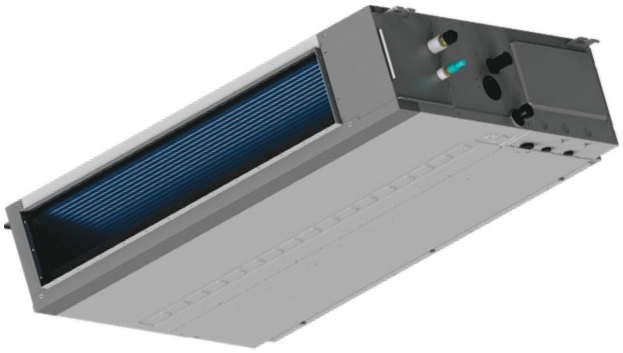
45VM---3 Series
Indoor Units and Controllers for
Variable Refrigerant Flow (VRF) Heat Pump System

Service Manual



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INDOOR UNITS

General Information

Indoor Unit Model Number Nomenclature

45 VM F 007 - - - 3

Digit # 1,2: Product Series
45 - Indoor Unit

Digit # 3,4: Model Letters
VM - Carrier VRF

Digit # 5: Model Number Modifier
C - Compact 4-Way Cassette
F - 4-Way Cassette
L - Low Static Duct
M - Medium Static Duct
V - Vertical AHU
W - High Wall

Digit # 6,7,8: Cooling Capacity (Btu/h)

005 - 5,000	007 - 7,000
009 - 9,000	012 - 12,000
015 - 15,000	018 - 18,000
024 - 24,000	030 - 30,000
036 - 36,000	048 - 48,000
054 - 54,000	072 - 72,000
096 - 96,000	

Digit # 9: Not Defined
A - Design Revision

Digit # 10: Not Defined
- Blank

Digit # 11: Not Defined
- Blank

Digit # 12: Electrical
3 - 208/230-1-60

Fig. 1 —Model Nomenclature (Indoor Units)

Indoor Unit Appearance

Figure 2 - 4-Way Cassette (45VMF)

Figure 3 - Compact 4-Way Cassette (45VMC)

Figure 4 - Vertical AHU (40VMV)

Figure 5 - High Wall (45VMW)

Figure 6 - Low Static Duct (45VML)

Figure 7 - Medium Static Duct (45VMM)

Maintenance and Service

⚠ WARNING

- **For safety reasons, always turn off the air conditioner and turn off the power before cleaning the air conditioner.**
- **Do not disassemble or repair the air conditioner by yourself; otherwise, it may cause fire or other hazards. Only professional service personnel can carry out the maintenance.**
- **Do not use flammable or explosive materials (such as hair styling agents or pesticides) near the product.**
- **Do not use organic solvents such as paint thinner to clean this product; otherwise, it may cause cracks, electric shock or fire.**
- **Only qualified dealers and professionally qualified electricians can install the optional accessories. Be sure to use the optional accessories specified by local dealer.**
- **Improper installation by yourself may result in water leakage,**

⚠ DANGER

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 authorized installers

Work on the refrigerant circuit with flammable refrigerant in safety group A2L may only be carried out by authorized 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.

MAIN PCB PORTS

Compact Four-way Cassette/Four-way Cassette/Wall Mounted

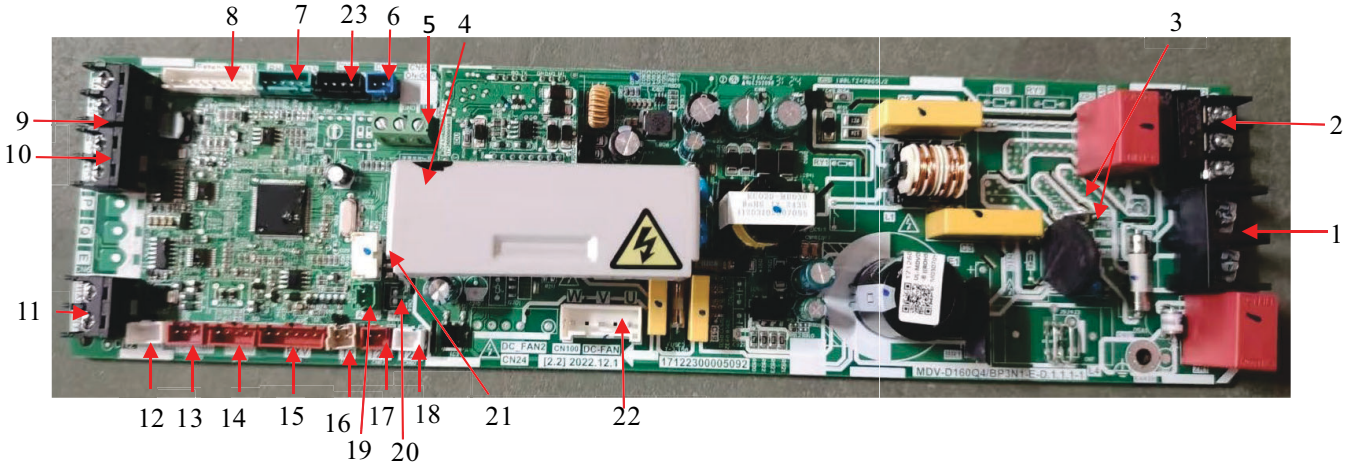


Fig. 2 —Compact Four-way Cassette/Four-way Cassette/Wall Mounted main PCB port

Table 1 —Compact Four-way Cassette/Four-way Cassette/Wall Mounted main PCB ports

Label in Fig. 2	Code	Content	Port Voltage	Notes
1	CN1(L,N)	AC power input	208/230V AC	Standard
2	CN22(ALARM,N,AC2)	AC power output used for customization function: alarm/strong electric sterilization module	208/230V AC	Standard
3	CN12(H-L) CN29(H-N)	Reserved	208/230V AC	Reserved
4	CN4	Program burning port (fan motor)	5V DC[4]	Standard
5	CN55	Remote on/off switch connection	Note 4	Standard
6	CN82	T1 Temperature sensor connection	3.3V DC	Standard
7	CN35	Humidity sensor connection	3.3V DC	Standard
8	CN18	Switch module	5V/12V DC[4]	Standard
9	CN10(M1M2)	M1 M2 communication port (with ODU by HyperLink)	24V DC	Standard
10	CN3(X1X2)	X1 X2 communication port (with wire controller)	18V DC	Standard
11	CN2(D1D2)	D1 D2 communication port(with Central controller or group controller)	2.5 - 2.7V DC	Standard
12	CN5	Water level switch 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[4]	Standard
16	CN81	T2 Temperature sensor connection	3.3V DC	Standard
17	CN83	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	12V DC	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. **M1M2 communication ports 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 (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 1 for voltage test instructions of some ports.**

Arc Duct

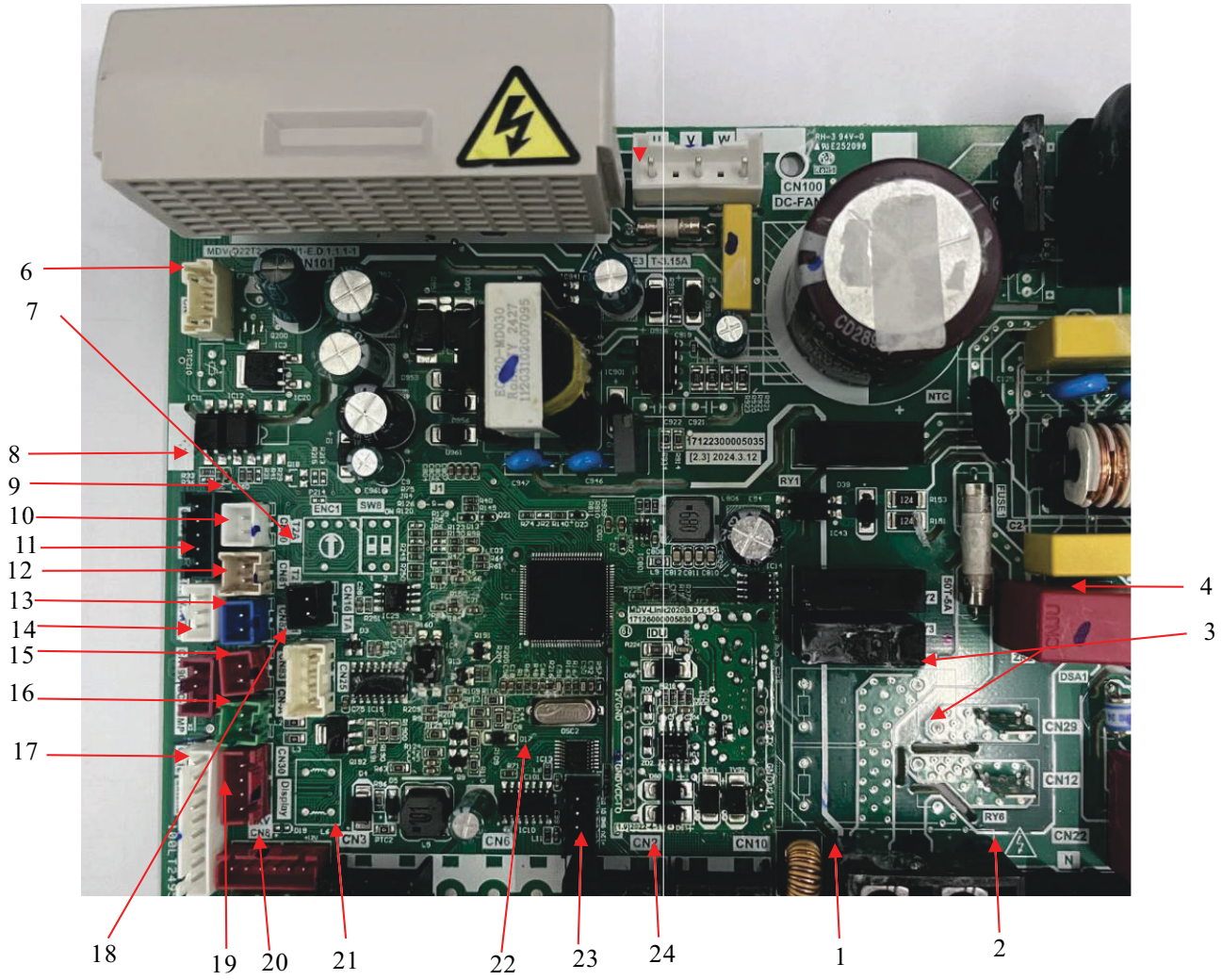


Fig. 3 —Low Static Pressure Duct/Medium Static Pressure Duct main PCB ports

Table 2 —Low Static Pressure Duct/Medium Static Pressure Duct main PCB ports

Label in Fig. 3	Code	Content	Port Voltage	Notes
1	CN1(L1.L2)	AC power input	208/230V AC	Standard
2	CN22	AC power output Used for customization function: alarm	208/230V AC	Standard
3	CN12(H-L) CN29(H-N)	Reserved	208/230V AC	Reserved
4	CN20	AC power input	208/230V AC	Reserved
5	CN100	Power supply for fan motor	Actual voltage	Standard
6	CN4	Program burning port (fan motor)	5V DC[4]	Standard
7	CN16	Reserved	3.3V DC	Reserved
8	CN35	Humidity sensor connection	3.3V DC[4]	Reserved
9	CN80	T2A Temperature sensor connection	3.3V DC	Standard
10	CN81	T2 Temperature sensor connection	3.3V DC	Standard
11	CN5	Water level switch port	3.3V DC[4]	Standard
12	CN82	T1 Ambient Temperature sensor connection	3.3V DC	Standard
13	CN83	T2B Temperature sensor connection	3.3V DC	Standard
14	CN190	Drainage pump port	12V DC[4]	Standard
15	CN-A	Sterilization module port	12V DC	Standard
16	CN30	Display Panel connection	12V DC[4]	Standard
17	CN18	Switch module	5V/12V DC[4]	Standard
18	CN25	Program burning port (indoor unit)	3.3V DC[4]	Standard
19	CN8	EEV drive port	12V DC[4]	Standard
20	CN55	Remote on/off switch connection	Note 4	Standard
21	CN (X1X2)	X1 X2 communication port (with wire controller)	18V DC	Standard
22	CN99	After-sale Kit communication port	12V DC[4]	Standard
23	CN2 (D1D2)	D1 D2 communication port (with Central controller or group controller)	D1,E or D2,E 2.5 - 2.7V DC	Standard
24	CN10 (M1M2)	M1 M2 communication port (with ODU by HyperLink)	24V DC	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. **M1M2 communication ports 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 (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, 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 be connected to the central controller.**
5. **Refer to Table 2 for voltage test instructions of some ports.**

INDOOR UNITS

Air Handler Unit

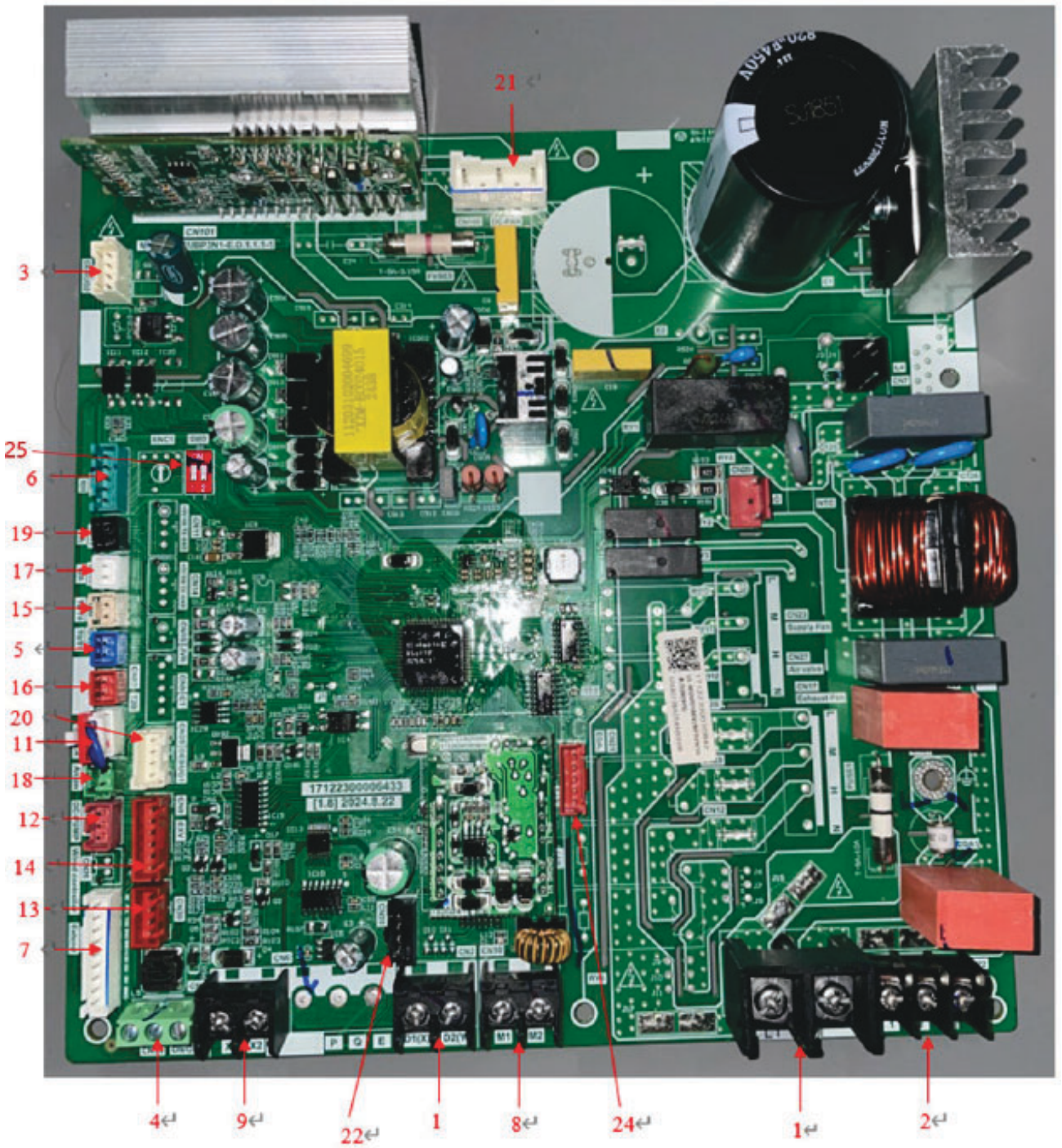


Fig. 4 —AHU main PCB ports

Table 3 —Air Handler Main PCB ports

Label in Fig. 3	Code	Content	Port Voltage	Notes
1	CN1(L1.L2)	AC power input	208/230V AC	Standard
2	CN22 (ALARM,N,AC2)	AC power output Used for customization function: alarm	208/230V AC	Standard
3	CN4	Program burning port (indoor unit)	5V DC[4]	Standard
4	CN55	Remote on/off switch connection	Note 4	Standard
5	CN82	T1 Ambient Temperature sensor connection	3.3V DC	Standard
6	CN35	Humidity sensor connection	3.3V DC	Standard
7	CN18	Switch module	5V/12V DC[4]	Standard
8	CN10 (M1M2)	M1 M2 communication port (with ODU by HyperLink)	24V DC	Standard
9	CN3 (X1X2)	X1 X2 communication port (with wire controller)	18V DC	Standard
10	CN2 (D1D2)	D1 D2 communication port (with Central controller or group controller)	2.5 - 2.7V DC	Standard

11	CN5	Water level switch port	3.3V DC	Standard
12	CN190	DC Drainage pump port	12V DC	Standard
13	CN30	Display Panel connection	12V DC	Standard
14	CN8	EEV drive port	12V DC[4]	Standard
15	CN81	T2 Temperature sensor connection	3.3V DC	Standard
16	CN83	T2B Temperature sensor connection	3.3V DC	Standard
17	CN80	T2A Temperature sensor connection	3.3V DC	Standard
18	CN-A	Sterilization module port	12V DC	Standard
19	CN16	Reserved	3.3V DC	Reserved
20	CN25	Program burning port (indoor unit)	3.3V DC	Standard
21	CN100	Power supply for fan motor	Actual Voltage	Standard
22	CN99	After-sale Kit communication port	12V DC	Standard
23	CN20	AC power input	208/230V AC	Standard
24	CN21	Electrical auxiliary heater control signal output	12V DC	Used when installing heater kit
25	SW8	SW8-1: Reserved SW8-2: Electrical auxiliary heater option	/	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. **M1M2 communication ports 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 (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, 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 be connected to the central controller.**
5. **Refer to Table 3 for voltage test instructions of some ports.**

INDOOR UNIT SETTINGS

PARAMETER SETTINGS

Use the wired controller (for example, WDC3-120T2) to enter engineering settings:

- Parameters can be set in the power-on or power-off state.
- Hold "≡" and " >" for 3 seconds to enter the parameter setting interface.
- After entering the parameter setting interface, Press "∨" and "∧" to switch the parameter. Set parameters according to the Table of Parameter Settings. Press "○" to enter the parameter setting interface.

Then press "<" and " > " to change parameter value and press " ○ " tosave changes.

- Press the " back " button to return to the previous page until exiting the parameter setting or exiting the parameter setting after 60 s without any operation.
- When it is in the parameter settings page, the wired controller does not respond to any remote control signal.

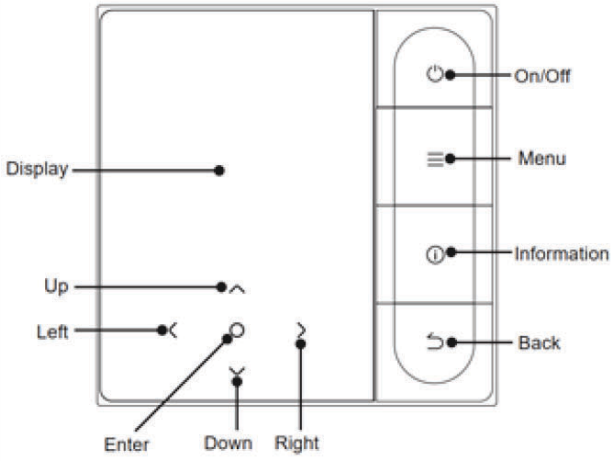


Table 4 — Wired Controller Parameter Settings

IDU Set Item	Parameter Name	Parameter Range	Default Value	Remarks
On-Site Settings	IDU static pressure	00/01-19/FF	FF	IDU static pressure is set based on the parameter value (refer to the IDU manual)
	High ceiling	00/01/02	00	00: H≤3m; 01: 3<H≤4m;
	On-site air flow adjustment factor	00/01/02/03/	00	02: 4<H≤4.5m; (H: Mounting height)
	Q4/Q4min air outlet closed 1	04/05/06	00	00: 1; 01: 1.05; 02: 1.1; 03: 1.15;
	Q4/Q4min air outlet closed 2	00/01	00	04: 0.95; 05: 0.9; 06: 0.85
	Q4/Q4min air outlet closed 3	00/01	00	00: Free control; 01: Close
	Q4/Q4min air outlet closed 4	00/01	00	00: Free control; 01: Close
	IDU cooling/heating	00/01	00	00: Free control; 01: Close
	One-to-more of wired controller enabled	00/01	00	00: Free control; 01: Close
IDU settings	IDU buzzer	00/01/0	02	00: Silent; 01: Ring; 02: Display panel only
	EXV opening during heating standby	00/01/02/14	14	00: 56P; 01: 72P; 02: 00P; 14: Auto regulation
	Mode switch interval in auto mode (min)	00/01/02/03	00	00: 15min; 01: 30min; 02: 60min; 03: 90min
	Auto restart	00/01	01	00: No; 01: Yes
	Remote control reception of IDU display panel	00/01	00	00: Receive; 01: Not receive
	Outdoor temperature to enable auxiliary heater	Celsius: -25 to 20 Fahrenheit: -13 to 68	Celsius: 0 Fahrenheit: 32	Accuracy: 1°C or 1°F
	Indoor temperature when auxiliary heater is on	Celsius: 10 to 30 Fahrenheit: 50 to 86	Celsius: 24 Fahrenheit: 75.2	Accuracy: 1°C or 1°F
	T1 temperature difference when auxiliary heater is on	0-7	3	0 to 7 represent 0 to 7°C/0 to 14°F
	T1 temperature difference when auxiliary heater is off	0-10	5	0 to 7 represent -4 to 6°C/(-8) to 12°F
	Auto dry function	00/01	00	00: No; 01: Yes
	Auto dry function	00/01	00	00: Invalid, 01: Valid
	Alternative Heat Source Closing Delay	00/01/02/03	01	00: min; 01: 15min; 02: 30min; 03: 45min
	Autodry Target Temp	40%/41%/42%…70%	65%	
	Third-party Dehumidifier Target Temp	35%/36%/37%…75%	65%	
	Third-party Humidifier Target Temp.	35%/36%/37%…75%	65%	
	Indoor Unit Control Type	00/01/02	01	00: Return Air Temp. Control; 01: Supply Air Temp. Control; 02: Room Temp. Control

IDU Set Item	Parameter Name	Parameter Range	Default Value	Remarks
Fan speed settings	Upper automatic fan speed in cooling mode	04/05/06/07	05	04: Speed 4; 05: Speed 5; 06: Speed 6; 07: Speed 7
	Upper automatic fan speed in heating mode	04/05/06/07	06	04: Speed 4; 05: Speed 5; 06: Speed 6; 07: Speed 7
	Air flow at fan speed 7	00/01	01	00: Constant speed; 01: Constant air flow
	Fan speed in cooling standby mode	00/01/02/03/04/05/06/07/14	01	00: Delayed fan off; 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 entering standby mode
	Standby fan speed L1 range in dry mode	00/01/02/03	01	00: Fan off; 01: L1; 02: L2; 03: Speed 1
	Fan speed in heating standby mode	00/01/14	00	00: Thermal; 01: Speed 1; 14: Fixed at Speed 1
	Time to stop the fan of IDU in heating mode (Thermal)	00/01/02/03/04	01	00: Stop the fan; 01: 4min; 02: 8min; 03: 12min; 04: 16min (stop the fan for Xmin; open the fan at speed 1 for 1min to detect the actual T1 temperature)
Temperature settings	IDU anti-cold wind temperature in heating mode	00/01/02/03/04	00	Common IDUs (models 1, 3, 4. 6, and 8): 0: 15°C(59°F);1: 20°C(68°F); 2: 24°C(75°F);3: 26°C(79°F); 04: Invalid
	Cooling return difference temperature	00/01/02/03/04	00	FAPU (models 2 and 7): 0: 14°C(57°F); 1: 12°C(54°F); 2: 16°C(61°F); 3: 18°C(64°F); 04: Invalid
	Heating return difference temperature	00/01/02/03/04	00	00: 1°C(2°F); 01: 2°C(4°F); 02: 0.5°C(1°F); 03: 1.5°C(3°F); 04: 2.5°C(5°F)
	IDU heating temperature compensation	00/01/02/03/04	00	00: 1°C(2°F); 01: 2°C(4°F); 02: 0.5°C(1°F); 03: 1.5°C(3°F); 04: 2.5°C(5°F)
	IDUcooling temperature compensation	00/01/02/03/04	00	00: 6°C(12°F); 01: 2°C(4°F); 02: 4°C(8°F); 03: 8°C(16°F); 04: 0°C(0°F)
	Maximum indoor temperature drops D3 in dry mode	00/01/02/03/04	01	00: 3°C(6°F); 01: 4°C(8°F); 02: 5°C(10°F); 03: 6°C(12°F); 04: 7°C(14°F)
Remote and alarm settings	Remote On/Off port logic of the IDU	00/01	00	00: Remote off (closed); 01: Remote off (open)
	Remote ON/OFF control settings (reserved)	00/01	00	00: Forced OFF control; 01: ON/OFF control
	Remote OFF delay settings	00/01/02/03/04/05/06	00	00: No delay; 01: 1 min; 02: 2 min; 03: 3min; 04: 4min; 05: 5min; 06: 10min
	Alarm port logic	00/01	00	00: Alarm when closed; 01: Alarm when open
	Sterilization	00/01	00	00: Sterilization unavailable; 01: Sterilization available
	Drying time at self-cleaning	00/01/02/03	00	00: 10min; 01: 20min; 02: 30min; 03: 40min
	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
	Dirt proof for ceiling	00/01	00	00: Invalid; 01: Valid
	Condensation proof	00/01	00	00: Invalid; 01: Valid
	Refrigerant leakage alarm reset	00/01	00	00: Not reset; 01: Reset
Energy saving option	ETA level in cooling mode	00/01/02	00	00: Level 1; 01: Level 2; 02: Level 3
	ETA level in heating mode	00/01/02	00	00: Level 1; 01: Level 2; 02: Level 3
	Initial static pressure detection	00/01	00	00: Not reset initial static pressure; 01: Reset initial static pressure
	Filter ending - initial static pressure setting	00/01/.../19	00	00: 10Pa; 01: 20Pa; 02: 30Pa; ...; 19: 200Pa
FAPU settings	Ambient temperature when preheating is turned on	00/01/02	00	00: 5°C(6°F); 01: 0°C(32°F); 02: (-5)°C(23°F) (for FAPU only)

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

INDOOR UNIT PRAMETER QUERY

Use the wired controller (for example, WDC3-120T2) to enter engineering settings:

- Parameters can be set in the power-on or power-off state.
- Hold "☰" and " >" for 3 seconds to enter the parameter setting interface.
- After entering the parameter setting interface, Press "∨" and "∧" to switch the parameter. Set parameters according to the Table of Parameter Settings. Press "○" to enter the parameter setting interface.

