

# **Technical Service Manual**

# **Quantum Series (AU)**





Model:

UCMI200OC-3PH

UCMI220OC-3PH

DUCMI200IHC-3PH

DUCMI220IHC-3PH



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# Part 1 General Information

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# 1 External Appearance

#### 1.1 Indoor Units

Table 1-2.1: Indoor unit appearance



#### 1.2 Outdoor Units

Table 1-2.2: Outdoor unit appearance



Note: One outdoor unit can only be connected to one indoor unit, and the capacity of the indoor and outdoor units must be the same.



# Part 2 Outdoor Unit Engineering Data

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# 1 Specifications

Table 2-1.1: Outdoor unit specifications

Model Name	Outdoor Unit		UCMI200OC-3PH	UCMI220OC-3PH	
Power supply	Outdoor Unit	V/Ph/Hz	380-415/3/50		
Power input	Outdoor unit + indoor unit	kW	6.7	6.99	
	Canaditu	kW	20.5	22.0	
Cooling1	Capacity	kBtu/h	69.9	75.0	
Cooling <sup>1</sup>	EER		3.06	3.15	
	AEER		3.08	3.15	
	Conneite	kW	23.0	24.5	
114:2	Capacity	kBtu/h	78.4	83.6	
Heating <sup>2</sup>	СОР		3.29	3.40	
	ACOP		3.28	3.25	
	HOT: Brisbane Darwin	Cooling	2	2	
	Pacific Is	Heating	2	2	
Star rating	AVERAGE: Adelaide,	Cooling	1.5	1.5	
Star rating	Perth, Sydney	Heating	1.5	1.5	
	COLD: Canberra, Hobart,	Cooling	1.5	2	
	Melbourne, New Zealand	Heating	1.5	1.5	
Ambient temp.	Cooling	°C (DB)	-5~	48	
operation range	Heating	°C (WB)	-20^	24	
	Compressor type		DC invert	er rotary	
	Compressor quantity		1		
	Fan type		Prope	eller	
	Fan quantity		2		
	Air flow rate	m³/h	11300		
	Refrigerant type		R410A		
Outdoor Unit	Refrigerant factory charge		10.2		
	Sound pressure level <sup>3</sup>	dB(A)	61		
	Sound power level	dB(A)	8:	1	
	Net dimensions (W×H×D)	mm	1120×1558×528		
	Packed dimensions (W×H×D)	mm	1270×1720×565		
	Net weight	kg	159		
	Gross weight	kg	175		
Max pipe length/he	eight	m	60/40		
Pipe connections	Liquid pipe	mm	12	.7	
. The confidentions	Gas pipe	mm	25	.4	

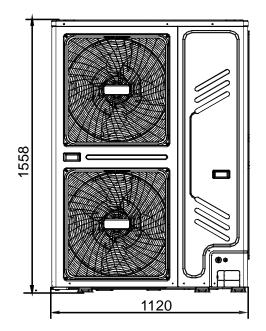
#### Notes:

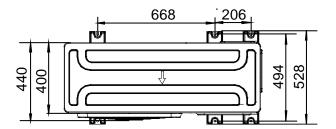
- 1. Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
- 2. Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
- 3. Sound pressure level is measured at a position 1m in front of the unit and 1m above the floor in a semi-anechoic chamber.



# 2 Dimensions

Figure 2-2.1: Dimensions (unit: mm)



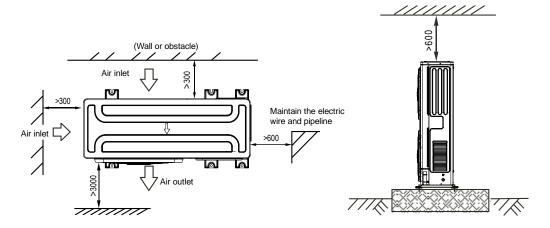


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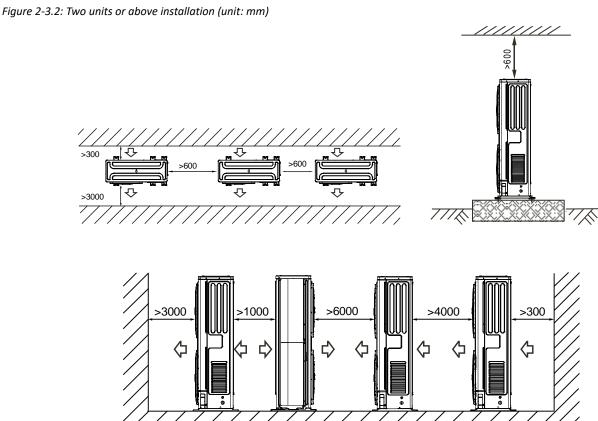
# **3 Installation Space Requirements**

#### For single unit installation

Figure 2-3.1: Single unit installation (unit: mm)



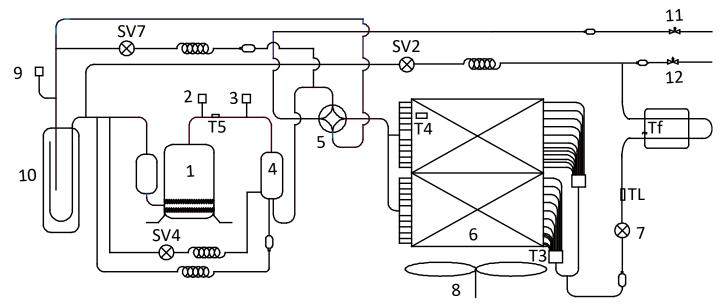
#### For single-row installation





# **4 Piping Diagrams**

Figure 2-4.1: Piping diagram



Legend	Legend						
No.	Parts name						
1	Compressor						
2	High pressure switch						
3	High pressure sensor						
4	Oil separator						
5	Four-way valve						
6	Heat exchanger						
7	Electronic expansion valve (EXV)						
8	Fan						
9	Low pressure switch						
10	Accumulator						

No.	Parts name
11	Stop valve (gas side)
12	Stop valve (liquid side)
Т3	Heat exchanger temperature sensor
T4	Outdoor ambient temperature sensor
T5	Discharge temperature sensor
Tf	Heat sink temperature sensor
TL	Refrigerant cooling pipe temperature sensor
SV2	Liquid injection valve
SV4	Oil return valve
SV7	Refrigerant bypass valve



#### **Key components:**

#### 1. Oil separator:

Separates oil from gas refrigerant pumped out of the compressor and quickly returns it to the compressor. Separation efficiency is up to 99%.

#### 2. Accumulator:

Stores liquid refrigerant and oil to protect compressor from liquid hammering.

#### 3. Electronic expansion valve (EXV):

Controls refrigerant flow and reduces refrigerant pressure.

#### 4. Four-way valve:

Controls refrigerant flow direction. Closed in cooling mode and open in heating mode. When closed, the heat exchanger functions as a condenser; when open, the heat exchanger functions as an evaporator.

#### 5. Solenoid valve SV2:

Protects the compressor. If compressor discharge temperature rises above 98°C, SV2 opens and sprays a small amount of liquid refrigerant to cool the compressor. SV2 closes again once the discharge temperature has fallen below 85°C.

#### 6. Solenoid valve SV4:

Returns oil to the compressor. Opens once the compressor has run for 200 seconds and closes 600 seconds later and then opens for 3 minutes every 20 minutes.

#### 7. Solenoid valve SV7:

Allows refrigerant return to the compressor directly. Opens when indoor air temperature is close to the set temperature to avoid frequent compressor on/off.

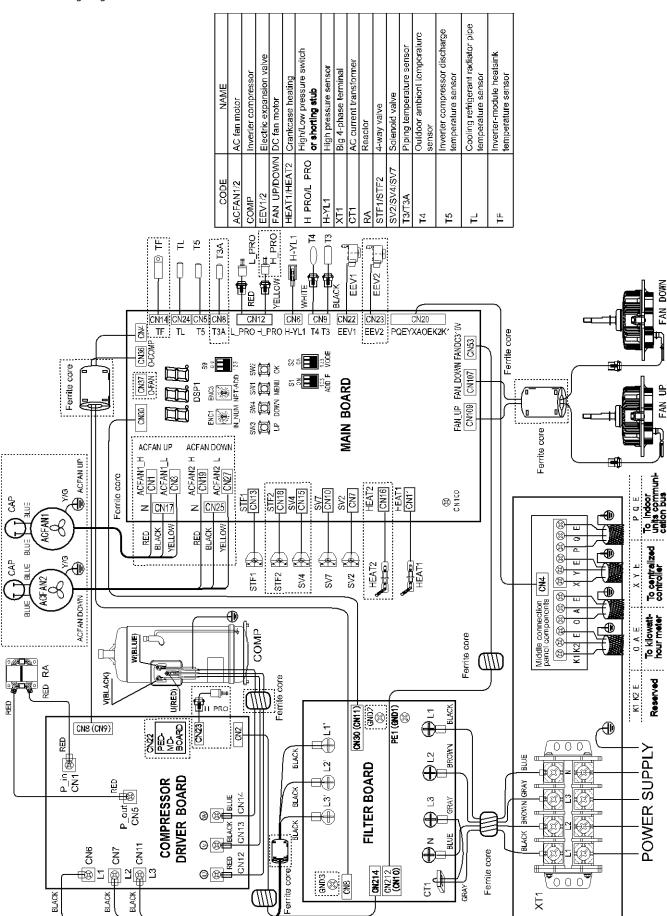
#### 8. High and low pressure switches:

Regulate system pressure. When system pressure rises above the upper limit or falls below the lower limit, the high or low pressure switches turn off, stopping the compressor. After 5 minutes, the compressor restarts.



#### **5 Wiring Diagrams**

Figure 2-5.1: Wiring diagram





#### **6 Electrical Characteristics**

#### Table 2-6.1: Outdoor unit electrical characteristics

		Power Supply <sup>1</sup>						Compressor		OFM										
Model	Hz	-	-								Volts	Min.	Max.	MCA <sup>2</sup>	TOCA <sup>3</sup>	MFA <sup>4</sup>	MSC <sup>5</sup>	RLA <sup>6</sup>	kW	FLA
		VOILS	volts	volts	IVICA	TOCA	IVIFA	IVISC	KLA	KVV	FLA									
UCMI200OC-3PH	50	380~415	342	456	26.4	33.2	32	/	19.6	2×0.17	2.1+2.1									
UCMI220OC-3PH	50	380~415	342	456	26.4	33.2	32	/	19.6	2×0.17	2.1+2.1									

#### Abbreviations:

MCA: Minimum Circuit Amps; TOCA: Total Over-current Amps; MFA: Maximum Fuse Amps; MSC: Maximum Starting Current (A); RLA: Rated Load Amps; FLA: Full Load Amps

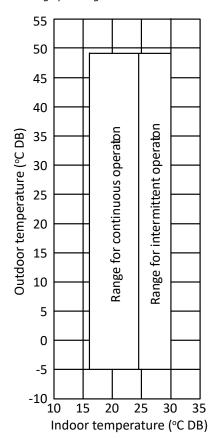
#### Notes:

- 1. Units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits. Maximum allowable voltage variation between phases is 2%.
- 2. Select wire size based on the value of MCA.
- 3. TOCA indicates the total overcurrent amps value of each OC set.
- 4. MFA is used to select overcurrent circuit breakers and residual-current circuit breakers.
- 5. MSC indicates the maximum current on compressor start-up in amps.
- $6. \ \ RLA is based on the following conditions: indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB.$



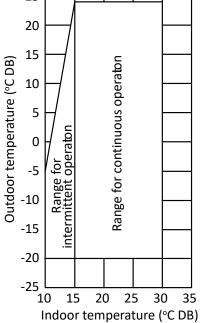
# **7 Operating Limits**

Figure 2-7.1: Cooling operating limits



30 25 20 15 0 10

Figure 2-7.2: Heating operating limits



#### Notes:

- 1. These figures assume the following operating conditions:
  - Equivalent piping length: 7.5m
  - Level difference: 0

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#### **8 Sound Levels**

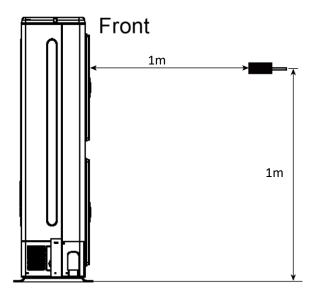
#### 8.1 Overall

Table 2-8.1: Sound pressure level

Model	dB(A)
UCMI200OC-3PH	61
UCMI220OC-3PH	61

#### Notes:

Figure 2-8.1: Sound pressure level measurement (unit: m)



#### 8.2 Octave Band Levels

Figure 2-8.2: UCMI200OC-3PH octave band level

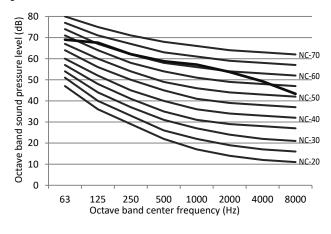
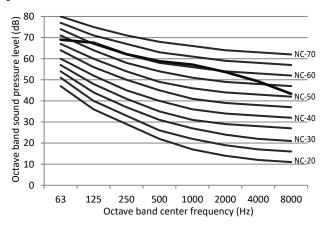


Figure 2-8.3: UCMI220OC-3PH octave band level



<sup>1.</sup> Sound pressure level is measured at a position 1m in front of the unit and 1m above the floor in a semi-anechoic chamber. During in-situ operation, sound pressure levels may be higher as a result of ambient noise.



# **9** Accessories

Table 2-9.1: Standard accessories

Name	Shape	Quantity	Function
Outdoor unit installation manual		1	
Outdoor unit owner's manual		1	
Installation instructions: Indoor unit manifold		1	
Water outlet connection pipe		1	Used for outdoor drainage
Matched resistor		2	Enhances communication stability
Waterproof chassis cover		2	Used for centralized drainage
Connection pipe	HETT.	1	Connecting pipes





# Part 3 Indoor Unit Engineering Data

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# 1 Specifications

Table 3-1.1: Indoor unit specifications

Model Name	Indoor Unit		DUCMI200IHC-3PH	DUCMI220IHC-3PH		
Power supply	Indoor Unit	V/Ph/Hz	220-240V/	1/50-60Hz		
Power input (outdoor unit + indoor unit)		kW	6.7	6.99		
	Compaih	kW	20.5	22.0		
Cooling <sup>1</sup>	Capacity	kBtu/h	69.9	75.0		
Cooling	EER		3.06	3.15		
	AEER		3.10	3.10		
	Conscitu	kW	23.0	24.5		
Heating <sup>2</sup>	Capacity	kBtu/h	78.4	83.6		
пеация	СОР		3.29	3.40		
	ACOP		3.25	3.25		
	Air flow rate <sup>3</sup>	m³/h	5200/4911/4622/4333/4044/3756/3467			
	External static pressure <sup>4</sup>	Pa	150 (50-280)			
	Sound pressure level <sup>5</sup>	dB(A)	51/49/47/45/43.5/42/41			
Indoor unit	Sound power level dB		70.5/69/67/65/63/61/60			
indoor unit	Net dimensions (W×H×D) <sup>6</sup> mm		1300×477×910			
	Packed dimensions (W×H×D) mm		1580×650×1090			
	Net weight	kg	82			
	Gross weight	kg	120			
Max pipe length/height		m	60/40			
	Liquid pipe	mm	12.7			
Pipe connections	Gas pipe mm		25.4			
	Drain pipe	mm	OD	Ф32		

#### Notes:

- 1 Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
- 2 Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
- 3 Fan motor speed and air flow rate are from the highest speed to the lowest speed, total 7 rates for each model.
- 4 Stable operation external static pressure range. (Setting external static pressure outside the unit's optimal static pressure range may lead to higher noise levels and lower airflow rate. For the optimal external static pressure range refer to the unit's installation manual.)
- 5 Sound pressure level is from highest level to lowest level, total 7 levels for each model. Sound pressure level is measured 1.4m below the unit in a semi-anechoic chamber.
- Unit body dimensions given are the largest external dimensions of the unit, no including hanger attachments.

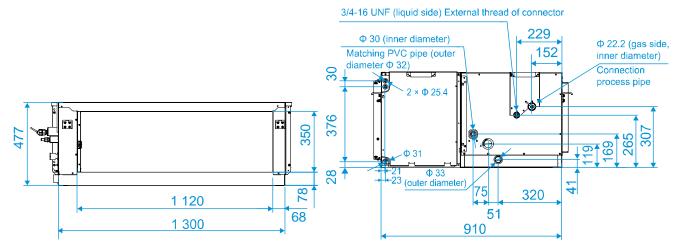


#### 2 Dimensions

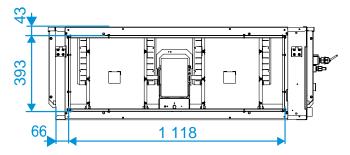
#### 2.1 Unit Dimensions

Figure 2.1: High Static Pressure Duct dimensions (unit: mm)

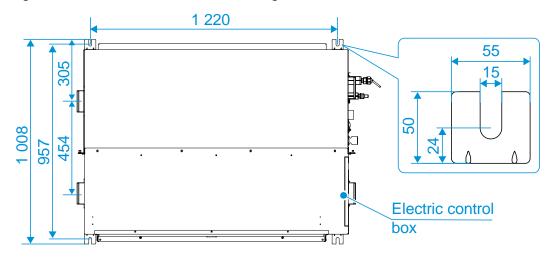
Appearance and dimensions of the air inlets, piping, drain pipes, power cable hole and communication wire hole:



Dimensions of the air outlets:



Dimensions of lugs and the screw hole of air outlet/inlet flange:





#### 3 Unit Placement

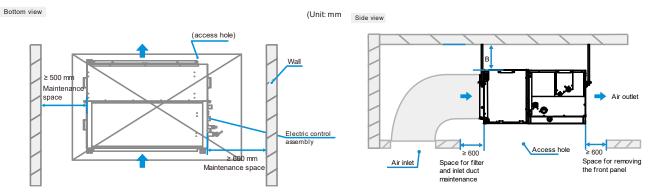
#### 3.1 Placement Considerations

Unit placement should take account of the following considerations:

- Units should not be installed in the following locations:
  - Where exposure to direct radiation from a high-temperature heat source or to interference from a source of electromagnetic radiation may occur.
  - Where dust or dirt may affect heat exchangers.
  - Where exposure to oil or to corrosive or harmful gases, such as acidic or alkaline gases, may occur.
  - Where exposure to salinity may occur, such as seaside locations.
  - · Where highly flammable materials are present.
  - Where exposure to oily air may occur, such as a kitchen.
  - Where exposure to very high humidity may occur, such as a laundry.
- Units should be installed in positions where:
  - The ceiling is horizontal and is able to bear the unit's weight.
  - There are no obstructions that could impede the airflow into and out of the unit.
  - The airflow out of the unit can reach throughout the room.
  - There is sufficient space for access during installation, servicing and maintenance.
  - The refrigerant piping and drain piping can be easily connected to the refrigerant piping and drain piping systems.
  - Short-circuit ventilation (where outlet air returns quickly to a unit's air inlet) will not occur.

#### 3.2 Space Requirements

Figure 3.1: High Static Pressure Duct space requirements (unit: mm)

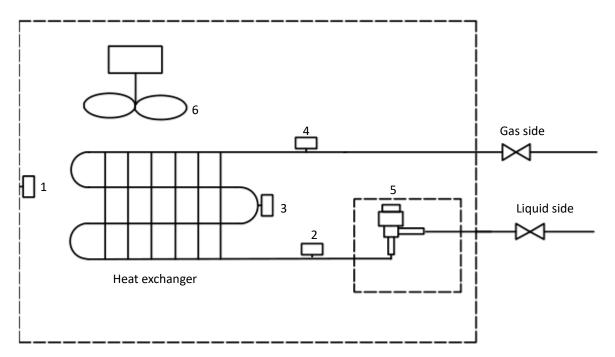


# Notes for installers and service engineers 🛠

- 1. The distance between the indoor unit and the roof (B) shall be greater than 50mm to install the air duct.
- 2. The motor and fan can be maintained from the indoor unit top or the air outlet. If maintenance is performed from the indoor unit top, the distance between the indoor unit and the roof must be larger than 600mm. If maintenance is performed from the air outlet, the distance between the indoor unit and the roof must be larger than 200mm, with a minimum distance of 600mm allowed for removing the front panel.



# 4 Piping Diagram

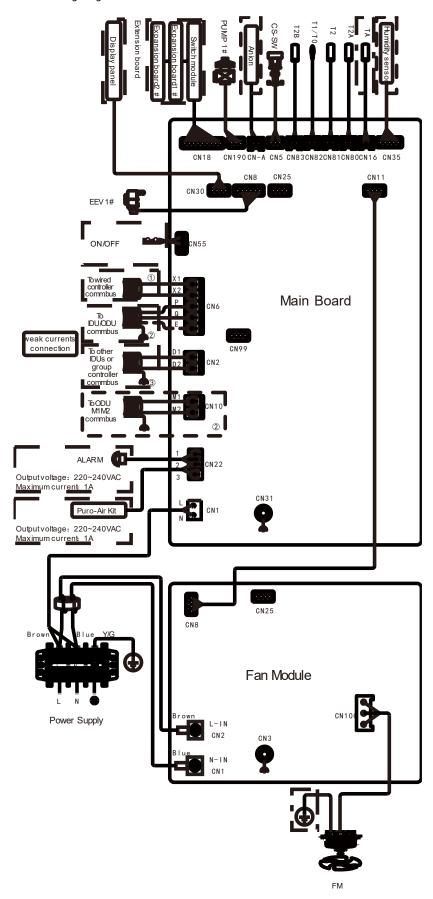


Legend		
1	T1	Inlet Air Temp. Sensor
2	T2A	Liquid Pipe Temp. Sensor
3	T2	Middle Pipe Temp. Sensor
4	T2B	Gas Pipe Temp. Sensor
5	EEV	Electronic expansion valve
6	FAN	Fan motor



# **5 Wiring Diagram**

Figure 5.1: High Static Pressure Duct wiring diagram





# Notes for installers and service engineers 🛠

#### Caution

- All installation, servicing and maintenance must be carried out by competent and suitably qualified, certified and accredited professionals and in accordance with all applicable legislation.
- Units should be grounded in accordance with all applicable legislation. Metal and other conductive components should be insulated in accordance with all applicable legislation.
- Power supply wiring should be securely fastened at the power supply terminals loose power supply wiring would represent a fire risk.
- After installation, servicing or maintenance, the electric control box cover should be closed. Failing to close the electric control box cover risks fire or electric shock.
- The dotted lines indicate the field wiring or optional function.
- X1X2 communication ports can be connected to the wired controller.
- PQ and M1M2 communication ports both are used for indoor and outdoor communication, and only one of them
  can be used at a time. Meanwhile, be sure to connect the same communication ports (PQ to PQ; M1M2 to
  M1M2) in case of damage of the main control board.
- 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.



# **6 Electrical Characteristics**

BA - d - l	Power supply						Indoor Fan Motor	
Model	Hz	Volts	Min. volts	Max. volts	MCA	MFA	Rated motor output (W)	
DUCMI200IHC-3PH	50/60	220-240	198	264	6.75	30	920	
DUCMI220IHC-3PH	50/60	220-240	198	264	6.75	30	920	

Abbreviations:

MCA: Minimum Circuit Amps MFA: Maximum Fuse Amps



#### 7 Sound Levels

#### 7.1 Overall

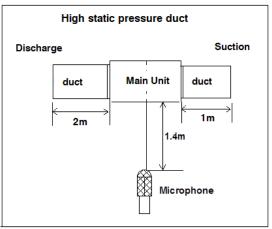
Table 7.1: High Static Pressure Duct sound pressure levels1

Model name	Sound pressure levels dB(A)						
woder name	SSH	SH	Н	М	L	SL	SSL
DUCMI200IHC-3PH	51	49	47	45	43.5	42	41
DUCMI220IHC-3PH	51	49	47	45	43.5	42	41

#### Notes:

1 Sound pressure levels are measured 1.4m below the unit in an anechoic chamber. During in-situ operation, sound pressure levels may be higher as a result of ambient noise.

