged.</td></tr>
</table>

Troubleshooting



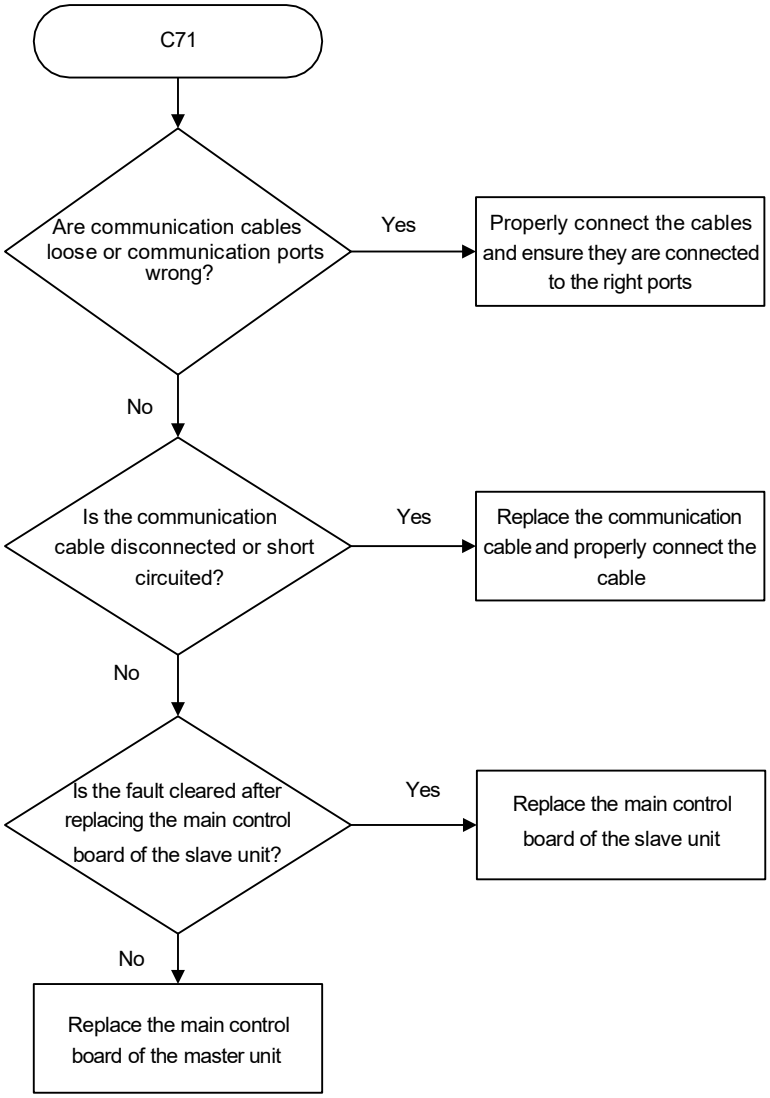
Note:

1. The control boards of display box and panel are uniformly named as display control board.

2. Check whether the model of display box and panel is correct and the type of the indoor unit main control board is set correctly

8.1.20 C71 - Abnormal communication between AHU Kit slave unit and master unit

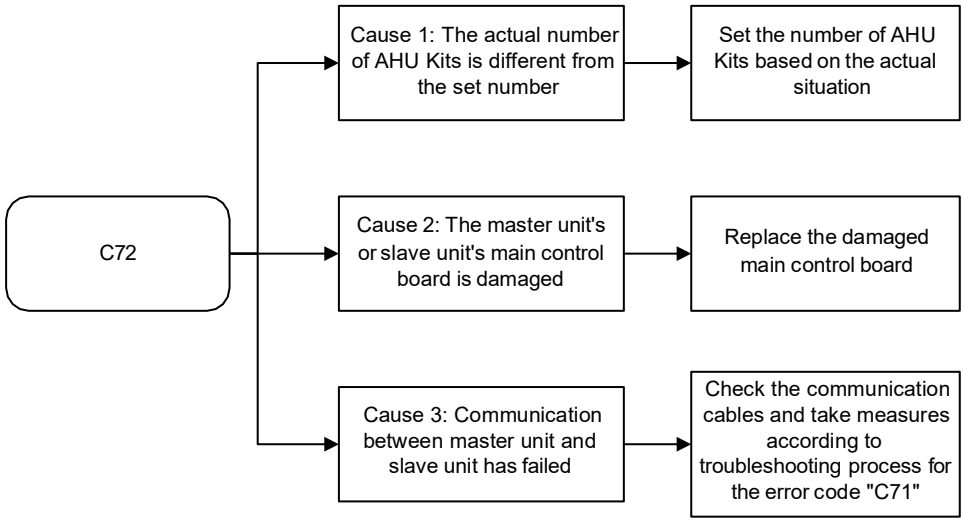
Note: When multiple AHU Kits are connected in parallel, the master AHU Kit (referred to as the master) communicates with the ODU, and the slave AHU Kit (referred to as the slave) communicates with the master control box.

<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position (master)</td></tr>
<tr><td>  </td><td>Display box or wired controller</td></tr>
<tr><td rowspan="2">Error impact</td><td colspan="2">Master unit and slave unit: stop. Other IDUs of the same system: operate normally.</td></tr>
<tr><td colspan="2">ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="2">If the main control board of the master unit has lost communication with the main control board of the slave unit for 2 min;</td></tr>
<tr><td>Error recovery</td><td colspan="2">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="2">■ The slave unit's main control board is damaged.
■ The master unit's main control board is damaged.
■ Communication cables are loose or the communication port is faulty.
■ Communication cables have short-circuited or been cut off.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 

Note: The error code can be queried after the slave is connected to the display box (during field service, the display box can be temporarily removed from the master unit and connected to the slave unit)</td></tr>
</table>

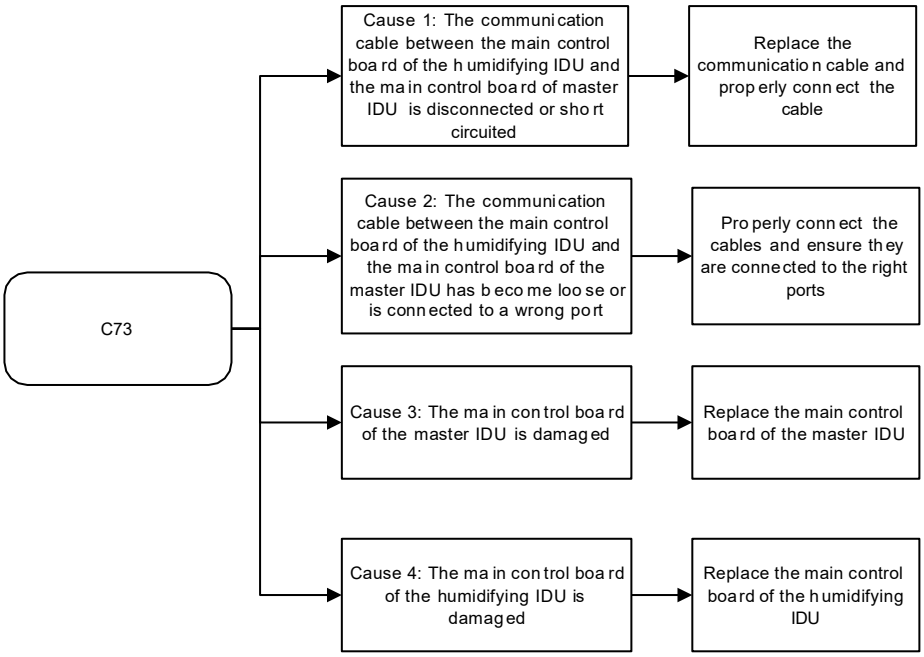
8.1.21 C72 - Number of AHU Kits is not the same as the set number

Note: When multiple AHU Kits are connected in parallel, the master AHU Kit (referred to as the master) communicates with the ODU, and the slave AHU Kit (referred to as the slave) communicates with the master control box.

<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position (master)</td></tr>
<tr><td>  </td><td>Display box or wired controller</td></tr>
<tr><td rowspan="2">Error impact</td><td colspan="2">Master unit and slave unit: stop. Other IDUs of the same system: stops.</td></tr>
<tr><td colspan="2">ODU of the same system:
■ stops.
■ Error code "C26" is displayed (V6 platform ODU displays the code "H7"). Meaning of the code: IDU qty decrease fault</td></tr>
<tr><td>Error trigger</td><td colspan="2">When it is detected that the number of AHU Kits in operation is different from the set number and this lasts for 3 min</td></tr>
<tr><td>Error recovery</td><td colspan="2">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="2">■ The master unit's or slave unit's main control board is damaged.
■ The actual number of AHU Kits is different from the set number.
■ Communication between the master unit and slave unit fails.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 

Note: The error code can be queried after the slave is connected to the display box (during field service, the display box can be temporarily removed from the master unit and connected to the slave unit)</td></tr>
</table>

8.1.22 C73 - Abnormal communication between the linked humidifying IDU and master IDU

<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position (master IDU)</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td>Error impact</td><td colspan="3">Master IDU: operates normally. Humidifying IDUs: stop. Other IDUs of the same system: operate normally.
ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="3">If the main control board of the master IDU has lost communication with the main control board of the humidifying IDU for 2 min</td></tr>
<tr><td>Error recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="3">■ The main control board of the humidifying IDU is damaged.
■ The master IDU's main control board is damaged.
■ Communication cables are loose or the communication port is faulty.
■ Communication cables have short-circuited or been cut off.</td></tr>
<tr><td>Troubleshooting</td><td colspan="3"> 

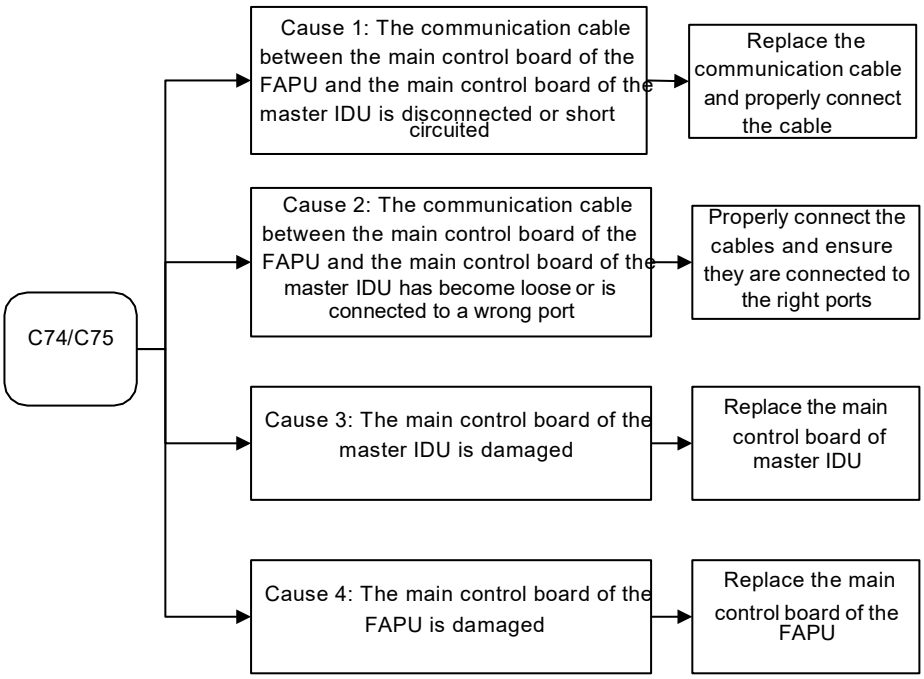
Note:
1. The error code can be queried after the humidifying IDU is connected to the wired controller or the display box.</td></tr>
</table>

8.1.23 C74 - Abnormal communication between the linked FAPU and master IDU (series setting)

Note:

1) The type of FAPU may be HRV, VRF fresh air IDU and so on.

2) Series setting: The air supply side of the linked FAPU is directly connected to the air return side of the master IDU through an air duct. A wired controller is used to set this installation method as a series connection.

<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position (master IDU)</td></tr>
<tr><td>  </td><td>Panel, display box, and wired controller</td></tr>
<tr><td>Error impact</td><td colspan="2">The master IDU and the linked FAPU: stop. Other IDUs of the same system: operate normally.
ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="2">If the main control board of the master IDU has lost communication with the main control board of the FAPU for 2 min</td></tr>
<tr><td>Error recovery</td><td colspan="2">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="2">■ The main control board of the FAPU is damaged.
■ The master IDU's main control board is damaged.
■ Communication cables are loose or the communication port is faulty.
■ Communication cables have short-circuited or been cut off.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 

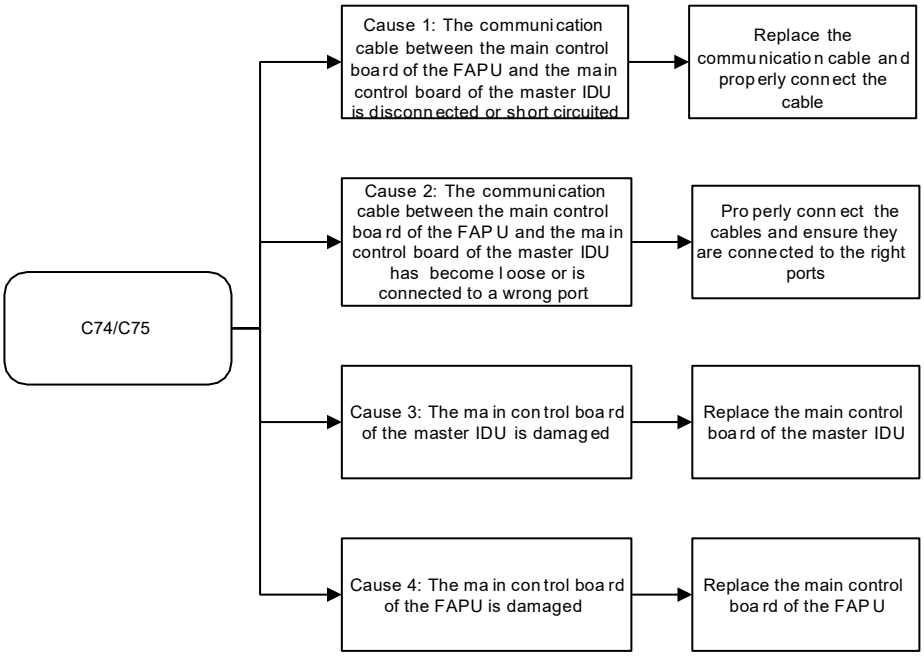
Note:
1. The error code can be queried after the FAPU is connected to the wired controller or the display box.</td></tr>
</table>

8.1.24 C75 - Communication fault between linked FAPU and master IDU (non-series setting)

Note:

1) The type of FAPU may be HRV, VRF fresh air IDU and so on.

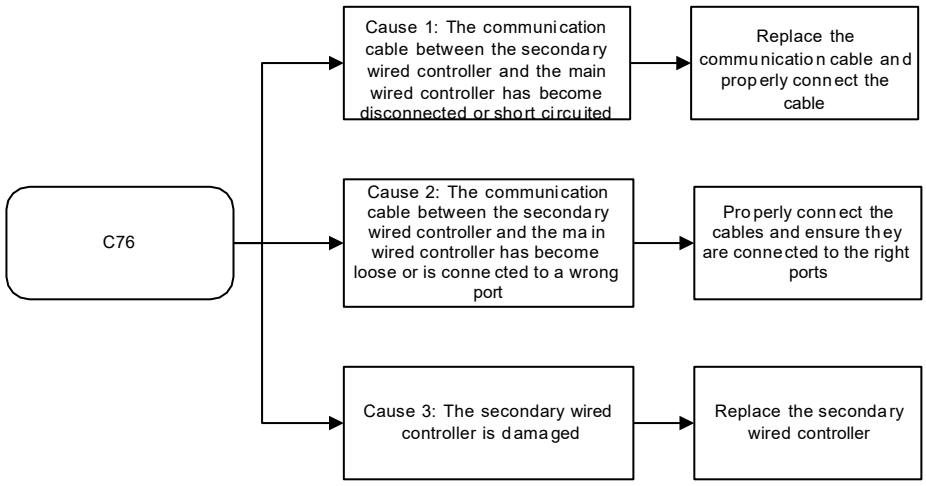
2) Series setting: The linked FAPU and the master IDU are connected to the air supply duct and air return duct respectively and separately. A wired controller is used to set this installation method as a non-series connection.

<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position (master IDU)</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td>Error impact</td><td colspan="3">Master IDU: operates normally. FAPU: stops. Other IDUs of the same system: operate normally.
ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="3">If the main control board of the master IDU has lost communication with the main control board of the FAPU for 2 min</td></tr>
<tr><td>Error recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="3">■ The main control board of the FAPU is damaged.
■ The master IDU's main control board is damaged.
■ Communication cables are loose or the communication port is faulty.
■ Communication cables have short-circuited or been cut off.</td></tr>
<tr><td>Troubleshooting</td><td colspan="3"> 

Note:
1. The error code can be queried after the FAPU is connected to the wired controller or the display box.</td></tr>
</table>

8.1.25 C76 - Abnormal communication between the main wired controller and secondary wired controller

Note: The error code C51 can be triggered either at the IDU side or at the wired controller side.