Then press "<" and " > " to change parameter value and press " ○ " tosave changes.

- Press the " back " button to return to the previous page until exiting the parameter setting or exiting the parameter setting after 60 s without any operation.
- When it is in the parameter settings page, the wired controller does not respond to any remote control signal.

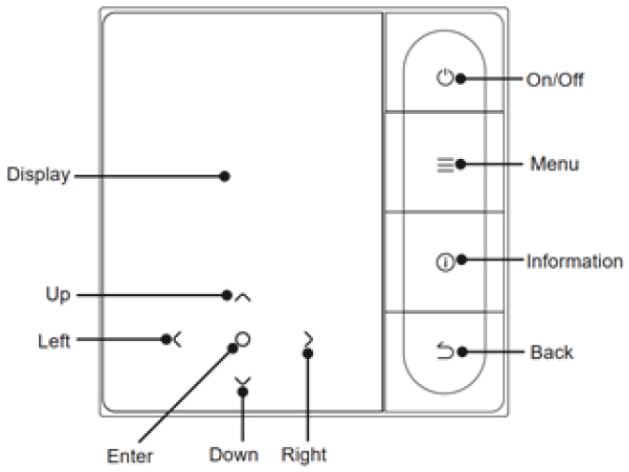


Table 5 — Indoor Unit Parameters Check List

Check No.	Parameters	Remarks
1	IDU and ODU communication address[1]	0 - 63
2	Capacity of indoor unit	Unit: HP
3	Actual set temperature Ts	Unit: C
4	Set temperature of the unit that is operating currently, Ts (Remarks: The temperature displayed is the actual set temperature Ts)	Actual value = value displayed
5	Actual T1 indoor temperature	Actual value = value displayed
6	Modified indoor temperature T1_ modify	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	
12	Actual fresh air processing unit TA air supply temperature	Actual value = value displayed
13	Air discharge 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 = 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.

FUNCTIONAL DESCRIPTIONS

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.

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.

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.

AHU Electrical Auxiliary Heater Setting

SW8-2 is the option of PCB Electrical auxiliary heater.

SW8-2 OFF: No electrical auxiliary heater installed.

SW8-2 ON: electrical auxiliary heater installed.

NOTE: When installed an electrical auxiliary heater, and the electrical auxiliary heat is failure, the unit is possible to blow cold air during heating. In this situation, the user needs to check whether the electric auxiliary heater is failure.

Display Panels

Appearance of Display Panel

The appearance of the digital display panel used is shown in Figure 5.

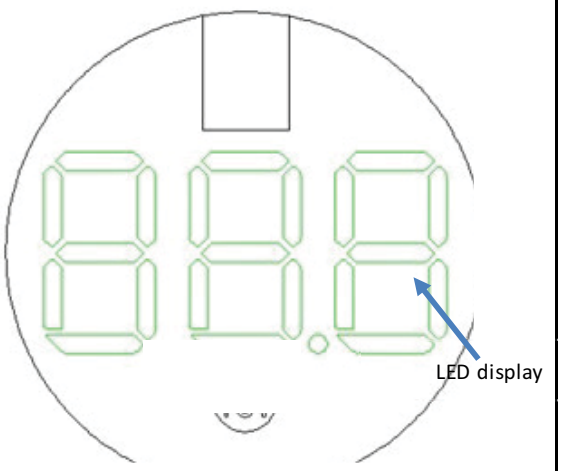
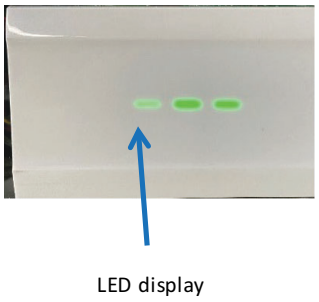
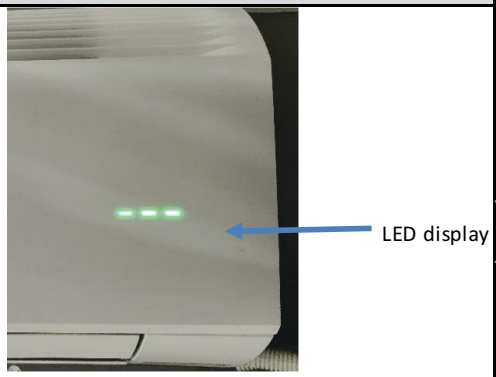
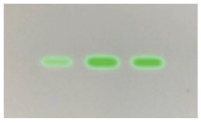
Display panel for Compact Four-way Cassette and Four-way Cassette (New 360 degree panel, standard panel)	Display panel for Low Static Pressure Duct\Medium Static Pressure Duct\ (Optional)
	
Display panel for Wall Mounted	
	

Fig. 5 —Digital Display Panel

Output Under Normal Operating Conditions

Table 6 — 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 18:Operating Status Codes.**
2. **The error code refer to Table 16:Error code.**

CONTROL

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")

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 7:

Table 7 — EEV Operation in Other Situations

<table>
<tr><th rowspan="2">IDU status</th><th colspan="2">Cooling mode</th><th colspan="2">Heating mode</th></tr>
<tr><th>ODU Operating</th><th>ODU stopped</th><th>ODU Operating</th><th>ODU stopped</th></tr>
<tr><td>Operating</td><td>Superheat control</td><td rowspan="4">B PLS</td><td>Superheat 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>

NOTES:

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.**

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.

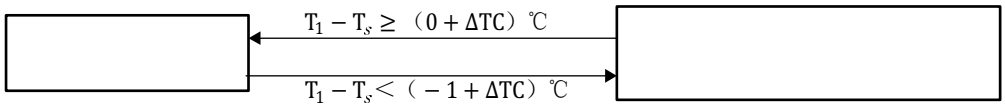


Fig. 6 —Cooling (Dry)

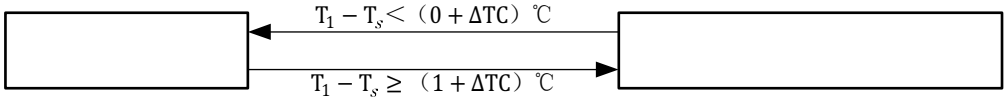


Fig. 7 —Heating

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

FAN CONTROL

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.

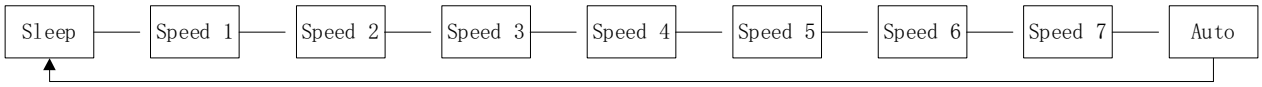


Fig. 8 —Seven-Speeds

- **Three-speeds**

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

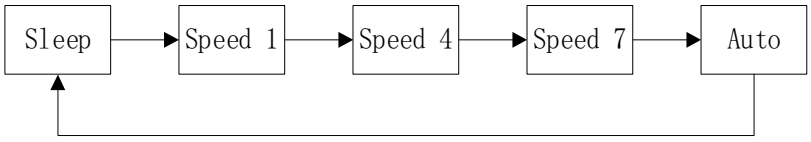


Fig. 9 —Three-Speeds

For the specific IDU series, please consult the technical manual of each series. Table 8 describes the fan control in different situations.

Table 8 — Fan Control in Different Situations

Operating in Set Speed	**IDU Status**	**Cooling Mode**	**Dry Mode**	**Heating Mode**	**Fan Mode**	**Speed Switch**
	Operating	Set speed	Speed 1	Set speed	Set speed	User set
	Standby	Set speed	Speed 1	Terminal	/	
	Off	Stop fan	Stop fan	Stop fan	Stop fan	
	Fault	Stop fan	Stop fan	Stop fan	Stop fan	
Automatic Fan Speed	**IDU Status**	**Cooling Mode**	**Heating Mode**	**Auto Mode**	**Fan Mode**	**Speed Switch**
	Operating	Automatic	Automatic	Automatic	Speed 1	Switch fan speed based on the difference of the set temperature and return air temperature
	Standby	Automatic	Terminal	Automatic cooling, automatic fan speed, automatic heating, and Thermal 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 controller)

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.

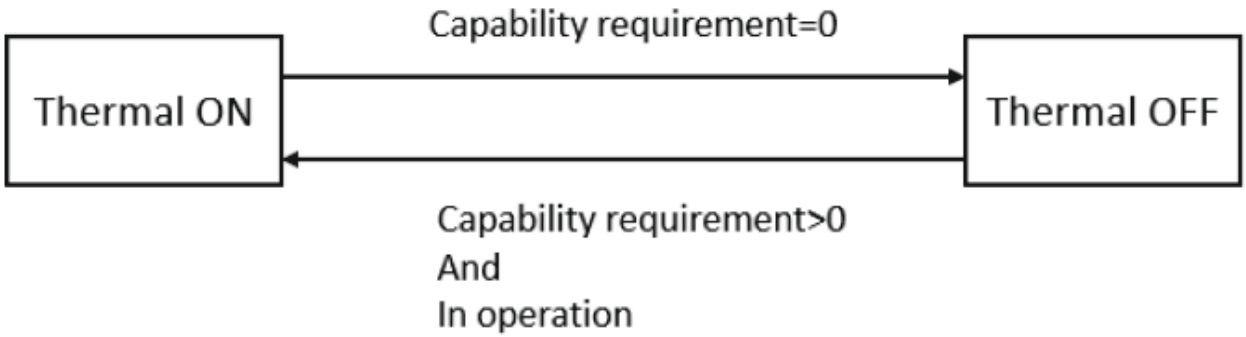


Fig. 10 —Auto Fan Control Mode

- **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

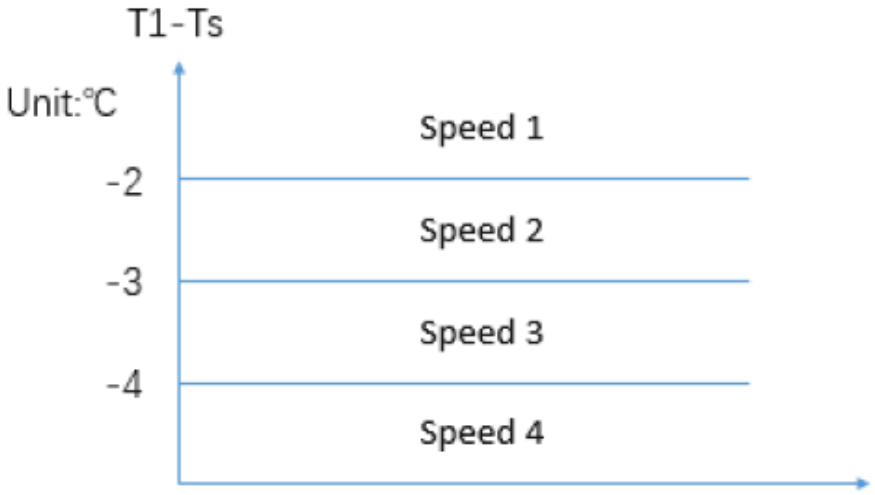


Fig. 11 —Speed of Fan Control

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.

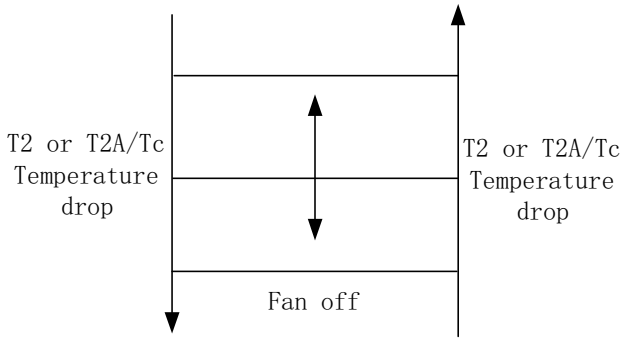


Fig. 12 —Anti-Cold Air Control

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.

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”).

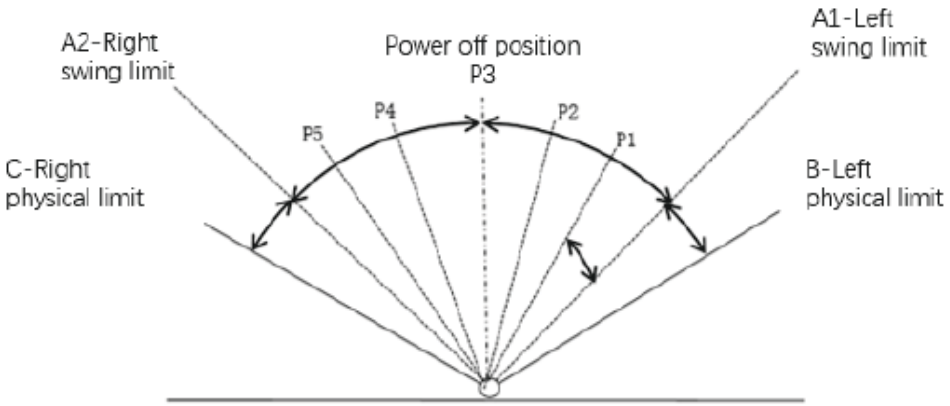
NOTE: Thermal: In the heating mode, The IDU in the standby state heating mode will run fan periodically at speed 1 for one minute (the period can be set by controller).

SWING CONTROL

Horizontal Swing Control

Table 9 — Angle Range of Horizontal Swing

	Heating	Cooling
Adjustable Range	A1+A2	A1+A2
Shutdown Angle	A1+B/A2+C	A1+B/A2+C



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

Fig. 13 —Horizontal Swing Angle

Table 10 — 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
	Default Gear	P3	P3	P3	P3

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 11, Table 12 and Figure 14.

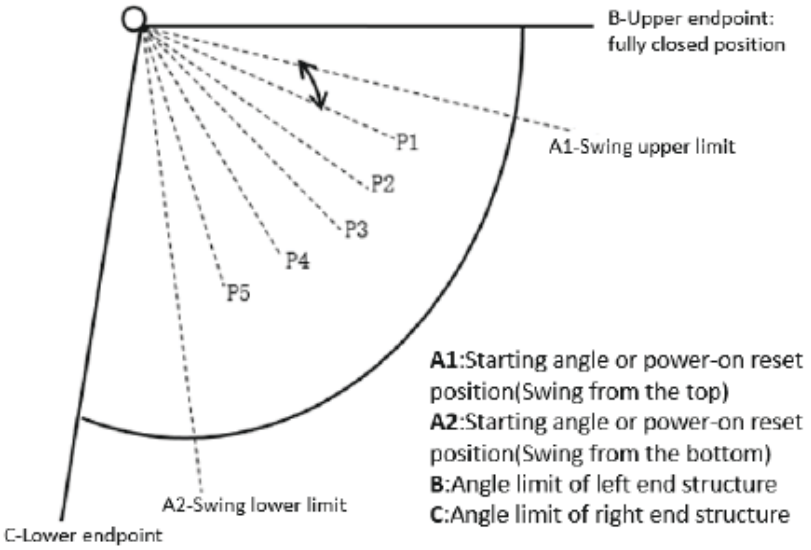


Fig. 14 —Vertical Swing Control

Table 11 — Angle Range of Vertical Swing in Wall-Mounted Unit

		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
	Default Gear	P3	P3	P3	P3	P5	P5

Table 12 — Angle Range of Vertical Swing in Four-Way Cassette/Compact Four-way Cassette

		Heating	Cooling/ventilation	Functional 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
Four-Way Cassette	Adjustable Range	P1-P5		Non-Adjustable	Non-Adjustable
	Default Gear	P5	P2	P5	P5
Compact Four-Way Cassette	Adjustable Range	P1-P5		Non-Adjustable	Non-Adjustable
	Default Gear	P5	P3	P5	P5

Individual Louver Control

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

1. 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.
2. 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.

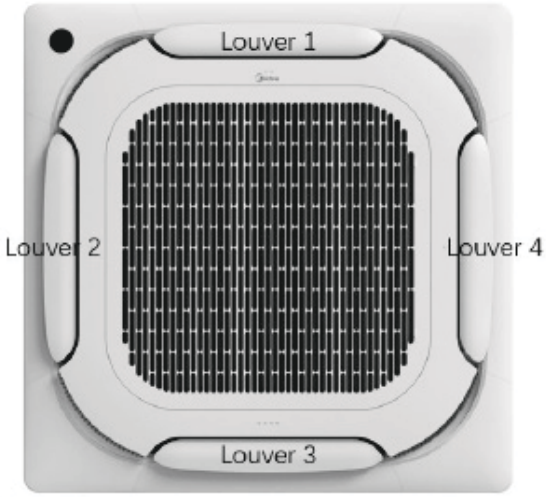


Fig. 15 —Louvers for Four-Way and Compact Cassette

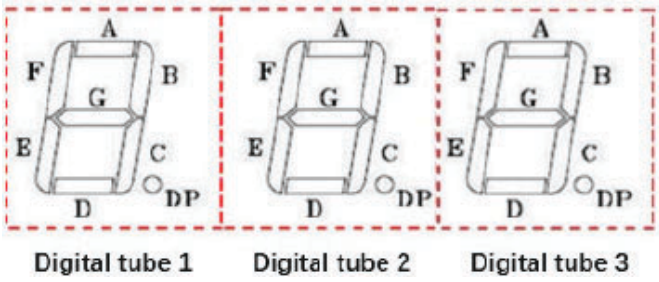


Fig. 16 —Corresponding Digital Tubes

Table 13 — Digital Tube Display Instructions

Louver	Digital Tube 1	Digital Tube 2	Digital Tube 3
Louver1	A flash	A flash	A flash
Louver2	E/F flash	-	-
Louver3	D flash	D flash	D flash
Louver4	-	-	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.

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 and 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.

Ceiling Anti-Dirty Control

In order to prevent flow of Compact Four-way Cassette and 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.

OPERATION MODE CONTROL

Outdoor Unit is Heat Pump

1. When 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.
2. When 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

1. When 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.
   a. when enter the auto mode, the mode icon Auto and Cool (or Auto and Heat will flash at the same time.
   b. Press "^" and "v" to switch mode (Cool or Heat) and press " " to enter temperature setting interface (In Cool is Tsc, and Tsh in Heat). Then press "^" and "v" to change value and press " " to save changes.
   c. In auto mode, Icons Auto and Cool light up during cooling operation, when Icons Auto and Heat light up during heating operation.
   d. The heating mode and cooling mode are switched according to the following 3 conditions.
      (1.) 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.
      (2.) 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.
      (3.) 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.

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.
   a. When the cooling/automatic cooling mode operates, the correction value2 of the set temperature Ts is + 1 every A3 minute.
   b. During heating/automatic heating mode operation, the correction value of the set temperature Ts is - 1 every A minute;
   c. Fan speed 1
   d. The fan louver maintains the previous angle.
   e. Resume normal control when someone is detected
2. When set the mode " Used to turn off the unit when unattended " and enter the unattended state1, the following logic is executed
   a. Turn off the unit
   b. Resume normal control when someone is detected

NOTES:

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)

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.

ANTI-FREEZE CONTROL

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

Condition:

1. 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);
2. 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;

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

1. Port 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)
2. Port 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.

Table 14 — 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

HIGH CEILING SETTING

For embedded IDU series, such as Compact Four-way Cassette and 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 details.

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

1. Port 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.

2. Port on 1# Expansion board (Optional)
   Port CN7 connects the 220V switch signal. For detail refer to Expansion board manual

Setting Positive or Negative Logic

1. Port 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)
2. Port 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.

Table 15 — 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.

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;
2. Maximum indoor temperature drop in dry mode (N27)
3. Standby 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
2. Maximum 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)

NOTES:

1. **Ts: Dehumidification setting temperature**
2. **T1: IDU air return temperature**
3. **ΔT: 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.
2. Need 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: For Auto Dry Target relative humidity, the Default value is 65% and can be set (N67).

ERRORS AND OPERATION CODE

Table 16 — Error Code Table

Error code	Content	Error code	Content
A01	Emergency stop	C52	Abnormal communication between the IDU and Wi-Fi Kit
A11	R32/R454B 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	Interlocking control Heat Recovery Ventilation Unit fault(in-series application)	C72	Number of AHU Kits is not the same as the set number
A72	The Humidity Unit fault	C73	Abnormal communication between the linked humidifying IDU and master IDU
A73	Interlocking control Heat Recovery Ventilation Unit fault（non-serial application)	C74	Abnormal communication between the linked FAPU and master IDU (series setting)
A74	The AHU Kit slave unit fault	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 module
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	Protection on 1# water pump	D43	Refrigerant leakage sensor service life reminder
b35	Protection on 2# water pump	d81	Alarm for exceeding temperature and humidity range
b36	Water level switch alarm	dE1	Sensor control board fault
b71	Reheating electric heater fault	dE2	PM2.5 sensor fault
b72	Preprocessing electric heater fault	dE3	CO2 sensor fault
b81	Humidifier fault	dE4	Formaldehyde sensor fault
C11	Duplicate IDU address code	dE5	Human Detect sensor fault
C21	Abnormal communication between the IDU and ODU	E21	T0 (fresh inlet air temperature sensor) short-circuits or cuts off
C41	Abnormal communication between the IDU main control board and fan drive board	E22	The upper dry bulb temperature sensor short-circuits or cuts off
C51	Abnormal communication between the IDU and wired controller	E23	The lower dry bulb temperature sensor short-circuits or cuts off
		E24	T1 (IDU return air temperature sensor) short-circuits or cuts off

Table 17 — Error Code Table (Cont)

Error code	Content	Error code	Content
E31	wired controller temperature sensor failure	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	The capacity value of the AHU Kit DIP switch does not match the model
E62	Tph (pre-heated fresh air temperature sensor) short-circuits or cuts off	U15	The DIP value of AHU Kit's fan speed output voltage is incorrect
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/R454B 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

Table 18 — 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	Initial static pressure detection	dH	Hot water mode(Specific series)

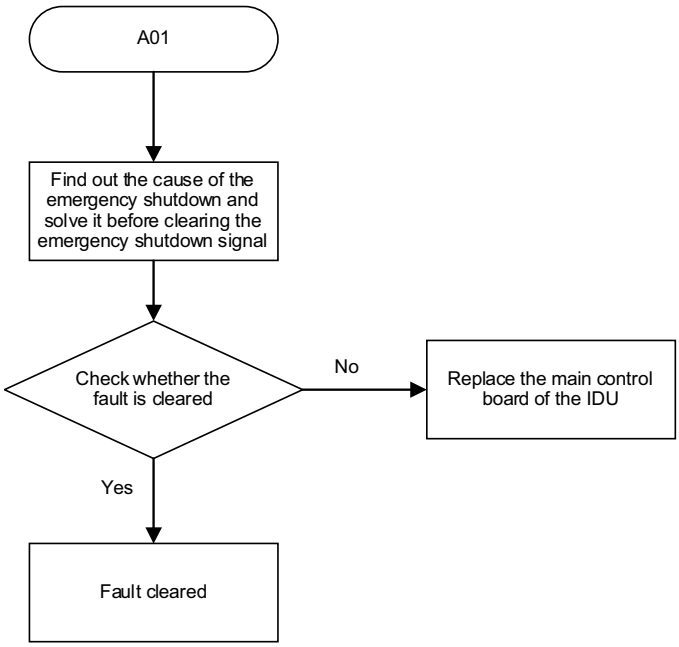
TROUBLESHOOTING

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.**

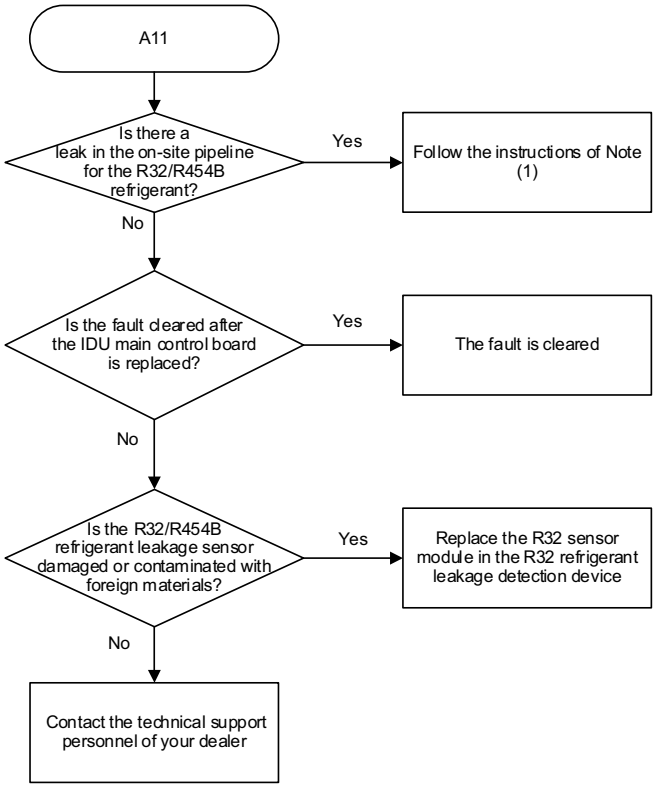
A01 - Emergency Shutdown

Table 19 — A01

Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU and other IDUs of the same system: stop running, displaying code "A01" (V6 platform indoor unit displays "A0" code)	
	ODU of the same system: stop running, displaying code "A01" (V6 platform outdoor unit displays "A0" code)	
Error trigger	When the IDU receives an emergency shutdown signal from the ODU	
Error recovery	After troubleshooting, power on again	
Possible cause	■ An emergency shutdown signal is received. ■ The IDU main control board is damaged.	
Troubleshooting	 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.	