Figure 7.1: High Static Pressure Duct sound pressure level measurement



#### 7.2 Octave Band Levels

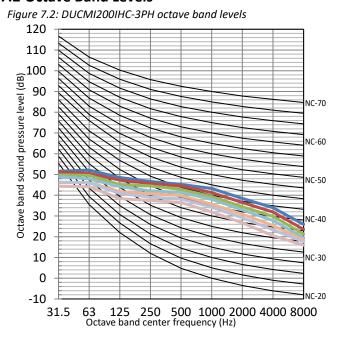
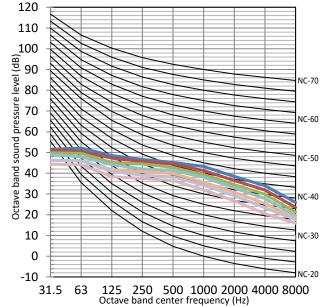


Figure 7.3: DUCMI220IHC-3PH octave band levels



#### 8 Fan Performance

#### 8.1 Constant Airflow mode

#### 8.1.1 Fan performance diagram

Figure 8.1: DUCMI200IHC-3PH fan performance

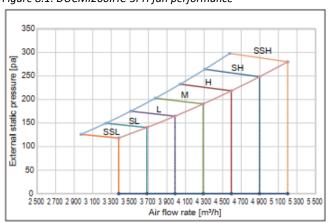
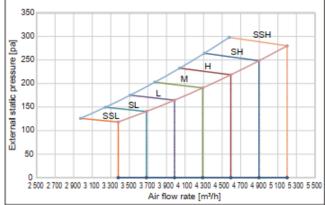


Figure 8.2: DUCMI220IHC-3PH fan performance



#### 8.2 Constant Speed mode

#### 8.2.1 Fan performance diagram

Figure 8.3: DUCMI200IHC-3PH fan performance

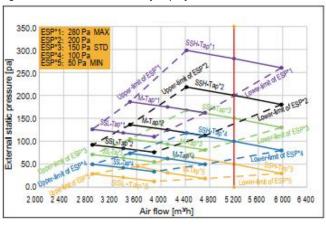
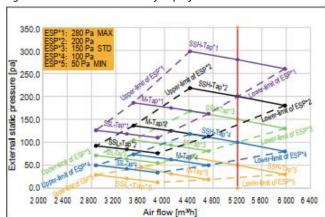


Figure 8.4: DUCMI220IHC-3PH fan performance





# Part 4 System Design and Installation

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#### 1 Preface

#### 1.1 Notes for Installers Boxes

The information contained in this Engineering Data Book may primarily be of use during the system design stage of a Midea VRF project. Additional important information which may primarily be of use during field installation has been placed in boxes, such as the example below, titled "Notes for installers".

#### **Notes for installers**



 Notes for installers boxes contain important information which may primarily be of use during field installation, rather than during desk-based system design.

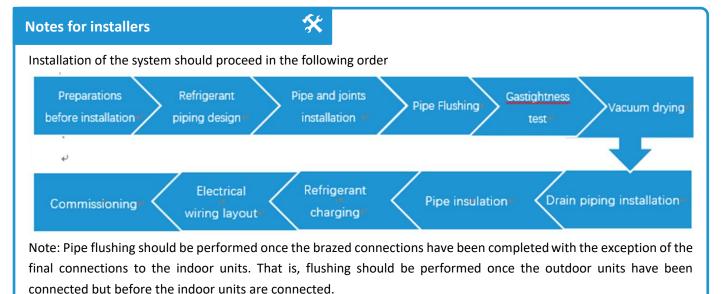
#### 1.2 Definitions

In this Engineering Data Book, the term "applicable legislation" refers to all national, local and other laws, standards, codes, rules, regulations and other legislation that apply in a given situation.

#### 1.3 Precautions

All system installation including installation of piping and electrical works must only be carried out by competent and suitably qualified, certified and accredited professionals and in accordance with all applicable legislation.

#### 1.4 Installation procedure





#### 2 Unit Placement and Installation

#### 2.1 Outdoor Units

#### 2.1.1 Placement considerations

Placement of outdoor units should take account of the following considerations:

- Air conditioners should not be exposed to direct radiation from a high-temperature heat source.
- Air conditioners should not be installed in positions where dust or dirt may affect heat exchangers.
- Air conditioners should not be installed in locations where exposure to oil or to corrosive or harmful gases, such as acidic or alkaline gases, may occur.
- Air conditioners should not be installed in locations where exposure to salinity may occur unless the anti-corrosion treatment for high-salinity areas customization option has been added and the precautions described in Part 3, 9 "Installation in Areas of High Salinity" are taken.
- Outdoor units should be installed in well-drained, well-ventilated positions that are as close as possible to the indoor units.

#### 2.1.2 Spacing

Outdoor units must be spaced such that sufficient air may flow through each unit. Sufficient airflow across heat exchangers is essential for outdoor units to function properly.

Figure 4-2.1: Single unit installation (unit: mm)

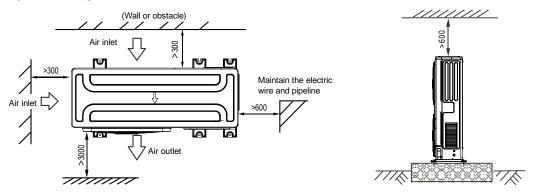
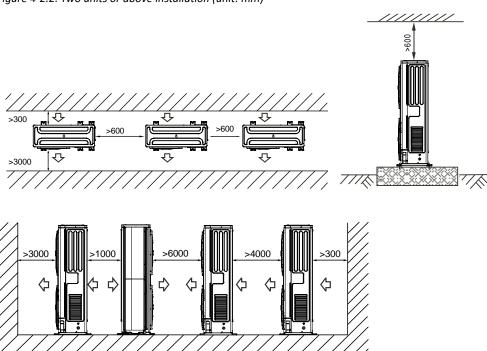


Figure 4-2.2: Two units or above installation (unit: mm)





#### 2.2 Indoor Units

#### 2.2.1 Placement considerations

Placement of indoor units should take account of the following considerations:

- Sufficient space for drain piping and for access during servicing and maintenance should be allowed.
- To ensure a good cooling/heating effect, short-circuit ventilation (where outlet air returns quickly to a unit's air inlet) should be avoided.
- To prevent excessive noise or vibration during operation, suspension rods or other weight-bearing fixings should typically be able to bear twice the unit's weight.

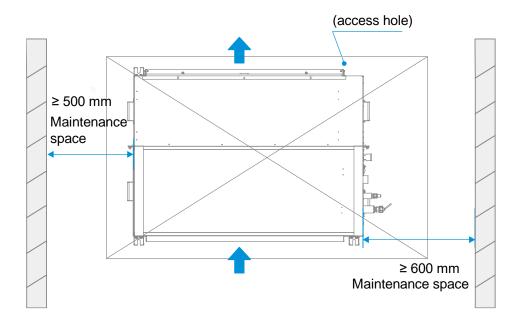
#### **Notes for installers**



- Before installing an indoor unit, check that the model to be installed is as specified in the construction drawings and confirm the correct orientation of the unit.
- Ensure that units are installed at the correct height.
- To allow smooth condensate drainage and to ensure unit stability (to prevent excessive noise or vibration), ensure that units are level to within 1° of the horizontal. If a unit is not level to within 1° of the horizontal, water leakage or abnormal vibration/noise may occur.

#### 2.2.2 Space Requirements

Figure 4-2.3: High Static Pressure Duct space requirements (unit: mm)



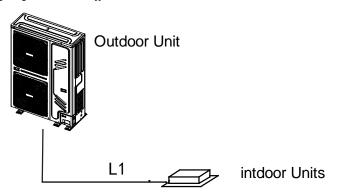


# **3 Refrigerant Piping Design**

#### 3.1 Permitted Piping Lengths and Level Differences

The piping length and level difference requirements that apply are summarized in table below.

Figure 4-3.1: Permitted refrigerant piping length and level differences



Name	Designation
Main pipe	L1

Table 4-3.1: Summary of permitted refrigerant piping length and level differences

	Category	Permitted values	Piping in Figure 4-3.1	
Piping lengths	The maximum piping length		≤ 90m	L1
Level between	Largest level difference	Outdoor unit is above	≤ 25m	
	between indoor unit and outdoor unit	Outdoor unit is below	≤ 20m	-

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#### 3.2 Selecting Piping Diameters

Selecting piping diameters between outdoor and indoor unit.

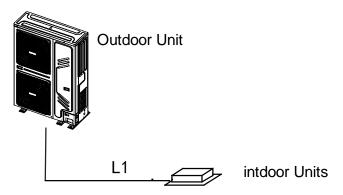


Table 4-3.2: Piping diameter of L1

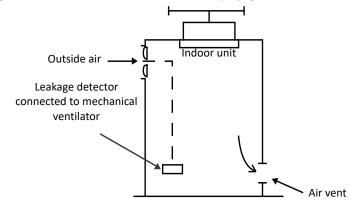
Outdoor units	Gas pipe (mm)	Liquid pipe (mm)
20-22kW	Ф25.4	Ф12.7

#### 3.3 Refrigerant Leakage Precautions

R410A refrigerant is not flammable in air at temperatures up to 100°C at atmospheric pressure and is generally considered a safe substance to use in air conditioning systems. Nevertheless, precautions should be taken to avoid danger to life in the unlikely event of a major refrigerant leakage. Precautions should be taken in accordance with all applicable legislation. Where no applicable legislation exists, the following may be used as a guide:

- Air-conditioned rooms should be large enough that if leakage of all the refrigerant in the system occurs, the concentration of the refrigerant in the room does not reach a level dangerous to health.
- A critical concentration (at which point R410A becomes dangerous to human health) of 0.44 kg/m³ can be used.
- The potential concentration of refrigerant in a room following a leak can be calculated as follows:
  - Calculate the total amount of refrigerant in the system ("A") as the nameplate charge (the charge in the system when delivered from the factory) plus the additional charge added as Part 4, 8.1 "Calculating Additional Refrigerant Charge".
  - Calculate the total volume ("B") of the smallest room into which refrigerant could potentially leak.
  - Calculate the potential refrigerant concentration as "A" divided by "B".
  - If A/B is equal or more than 0.44 kg/m³, countermeasures such installing mechanical ventilators (either ventilating regularly or controlled by refrigerant leakage detectors) should be taken.
- Since R410A is heavier than air, particular consideration should be given to leak scenarios in basement rooms.

Figure 4-3.2: Mechanical ventilator controlled by refrigerant leak detector





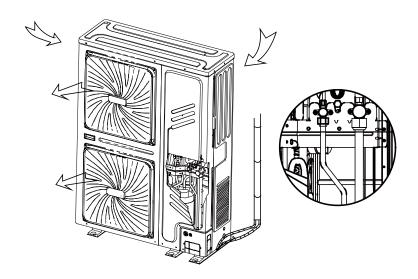
#### **4 Refrigerant Piping Installation**

#### 4.1 Refrigerant pipe connection

Connect the Indoor units first, then connect the Outdoor unit.

Before connecting, knock off the plate in the corresponding direction.

Figure 4-4.1: The outdoor refrigerant connecting pipe position



#### 4.1.1 Cutting copper piping and removing burrs

#### **Notes for installers**



- Use a pipe cutter rather than a saw or cutting machine to cut piping. Rotate the piping evenly and slowly, applying even force to ensure that the piping does not become deformed during cutting. Using a saw or cutting machine to cut piping runs the risk of copper shavings entering the piping. Copper shavings are difficult to remove and pose a serious risk to the system if they enter the compressor or block the throttling unit.
- After cutting using a pipe cutter, use a reamer/scraper to remove any burrs that have formed at the opening, keeping the opening of the piping downwards to avoid copper shavings from entering the piping.
- Remove burrs carefully to avoid scratches, which may prevent a proper seal being formed and lead to refrigerant leakage.



#### 4.1.2 Bending piping

Bending copper piping reduces the number of brazed joints required and can improve quality and save material.

#### **Notes for installers**



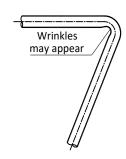
#### Piping bending methods

- Hand bending is suitable for thin copper piping (Φ6. 35mm Φ12. 7mm).
- Mechanical bending (using a bending spring, manual bending machine or powered bending machine) is suitable for a wide range of diameters (Φ6. 35mm - Φ54.0mm).

#### Caution

- When using a spring bender, ensure that the bender is clean before inserting it in the piping.
- After bending a copper pipe, ensure that there are no wrinkles or deformation on either side of the pipe.
- Ensure that bend angles do not exceed 90°, otherwise wrinkles may appear on the inner side of the pipe, and the pipe may buckle or crack.
- Do not use a pipe that has buckled during the bending process; ensure that the cross section at the bend is greater than 2/3 of the original area.

Figure 4-4.2: Pipe bending in excess of 90°



#### 4.1.3 Flared joints

Flared joints should be used where a screw thread connection is required.

#### **Notes for installers**

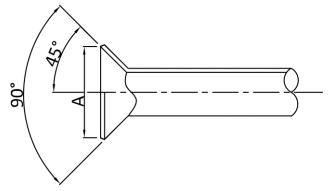


- Before flaring 1/2H (half hard) piping, anneal the end of the pipe to be flared.
- Remember to place the flare nut on the piping before flaring.
- Ensure the flared opening is not cracked, deformed or scratched, otherwise it will not form a good seal and refrigerant leakage may occur.
- The diameter of the flared opening should be within the ranges specified in table below.

Table 4-4.1: Flared opening size ranges

Pipe (mm)	Flared opening diameter (A) (mm)
Ф6.35	8.7 - 9.1
Ф9.52	12.8 - 13.2
Ф12.7	16.2 - 16.6
Ф15.9	19.3 - 19.7
Ф19.1	23.6 - 24.0

Figure 4-4.3: Flared opening



When connecting a flared joint, apply some compressor oil to the inner and outer surfaces of the flared opening to facilitate the connection and rotation of the flare nut, ensure firm connection between the sealing surface and the bearing surface, and avoid the pipe becoming deformed.



#### 4.1.4 Method of piping flaring connection

Connect the copper pipes to the indoor unit first, then connect it to the outdoor unit. You should first connect the low-pressure pipe, then the high-pressure pipe.

#### **Notes for installers**



- When connecting the flare nuts, apply a thin coat of refrigeration oil to the flared ends of the pipes.
- Align the center of the two pipes that you will connect. Remember to place the flare nut on the piping before flaring.
- The protective nut is a one-time part, it cannot be reused. In case it is removed, it should be replaced with a new one.
- According to the installation conditions, excessive torque can damage the horn mouth, while insufficient torque
  can cause air leakage. Please refer to the table below to determine the tightening torque in table below.

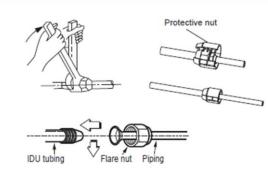
Table 4-4.2: Flared opening size ranges

 Pipe (mm)
 Tightening torque

 Φ9.52
 32.7~39.9 N.m (333~407 kgf.cm)

 Φ19.1
 97.2~118.6 N.m (990~1210 kgf.cm)

Figure 4-4.4: Nut fastening



When connecting a flared joint, apply some compressor oil to the inner and outer surfaces of the flared opening

#### 4.1.5 Refrigerant Piping Supports

When the air conditioning is running, the refrigerant piping will deform (shrink, expand, droop). To avoid damage to piping, hangers or supports should be spaced as per the criteria in the table below. In general, the gas and liquid pipes should be suspended in parallel and the interval between support points should be selected according to the diameter of the gas pipe.

Table 4-4.3: Refrigerant piping support spacings

Dina (mm)	Interval between support points (m)				
Pipe (mm)	Horizontal Piping	Vertical Piping			
< Ф20	1	1.5			
Ф20 – Ф40	1.5	2			
> Ф40	2	2.5			

Suitable insulation should be provided between the piping and the supports. If wooden dowels or blocks are to be used, use wood that has undergone preservative treatment.

Changes in refrigerant flow direction and refrigerant temperature result in movement, expansion and shrinkage of the refrigerant piping. Piping should therefore not be fixed too tightly, otherwise stress concentrations may occur in the piping, with the potential for rupturing.



#### 4.2 Pipe Flushing

#### 4.2.1 Purpose

To remove dust, other particles and moisture, which could cause compressor malfunction if not flushed out before the system is run, the refrigerant piping should be flushed using nitrogen. As described in Part 4, "Installation procedure", pipe flushing should be performed once the piping connections have been completed with the exception of the final connections to the indoor units. That is, flushing should be performed once the outdoor units have been connected but before the indoor units are connected.

#### 4.2.2 Procedure

#### **Notes for installers**



#### Warning

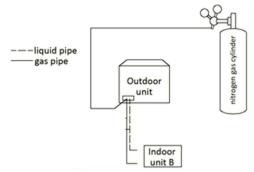
Only use nitrogen for flushing. Using carbon dioxide risks leaving condensation in the piping. Oxygen, air, refrigerant, flammable gases and toxic gases must not be used for flushing. Use of such gases may result in fire or explosion.

#### Procedure

The liquid and gas sides can be flushed simultaneously; alternatively, one side can be flushed first and then Steps 1 to 8 repeated, for the other side. The flushing procedure is as follows:

- 1. Cover the inlets and outlets of the indoor units to prevent dirt getting blown in during pipe flushing. (Pipe flushing should be carried out before connecting the indoor units to the piping system.)
- 2. Attach a pressure reducing valve to a nitrogen cylinder.
- 3. Connect the pressure reducing valve outlet to the inlet on the liquid (or gas) side of the outdoor unit.
- 4. Use blind plugs to block all liquid (gas) side openings, except for the opening at the indoor unit which is furthest from the outdoor units ("Indoor unit A" in figure below).
- 5. Start to open the nitrogen cylinder valve and gradually increase the pressure to 0.5MPa.
- 6. Allow time for nitrogen to flow as far as the opening at indoor unit A.
- 7. Flush the first opening:
  - a) Using suitable material, such as a bag or cloth, press firmly against the opening at indoor unit A.
  - b) When the pressure becomes too high to block with your hand, suddenly remove your hand allowing gas to rush out.
  - c) Repeatedly flush in this manner until no further dirt or moisture is emitted from the piping. Use a clean cloth to check for dirt or moisture being emitted. Seal the opening once it has been flushed.
- 8. Flush the other openings in the same manner, working in sequence from indoor unit A towards the outdoor units. Refer to figure below.
- 9. Once flushing is complete, seal all openings to prevent dust and moisture from entering.

Figure 4-4.5: Pipe flushing using nitrogen





#### 4.3 Gastightness Test

#### 4.3.1 Purpose

To prevent faults caused by refrigerant leakage, a gastightness test should be performed before system commissioning.

#### 4.3.2 Procedure

#### **Notes for installers**



#### Warning

Only dry nitrogen should be used for gastightness testing. Oxygen, air, flammable gases and toxic gases must not be used for gastightness testing. Use of such gases may result in fire or explosion.

#### **Procedure**

The gastightness test procedure is as follows:

#### Step 1

 Once the piping system is complete and the indoor and outdoor units have been connected, vacuum the piping to -0.1MPa.

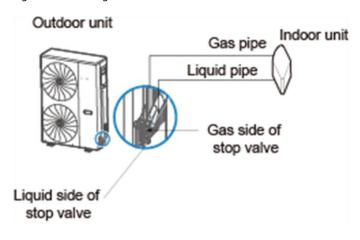
#### Step 2

- Charge the indoor piping with nitrogen at 0.3MPa through the needle valves on the liquid and gas stop valves and leave for at least 3 minutes (do not open the liquid or gas stop valves). Observe the pressure gauge to check for large leakages. If there is a large leakage, the pressure gauge will drop quickly.
- If there are no large leakages, charge the piping with nitrogen at 1.5MPa and leave for at least 3 minutes. Observe the pressure gauge to check for small leakages. If there is a small leakage, the pressure gauge will drop distinctly.
- If there are no small leakages, charge the piping with nitrogen at 4.2MPa and leave for at least 24 hours to check for micro leakages. Micro leakages are difficult to detect. To check for micro leakages, allow for any change in ambient temperature over the test period by adjusting the reference pressure by 0.01MPa per 1°C of temperature difference. Adjusted reference pressure = Pressure at pressurization + (temperature at observation temperature at pressurization) x 0.01MPa. Compare the observed pressure with the adjusted reference pressure. If they are the same, the piping has passed the gastightness test. If the observed pressure is lower than the adjusted reference pressure, the piping has a micro leakage.
- If the leakage is detected, refer to Part 3, 4.3.3 "Leak detection". Once the leak has been found and fixed, the gastightness test should be repeated.

#### Step 3

• If not continuing straight to vacuum drying once the gastightness test is complete, reduce the system pressure to 0.5-0.8MPa and leave the system pressurized until ready to carry out the vacuum drying procedure.

Figure 4-4.6: Gastightness test



#### 4.3.3 Leak detection



#### **Notes for installers**



#### To check for leaks: Vacuum leak test

- 1. Evacuate the system from the liquid and gas piping to -100.7 kPa (-1.007 bar) (5 Torr absolute) for more than 2 hours.
- 2. Once reached, turn off the vacuum pump and check that the pressure does not rise for at least 1 minute.
- 3. Should the pressure rise, the system may either contain moisture (see vacuum drying below) or have leaks.

#### To check for leaks: Pressure leak test

- 1. Test for leaks by applying a bubble test solution to all piping connections.
- 2. Discharge all nitrogen gas.
- 3. Break the vacuum by pressurizing with nitrogen gas to a minimum gauge pressure of 0.2 MPa (2 bar). Never set the gauge pressure higher than the maximum operation pressure of the unit, i.e. 4.0 MPa (40 bar)

ALWAYS use a recommended bubble test solution from your wholesaler.

NEVER use soap water:

Soap water may cause cracking of components, such as flare nuts or stop valve caps.

Soap water may contain salt, which absorbs moisture that will freeze when the piping gets cold.

Soap water contains ammonia which may lead to corrosion of flared joints (between the brass flare nut and the copper flare).

#### 4.4 Vacuum Drying

#### 4.4.1 Purpose

Vacuum drying should be performed in order to remove moisture and non-condensable gases from the system. Removing moisture prevents ice formation and oxidization of copper piping or other internal components. The presence of ice particles in the system would cause abnormal operation, whilst particles of oxidized copper can cause compressor damage. The presence of non-condensable gases in the system would lead to pressure fluctuations and poor heat exchange performance.

Vacuum drying also provides additional leak detection (in addition to the gastightness test).



#### 4.4.2 Procedure

#### **Notes for installers**



During vacuum drying, a vacuum pump is used to lower the pressure in the piping to the extent that any moisture present evaporates. At 5mmHg (755mmHg below typical atmospheric pressure) the boiling point of water is 0°C. Therefore a vacuum pump capable of maintaining a pressure of -756mmHg or lower should be used. Using a vacuum pump with a discharge in excess of 4L/s and a precision level of 0.02mmHg is recommended.

#### Caution

- Before performing vacuum drying, make sure that all the outdoor unit stop valves are firmly closed.
- Once the vacuum drying is complete and the vacuum pump is stopped, the low pressure in the piping could suck vacuum pump lubricant into the air conditioning system. The same could happen if the vacuum pump stops unexpectedly during the vacuum drying procedure. Mixing of pump lubricant with compressor oil could cause compressor malfunction and a one-way valve should therefore be used to prevent vacuum pump lubricant seeping into the piping system.

#### **Procedure**

The vacuum drying procedure is as follows:

#### Step 1

• Connect the blue (low pressure side) hose of a pressure gauge to the master unit gas pipe stop valve, the red (high pressure side) hose to the master unit liquid pipe stop valve and the yellow hose to the vacuum pump.

#### Step 2

- Start the vacuum pump and then open the pressure gauge valves to start vacuum the system.
- After 30 minutes, close the pressure gauge valves.
- After a further 5 to 10 minutes check the pressure gauge. If the gauge has returned to zero, check for leakages in the refrigerant piping.

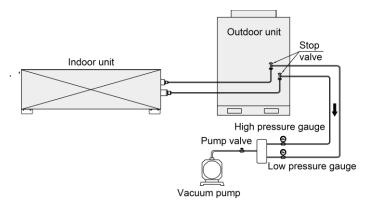
#### Step 3

Re-open the pressure gauge valves and continue vacuum drying for at least 2 hours and until a pressure difference (below typical atmospheric pressure) of 756mmHg or more has been achieved. Once the pressure difference of at least 756mmHg has been achieved, continue vacuum drying for 2 hours.