Error display	Digital display	Display position (secondary wired controller)
		The error code "C76" is displayed only on the secondary wired controller
Error impact	The faulty IDU and other IDUs of the same system: operate normally. The wired controller does not work.	
	ODU of the same system: operate normally.	
Error trigger	If the secondary wired controller has not received any reply from the main wired controller for 1 min	
Error recovery	Automatic recovery	
Possible cause	■ The secondary wired controller is damaged. ■ Communication cables are loose or the communication port is faulty. ■ Communication cables have short-circuited or been cut off.	
Troubleshooting		

8.1.26 C77, C78 - Abnormal communication between IDU main control board and 1# Expansion Board, abnormal communication between IDU main control board and 2# Expansion Board

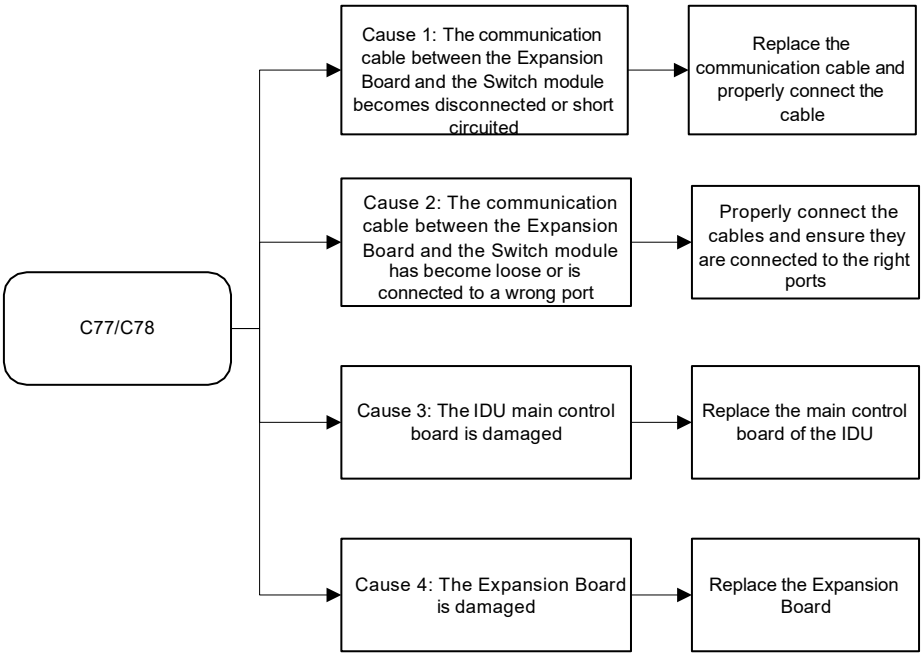
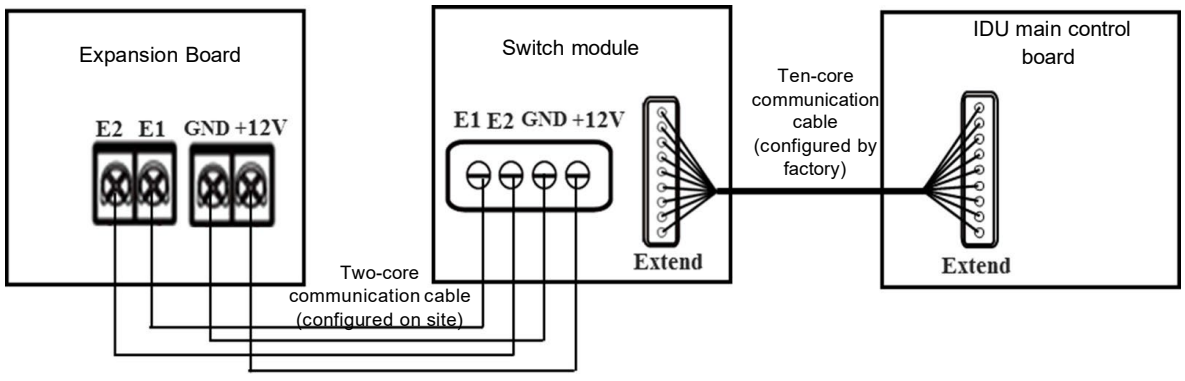
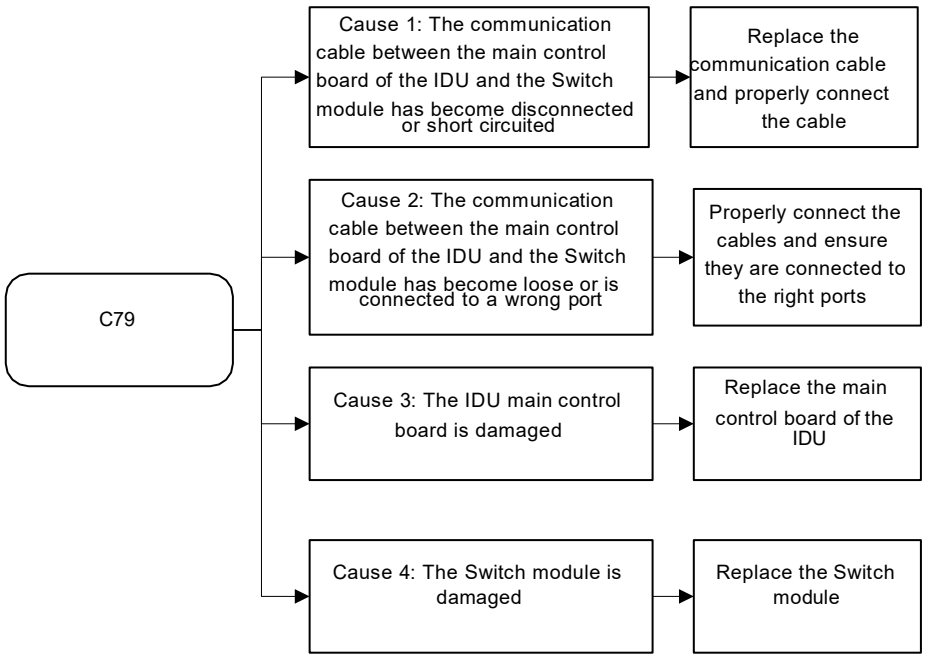
Error display	Digital display:  	Display position: Panel, display box, and wired controller
Error impact	Faulty IDU: The fan continues running, and the EEV is closed. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	If the main control board of an IDU has lost communication with 1# Expansion Board or 2# Expansion Board for 2 min	
Error recovery	Automatic recovery	
Possible cause	See the Troubleshooting section.	
Troubleshooting	 Note: The main control board of the IDU cannot be directly connected to the Expansion Board. Instead, a Switch module has to be used. See Figure 1 below:	

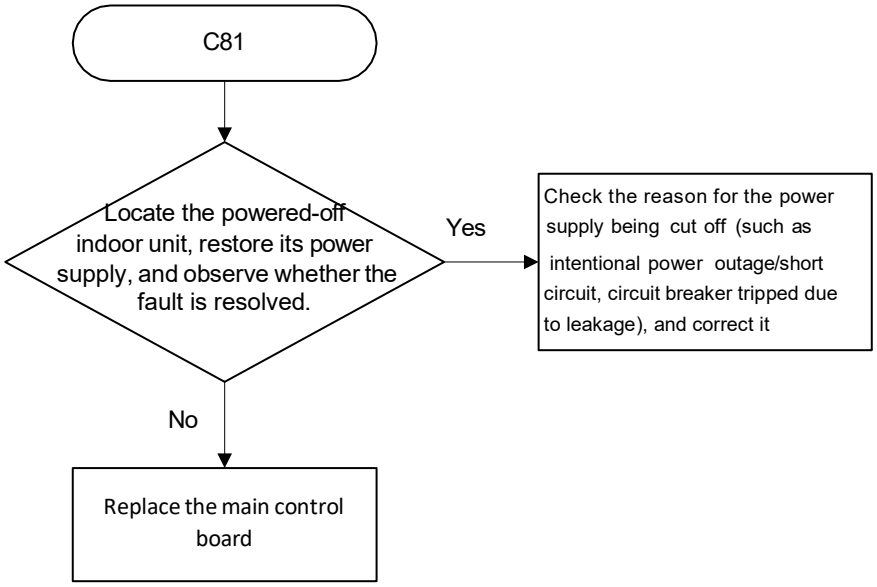
Figure 1 Wiring diagram of Expansion Board, Switch module, and IDU main control board



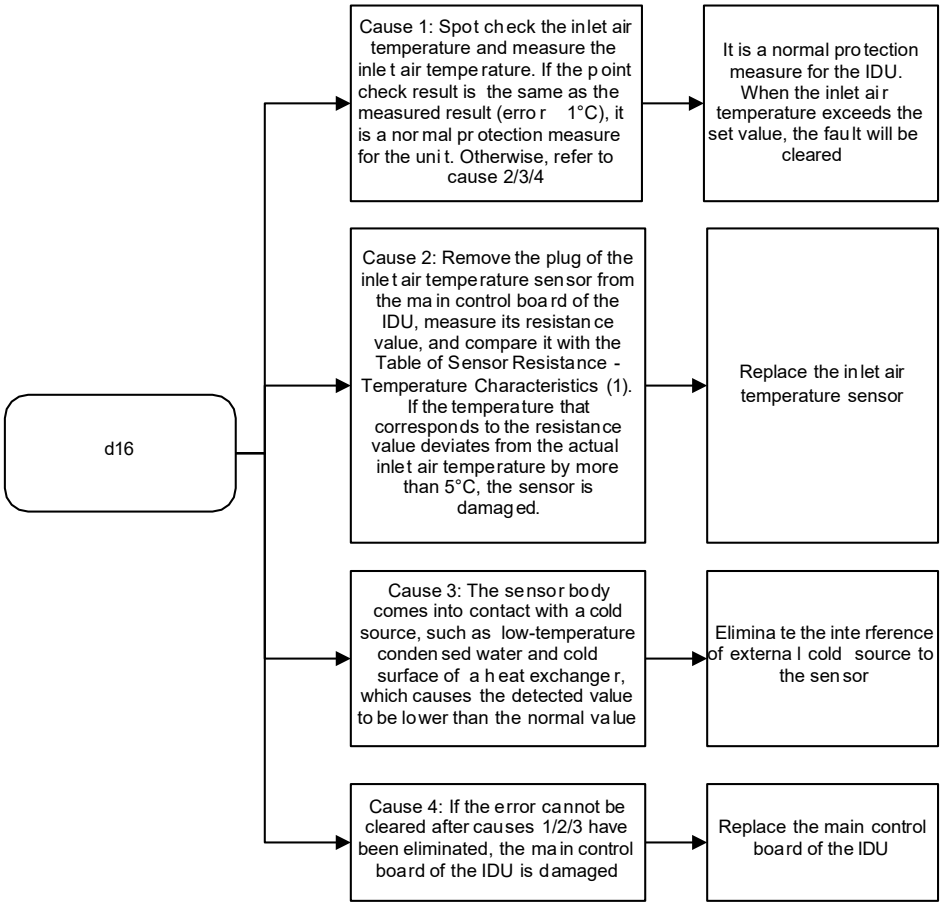
8.1.27 C79 - Abnormal communication between the IDU main control board and Switch module

Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	Faulty IDU: The fan continues running, and the EEV is closed. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	If the main control board of an IDU has lost communication with the Switch module for 2 min	
Error recovery	Automatic recovery	
Possible cause	See the Troubleshooting section.	
Troubleshooting		

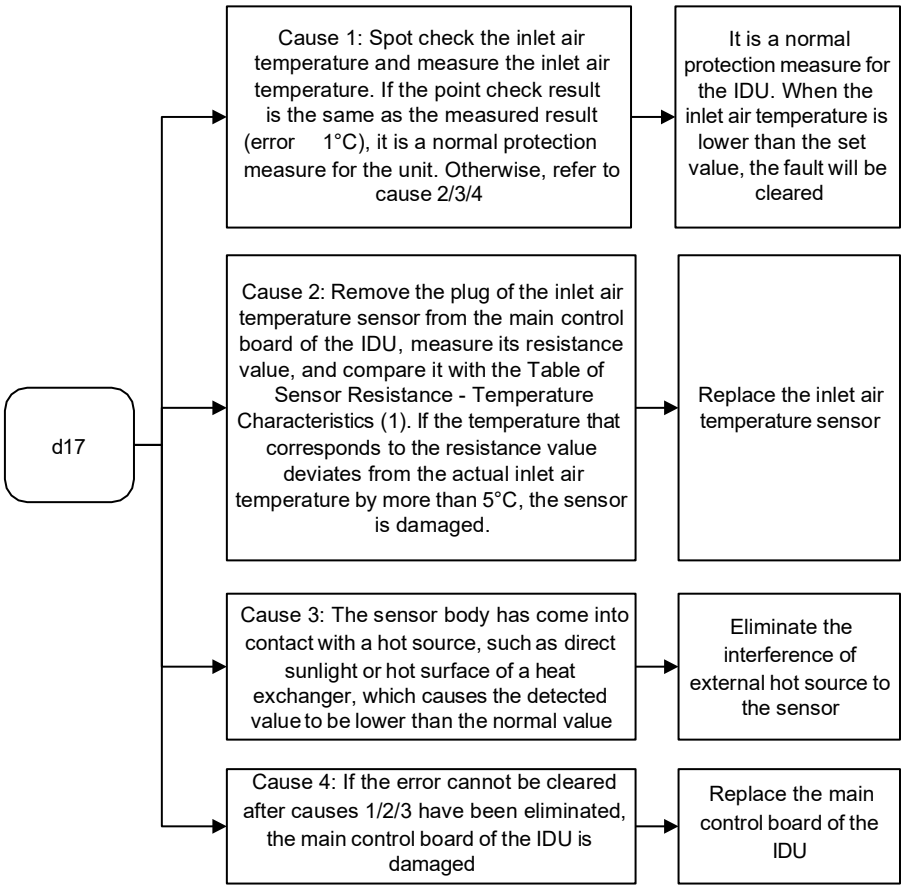
8.1.28 C81—The indoor unit is in a power-off state

Error display	Digital display	Display position
		Central controller or various types of control terminal software
Error impact	■ The faulty indoor unit and the panels, display boxes, and wired controllers connected to it will stop running, and the central controller or various types of control terminal software will display "C81". ■ Other indoor units in the same system are operating normally.	
	The outdoor unit in the same system is operating normally, displaying 'd41'(There are indoor units in the system that are in a powered-off state). HyperLink will closes the electronic expansion valve of the powered-off indoor unit.	
Error trigger	The power supply to the indoor unit has been detected as being cut off.	
Error recovery	The faulty indoor unit will automatically resume operation once power supply is restored.	
Possible cause	■ The power supply to the indoor unit has been cut off. ■ The main control board of the indoor unit is damaged	
Troubleshooting	 Note: The C81 fault trigger is only supported when both the indoor and outdoor units belong to the V8 Atom series and the communication line between the indoor and outdoor units is connected to the M1/M2 ports.	

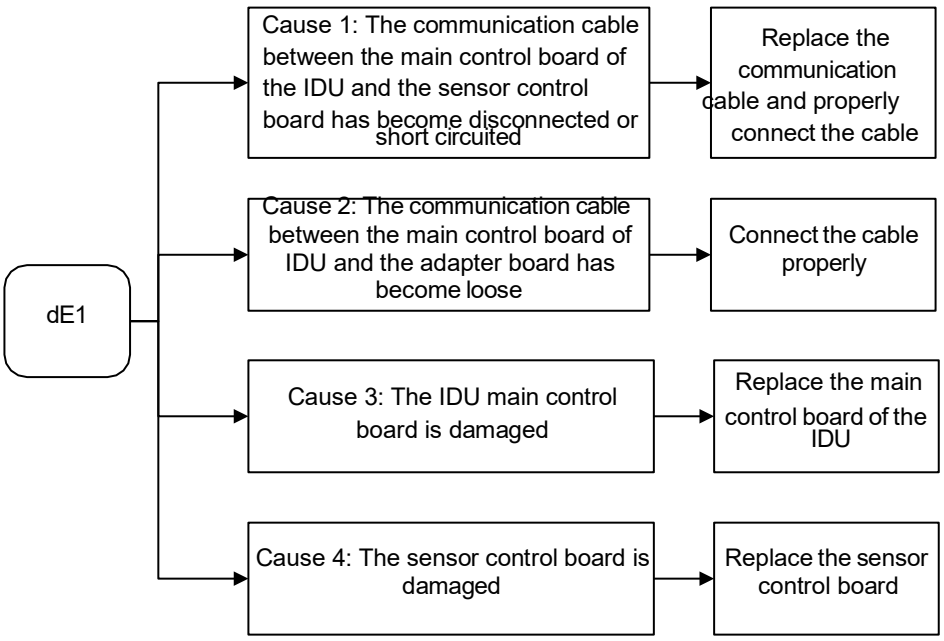
8.1.29 d16 - Air inlet temperature of IDU is too low in heating mode

Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	If the air inlet temperature of the IDU is lower than the set value (See the operating temperature range set out in the IDU Manual) for 5 min in heating mode	
Error recovery	Automatic recovery	
Possible cause	See the Troubleshooting section.	
Troubleshooting	 Note: 1. The inlet air temperature sensor is commonly found in the fresh air IDUs (The sensor code is defined as T0), and its resistance and temperature characteristics are similar to T1 - return air temperature sensor. Please refer to the Table of Temperature Sensor Resistance Characteristics listed in the Maintenance Manual to learn more about the sensor's features.	