A11: R32/R454B Refrigerant Leaks, Requiring Immediate Shutdown

Table 20 — A11

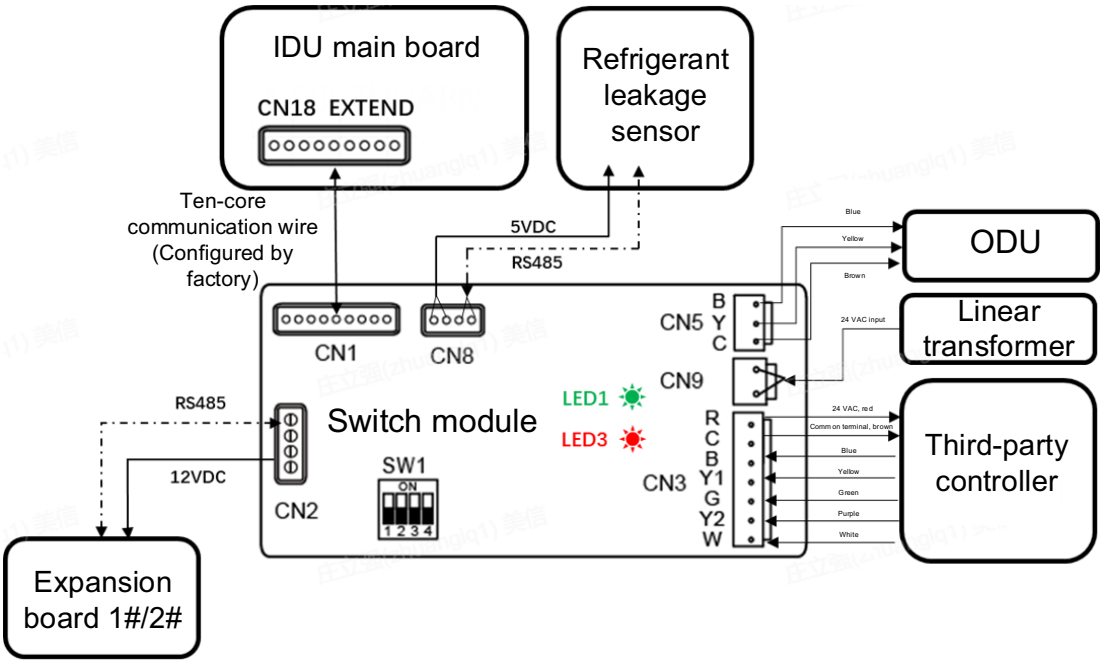
<table>
<tr><td rowspan="2">Fault Display</td><td>Digital display</td><td>Display position</td></tr>
<tr><td>  </td><td>Panel, display box, and wired controller</td></tr>
<tr><td rowspan="2">Fault Impact</td><td colspan="2">■ Faulty IDU: The fan operates at the highest speed, the EXV is closed (Note: Fault persists after power on again), and the buzzer of the display control board of the faulty IDU and the 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, displaying code "A51" - ODU fault (V6 platform IDU displays the code "Ed").</td></tr>
<tr><td colspan="2">ODU of the same system: After the automatic recovery of refrigerant ends, the unit stops, displaying the error code "A11" - IDU refrigerant leakage.</td></tr>
<tr><td>Fault Trigger</td><td colspan="2">The IDU main control board receives a refrigerant leakage signal from the R32/R454B refrigerant detection device (See Figure 1 below).</td></tr>
<tr><td>Fault Recovery</td><td colspan="2">No refrigerant leakage signal is detected and the refrigerant leakage fault rectification command sent by the wired controller is received.</td></tr>
<tr><td>Possible Cause</td><td colspan="2">■ The R32/R454B refrigerant at the IDU side leaks.
■ The sensor in the R32/R454B refrigerant leakage detection device is damaged or contaminated with foreign materials (such as steam and oil).
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 

Note 1:
Step 1: Check whether pipes are leaking refrigerant.
(1) Check whether there is refrigerant leakage in the pipeline on site. Method: If the system is connected with a refrigerant cut-off device, use a refrigerant pressure gauge to connect the service needle valve on the liquid side or gas side of the refrigerant cut-off device. If the system is not connected to a refrigerant cut-off</td></tr>
</table>

Table 21 — A11 (Cont.)

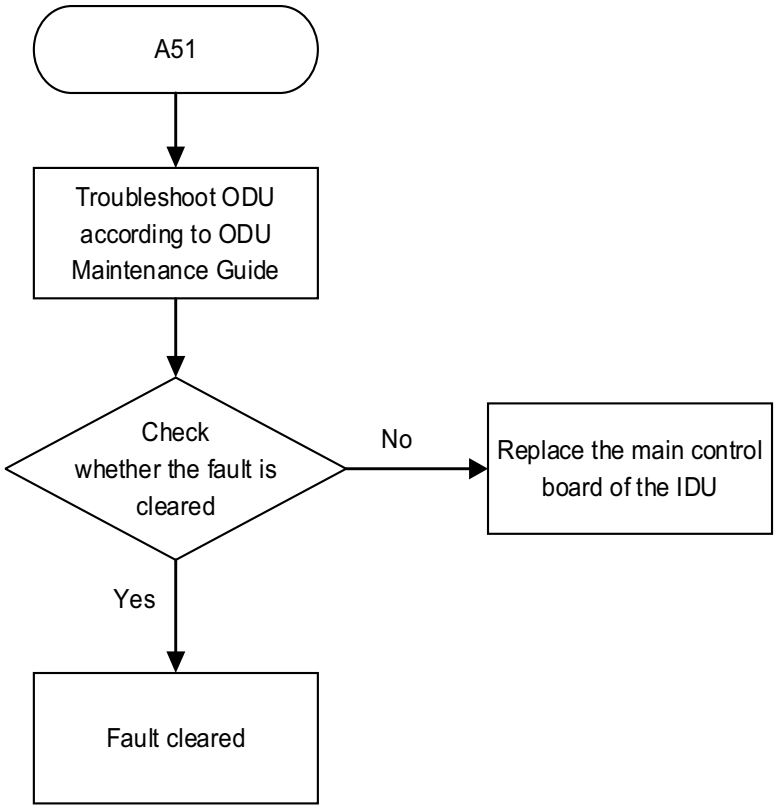
	device, use a refrigerant pressure gauge to connect the service needle valve on the liquid side or gas side of the ODU. Measure the refrigerant saturation gauge pressure in the pipeline on site. If the measured refrigerant saturation pressure on the liquid side or gas side is less than the standard saturation pressure (see Table of Ambient Temperature - Standard Saturation Gauge Pressure of R32/R454B Refrigerant attached to this manual), there is a refrigerant leak. Follow the steps below to eliminate refrigerant leaks: ■ Use a refrigerant recovery device to recover the residual refrigerant from the unit. If refrigerant leaks occur, the refrigerant cutoff device remains off, necessitating recovery from both the ODU stop valve and the maintenance needle valve of the refrigerant cutoff device. Additionally, when recovering the refrigerant, ensure that the ODU is set to vacuum mode to facilitate thorough and clean recovery of the refrigerant. ■ Locate and repair pipeline leaks. ■ Perform the air tightness test for the system pipeline after the repair (dry nitrogen must be used). For details, refer to the pipeline installation section in the ODU Installation Manual. After the air tightness test is passed, proceed to the next step. Otherwise, repeat the previous step until the air tightness test is passed. ■ Replace the R32/R454B sensor module in the faulty IDU R32/R454B refrigerant leakage detection device (see Figure 1 below). ■ Recharge the refrigerant according to the instructions in the ODU Installation Manual. (2) If the measured refrigerant saturation pressure on the liquid side and/or gas side is equal to the standard saturation pressure (see Table of Ambient Temperature - Standard Saturation Gauge Pressure of R32/R454B Refrigerant attached to this manual), use a refrigerant detection instrument or other methods to confirm whether there is refrigerant leakage. If refrigerant leakage is detected, follow the refrigerant leakage treatment steps in (1). **Step 2: Reset the R32/R454B refrigerant detection device.** After an A11 error is reported, it is necessary to reset the R32/R454B refrigerant detection device through the wired controller's engineering menu. For detailed reset instructions, see the user manual for the corresponding wired controller.

Figure 1 Schematic diagram of the R32/R454B refrigerant leakage detection system



A51 - ODU Fault

Table 22 — A51

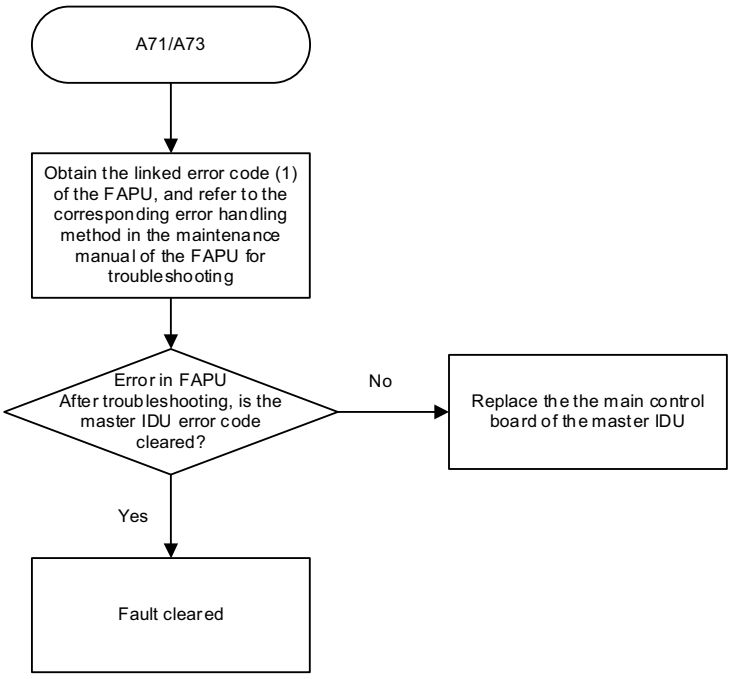
<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position</td></tr>
<tr><td>  </td><td>Panel, display box, and wired controller</td></tr>
<tr><td rowspan="2">Error impact</td><td colspan="2">The faulty IDU and other IDUs of the same system: The fan continues running, the EEV is closed, and code "A51" is displayed (V6 platform IDU displays the code "Ed")</td></tr>
<tr><td colspan="2">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.</td></tr>
<tr><td>Error trigger</td><td colspan="2">Duration of ODU error ≥ 10 minutes</td></tr>
<tr><td>Error recovery</td><td colspan="2">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="2">■ The ODU error is transmitted to the IDU.
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 
</td></tr>
</table>

A71 - Error of Linked FAPU is Transmitted to 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.**

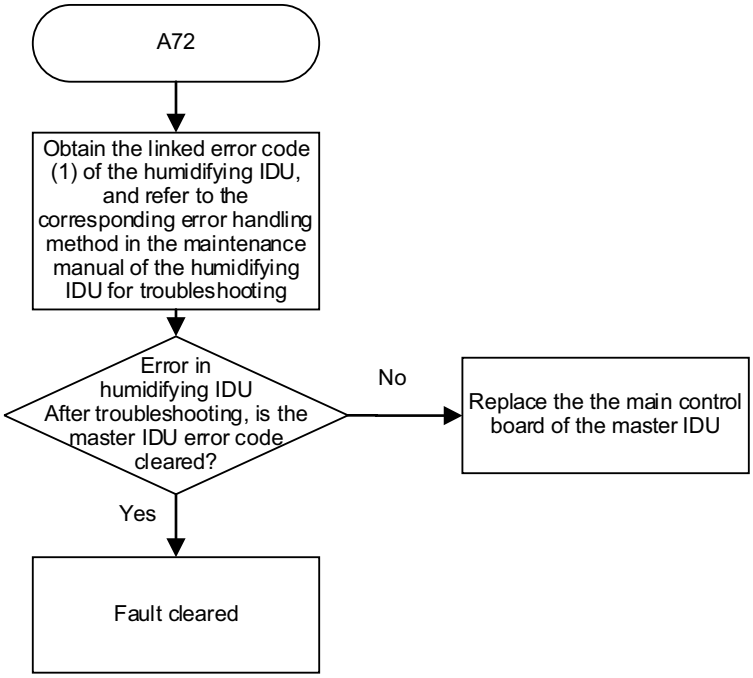
Table 23 — A71

<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>

A72 - Error of Linked Humidifying IDU is Transmitted to Master IDU

Table 24 — A72

<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.</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 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"> 

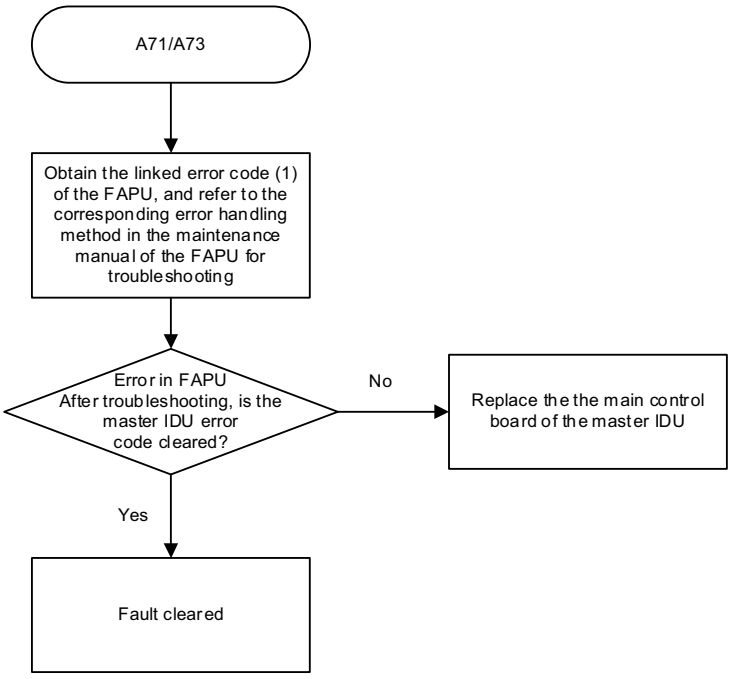
Note:
1. The error code can be queried after the humidifying IDU is connected to the wired controller or the display box.</td></tr>
</table>

A73 - Error of Linked FAPU is Transmitted to 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 25 — A73

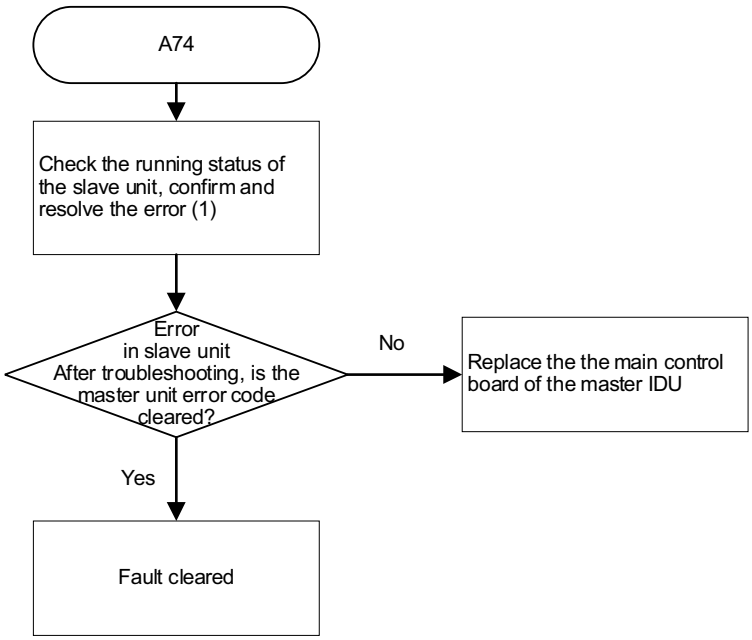
<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position (master IDU)</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td>Error impact</td><td colspan="3">Master IDU: operates normally. FAPU: stops. Other IDUs of the same system: operate normally.</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 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>

A74 - Error of AHU Kit Slave Unit is Sent to 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).

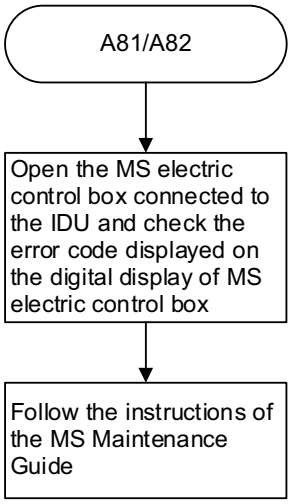
Table 26 — A74

<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 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">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. When the display box or wired controller is connected to the slave unit, fault codes can be queried (when repairing on site, the display box or wired controller of the main unit can be temporarily removed and connected to the slave unit)</td></tr>
</table>

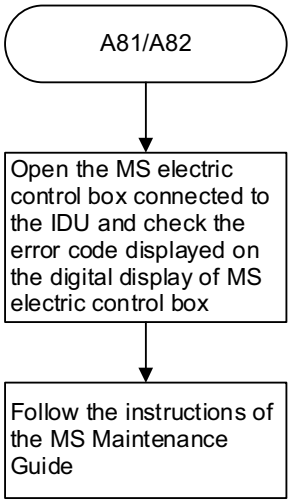
A81 - Self-Check Fault

Table 27 — A81

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 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		

A82 - MS (Refrigerant Flow Direction Switching Device) Fault

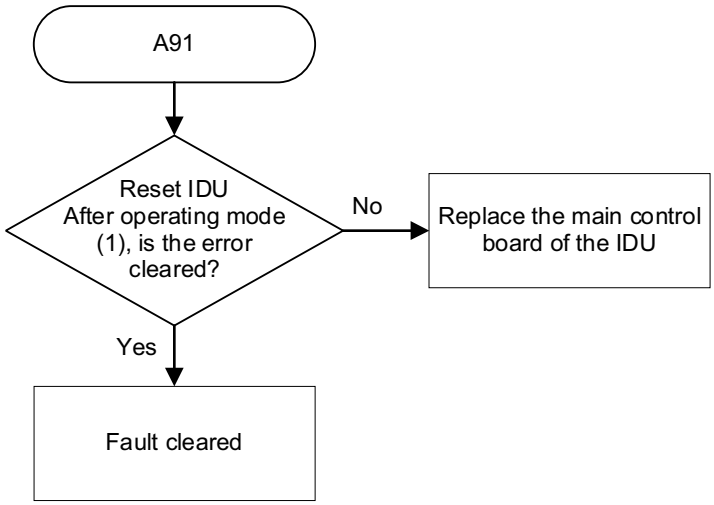
Table 28 — A82

Faulty IDU	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: ■ 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 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.	
	ODU of the same system: ■ Shutdown ■ V8 platform ODU displays the code "A82" (V6 platform ODU displays the code "F8". Meaning of the code: MS fault)	
Error trigger	When the IDU receives a fault signal from MS	
Error recovery	Automatic recovery (Note: Duration from fault triggering to automatic recovery is at least 30 min)	
Possible cause	The MS is faulty.	
Troubleshooting		

A91 - Mode Conflict (V6 Communication Protocol Adopted)

NOTE: Available when using V6 platform wired controller.

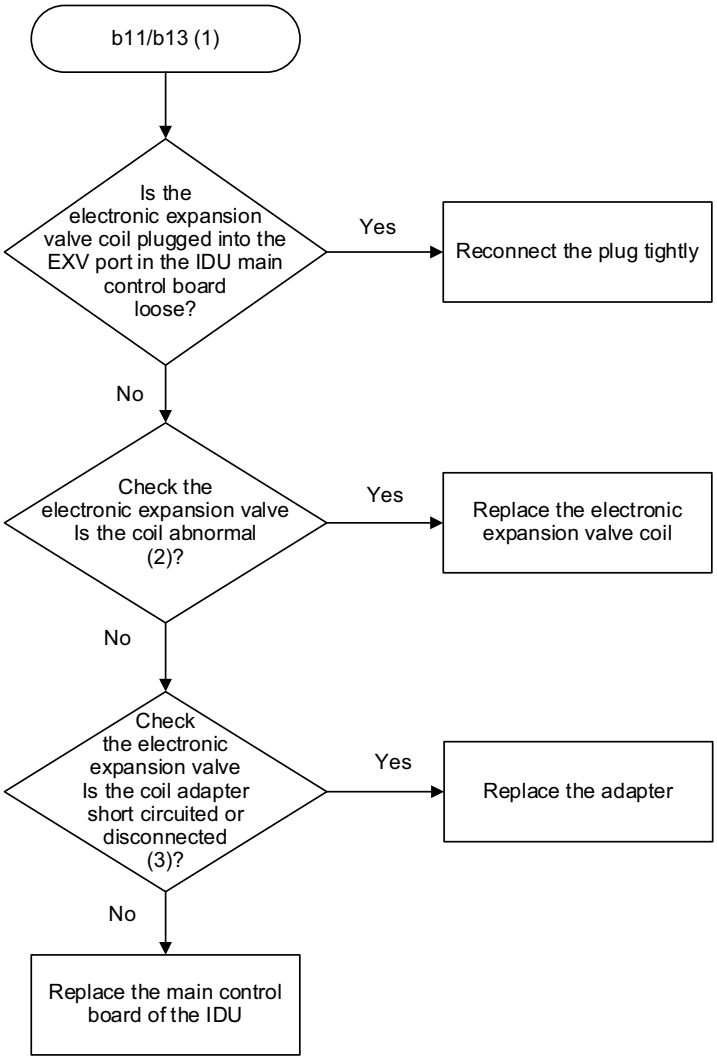
Table 29 — A91

<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
(Note: Error codes are displayed 2 minutes after faults are triggered)</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: 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 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.</td></tr>
<tr><td>Error recovery</td><td colspan="2">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="2">■ The operation mode of IDU conflicts with that of the ODU.
■ The IDU main control board is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 

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.</td></tr>
</table>

b11, b13 - Error in 1# Electronic Expansion Valve Coil, Error in 2# Electronic Expansion Valve Coil

Table 30 — b11, b13l

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			

b11, b13 - Error in 1# Electronic Expansion Valve Coil, Error in 2# Electronic Expansion Valve Coil (Cont.)

Table 31 — b11, b13 (Cont.)

Note:

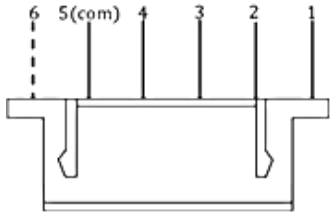
1. The error code corresponds to the following two situations:

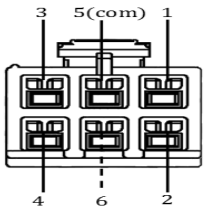
a. If there is only one electronic expansion valve port on the main control board of the IDU, when an error occurs in the electronic expansion valve coil connected to the EEV port, the error code is b05.