#### Step 4

- Close the pressure gauge valves and then stop the vacuum pump.
- After 1 hour, check the pressure gauge. If the pressure in the piping has not increased, the procedure is finished. If the pressure has increased, check for leakages.
- After vacuum drying, keep the blue and red hoses connected to the pressure gauge and to the master unit stop valves, in preparation for refrigerant charging.

Figure 4-4.7: Vacuum drying





Pressure gauge



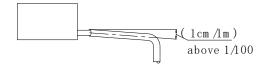
#### **5 Drain Piping**

#### 5.1 Design Considerations

Drain piping design should take account of the following considerations:

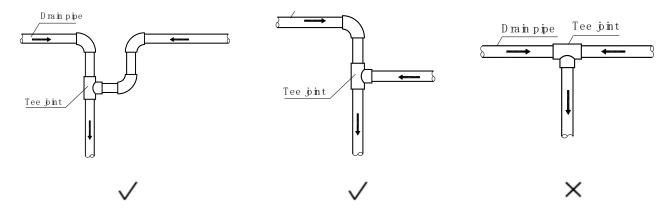
- Indoor unit condensate drain piping needs to be of sufficient diameter to carry the volume of condensate produced at
  the indoor units and installed at a slope sufficient to allow drainage. Discharge as close as possible to the indoor units
  is usually preferable.
- To prevent the drain piping becoming excessively long, consideration should be given to installing multiple drain piping systems, with each system having its own drainage point and providing drainage for a subset of the overall set of indoor units
- The routing of drain piping should take into consideration the need to maintain sufficient slope for drainage whilst avoiding obstacles such as beams and ducting. The drain piping slope should be at least 1:100 away from indoor units.

Figure 4-5.1: Drain piping minimum slope requirement



To avoid backflow and other potential complications, two horizontal drain pipes should not meet at the same level.
 Refer to the figure below for suitable connection arrangements. Such arrangements also allow the slope of the two horizontal pipes to be selected independently.

Figure 4-5.2: Drain piping joints – correct and incorrect configurations



- Branch drain piping should join main drain piping from the top.
- Recommended support/hanger spacing is 0.8 1.0m for horizontal piping and 1.5 – 2.0m for vertical piping. Each vertical section should be fitted with at least two supports. For horizontal piping, spacing greater than those recommended leads to sagging and deformation of the pipe profile at the supports which impedes water flow and should therefore be avoided.
- Air vents should be fitted at the highest point of each drain piping system to ensure that condensation is discharged smoothly. U-bends or elbow joints should be used such that the vents face downwards, to prevent dust entering the piping. Air outlet should not be installed too close to indoor unit lift pumps.

Figure 4-5.3: Branch drain piping joining main drain piping

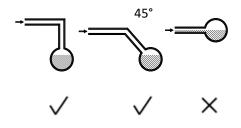


Figure 4-5.4: Effect of insufficient drain piping support

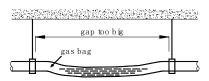
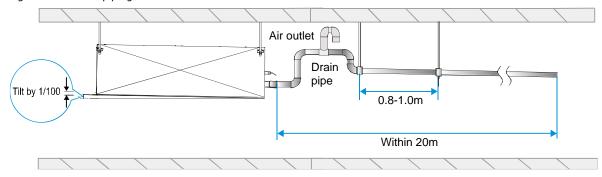




Figure 4-5.5: Drain piping air outlet

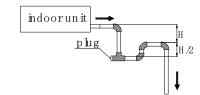


- Air conditioner drain piping should be installed separately from waste, rainwater and other drain piping and should not come into direct contact with the ground.
- Drain piping diameter should be not less than the indoor units' drain piping connection.
- To allow inspection and maintenance, the piping clamps shipped with units should be used to attach drain piping to indoor units – adhesive should not be used.
- Thermal insulation should be added to drain piping to prevent condensation forming. Thermal insulation should extend
  all the way to the connection with the indoor unit.
- Units with drain pumps should have separate drain piping systems from systems that use natural drainage.

#### 5.2 Water Traps

For indoor units with a high negative pressure differential at the outlet of the drainage pan, a trap should be fitted to the drain piping to prevent poor drainage and/or water being blown back into the drainage pan. Traps should be arranged as in Figure 4-5.6. The vertical separation H should be in excess of 50mm. A plug may be fitted to allow cleaning or inspection.

Figure 4-5.6: Drain piping water traps



#### **5.3 Selecting Piping Diameters**

Select branch drainage piping (the drain piping connection to each unit) diameters according to indoor unit flow volume and select main drainage piping diameters according to the combined flow volume of the upstream indoor units. Use a design assumption of 2 liters of condensate per horsepower per hour. For example, the combined flow volume of three 2HP units and two 1.5HP units would be calculated as follows:

Combined flow volume = 
$$3 \times 2 \text{ L/HP/h} \times 2 \text{HP}$$
 =  $18 \text{ L/h}$  +  $2 \times 2 \text{ L/HP/h} \times 1.5 \text{HP}$ 

Tables below specify the required piping diameters for horizontal and vertical branch piping and for main piping. Note that main piping should use PVC40 or larger.

Table 4-5.1: Horizontal drain piping diameters

PVC piping	Nominal diameter (mm)	Capacity (L/h)		Remarks
		Slope 1:50	Slope 1:100	Remarks
PVC25	25	39	27	Dranch nining only
PVC32	32	70	50	Branch piping only
PVC40	40	125	88	
PVC50	50	247	175	Branch or main piping
PVC63	63	473	334	



Table 4-5.2: Vertical drain piping diameters

PVC piping	Nominal diameter (mm)	Capacity (L/h)	Remarks
PVC25	25	220	Drongh nining only
PVC32	32	410	Branch piping only
PVC40	40	730	
PVC50	50	1440	
PVC63	63	2760	Branch or main piping
PVC75	75	5710	
PVC90	90	8280	

#### 5.4 Drain Piping Installation

#### **Notes for installers**

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Installation of the drain piping should proceed in the following order:

Indoor unit installation

Drain piping installation

Watertightness test

Drain piping insulation

#### Caution

- Ensure that all joints are firm and once the drain piping is all connected conduct a watertightness test and water flow test.
- Do not connect air conditioner drain piping to waste, rainwater or other drain piping and do not let air conditioner drain piping come into direct contact with the ground.
- For units with drain pumps, test that the drain pump functions properly by adding water to the unit's drainage pan and running the unit. To allow inspection and maintenance, the pipe clamps shipped with units should be used to attach drain piping to indoor units adhesive should not be used.

#### 5.5 Watertightness Test and Water Flow Test

Once installation of a drainage piping is complete, watertightness and water flow tests should be performed.

#### Notes for installers



#### Watertightness test

Fill the piping with water and test for leakages over a 24-hour period.

#### Water flow test (natural drainage test)

Slowly fill the drainage pan of each indoor unit with at least 600ml of water through the inspection port and check that the water is discharged through the outlet of the drain piping.

#### Caution

• The drain plug in the drainage pan is for removing accumulated water prior to performing indoor unit maintenance. During normal operation, the drain should be plugged to prevent leakage.

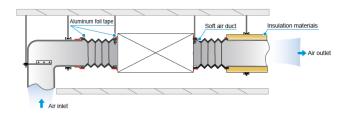


#### 6 Air Duct

#### 6.1 Design Considerations

- Please use locally purchased air ducts and soft air ducts (Use environmentally friendly, odorless materials, otherwise the air conditioner may generate odor when it runs).
- Install the flange at the air return side, and use aluminum foil tape to seal the connection part between the flange and the air duct to avoid air leakage.
- Use aluminum foil tape to seal the connection part between the flange at the air supply side and the air duct to avoid air leakage.
- The air ducts on the air supply side shall be insulated to prevent condensation.
- When installing the air duct and its components, need to fix and adjust the supports and suspension brackets to ensure they are in the right position and subject to uniform force.
- Make sure that the air duct and its components are clean before installation.
- After installation, carry out the air tightness test on the air duct to ensure its air leakage.

Figure 4-6.1: Air ducts design



#### 6.2 Procedure

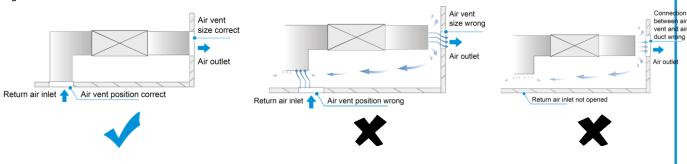
#### **Notes for installers**



#### Warning

- Connect the air outlet and air inlet to the ceiling opening properly to avoid short circuit.
- Use canvas or soft air duct to connect the indoor unit and air duct at a distance (width) of 150-300mm.
- Do not lay wires, cables or other pipes containing toxic, flammable, and explosive gases or liquids inside the air ducts.
- The air duct regulating device shall be installed in a position that is easily accessible, flexible, and reliable.
- The air duct should be securely connected to the vent.
- The frame shall fit snugly into the building decoration, and should appear neat and flexible. It shall not be twisted or warped.
- If the air vent is installed horizontally, its deviation shall not exceed 3/1000; if installed vertically, its deviation shall not exceed 2/1000.
- All the air vents in one room shall be neatly installed at the same height.
- All metal accessories (including supports, suspension brackets, and brackets) for the piping system shall undergo anti-corrosion treatment.

Figure 4-6.2: Connection between air vent and air duct





#### 7 Insulation

#### 7.1 Refrigerant Piping Insulation

During operation, the temperature of the refrigerant piping varies. Insulation is required to ensure unit performance and compressor lifespan. During cooling, the gas pipe temperature can be very low. Insulation prevents condensation forming on the piping. During heating, the gas pipe temperature can be very high. Insulation serves as necessary protection from burns.

#### 7.1.1 Selecting insulation materials

RUse heat-resistant polyethylene foam for the liquid pipes (able to withstand temperature of 70°C), and polyethylene foam for the gas pipes (able to withstand temperature of 120°C).

#### 7.1.2 Thickness of insulation

Minimum thicknesses for refrigerant piping insulation are specified in table below. In hot, humid environments, the thickness of insulation should be increased over and above the specifications in table below.

Table 4-7.1: Refrigerant piping insulation thickness

Pipe outer diameter (mm)	Minimum insulation thickness (mm) Humidity < 80%RH	Minimum insulation thickness (mm) Humidity ≥ 80%RH
Ф6.35		
Ф9.52		
Ф12.7		
Ф15.9	15	20
Ф19.1		
Ф22.2		
Ф25.4		

#### 7.1.3 Installation of piping insulation

With the exception of joint insulation, insulation should be applied to piping before fixing the piping in place. Insulation at joints in refrigerant piping should be applied after the gastightness test has been completed.

#### **Notes for installers**



- Installation of insulation should be carried out in a manner suited to the type of insulation material being used.
- Ensure there are no gaps at the joints between sections of insulation.
- Do not apply tape too tightly as doing so may shrink insulation, reducing its insulating properties leading to condensation and loss of efficiency.
- Insulate gas and liquid pipes separately, otherwise heat exchange between the two sides will greatly impact efficiency.
- Do not bind the separately insulated gas and liquid pipes together too tightly as doing so can damage the joints between sections of insulation.

#### 7.2 Drain Piping Insulation

- Use rubber/plastic insulating tube with a B1 fire resistance rating.
- The insulation should typically be in excess of 10mm thick.
- For drain piping installed inside a wall, insulation is not required.
- Use suitable adhesive to seal seams and joints in the insulation and then bind with cloth reinforced tape of width not less than 50mm. Ensure tape is fixed firmly to avoid condensation.
- Ensure the drain piping insulation adjacent to the indoor unit drainage water outlet is fixed to the unit itself using adhesive, to prevent condensation and dripping.

#### 7.3 Ducting Insulation

Suitable insulation should be added to ducting in according with all applicable legislation.



#### **8 Charging Refrigerant**

#### 8.1 Calculating Additional Refrigerant Charge

The additional refrigerant charge required depends on the lengths and diameters of the outdoor and indoor liquid pipes. Table 4-8.1 shows the additional refrigerant charge required per meter of equivalent pipe length for different diameters of pipe. The total additional refrigerant charge is obtained by summing the additional charge requirements for each of the outdoor and indoor liquid pipes, as in the following formula, where  $L_1$  to  $L_8$  represent the equivalent lengths of the pipes of different diameters. Assume 0.5m for the equivalent pipe length of each branch joint.

Additional refrigerant charge R (kg)

- $L_1(\Phi 6.35) \times 0.022$
- + L<sub>2</sub> (**Φ9.52**) × 0.057
- +  $L_3$  (**Φ12.7**) × 0.110
- +  $L_4$  (**Φ15.9**) × 0.170
- + L<sub>5</sub> (Φ19.1) × 0.260
- +  $L_6$  (**Ф22.2**) × 0.360

Table 4-8.1: Additional refrigerant charge	2
--	---

Liquid side piping (mm)	Additional refrigerant charge per meter of equivalent length of piping (kg)
Ф6.35	0.022
Ф9.52	0.057
Ф12.7	0.110
Ф15.9	0.170
Ф19.1	0.260
Ф22.2	0.360

#### Notes:

- If the connection pipeline (L1) is less than or equal to 20m, no additional refrigerant is required.
- If the connection pipeline (L1) is longer than 20m, the refrigerant amount of 20m pipeline must be deducted from the final calculated additional refrigerant amount.

#### 8.2 Adding Refrigerant

#### **Notes for installers**



#### Caution

- Only charge refrigerant after performing a gastightness test and vacuum drying.
- Never charge more refrigerant than required as doing so can lead to liquid hammering.
- Only use refrigerant R410A charging with an unsuitable substance may cause explosions or accidents.
- Use tools and equipment designed for use with R410A to ensure required pressure resistance and to prevent foreign materials from entering the system.
- Refrigerant must be treated in accordance with applicable legislation.
- Always use protective gloves and protect your eyes when charging refrigerant.
- Open refrigerant containers slowly, and the power supply for all outdoor units should be turned on.
- The power supply for all outdoor units should be turned on, when add refrigerant



#### **Notes for installers**



#### **Procedure**

The procedure for adding refrigerant is as follows:

#### Step 1

Calculate additional refrigerant charge R (kg).

#### Step 2

- Place a tank of R410A refrigerant on a weighing scale. Turn the tank upside down to ensure refrigerant is charged in a liquid state. (R410A is a blend of two different chemicals compounds. Charging gaseous R410A into the system could mean that the refrigerant charged is not of the correct composition).
- After vacuum drying, the blue and red pressure gauge hoses should still be connected to the pressure gauge and to the outdoor unit stop valves.
- Connect the yellow hose from the pressure gauge to the R410A refrigerant tank.

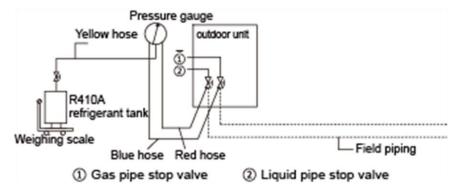
#### Step 3

- Open the valve where the yellow hose meets the pressure gauge, and open the refrigerant tank slightly to let the refrigerant eliminate the air. Caution: open the tank slowly to avoid freezing your hand.
- Set the weighing scale to zero.

#### Step 4

- Open the three valves on the pressure gauge to begin charging refrigerant.
- When the amount charged reaches R (kg), close the three valves. If the amount charged has not reached R (kg) but no additional refrigerant can be charged, close the three valves on the pressure gauge, run the outdoor units in cooling mode, and then open the yellow and blue valves. Continue charging until the full R (kg) of refrigerant has been charged, then close the yellow and blue valves. Note: Before running the system, be sure to complete all the pre-commissioning checks and be sure to open all stop valves as running the system with the stop valves closed would damage the compressor.

Figure 4-8.1: Charging refrigerant





Pressure gauge



# Part 5

# Electrical Components and Wiring Diagrams

1	Outdoor Unit Electric Control Box Layout	48
2	Outdoor Unit Main PCB	49
3	Compressor Inverter Module and Filter Board	56
4	Wiring Diagrams	60

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#### 1 Outdoor Unit Electric Control Box Layout

Figure 5-1.1: Front view of electric control box

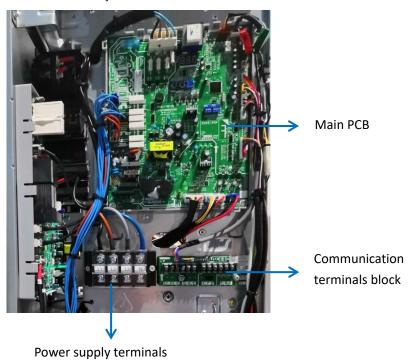
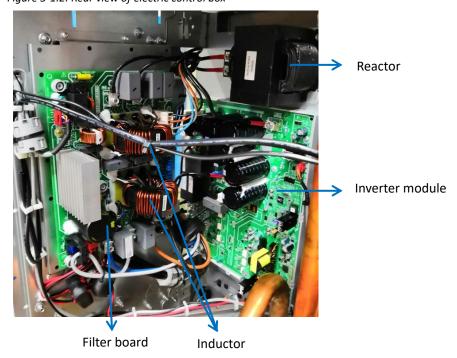


Figure 5-1.2: Rear view of electric control box

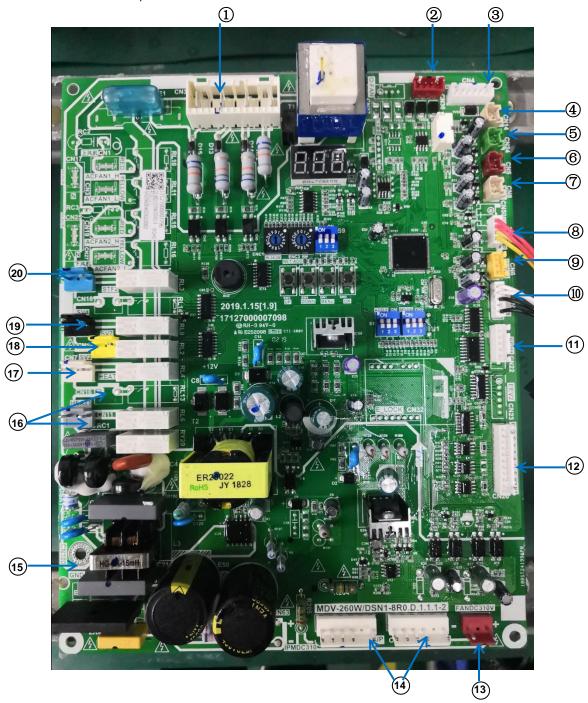




#### 2 Outdoor Unit Main PCB

#### 2.1 Ports

Figure 5-2.1: Outdoor unit main PCB ports<sup>1</sup>



Notes:

1. Label descriptions are given in Table 5-2.1.



Table 5-2.1: Main PCB ports

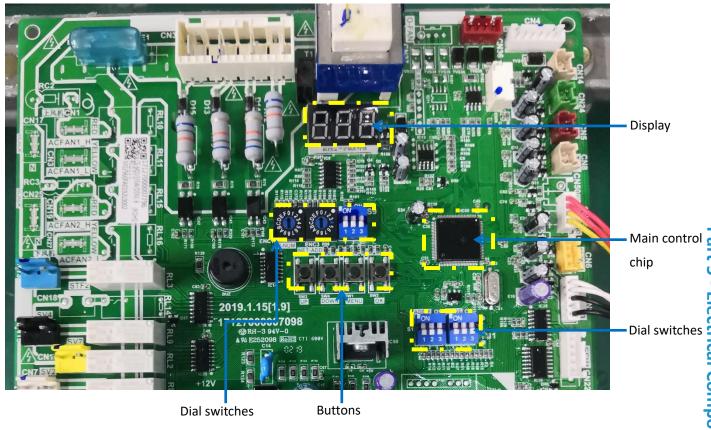
Label in					
Figure 5-2.1	Port code	Content	Port voltage		
_	0.100		220V AC between A/B/C and N;		
1	CN30	Power input of main board	380V AC between A,B and C		
2	CN36	Inverter module connection	0V or 5V DC		
3	CN4	Control port of filter board	0V or 12V DC		
4	CN14	Heat sink temperature sensor (Tf) connection	0-5V DC (varying)		
5	CN24	Refrigerant cooling pipe temperature sensor (TL) connection	0-5V DC (varying)		
6	CN5	Discharge pipe temperature sensor (T5) connection	0-5V DC (varying)		
7	CN8	Heat exchanger temperature sensor (T3A) connection	0.5V.DC (varying)		
,	CINO	(Reserved)	0-5V DC (varying)		
8	CN12	High pressure sensor and low pressure sensor connections	0-5V DC (varying)		
9	CN6	High pressure switch connection	0V or 5V DC		
10	CN9	Heat exchanger temperature sensor outlet (T3) and ambient	0 EV DC (varying)		
10		temperature sensor (T4) connections	0-5V DC (varying)		
11	CN22	EEV drive port	0V or 12V DC		
12	CN20	Communication port	0-5V DC (varying)		
13	CN53	DC fan motor power supply connection	310V DC		
14	CN107	DC fan motor control port	0.210V DC (varying)		
14	CN109	De fair motor control port	0-310V DC (varying)		
15	CN100	Ground connection			
16	CN11	Power supply to compressor crankcase heater	2201/ A.C		
10	CN16	rower supply to compressor crankcase neater	220V AC		
17	CN7	Solenoid valve SV2 drive port	220V AC		
18	CN10	Solenoid valve SV7 drive port	220V AC		
19	CN15	Solenoid valve SV4 drive port	220V AC		
20	CN13	Four-way valve drive ports	220V AC		



#### 2.2 Components

#### 2.2.1 Layout

Figure 5-2.2: Outdoor unit main PCB components



#### 2.2.2 Function of buttons

Table 5-2.2: Function of buttons SW1 to SW4

Button	Function
SW3 (UP)	In menu mode: previous and next buttons for menu modes.
SW4 (DOWN)	Not in menu mode: previous and next buttons for system check information.
SW1 (MENU)	Enter / exit menu mode.
SW2 (OK)	Confirm to enter specified menu mode.

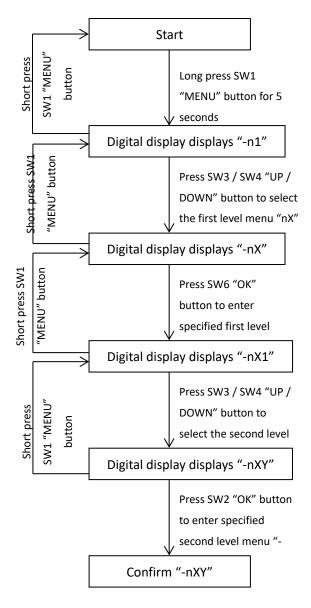




#### 2.2.3 Menu mode

- 1. Long press SW1 "MENU" button for 5 seconds to enter menu mode, and the digital display displays "n1";
- 2. Press SW3 / SW4 "UP / DOWN" button to select the first level menu "n1", "n2", "n3", "n4", "nb" or "nF";
- 3. Press SW2 "OK" button to enter specified first level menu, for example, enter "n3" mode;
- 4. Press SW3 / SW4 "UP / DOWN" button to select the second level menu from "n31" to "n34";
- 5. Press SW2 "OK" button to enter specified second level menu, for example, enter "n32" mode;

#### Menu mode selection flowchart:





#### Menu mode function:

Table 5-2.3: Menu mode function

Digital display content	Menu mode	Remarks
n14	Force cooling mode	All indoor units running in cooling mode
n16	Maintenance mode	The system does not check the indoor units' number.
n27 Vacuum mode It is only used in maintenance process. The digital display displays "R01", and all s valves are opened and EXVs are positioned to 480 steps.		It is only used in maintenance process. The digital display displays "R01", and all solenoid valves are opened and EXVs are positioned to 480 steps.
n31	History error codes Displays recent 10 history error codes	
n32	32 Cleaning history error codes	
n34	n34 Factory reset	
nb3	Exit auto power save mode	
nb4	Enter auto power save mode	
nF1	Adjust T2	Only 40 to 50 could be selected (default value is 44).
nF2	Adjust T2B	Only 5 to 15 could be selected (default value is 8).