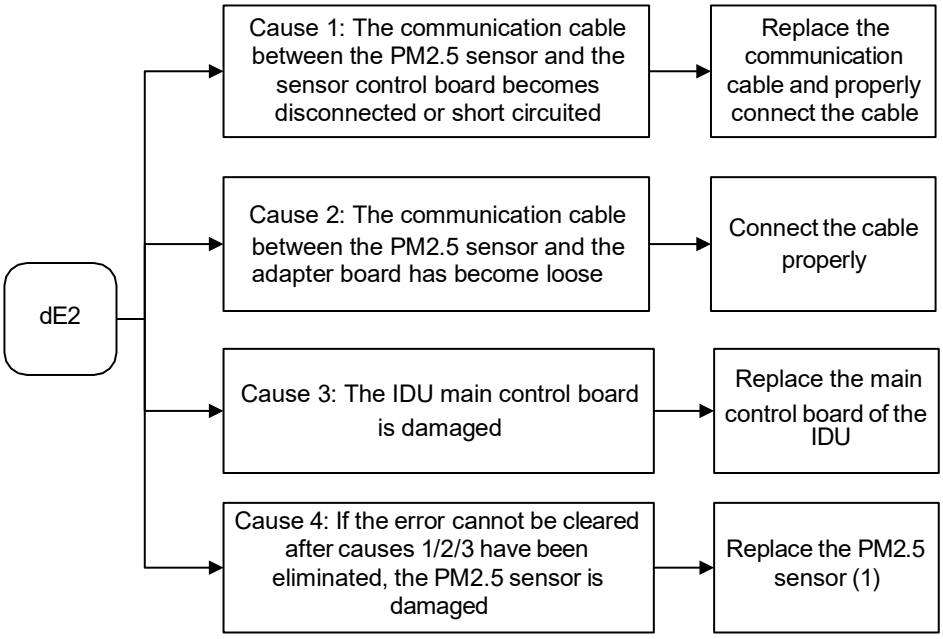
8.1.30 d17 - Air inlet temperature of IDU is too high in cooling mode

Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	If the air inlet temperature of the IDU is higher than the set value (See the operating temperature range set out in the IDU Manual) for 5 min in cooling mode	
Error recovery	Automatic recovery	
Possible cause	See the Troubleshooting section.	
Troubleshooting	 Note: 1. The inlet air temperature sensor is commonly found in the fresh air IDUs (The sensor code is defined as T0), and its resistance and temperature characteristics are similar to T1 - return air temperature sensor. Please refer to the Table of Temperature Sensor Resistance Characteristics listed in the Maintenance Manual to learn more about the sensor's features.	

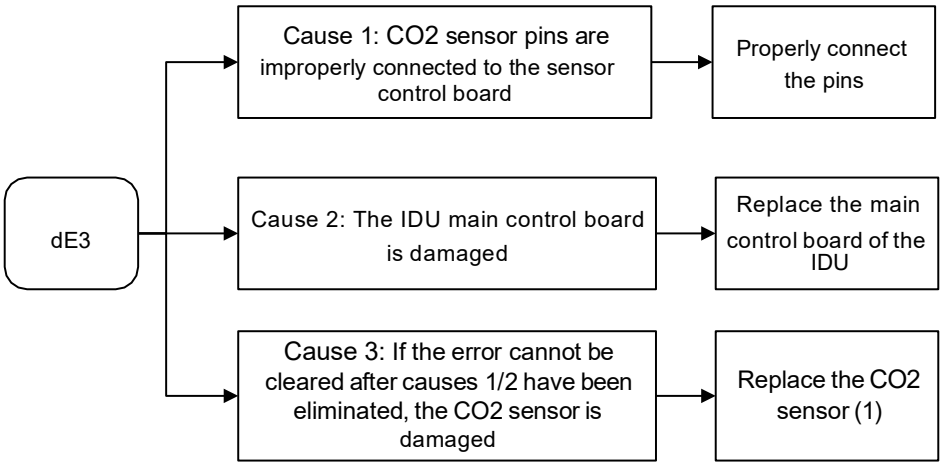
8.1.31 dE1 - Sensor control board fault

Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU and other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	If the main control board of an IDU has lost communication with sensor control board for 2 min	
Error recovery	Automatic recovery	
Possible cause	See the Troubleshooting section.	
Troubleshooting		

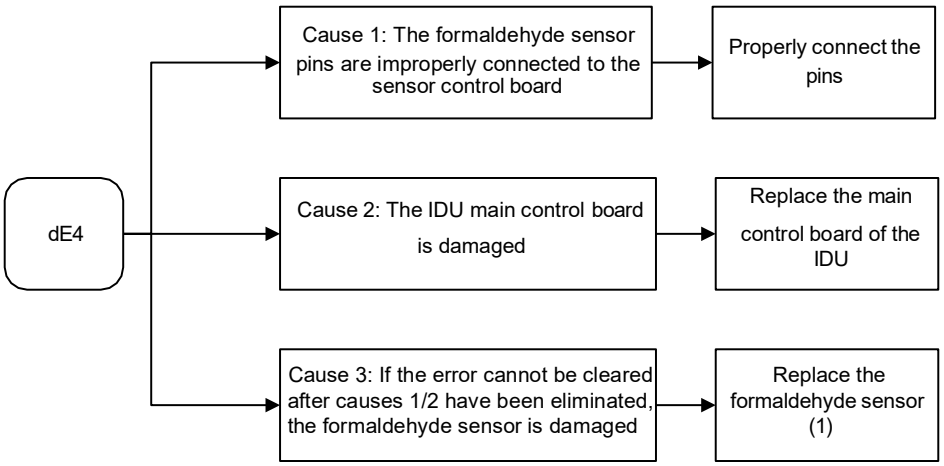
8.1.32 dE2 - PM2.5 sensor fault

Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU and other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	If the main control board of an IDU has lost communication with PM2.5 sensor for 2 min	
Error recovery	Automatic recovery	
Possible cause	See the Troubleshooting section.	
Troubleshooting	 Note: 1. If the PM2.5 sensor is integrated with the sensor control board, making disassembly difficult, then replace the sensor control board directly.	

8.1.33 dE3 - CO2 sensor fault

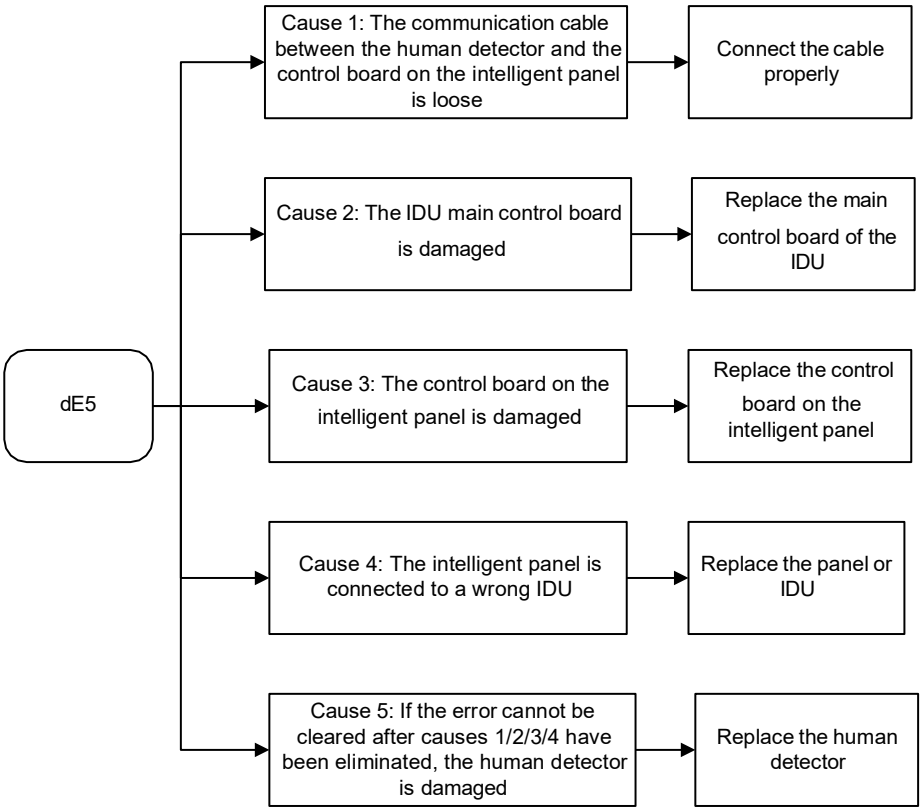
Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU and other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	If the main control board of an IDU has lost communication with CO2 sensor for 2 min	
Error recovery	Automatic recovery	
Possible cause	See the Troubleshooting section.	
Troubleshooting	 Note 1: 1) The CO2 sensor pins should be inserted on the sensor control board according to the wiring nameplate. 2) When inserting and removing the sensor, do not press and deform the sensor surface, as it may change its internal optical path and cause zero drift to the sensor, making the measuring results of sensor too large or even out of range. 3) When inserting and removing the sensor: Operators must keep their hands clean and dry; the antistatic wrist strap should be worn on the wrist; the metal piece inside the antistatic wrist strap should be in close contact with the skin; and the metal clamp of the antistatic wrist strap should be placed at the exposed copper grounding wire.	

8.1.34 dE4 - Formaldehyde sensor fault

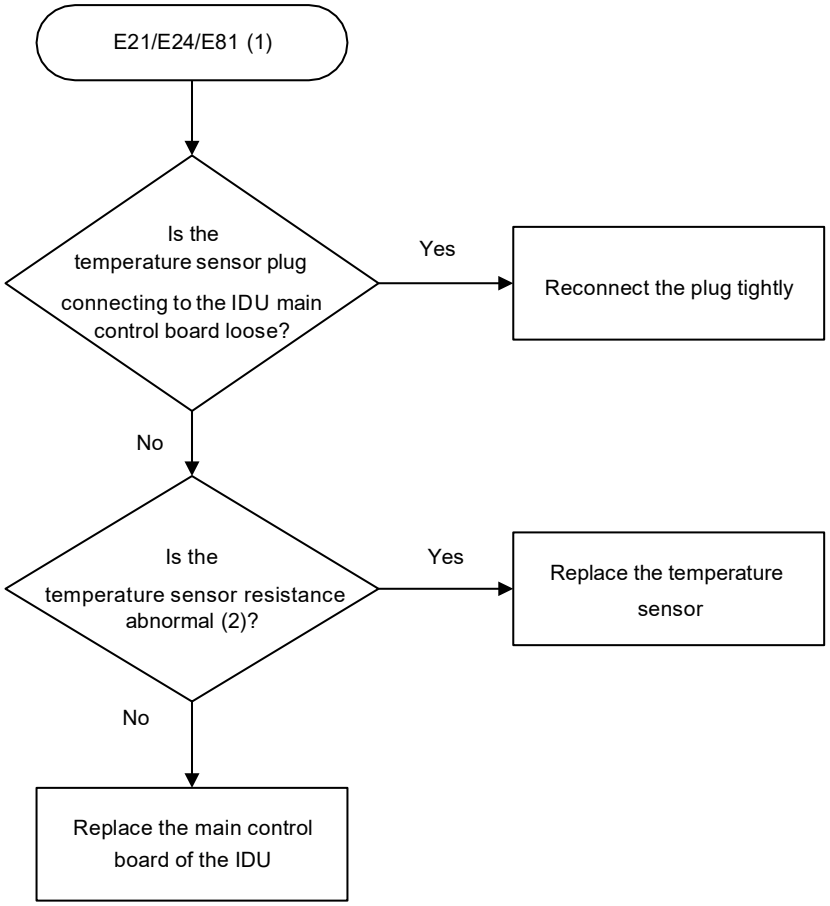
Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU and other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	If the main control board of an IDU has lost communication with formaldehyde sensor for 2 min	
Error recovery	Automatic recovery	
Possible cause	See the Troubleshooting section.	
Troubleshooting	 Note 1: 1) The formaldehyde sensor pins should be inserted on the sensor control board according to the wiring nameplate. 2) When inserting and removing the sensor, do not touch or squeeze the white sensor film with your hand. 3) When inserting and removing the sensor: Operators must keep their hands clean and dry; the antistatic wrist strap should be worn on the wrist; the metal piece inside the antistatic wrist strap should be in close contact with the skin; and the metal clamp of the antistatic wrist strap should be placed at the exposed copper grounding wire.	

8.1.35 dE5 - Human Detect sensor fault

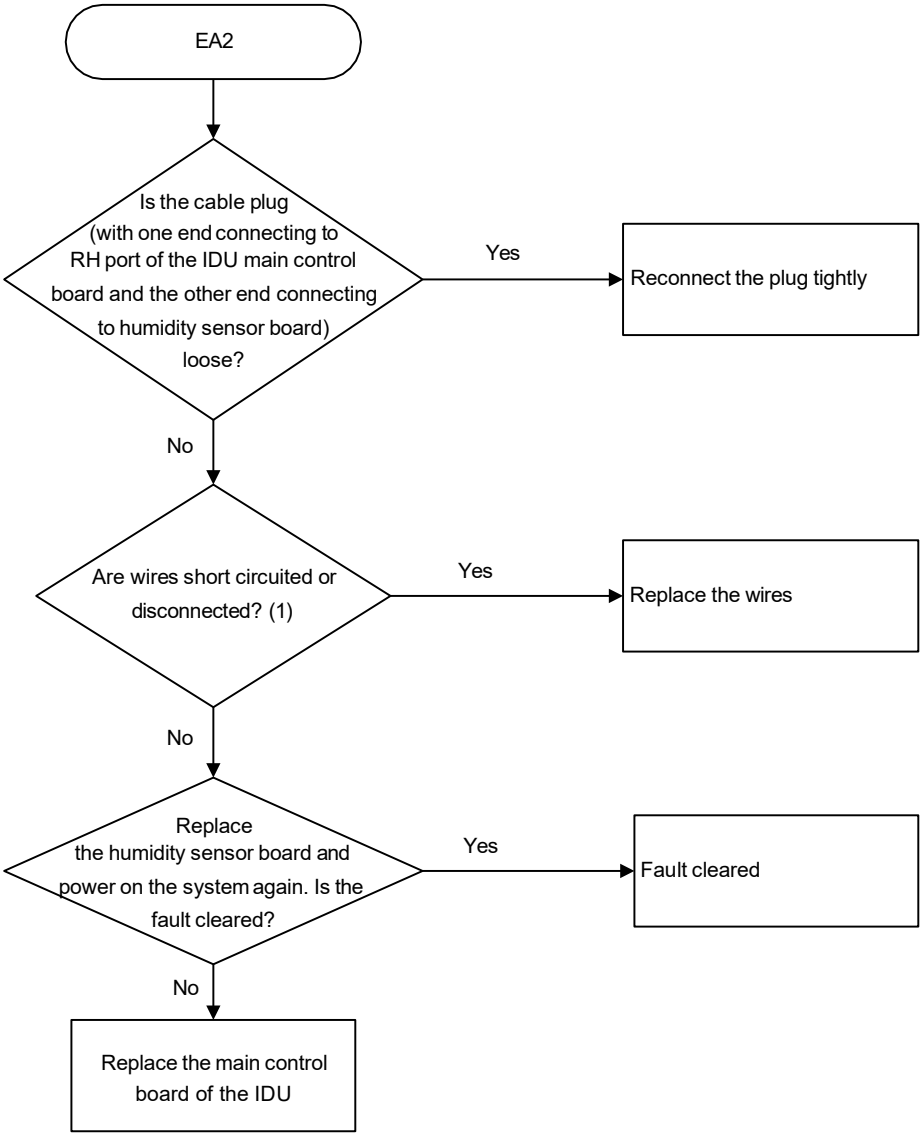
Note: The human detector sensor on the smart panel is used to detect the location of the human body.

Error display	Digital display	Display position
		Panel, wired controller
Error impact	The faulty IDU and other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	If the control board of intelligent panel has lost communication with the human detector sensor for 10s and a fault signal has been sent to the IDU main control board	
Error recovery	Automatic recovery	
Possible cause	See the Troubleshooting section.	
Troubleshooting		

8.1.36 E21, E24, E81 - T0 (fresh inlet air temperature sensor) short-circuits or cuts off, T1 (IDU return air temperature sensor) short-circuits or cuts off, and TA (outlet air temperature sensor) short-circuits or cuts off

Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	When detecting that the temperature sensor short-circuits or cuts off	
Error recovery	Automatic recovery	
Possible cause	■ The temperature sensor is damaged. ■ The sensor plug to the T0/T1/TA port in the IDU main control board is loose. ■ The IDU main control board is damaged.	
Troubleshooting	 Note: 1) The E21/E24/E81 code respectively corresponds to the T0/T1/TA temperature sensor. Check the wiring nameplate to find the sensor port on the main control board. 2) Measure the resistance between two pins of the sensor plug with a multimeter. A resistance value close to 0 indicates a short circuit has occurred in the temperature sensor, and a resistance value close to infinity indicates an open circuit in the temperature sensor.	