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





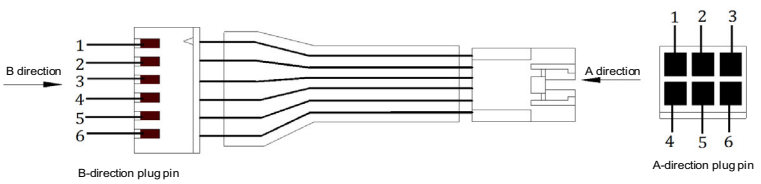
XHP plug	AMP plug

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

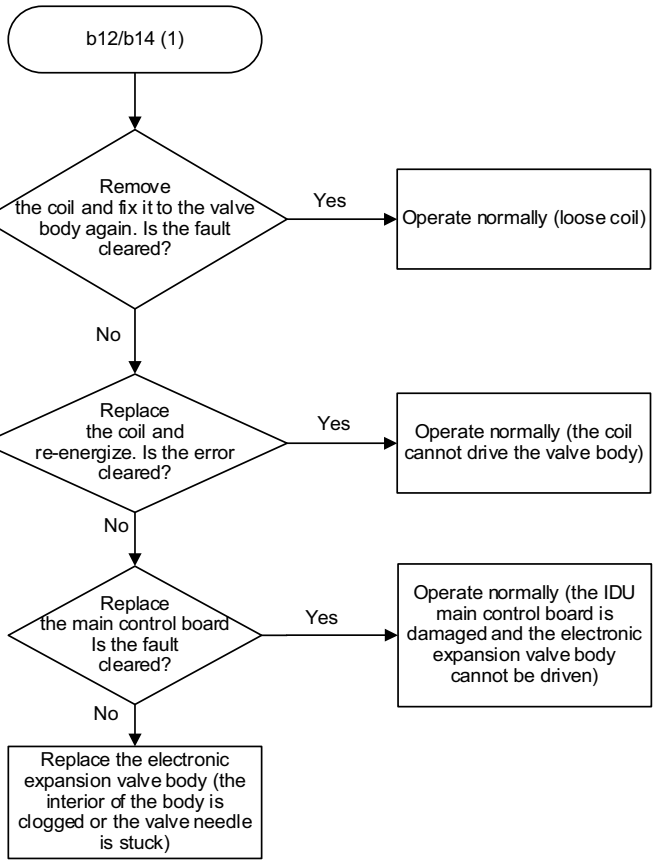
3. When the distance between the throttle part and the main control board of the IDU in need of connection is too great, you will need an adapter wire for the electronic expansion valve coil. This is shown in Figure 2 below: Use a multimeter to measure the resistance between the pin in the plug at end 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



b12, b14 - Error in 1# Electronic Expansion Valve Body, Error in 2# Electronic Expansion Valve Body

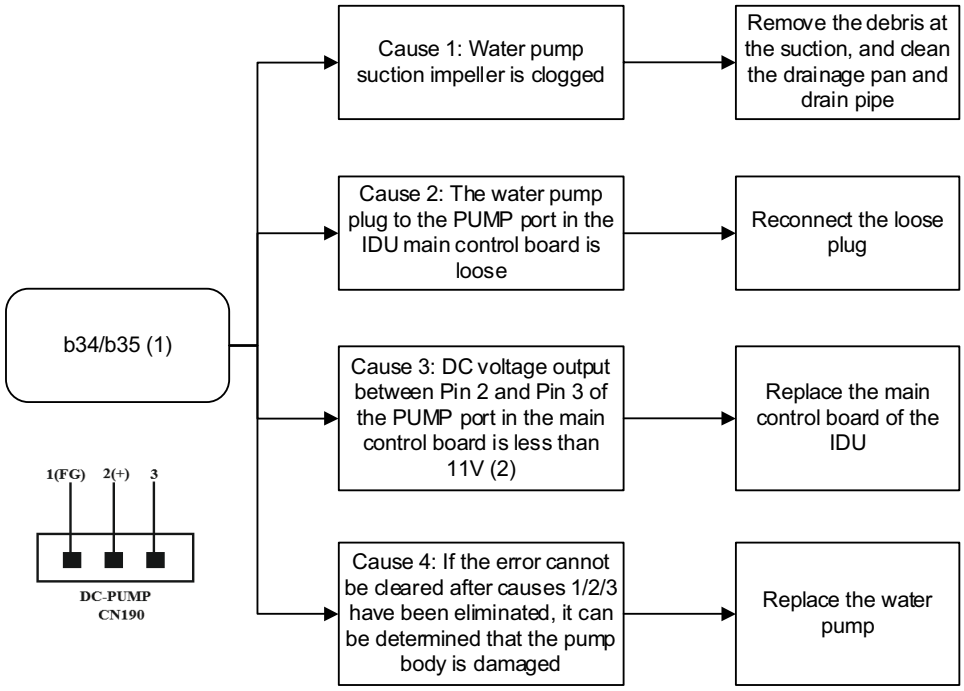
Table 32 — b12, b14

<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>

b34, b35 - Stall Protection for 1# Water Pump, Stall Protection on 2# Water Pump

Table 33 — b34, b35

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.

b36 - Water Level Switch Alarm Error

Table 34 — b36

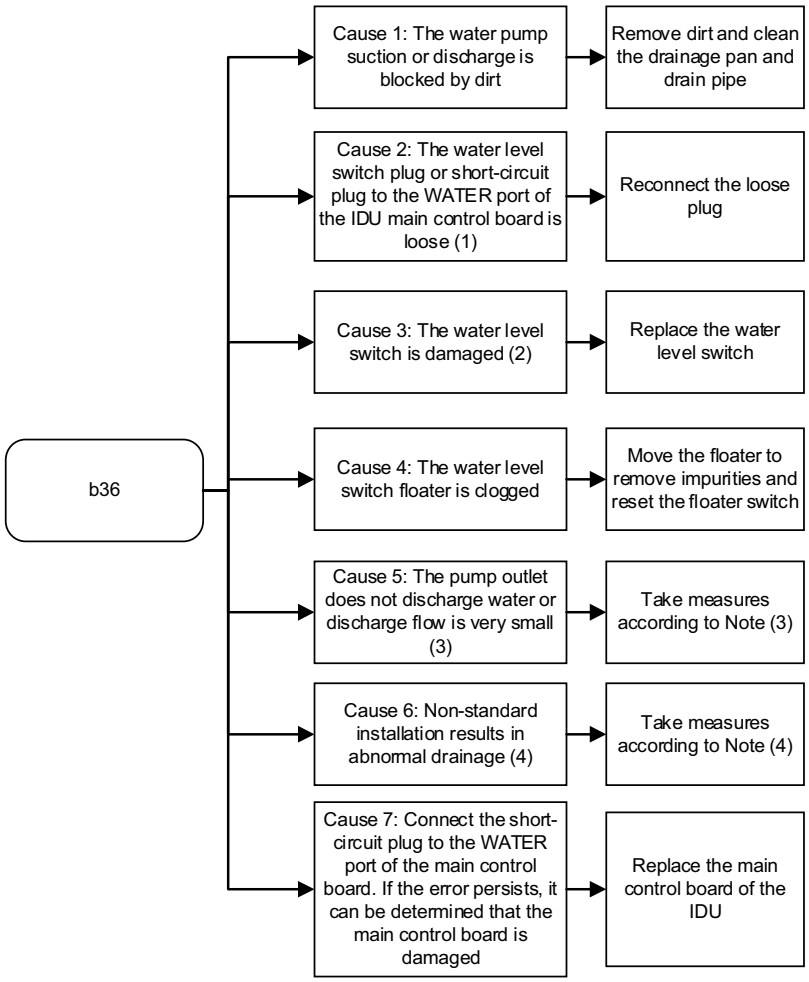
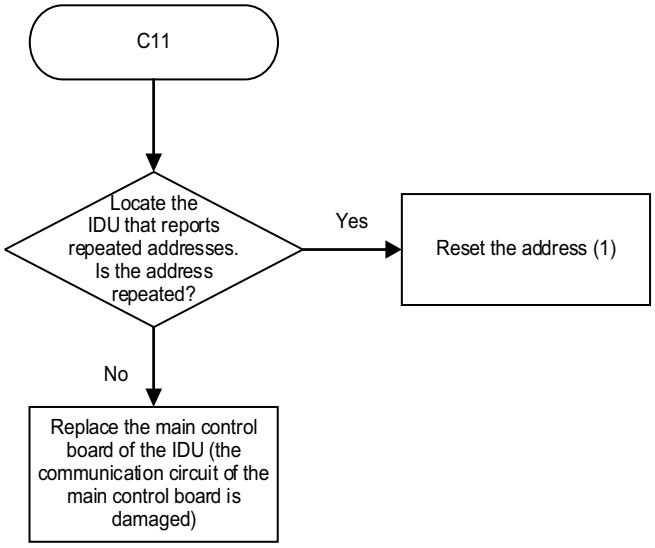
Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	The water level switch alarm is triggered when the floater of the water 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		

Table 35 — b36 (Cont.)

	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.

C11 - Duplicate IDU Address Code

Table 36 — C11

<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>

Table 37 — C11

Note:

1. The following table shows the number of addresses and address codes for any indoor unit (AHU kit/direct expansion unit not applicable) with different capacities (HP)

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

Table 38 — C11 (Cont.)

★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.

C21 - Abnormal Communication Between IDU and ODU

Table 39 — C21

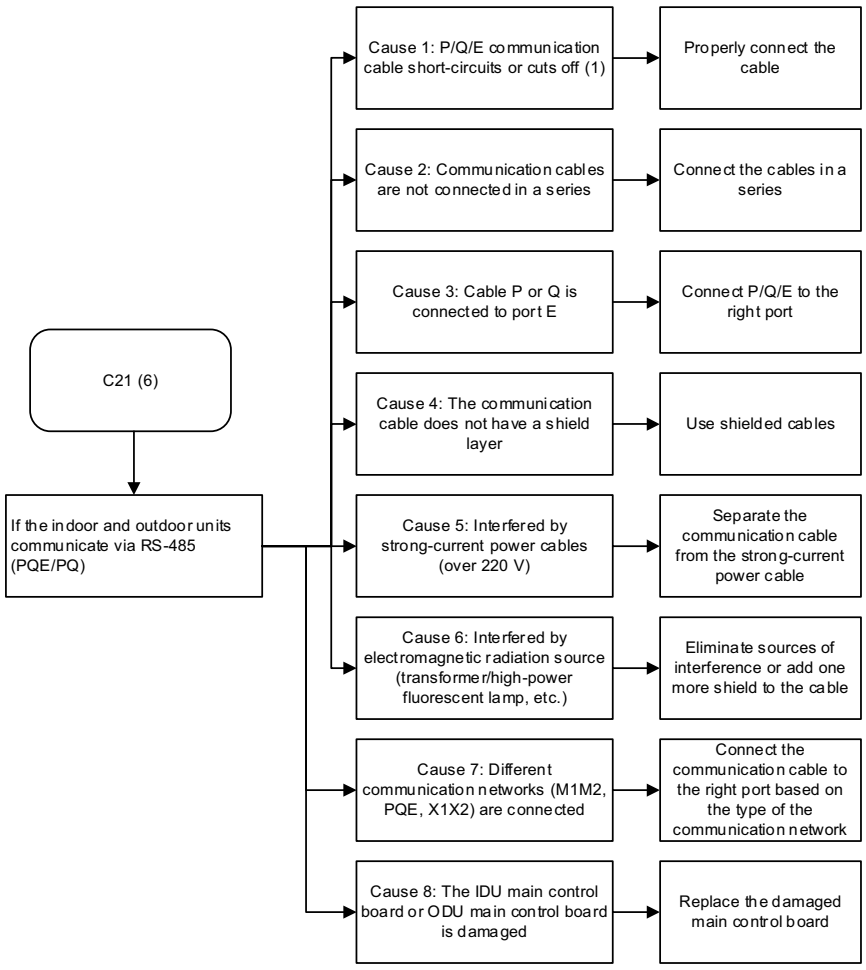
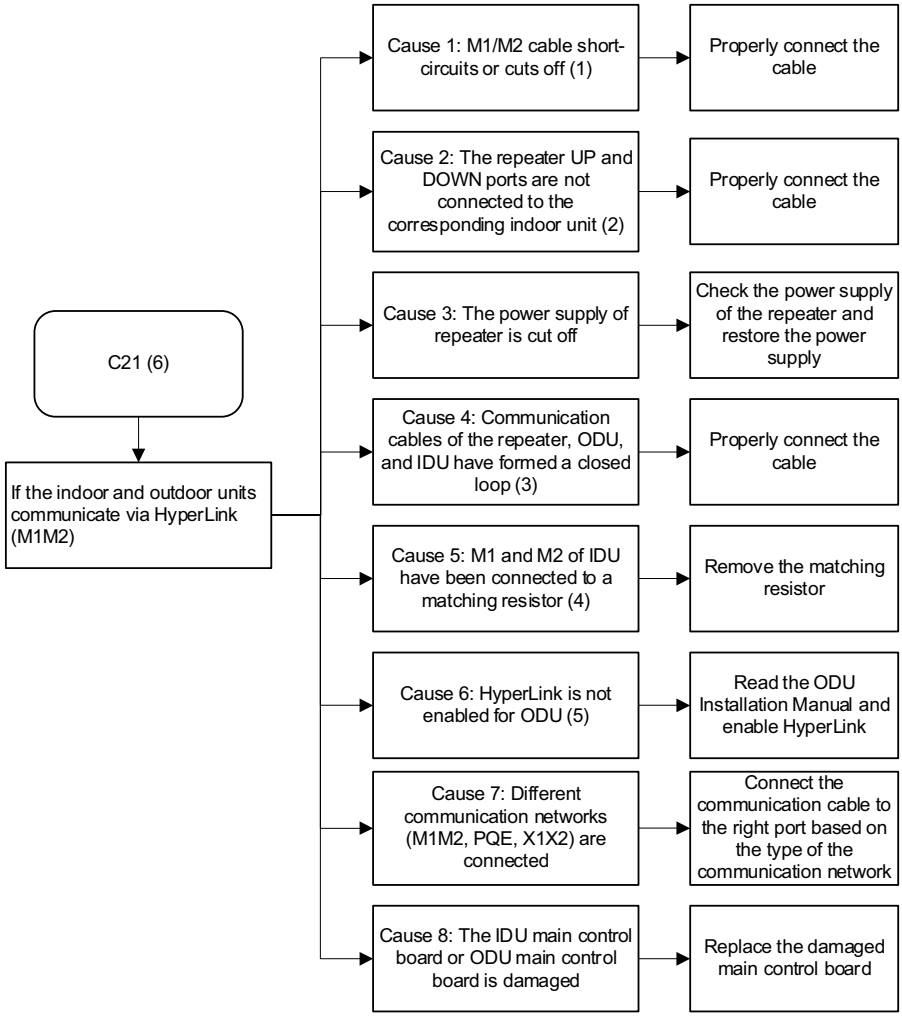
Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	Faulty IDU: The fan continues running, and the EEV is closed. Other IDUs of the same system: The fan continues running, the EEV is closed, and error code "A51" is displayed (V6 platform IDU displays 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 2 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.	

Table 40 — C21 (Cont.)

Troubleshooting

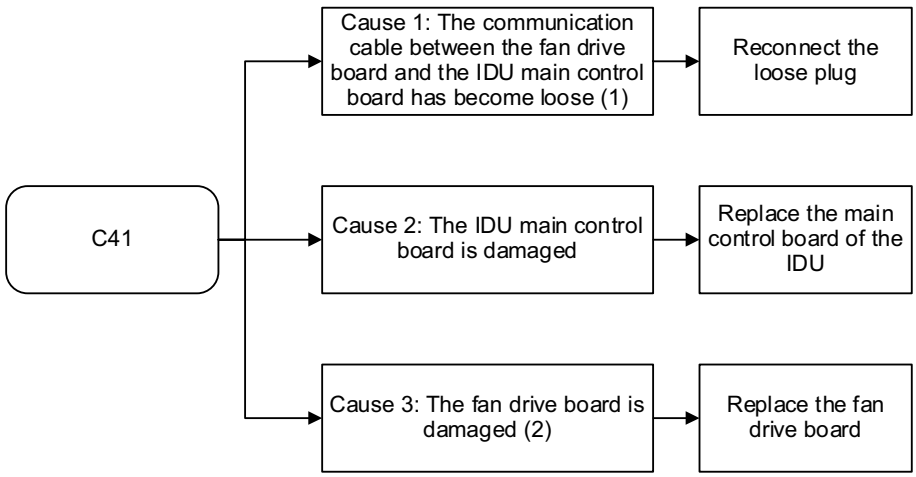
■ If the indoor and outdoor units communicate via HyperLink (M1M2):



Note:

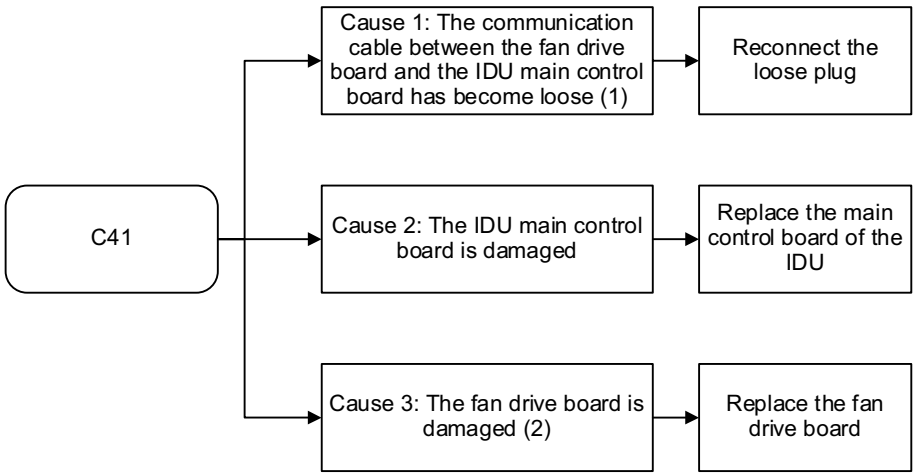
1. If you measure the resistance between terminal blocks M1 and M2 of the IDU main control board, normally this resistance is greater than 1 MΩ.
2. Figure 1 shows the schematic diagram of HyperLink communication line connection. The connection of repeater wires must comply with the following requirements. Otherwise, an IDU communication fault may occur.

Table 41 — C21 (Cont.)

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.	

C41 - Abnormal Communication Between IDU Main Control Board and Fan Drive Board

Table 42 — C41

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.	

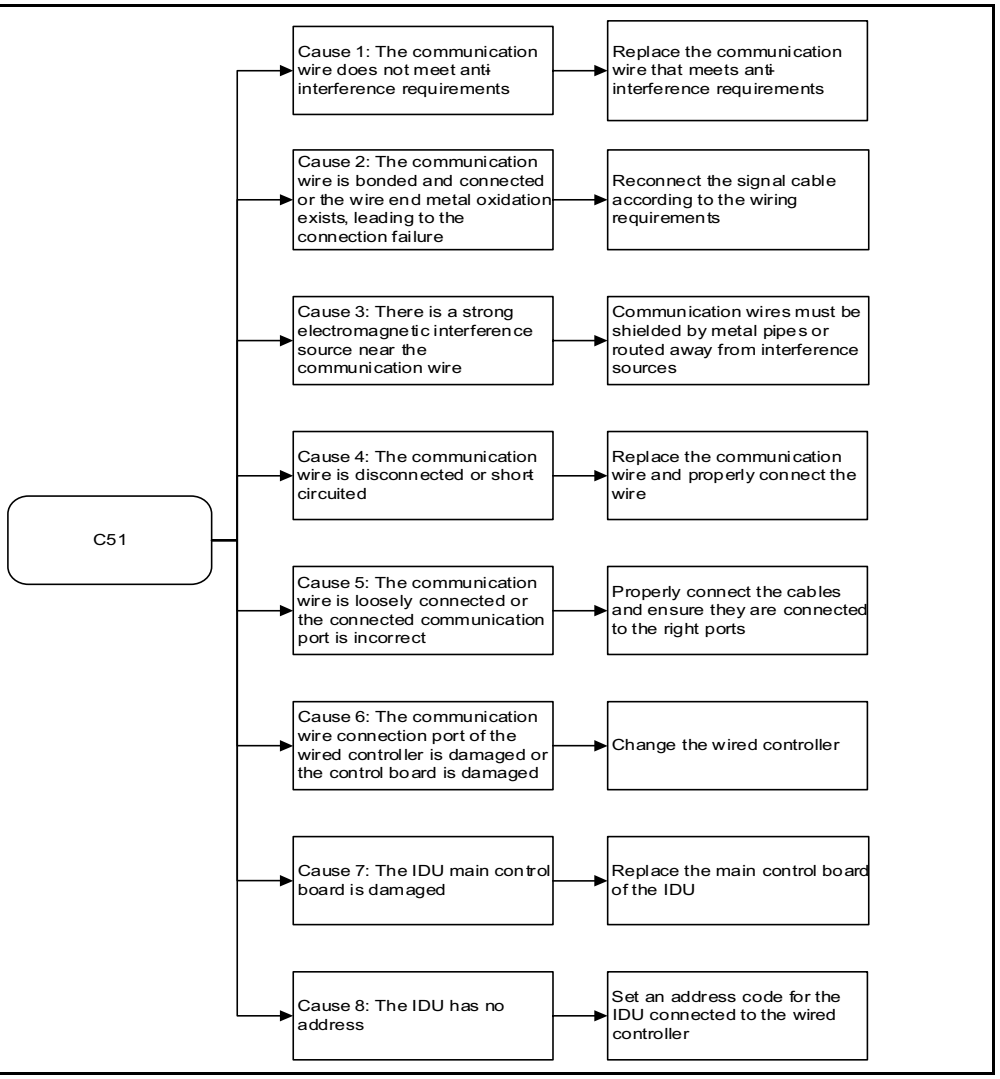
C51: Communication Exception Between IDU and Wired Controller

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

Table 43 — C51

<table>
<tr><td rowspan="3">Fault Display</td><td>LED display</td><td>Display position</td></tr>
<tr><td rowspan="2">  </td><td>If a powered-on IDU does not receive any message from the wired controller: 1) Wired controller: "C51" is displayed; 2) Panel or display box: The LED display and the error code bit on the inspection interface are displayed normally.</td></tr>
<tr><td>If a powered-on IDU receives any message from the wired controller: 1) Wired controller: "C51" is displayed; 2) Panel or display box: The LED display is normal, and "C51" is displayed in the error code bit on the inspection interface.</td></tr>
<tr><td rowspan="2">Fault Impact</td><td colspan="2">■ 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="2">ODU of the same system operates normally.</td></tr>
<tr><td>Fault Trigger</td><td colspan="2">■ Triggered at the IDU side: The IDU main control board experiences a two-minute communication interruption with the wired controller.
■ Triggered at the wired controller side: The wired controller has not received any reply from the IDU main control board for one continuous minute.</td></tr>
<tr><td>Fault Recovery</td><td colspan="2">Automatic recovery</td></tr>
<tr><td>Possible Cause</td><td colspan="2">■ The wired controller is damaged.
■ The IDU main control board is damaged.
■ Communication wires are loose or the communication port is faulty.
■ Communication wires have short-circuited or been cut off.
■ The communication wire does not meet anti-interference requirements or is affected by strong-current interference.
■ IDU has no address.</td></tr>
</table>

Table 44 — C51 (Cont.)

Troubleshooting	

C61 - Abnormal Communication Between IDU Main Control Board and Display Control Board

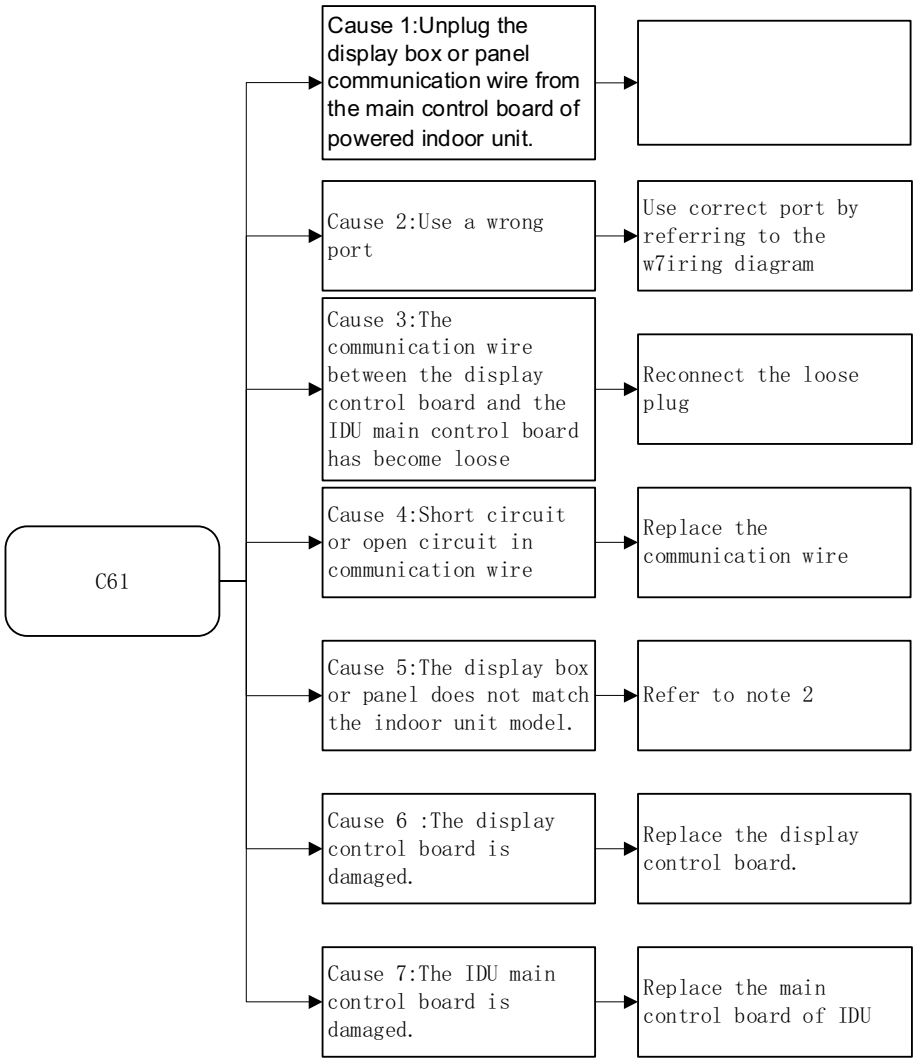
NOTE: The error code C61 can be triggered either at the IDU side or at the panel or display box side.

Table 45 — C61

Error display	Digital display	Display position
		After power on, normal communication was not established between the indoor unit and the wired controller: 1) The wired controller does not display fault code; 2) The panel or display box displays "C61".
		After power on, normal communication was established between the indoor unit and the wired controller: 1) The wired controller displays "C61"; 2) The panel or display box displays "C61".
Error impact	The faulty IDU and other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	■ 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	
Error recovery	Automatic recovery	
Possible cause	■ 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.	

Table 46 — C61 (Cont.)

Troubleshooting



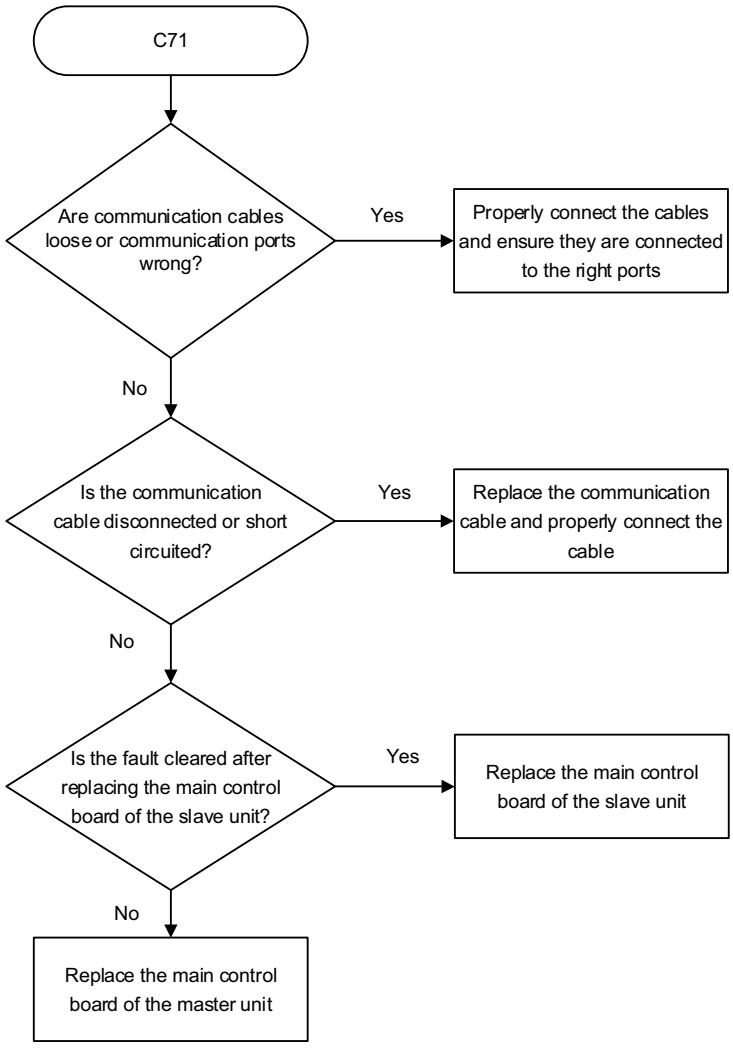
Note:

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

C71 - 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 AHU Kit.