#### How to exit specified menu mode:

Table 5-2.4: Exit specified menu mode method:

Menu mode	Manual exit method	Automatic exit method	
Debug mode 1 (2)	Long press SW2 "OK" button when the digital display is not	After rupping CO minutes	
Debug mode 1 (2)	in menu selection state	After running 60 minutes	
Maintenance mode	/	After running 60 minutes	
\/a	Long press SW2 "OK" button when the digital display is not	After marine Chause	
Vacuum mode	in menu selection state	After running 8 hours	
Auto power save mode	Select "nb3"	/	

In the non-menu selection state, long press SW2 "OK" button for 3s, it will automatically exit all test modes.

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#### 2.2.4 System check button

Before pressing UP or DOWN button, make sure that the system has been operating steadily for more than one hour. On pressing UP or DOWN button, the parameters listed in Table 5-2.5 will be displayed in sequence.

Table 5-2.5: System check

DSP content	Parameters displayed on DSP	Remarks
1	Unit capacity (Hp)	Actual value = value displayed
2	Setting number of indoor units	
3	Operating mode	Refer to Note 1
4	Fan speed index	Refer to Note 2
5	Total capacity of outdoor unit	
6	Total capacity requirement of indoor units	
7	Main heat exchanger pipe (T3) temperature (°C)	Actual value = value displayed
8	Outdoor ambient (T4) temperature (°C)	Actual value = value displayed
9	Inverter compressor discharge temperature (°C)	Actual value = value displayed
10	Invert module (TF) temperature (°C)	Actual value = value displayed
11	Refrigerant cooling pipe (TL) temperature (°C)	Actual value = value displayed
12	Compressor discharge pressure (MPa)	Actual value = value displayed × 0.1
13	Discharge superheat degree (°C)	Actual value = value displayed
14	EXVA position	Actual value = value displayed × 8
15	Actual current (A)	Actual value = value displayed
16	Inverter compressor current (A)	Actual value = value displayed
17	Actual voltage (V)	Actual value = value displayed
18	DC bus voltage (V)	Actual value = value displayed
19	Indoor heat exchanger pipe (T2/T2B) temperature (°C)	Actual value = value displayed
20	Priority mode	Refer to Note 3
21	Number of indoor units currently in communication with outdoor unit	Actual value = value displayed
22	Number of indoor units currently operating	Actual value = value displayed
23	Most recent error or protection code	"nn" is displayed if no error or protection events have occurred since start-up
	Software version	
24	Software version	

#### Notes:

- 1. Operating mode:
- 0: off; 2: cooling; 3: heating; 4: forced cooling.
- 2. The fan speed index is related to the fan speed in rpm and can take any integer value in the range 1 (slowest) to 11 (fastest).
- 3. Priority mode:
- 0: heating priority; 1: cooling priority; 2: first ON priority; 3: heating only; 4: cooling only; 5: test mode 1; 6: test mode 2
- 4. Inverter compressor discharge temperature:
- (10.):100°C-109°C; (11.):110°C-119°C



#### 2.2.5 Digital display output

Table 5-2.6: Digital display output in different operating states

Outdoor unit state	Parameters displayed on DSP	
Standby The number of indoor units in communication with the our		
Normal operation	Frequency limitation code <sup>1</sup> and running speed of the compressor in rotations per second	
Error or protection Error or protection code		
In menu mode	Refer to Table 5-2.3	
System check	Refer to Table 5-2.5	



#### Notes:

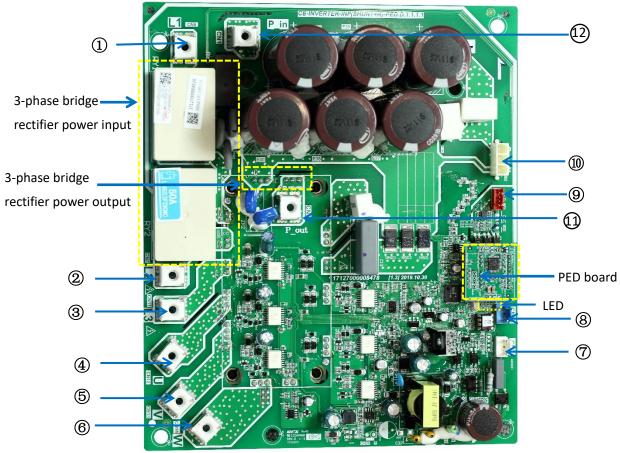
- 1. Frequency limitation code:
  - P: Compressor discharge temperature frequency limitation; C: Pressure frequency limitation; A: Ambient temperature frequency limitation; F: Heat sink temperature frequency limitation; U: Voltage frequency limitation; H: Current frequency limitation; d: DC voltage frequency limitation.

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#### 3 Compressor Inverter Module and Filter Board

#### 3.1 Inverter module ports

Figure 5-3.1: Outdoor unit inverter module ports<sup>1</sup>



Notes:

1. Label descriptions are given in Table 5-3.1.



Table 5-3.1: Inverter module ports

Label in Figure 5-2.1	Port code	Content	Port voltage	
1	CN6	Power input L1 of inverter module	380V AC	
2	CN7	Power input L2 of inverter module	380V AC	
3	CN11	Power input L3 of inverter module	380V AC	
4	CN12	Power output U of inverter module to compressor	Above 156V DC (varying according to frequency)	
5	CN13	Power output V of inverter module to compressor	Above 156V DC (varying according to frequency)	
6	CN14	Power output W of inverter module to compressor	Above 156V DC (varying according to frequency)	
7	CN2	DC power supply input	310V DC	
8	CN23	High pressure switch connection	+12V DC	
9	CN8	Main PCB connection	0-5V DC (varying)	
10	CN38	Reserved		
11	CN5	DC bus output connect to reactor	350-640V DC (varying)	
12	CN1	DC bus input connect to reactor	350-640V DC (varying)	

#### **LED indicators LED1 and LED2**

Table 5-3.2: LED indicators LED1 and LED2

Indicator	LED indicator function and status		
LED 1	Inverter module operating indicator. Continuously on if the compressor is running normally and flashing if an inverter module error has occurred <sup>1</sup> .	C9	
LED 2	Inverter module error indicator. Continuously on if an inverter module error has occurred <sup>1</sup> .	LED2	

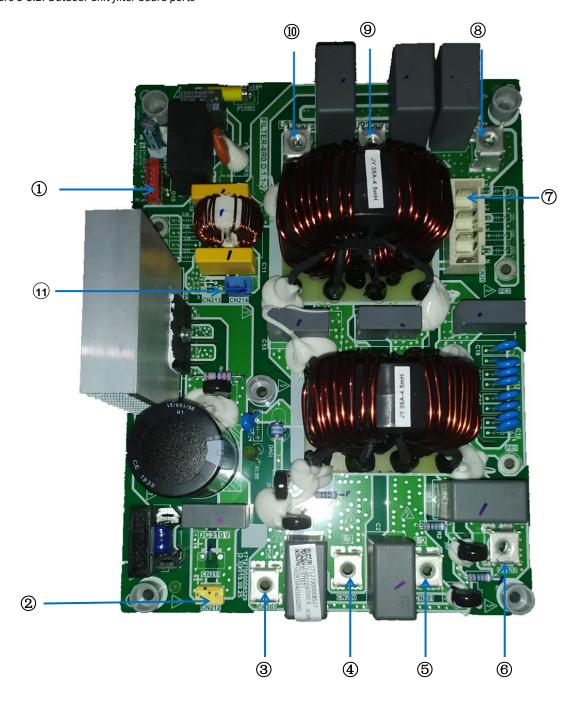
#### Note:

1. If an inverter module error occurs, refer to Part 6, "H4 Troubleshooting". The error code is displayed on the digital display.

#### 3.2 Filter board ports

Figure 5-3.2: Outdoor unit filter board ports<sup>1</sup>





#### Notes:

1. Label descriptions are given in Table 5-3.3.



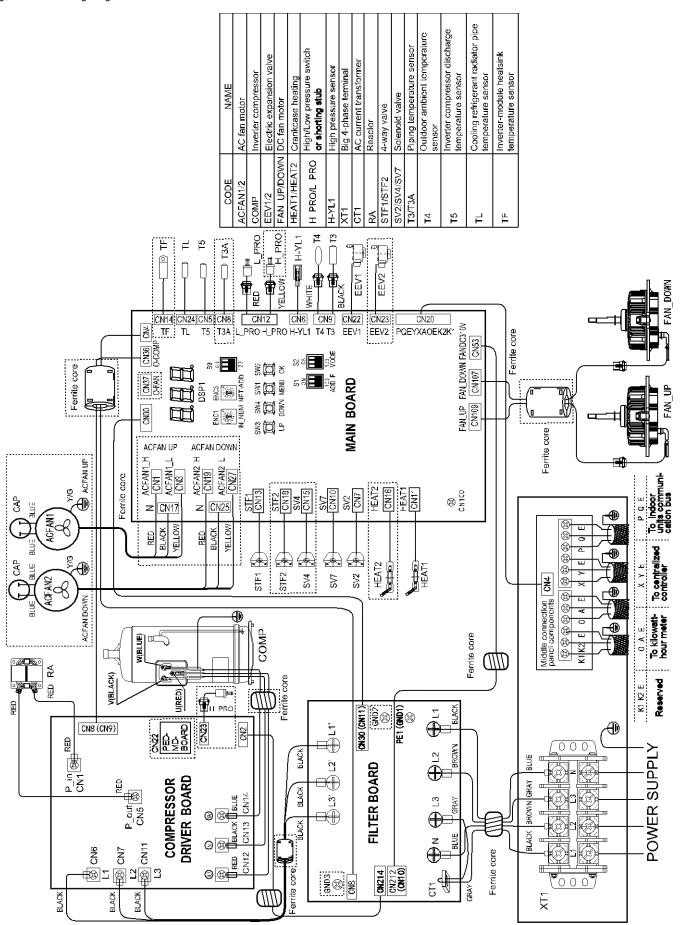
Table 5-3.3: Filter board ports

Label in Figure 5-3.2	Port code	Content	Port voltage	
1	CN8	Control port of filter board	12V DC	
2	CN212	Power supply to DC fan motor (CN212) of filter board	310V DC	
_	CN203	Power input N of filter board	220V AC between L1/L2/L3 and N;	
3			380V AC between L1,L2 and L3	
4	CN200	Power input L1 of filter board	220V AC between L1/L2/L3 and N;	
			380V AC between L1,L2 and L3	
_	CN201	Power input L2 of filter board	220V AC between L1/L2/L3 and N;	
5			380V AC between L1,L2 and L3	
C	CN202	Power input L3 of filter board	220V AC between L1/L2/L3 and N;	
6			380V AC between L1,L2 and L3	
7	CN30	Power supply output to main PCB	220V AC between L1/L2/L3 and N;	
/			380V AC between L1,L2 and L3	
0	CN206	Power output L1 of filter board	220V AC between L1/L2/L3 and N;	
8			380V AC between L1,L2 and L3	
9	CN205	Power output L2 of filter board	220V AC between L1/L2/L3 and N;	
			380V AC between L1,L2 and L3	
10	CN204	Downs output 12 of filter board	220V AC between L1/L2/L3 and N;	
		Power output L3 of filter board	380V AC between L1,L2 and L3	
11	CN214	Power supply to inverter board (CN214) of filter board	220V AC	



#### **4 Wiring Diagrams**

Figure 5-4.1: Wiring diagram





# Part 6 Outdoor Diagnosis and Troubleshooting

1	Error Code Table	. 62
2	Troubleshooting	. 63
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#### 1 Error Code Table

Table 6-1.1: Error code table

Error	Contant	Demode	Manual re-start	
code <sup>1</sup>	Content	Remarks		
E1	Phase sequence error	Displayed on the outdoor unit PCB	Yes	
E2	Communication error between indoor and outdoor units	Displayed on the outdoor unit PCB	No	
E4	Outdoor heat exchanger temperature sensor (T3) error or	Displayed on the outdoor unit PCB	No	
C4	outdoor ambient temperature sensor (T4) error	Displayed off the outdoor drift PCB		
E5	Abnormal power supply voltage	Displayed on the outdoor unit PCB	No	
E6	DC fan motor error	Displayed on the outdoor unit PCB	No	
Eb	E6 error appears 6 times in 1 hour	Displayed on the outdoor unit PCB	Yes	
E7	Outdoor compressor discharge temperature sensor (T5) error	Displayed on the outdoor unit PCB	No	
EH	Outdoor refrigerant cooling pipe temperature sensor (TL) error	Displayed on the outdoor unit PCB	No	
F1	DC bus voltage error	Displayed on the outdoor unit PCB	No	
Н0	Communication error between main control chip and inverter driver chip	Displayed on the outdoor unit PCB	No	
H4	Inverter module protection, P6 protection appears three times in 30 minutes	Displayed on the outdoor unit PCB	Yes	
H5	P2 protection appears three times in 60 minutes	Displayed on the outdoor unit PCB	Yes	
H7	Number of indoor units detected by outdoor unit not same as number set on main PCB	Displayed on the outdoor unit PCB	No	
Н8	High pressure sensor error	Displayed on the outdoor unit PCB	No	
bL	High pressure switch protection on compressor inverter board	Displayed on the outdoor unit PCB	No	
bH	PED board error	Displayed on the outdoor unit PCB	No	
P1	Discharge pipe high pressure protection	Displayed on the outdoor unit PCB	No	
P2	Suction pipe low pressure protection	Displayed on the outdoor unit PCB	No	
Р3	Compressor current protection	Displayed on the outdoor unit PCB	No	
P4	Discharge temperature protection	Displayed on the outdoor unit PCB	No	
P5	Outdoor heat exchanger temperature protection	Displayed on the outdoor unit PCB	No	
P8	Typhoon protection	Displayed on the outdoor unit PCB	No	
PL	Heat sink high temperature protection	Displayed on the outdoor unit PCB	No	
L0	Inverter module protection	Displayed on the outdoor unit PCB	Yes	
L1	DC bus low voltage protection	Displayed on the outdoor unit PCB	Yes	
L2	DC bus high voltage Heat sink temperature sensor protection	Displayed on the outdoor unit PCB	Yes	
L4	MCE error	Displayed on the outdoor unit PCB	Yes	
L5	Zero speed protection	Displayed on the outdoor unit PCB	Yes	
L7	Phase sequence error	Displayed on the outdoor unit PCB	Yes	
L8	Compressor frequency variation greater than 15Hz within one second protection	Displayed on the outdoor unit PCB	Yes	
L9	Actual compressor frequency differs from target frequency by more than 15Hz protection	Displayed on the outdoor unit PCB	Yes	

#### Notes:

 ${\bf 1.} \quad \hbox{For some error codes, a manual restart is required before the system can resume operation.}$ 



#### 2 Troubleshooting

#### 2.1 Warning

#### 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 outdoor units 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.

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#### 2.2 E1: Phase sequence error

#### 2.2.1 Digital display output



#### 2.2.2 Description

- Phase sequence error.
- The system stops running.
- Error code is displayed on the outdoor unit PCB.

#### 2.2.3 Trigger / recover condition

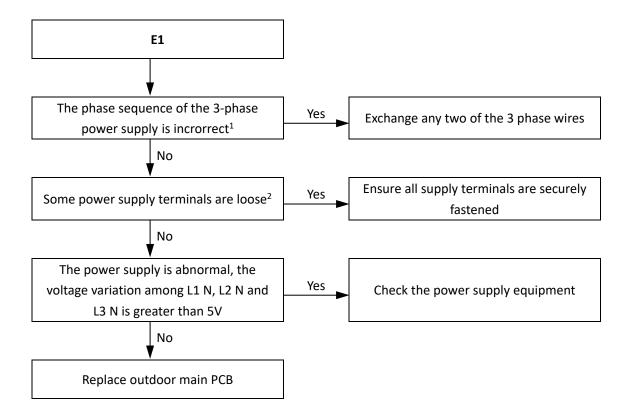
- Trigger condition: Wrong phase connection for 1.6s or phase missing for 48s.
- Recover condition: Correct phase connection.
- Reset method: Manually restart.

#### 2.2.4 Possible causes

- Power supply phases not connected in correct sequence.
- Power supply terminals loose.
- Power supply abnormal.
- Main PCB damaged.



#### 2.2.5 Procedure



#### Notes:

- 1. The L1, L2, L3 terminals of the 3-phase power supply should match compressor phase sequence requirements. If the phase sequence is inverted, the compressor will operate inversely.
- 2. Loose power supply terminals can cause the compressor to operate abnormally and compressor current to be very large.



#### 2.3 E2: Communication error between indoor and outdoor unit

#### 2.3.1 Digital display output



#### 2.3.2 Description

- Communication error between indoor and outdoor unit.
- The system stops running.
- Error code is displayed on the outdoor unit PCB.

#### 2.3.3 Trigger / recover condition

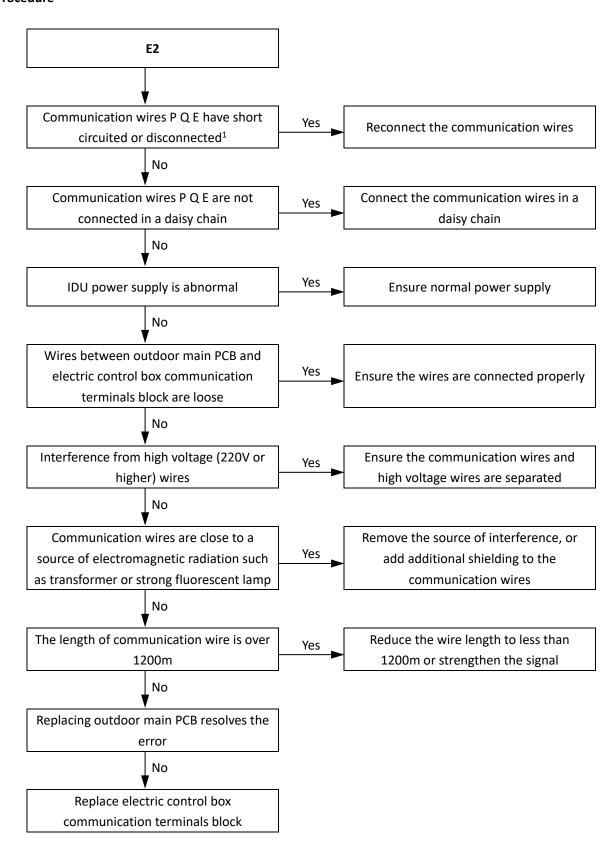
- Trigger condition: Indoor units and the outdoor unit cannot communicate for 2 minutes after the system is powered on for 20 minutes.
- Recover condition: Communication go back to normal.
- Reset method: Resume automatically.

#### 2.3.4 Possible causes

- Communication wires between indoor and outdoor units not connected properly.
- Indoor unit power supply abnormal.
- Loosened wiring within electric control box.
- Interference from high voltage wires or other sources of electromagnetic radiation.
- Communication wire too long.
- Damaged main PCB or electric control box communication terminals block.



#### 2.3.5 Procedure



#### Notes:

1. Measure the resistance among P, Q and E. The normal resistance between P and Q is 120Ω, between P and E is infinite, between Q and E is infinite.



#### 2.4 E4: Temperature sensor (T3/T4) error

#### 2.4.1 Digital display output



#### 2.4.2 Description

- Outdoor heat exchanger temperature sensor (T3) error or outdoor ambient temperature sensor (T4) error.
- The system stops running.
- Error code is displayed on the outdoor unit PCB.

#### 2.4.3 Trigger / recover condition

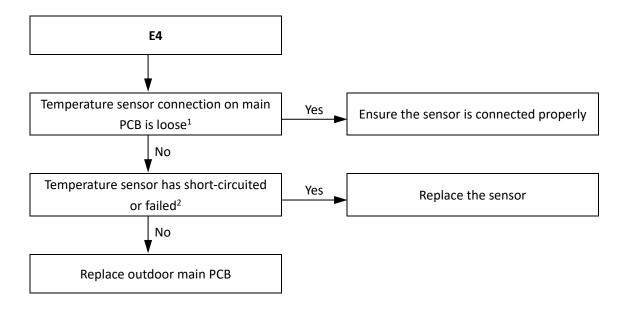
- Trigger condition: The main control board cannot receive the feedback signal of temperature sensor T3 or T4.
- Recover condition: The main control board can receive the feedback signal of temperature sensor T3 or T4.
- Reset method: Resume automatically.

#### 2.4.4 Possible causes

- Temperature sensor not connected properly or has malfunctioned.
- Damaged main PCB.



#### 2.4.5 Procedure



#### Notes:

- 1. Outdoor ambient temperature sensor (T4) and heat exchanger temperature sensor (T3) connection is port CN9 on the main PCB (labeled 10 in Figure 5-2.1 in Part 5, 2.1 "Ports").
- 2. Measure sensor resistance. If the resistance is too low, the sensor has short-circuited. If the resistance is not consistent with the sensor's resistance characteristics table, the sensor has failed. Refer to Table 6-3.1 in Part 6, 3.1 "Temperature Sensor Resistance Characteristics".

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#### 2.5 E5: Abnormal power supply voltage

#### 2.5.1 Digital display output



#### 2.5.2 Description

- Abnormal power supply voltage.
- The system stops running.
- Error code is displayed on the outdoor unit PCB.

#### 2.5.3 Trigger / recover condition

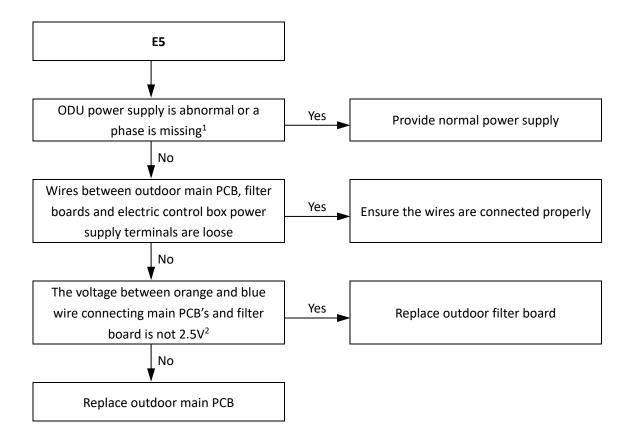
- Trigger condition: Outdoor unit power supply phase voltage < 172V.</li>
- Recover condition: Outdoor unit power supply phase voltage is > 265V.
- Reset method: Resume automatically.

#### 2.5.4 Possible causes

- Outdoor unit power supply voltage is abnormal or a phase is missing.
- Loosened wiring within electric control box.
- High voltage circuit error.
- Main PCB damaged.



#### 2.5.5 Procedure



#### Notes:

- 1. The normal voltage between L1and N, L2 and N, and L3 and N is 172-265V.
- 2. Control port of filter board is CN4 on the main PCB (labeled 3 in Figure 5-2.1 in Part 5, 2.1 "Ports").

# 2.6 E6, Eb: DC fan motor error

# 2.6.1 Digital display output





# 2.6.2 Description

- DC fan motor error.
- The system stops running.
- Error code is displayed on the outdoor unit PCB.

# 2.6.3 Trigger / recover condition

Trigger condition:

For E6 protection: Actual fan speed is < 120 rps more than 20S or the actual fan speed differs from target speed by more 200rps for more than 3 minutes.

For Eb protection: E6 protection appears six times in 60 minutes.

Recover condition: Actual fan speed is > 120 rps and the actual fan speed differs from target speed less than 200rps.

Reset method: Resume automatically.

For E6 protection: Resume automatically.

For Eb protection: Manually restart.

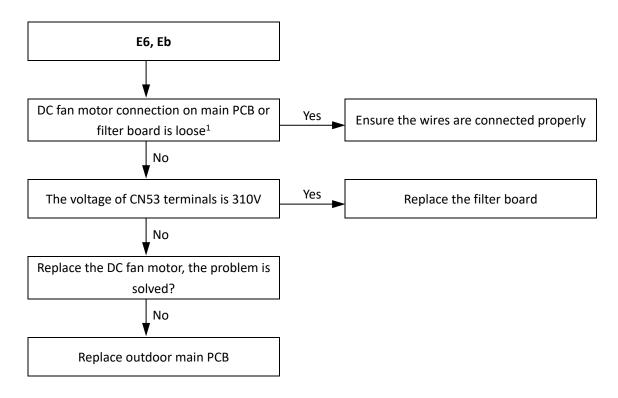
#### 2.6.4 Possible causes

- Loosened wiring within electric control box.
- DC fan motor damaged.
- Filter board damaged.
- Main PCB damaged.