8.1.37 EA2 - Return air humidity sensor fault

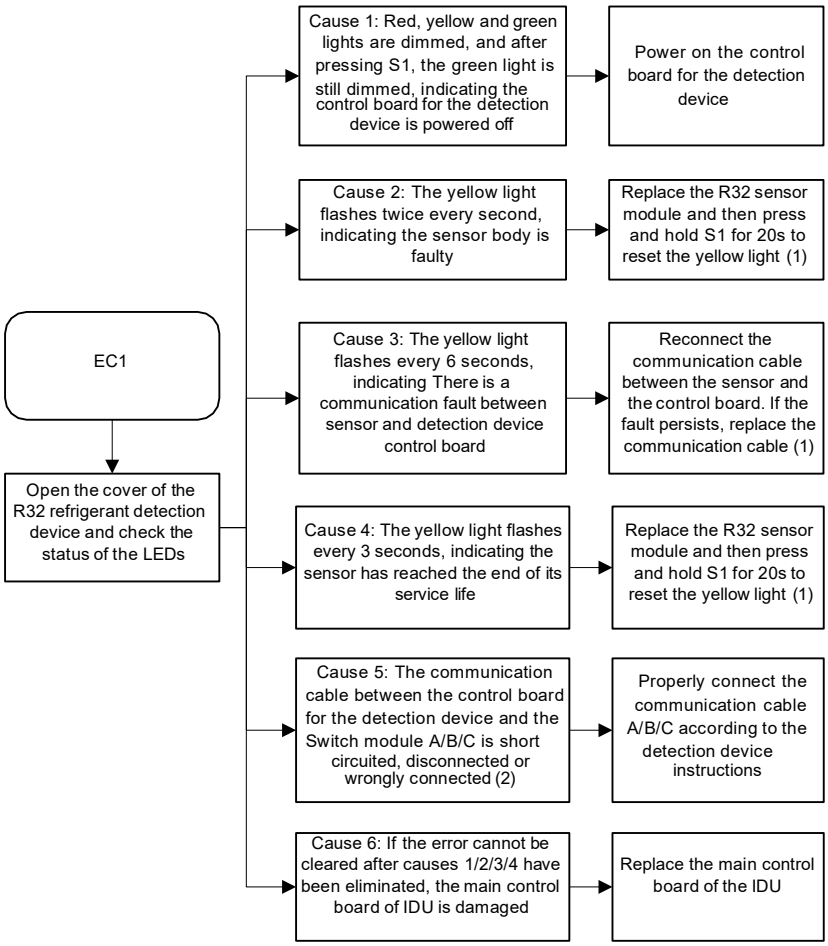
<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td>Error impact</td><td colspan="3">The faulty IDU and other IDUs of the same system: operate normally.
ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="3">If the main control board of an IDU has lost communication with the return air humidity sensor for 2 min</td></tr>
<tr><td>Error recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="3">■ The humidity sensor board is damaged.
■ The cable plug connecting to the RH port in the IDU main control board is loose.
■ The cable plug connecting to the humidity sensor board is loose.
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="3"> 

Note:
1. Use a multimeter to measure the resistance between the pin in the plug at two ends of each wire. A resistance value close to 0 indicates a short circuit has occurred in the wire, and a resistance value close to infinity indicates an open circuit in the wire.</td></tr>
</table>

8.1.38 EC1 - R32 refrigerant leakage sensor fault

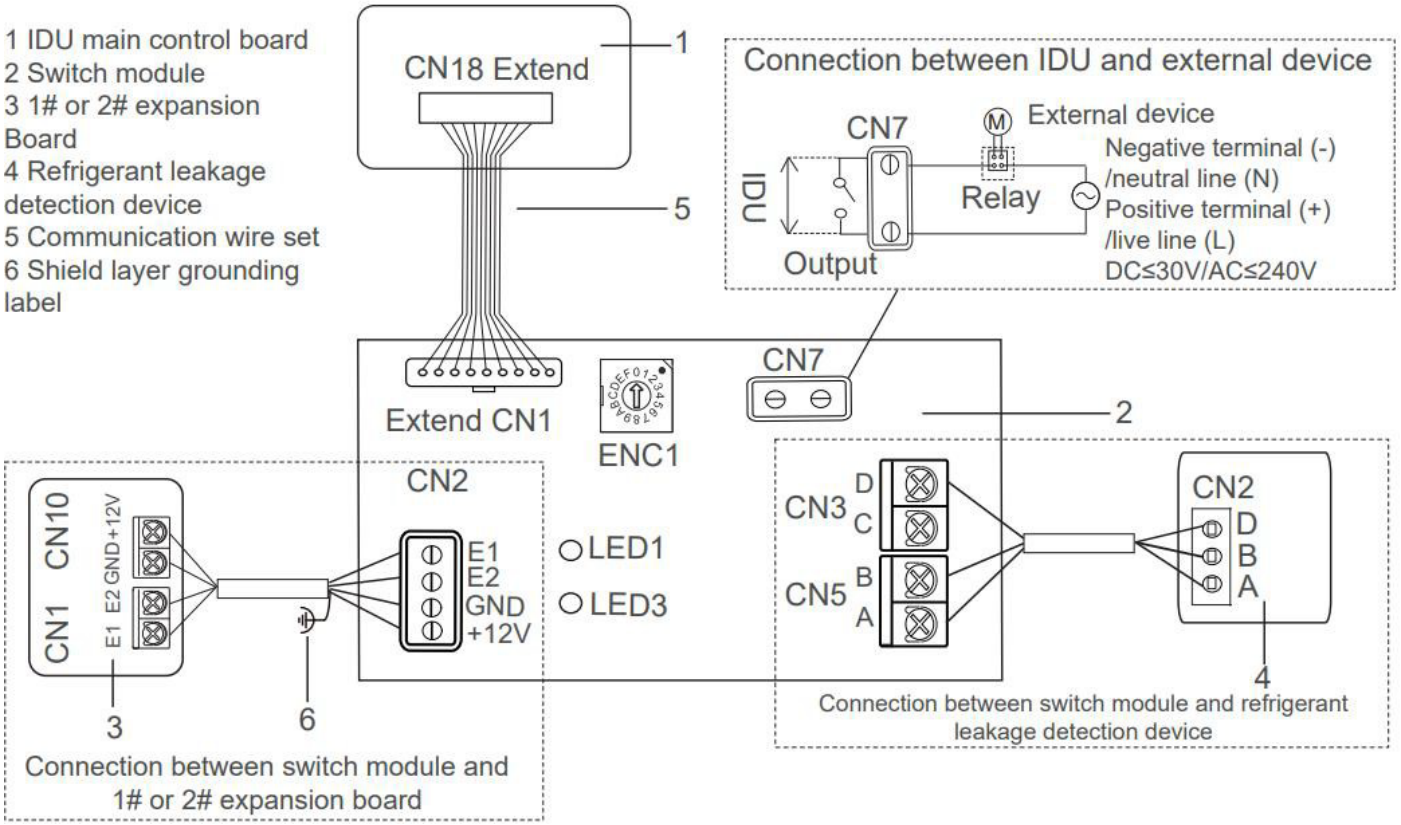
Check the R32 refrigerant leakage sensor of faulty IDU

If the measured refrigerant saturation pressure at the liquid side or gas side is equal to the standard saturation pressure, there is no refrigerant leak. Then check whether the sensor is damaged or contaminated by foreign materials (such as steam and oil). If so, replace the sensor.

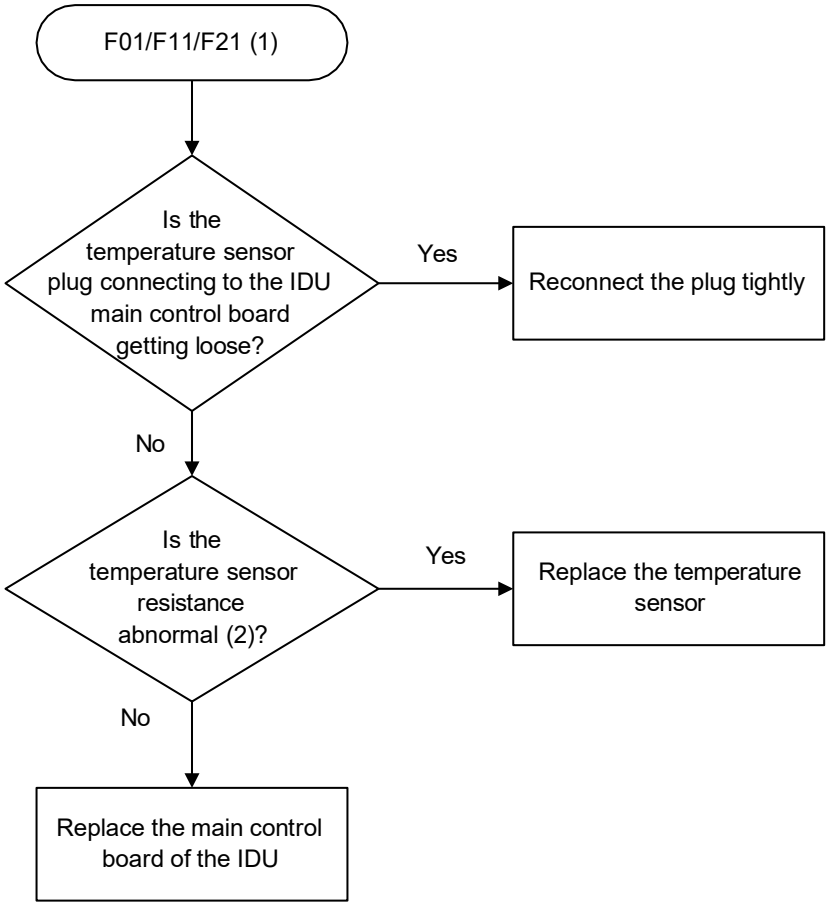
<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position</td></tr>
<tr><td>  </td><td>Panel, display box, and wired controller</td></tr>
<tr><td>Error impact</td><td colspan="2">Faulty IDU: stops. Other IDUs of the same system: operate normally.</td></tr>
<tr><td></td><td colspan="2">ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="2">When the IDU main control board receives sensor module fault signal from the R32 refrigerant detection device</td></tr>
<tr><td>Error recovery</td><td colspan="2">When the IDU main control board cannot detect a sensor module fault signal</td></tr>
<tr><td>Possible cause</td><td colspan="2">See the Troubleshooting section.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 

Note:
1. How to reset when the sensor body is faulty or the sensor has reached the end of its service life: After faults have been cleared, press and hold the S1 button on the control board for 20s to reset the unit. After resetting, all the LED indicators are lit for 2s before they become dimmed. The R32 sensor life recorded by the control board EEPROM is cleared. Communication between the sensor and the control board for the detection device is automatically restored.
2. The communication connection between the control board for the detection device and the Switch module A/B/C is shown in Figure 1 below.</td></tr>
</table>

Figure 1 Schematic diagram of the R32 refrigerant leakage detection system

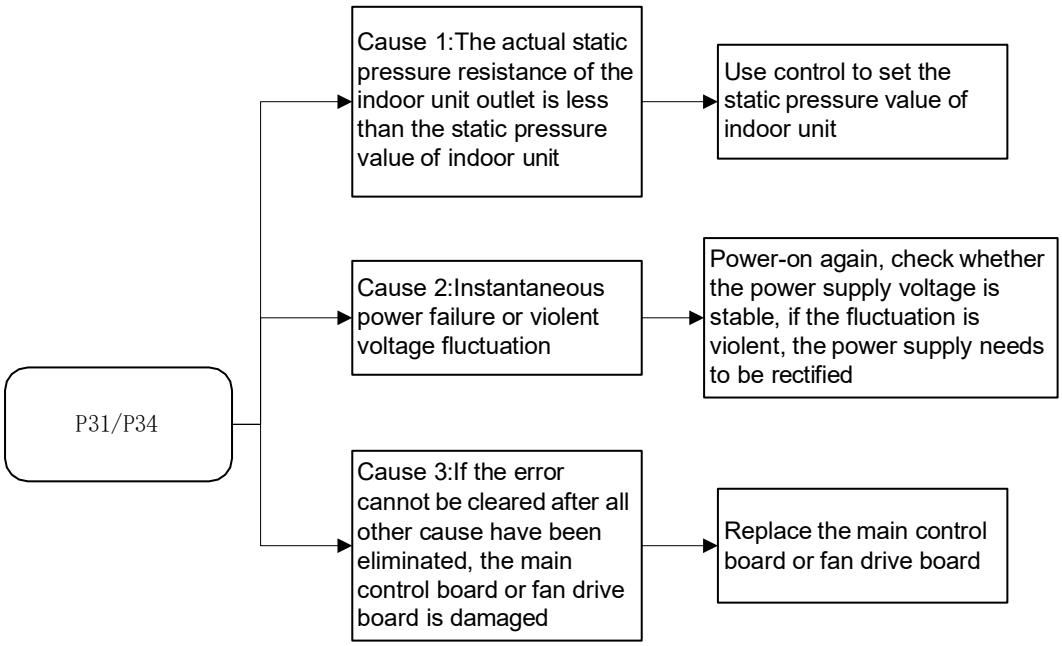


8.1.39 F01, F11, F21 - T2A (heat exchanger liquid pipe temperature sensor) short-circuits or cuts off, T2 (heat exchanger middle temperature sensor) short-circuits or cuts off, and T2B (heat exchanger gas pipe temperature sensor) short-circuits or cuts off

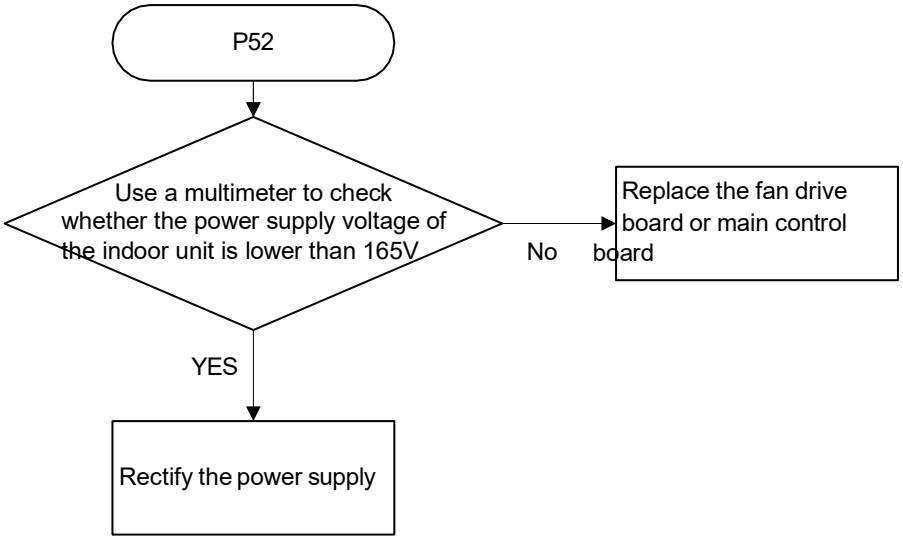
<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position</td></tr>
<tr><td>  </td><td>Panel, display box, and wired controller</td></tr>
<tr><td rowspan="2">Error impact</td><td colspan="2">The faulty IDU stops. Other IDUs of the same system: operate normally.</td></tr>
<tr><td colspan="2">ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="2">When detecting that the temperature sensor short-circuits or cuts off</td></tr>
<tr><td>Error recovery</td><td colspan="2">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="2">■ The temperature sensor is damaged.
■ The sensor plug connecting to the T2A/T2/T2B port in the IDU main control board is loose.
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 

Note:
1) The F01/F11/F21 codes respectively correspond to T2A/T2/T2B temperature sensors. Check the wiring nameplate to find the sensor port on the main control board.
2) Measure the resistance between two pins of the sensor plug with a multimeter. A resistance value close to 0 indicates a short circuit has occurred in the temperature sensor, and a resistance value close to infinity indicates an open circuit in the temperature sensor.</td></tr>
</table>

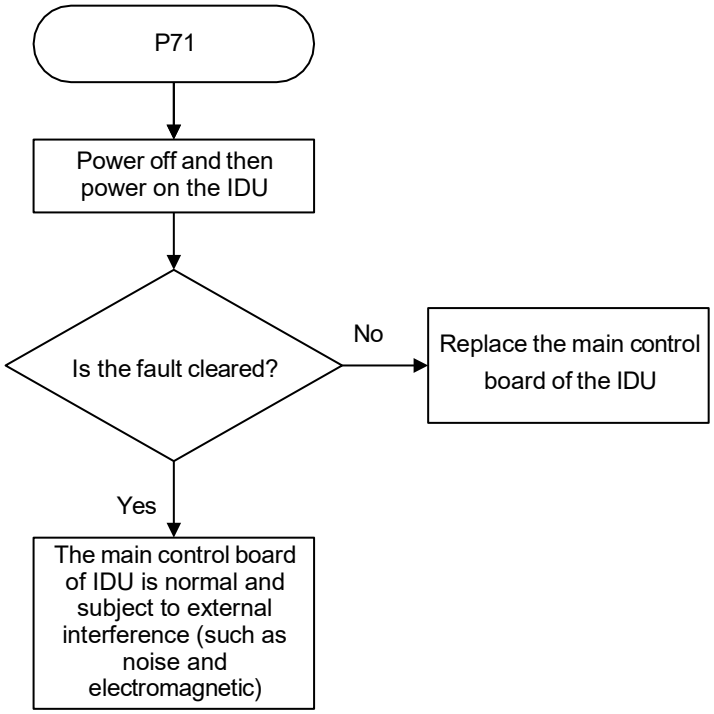
8.1.40 P31/P34 - Fan drive board AC side overcurrent protection

Error display	Digital display	Display position
	 	Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	■ P31: The current value detected on the AC side of the fan drive board exceeds the programmed overcurrent protection value ■ P34: Six P31 failures within an hour.	
Error recovery	■ P31: Automatic recovery ■ P34: Power-on again	
Possible cause	■ The actual static pressure resistance of the indoor unit outlet is less than the static pressure value of indoor unit ■ Instantaneous power failure or violent voltage fluctuation ■ Indoor unit fan driver board is damaged ■ Indoor unit main control board is damaged	
Troubleshooting	 Note 1: When replacing the fan drive board, the following should be noted: For models where the fan drive board is integrated and soldered onto the main control board, if either the fan drive board or the indoor unit main control board is damaged, the entire control board needs to be replaced."	