Table 47 — C71

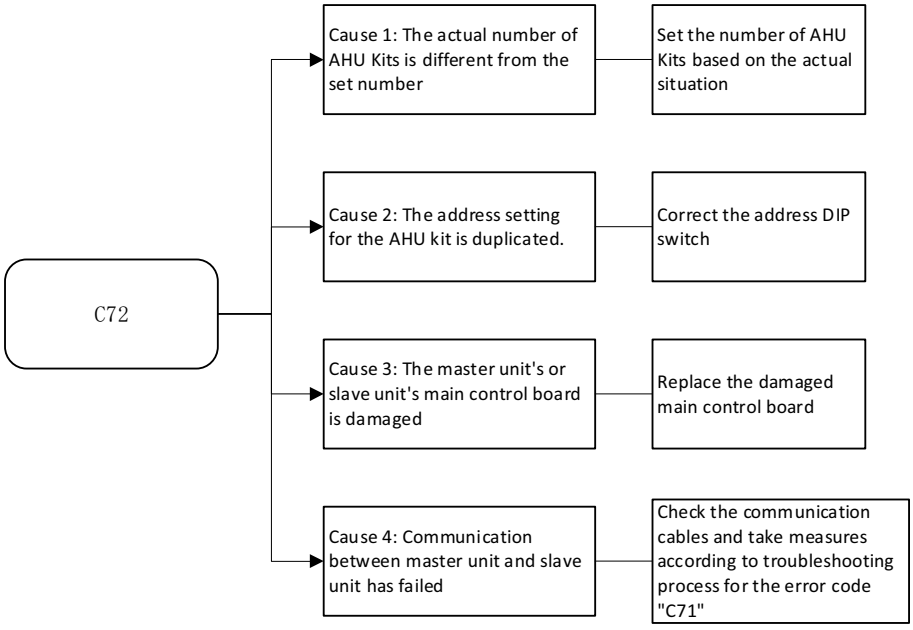
<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position (master)</td></tr>
<tr><td>  </td><td>Display box or wired controller*</td></tr>
<tr><td rowspan="2">Error impact</td><td colspan="2">Master unit and slave unit: stop. Other IDUs of the same system: operate normally.</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: When the display box or wired controller is connected to the slave unit, fault codes can be queried (when repairing on site, the display box or wired controller of the main unit can be temporarily removed and connected to the slave unit).</td></tr>
</table>

C72 - Number of AHU Kits is not the same as the Set Number

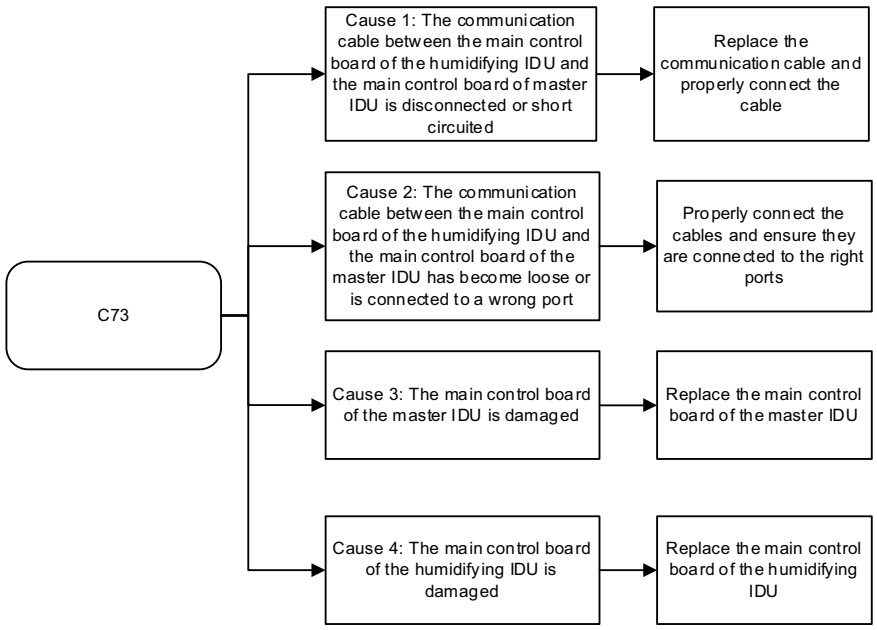
NOTE: When multiple AHU Kits are connected in parallel, the master AHU Kit (referred to as the master) communicates with the ODU, and the slave AHU Kit (referred to as the slave) communicates with the master AHU Kit.

Table 48 — C72

<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position (master)</td></tr>
<tr><td>  </td><td>Master AHU Kit: 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.
■ The address setting for the AHU kit is duplicated.
■ Communication between the master unit and slave unit fails.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 
</td></tr>
</table>

C73 - Abnormal Communication Between the Linked Humidifying IDU and Master IDU

Table 49 — C73

<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"> 

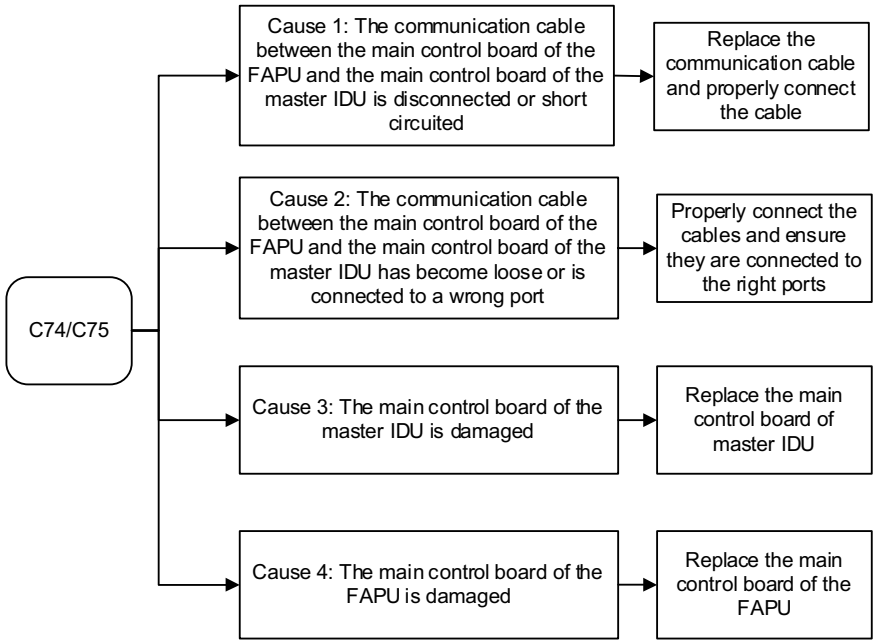
Note:
1. The error code can be queried after the humidifying IDU is connected to the wired controller or the display box.</td></tr>
</table>

C74 - Abnormal Communication Between the Linked FAPU and Master IDU (Series Setting)

NOTES:

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 50 — C74

<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"> 

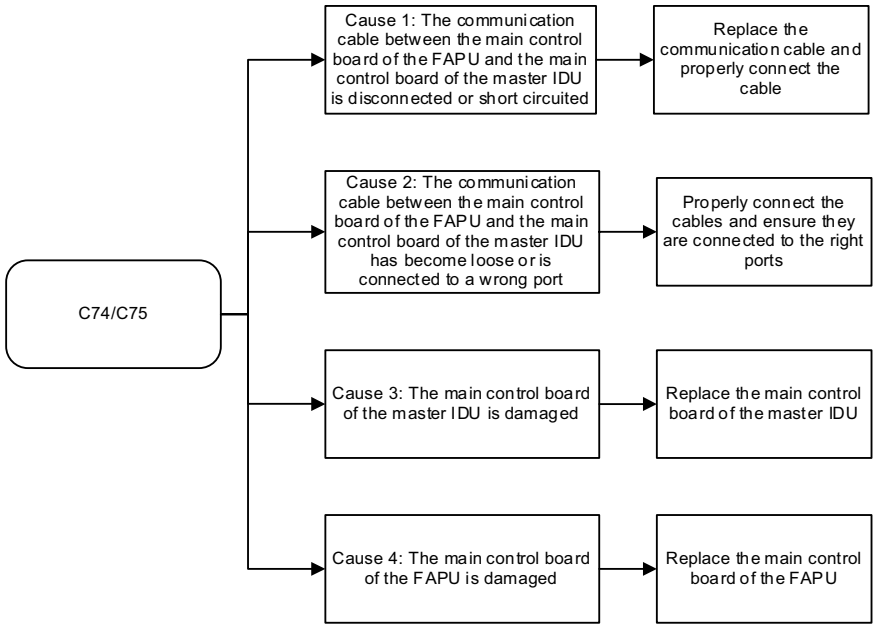
Note:
1. The error code can be queried after the FAPU is connected to the wired controller or the display box.</td></tr>
</table>

C75 - Communication Fault Between Linked FAPU and Master IDU (Non-Series Setting)

NOTES:

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.

Fig. 17 —C75

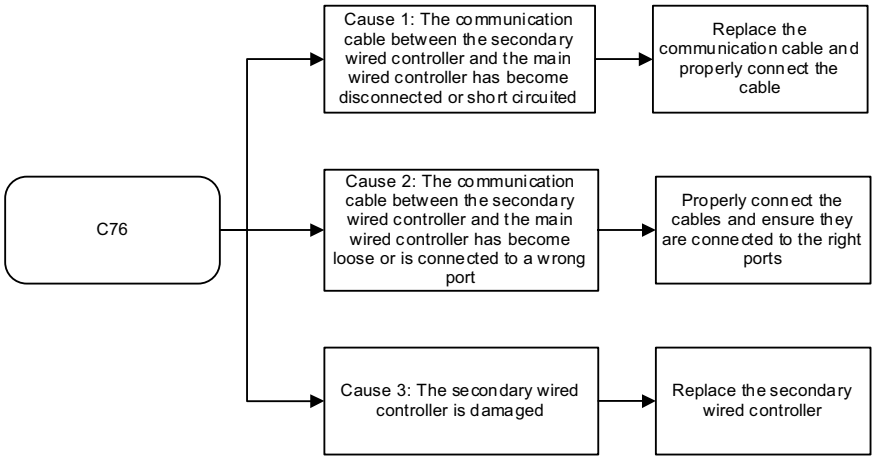
<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position (master IDU)</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td>Error 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>

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.

Table 51 — C76

Error display	Digital display	Display position
		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		

C77, C78 - Abnormal Communication Between IDU Main Control Board and 1# Expansion Board, Abnormal Communication Between IDU Main Control Board and 2# Expansion Board

Table 52 — C77, C78

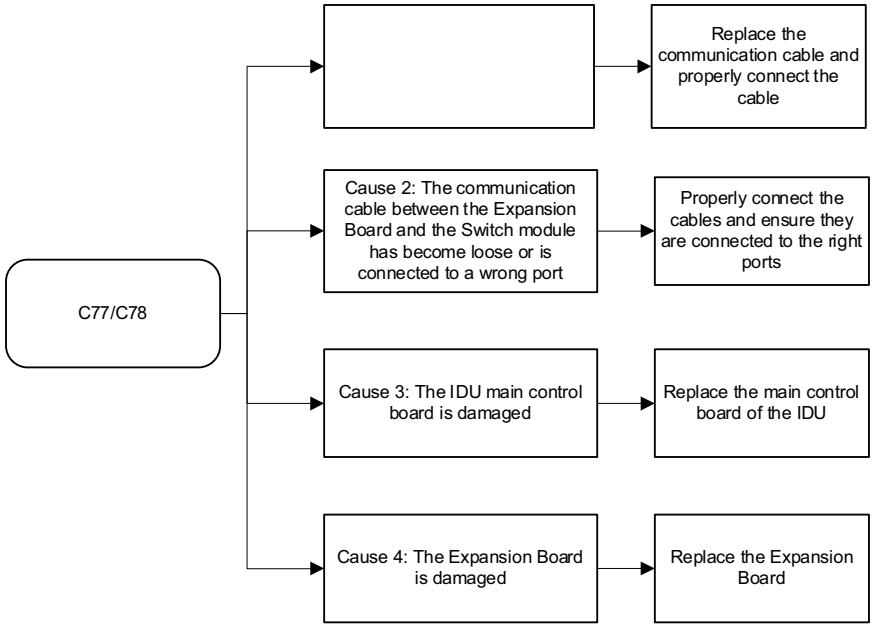
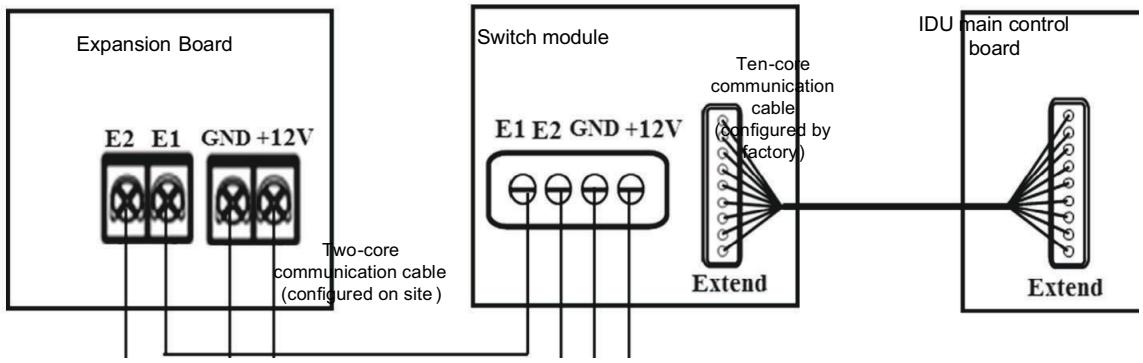
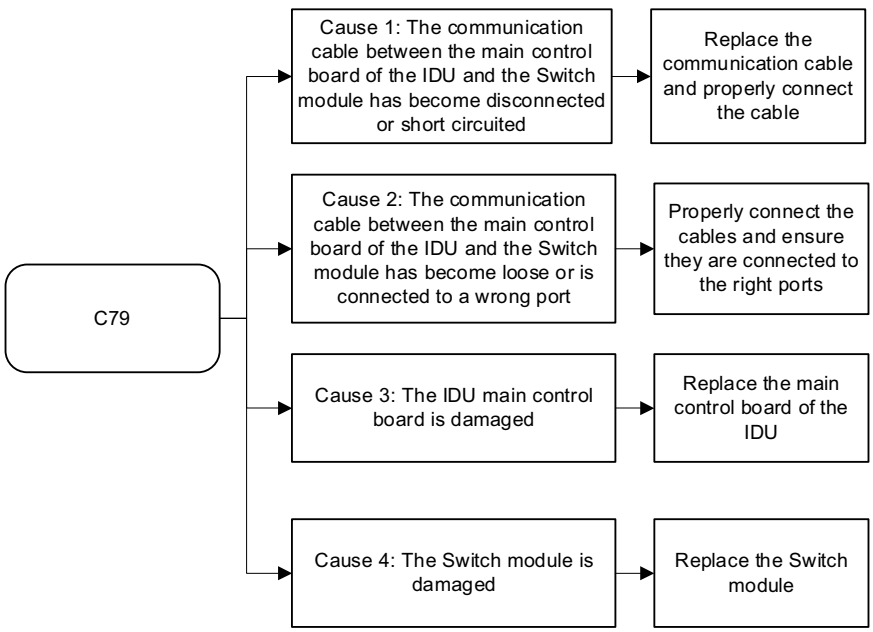
Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	Faulty IDU: The fan continues running, and the EEV is closed. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	If the main control board of 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



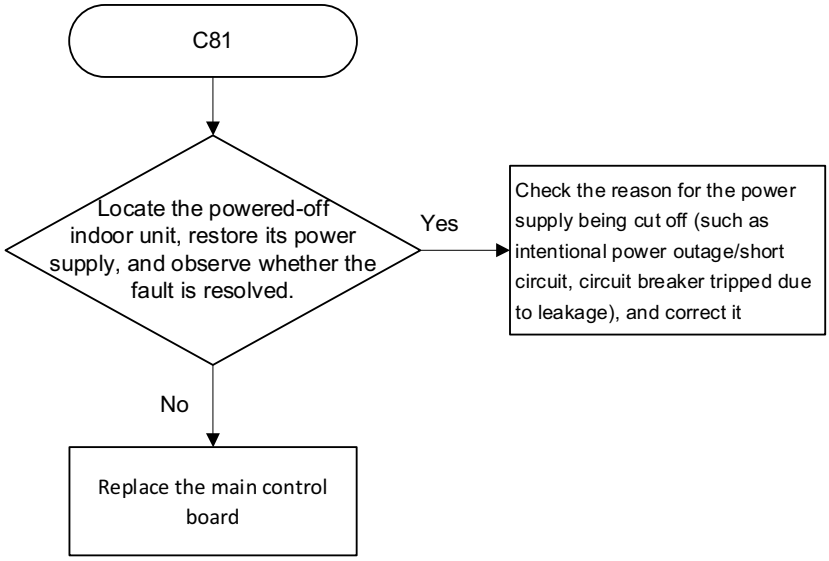
C79 - Abnormal Communication Between the IDU Main Control Board and Switch Module

Table 53 — C79

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		

C81—The Indoor Unit is in a Power-Off State

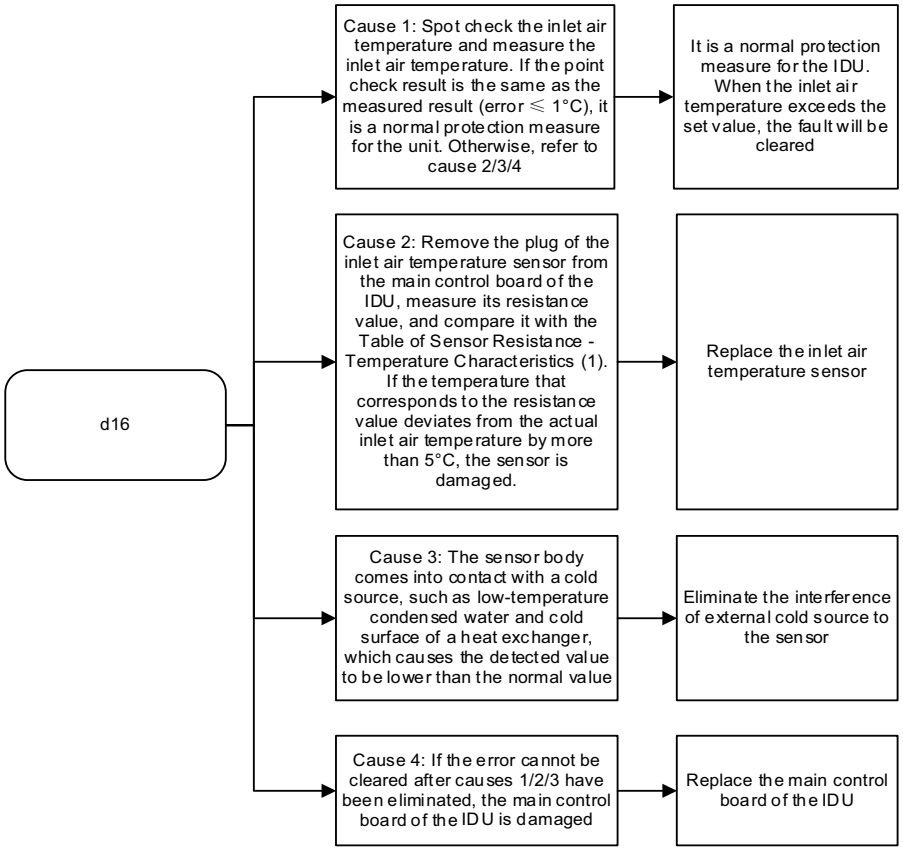
Table 54 — C81

<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position</td></tr>
<tr><td>  </td><td>Central controller or various types of control terminal software</td></tr>
<tr><td rowspan="2">Error impact</td><td colspan="2">■ 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.</td></tr>
<tr><td colspan="2">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.</td></tr>
<tr><td>Error trigger</td><td colspan="2">The power supply to the indoor unit has been detected as being cut off.</td></tr>
<tr><td>Error recovery</td><td colspan="2">The faulty indoor unit will automatically resume operation once power supply is restored.</td></tr>
<tr><td>Possible cause</td><td colspan="2">■ The power supply to the indoor unit has been cut off.
■ The main control board of the indoor unit is damaged</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 

Note: The C81 fault trigger is only supported when both the indoor and outdoor units belong to the V8 series and the communication line between the indoor and outdoor units is connected to the M1/M2 ports.</td></tr>
</table>

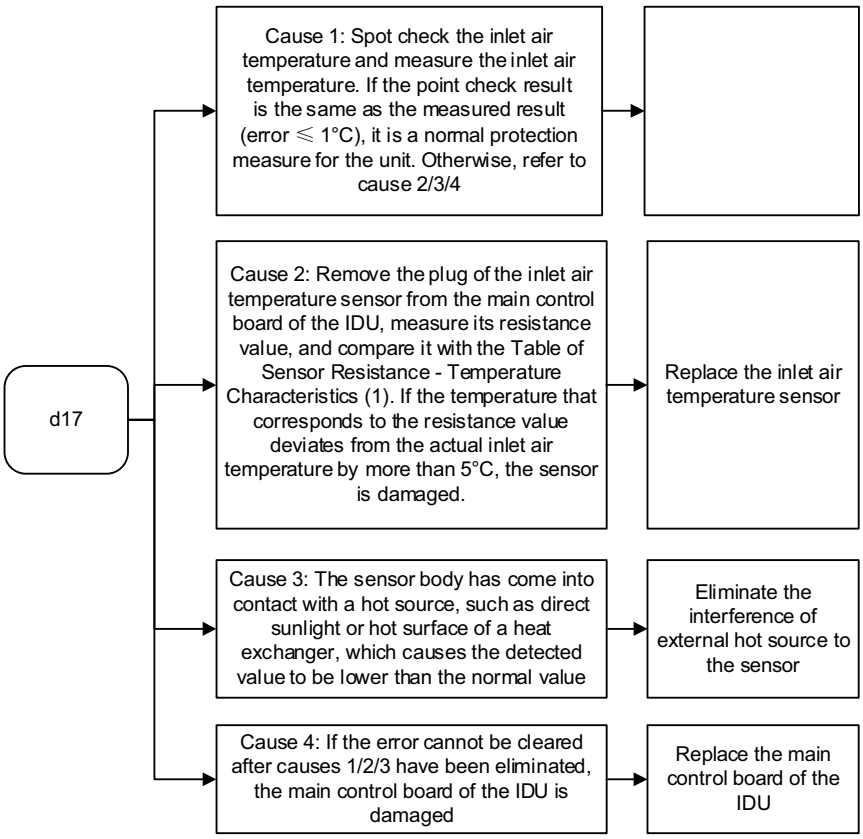
d16 - Air Inlet Temperature of IDU is Too Low in Heating Mode

Table 55 — d16

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. 2. FAPU operating temperature range: Heating: -10 to 16; Cooling: 20 to 52 Standard IDU operating temperature range: Heating: 15 to 30; Cooling: 16 to 32	

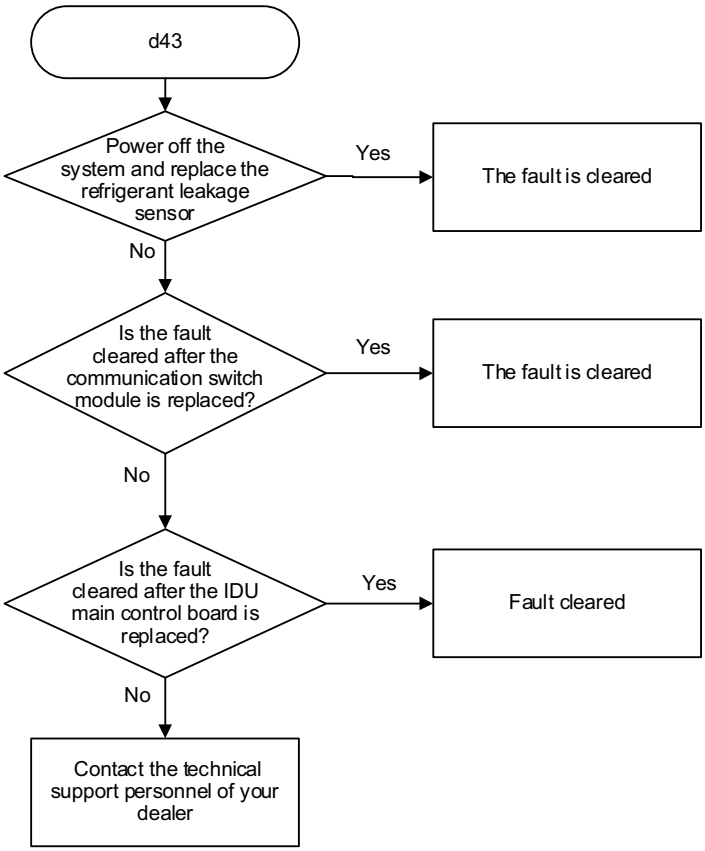
d17 - Air Inlet Temperature of IDU is Too High in Cooling Mode

Table 56 — d17

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. 2. FAPU operating temperature range: Heating: -10 to 16; Cooling: 20 to 52 Standard IDU operating temperature range: Heating: 15 to 30; Cooling: 16 to 32	