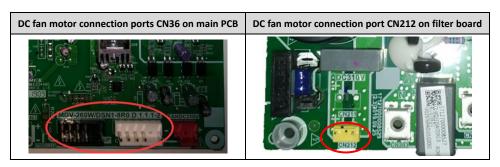


#### 2.6.5 Procedure



#### Notes:

1. DC fan motor connections on main PCB are ports CN107, CN109 (labeled 14 in Figure 5-2.1 in Part 5, 2.1 "Ports") and CN53 (labeled 13 in Figure 5-2.1 in Part 5, 2.1 "Ports"). DC fan motor connection on filter board is ports CN212 (labeled 2 in Figure 5-3.2 in Part 5, 3.2 "Filter Board Ports").



# Midea

# 2.7 E7: Temperature sensor (T5) error

# 2.7.1 Digital display output



# 2.7.2 Description

- A compressor discharge pipe temperature sensor (T5) error.
- The system stops running.
- Error code is displayed on the outdoor unit PCB.

# 2.7.3 Trigger / recover condition

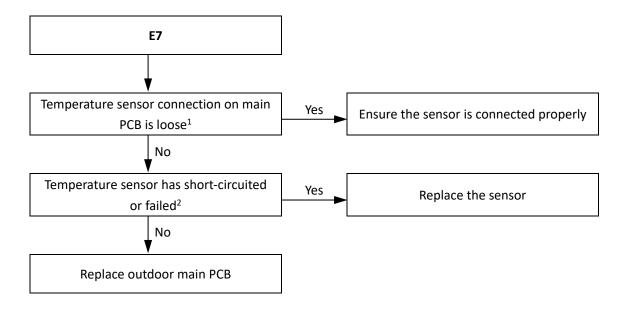
- Trigger condition: Discharge temperature < 15°C for 2 minutes after compressor startup for 10 minutes.
- Recover condition: Discharge temperature go back to normal.
- Reset method: Manually restart.

#### 2.7.4 Possible causes

- Temperature sensor not connected properly or has malfunctioned.
- Damaged main PCB.



#### 2.7.5 Procedure



- 1. Compressor discharge pipe temperature sensor connection is port CN5 on the main PCB (labeled 6 in Figure 5-2.1 in Part 5, 2.1 "Ports").
- 2. Measure sensor resistance. If the resistance is too low, the sensor has short-circuited. If the resistance is not consistent with the sensor's resistance characteristics table, the sensor has failed. Refer to Table 6-3.2 in Part 6, 3.1 "Temperature Sensor Resistance Characteristics".



# 2.8 EH: Outdoor refrigerant cooling pipe temperature sensor (TL) error

# 2.8.1 Digital display output



#### 2.8.2 Description

- An outdoor refrigerant cooling pipe temperature sensor (TL) error.
- The system stops running.
- Error code is displayed on the outdoor unit PCB.

# 2.8.3 Trigger / recover condition

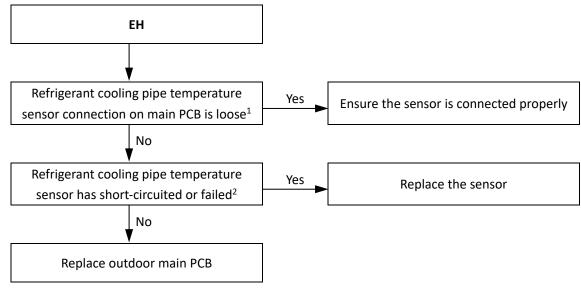
- Trigger condition: The main control board cannot receive the feedback signal of temperature sensor TL.
- Recover condition: The main control board can receive the feedback signal of temperature sensor TL.
- Reset method: Manually restart.

#### 2.8.4 Possible causes

- Temperature sensor not connected properly or has malfunctioned.
- Damaged main PCB.



#### 2.8.5 Procedure



- 1. Outdoor refrigerant cooling pipe temperature sensor connection is port CN24 on the main PCB (labeled 5 in Figure 5-2.1 in Part 5, 2.1 "Ports").
- 2. Measure sensor resistance. If the resistance is too low, the sensor has short-circuited. If the resistance is not consistent with the sensor's resistance characteristics table, the sensor has failed. Refer to Table 6-3.1 in Part 6, 3.1 "Temperature Sensor Resistance Characteristics".

# 2.9 F1: DC bus voltage error

# 2.9.1 Digital display output



# 2.9.2 Description

- F1 indicates compressor DC bus voltage error.
- The system stops running.
- Error code is displayed on the unit with the error.

# 2.9.3 Trigger / recover condition

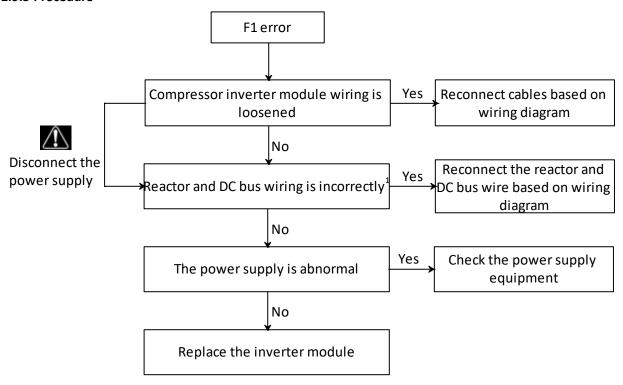
- Trigger condition: DC bus voltage < 200V continuously for 5 seconds.</li>
- Recover condition: DC bus voltage goes back to normal.
- Reset method: Restart automatically.

#### 2.9.4 Possible causes

- Loosened wiring of the compressor inverter module.
- Incorrect wiring of the reactor and DC bus wire.
- Abnormal power supply.
- Inverter module damaged.



#### 2.9.5 Procedure



#### Note:

1. The normal DC voltage between terminals P and N on inverter module should be 450-650V.



Figure 6-2.1: P and N terminals on Inverter module

# Midea

# 2.10 H0: Communication error

# 2.10.1 Digital display output



# 2.10.2 Description

- H0 indicates a communication error between the main control chip and the compressor inverter driver chip.
- The system stops running.
- Error code is displayed on the outdoor unit PCB.

# 2.10.3 Trigger / recover condition

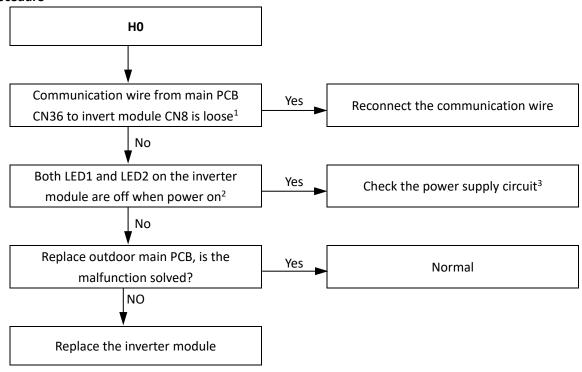
- Trigger condition: Main control chip and inverter driver chip cannot communication for 2 minutes.
- Recover condition: Communication go back to normal.
- Reset method: Resume automatically.

#### 2.10.4 Possible causes

- Loosened communication wiring from the main PCB to the inverter module.
- Main PCB damaged.
- Compressor inverter module damaged.

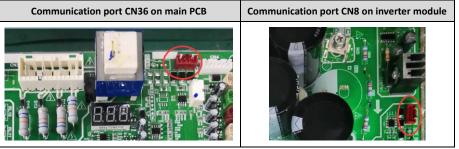


#### 2.10.5 Procedure



#### Notes:

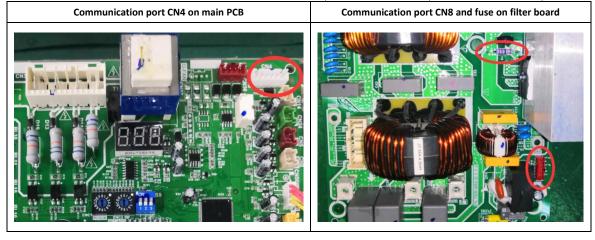
1. Communication wire from outdoor main PCB CN36 to inverter module CN8.



2. LED1/2 on inverter module



 Check the power supply for the compressor inverter module, port CN211 on filter board, the normal voltage should be DC310V; Check the single phase bridge and fuse on filter board; check the connection cable from ODU main PCB port CN4 to filter board port CN8 which is 12V DC power control port.



# Midea

### 2.11 H4: Inverter module protection

# 2.11.1 Digital display output



#### 2.11.2 Description

- H4 indicates compressor inverter module protection.
- The system stops running.
- Error code is displayed on the outdoor unit PCB.

#### 2.11.3 Trigger / recover condition

- Trigger condition: Compressor appears three inverter module protections.
- Recover condition: Inverter module goes back to normal.
- Reset method: Manually restart.

#### 2.11.4 Possible causes

- Inverter module protection.
- DC bus low or high voltage protection.
- MCE error.
- Zero speed protection.
- Phase sequence error.
- Excessive compressor frequency variation.
- Actual compressor frequency differs from target frequency.

# 2.11.5 Specific error codes for H4 inverter module protection

If an H4 error code is displayed, enter menu mode "n31" (refer to Part 5, 2.2.3 "menu mode") to check the history error code to check the following specific error code: L0, L1, L2, L4, L5, L7, L8, L9.

Table 6-2.1: Specific error codes for error H4

Specific error code <sup>1</sup>	Content
LO	Inverter module protection
L1	DC bus low voltage protection
L2	DC bus high voltage protection
L4	MCE error
L5	Zero speed protection
L7	Phase sequence error
L8	Compressor frequency variation greater than 15Hz within one second protection
L9	Actual compressor frequency differs from target frequency by more than 15Hz protection



The specific error codes L0, L1, L2 and L4 can also be obtained from the inverter module LED indicators. If an inverter module error has occurred, LED2 is continuously on and LED1 flashes.

Figure 6-2.2: LED indicators LED1 and LED2 on inverter module



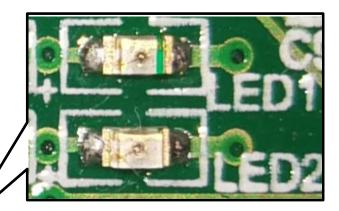
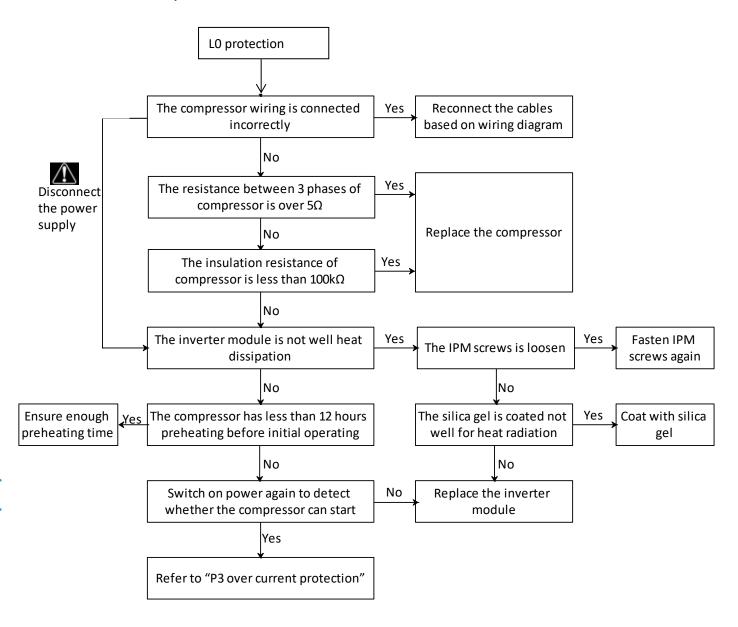


Table 2-6.2: Errors indicated on LED1

LED1 flashing pattern	Corresponding error
Flashes 8 times and stops for 1 second, then repeats	LO - Inverter module protection
Flashes 9 times and stops for 1 second, then repeats	L1 - DC bus low voltage protection
Flashes 10 times and stops for 1 second, then repeats	L2 - DC bus high voltage protection
Flashes 12 times and stops for 1 second, then repeats	L4 - MCE error

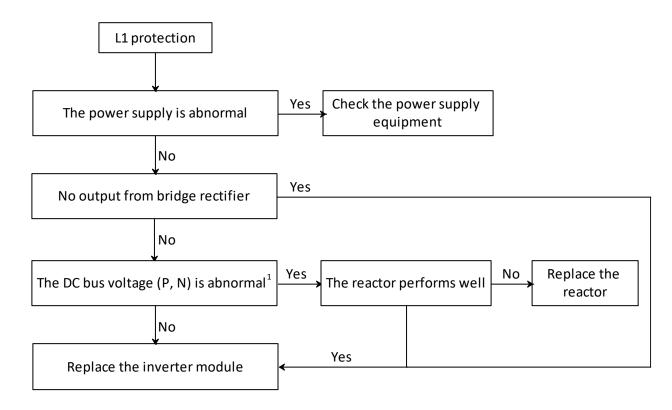
# Midea

#### 2.11.6 LO: Inverter module protection





# 2.11.7 L1: DC bus low voltage protection



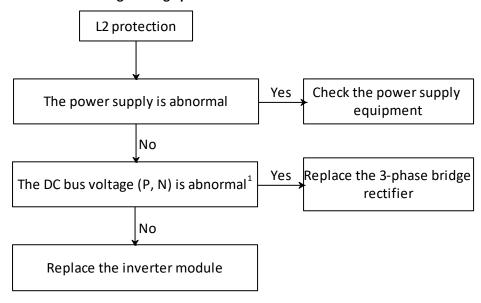
#### Note:

1. The normal DC voltage between terminals P and N on inverter module should be 450-650V. When the voltage is lower than 350V, L1 protection will be appeared.



Figure 6-2.3: P and N terminals on Inverter module

# 2.11.8 L2: DC bus high voltage protection



### Note:

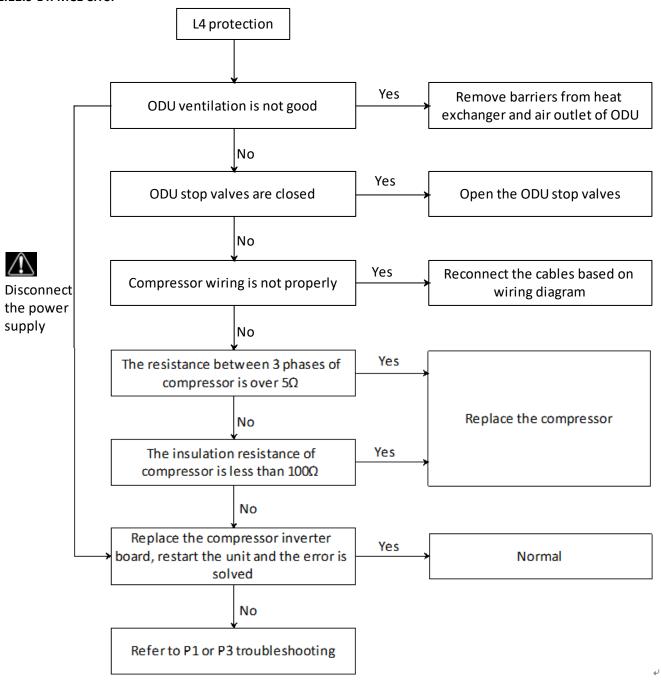
The normal DC voltage between terminals P and N on inverter module should be 520V. When the voltage is higher than 630V, L2 protection will be appeared.



Figure 6-2.4: P and N terminals on Inverter module

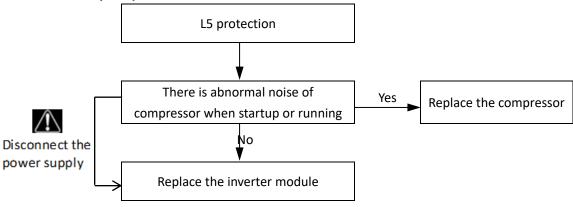


#### 2.11.9 L4: MCE error



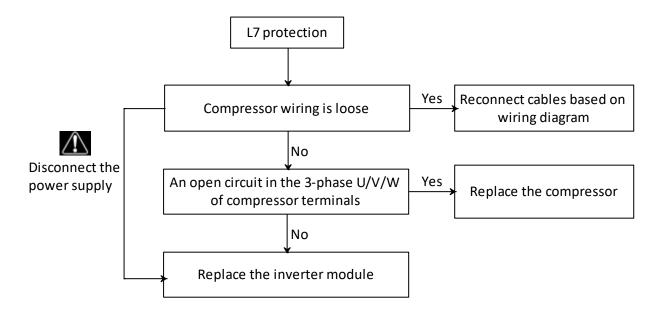


2.11.10 L5: Zero speed protection



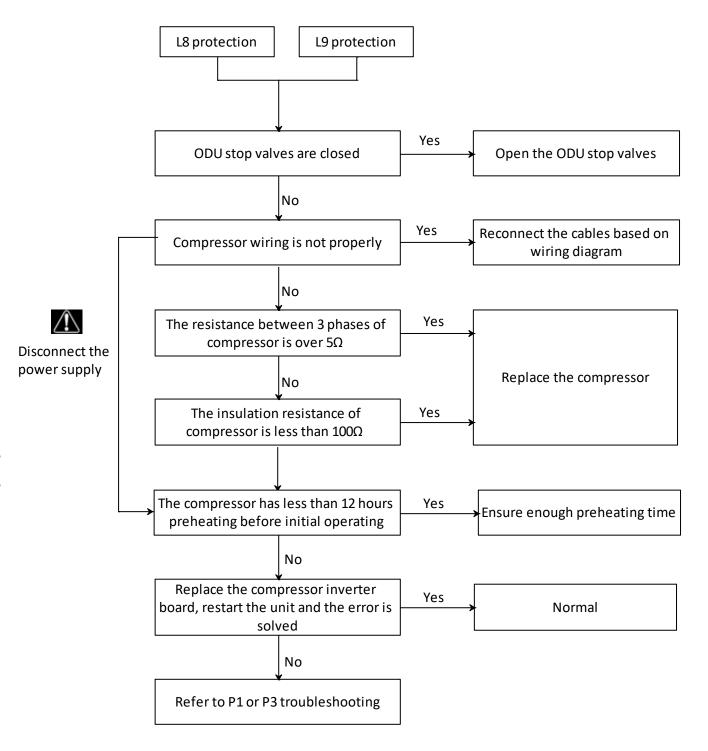


# 2.11.11 L7: Phase sequence error





- 2.11.12 L8: Compressor frequency variation greater than 15Hz within one second protection
  - L9: Actual compressor frequency differs from target frequency by more than 15Hz protection





#### 2.11.13 Compressor replacement procedure

# Step 1: Remove faulty compressor and remove oil

- Remove the faulty compressor from the outdoor unit.
- Before removing the oil, shake the compressor so as to not allow impurities to remain settled at the bottom.
- Drain the oil out of the compressor and retain it for inspection.
   Normally the oil can be drained out from the compressor discharge pipe.



Step 2: Inspect oil from faulty compressor

The oil should be clear and transparent. Slightly yellow oil is not an indication of any problems. However, if the oil is dark, black or contains impurities, the system has problems and the oil needs to be changed. Refer to Figure 6-2.7 for further details regarding inspecting compressor oil. (If the compressor oil has been spoiled, the compressor will not be being lubricated effectively. The scroll plate, crankshaft and bearings will wear. Abrasion will lead to a larger load and higher current. More electric energy will get dissipated as heat and the temperature of the motor will become increasingly high. Finally, compressor damage or burnout will result.)

# Step 3: Check oil in other compressors in the system

- If the oil drained from the faulty compressor is clean, go to Step 6.
- If the oil drained from the faulty compressor is spoiled (lightly or heavily), go to Step 4.

#### Step 4: Replace oil separator and accumulator

• If the oil from a compressor is spoiled (lightly or heavily), drain the oil from the oil separator and accumulator in that unit and then replace them.

# Step 5: Check filters(s)

• If the oil from a compressor is spoiled (lightly or heavily), check the filter between the gas stop valve and the 4-way valve in that unit. If it is blocked, clean with nitrogen or replace.

# Step 6: Replace the faulty compressor and re-fit the other compressors

- Replace the faulty compressor.
- If the oil had been spoiled and was drained from the non-faulty compressor in Step 3, use clean oil to clean them before re-fitting it into the unit. To clean, add oil into the compressor through the discharge pipe using a funnel, shake the compressor, and then drain the oil. Repeat several times and then re-fit the compressors into the units. (The discharge pipe is connected to the oil pool of the compressor by the inner oil balance pipe.)

Figure 6-2.6: Compressor piping



# Step 7: Add compressor oil

- Add 2.3L of oil to each of the compressors from which oil was drained in Step
   3.
- Only use FV50S oil. Different compressors require different types of oil. Using the wrong type of oil leads to various problems.
- Add additional 1.5L oil to the accumulator from which oil was drained in Step 4 such that the total amount of oil is 3.8L.

# Step 8: Vacuum drying and refrigerant charging

• Once all the compressors and other components have been fully connected, vacuum dry the system and recharge refrigerant. Refer to the V4+i Engineering Data Book, Part 3.

Figure 6-2.7: Inspecting compressor oil



This oil is black
- it has been
carbonized



This oil is a little yellow, but is clear and transparent and the condition is acceptable



This oil is still transparent but there are impurities which may clog the filter

Cloudy or gray
oil indicates
abnormal
system
operation





This oil contains particles of copper



# 2.12 H7: Unmatched total number of indoor units

# 2.12.1 Digital display output



#### 2.12.2 Description

- Number of indoor units detected by the outdoor unit not same as number set on main PCB.
- The system stops running.
- Error code is displayed on the outdoor unit PCB.

#### 2.12.3 Trigger / recover condition

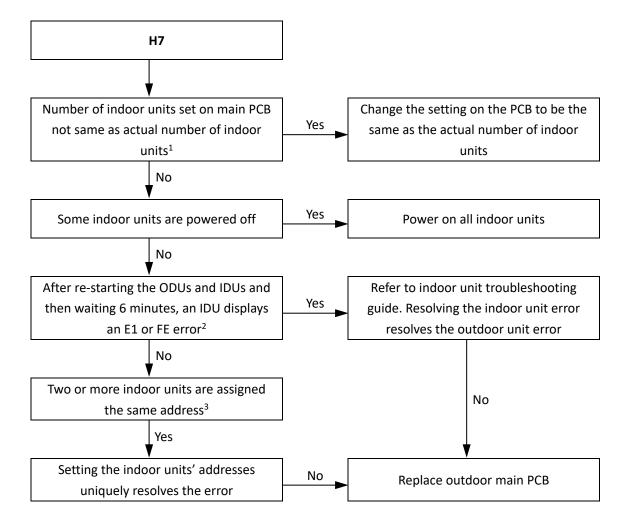
- Trigger condition: At least one indoor unit cannot be detected by the outdoor unit for more than 20 minutes for the first time powered on or at least one indoor unit cannot be detected by the outdoor unit for more than 3 minutes.
- Recover condition: Number of indoor units detected by the outdoor unit is same as number set on main PCB.
- Reset method: Resume automatically.

#### 2.12.4 Possible causes

- Number of indoor units set on main PCB not same as actual number of indoor units.
- Some indoor units are powered off.
- Communication wires between indoor and outdoor units not connected properly.
- Indoor unit PCB damaged.
- Indoor unit without address or indoor unit address duplicated.
- Main PCB damaged.

### 2.12.5 Procedure





- 1. The number of indoor units can be set on switches ENC1 and S9-3 on the main PCB.
- 2. Indoor unit error code E1 indicates a communication error between indoor and outdoor unit. Indoor unit error code FE indicates that an indoor unit has not been assigned an address.
- 3. Indoor unit addresses can be checked and manually assigned using indoor unit remote/wired controllers. Alternatively, indoor unit addresses can be automatically assigned by the outdoor unit.



# 2.13 H8: High pressure sensor error

# 2.13.1 Digital display output



# 2.13.2 Description

- High pressure sensor error.
- The system stops running.
- Error code is displayed on the unit with the error.