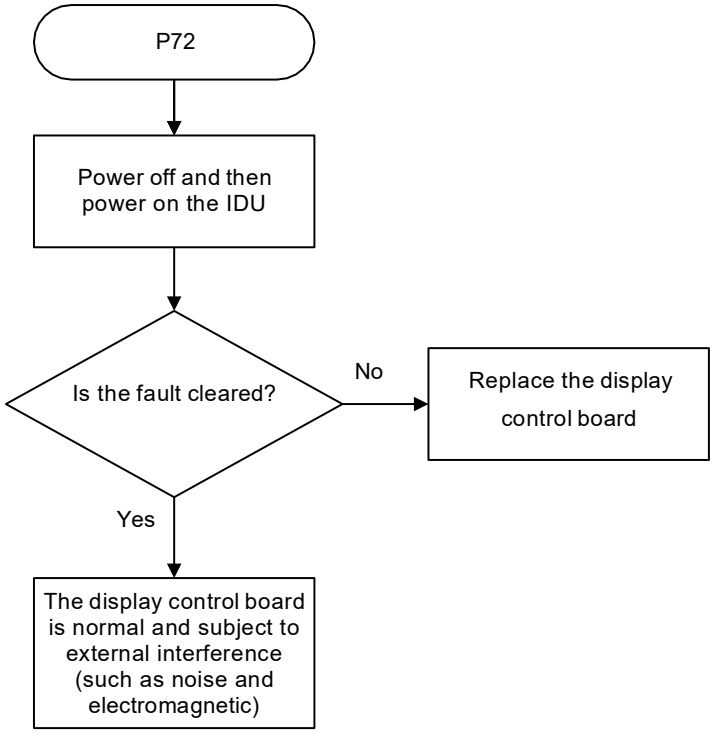
8.1.41 P52 - The voltage of the power supply is too low

Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	■ Power supply voltage is below the programmed protection threshold (165V)	
Error recovery	■ Automatic recovery	
Possible cause	■ Power supply voltage is lower than 165V ■ Indoor unit fan driver board is damaged	
Troubleshooting		

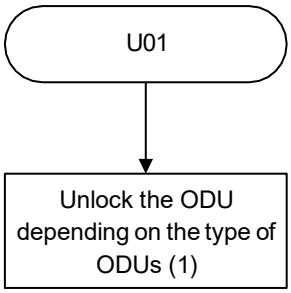
8.1.42 P71 - Main control board EEPROM fault

Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	When the master chip cannot receive data from EEPROM (EEPROM: a non-volatile memory whose data are kept even when powered off)	
Error recovery	Automatic recovery	
Possible cause	■ The IDU main control board is damaged. ■ External interference (such as noise and electromagnetic)	
Troubleshooting		

8.1.43 P72 - IDU display control board EEPROM fault

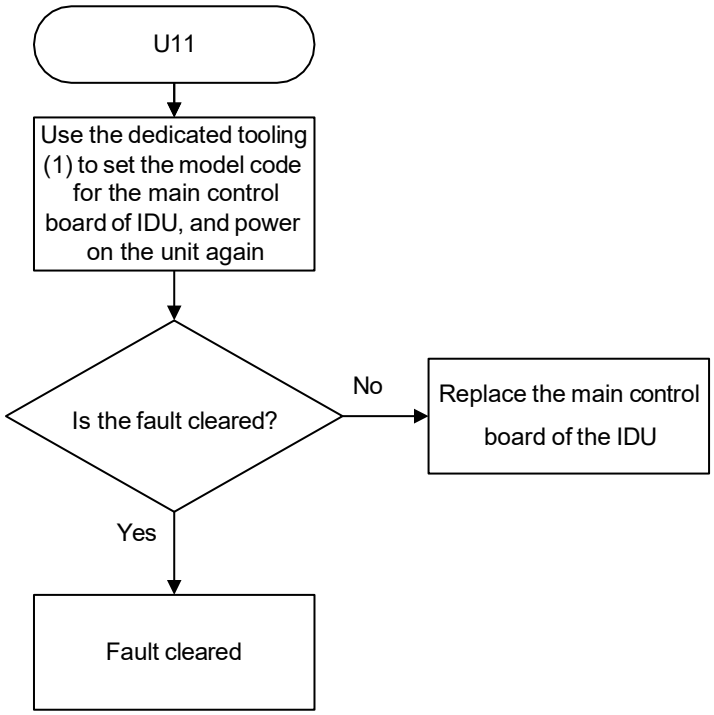
Error display	Digital display	Display position
		Panel or display box
Error impact	The faulty IDU operates normally, and the error code is displayed on the panel or display box only. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	Unable to read data from display control board EEPROM (EEPROM: a non-volatile memory whose data are kept even when powered off)	
Error recovery	Automatic recovery	
Possible cause	■ The display control board is damaged. ■ External interference (such as noise and electromagnetic)	
Troubleshooting		

8.1.44 U01 - Locked (electronic lock)

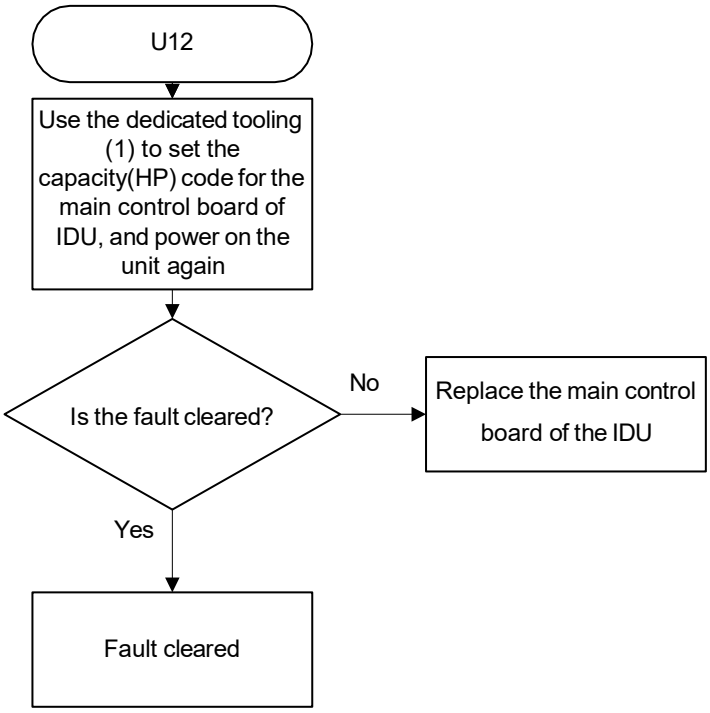
<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position</td></tr>
<tr><td>  </td><td>Panel, display box, and wired controller</td></tr>
<tr><td rowspan="2">Error impact</td><td colspan="2">All IDUs of the same system: stop running, displaying code "U01"</td></tr>
<tr><td colspan="2">ODU of the same system: stops running, displaying code "U01"</td></tr>
<tr><td>Error trigger</td><td colspan="2">When detecting that the ODU is locked</td></tr>
<tr><td>Error recovery</td><td colspan="2">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="2">The ODU is still locked.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 

Note 1: To get unlocking methods and tools, please contact your local dealer or technical support personnel.</td></tr>
</table>

8.1.45 U11 - Unit model code not set

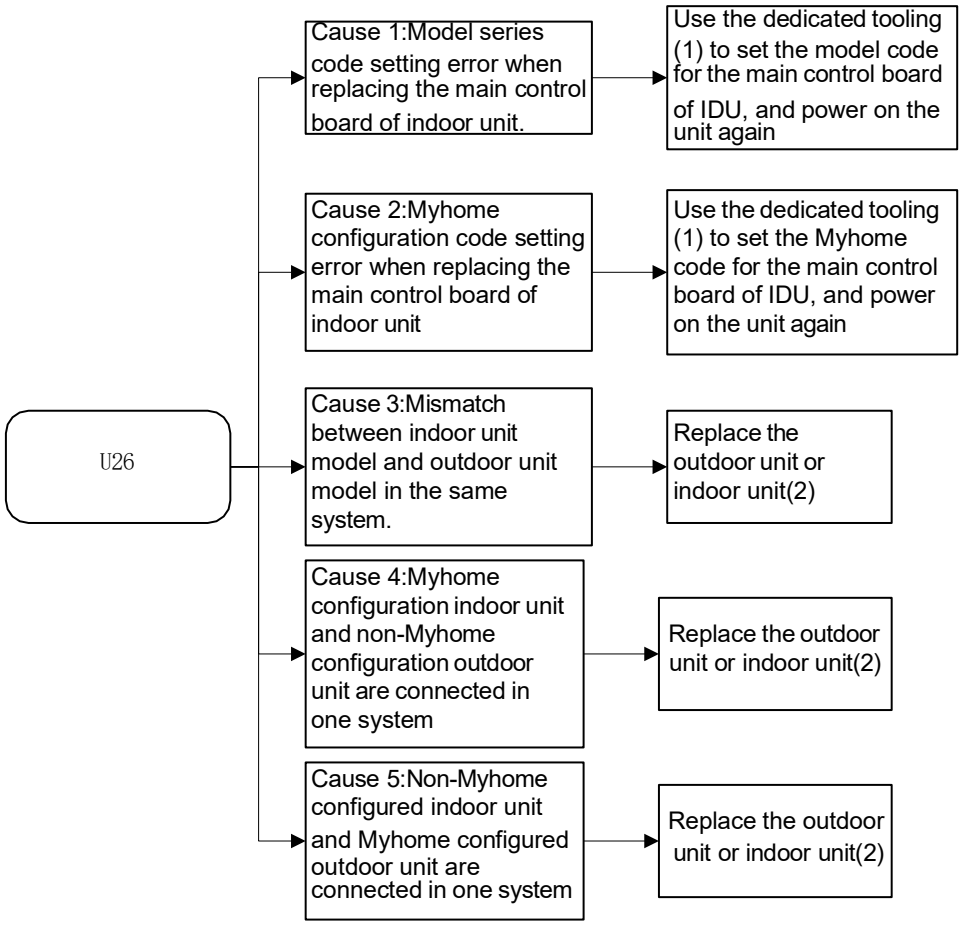
Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	1) The faulty IDU stops running. 2) Other IDUs of the same system: ■ If the address for the faulty IDU has been set, other IDUs will operate normally. ■ If the address of the faulty IDU was not set, other IDUs will display error code "A51"-ODU fault. (The indoor unit of V6 platform displays "Ed" code)	
	ODU of the same system: ■ If the address for the faulty IDU has been set, the ODU will operate normally. ■ If the address of the faulty IDU was not set, the ODU will display the error code "C26" -number of IDUs reduced. (The outdoor unit of V6 platform displays "H7" code.)	
Error trigger	When detecting that the unit model code for IDU main control board is not set	
Error recovery	Automatic recovery	
Possible cause	■ The unit model code has not been set after replacing the IDU main control board. ■ The IDU main control board is damaged.	
Troubleshooting	 Note 1: For specialized tooling and instructions, please contact your local dealer or technical support personnel.	

8.1.46 U12 - Capacity(HP) code not set

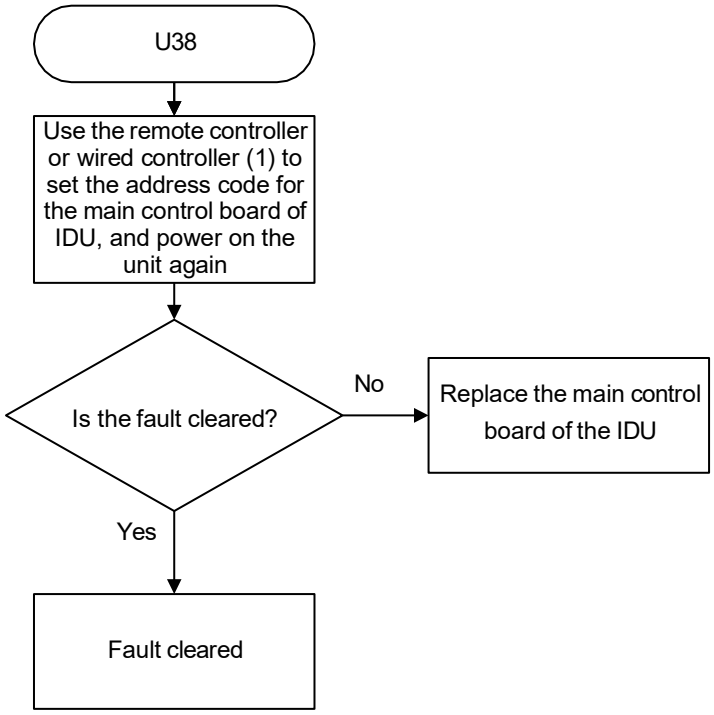
<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position</td></tr>
<tr><td>  </td><td>Panel, display box, and wired controller</td></tr>
<tr><td rowspan="2">Error impact</td><td colspan="2">1) The faulty IDU stops running.
2) Other IDUs of the same system:
■ If the address for the faulty IDU has been set, other IDUs will operate normally.
■ If the address of the faulty IDU was not set, other IDUs will display error code "A51"-ODU fault.</td></tr>
<tr><td colspan="2">ODU of the same system:
■ If the address for the faulty IDU has been set, the ODU will operate normally.
■ If the address of the faulty IDU was not set, the ODU will display the error code "C26" -number of IDUs reduced.</td></tr>
<tr><td>Error trigger</td><td colspan="2">When detecting that the capacity(HP) code for IDU main control board has not been set</td></tr>
<tr><td>Error recovery</td><td colspan="2">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="2">■ The capacity(HP) code has not been set after replacing the IDU main control board.
■ The new IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 

Note 1: For specialized tooling and instructions, please contact your local dealer or technical support personnel.</td></tr>
</table>

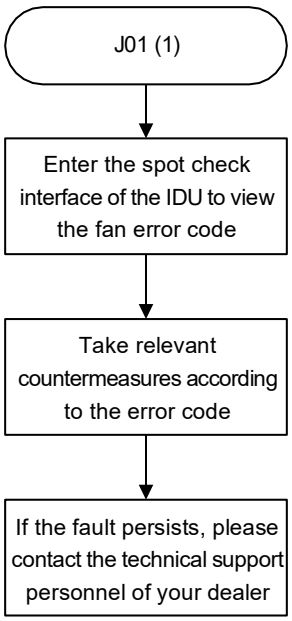
8.1.47 U26 - Mismatch between indoor unit model and outdoor unit model

Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	1) The faulty IDU stops running. 2) Other IDUs of the same system will operate normally	
	ODU of the same system: ■ If there is one IDU in the system is operating normally, the ODU will operate normally. ■ If all the IDUs in the system are display error code "U26", the ODU will operate normally.	
Error trigger	■ There is a conflict between the model series code of indoor unit and the model series code of outdoor unit ■ The communication flag bit (Myhome identification flag bit) between indoor unit and outdoor unit has a matching conflict	
Error recovery	Automatic recovery	
Possible cause	■ Model series code setting error when replacing the main control board of indoor unit. ■ Mismatch between indoor unit model and outdoor unit model in the same system. ■ Myhome configuration code setting error when replacing the main control board of indoor unit ■ Myhome configuration indoor unit and non-Myhome configuration outdoor unit are connected in one system ■ Non-Myhome configured indoor unit and Myhome configured outdoor unit are connected in one system	
Troubleshooting	 Note: 1. For specialized tooling and instructions, please contact your local dealer or technical support personnel. 2. Please contact your local dealer or technical support staff to confirm the detail.	

8.1.48 U38 - Address code not detected

Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	1) The faulty IDU stops running. 2) Other IDUs of the same system: The fan continues running, the EEV is closed, and ODU error code "A51" is displayed (V6 platform IDU displays the code "Ed").	
	ODU of the same system: Otherwise, the ODU will display the error code "C26" (number of IDUs reduced) (V6 platform ODU displays the code "H7")	
Error trigger	When detecting that the address code for IDU main control board has not been set	
Error recovery	Automatic recovery	
Possible cause	■ The address code has not been set after replacing the IDU main control board. ■ The new IDU main control board is damaged.	
Troubleshooting	 Note 1: For instructions on how to set up addresses for a remote controller or a wired controller, please refer to relevant manuals.	