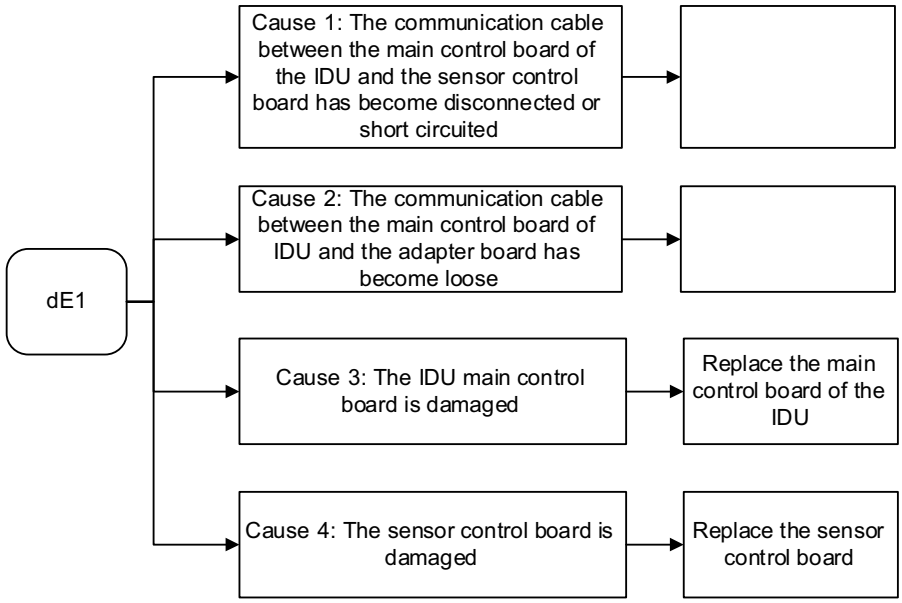
d43 Refrigerant Leakage Sensor Service Life Reminder

Table 57 — d43

<table>
<tr><td rowspan="2">Fault 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">Fault Impact</td><td colspan="2">The faulty IDU and other IDUs of the same system operate normally.</td></tr>
<tr><td colspan="2">ODU of the same system operates normally.</td></tr>
<tr><td>Fault Trigger</td><td colspan="2">The IDU main control board receives a refrigerant leakage sensor service life reminder from the communication switch module (as shown in the following figure)</td></tr>
<tr><td>Fault Recovery</td><td colspan="2">A refrigerant leakage sensor service life reminder is detected.</td></tr>
<tr><td>Possible Cause</td><td colspan="2">■ The R32/R454B refrigerant leakage sensor on the IDU side has reached the end of its service life</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 
</td></tr>
<tr><td></td><td colspan="2"></td></tr>
</table>

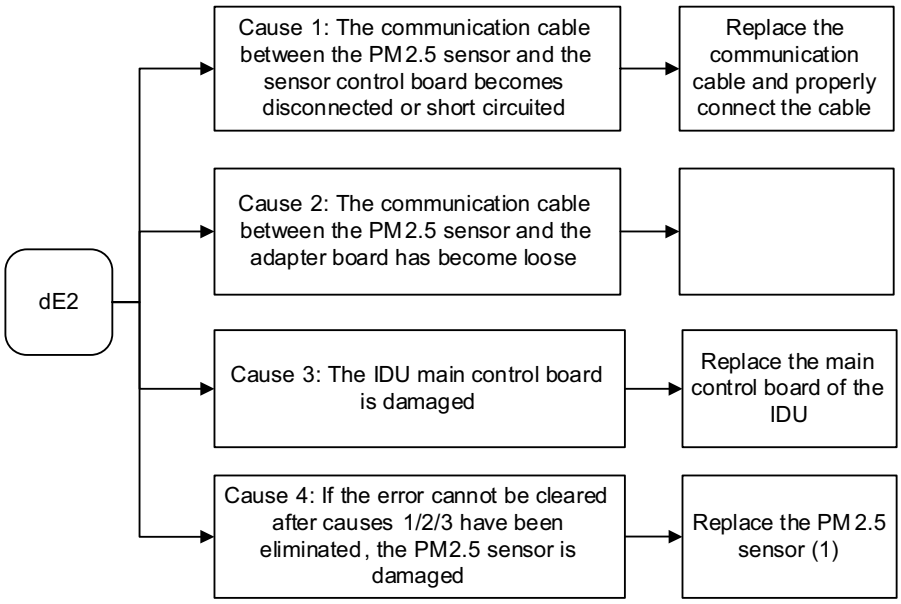
dE1 - Sensor Control Board Fault

Table 58 — dE1

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		

dE2 - PM2.5 Sensor Fault

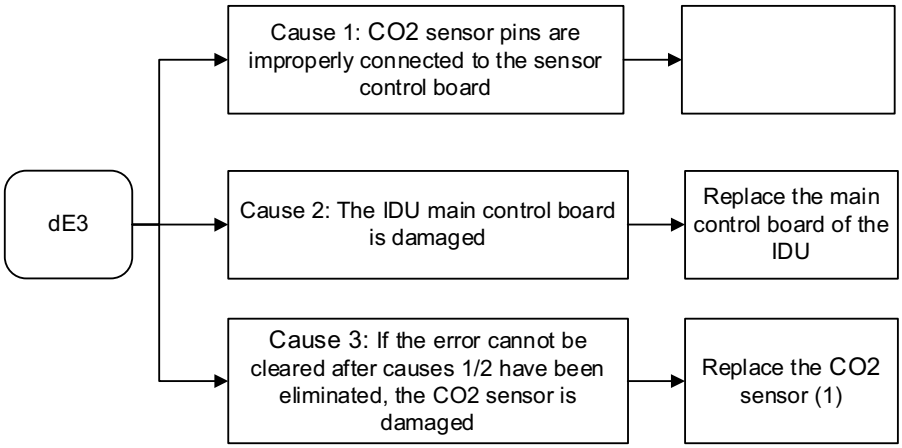
Table 59 — dE2

<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: 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 an IDU has lost communication with PM2.5 sensor 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">See the Troubleshooting section.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 

Note:
1. If the PM2.5 sensor is integrated with the sensor control board, making disassembly difficult, then replace the sensor control board directly.</td></tr>
</table>

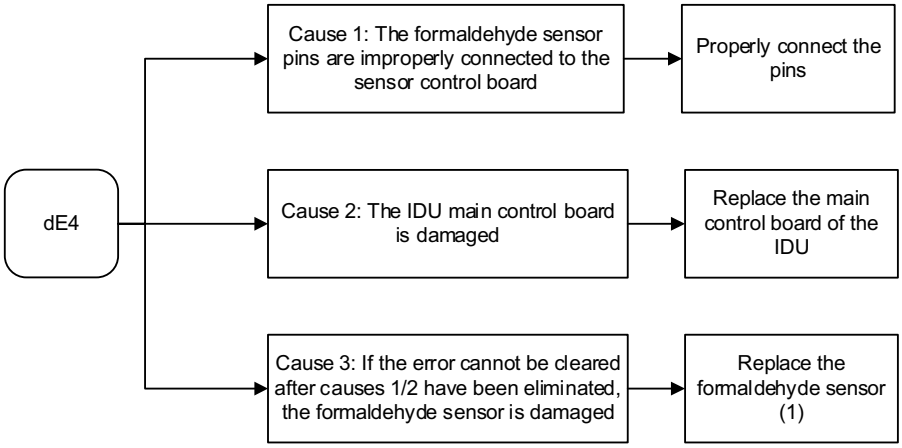
dE3 - CO2 Sensor Fault

Table 60 — dE3

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.	

dE4 - Formaldehyde Sensor Fault

Table 61 — dE4

<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: 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 an IDU has lost communication with formaldehyde sensor 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">See the Troubleshooting section.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 

Note 1:
1) The formaldehyde sensor pins should be inserted on the sensor control board according to the wiring nameplate.

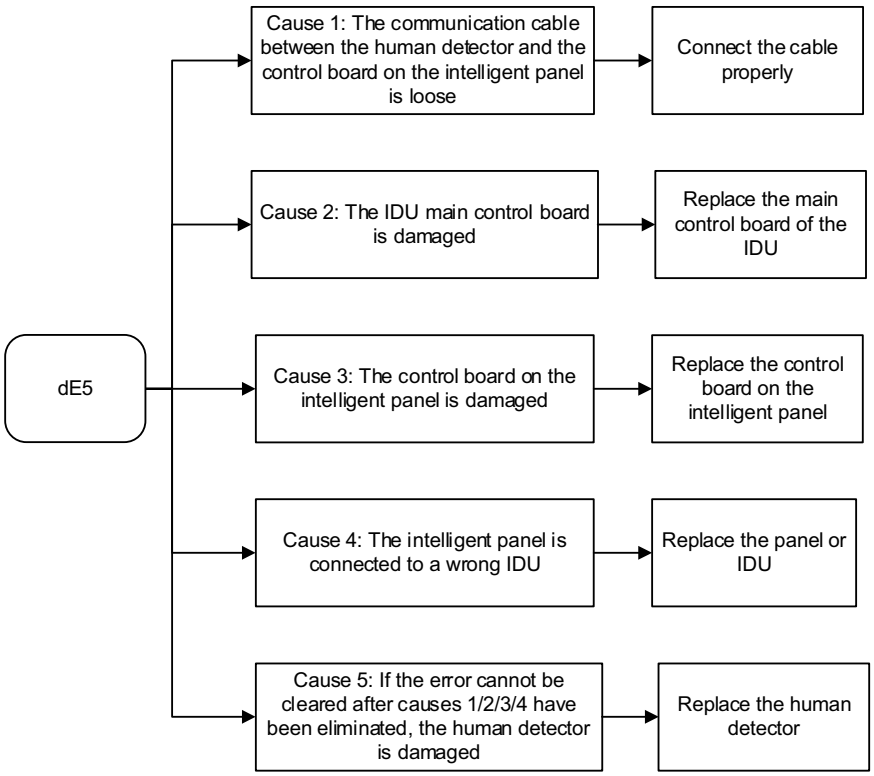
2) When inserting and removing the sensor, do not touch or squeeze the white sensor film with your hand.

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.</td></tr>
</table>

dE5 - Human Detect Sensor Fault

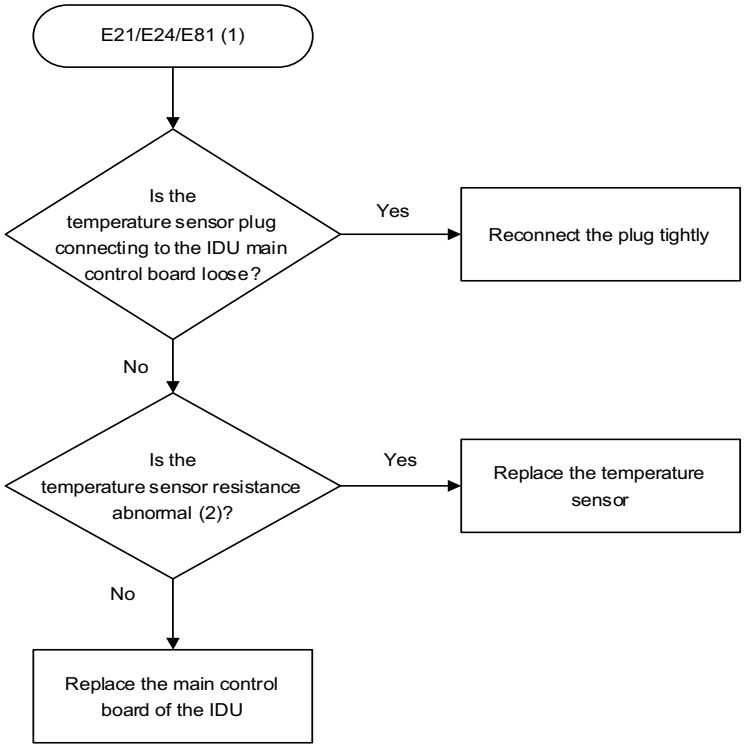
NOTE: The human detector sensor on the smart panel is used to detect the location of the human body.

Table 62 — dE5

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		

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

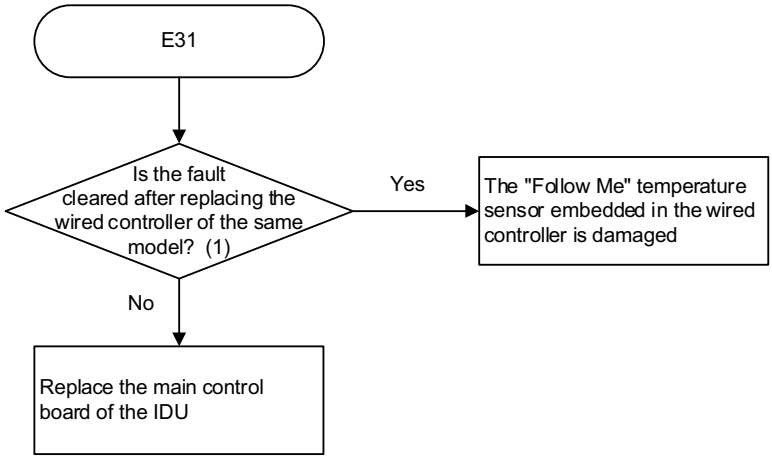
Table 63 — E21, E24, E81

<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 to the T0/T1/TA 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 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.
3) When the AHU kit is set to return air temperature control, it is able to determine if the T1 sensor is short-circuited or open-circuited, but it is not able to determine if the T0 or TA sensors are short-circuited or open-circuited.
When the AHU kit is set to supply air temperature control, it is able to determine if the T0 or TA sensors are short-circuited or open-circuited, but it is not able to determine if the T1 sensor is short-circuited or open-circuited.
4) Only the master unit needs to be connected to the T1/T0/TA sensors when the AHU kit is installed in parallel.</td></tr>
</table>

E31: Wired Controller Temperature Sensor Failure

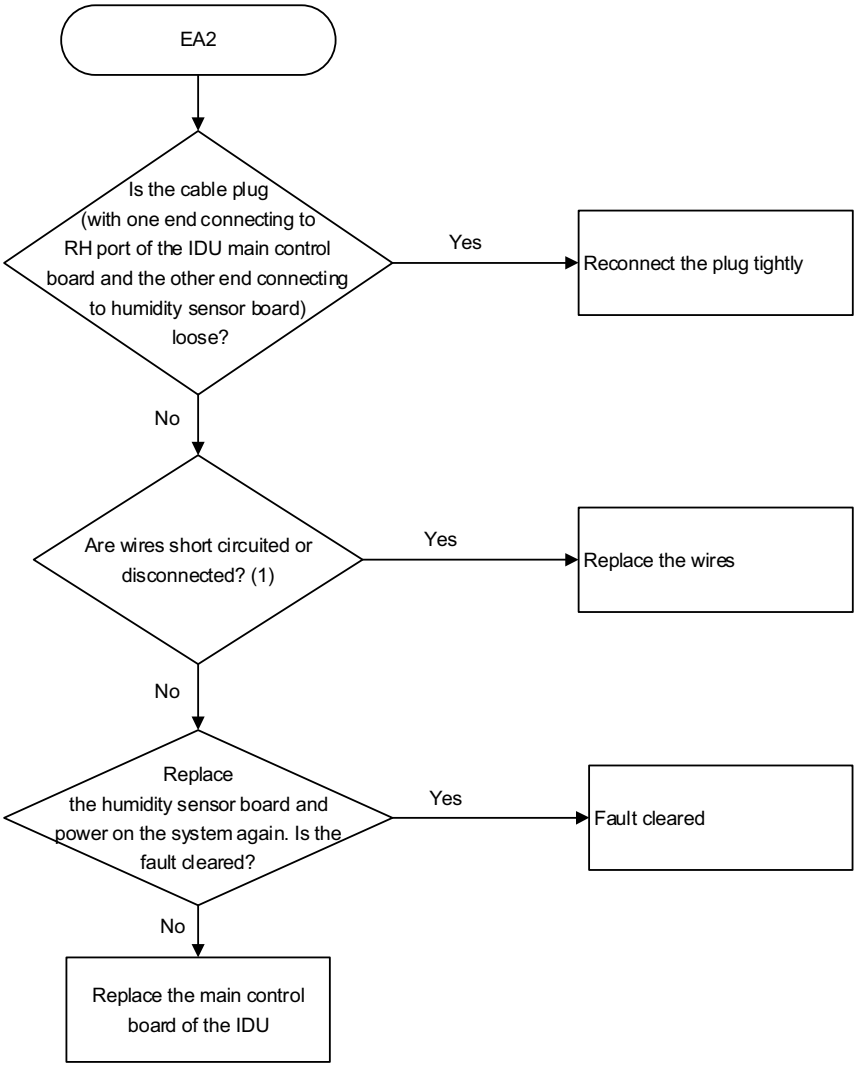
Table 64 — E31

<table>
<tr><td rowspan="3">Fault Display</td><td>LED 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 colspan="2">Panel, display box, and wired controller</td></tr>
<tr><td>Fault Impact</td><td colspan="3">The faulty IDU and other IDUs of the same system operate normally.
ODU of the same system operates normally.</td></tr>
<tr><td>Fault Trigger</td><td colspan="3">When the V8 series FAPU uses room temperature control, the "Follow Me" temperature value received from the wired controller is abnormal.</td></tr>
<tr><td>Fault Recovery</td><td colspan="3">Automatic recovery</td></tr>
<tr><td>Possible Cause</td><td colspan="3">■ The built-in room temperature sensor of the wired controller is short-circuited or open-circuited.
■ The wired controller is damaged.
■ The main control board of the FAPU is damaged.</td></tr>
<tr><td>Troubleshooting</td><td colspan="3"> 

Note:
1. After replacing the wired controller of the same model, set the FAPU to room temperature control and activate the "Follow Me" function according to the engineering parameter settings in the Installation Manual for V8 Series Fresh Air Processing Unit.</td></tr>
</table>

EA2 - Return Air Humidity Sensor Fault

Table 65 — EA2

<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>

EC1: R32/R454B Refrigerant Leakage Sensor Fault

Table 66 — EC1

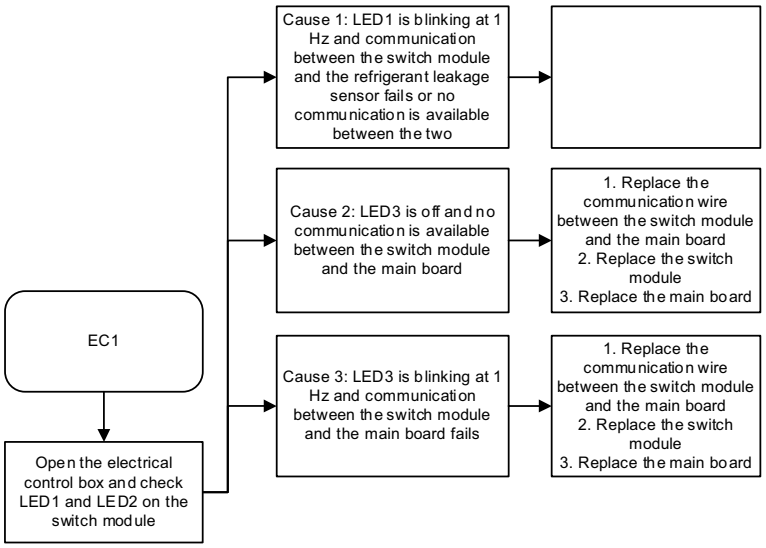
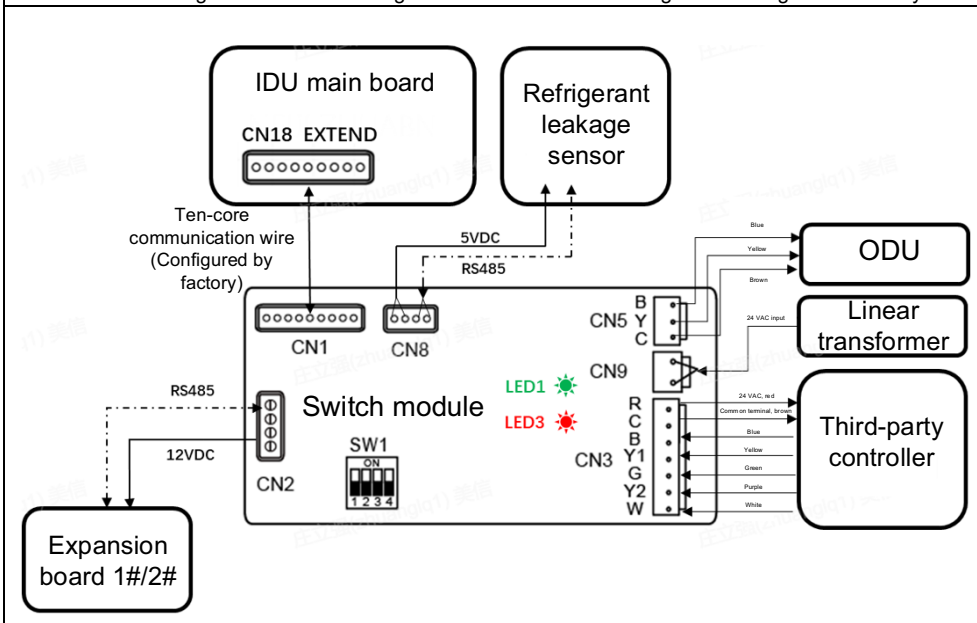
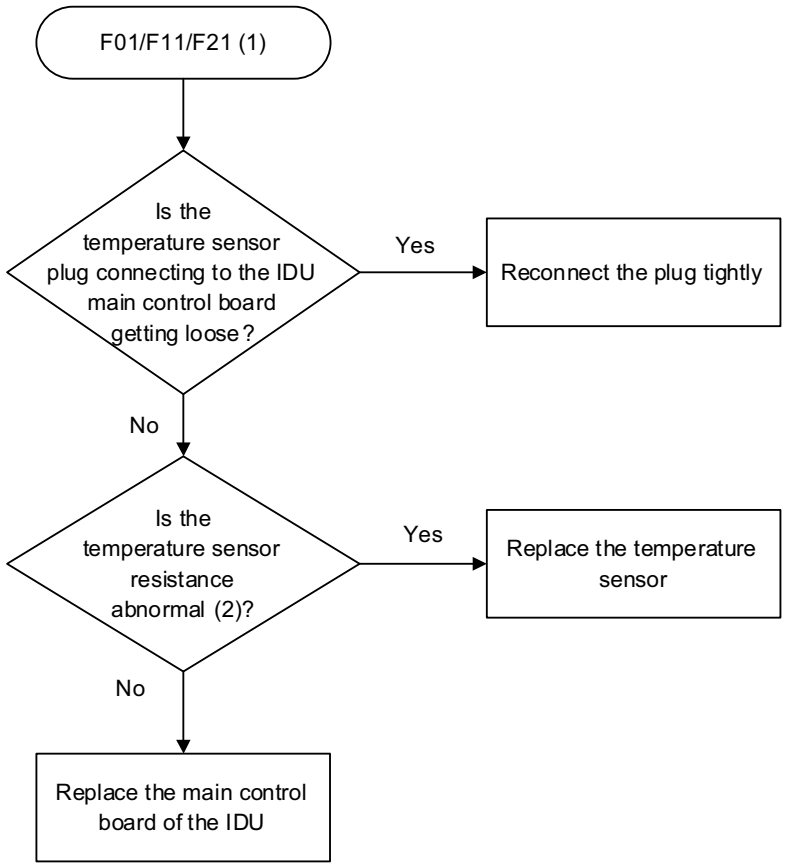
Fault Display	Digital display	Display position
		Panel, display box, and wired controller
Fault Impact	Faulty IDU stops. Other IDUs of the same system operate normally.	
	ODU of the same system operates normally.	
Fault Trigger	The IDU main control board receives a sensor module fault signal from the R32/454B refrigerant detection device.	
Fault Recovery	No sensor module fault signal is detected by the IDU main control board.	
Possible Cause	See the Troubleshooting section.	
Troubleshooting		

Figure 1 Schematic diagram of the R32/R454B refrigerant leakage detection system



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.