# 2.13.3 Trigger / recover condition

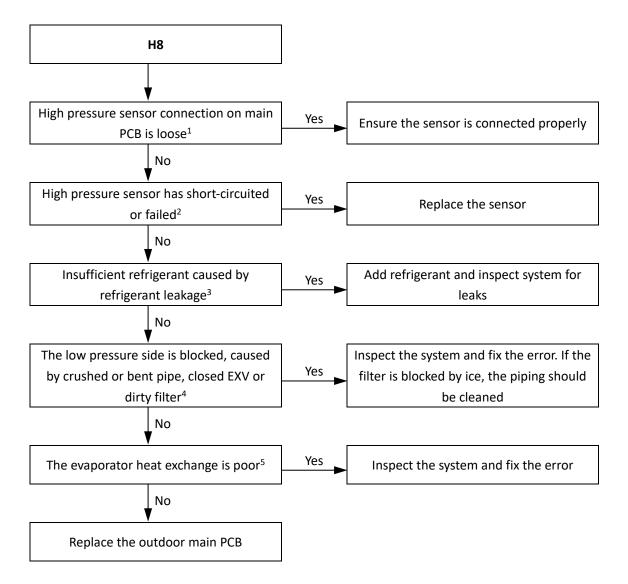
- Trigger condition: Discharge pressure ≤ 0.3MPa.
- Recover condition: Discharge pressure > 0.3MPa.
- Reset method: Resume automatically.

#### 2.13.4 Possible causes

- Pressure sensor not connected properly or has malfunctioned.
- Insufficient refrigerant.
- Low pressure side blockage.
- Poor evaporator heat exchange.
- Main PCB damaged.

### 2.13.5 Procedure





- High pressure sensor connection is port CN12 on the main PCB (labeled 8 in Figure 5-2.1 in Part 5, 2.1 "Ports").
- 2. Measure the resistance among the three terminals of the pressure sensor. If the resistance is of the order of mega Ohms or infinite, the pressure sensor has failed
- 3. An insufficiency of refrigerant causes compressor discharge temperature to be higher than normal, discharge and suction pressures to be lower than normal and compressor current to be lower than normal, and may cause frosting to occur on the suction pipe. These issues disappear once sufficient refrigerant has been charged into the system. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6, 3.2 "Normal Operating Parameters of Refrigerant System"
- 4. A low pressure side blockage causes compressor discharge temperature to be higher than normal, suction pressure to be lower than normal and compressor current to be lower than normal, and may cause frosting to occur on the suction pipe. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6, 3.2 "Normal Operating Parameters of Refrigerant System".
- 5. In cooling mode check indoor heat exchangers, fans and air outlets for dirt/blockages. In heating mode check outdoor heat exchangers, fans and air outlets for dirt/blockages.



# 2.14 bL: High pressure switch protection on compressor inverter board

# 2.14.1 Digital display output



#### 2.14.2 Description

- Discharge pipe high pressure protection or DC bus voltage abnormal.
- The system stops running.
- Error code is displayed on the outdoor unit PCB.

#### 2.14.3 Trigger / recover condition

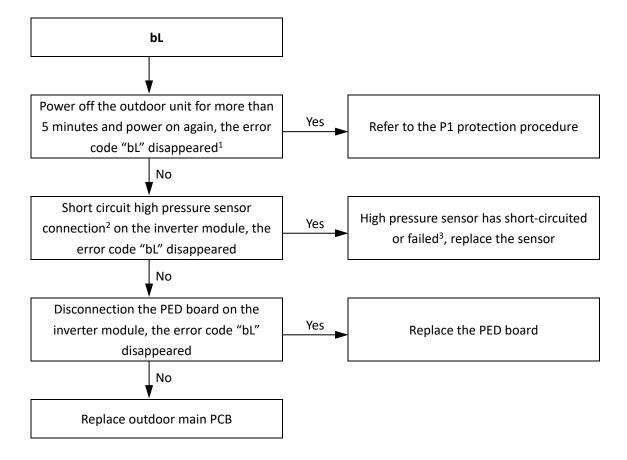
- Trigger condition: Discharge pressure ≥ 4.4MPa or DC bus voltage ≥ 325V
- Recover condition: Discharge pressure ≤ 3.2MPa or DC bus voltage < 325V.</p>
- Reset method: Resume automatically.

#### 2.14.4 Possible causes

- Pressure sensor/switch not connected properly or has malfunctioned.
- High pressure side blockage.
- Poor condenser heat exchange.
- Main PCB damaged.
- Inverter module damaged
- PED board damaged.

# 2.14.5 Procedure





- 1. For the first time the unit is powered on, the error code "bL" may disappeared in 5 minutes. It's normal and no need to be treated.
- 2. The high pressure sensor connection is port CN23 on the inverter module (labeled 8 in Figure 5-3.1 in Part 5, 3.1 "Ports").
- 3. Measure the resistance among the three terminals of the pressure sensor. If the resistance is of the order of mega Ohms or infinite, the pressure sensor has failed.



# 2.15 bH: PED board protection

# 2.15.1 Digital display output



#### 2.15.2 Description

- PED board protection.
- The system stops running.
- Error code is displayed on the outdoor unit PCB.

# 2.15.3 Trigger / recover condition

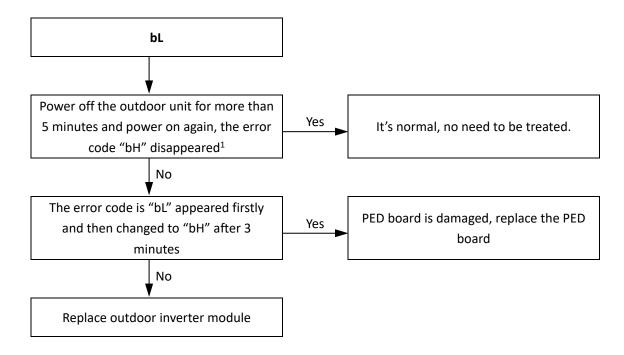
- Trigger condition: Contact conglutination or PED board self-check failure.
- Recover condition: Contact conglutination problem resolved or PED board self-check success.
- Reset method: Resume automatically.

#### 2.15.4 Possible causes

- Inverter module damaged.
- PED board damaged.

# Mide

#### 2.15.5 Procedure



#### lotes.

1. For the first time the unit is powered on, the error code "bH" may disappeared in 5 minutes. It's normal and no need to be treated.



# 2.16 P1: Discharge pipe high pressure protection

# 2.16.1 Digital display output



#### 2.16.2 Description

- Discharge pipe high pressure protection.
- The system stops running.
- Error code is displayed on the outdoor unit PCB.

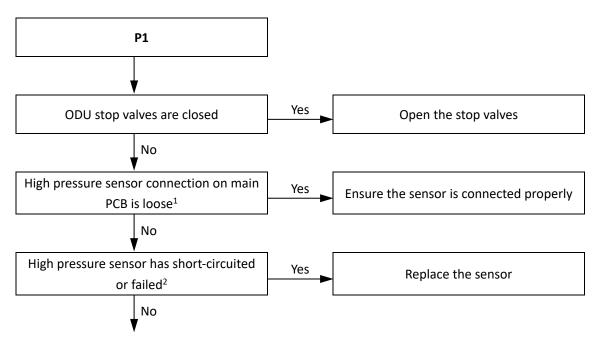
#### 2.16.3 Trigger / recover condition

- Trigger condition: Discharge pressure ≥ 4.4MPa.
- Recover condition: Discharge pressure ≤ 3.2MPa.
- Reset method: Resume automatically.

#### 2.16.4 Possible causes

- Outdoor unit stop valves are closed.
- Pressure sensor/switch not connected properly or has malfunctioned.
- Excess refrigerant.
- System contains air or nitrogen.
- High pressure side blockage.
- Poor condenser heat exchange.
- Main PCB damaged.

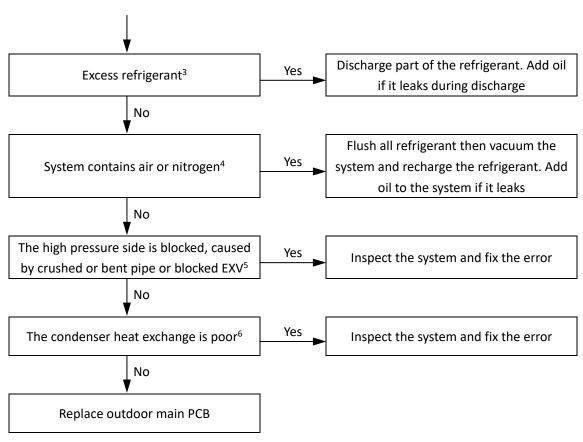
#### 2.16.5 Procedure



Flowchart continued on next page ...



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- 4. The high pressure sensor connection is port CN12 on the main PCB (labeled 8 in Figure 5-2.1 in Part 5, 2.1 "Ports").
- 5. Measure the resistance among the three terminals of the pressure sensor. If the resistance is of the order of mega Ohms or infinite, the pressure sensor has failed.
- 6. Excess refrigerant causes discharge temperature to be lower than normal, discharge pressure to be higher than normal and suction pressure to be higher than normal. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6, 3.2 "Normal Operating Parameters of Refrigerant System".
- Air or nitrogen in the system causes discharge temperature to be higher than normal, discharge pressure to be higher than normal, compressor current to
  be higher than normal, abnormal compressor noise and an unsteady pressure meter reading. For normal system parameters refer to Table 6-3.4 and 6-3.5
  in Part 6, 3.2 "Normal Operating Parameters of Refrigerant System".
- 8. High pressure side blockage causes discharge temperature to be higher than normal, discharge pressure to be higher than normal and suction pressure to be lower than normal. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6, 3.2 "Normal Operating Parameters of Refrigerant System".
- 9. In cooling mode check outdoor heat exchangers, fans and air outlets for dirt/blockages. In heating mode check indoor heat exchangers, fans and air outlets for dirt/blockages.



# 2.17 P2, H5: Suction pipe low pressure protection

# 2.17.1 Digital display output





# 2.17.2 Description

- Suction pipe low pressure protection.
- The system stops running.
- Error code is displayed on outdoor unit PCB.

# 2.17.3 Trigger / recover condition

Trigger condition:

For P2 protection: Suction pressure ≤ 0.05MPa.

For H5 protection: P2 protection appears three times in 30 minutes.

Recover condition: Suction pressure ≥ 0.15MPa.

Reset method:

For P2 protection: Resume automatically.

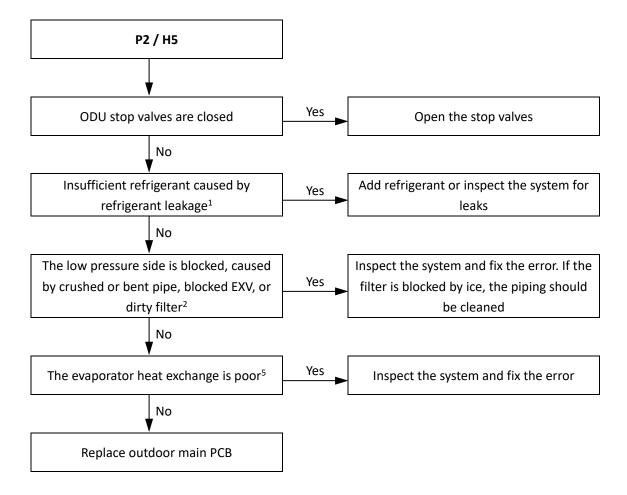
For H5 protection: Manually restart.

# 2.17.4 Possible causes

- Outdoor unit stop valves are closed.
- Insufficient refrigerant.
- Low pressure side blockage.
- Poor evaporator heat exchange.
- Main PCB damaged.

### 2.17.5 Procedure





- An insufficiency of refrigerant causes compressor discharge temperature to be higher than normal, discharge and suction pressures to be lower than normal
  and compressor current to be lower than normal, and may cause frosting to occur on the suction pipe. These issues disappear once sufficient refrigerant has
  been charged into the system. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6, 3.2 "Normal Operating Parameters of Refrigerant
  System".
- A low pressure side blockage causes compressor discharge temperature to be higher than normal, suction pressure to be lower than normal and compressor
  current to be lower than normal, and may cause frosting to occur on the suction pipe. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6,
  3.2 "Normal Operating Parameters of Refrigerant System".
- 3. In cooling mode check indoor heat exchangers, fans and air outlets for dirt/blockages. In heating mode check outdoor heat exchangers, fans and air outlets for dirt/blockages.



# 2.18 P3: Compressor current protection

# 2.18.1 Digital display output



#### 2.18.2 Description

- P3 indicates current protection on compressor.
- The system stops running.
- Error code is displayed on the outdoor unit PCB.

### 2.18.3 Trigger / recover condition

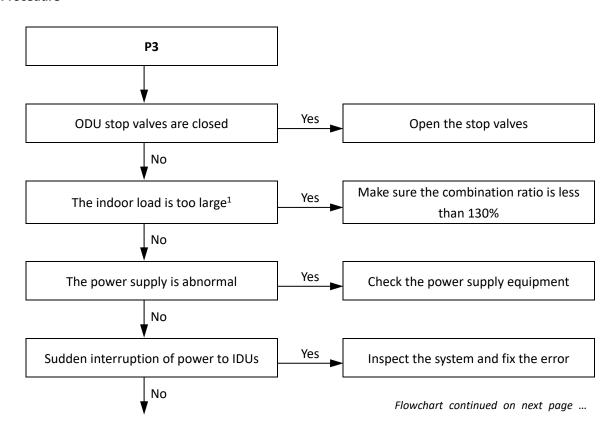
- Trigger condition: Current of compressor LNB65FAGMC ≥ 29A.
- Recover condition: Current of compressor LNB65FAGMC < 29A.</li>
- Reset method: Resume automatically.

#### 2.18.4 Possible causes

- Outdoor unit stop valves are closed.
- Indoor load too large.
- Power supply abnormal.
- Sudden interruption of power to IDUs.
- Excess refrigerant.
- System contains air or nitrogen.

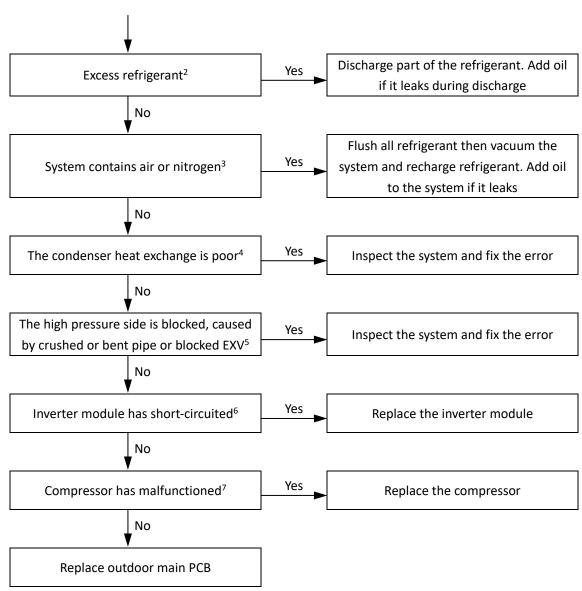
- Poor condenser heat exchange.
- High pressure side blockage.
- Inverter module damaged.
- Compressor damaged.
- Main PCB damaged.

### 2.18.5 Procedure





... flowchart continued from previous page



- 1. An indoor load that is too large causes suction and discharge temperatures to be higher than normal. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6, 3.2 "Normal Operating Parameters of Refrigerant System".
- 2. Excess refrigerant causes discharge temperature to be lower than normal, discharge pressure to be higher than normal and suction pressure to be higher than normal. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6, 3.2 "Normal Operating Parameters of Refrigerant System".
- 3. Air or nitrogen in the system causes discharge temperature to be higher than normal, discharge pressure to be higher than normal, compressor current to be higher than normal, abnormal compressor noise and an unsteady pressure meter reading. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6, 3.2 "Normal Operating Parameters of Refrigerant System".
- 4. In cooling mode check outdoor heat exchangers, fans and air outlets for dirt/blockages. In heating mode check indoor heat exchangers, fans and air outlets for dirt/blockages.
- 5. High pressure side blockage causes discharge temperature to be higher than normal, discharge pressure to be higher than normal and suction pressure to be lower than normal. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6, 3.2 "Normal Operating Parameters of Refrigerant System".
- 6. Set a multi-meter to buzzer mode and test any two terminals of P N U V W of the inverter module. If the buzzer sounds, the inverter module has short-circuited.
- 7. The normal resistances of the inverter compressor are 0.7-1.5Ω among U V W and infinite between each of U V W and ground. If any of the resistances differ from these specifications, the compressor has malfunctioned.



# 2.19 P4: Discharge temperature protection

# 2.19.1 Digital display output



### 2.19.2 Description

- Discharge temperature protection.
- The system stops running.
- Error code is displayed on the unit with the error.

### 2.19.3 Trigger / recover condition

Trigger condition:

Discharge temperature (T5) > 110°C.

- Recover condition: Discharge temperature (T5) < 85 °C.</li>
- Reset method:

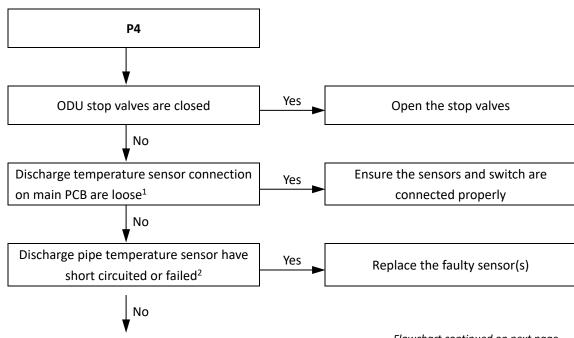
Resume automatically.

#### 2.19.4 Possible causes

- Outdoor unit stop valves are closed.
- Temperature sensor/switch not connected properly or has malfunctioned.
- Insufficient refrigerant.
- System blockage.

- Indoor load too large.
- System contains air or nitrogen.
- Poor condenser heat exchange.
- Main PCB damaged.

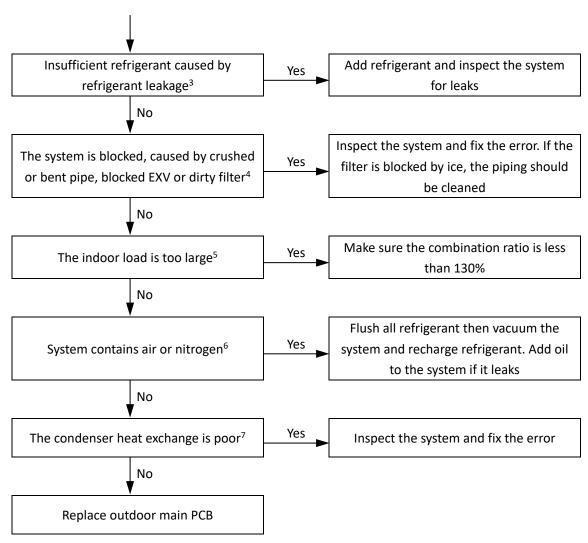
#### 2.19.5 Procedure



 ${\it Flow chart\ continued\ on\ next\ page\ ...}$ 



... flowchart continued from previous page



#### Votes:

- Discharge pipe temperature sensor connections is port CN5 on the main PCB (labeled 6 in Figure 5-2.1 in Part 5, 2.1 "Ports").
- 2. Measure sensor resistance. If the resistance is too low, the sensor has short-circuited. If the resistance is not consistent with the sensor's resistance characteristics table, the sensor has failed. Refer to Table 6-3.2 in Part 6, 3.1 "Temperature Sensor Resistance Characteristics".
- 3. An insufficiency of refrigerant causes compressor discharge temperature to be higher than normal, discharge and suction pressures to be lower than normal and compressor current to be lower than normal, and may cause frosting to occur on the suction pipe. These issues disappear once sufficient refrigerant has been charged into the system. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6, 3.2 "Normal Operating Parameters of Refrigerant System".
- A low pressure side blockage causes compressor discharge temperature to be higher than normal, suction pressure to be lower than normal and compressor current to be lower than normal, and may cause frosting to occur on the suction pipe. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6, 3.2 "Normal Operating Parameters of Refrigerant System".
- 5. An indoor load that is too large causes suction and discharge temperatures to be higher than normal. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6, 3.2 "Normal Operating Parameters of Refrigerant System".
- 6. Air or nitrogen in the system causes discharge temperature to be higher than normal, discharge pressure to be higher than normal, compressor current to be higher than normal, abnormal compressor noise and an unsteady pressure meter reading. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6, 3.2 "Normal Operating Parameters of Refrigerant System".
- 7. In cooling mode check outdoor heat exchangers, fans and air outlets for dirt/blockages. In heating mode check indoor heat exchangers, fans and air outlets for dirt/blockages.



#### 2.20 P5: Outdoor heat exchanger temperature protection

#### 2.20.1 Digital display output



#### 2.20.2 Description

- Outdoor heat exchanger temperature protection.
- The system stops running.
- Error code is displayed on the unit with the error.

#### 2.20.3 Trigger / recover condition

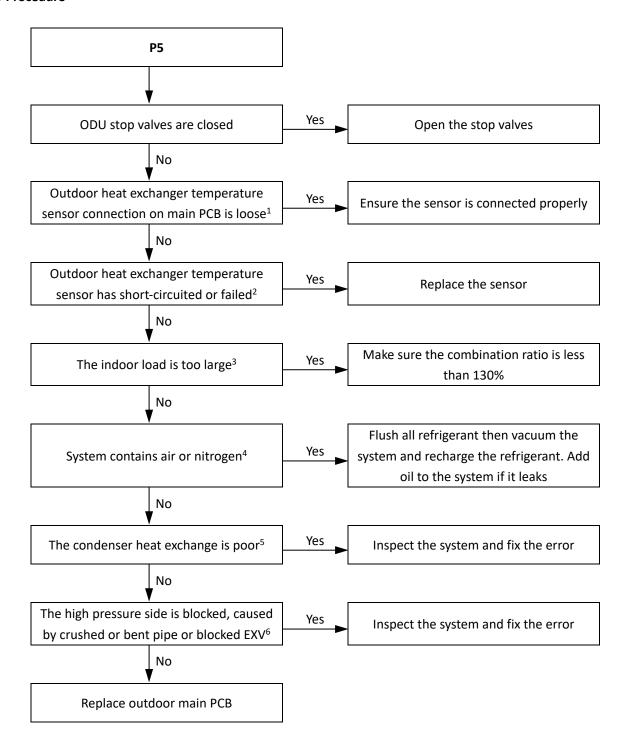
- Trigger condition: Outdoor heat exchanger temperature (T3) ≥ 65°C.
- Recover condition: Outdoor heat exchanger temperature (T3) < 55 °C.</li>
- Reset method: Resume automatically.

#### 2.20.4 Possible causes

- Outdoor unit stop valves are closed.
- Temperature sensor not connected properly or has malfunctioned.
- Indoor load too large.
- System contains air or nitrogen.
- Poor condenser heat exchange.
- High pressure side blockage.
- Main PCB damaged.

#### 2.20.5 Procedure





#### Notes:

- 1. Outdoor heat exchanger temperature sensor connection is port CN1 on the main PCB (labeled 11 in Figure 5-2.1 in Part 5, 2.1 "Ports").
- 2. Measure sensor resistance. If the resistance is too low, the sensor has short-circuited. If the resistance is not consistent with the sensor's resistance characteristics table, the sensor has failed. Refer to Table 6-3.1 in Part 6, 3.1 "Temperature Sensor Resistance Characteristics"
- 3. An indoor load that is too large causes suction and discharge temperatures to be higher than normal. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6, 3.2 "Normal Operating Parameters of Refrigerant System".
- 4. Air or nitrogen in the system causes discharge temperature to be higher than normal, discharge pressure to be higher than normal, compressor current to be higher than normal, abnormal compressor noise and an unsteady pressure meter reading. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6, 3.2 "Normal Operating Parameters of Refrigerant System".
- 5. In cooling mode check outdoor heat exchangers, fans and air outlets for dirt/blockages. In heating mode check indoor heat exchangers, fans and air outlets for dirt/blockages.
- 6. High pressure side blockage causes discharge temperature to be higher than normal, discharge pressure to be higher than normal and suction pressure to be lower than normal. For normal system parameters refer to Table 6-3.4 and 6-3.5 in Part 6, 3.2 "Normal Operating Parameters of Refrigerant System".