8.1.49 J01 - Motor failed more than once

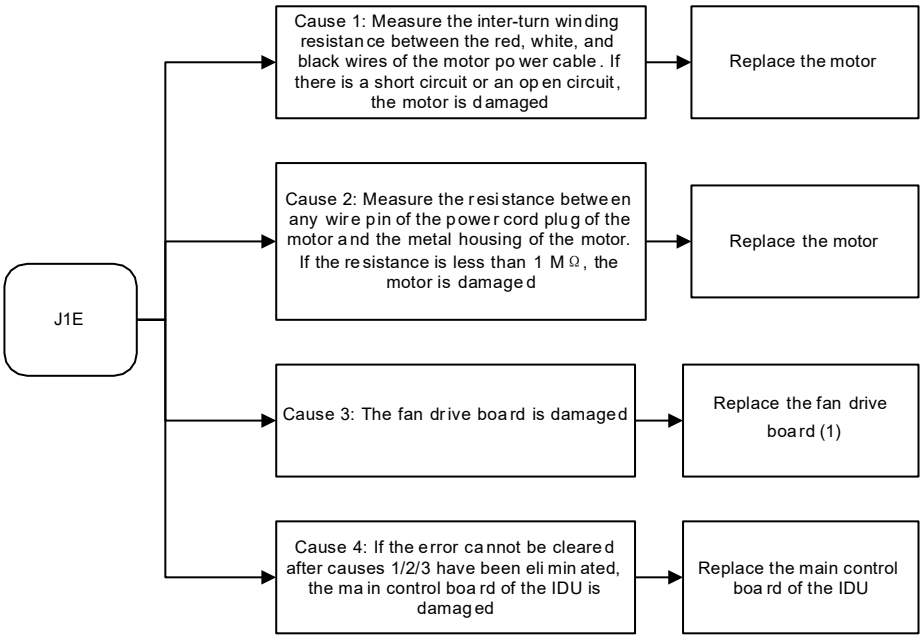
Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	If fan control faults have occurred 10 times in 120 min (1)	
Error recovery	Automatic recovery	
Possible cause	The fan drive faults have caused the motor to fail more than once.	
Troubleshooting		

Note:

1. Enter the spot check interface of the IDU to query fan drive fault code (see the table below). For specific troubleshooting methods, please refer to this document.

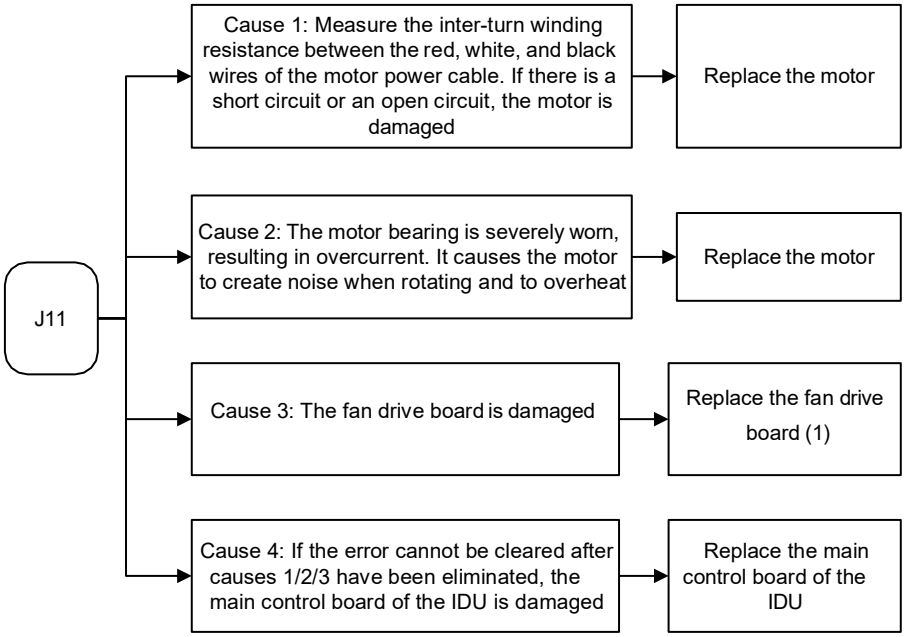
No.	Error	Fan drive fault name
1	J1E	IPM (fan module) overcurrent protection
2	J11	Instantaneous overcurrent protection for phase
3	J3E	Low bus voltage fault
4	J31	High bus voltage fault
5	J43	Phase current sample bias error
6	J47	IPM (fan module) and IDU unmatched
7	J5E	Motor startup failure
8	J52	Motor blocking protection
9	J55	Speed control mode setting error
10	J6E	Phase lack protection of motor

8.1.50 J1E - IPM (fan module) overcurrent protection

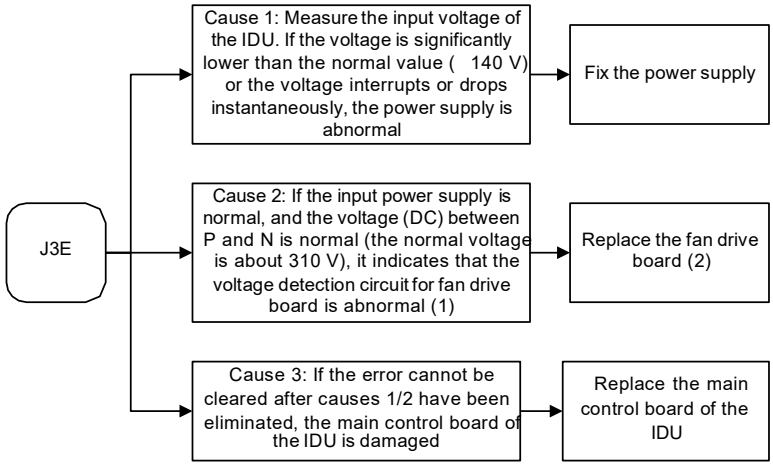
<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td>Error impact</td><td colspan="3">The faulty IDU stops. Other IDUs of the same system: operate normally.
ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="3">The fault is triggered if one of the following conditions is met:
1) The current value (AC) detected for any phase line of U/V/W on the IPM exceeds the set overcurrent protection value of the IPM.
2) A fault signal output by the IPM protection circuit is detected.</td></tr>
<tr><td>Error recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="3">■ The motor insulation is damaged or motor coils are short circuited.
■ The fan drive board is damaged.
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="3"> 

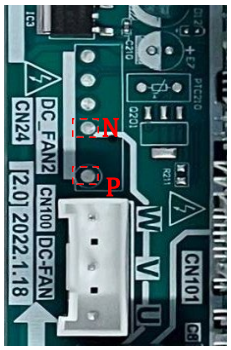
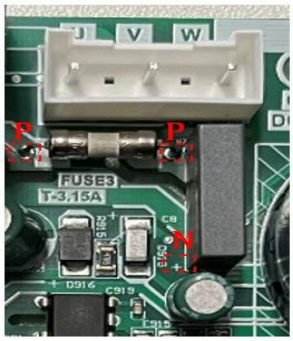
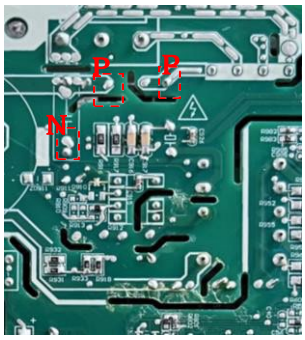
Note 1: Please observe the following rule when replacing the fan drive board: For units whose fan drive board is welded onto the main control board, if either the fan drive board or main control board becomes faulty, the whole control board has to be replaced.</td></tr>
</table>

8.1.51 J11 - Instantaneous overcurrent protection for phase current

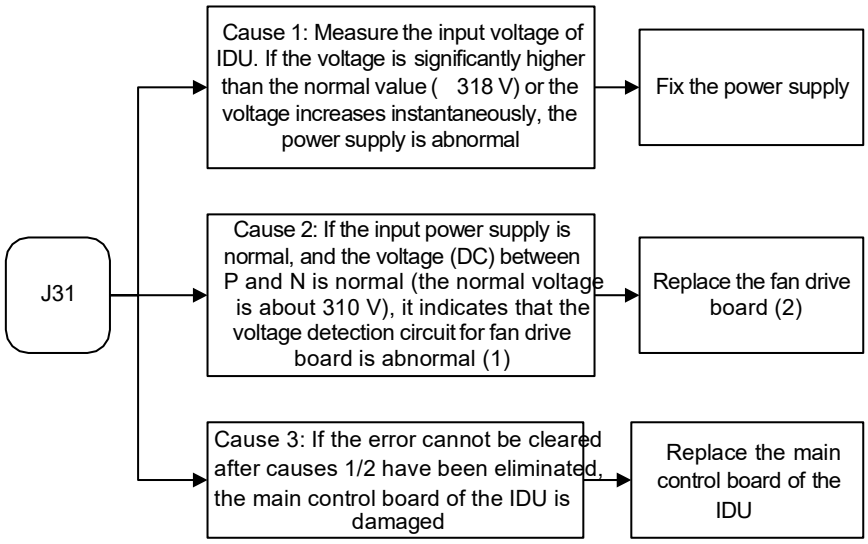
Error display	Digital display	Display position	
		Panel or display box	Wired controller
		Spot check interface query	Error code is not displayed
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.		
	ODU of the same system: operate normally.		
Error trigger	The current value (AC) detected for any phase line of U/V/W on the IPM exceeds the set overcurrent protection value of the driver.		
Error recovery	Automatic recovery		
Possible cause	■ Motor coils are short circuited, or motor bearing is worn, resulting in abnormal increase of motor current. ■ The fan drive board is damaged. ■ The IDU main control board is damaged.		
Troubleshooting	 Note 1: Please observe the following rule when replacing the fan drive board: For units whose fan drive board is welded onto the main control board, if either the fan drive board or main control board becomes faulty, the whole control board has to be replaced.		

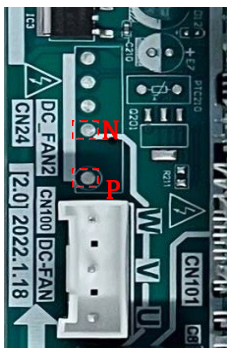
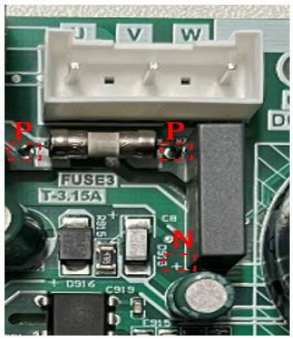
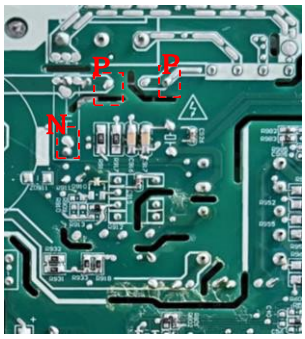
8.1.52 J3E - Low bus voltage fault

<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td>Error impact</td><td colspan="3">The faulty IDU stops. Other IDUs of the same system: operate normally.
ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="3">When the bus voltage (DC voltage) is below the threshold value of the driver (165 V)</td></tr>
<tr><td>Error recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="3">■ The input voltage is too low, resulting in low bus voltage.
■ The input voltage encounters transient drop and interruption, resulting in too low transient bus voltage.
■ The fan drive board is damaged, so the bus voltage detection circuit becomes abnormal.
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="3">


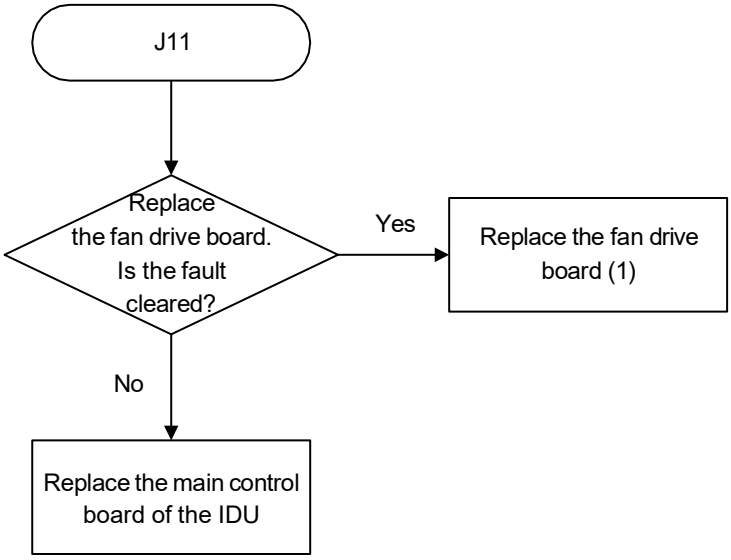
Note:
1. Please refer to the figure below when measuring voltage between P and N. Make sure P/N measuring points are selected according to PCB type.
<table>
<tr><td>PCB type 1</td><td colspan="2">PCB type 2</td></tr>
<tr><td>P/N measuring point</td><td>P/N measuring point
(front of PCB)</td><td>P/N measuring point
(back of PCB)</td></tr>
<tr><td> 
</td><td> 
</td><td> 
</td></tr>
</table>
2. Please observe the following rule when replacing the fan drive board: For units whose fan drive board is welded onto the main control board, if either the fan drive board or main control board becomes faulty, the whole control board has to be replaced.</td></tr>
</table>

8.1.53 J31 - High bus voltage fault

<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td rowspan="2">Error impact</td><td colspan="3">The faulty IDU stops. Other IDUs of the same system: operate normally.</td></tr>
<tr><td colspan="3">ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="3">When the bus voltage (DC voltage) is greater than the threshold value of the driver (450V)</td></tr>
<tr><td>Error recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="3">■ The input voltage is too high, resulting in high bus voltage.
■ Instantaneous high input voltage.
■ The fan drive board is damaged, so the bus voltage detection circuit becomes abnormal.
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="3"> 

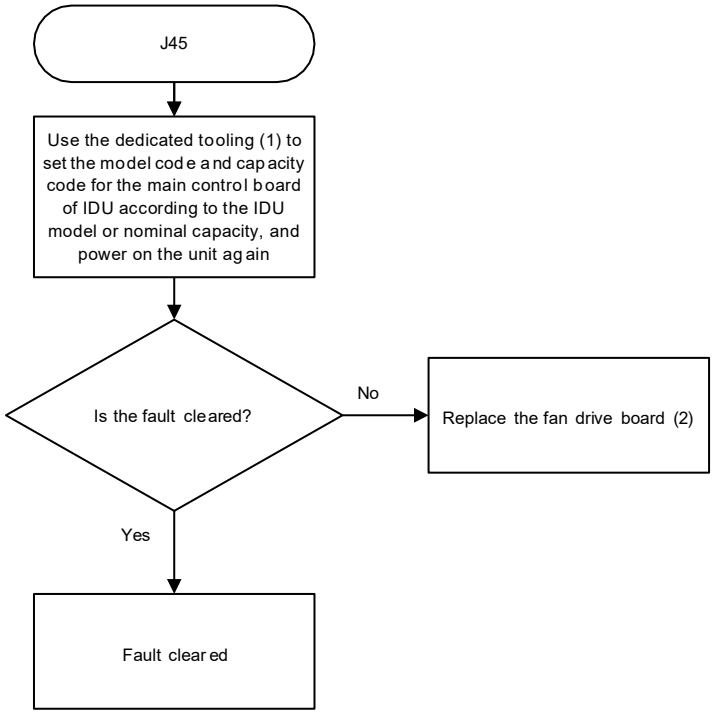
Note:
1. Please refer to the figure below when measuring voltage between P and N. Make sure P/N measuring points are selected according to PCB type.
<table>
<tr><td>PCB type 1</td><td colspan="2">PCB type 2</td></tr>
<tr><td>P/N measuring point</td><td>P/N measuring point (front of PCB)</td><td>P/N measuring point (back of PCB)</td></tr>
<tr><td> 
</td><td> 
</td><td> 
</td></tr>
</table>
2. Please observe the following rule when replacing the fan drive board: For units whose fan drive board is welded onto the main control board, if either the fan drive board or main control board becomes faulty, the whole control board has to be replaced.</td></tr>
</table>