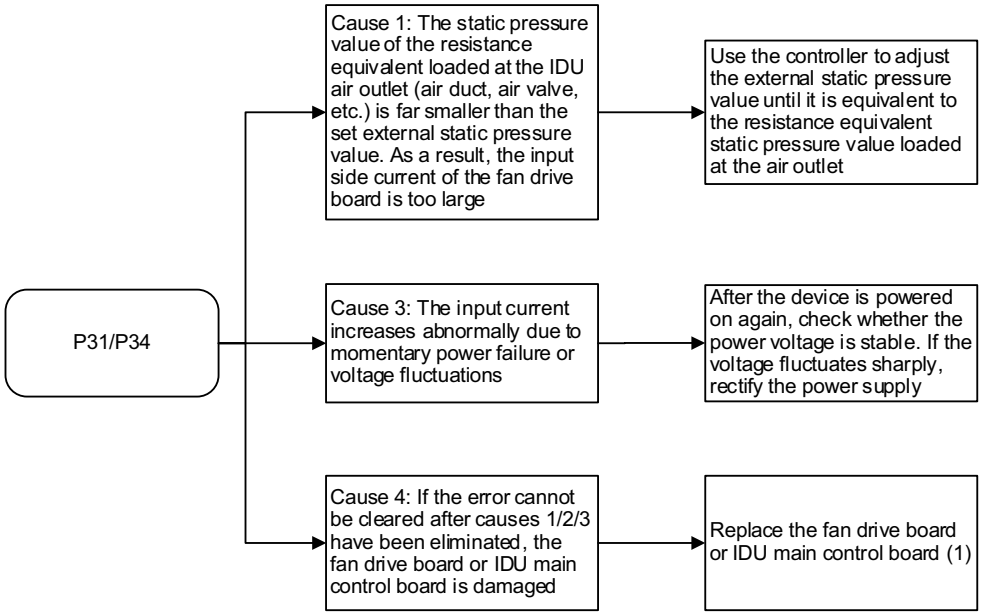
Table 67 — F01, F11, F21 - T2A

<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.
3) If only the master unit is connected to the T2A/T2/T2B temperature sensors in the parallel control of the AHU kit, then only the master unit can detect the F01/F11/F21 faults, and the slave units cannot detect them.</td></tr>
</table>

P31, P34: Fan Driver Board AC Side Overcurrent Protection, at Least Six P31 Faults Detected Within 60 Minutes

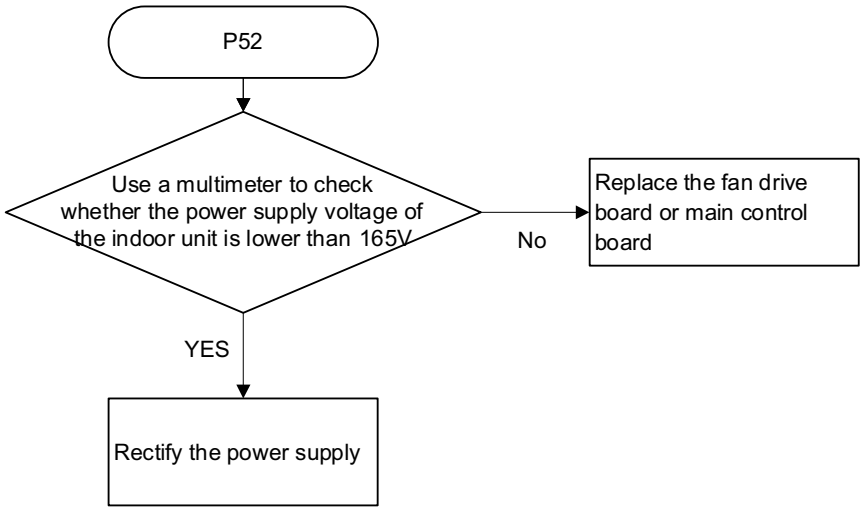
Table 68 — P31, P34

<table>
<tr><td rowspan="2">Fault Display</td><td colspan="2">Digital display</td><td>Display position</td></tr>
<tr><td>  </td><td>  </td><td>Panel, display box, and wired controller</td></tr>
<tr><td rowspan="2">Fault 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 operates normally.</td></tr>
<tr><td>Fault Trigger</td><td colspan="3">■ P31 fault trigger: The current value detected on the AC side of the fan drive board exceeds the programmed overcurrent protection value.
■ P34 fault trigger: At least six consecutive P31 faults are detected within 60 minutes</td></tr>
<tr><td>Fault Recovery</td><td colspan="3">■ P31 fault recovery: Automatic recovery
■ P34 fault recovery: Power on again</td></tr>
<tr><td>Possible Cause</td><td colspan="3">■ The static pressure value of the resistance equivalent loaded at the IDU air outlet (air duct, air valve, etc.) is far smaller than the set external static pressure value. As a result, the input side current of the fan drive board is too large.
■ The input current increases abnormally due to momentary power failure or voltage fluctuations
■ The IDU 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>

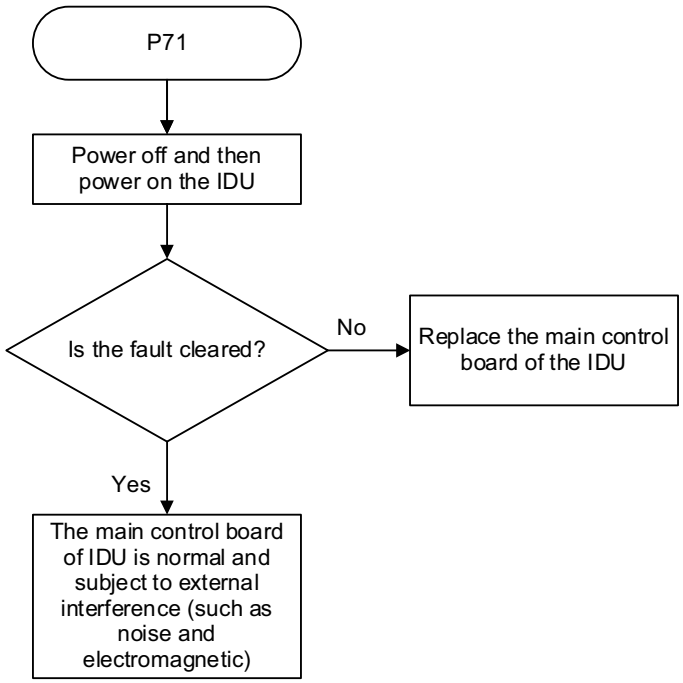
P52 - Voltage of Power Supply is Too Low

Table 69 — P52

<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">■ Power supply voltage is below the programmed protection threshold (165V)</td></tr>
<tr><td>Error recovery</td><td colspan="2">■ Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="2">■ Power supply voltage is lower than 165V
■ Indoor unit fan driver board is damaged</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 
</td></tr>
</table>

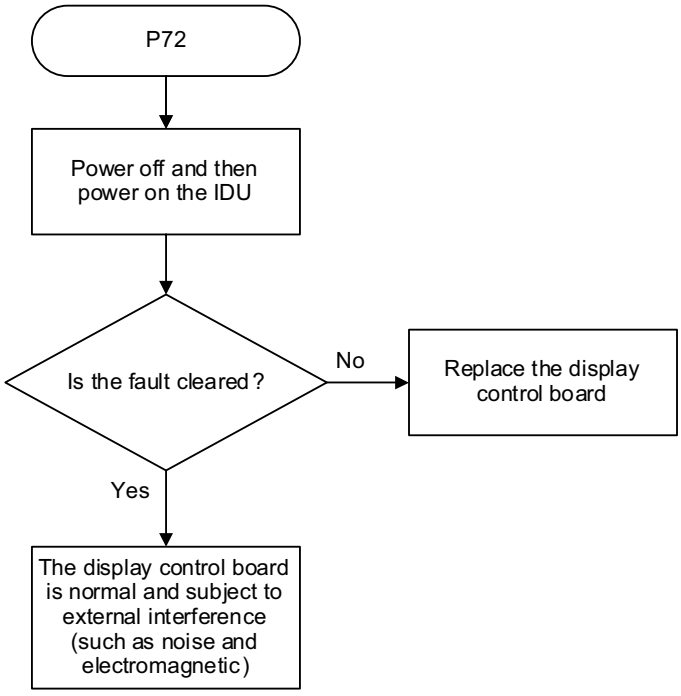
P71 - Main Control Board EEPROM Fault

Table 70 — P71

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		

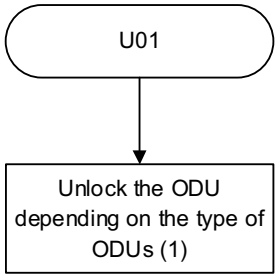
P72 - IDU Display Control Board EEPROM Fault

Table 71 — P72

<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position</td></tr>
<tr><td>  </td><td>Panel or display box</td></tr>
<tr><td rowspan="2">Error impact</td><td colspan="2">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.</td></tr>
<tr><td colspan="2">ODU of the same system: operate normally.</td></tr>
<tr><td>Error trigger</td><td colspan="2">Unable to read data from display control board EEPROM (EEPROM: a non-volatile memory whose data are kept even when powered off)</td></tr>
<tr><td>Error recovery</td><td colspan="2">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="2">■ The display control board is damaged.
■ External interference (such as noise and electromagnetic)</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 
</td></tr>
</table>

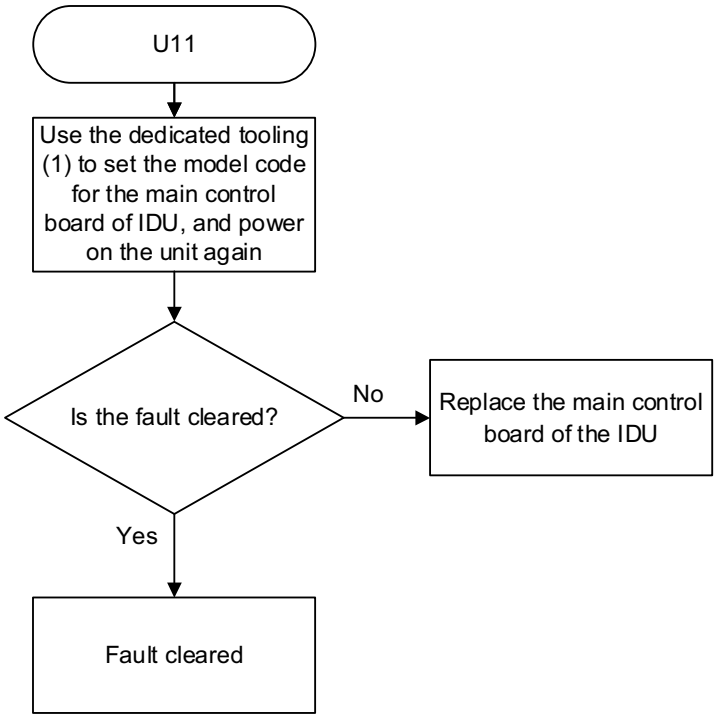
U01 - Locked (electronic lock)

Table 72 — U01

Error display	Digital display	Display position
		Panel, display box, and wired controller
Error impact	All IDUs of the same system: stop running, displaying code "U01"	
	ODU of the same system: stops running, displaying code "U01"	
Error trigger	When detecting that the ODU is locked	
Error recovery	Automatic recovery	
Possible cause	The ODU is still locked.	
Troubleshooting	 Note 1: To get unlocking methods and tools, please contact your local dealer or technical support personnel.	

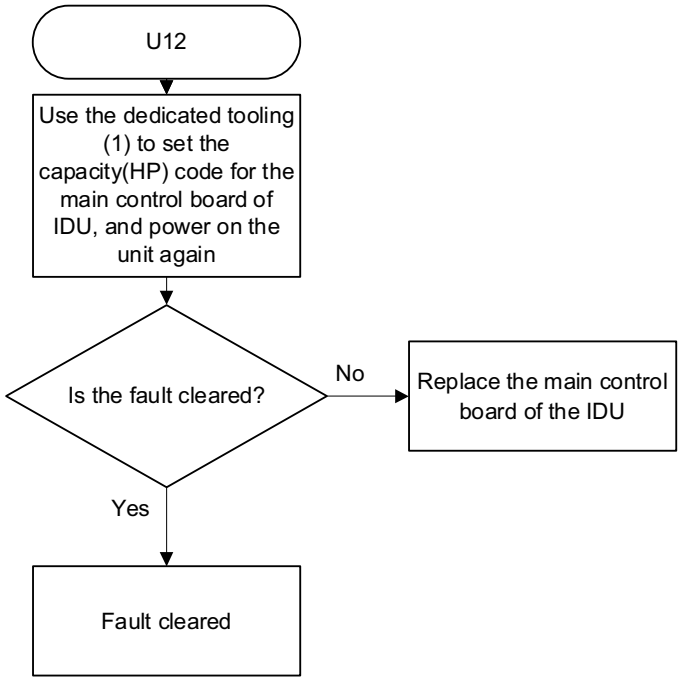
U11 - Unit model code not set

Table 73 — U11

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.	

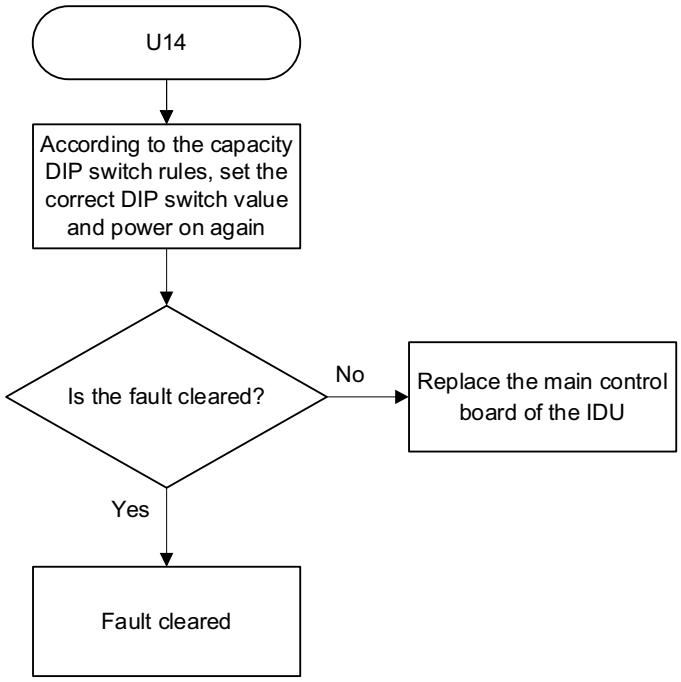
U12 - Capacity (HP) code not set

Table 74 — U12

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.	
	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.	
Error trigger	When detecting that the capacity(HP) code for IDU main control board has not been set	
Error recovery	Automatic recovery	
Possible cause	■ The capacity(HP) code has not been set after replacing the IDU main control board. ■ The new IDU main control board is damaged.	
Troubleshooting	 Note 1: For specialized tooling and instructions, please contact your local dealer or technical support personnel.	

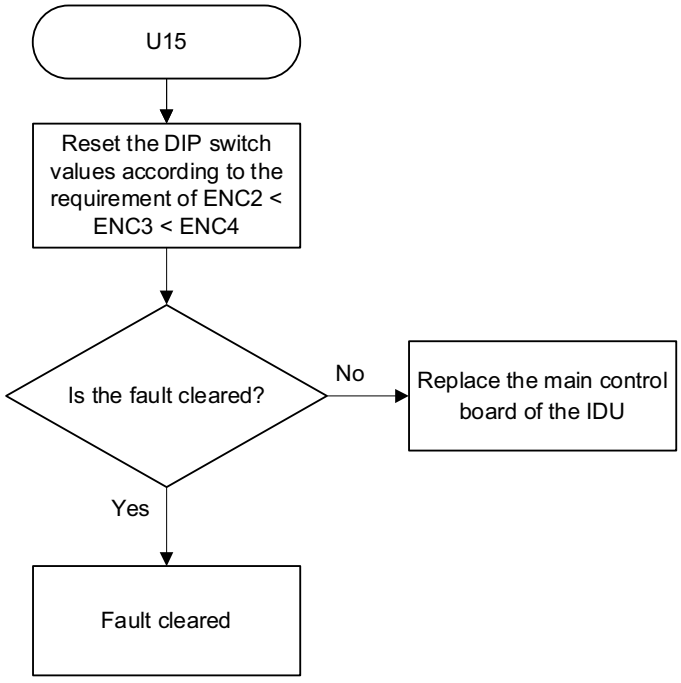
U14 - The capacity value of the AHU Kit DIP switch does not match the model

Table 75 — U14

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: operate normally	
	ODU of the same system: operate normally	
Error trigger	The capacity value of the AHU Kit DIP switch is not within the capability segment corresponding to the current model	
Error recovery	After setting the capacity value of the AHU Kit DIP switch correctly, power on again	
Possible cause	■ The capacity value of the AHU Kit DIP switch is not within the capability segment corresponding to the current model ■ The IDU main control board is damaged.	
Troubleshooting		

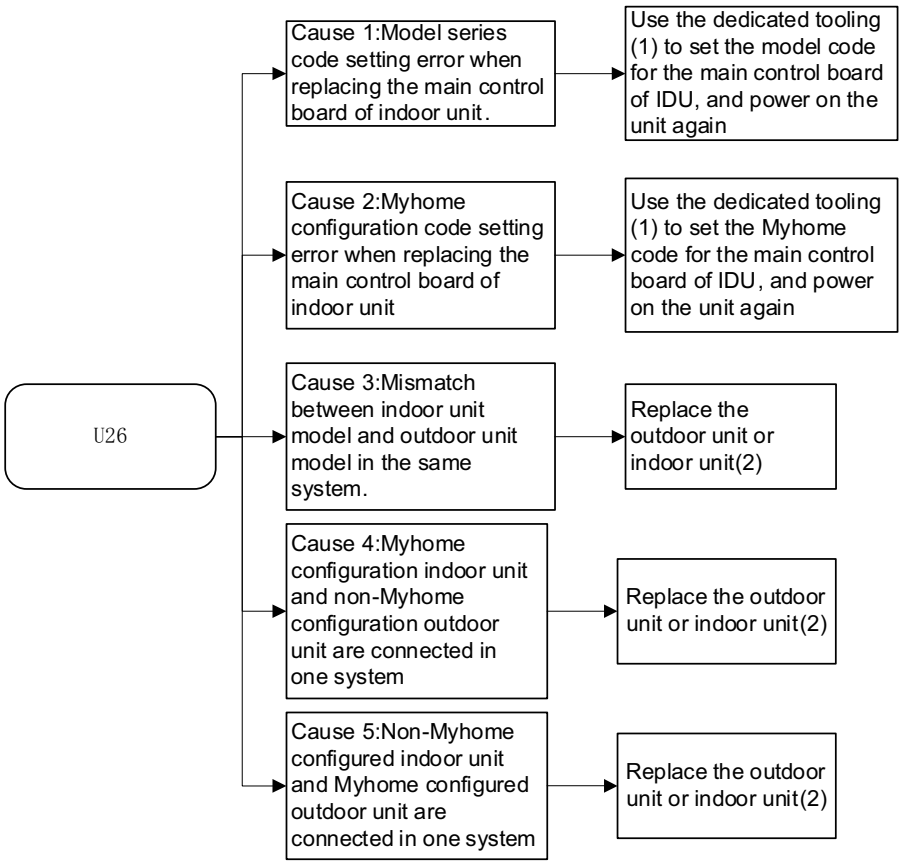
U15 - The DIP value of AHU Kit's fan speed output voltage is incorrect

Table 76 — U15

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: operate normally	
	ODU of the same system: operate normally	
Error trigger	The voltage values corresponding to the high/medium/low speed of the AHU kit do not meet the condition： The voltage corresponding to the high fan speed > The voltage corresponding to the medium fan speed > The voltage corresponding to the medium low speed	
Error recovery	Automatic recovery	
Possible cause	■ The DIP switch values of ENC2/ENC3/ENC4 do not meet the requirement that ENC2 < ENC3 < ENC4 (Note: The DIP switches of ENC2, ENC3, and ENC4 on the main control board correspond to the output voltage values of the low speed, medium speed, and high speed, respectively). ■ The IDU main control board is damaged.	
Troubleshooting		

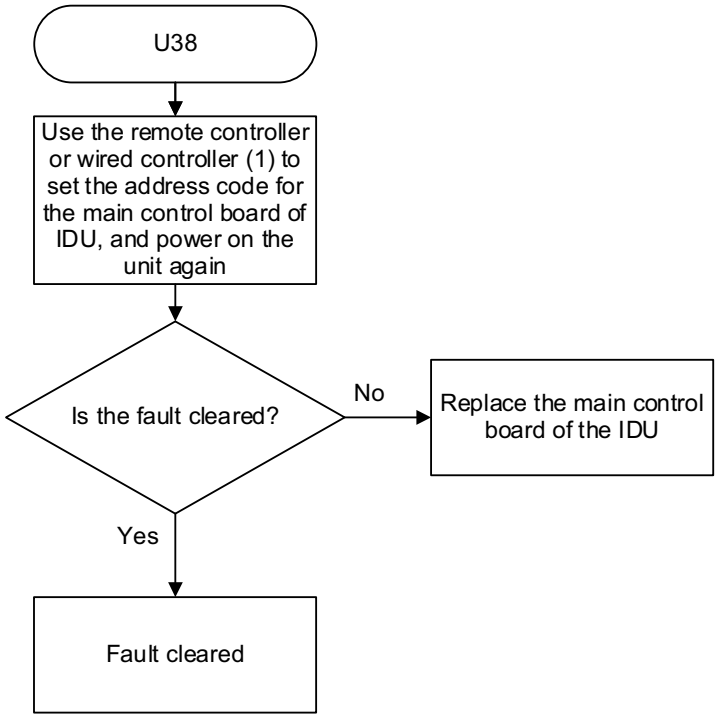
U26 - Mismatch between indoor unit model and outdoor unit model

Table 77 — U26

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.	

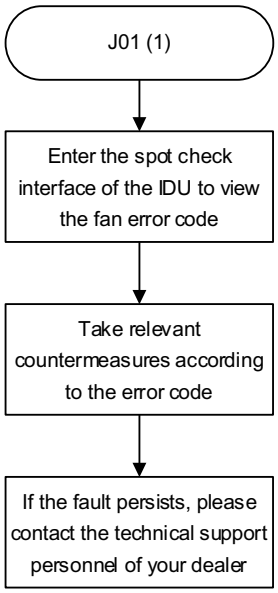
U38 - Address code not detected

Table 78 — U38

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.	

J01 - Motor failed more than once

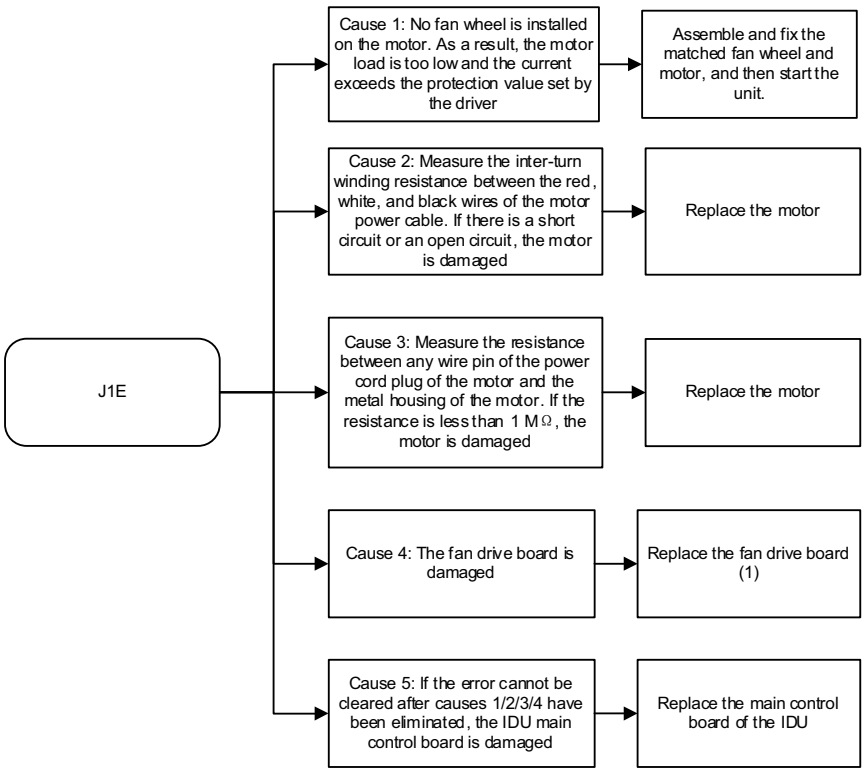
Table 79 — J01

<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">If fan control faults have occurred 10 times in 120 min (1)</td></tr>
<tr><td>Error recovery</td><td colspan="2">After troubleshooting, power on again</td></tr>
<tr><td>Possible cause</td><td colspan="2">The fan drive faults have caused the motor to fail more than once.</td></tr>
<tr><td>Troubleshooting</td><td colspan="2"> 

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

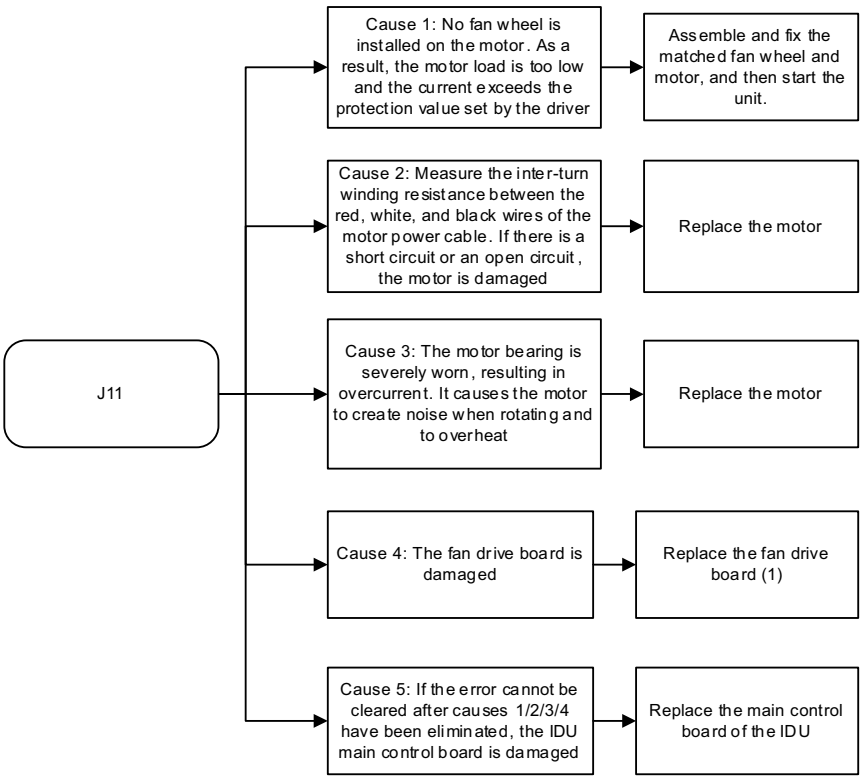
J1E: IPM (fan module) overcurrent protection

Table 80 — J1E

Fault Display	LED display	Display position
		Panel, display box, and wired controller
	The faulty IDU stops. Other IDUs of the same system: operate normally.	
Fault Impact	ODU of the same system operates normally.	
Fault Trigger	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.	
Fault Recovery	Automatic recovery	
Possible Cause	■ There is no fan wheel installed on the motor. ■ The motor insulation is damaged or motor coils are short-circuited. ■ 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.	