#### 2.21 P8: Typhoon protection

#### 2.21.1 Digital display output



#### 2.21.2 Description

- P8 indicates strong wind protection.
- The system stops running.
- Error code is displayed on the outdoor unit PCB.

#### 2.21.3 Trigger / recover condition

Trigger condition:

Fan speed ≥400rps when the outdoor unit is not start up.

Recover condition:

Both the upper and lower fan speed < 400rps for more than 120S.

Reset method:

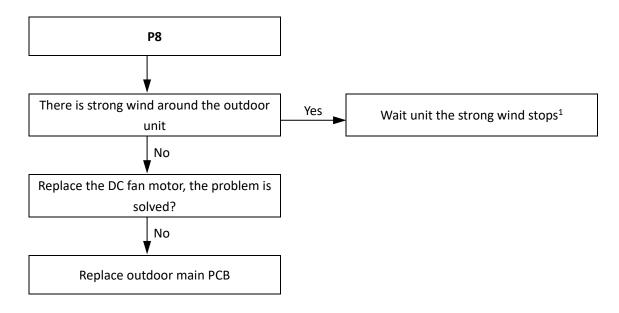
Resume automatically.

#### 2.21.4 Possible causes

- There is strong wind around the outdoor unit.
- DC fan motor is damaged.
- Main PCB damaged.

## Midea

#### 2.21.5 Procedure



#### Notes:

1. P8 protection recovers in 2 minutes when the strong wind stops.



#### 2.22 PL: Inverter module temperature protection

#### 2.22.1 Digital display output



#### 2.22.2 Description

- PL indicates inverter module temperature protection.
- The system stops running.
- Error code is displayed on the outdoor unit PCB.

#### 2.22.3 Trigger / recover condition

Trigger condition:

Inverter module heat sink temperature (Tf)  $\geq$  72°C.

Recover condition:

Inverter module heat sink temperature (Tf) < 66°C

Reset method:

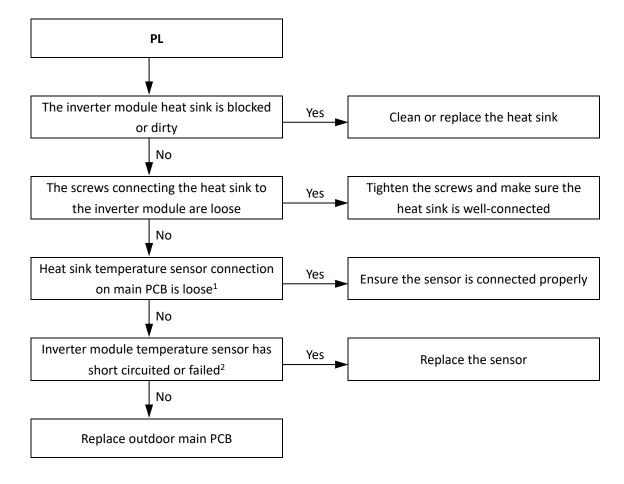
Resume automatically.

#### 2.22.4 Possible causes

- Blocked, dirty or loose heat sink.
- Temperature sensor not connected properly or has malfunctioned.
- Main PCB damaged.

#### 2.22.5 Procedure





#### Notes:

- 1. Heat sink temperature sensor connection is port CN14 on the main PCB (labeled 4 in Figure 5-2.1 in Part 5, 2.1 "Ports").
- 2. Measure sensor resistance. If the resistance is too low, the sensor has short-circuited. If the resistance is not consistent with the sensor's resistance characteristics table, the sensor has failed. Refer to Table 6-3.3 in Part 6, 3.1 "Temperature Sensor Resistance Characteristics".



#### 3 Appendix to Part 6

#### 3.1 Temperature Sensor Resistance Characteristics

Table 6-3.1: Outdoor ambient temperature sensor, outdoor heat exchanger temperature sensor and refrigerant cooling pipe temperature sensor resistance characteristics

	e characteristics			_		_	
Temperature	Resistance	Temperature	Resistance	Temperature	Resistance	Temperature	Resistance
(°C)	(kΩ)	(°C)	(kΩ)	(°C)	(kΩ)	(°C)	(kΩ)
-20	115.3	20	12.64	60	2.358	100	0.6297
-19	108.1	21	12.06	61	2.272	101	0.6115
-18	101.5	22	11.50	62	2.191	102	0.5939
-17	96.34	23	10.97	63	2.112	103	0.5768
-16	89.59	24	10.47	64	2.037	104	0.5604
-15	84.22	25	10.00	65	1.965	105	0.5445
-14	79.31	26	9.551	66	1.896	106	0.5291
-13	74.54	27	9.124	67	1.830	107	0.5143
-12	70.17	28	8.720	68	1.766	108	0.4999
-11	66.09	29	8.336	69	1.705	109	0.4860
-10	62.28	30	7.971	70	1.647	110	0.4726
-9	58.71	31	7.624	71	1.591	111	0.4596
-8	56.37	32	7.295	72	1.537	112	0.4470
-7	52.24	33	6.981	73	1.485	113	0.4348
-6	49.32	34	6.684	74	1.435	114	0.4230
-5	46.57	35	6.400	75	1.387	115	0.4116
-4	44.00	36	6.131	76	1.341	116	0.4006
-3	41.59	37	5.874	77	1.291	117	0.3899
-2	39.82	38	5.630	78	1.254	118	0.3796
-1	37.20	39	5.397	79	1.2133	119	0.3695
0	35.20	40	5.175	80	1.174	120	0.3598
1	33.33	41	4.964	81	1.136	121	0.3504
2	31.56	42	4.763	82	1.100	122	0.3413
3	29.91	43	4.571	83	1.064	123	0.3325
4	28.35	44	4.387	84	1.031	124	0.3239
5	26.88	45	4.213	85	0.9982	125	0.3156
6	25.50	46	4.046	86	0.9668	126	0.3075
7	24.19	47	3.887	87	0.9366	127	0.2997
8	22.57	48	3.735	88	0.9075	128	0.2922
9	21.81	49	3.590	89	0.8795	129	0.2848
10	20.72	50	3.451	90	0.8525	130	0.2777
11	19.69	51	3.318	91	0.8264	131	0.2708
12	18.72	52	3.192	92	0.8013	132	0.2641
13	17.80	53	3.071	93	0.7771	133	0.2576
14	16.93	54	2.959	94	0.7537	134	0.2513
15	16.12	55	2.844	95	0.7312	135	0.2451
16	15.34	56	2.738	96	0.7094	136	0.2392
17	14.62	57	2.637	97	0.6884	137	0.2334
18	13.92	58	2.540	98	0.6682	138	0.2278
19	13.26	59	2.447	99	0.6486	139	0.2223



Table 6-3.2: Compressor discharge pipe temperature sensor resistance characteristics

Temperature	Resistance	Temperature	Resistance	Temperature	Resistance	Temperature	Resistance
(°C)	(kΩ)	(°C)	(kΩ)	(°C)	(kΩ)	(°C)	(kΩ)
-30	913.239	16	83.541	62	12.809	108	2.918
-29	862.001	17	79.801	63	12.357	109	2.835
-28	813.806	18	76.248	64	11.923	110	2.755
-27	768.47	19	72.871	65	11.506	111	2.678
-26	725.821	20	69.66	66	11.105	112	2.603
-25	685.694	21	66.607	67	10.721	113	2.53
-24	647.937	22	63.703	68	10.352	114	2.46
-23	612.405	23	60.939	69	9.997	115	2.392
-22	578.963	24	58.31	70	9.656	116	2.326
-21	547.482	25	55.807	71	9.329	117	2.262
-20	517.845	26	53.424	72	9.014	118	2.2
-19	489.937	27	51.154	73	8.711	119	2.141
-18	463.653	28	48.992	74	8.42	120	2.082
-17	438.895	29	46.933	75	8.14	121	2.026
-16	415.569	30	44.97	76	7.871	122	1.972
-15	393.587	31	43.098	77	7.612	123	1.919
-14	372.869	32	41.314	78	7.363	124	1.868
-13	353.337	33	39.613	79	7.123	125	1.818
-12	334.92	34	37.989	80	6.892	126	1.77
-11	317.549	35	36.441	81	6.67	127	1.723
-10	301.161	36	34.963	82	6.456	128	1.678
-9	285.699	37	33.552	83	6.249	129	1.635
-8	271.104	38	32.205	84	6.051	130	1.592
-7	257.326	39	30.919	85	5.859	131	1.551
-6	244.316	40	29.691	86	5.675	132	1.511
-5	232.028	41	28.517	87	5.497	133	1.472
-4	220.418	42	27.395	88	5.325	134	1.435
-3	209.447	43	26.323	89	5.16	135	1.399
-2	199.077	44	25.298	90	5	136	1.363
-1	189.272	45	24.318	91	4.846	137	1.329
0	179.999	46	23.381	92	4.697	138	1.296
1	171.227	47	22.485	93	4.554	139	1.264
2	162.926	48	21.627	94	4.415	140	1.233
3	155.07	49	20.806	95	4.282	141	1.203
4	147.632	50	20.021	96	4.152	142	1.174
5	140.589	51	19.269	97	4.027	143	1.146
6	133.917	52	18.548	98	3.907	144	1.119
7	127.596	53	17.859	99	3.79	145	1.093
8	121.605	54	17.198	100	3.677	146	1.067
9	115.926	55	16.565	101	3.568	147	1.043
10	110.54	56	15.958	102	3.463	148	1.019
11	105.433	57	15.377	103	3.361	149	0.996
12	100.587	58	14.82	104	3.262	150	0.974
13	95.988	59	14.285	105	3.166		
14	91.622	60	13.773	106	3.091		
15	87.477	61	13.281	107	3.003		



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120.0

114.3

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21.26

20.47

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5.322

5.159

Table 6-3.3: Heat sink temperature sensor resistance characteristics

Temperature	Resistance	Temperature	Resistance	Temperature	Resistance	Temperature	Resistance
(°C)	(kΩ)	(°C)	(kΩ)	(°C)	(kΩ)	(°C)	(kΩ)
-30	971.4	10	109.0	50	19.70	90	5.000
-29	912.8	11	103.9	51	18.97	91	4.855
-28	858.2	12	99.02	52	18.26	92	4.705
-27	807.3	13	94.44	53	17.59	93	4.566
-26	759.7	14	90.11	54	16.94	94	4.431
-25	715.3	15	86.00	55	16.32	95	4.301
-24	673.6	16	82.09	56	15.73	96	4.176
-23	634.7	17	78.38	57	15.16	97	4.055
-22	598.2	18	74.87	58	14.62	98	3.938
-21	564.1	19	71.53	59	14.10	99	3.825
-20	532.2	20	68.36	60	13.60	100	3.716
-19	502.2	21	65.34	61	13.12	101	3.613
-18	474.1	22	62.47	62	12.65	102	3.514
-17	447.7	23	59.75	63	12.22	103	3.418
-16	423.0	24	57.17	64	11.79	104	3.326
-15	399.8	25	54.71	65	11.39	105	3.235
-14	378.0	26	52.36	66	10.99	106	3.148
-13	357.5	27	50.13	67	10.62	107	3.063
-12	338.2	28	48.01	68	10.25	108	2.982
-11	320.1	29	45.99	69	9.909	109	2.902
-10	303.1	30	44.07	70	9.576	110	2.826
-9	287.1	31	42.23	71	9.253	111	2.747
-8	272.0	32	40.48	72	8.947	112	2.672
-7	257.8	33	38.81	73	8.646	113	2.599
-6	244.4	34	37.23	74	8.362	114	2.528
-5	231.9	35	35.71	75	8.089	115	2.460
-4	220.0	36	34.27	76	7.821	116	2.390
-3	208.7	37	32.89	77	7.569	117	2.322
-2	198.2	38	31.58	78	7.323	118	2.256
-1	188.2	39	30.33	79	7.088	119	2.193
0	178.8	40	29.13	80	6.858	120	2.132
1	169.9	41	27.98	81	6.640	121	2.073
2	161.5	42	26.89	82	6.432	122	2.017
3	153.6	43	25.85	83	6.230	123	1.962
4	146.1	44	24.85	84	6.033	124	1.910
5	139.1	45	23.90	85	5.847	125	1.859
6	132.3	46	22.98	86	5.667	123	1.055
7	126.0	47	22.38	87	5.492	_	
0	120.0	47	22.10	00	5.492	-	



#### 3.2 Normal Operating Parameters of Refrigerant System

Under the following conditions, the operating parameters given in Tables 6-3.4 and 6-3.5 should be observed:

- The outdoor unit can detect all the indoor units.
- The number of indoor units displayed on DSP is steady and is equal to the actual number of indoor units installed.
- All stop valves are open and all indoor unit EXVs are connected to their unit's PCB.
- All the indoor units are currently running.
- If the outdoor ambient temperature is high, the system is being run in cooling mode with the following settings: temperature 17°C; fan speed high.
- If the outdoor ambient temperature is low, the system is being run in heating mode with the following settings: temperature 30°C; fan speed high.
- The system has been running normally for more than 30 minutes.

Table 6-3.4: Outdoor unit cooling mode operating parameters

Outdoor ambient temperature	°C	< 10	10 to 26	26 to 31	31 to 41	> 41
Average discharge temperature	°C	60-76	62-78	65-82	67-92	69-92
Average discharge superheat	°C	17-30	17-33	17-34	17-36	10-32
Discharge pressure	MPa	2.3-2.8	2.3-2.8	2.4-3.6	2.6-3.8	3.1-4.2
Suction pressure	MPa	0.6-0.7	0.7-0.9	0.8-1.0	1.0-1.2	1.2-1.4
DC inverter compressor current	Α	7-18	10-20	12-25	15-27	18-25

Table 6-3.5: Outdoor unit heating mode operating parameters

Outdoor ambient temperature	°C	< -10	-10 to 0	0 to 5	5 to 10	10 to 17	> 17
Average discharge temperature	°C	56-74	57-76	58-78	61-82	63-82	63-82
Average discharge superheat	°C	17-35	17-35	17-35	17-33	14-33	14-33
Discharge pressure	MPa	1.7-2.4	1.8-2.5	1.9-3.0	2.2-3.2	2.3-3.2	2.3-3.2
Suction pressure	MPa	1.4-1.6	1.5-1.7	1.6-2.2	1.8-2.6	1.8-2.6	2.0-2.4
DC inverter compressor current	Α	11-23	12-25	10-25	10-26	10-22	13-20



# Part 7 Indoor Unit Diagnosis and Troubleshooting

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## Midea

## 1 Errors and operation codeError Code Table

Table 7.1: Error code

Error code	Content	Error code	Content
A01	Emergency stop	C52	Abnormal communication between the IDU and Wi-Fi Kit
A11	R32 refrigerant leaks, requiring shutdown immediately	C61	Abnormal communication between the IDU main control board and display board
A51	Outdoor unit fault	C71	Abnormal communication between the AHU Kit slave unit and master unit
A71	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	d81	Alarm for exceeding temperature and humidity range
b35	Protection on 2# water pump	dE1	Sensor control board fault
b36	Water level switch alarm	dE2	PM2.5 sensor fault
b71	Reheating electric heater fault	dE3	CO2 sensor fault
b72	Preprocessing electric heater fault	dE4	Formaldehyde sensor fault
b81	Humidifier fault	dE5	Human Detect sensor fault
C11	Duplicate IDU address code	E21	T0 (fresh inlet air temperature sensor) short-circuits or cuts off
C21	Abnormal communication between the IDU and ODU	E22	The upper dry bulb temperature sensor short-circuits or cuts off
C41	Abnormal communication between the IDU main control board and fan drive board	E23	The lower dry bulb temperature sensor short-circuits or cuts off
C51	Abnormal communication between the IDU and wired controller	E24	T1 (IDU return air temperature sensor) short-circuits or cuts off



Table 7.1: Error code (continued)

Error	Error code (continued)	Error	
code	Content	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 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



#### 1.1 Operating Status Codes

Table 7.2: Operating Status Codes

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



#### 2 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.

# Quantum Series (AU) 2.1 A01 – Emergency shutdown



	Digital display	Display position			
Error display	888	Panel, display box, and wired controller			
	The faulty IDU and other IDUs of the same system: stop running, di	splaying code "A01" (V6 platform indoor unit displays			
Error impact	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.				
i ossibie eduse	■ The IDU main control board is damaged.				
Troubleshooting	Find out the cause of the emergency shutdown and solve it before clearing the emergency shutdown signal  Check whether the fault is cleared  Yes  Fault cleared  Note:  1.Emergency shutdown is usually caused by the outdoor unit receive the central controller or external reasons. For detailed handling in outdoor unit troubleshooting manual.				



Faulty IDU: The fan operates at the highest speed, the EE and buzzer of the display control board of the faulty IDU IDU keep beeping.  Other IDUs of the same system: Refrigerant is recycled to running, displaying code "A51" - ODU fault and of the same system: It stops running after recycling is content the IDU main control board receives a refrigerant leaks ure 1 below) or the abnormal communication among the notrol board of the R32 refrigerant detection device causes the same detected the refrigerant leak signal and has received the R32 refrigerant sensor is damaged or contaminated with Abnormal communication among IDU main control board IDU main control board or adapter board or R32 refrigerant IDU main control board or adapter board or R32 refrigerant IDU main control board IDU main control board or adapter board or R32 refrigerant IDU main control board IDU main control board IDU main control board or adapter board or R32 refrigerant IDU main control board IDU main control board or adapter board or R32 refrigerant IDU main control board IDU main control board IDU main control board or adapter board or R32 refrigerant IDU main control board IDU main control IDU main control IDU main control IDU main control IDU IDU main control IDU	and buzzer of wired controller connected to the fault to ODU. After recycling is completed, other IDUs stompleted, displaying code "A11" - IDU refrigerant leaks age signal from R32 refrigerant detection device (See IDU main control board, the adapter board and the fault to trigger by mistake.  The signal of refrigerant fault rectification  The external foreign matter (e.g. steam, oil)  The control board and R32 refrigerant detection device (see steam).
and buzzer of the display control board of the faulty IDU IDU keep beeping.  Other IDUs of the same system: Refrigerant is recycled to running, displaying code "A51" - ODU fault of the same system: It stops running after recycling is content the IDU main control board receives a refrigerant leaks ure 1 below) or the abnormal communication among the notrol board of the R32 refrigerant detection device causes the same detected the refrigerant leak signal and has received the R32 refrigerant of IDUs leaks.  R32 refrigerant of IDUs leaks.  R32 refrigerant sensor is damaged or contaminated with Abnormal communication among IDU main control board IDU main control board or adapter board or R32 refrigera	and buzzer of wired controller connected to the fault to ODU. After recycling is completed, other IDUs stompleted, displaying code "A11" - IDU refrigerant leaks age signal from R32 refrigerant detection device (See IDU main control board, the adapter board and the fault to trigger by mistake.  The signal of refrigerant fault rectification  The external foreign matter (e.g. steam, oil)  The control board and R32 refrigerant detection device (see steam).
IDU keep beeping.  Other IDUs of the same system: Refrigerant is recycled to running, displaying code "A51" - ODU fault out of the same system: It stops running after recycling is content the IDU main control board receives a refrigerant leaks ure 1 below) or the abnormal communication among the ntrol board of the R32 refrigerant detection device causes the same detected the refrigerant leak signal and has received the R32 refrigerant of IDUs leaks.  R32 refrigerant sensor is damaged or contaminated with Abnormal communication among IDU main control board IDU main control board or adapter board or R32 refrigerant.	to ODU. After recycling is completed, other IDUs stompleted, displaying code "A11" - IDU refrigerant leaks age signal from R32 refrigerant detection device (See IDU main control board, the adapter board and the fault to trigger by mistake.  The signal of refrigerant fault rectification  The external foreign matter (e.g. steam, oil)  The external foreign matter (e.g. steam, oil)
Other IDUs of the same system: Refrigerant is recycled to running, displaying code "A51" - ODU fault but of the same system: It stops running after recycling is content the IDU main control board receives a refrigerant leaked ure 1 below) or the abnormal communication among the introl board of the R32 refrigerant detection device causes the same detected the refrigerant leak signal and has received the R32 refrigerant of IDUs leaks.  R32 refrigerant sensor is damaged or contaminated with Abnormal communication among IDU main control board control board IDU main control board or adapter board or R32 refrigerant.	mpleted, displaying code "A11" - IDU refrigerant leaks age signal from R32 refrigerant detection device (See IDU main control board, the adapter board and the fault to trigger by mistake.  The signal of refrigerant fault rectification  The external foreign matter (e.g. steam, oil)  Trd, adapter board and R32 refrigerant detection devices
running, displaying code "A51" - ODU fault DU of the same system: It stops running after recycling is content the IDU main control board receives a refrigerant leake ure 1 below) or the abnormal communication among the ntrol board of the R32 refrigerant detection device causes the not detected the refrigerant leak signal and has received the R32 refrigerant of IDUs leaks.  R32 refrigerant sensor is damaged or contaminated with Abnormal communication among IDU main control board control board  IDU main control board or adapter board or R32 refrigerant sensor is damaged or R32 refrigerant control board in the control board in the control board in the control board or adapter board or R32 refrigerant control board in the control board in	mpleted, displaying code "A11" - IDU refrigerant leaks age signal from R32 refrigerant detection device (See IDU main control board, the adapter board and the fault to trigger by mistake.  The signal of refrigerant fault rectification  The external foreign matter (e.g. steam, oil)  Trd, adapter board and R32 refrigerant detection devices
PU of the same system: It stops running after recycling is content the IDU main control board receives a refrigerant leaks ure 1 below) or the abnormal communication among the ntrol board of the R32 refrigerant detection device causes the same that the refrigerant leak signal and has received the R32 refrigerant of IDUs leaks.  R32 refrigerant sensor is damaged or contaminated with Abnormal communication among IDU main control board control board IDU main control board or adapter board or R32 refrigerant.	age signal from R32 refrigerant detection device (See IDU main control board, the adapter board and the fault to trigger by mistake.  The signal of refrigerant fault rectification  The external foreign matter (e.g. steam, oil)  Trd, adapter board and R32 refrigerant detection devices
nen the IDU main control board receives a refrigerant leakage ure 1 below) or the abnormal communication among the notrol board of the R32 refrigerant detection device causes the same not detected the refrigerant leak signal and has received the R32 refrigerant of IDUs leaks.  R32 refrigerant sensor is damaged or contaminated with Abnormal communication among IDU main control board control board IDU main control board or adapter board or R32 refrigerant sensor is damaged or R32 refrigerant control board IDU main control board or adapter board or R32 refrigerant IDU main control board or adapter board or R32 refrigerant IDU main control board or adapter board or R32 refrigerant IDU main control board or adapter board or R32 refrigerant IDU main control board or adapter board or R32 refrigerant IDU main control board or adapter board or R32 refrigerant IDU main control board or adapter board or R32 refrigerant IDU main control board IDU main control Balant IDU main control Bala	age signal from R32 refrigerant detection device (See IDU main control board, the adapter board and the fault to trigger by mistake.  The signal of refrigerant fault rectification  The external foreign matter (e.g. steam, oil)  Trd, adapter board and R32 refrigerant detection devices
ure 1 below) or the abnormal communication among the ntrol board of the R32 refrigerant detection device causes the not detected the refrigerant leak signal and has received the R32 refrigerant of IDUs leaks.  R32 refrigerant sensor is damaged or contaminated with Abnormal communication among IDU main control board control board IDU main control board or adapter board or R32 refrigerated.	e IDU main control board, the adapter board and the fault to trigger by mistake. The signal of refrigerant fault rectification  The external foreign matter (e.g. steam, oil) The external foreign matter (e.g. steam, oil)
R32 refrigerant leak signal and has received the R32 refrigerant leak signal and has received the R32 refrigerant of IDUs leaks. R32 refrigerant sensor is damaged or contaminated with Abnormal communication among IDU main control board control board IDU main control board or adapter board or R32 refrigera	the fault to trigger by mistake. The signal of refrigerant fault rectification  The external foreign matter (e.g. steam, oil) The external foreign matter (e.g. steam, oil)
R32 refrigerant of IDUs leaks. R32 refrigerant sensor is damaged or contaminated with Abnormal communication among IDU main control board control board IDU main control board or adapter board or R32 refrigera	the signal of refrigerant fault rectification  external foreign matter (e.g. steam, oil)  rd, adapter board and R32 refrigerant detection device
R32 refrigerant of IDUs leaks. R32 refrigerant sensor is damaged or contaminated with Abnormal communication among IDU main control board control board IDU main control board or adapter board or R32 refrigera	external foreign matter (e.g. steam, oil) rd, adapter board and R32 refrigerant detection device
R32 refrigerant of IDUs leaks. R32 refrigerant sensor is damaged or contaminated with Abnormal communication among IDU main control board control board IDU main control board or adapter board or R32 refrigera	external foreign matter (e.g. steam, oil) rd, adapter board and R32 refrigerant detection device
R32 refrigerant sensor is damaged or contaminated with Abnormal communication among IDU main control board control board IDU main control board or adapter board or R32 refrigerations.	rd, adapter board and R32 refrigerant detection device
Abnormal communication among IDU main control board control board IDU main control board or adapter board or R32 refrigera	rd, adapter board and R32 refrigerant detection device
control board  IDU main control board or adapter board or R32 refrigera	
IDU main control board or adapter board or R32 refrigera	ant detection device control board damaged
	ant detection device control board damaged
A11	
R32 refrigerant sensor has been damaged or contaminated by external foreign matter  No  Contact the technical	Follow the instructions of Note (1)  Fault cleared  Replace R32 refrigerant sensor
	Replace the main control board of the IDU.Is the fault cleared?  No  R32 refrigerant sensor has been damaged or contaminated by external foreign matter  No

effective, if the communication abnormality between indoor unit main control board, adapter board and R32 refrigerant detection device control board lasts for more than 2 minutes (see "C79" fault handling in this manual for the communication abnormality handling method between indoor unit main control board and adapter board, and

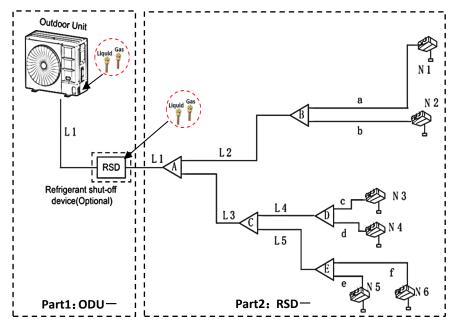


see R32 refrigerant detection device control board operation and installation manual for the communication abnormality handling method between adapter board and R32 refrigerant detection device control board), "A11" fault will be triggered by mistake.