8.1.54 J43 - Phase current sample bias error

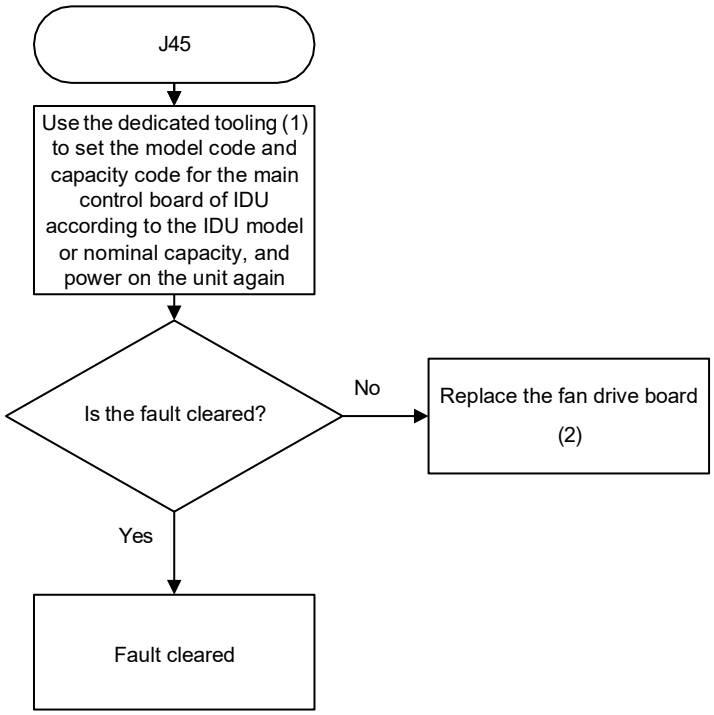
<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td>Error impact</td><td colspan="3">The faulty IDU stops. Other IDUs of the same system: operate normally.
ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="3">When detecting that the current sample is 50% greater than 2.5 V</td></tr>
<tr><td>Error recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="3">■ The current sampling circuit of the fan drive board is damaged.
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="3"> 

Note 1: Please observe the following rule when replacing the fan drive board: For units whose fan drive board is welded onto the main control board, if either the fan drive board or main control board becomes faulty, the whole control board has to be replaced.</td></tr>
</table>

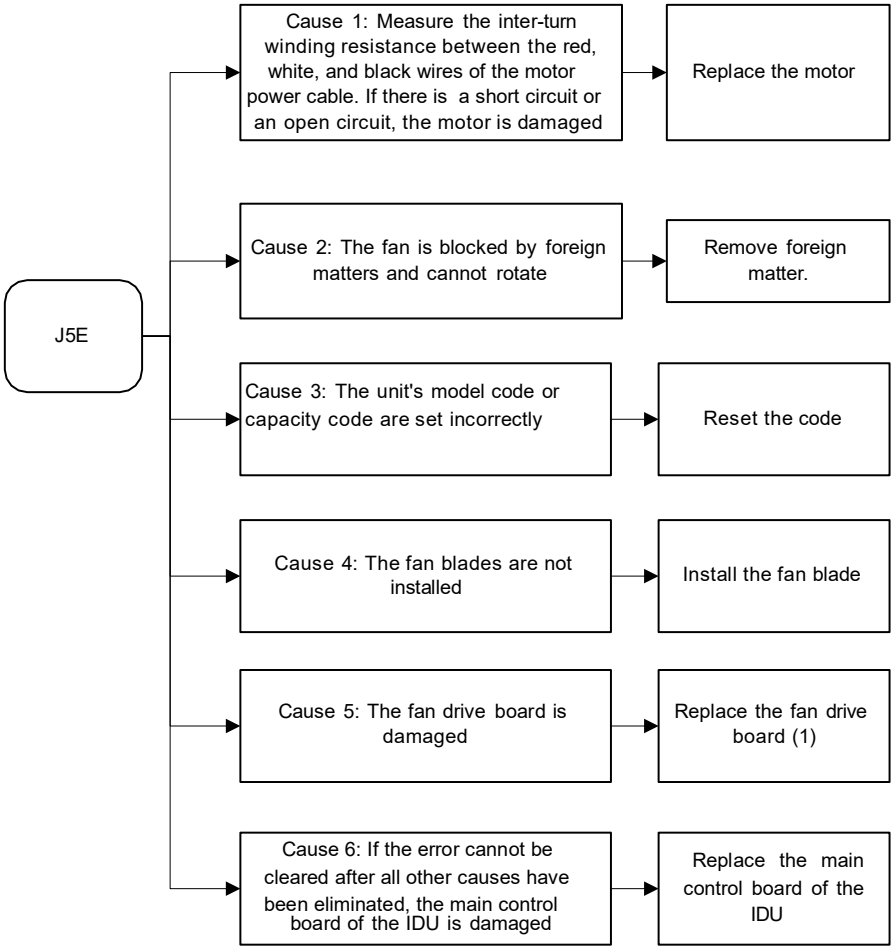
8.1.55 J45 - Motor and IDU unmatched

Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	If the motor code sent by the IDU main control board is not found in the fan driver	
Error recovery	Automatic recovery	
Possible cause	■ Unit model code or capacity code is incorrectly set. ■ The fan drive board is wrong or damaged.	
Troubleshooting	 Note: 1. For specialized tooling and instructions, please contact your local dealer or technical support personnel. 2. Please observe the following rule when replacing the fan drive board: For units whose fan drive board is welded onto the main control board, if either the fan drive board or main control board becomes faulty, the whole control board has to be replaced.	

8.1.56 J47 - IPM (fan module) and IDU unmatched

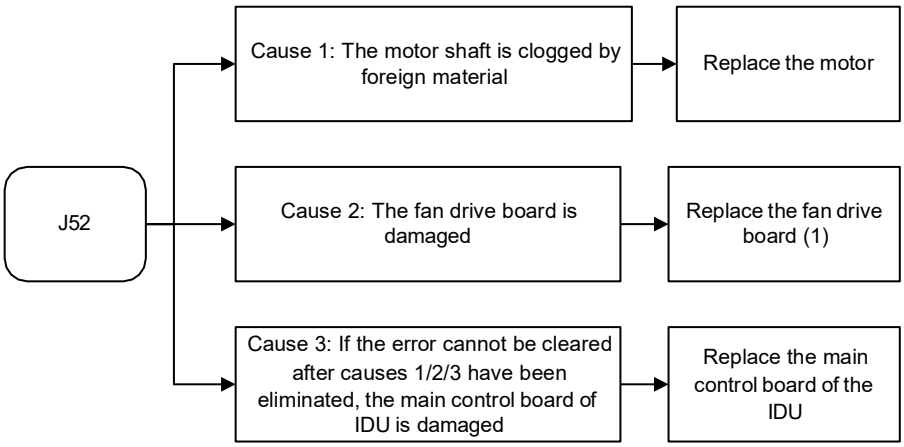
Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	When detecting that the fan drive board does not match the set value of the driver	
Error recovery	Automatic recovery	
Possible cause	■ Unit model code or capacity(HP) code is incorrectly set. ■ The fan drive board is wrong or damaged.	
Troubleshooting	 Note: 1. For specialized tooling and instructions, please contact your local dealer or technical support personnel. 2. Please observe the following rule when replacing the fan drive board: For units whose fan drive board is welded onto the main control board, if either the fan drive board or main control board becomes faulty, the whole control board has to be replaced.	

8.1.57 J5E - Motor startup failure

<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td>Error impact</td><td colspan="3">The faulty IDU stops. Other IDUs of the same system: operate normally.
ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="3">Motor startup failure</td></tr>
<tr><td>Error recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="3">■ Motor winding short-circuits or cuts off
■ The fan is blocked by foreign material or the motor is damaged and cannot rotate.
■ The unit's model code or capacity code are set incorrectly
■ Fan blade is not installed
■ The fan drive module is damaged.
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="3"> 

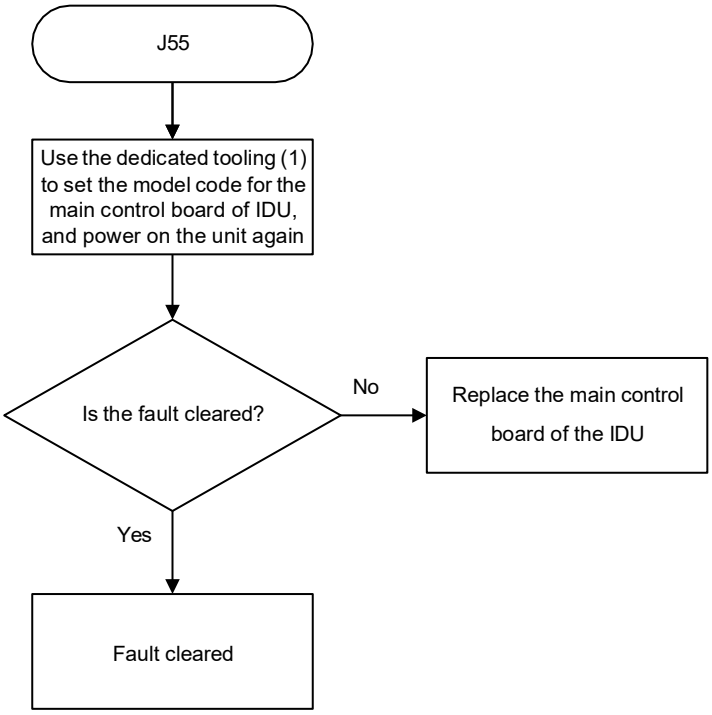
Note 1: Please observe the following rule when replacing the fan drive board: For units whose fan drive board is welded onto the main control board, if either the fan drive board or main control board becomes faulty, the whole control board has to be replaced.</td></tr>
</table>

8.1.58 J52 - Motor blocking protection

<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td>Error impact</td><td colspan="3">The faulty IDU stops. Other IDUs of the same system: operate normally.</td></tr>
<tr><td></td><td colspan="3">ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="3">The motor is blocked.</td></tr>
<tr><td>Error recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="3">■ The motor shaft gets stuck.
■ The fan drive board is damaged.
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="3"> 

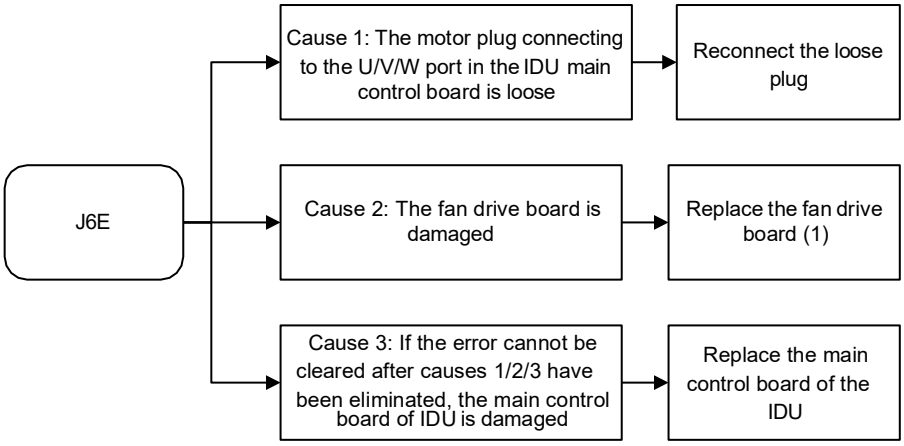
Note 1: Please observe the following rule when replacing the fan drive board: For units whose fan drive board is welded onto the main control board, if either the fan drive board or main control board becomes faulty, the whole control board has to be replaced.</td></tr>
</table>

8.1.59 J55 - Speed control mode setting error

<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td>Error impact</td><td colspan="3">The faulty IDU stops. Other IDUs of the same system: operate normally.
ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="3">The IDU is non constant air flow control, but its main control program sets the fan speed according to the constant air flow control mode.</td></tr>
<tr><td>Error recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="3">■ The IDU model is set incorrectly.
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="3"> 

Note 1: For specialized tooling and instructions, please contact your local dealer or technical support personnel.</td></tr>
</table>

8.1.60 J6E - Phase lack protection of motor

<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td>Error impact</td><td colspan="3">The faulty IDU stops. Other IDUs of the same system: operate normally.</td></tr>
<tr><td></td><td colspan="3">ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="3">When the motor phase lacks protection</td></tr>
<tr><td>Error recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="3">■ The motor plug connecting to the U/V/W port in the IDU main control board is loose.
■ The fan drive board is damaged.
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="3"> 

Note 1: Please observe the following rule when replacing the fan drive board: For units whose fan drive board is welded onto the main control board, if either the fan drive board or main control board becomes faulty, the whole control board has to be replaced.</td></tr>
</table>

8 Appendix

8.1 Temperature Sensor Resistance Characteristics

Table 9.1: Indoor temperature sensors resistance characteristics

R25=10KΩ ±3% B25/50=4100K±3%

Temperature (°C)	Resistance min(kΩ)	Resistance Normal(kΩ)	Resistance max(kΩ)	Temperature (°C)	Resistance min(kΩ)	Resistance Normal(kΩ)	Resistance max(kΩ)
-40	337.762	388.619	446.732	0	32.140	34.385	36.753
-39	315.441	362.171	415.450	1	30.532	32.613	34.803
-38	294.802	337.767	386.646	2	29.013	30.941	32.968
-37	275.699	315.226	360.096	3	27.578	29.364	31.238
-36	258.001	294.386	335.600	4	26.221	27.876	29.609
-35	241.589	275.100	312.977	5	24.938	26.471	28.074
-34	226.358	257.238	292.067	6	23.725	25.145	26.626
-33	212.210	240.679	272.721	7	22.578	23.892	25.260
-32	199.059	225.317	254.809	8	21.492	22.708	23.972
-31	186.823	211.053	238.210	9	20.464	21.590	22.757
-30	175.432	197.799	222.817	10	19.491	20.532	21.609
-29	164.820	185.475	208.531	11	18.569	19.532	20.526
-28	154.925	174.007	195.264	12	17.696	18.586	19.502
-27	145.695	163.330	182.934	13	16.868	17.690	18.536
-26	137.078	153.381	171.467	14	16.084	16.843	17.622
-25	129.030	144.105	160.797	15	15.341	16.041	16.758
-24	121.508	135.452	150.861	16	14.635	15.281	15.941
-23	114.473	127.375	141.604	17	13.966	14.562	15.169
-22	107.892	119.832	132.974	18	13.332	13.880	14.438
-21	101.730	112.783	124.925	19	12.729	13.234	13.746
-20	95.959	106.193	117.413	20	12.157	12.621	13.091
-19	90.551	100.028	110.399	21	11.614	12.041	12.471
-18	85.480	94.259	103.846	22	11.099	11.490	11.884
-17	80.724	88.857	97.721	23	10.608	10.967	11.327
-16	76.260	83.796	91.994	24	10.143	10.471	10.800
-15	72.070	79.054	86.636	25	9.700	10.000	10.300
-14	68.134	74.607	81.620	26	9.254	9.553	9.853
-13	64.436	70.436	76.924	27	8.830	9.128	9.428
-12	60.960	66.521	72.525	28	8.429	8.725	9.024
-11	57.691	62.847	68.402	29	8.048	8.342	8.639
-10	54.615	59.396	64.536	30	7.686	7.977	8.273
-9	51.721	56.153	60.911	31	7.342	7.631	7.924
-8	48.996	53.106	57.509	32	7.016	7.302	7.592
-7	46.430	50.241	54.315	33	6.706	6.988	7.276
-6	44.012	47.546	51.317	34	6.412	6.690	6.975
-5	41.733	45.010	48.500	35	6.132	6.407	6.688
-4	39.585	42.623	45.853	36	5.866	6.137	6.414
-3	37.558	40.376	43.365	37	5.613	5.880	6.153
-2	35.647	38.259	41.025	38	5.373	5.635	5.905
-1	33.843	36.264	38.824	39	5.144	5.402	5.667

Table 9.1: Indoor temperature sensors resistance characteristics(continues)

Temperature (°C)	Resistance min(kΩ)	Resistance Normal(kΩ)	Resistance max(kΩ)	Temperature (°C)	Resistance min(kΩ)	Resistance Normal(kΩ)	Resistance max(kΩ)
40	4.926	5.179	5.441	**80**	1.060	1.166	1.281
41	4.718	4.968	5.225	**81**	1.025	1.128	1.240
42	4.521	4.766	5.019	**82**	0.990	1.091	1.201
43	4.333	4.573	4.822	**83**	0.958	1.056	1.164
44	4.154	4.390	4.634	**84**	0.926	1.022	1.127
45	3.983	4.215	4.455	**85**	0.895	0.990	1.092
46	3.821	4.047	4.283	**86**	0.866	0.958	1.059
47	3.666	3.888	4.120	**87**	0.838	0.928	1.026
48	3.518	3.736	3.963	**88**	0.811	0.899	0.995
49	3.377	3.590	3.813	**89**	0.785	0.870	0.965
50	3.243	3.451	3.670	**90**	0.760	0.843	0.935
51	3.114	3.318	3.533	**91**	0.735	0.817	0.907
52	2.991	3.192	3.402	**92**	0.712	0.792	0.880
53	2.874	3.070	3.276	**93**	0.689	0.768	0.854
54	2.762	2.954	3.156	**94**	0.668	0.744	0.829
55	2.656	2.843	3.041	**95**	0.647	0.722	0.804
56	2.553	2.737	2.931	**96**	0.627	0.700	0.781
57	2.456	2.635	2.825	**97**	0.607	0.679	0.758
58	2.362	2.538	2.723	**98**	0.589	0.659	0.736
59	2.273	2.444	2.626	**99**	0.571	0.639	0.715
60	2.187	2.355	2.533	**100**	0.553	0.620	0.694
61	2.105	2.269	2.444	**101**	0.537	0.602	0.674
62	2.027	2.187	2.358	**102**	0.520	0.584	0.655
63	1.952	2.109	2.276	**103**	0.505	0.567	0.637
64	1.880	2.033	2.197	**104**	0.490	0.551	0.619
65	1.811	1.961	2.121	**105**	0.475	0.535	0.602
66	1.745	1.892	2.048	**106**	0.461	0.520	0.585
67	1.682	1.825	1.978	**107**	0.448	0.505	0.569
68	1.622	1.761	1.911	**108**	0.434	0.490	0.553
69	1.564	1.700	1.847	**109**	0.422	0.477	0.538
70	1.508	1.641	1.785	**110**	0.410	0.463	0.523
71	1.455	1.585	1.725	**111**	0.398	0.450	0.509
72	1.403	1.530	1.668	**112**	0.386	0.438	0.495
73	1.354	1.478	1.613	**113**	0.375	0.425	0.482
74	1.307	1.428	1.559	**114**	0.365	0.414	0.469
75	1.261	1.380	1.509	**115**	0.354	0.402	0.456
76	1.218	1.334	1.460	**116**	0.344	0.391	0.444
77	1.176	1.289	1.412	**117**	0.335	0.381	0.433
78	1.136	1.247	1.367	**118**	0.325	0.370	0.421
79	1.098	1.206	1.323	**119**	0.317	0.361	0.410