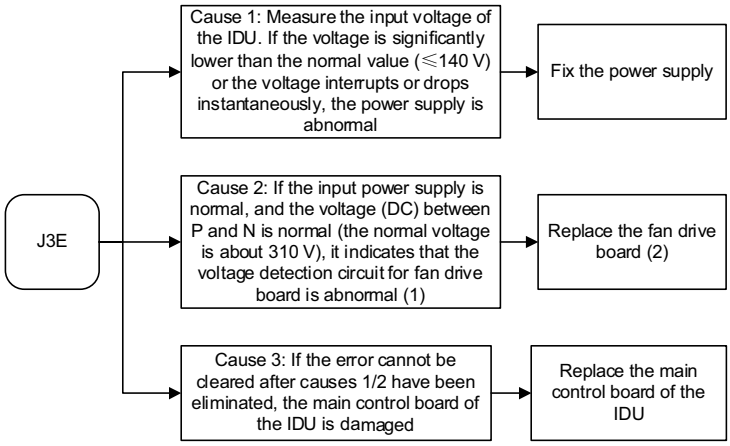
J11: instantaneous overcurrent protection for phase current

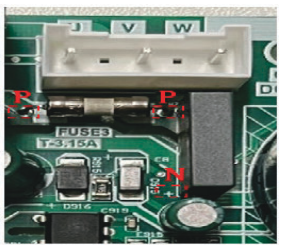
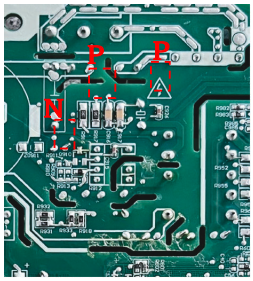
Table 81 — J11

Fault Display	LED display	Display position
		Panel, display box, and wired controller
Fault Impact	The faulty IDU stops. Other IDUs of the same system: operate normally.	
	ODU of the same system operates normally.	
Fault 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.	
Fault Recovery	Automatic recovery	
Possible Cause	■ There is no fan wheel installed on the motor. ■ Motor coils are short-circuited, or the motor bearing is worn, resulting in an 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.	

J3E - Low bus voltage fault

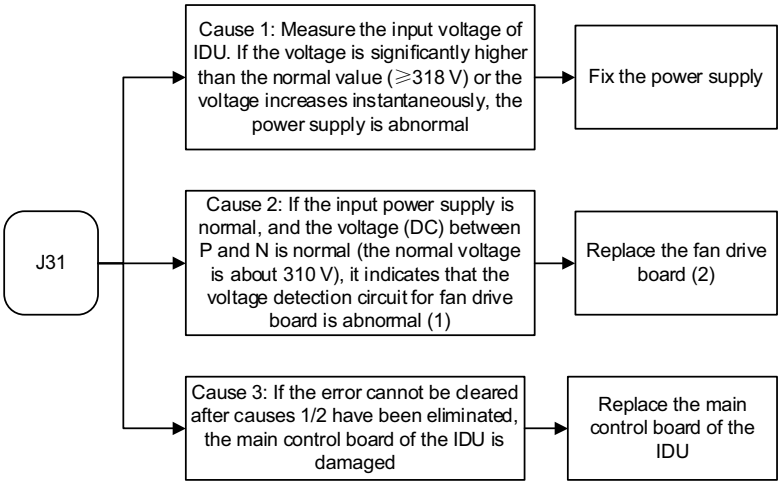
Table 82 — J3E

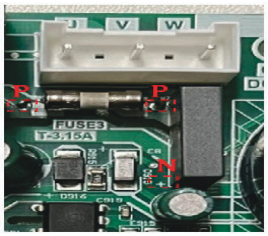
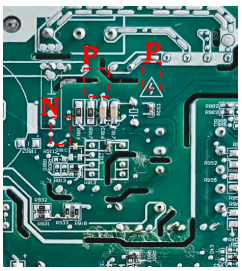
<table>
<tr><td rowspan="3">Error display</td><td>Digital display</td><td colspan="2">Display position</td></tr>
<tr><td rowspan="2">  </td><td>Panel or display box</td><td>Wired controller</td></tr>
<tr><td>Spot check interface query</td><td>Error code is not displayed</td></tr>
<tr><td>Error impact</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>

J31 - High bus voltage fault

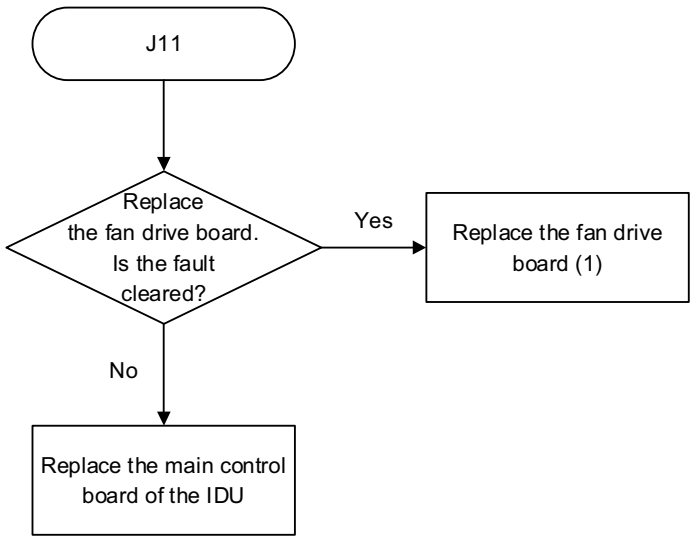
Table 83 — J31

<table>
<tr><td rowspan="2">Error display</td><td>Digital display</td><td>Display position</td></tr>
<tr><td>  </td><td>Panel, display box
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 the bus voltage (DC voltage) is greater than the threshold value of the driver (450V)</td></tr>
<tr><td>Error recovery</td><td colspan="2">Automatic recovery</td></tr>
<tr><td>Possible cause</td><td colspan="2">■ 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="2"> 

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>

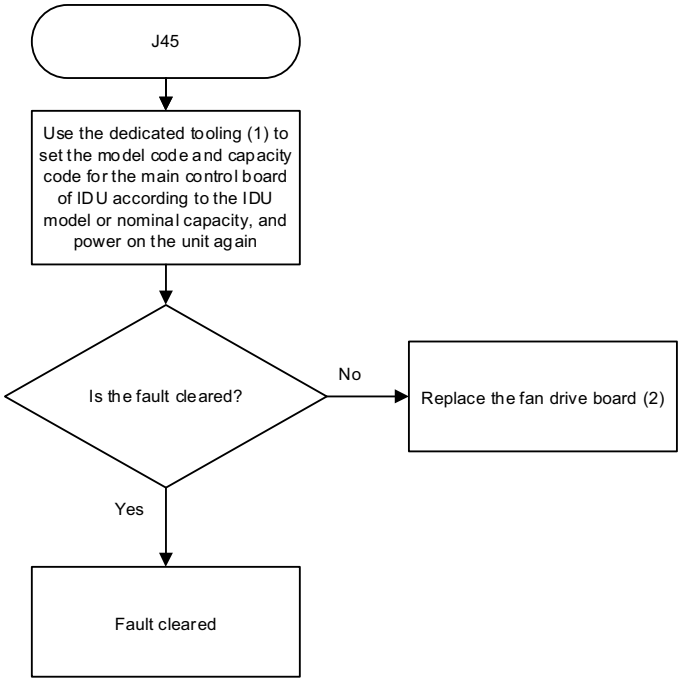
J43 - Phase current sample bias error

Table 84 — J43

Error display	Digital display	Display position
		Panel, display box 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 current sample is 50% greater than 2.5 V	
Error recovery	Automatic recovery	
Possible cause	■ The current sampling circuit of 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.	

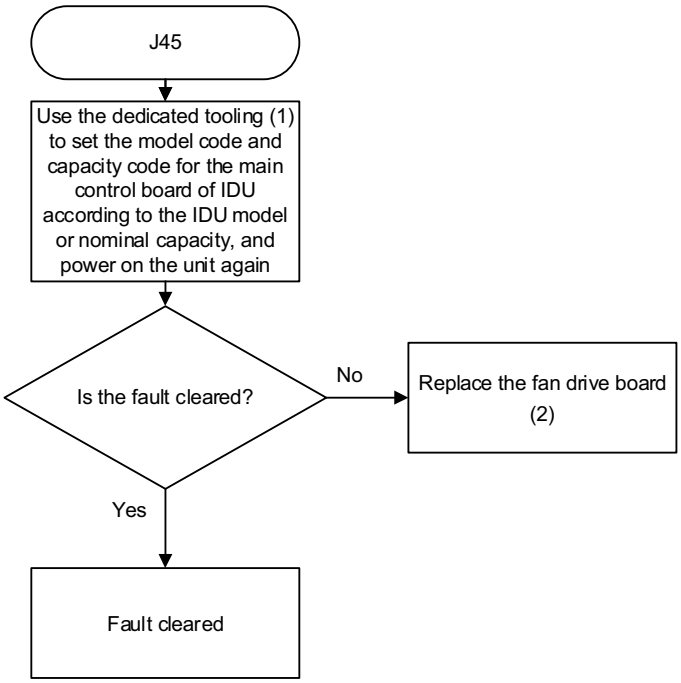
J45 - Motor and IDU Unmatched

Table 85 — J45

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.	

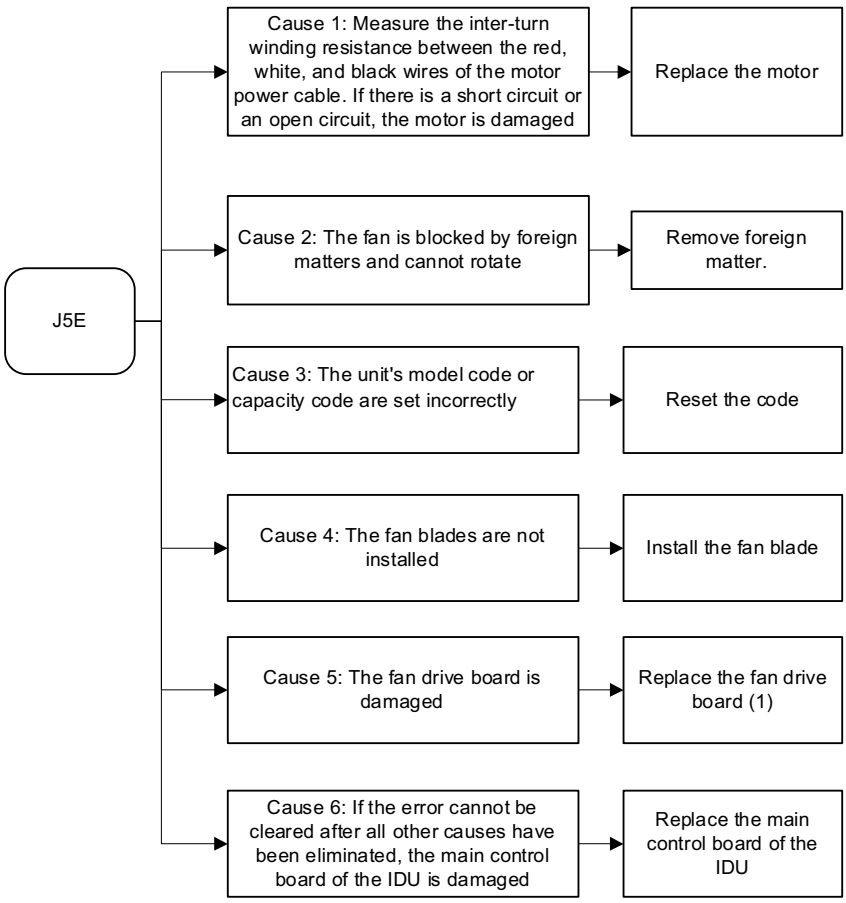
J47 - IPM (fan module) and IDU Unmatched

Table 86 — J47

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.	

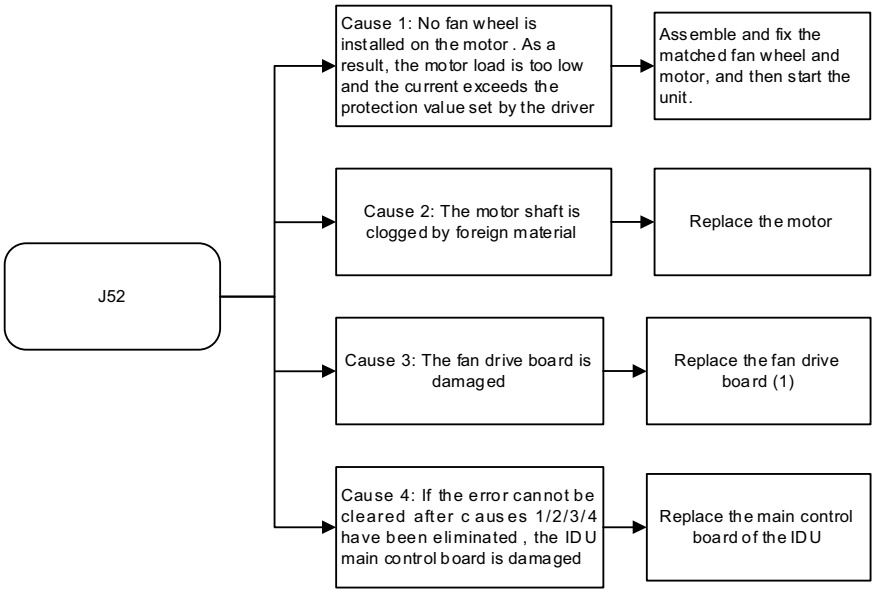
J5E - Motor Startup Failure

Table 87 — J5E

Error display	Digital display	Display position
		Panel, display box 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	Motor startup failure	
Error recovery	Automatic recovery	
Possible cause	■ 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.	
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.	

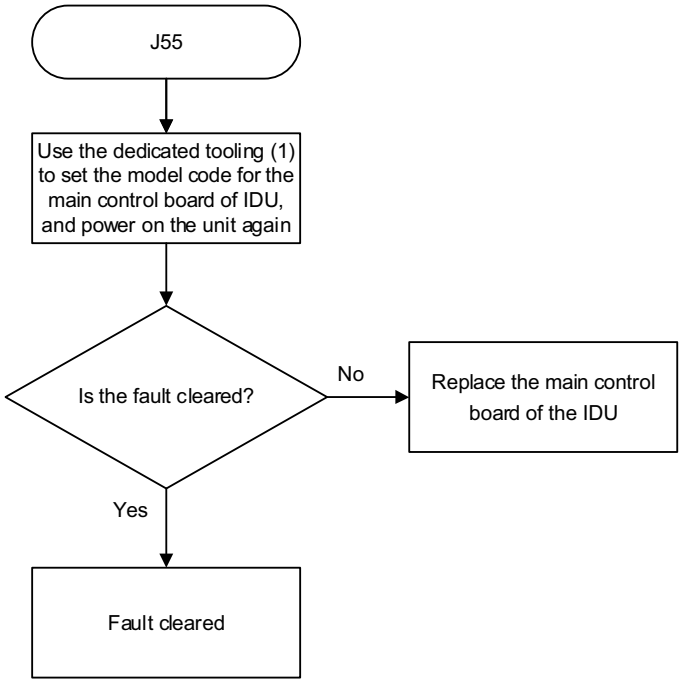
J52: Motor Blocking Protection

Table 88 — J52

Fault Display	LED display	Display position
		Panel, display box, and wired controller
Fault Impact	The faulty IDU stops. Other IDUs of the same system: operate normally.	
	ODU of the same system operates normally.	
Fault Trigger	The motor is blocked.	
Fault Recovery	Automatic recovery	
Possible Cause	■ There is no fan wheel installed on the motor. ■ The motor shaft gets stuck. ■ 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.	

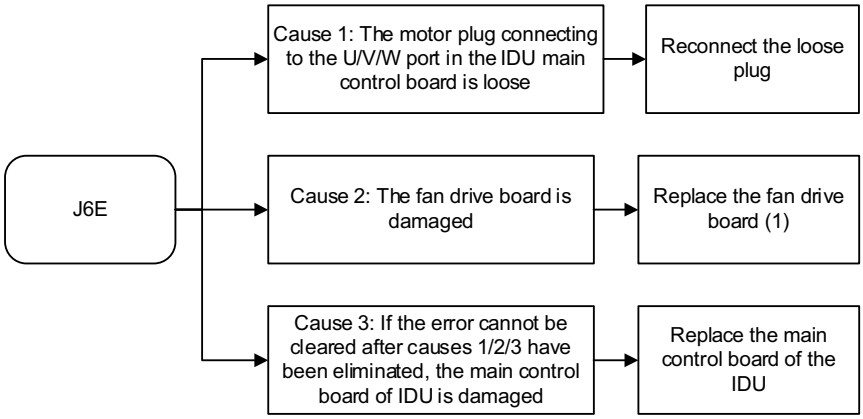
J55 - Speed Control Mode Setting Error

Table 89 — J55

Error display	Digital display	Display position
		Panel, display box 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 is non constant air flow control, but its main control program sets the fan speed according to the constant air flow control mode.	
Error recovery	Automatic recovery	
Possible cause	■ The IDU model is set incorrectly. ■ The IDU main control board is damaged.	
Troubleshooting	 Note 1: For specialized tooling and instructions, please contact your local dealer or technical support personnel.	

J6E - Phase Lack Protection of Motor

Table 90 — J6E

Error display	Digital display	Display position
		Panel, display box 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 motor phase lacks protection	
Error recovery	Automatic recovery	
Possible cause	■ 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.	
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.	

SATURATED GAUGE PRESSURE OF R454B REFRIGERANT

Table 91 — Saturated Vapor Ambient Temperature

Ambient temperature (°C)	Saturation gauge pressure (KPa)	Saturation gauge pressure (psi)	Ambient temperature (°C)	Saturation gauge pressure (KPa)	Saturation gauge pressure (psi)	Ambient temperature (°C)	Saturation gauge pressure (MPa)	Saturation gauge pressure (psi)
-70	32.25	10.13	**-23**	324.63	34.78	**24**	1475.72	91.53
-69	34.32	10.44	**-22**	337.39	35.59	**25**	1515.94	93.23
-68	36.49	10.75	**-21**	350.54	36.41	**26**	1556.99	94.95
-67	38.77	11.07	**-20**	364.08	37.25	**27**	1598.87	96.70
-66	41.17	11.40	**-19**	378.02	38.10	**28**	1641.61	98.47
-65	43.68	11.74	**-18**	392.37	38.97	**29**	1685.20	100.26
-64	46.32	12.09	**-17**	407.13	39.85	**30**	1729.67	102.08
-63	49.09	12.44	**-16**	422.31	40.75	**31**	1775.02	103.92
-62	51.99	12.80	**-15**	437.92	41.67	**32**	1821.28	105.79
-61	55.02	13.17	**-14**	453.98	42.60	**33**	1868.44	107.69
-60	58.20	13.55	**-13**	470.47	43.54	**34**	1916.53	109.61
-59	61.52	13.93	**-12**	487.43	44.50	**35**	1965.55	111.55
-58	64.99	14.33	**-11**	504.84	45.48	**36**	2015.53	113.53
-57	68.61	14.73	**-10**	522.73	46.48	**37**	2066.47	115.53
-56	72.40	15.14	**-9**	541.10	47.49	**38**	2118.38	117.55
-55	76.35	15.57	**-8**	559.95	48.52	**39**	2171.30	119.60
-54	80.48	16.00	**-7**	579.31	49.56	**40**	2225.21	121.68
-53	84.78	16.44	**-6**	599.16	50.63	**41**	2280.15	123.79
-52	89.26	16.89	**-5**	619.53	51.71	**42**	2336.13	125.92
-51	93.92	17.35	**-4**	640.43	52.81	**43**	2393.16	128.08
-50	98.78	17.82	**-3**	661.86	53.92	**44**	2451.26	130.27
-49	103.84	18.30	**-2**	683.82	55.06	**45**	2510.44	132.49
-48	109.10	18.79	**-1**	706.34	56.21	**46**	2570.72	134.74
-47	114.56	19.29	**0**	729.41	57.38	**47**	2632.12	137.01
-46	120.25	19.80	**1**	753.06	58.57	**48**	2694.66	139.32
-45	126.15	20.32	**2**	777.28	59.78	**49**	2758.34	141.65
-44	132.28	20.85	**3**	802.08	61.00	**50**	2823.20	144.01
-43	138.64	21.39	**4**	827.48	62.25	**51**	2889.25	146.40
-42	145.24	21.95	**5**	853.49	63.52	**52**	2956.51	148.83
-41	152.09	22.51	**6**	880.11	64.80	**53**	3024.99	151.28
-40	159.18	23.09	**7**	907.35	66.11	**54**	3094.73	153.76
-39	166.54	23.68	**8**	935.23	67.43	**55**	3165.74	156.28
-38	174.15	24.27	**9**	963.75	68.78	**56**	3238.06	158.82
-37	182.04	24.89	**10**	992.93	70.14	**57**	3311.68	161.40
-36	190.20	25.51	**11**	1022.77	71.53	**58**	3386.65	164.00
-35	198.65	26.14	**12**	1053.28	72.94	**59**	3463.00	166.64
-34	207.39	26.79	**13**	1084.47	74.37	**60**	3540.74	169.31
-33	216.42	27.45	**14**	1116.36	75.82	**61**	3619.90	172.02
-32	225.76	28.13	**15**	1148.95	77.29	**62**	3700.53	174.75
-31	235.41	28.81	**16**	1182.26	78.78	**63**	3782.65	177.52
-30	245.37	29.51	**17**	1216.29	80.29	**64**	3866.30	180.32
-29	255.67	30.22	**18**	1251.06	81.83	**65**	3951.52	183.16
-28	266.29	30.95	**19**	1286.57	83.39	**66**	4038.35	186.02
-27	277.25	31.69	**20**	1322.84	84.97	**67**	4126.84	188.93
-26	288.56	32.44	**21**	1359.88	86.58	**68**	4217.05	191.86
-25	300.22	33.21	**22**	1397.70	88.21	**69**	4309.04	194.83
-24	312.24	33.99	**23**	1436.31	89.86	**70**	4402.88	197.84

Table 92 — Saturated Liquid Ambient Temperature

Ambient temperature (°C)	Saturation gauge pressure (KPa)	Saturation gauge pressure (psi)	Ambient temperature (°C)	Saturation gauge pressure (KPa)	Saturation gauge pressure (psi)	Ambient temperature (°C)	Saturation gauge pressure (MPa)	Saturation gauge pressure (psi)
-70	34.10	10.67	**-23**	339.59	36.43	**24**	1529.52	95.44
-69	36.28	10.99	**-22**	352.89	37.27	**25**	1570.81	97.20
-68	38.56	11.32	**-21**	366.58	38.13	**26**	1612.93	98.98
-67	40.96	11.66	**-20**	380.67	39.01	**27**	1655.89	100.79
-66	43.47	12.00	**-19**	395.18	39.90	**28**	1699.69	102.63
-65	46.12	12.36	**-18**	410.10	40.80	**29**	1744.36	104.49
-64	48.89	12.72	**-17**	425.46	41.72	**30**	1789.90	106.37
-63	51.79	13.09	**-16**	441.25	42.66	**31**	1836.32	108.28
-62	54.83	13.46	**-15**	457.48	43.61	**32**	1883.64	110.22
-61	58.01	13.85	**-14**	474.17	44.58	**33**	1931.86	112.18
-60	61.34	14.25	**-13**	491.31	45.57	**34**	1980.99	114.17
-59	64.83	14.65	**-12**	508.93	46.57	**35**	2031.06	116.18
-58	68.47	15.06	**-11**	527.02	47.59	**36**	2082.07	118.23
-57	72.27	15.49	**-10**	545.60	48.62	**37**	2134.03	120.30
-56	76.24	15.92	**-9**	564.67	49.68	**38**	2186.96	122.39
-55	80.38	16.36	**-8**	584.24	50.75	**39**	2240.86	124.51
-54	84.70	16.81	**-7**	604.32	51.84	**40**	2295.76	126.66
-53	89.20	17.27	**-6**	624.92	52.94	**41**	2351.65	128.84
-52	93.89	17.74	**-5**	646.06	54.07	**42**	2408.57	131.05
-51	98.78	18.22	**-4**	667.72	55.21	**43**	2466.51	133.28
-50	103.87	18.72	**-3**	689.94	56.37	**44**	2525.49	135.55
-49	109.16	19.22	**-2**	712.70	57.55	**45**	2585.53	137.84
-48	114.66	19.73	**-1**	736.03	58.75	**46**	2646.64	140.16
-47	120.38	20.25	**0**	759.93	59.97	**47**	2708.82	142.51
-46	126.33	20.79	**1**	784.42	61.21	**48**	2772.11	144.89
-45	132.50	21.33	**2**	809.49	62.46	**49**	2836.51	147.30
-44	138.91	21.89	**3**	835.16	63.74	**50**	2902.03	149.74
-43	145.56	22.45	**4**	861.44	65.04	**51**	2968.70	152.21
-42	152.46	23.03	**5**	888.34	66.35	**52**	3036.51	154.71
-41	159.62	23.62	**6**	915.87	67.69	**53**	3105.50	157.24
-40	167.03	24.23	**7**	944.03	69.04	**54**	3175.68	159.80
-39	174.71	24.84	**8**	972.84	70.42	**55**	3247.06	162.40
-38	182.67	25.47	**9**	1002.30	71.82	**56**	3319.66	165.02
-37	190.91	26.10	**10**	1032.43	73.24	**57**	3393.50	167.68
-36	199.43	26.76	**11**	1063.23	74.68	**58**	3468.59	170.36
-35	208.25	27.42	**12**	1094.71	76.14	**59**	3544.95	173.08
-34	217.37	28.10	**13**	1126.89	77.63	**60**	3622.60	175.84
-33	226.80	28.79	**14**	1159.78	79.13	**61**	3701.56	178.62
-32	236.54	29.49	**15**	1193.37	80.66	**62**	3781.86	181.44
-31	246.61	30.20	**16**	1227.69	82.21	**63**	3863.50	184.29
-30	257.00	30.93	**17**	1262.75	83.78	**64**	3946.51	187.17
-29	267.73	31.68	**18**	1298.54	85.38	**65**	4030.91	190.09
-28	278.81	32.43	**19**	1335.10	87.00	**66**	4116.73	193.04
-27	290.23	33.20	**20**	1372.41	88.64	**67**	4203.99	196.03
-26	302.01	33.99	**21**	1410.50	90.30	**68**	4292.71	199.05
-25	314.16	34.79	**22**	1449.37	91.99	**69**	4382.92	202.11
-24	326.69	35.60	**23**	1489.04	93.70	**70**	4474.65	205.20

Table 93 — Sensor Codes and Definitions Applicable to Tables 91 and 92

Sensor Code	Definition
T1	Inlet Air Temp. Sensor
T0	Outdoor Air Temp. Sensor*
TA	Discharge Air Temp. Sensor*
T2A	Liquid Pipe Temp. Sensor
T2	Middle Pipe Temp. Sensor
T2B	Gas Pipe Temp. Sensor

Edition Date: 04/25

Catalog No: 45VM---3-01SM

Replaces: NEW