Table 9.1: Indoor temperature sensors resistance characteristics(continues)

Temperature (°C)	Resistance min(kΩ)	Resistance Normal(kΩ)	Resistance max(kΩ)	Temperature (°C)	Resistance min(kΩ)	Resistance Normal(kΩ)	Resistance max(kΩ)
120	0.308	0.351	0.400				
121	0.299	0.342	0.389				
122	0.291	0.332	0.379				
123	0.283	0.324	0.370				
124	0.276	0.315	0.360				
125	0.268	0.307	0.351				
126	0.261	0.299	0.342				
127	0.254	0.291	0.334				
128	0.247	0.284	0.325				
129	0.241	0.277	0.317				
130	0.234	0.269	0.309				
131	0.228	0.263	0.302				
132	0.222	0.256	0.294				
133	0.217	0.250	0.287				
134	0.211	0.243	0.280				
135	0.206	0.237	0.273				
136	0.200	0.231	0.267				
137	0.195	0.226	0.260				
138	0.190	0.220	0.254				
139	0.186	0.215	0.248				
140	0.181	0.210	0.242				
141	0.177	0.205	0.237				
142	0.172	0.200	0.231				
143	0.168	0.195	0.226				
144	0.164	0.190	0.221				
145	0.160	0.186	0.216				
146	0.156	0.181	0.211				
147	0.152	0.177	0.206				
148	0.148	0.173	0.201				
149	0.145	0.169	0.197				
150	0.142	0.165	0.192				

8.2 Ambient Temperature and Standard Saturation Pressure of R410A

Table 9.2: Ambient Temperature and Standard Saturation Pressure of R410A (saturated vapor state)

Ambient Temperature (°C)	Saturated gauge pressure (kPa)	Saturated gauge pressure (psi)	Ambient Temperature (°C)	Saturated gauge pressure (kPa)	Saturated gauge pressure (psi)	Ambient Temperature (°C)	Saturated gauge pressure (kPa)	Saturated gauge pressure (psi)
-70	-65.879	-9.5549	**-30**	168.02	24.37	**10**	983.49	142.64
-69	-63.608	-9.2256	**-29**	179.3	26.005	**11**	1015.9	147.35
-68	-61.22	-8.8793	**-28**	190.93	27.693	**12**	1049.1	152.15
-67	-58.711	-8.5154	**-27**	202.94	29.434	**13**	1083	157.07
-66	-56.077	-8.1332	**-26**	215.32	31.23	**14**	1117.6	162.09
-65	-53.312	-7.7322	**-25**	228.09	33.081	**15**	1153	167.22
-64	-50.411	-7.3115	**-24**	241.25	34.99	**16**	1189.1	172.47
-63	-47.371	-6.8706	**-23**	254.81	36.957	**17**	1226	177.82
-62	-44.186	-6.4087	**-22**	268.78	38.983	**18**	1263.8	183.29
-61	-40.852	-5.925	**-21**	283.17	41.07	**19**	1302.3	188.88
-60	-37.362	-5.4189	**-20**	297.98	43.218	**20**	1341.6	194.58
-59	-33.713	-4.8896	**-19**	313.23	45.43	**21**	1381.8	200.41
-58	-29.898	-4.3363	**-18**	328.91	47.705	**22**	1422.7	206.35
-57	-25.913	-3.7583	**-17**	345.05	50.046	**23**	1464.6	212.42
-56	-21.752	-3.1548	**-16**	361.65	52.453	**24**	1507.3	218.61
-55	-17.409	-2.525	**-15**	378.71	54.928	**25**	1550.8	224.93
-54	-12.88	-1.868	**-14**	396.26	57.472	**26**	1595.3	231.37
-53	-8.1571	-1.1831	**-13**	414.28	60.086	**27**	1640.6	237.95
-52	-3.2361	-0.46936	**-12**	432.8	62.772	**28**	1686.8	244.65
-51	1.8893	0.27402	**-11**	451.82	65.531	**29**	1734	251.49
-50	7.2252	1.0479	**-10**	471.35	68.364	**30**	1782.1	258.47
-49	12.777	1.8532	**-9**	491.4	71.272	**31**	1831.1	265.58
-48	18.552	2.6908	**-8**	511.98	74.257	**32**	1881.1	272.83
-47	24.556	3.5615	**-7**	533.1	77.32	**33**	1932.1	280.23
-46	30.794	4.4663	**-6**	554.76	80.462	**34**	1984	287.76
-45	37.274	5.4062	**-5**	576.99	83.685	**35**	2037	295.44
-44	44.002	6.382	**-4**	599.77	86.99	**36**	2091	303.27
-43	50.985	7.3947	**-3**	623.13	90.378	**37**	2146	311.25
-42	58.228	8.4453	**-2**	647.08	93.851	**38**	2202	319.37
-41	65.739	9.5347	**-1**	671.62	97.41	**39**	2259.1	327.66
-40	73.525	10.664	**0**	696.76	101.06	**40**	2317.3	336.09
-39	81.592	11.834	**1**	722.51	104.79	**41**	2376.5	344.69
-38	89.947	13.046	**2**	748.89	108.62	**42**	2436.9	353.44
-37	98.598	14.3	**3**	775.9	112.53	**43**	2498.4	362.36
-36	107.55	15.599	**4**	803.55	116.54	**44**	2561	371.45
-35	116.81	16.942	**5**	831.85	120.65	**45**	2624.8	380.7
-34	126.39	18.332	**6**	860.82	124.85	**46**	2689.8	390.12
-33	136.3	19.768	**7**	890.45	129.15	**47**	2755.9	399.71
-32	146.53	21.252	**8**	920.77	133.55	**48**	2823.3	409.48
-31	157.1	22.786	**9**	951.78	138.04	**49**	2891.8	419.43

Table 9.2: Ambient Temperature and Standard Saturation Pressure of R410A (saturated vapor state)-continue

50	2961.7	429.55	**57**	3487.2	505.78	**64**	4083.4	592.25
51	3032.8	439.87	**58**	3567.8	517.47	**65**	4175	605.54
52	3105.2	450.36	**59**	3649.9	529.38	**66**	4268.3	619.07
53	3178.9	461.05	**60**	3733.5	541.5	**67**	4363.5	632.87
54	3253.9	471.94	**61**	3818.6	553.84	**68**	4460.5	646.93
55	3330.3	483.02	**62**	3905.3	566.41	**69**	4559.4	661.28
56	3408	494.3	**63**	3993.5	579.21	**70**	4660.4	675.93

Table 9.3: Ambient Temperature and Standard Saturation Pressure of R410A (Saturated liquid state)

Ambient Temperature (°C)	Saturated gauge pressure (kPa)	Saturated gauge pressure (psi)	Ambient Temperature (°C)	Saturated gauge pressure (kPa)	Saturated gauge pressure (psi)	Ambient Temperature (°C)	Saturated gauge pressure (kPa)	Saturated gauge pressure (psi)
-70	-65.704	-9.5296	**-37**	99.329	14.407	**-4**	602.1	87.327
-69	-63.425	-9.1991	**-36**	108.31	15.709	**-3**	625.53	90.725
-68	-61.029	-8.8515	**-35**	117.6	17.057	**-2**	649.55	94.209
-67	-58.511	-8.4863	**-34**	127.22	18.451	**-1**	674.16	97.779
-66	-55.867	-8.1028	**-33**	137.15	19.892	**0**	699.38	101.44
-65	-53.092	-7.7004	**-32**	147.42	21.381	**1**	725.21	105.18
-64	-50.182	-7.2782	**-31**	158.03	22.92	**2**	751.67	109.02
-63	-47.131	-6.8358	**-30**	168.98	24.509	**3**	778.76	112.95
-62	-43.935	-6.3722	**-29**	180.29	26.15	**4**	806.49	116.97
-61	-40.589	-5.8869	**-28**	191.97	27.843	**5**	834.88	121.09
-60	-37.087	-5.379	**-27**	204.01	29.59	**6**	863.93	125.3
-59	-33.425	-4.8479	**-26**	216.44	31.391	**7**	893.66	129.61
-58	-29.597	-4.2927	**-25**	229.24	33.249	**8**	924.07	134.02
-57	-25.599	-3.7128	**-24**	242.45	35.164	**9**	955.17	138.54
-56	-21.423	-3.1072	**-23**	256.05	37.137	**10**	986.98	143.15
-55	-17.066	-2.4752	**-22**	270.07	39.17	**11**	1019.5	147.87
-54	-12.521	-1.816	**-21**	284.5	41.263	**12**	1052.7	152.69
-53	-7.7823	-1.1287	**-20**	299.36	43.419	**13**	1086.7	157.62
-52	-2.8446	-0.41258	**-19**	314.66	45.637	**14**	1121.5	162.65
-51	2.2981	0.33331	**-18**	330.39	47.92	**15**	1156.9	167.8
-50	7.6519	1.1098	**-17**	346.58	50.268	**16**	1193.2	173.06
-49	13.223	1.9178	**-16**	363.23	52.683	**17**	1230.2	178.43
-48	19.017	2.7582	**-15**	380.35	55.165	**18**	1268.1	183.92
-47	25.041	3.6319	**-14**	397.95	57.717	**19**	1306.7	189.52
-46	31.3	4.5397	**-13**	416.03	60.34	**20**	1346.1	195.24
-45	37.802	5.4827	**-12**	434.61	63.034	**21**	1386.4	201.08
-44	44.553	6.4618	**-11**	453.69	65.802	**22**	1427.5	207.04
-43	51.558	7.4779	**-10**	473.28	68.643	**23**	1469.4	213.12
-42	58.826	8.5319	**-9**	493.39	71.561	**24**	1512.2	219.33
-41	66.362	9.625	**-8**	514.04	74.555	**25**	1555.9	225.67
-40	74.173	10.758	**-7**	535.22	77.627	**26**	1600.5	232.13
-39	82.267	11.932	**-6**	556.95	80.779	**27**	1645.9	238.72
-38	90.65	13.148	**-5**	579.24	84.012	**28**	1692.3	245.45

Table 9.3: Ambient Temperature and Standard Saturation Pressure of R410A (Saturated liquid state) -continue

29	1739.6	252.31	**43**	2505.8	363.44	**57**	3495.4	506.96
30	1787.8	259.3	**44**	2568.5	372.54	**58**	3575.9	518.64
31	1837	266.43	**45**	2632.4	381.8	**59**	3657.9	530.53
32	1887.1	273.7	**46**	2697.5	391.24	**60**	3741.3	542.63
33	1938.2	281.11	**47**	2763.7	400.85	**61**	3826.2	554.95
34	1990.3	288.67	**48**	2831.2	410.63	**62**	3912.7	567.48
35	2043.4	296.37	**49**	2899.8	420.59	**63**	4000.6	580.24
36	2097.5	304.22	**50**	2969.7	430.73	**64**	4090.2	593.23
37	2152.6	312.21	**51**	3040.9	441.05	**65**	4181.3	606.45
38	2208.8	320.36	**52**	3113.3	451.55	**66**	4274.1	619.9
39	2266	328.66	**53**	3187.1	462.25	**67**	4368.6	633.61
40	2324.3	337.11	**54**	3262.1	473.13	**68**	4464.8	647.56
41	2383.7	345.73	**55**	3338.5	484.21	**69**	4562.8	661.77
42	2444.2	354.5	**56**	3416.3	495.49	**70**	4662.6	676.25

8.3 Ambient Temperature and Standard Saturation Pressure of R32

Table 9.4: Ambient Temperature and Standard Saturation Pressure of R32

Ambient Temperature (°C)	Saturated gauge pressure (kPa)	Saturated gauge pressure (psi)	Ambient Temperature (°C)	Saturated gauge pressure (kPa)	Saturated gauge pressure (psi)	Ambient Temperature (°C)	Saturated gauge pressure (kPa)	Saturated gauge pressure (psi)
-70	-65.258	-9.4649	**-29**	183.58	26.627	**12**	1072.9	155.6
-69	-62.958	-9.1312	**-28**	195.42	28.344	**13**	1107.6	160.65
-68	-60.539	-8.7804	**-27**	207.64	30.115	**14**	1143.2	165.8
-67	-57.997	-8.4118	**-26**	220.24	31.943	**15**	1179.5	171.07
-66	-55.328	-8.0247	**-25**	233.24	33.828	**16**	1216.6	176.45
-65	-52.527	-7.6184	**-24**	246.64	35.772	**17**	1254.5	181.95
-64	-49.589	-7.1923	**-23**	260.45	37.775	**18**	1293.3	187.57
-63	-46.509	-6.7456	**-22**	274.68	39.838	**19**	1332.8	193.31
-62	-43.283	-6.2777	**-21**	289.33	41.964	**20**	1373.2	199.17
-61	-39.905	-5.7877	**-20**	304.43	44.153	**21**	1414.5	205.16
-60	-36.37	-5.275	**-19**	319.97	46.407	**22**	1456.6	211.27
-59	-32.673	-4.7388	**-18**	335.96	48.727	**23**	1499.6	217.5
-58	-28.808	-4.1782	**-17**	352.42	51.114	**24**	1543.5	223.87
-57	-24.77	-3.5926	**-16**	369.34	53.569	**25**	1588.3	230.36
-56	-20.553	-2.981	**-15**	386.75	56.093	**26**	1634	236.99
-55	-16.153	-2.3428	**-14**	404.65	58.689	**27**	1680.6	243.75
-54	-11.562	-1.677	**-13**	423.04	61.357	**28**	1728.2	250.65
-53	-6.7758	-0.98275	**-12**	441.94	64.098	**29**	1776.7	257.69
-52	-1.7877	-0.25928	**-11**	461.36	66.915	**30**	1826.2	264.87
-51	3.4082	0.49432	**-10**	481.31	69.808	**31**	1876.6	272.18
-50	8.8179	1.2789	**-9**	501.79	72.778	**32**	1928.1	279.65
-49	14.448	2.0955	**-8**	522.81	75.828	**33**	1980.5	287.25
-48	20.304	2.9448	**-7**	544.39	78.957	**34**	2034	295.01
-47	26.393	3.8279	**-6**	566.53	82.169	**35**	2088.5	302.91
-46	32.721	4.7457	**-5**	589.25	85.464	**36**	2144.1	310.97
-45	39.295	5.6992	**-4**	612.55	88.843	**37**	2200.7	319.18
-44	46.121	6.6893	**-3**	636.44	92.308	**38**	2258.3	327.55
-43	53.206	7.7169	**-2**	660.94	95.861	**39**	2317.1	336.07
-42	60.558	8.7831	**-1**	686.05	99.503	**40**	2377	344.75
-41	68.182	9.8889	**0**	711.78	103.23	**41**	2438	353.6
-40	76.086	11.035	**1**	738.14	107.06	**42**	2500.1	362.61
-39	84.277	12.223	**2**	765.15	110.97	**43**	2563.4	371.79
-38	92.762	13.454	**3**	792.8	114.99	**44**	2627.8	381.13
-37	101.55	14.728	**4**	821.13	119.09	**45**	2693.5	390.65
-36	110.64	16.048	**5**	850.12	123.3	**46**	2760.3	400.34
-35	120.05	17.413	**6**	879.8	127.6	**47**	2828.3	410.21
-34	129.79	18.824	**7**	910.18	132.01	**48**	2897.6	420.26
-33	139.86	20.284	**8**	941.26	136.52	**49**	2968.1	430.49
-32	150.26	21.793	**9**	973.06	141.13	**50**	3039.9	440.9
-31	161.01	23.353	**10**	1005.6	145.85	**51**	3113	451.5
-30	172.12	24.963	**11**	1038.8	150.67	**52**	3187.4	462.29

Table 9.4: Ambient Temperature and Standard Saturation Pressure of R32 (continue)

53	3263.1	473.27	**59**	3746.3	543.36	**65**	4282.9	621.19
54	3340.1	484.45	**60**	3831.9	555.77	**66**	4378	634.97
55	3418.6	495.82	**61**	3919	568.4	**67**	4474.7	649
56	3498.4	507.39	**62**	4007.6	581.25	**68**	4573.2	663.29
57	3579.6	519.17	**63**	4097.8	594.33	**69**	4673.4	677.82
58	3662.2	531.16	**64**	4189.6	607.64	**70**	4775.5	692.63

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