#### Note 2:

#### Step 1: Refrigerant leakage inspection method and refrigerant leakage treatment

- (1) Check whether there is refrigerant leakage in the field pipeline. Inspection method: if the system is connected with the refrigerant block device, use the refrigerant pressure gauge to connect the liquid test or gas test maintenance needle valve of the refrigerant block device; if the system is not connected with the refrigerant block device, use the refrigerant pressure gauge to connect the liquid test or gas test maintenance needle valve of the outdoor unit. Measure the refrigerant saturation gauge pressure in the field pipeline. If the measured liquid side or gas side refrigerant saturation pressure is less than the standard saturation pressure (see the table of R32 refrigerant ambient temperature and standard saturation gauge pressure in the attached table of this manual), it is determined that there is refrigerant leakage. Follow these steps to handle refrigerant leaks:
- As shown in the figure below, use the refrigerant recovery device to recover the refrigerant in Part 1 and Part 2 respectively. Note: 1) The recovery device must be connected to the liquid/gas side needle valve at the same time to ensure that the residual refrigerant in the liquid pipe and the air pipe is recovered completely; 2) For the recovery of Part 1, it is necessary to enter the outdoor unit engineering menu and select the vacuumizing mode to ensure that all valve bodies of the outdoor unit are in the open state.



- Locate and repair pipeline leaks.
- After the repair is completed, the system is tested for gas tightness, refer to the Owner's and installation manual for details. If the gas tightness test is passed, go to the next step, otherwise repeat the step above until the gas tightness test is passed
- Replace the R32 sensor model of the faulty IDU.
- Recharge refrigerant according to the ODU Installation Manual.
- (2) If the measured refrigerant saturation pressure on the liquid side or gas side is equal to the standard saturation pressure (see Table of Ambient Temperature and Standard Saturation Pressure of R32 attached to this manual), confirm whether there is a refrigerant leak by using refrigerant testing instruments. If it is determined that there is a refrigerant leak, please operate the refrigerant leak handling procedure above.

Step 2: Reset the R32 refrigerant detection device.

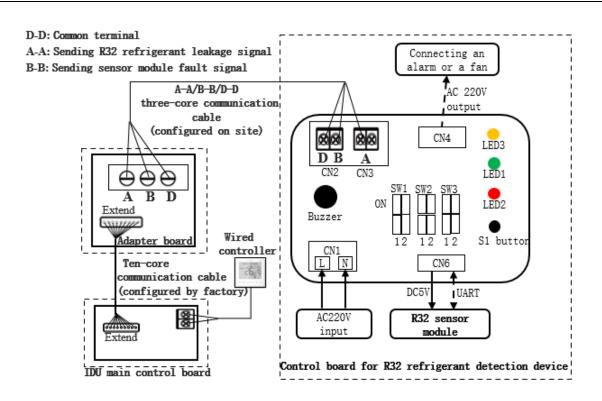


Refer to Figure 1 below. After the refrigerant leakage alarm, the red LED (LED 2) in the R32 refrigerant detection device lights up once every 1s, and the buzzer sounds once every 1s. After maintenance, press and hold the S1 key on the control panel for 10s to reset. After resetting, all LEDs are on for 2S and then go out, and the buzzer stops ringing. The R32 sensor life timing recorded by EERPOM on the control panel is cleared.

#### Step 3: Wired controller reset operation.

When the wired controller receives the refrigerant leakage fault command transmitted by the indoor unit, the interface will display the "A11" code, and the buzzer will sound once every 1s. After the above step 1/2 is completed and the R32 refrigerant leakage alarm signal is OFF, enter the wired controller engineering parameter setting menu to select the parameter: refrigerant leakage fault reset. After the reset is completed, the interface will no longer display the "A11" code, and the buzzer stops ringing. Note: If the R32 refrigerant leakage alarm signal = ON, the reset operation is invalid!

Figure 1 Schematic diagram of the R32 refrigerant leakage detection system



Note: The A/B/D wet printed numbers on the adapter board and the R32 refrigerant detection device control board are only used for the connection of the communication line. Please refer to the corresponding requirements in the installation instructions of the adapter board and the R32 refrigerant detection device control board when connecting the communication line on site.

# Quantum Series (AU) 2.3 A51 - ODU fault



	Digital display	Display position				
Error display	888	Panel, display box, and wired controller				
	The faulty IDU and other IDUs of the same system: The fan displayed (V6 platform IDU displays the code "Ed")	continues running, the EEV is closed, and code "A51" is				
Error impact	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 entable specific to the model of the ODU.					
Error trigger	Duration of ODU error ≥ 10 minutes					
Error recovery	Automatic recovery					
Possible cause	<ul><li>The ODU error is transmitted to the IDU.</li><li>The IDU main control board is damaged.</li></ul>					
Troubleshooting	Troubleshoot ODU according to ODU Maintenance Guide  Check whether the fault is cleared  Yes  Fault cleared	Replace the main control board of the IDU				



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

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.

	Digital display	Display position (master IDU)
Error display	888	Panel, display box, and wired controller
Error impact	The master IDU and the linked FAPU: stop. Other IDUs of the ODU of the same system: operate normally.	same system: operate normally.
Error trigger	The error of the linked FAPU is transmitted to the master IDU	
Error recovery	Automatic recovery	
Possible cause	<ul><li>The FAPU is faulty.</li><li>The master IDU's main control board is damaged.</li></ul>	
Troubleshooting	Obtain the linked error code (1) of the FAPU, and refer to the corresponding error handling method in the maintenance manual of the FAPU for trouble shooting.  After troub leshooting, is the master IDU error code cleared?  Yes  Fault cleared  Note:  1. The error code can be queried after the FAPU is connected.	Replace the the main control board of the master IDU



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

	Digital display Display position (master IDU)		(master IDU)
Error display	nnn	Panel or display box	Wired controller
		Spot check interface query	
Error impact	Master IDU: operates normally. Humidifying IDUs: stop. O	ther IDUs of the same system: op	perate normally.
ziroi impact	ODU of the same system: operate normally.		
Error trigger	The error of the linked humidifying IDU is transmitted to the	he master IDU	
Error recovery	Automatic recovery		
Possible cause	■ The humidifying IDU is faulty.		
Possible cause	■ The master IDU's main control board is damaged.		
Troubleshooting	Obtain the linked error code (1) of the humidifying IDU, and refer to the corresponding error handling method in the maintenance manual of the humidifying IDU for troubleshooting  Error in humidifying IDU After troubleshooting, is the master IDU error code cleared? Yes  Fault cleared  Note:  1. The error code can be queried after the humidifying IDU	Replace the the main board of the maste	rIDU



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

- 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.

	Digital display	Display position (master IDU)		
Error display		Panel or display box Wired controller		
		Spot check interface query	Error code is not displayed	
Error impact	Master IDU: operates normally. FAPU: stops. Other IDUs of	of the same system: operate no	rmally.	
	ODU of the same system: operate normally.			
Error trigger	The error of the linked FAPU is transmitted to the master	IDU		
Error recovery	Automatic recovery			
Possible cause	■ The FAPU is faulty.			
	■ The master IDU's main control board is damaged.			
Troubleshooting		ne the main control f the master IDU	he display box.	

# Quantum Series (AU) 2.7 A81 - Self-check fault



	Digital display	Display position		
Error display	888	Panel, display box, and wired controller		
	Faulty IDU: stops. Other IDUs of the same system:	L		
	■ IDUs that share the same MS with the faulty IDU will stop	o 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").		
Fuunu immaat	Meaning of the code: MS self-check fault); IDUs that are	connected to other MSs work properly.		
Error impact	ODU of the same system:			
	stops.			
	■ V8 platform ODU displays the code "A81", and V6 platfor	m ODU displays the code "U4". Meaning of the code: M		
	self-check fault)			
Error trigger	The MS self-check fault lasts for at least 10 min			
	The fault is cleared if one of the following conditions is met:			
Error recovery	■ 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	Open the MS e control box con the IDU and cherror code disp the digital displa electric control  Follow the instream the MS Mainter Guide	lectric nected to eck the layed on ay of MS box		





#### 2.8 A82 - MS (refrigerant flow direction switching device) fault

-	Digital display	Display position		
Faulty IDU	888	Panel, display box, and wired controller		
Error impact	Faulty IDU: The fan continues running, and the EEV is closed. Other IDUs of IDUs that share the same MS with the faulty IDU: The fan continue remain in operation.  ■ IDUs that share the same MS with the faulty IDU: V8 platform IDU of displays the code "F8". Meaning of the code: MS fault. IDUs that are ODU of the same system:	displays the code "A82", and V6 platform IDU		
-	<ul> <li>Shutdown</li> <li>V8 platform ODU displays the code "A82" (V6 platform ODU displays the code "F8". Meaning of the code: MS</li> </ul>			
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	Open the MS electric control box connected to the IDU and check the error code displayed on the digital display of MS electric control box  Follow the instructions of the MS Maintenance Guide			



#### 2.9 A91 - Mode conflict (V6 communication protocol adopted)

Available when using V6 platform wired controller.

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



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

	Digital display	Display position	
Error display	883 888	Panel, display box, and wired controller	
F	The faulty IDU stops. Other IDUs of the same system: operate norm	mally.	
Error impact	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	<ul> <li>The electronic expansion valve coil plugged into the EEV port in the IDU main control board is loose.</li> <li>The IDU main control board is damaged.</li> <li>The electronic expansion valve coil is faulty.</li> <li>The electronic expansion valve coil is short circuited or disconnected.</li> </ul>		
Froubleshooting	Is the electronic expansion valve coil plugged into the EXV port in the IDU main control board loose?  No  Check the electronic expansion valve is the coil abnormal (2)?  No  Check the electronic expansion valve is the coil adapter short circuited or disconnected (3)?  No  Replace the main control	Reconnect the plug tightly  Replace the electronic expansion valve coil  Replace the adapter	



- 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.

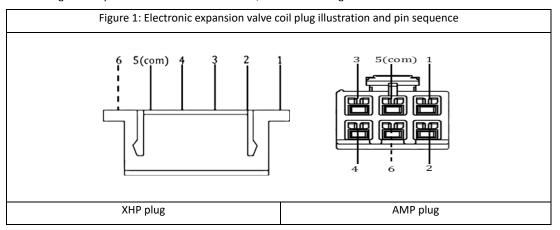
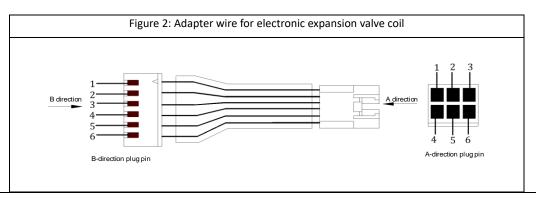


Table 1: Resistance between pins with an electronic expansion valve coil in normal condition		
Pin measured Resistance in normal status		
1-5	40-50Ω	
2-5	40-50Ω	
3-5	40-50Ω	
4-5	40-50Ω	

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.





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

	Digital display Display position			
Error display		Panel or display box	Wired controller	
Error uispiay		Error co		
		Spot check interface query	displayed	
Error impact	The faulty IDU and other IDUs of the same system: oper	rate normally.		
Error impact	ODU of the same system: operate normally.			
	■ Return air temperature(T1) - Heat exchanger liquid	d pipe temperature (T2A) > Set value		
Error trigger	■ IDU EEV=0, ODU running in cooling mode and con	npressor speed ≠0		
Error recovery	Automatic recovery			
	■ The electronic expansion valve needle is stuck or o	clogged.		
Possible cause	■ The electronic expansion valve coil is damaged and	d unable to drive the valve body.		
	■ The IDU main control board is damaged.			
	( b12/b14 (1) )			
	<u> </u>			
	Remove the coil and fix it to the valve	Yes		
	body again. Is the fault	Operate normally (loose co	oil)	
	cleared?			
	No			
			_	
	Replace the coil and	Yes Operate normally (the coi	1	
	re-energize. Is the error cleared?	cannot drive the valve bod		
	Goding.			
	No			
Troubleshooting		Operate permally (the IDI	$\Box$	
J	Replace the main control board	Yes Operate normally (the IDU main control board is		
	Is the fault cleared?	damaged and the electron expansion valve body	IC	
		cannot be driven)		
	No V			
	Replace the electronic expansion valve body (the			
	interior of the body is			
	clogged or the valve needle is stuck)			
	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 bod	y connected to port EEV1, the error cod	e is b12; when there i	
	a leak inside the electronic expansion valve body conne	cted to port EEV2, the error code is b14.		



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

	Digital display	Display position			
Error display	888	Panel, display box, and wired controller			
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.				
Error impact	ODU of the same system: operate normally.				
Error trigger	The main control board of the IDU detects the p	mp rotation speed ≤ 100 rpm for 10 seconds			
Error recovery	Automatic recovery				
	■ The water pump suction impeller is clogge	l.			
	■ The water pump plug to the PUMP port in	he IDU main control board is loose.			
Possible cause	■ The pump body is damaged (due to motor	damage, control drive circuit damage, etc.).			
	■ The IDU main control board is damaged.				
	C	Cause 1: Water pump ction impeller is clogged  Remove the debris at the suction, and clean the drainage pan and drain pipe  ause 2: The water pump g to the PUMP port in the DU main control board is			
Troubleshooting	be tr	use 3: DC voltage output tween Pin 2 and Pin 3 of e PUMP port in the main control board is less than 11V (2)			
	DC-PUMP be	Replace the water pump body is damaged			
	Note:				
	The error code corresponds to the following to	vo situations:			
	·	ntrol board of the IDU, when a stall error occurs in the water pump			
	connected to the PUMP port, the error code is b34.				
	, .	ol 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 po	rt. The output voltage between pin 2 and pin 3 can be measured w			
	a multimeter in DC voltage gear. If the output vo	tage is less than 11 V, the water pump cannot be driven.			



#### 2.13 b36 - Water level switch alarm error

	Digital display	Display position			
Error display	888	Panel, display box, and wired controller			
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.				
Lifoi iiiipact	ODU of the same system: operate normally.				
Error trigger	The water level switch alarm is triggered when the floater of lasts for 5 min.	the water level switch rises to the warning water level a			
Error recovery	Automatic recovery				
Possible cause	<ul> <li>The drain pump/water level switch is damaged.</li> <li>Water level switch float is stuck by a foreign object</li> <li>The water level switch plug or short-circuit plug to the W</li> <li>Non-standard installation results in abnormal drainage: causes the condensate water to flow backwards; and the</li> <li>The IDU main control board is damaged.</li> </ul>	The drain pipe is blocked; the improperly sloped drain p			
Troubleshooting	Cause 2: switch plug to the the IDU mai lo  Cause 3: switch is  Cause 4: switch flo  Cause 5: does not didischarge finstallat abnorma  Cause 7: C circuit plug port of the board. If the can be det main co	The water pump or discharge is ked by dirt  The water level gor short-circuit en control board is bose (1)  The water level so damaged (2)  The water level so damaged (2)  Reconnect the loose plug  Replace the water level set the floater to remove impurities and reset the floater switch  The pump outlet ischarge water or flow is very small (3)  Non-standard tion results in all drainage (4)  Take measures according to Note (3)  Take measures according to Note (4)  Replace the main control board of the IDU  Replace the main control board of the IDU			
		amaged			



- 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  $\Omega$ . 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.



#### 2.14 C11 - Duplicate IDU address code

Digital display	Display	position
	Panel or display box Wired controller	
$\leftarrow                   $	Error code and address code	Error code and address code
	are displayed alternately (2)	flash simultaneously
Faulty IDU: The fan continues running, and the EEV is close	I ed. Other IDUs of the same systo	I em: The fan continues running
the EEV is closed, and error code "A51" is displayed (V6 pl	atform IDU displays the code "E	d"). Meaning of the code: ODI
fault		
ODU of the same system:		
·		
·	lays the code "H7"). Meaning of	the code: IDU gty decrease
	, , ,	.,
<u> </u>		
■ The IDU main control board is damaged.		
Locate the IDU that reports repeated addresses. Is the address repeated?  No  Replace the main control board of the IDU (the communication circuit of the main control board is damaged)	Yes Reset the address	s (1)
<ol> <li>After replacing the main control board, the address was be manually set using the controller or the indoor unit add automatically addressed again.</li> <li>In systems where the nominal capacity of an indoor unit occupies more than two addresses (one real address + seven)</li> </ol>	s not reset, resulting in address of dress can be cleared at the outdo t is greater than or equal to 20K veral virtual addresses, see Note	oor unit and then  W, the indoor unit usually  1 below), which may cause
	the EEV is closed, and error code "A51" is displayed (V6 plault  ODU of the same system:  Stop.  Error code "C26" is displayed (V6 platform ODU displault  Repeated address codes for IDU  Automatic recovery  Duplicate IDU address code (▲)  The IDU main control board is damaged.  C11  Repeated addresses. Is the addresses. Is the addresses. Is the addresses. Is the addresses of the IDU (the communication circuit of the main control board is damaged)  (▲): The common reasons for address code duplication and 1. After replacing the main control board, the address was be manually set using the controller or the indoor unit add automatically addressed again.  2. In systems where the nominal capacity of an indoor unit occupies more than two addresses (one real address + see	Error code and address code are displayed alternately (2)  Faulty IDU: The fan continues running, and the EEV is closed. Other IDUs of the same syst the EEV is closed, and error code "A51" is displayed (V6 platform IDU displays the code "E fault  ODU of the same system:  Stop.  Error code "C26" is displayed (V6 platform ODU displays the code "H7"). Meaning of fault  Repeated address codes for IDU  Automatic recovery  Duplicate IDU address code (▲)  The IDU main control board is damaged.  C11  Replace the main control board of the IDU (the communication circuit of the main control board is damaged)  (▲): 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 be manually set using the controller or the indoor unit address can be cleared at the outdite manually set using the controller or the indoor unit address can be cleared at the outdite.



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)

					Address code to be
Nominal capacity (kW)	capacity (HP)	Number of IDUs (N)	Number of addresses (N)	Address code	queried at the
					centralized controller
					or wired controller
					(★)
				Address code can be	
kW<20	HP<7	1	1	any integer from 0 to	х
				63, denoted by X	
20≤kW<40	7≤HP<14	1	2	The address code can	
				be any integer from 0	
				to 62, denoted by X,	X
				and the virtual address	
				following it is X+1	
40≤kW<78 .5	14≤HP<28	1	4	The address code can	
				be any integer from 0	
				to 60, denoted by X,	V
				and the virtual	X
				addresses following it	
				are: X+1, X+2, X+3	
78.5≤kW<	28≤HP<36	1	5	The address code can	
				be any integer from 0	
				to 59, denoted by X,	
101				and the virtual	X
				addresses following it	
				are: X+1, X+2, X+3, X+4	
	36≤HP<40	1	6	The address code can	
				be any integer from 0	
404 41347 44				to 58, denoted by X,	
101≤kW<1 12				and the virtual	Х
				addresses following it	
				are: X+1, X+2, X+3, X+4,	
				X+5	
kW>112				The address code can	
				be any integer from 0	
	HP>40	1	8	to 56, denoted by X,	
				and the virtual	х
				addresses following it	
				are: X+1, X+2, X+3, X+4,	
				X+5, X+6, X+7	



- ★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

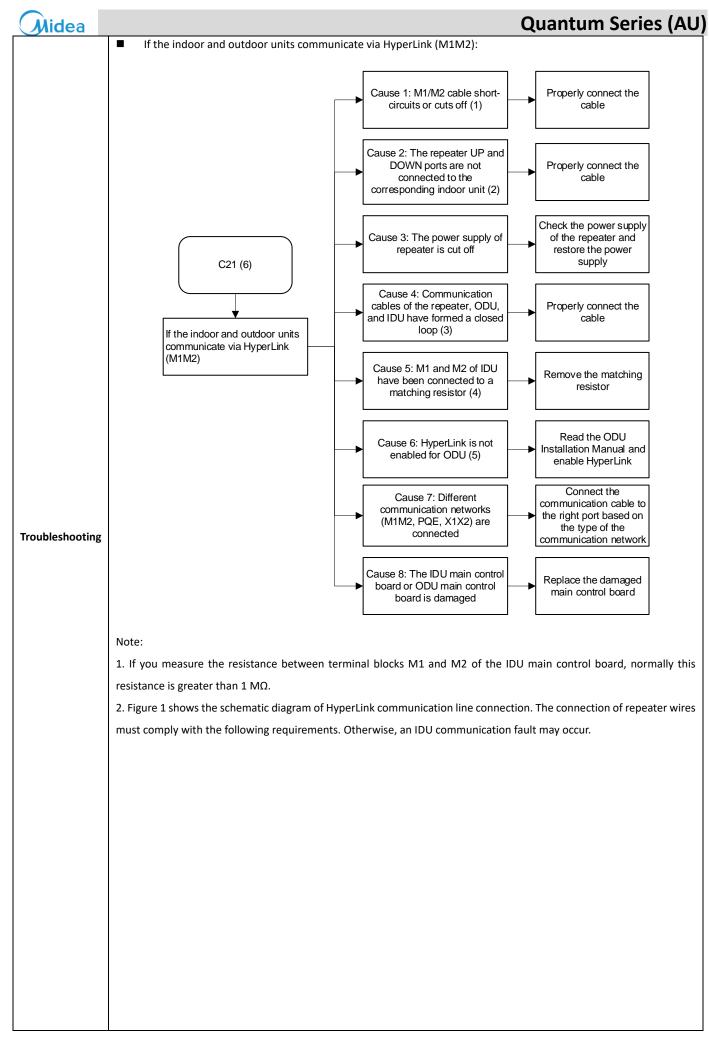
	Error code	Display box/panel	Wired controller
IDU with repeated address codes (number of addresses N = 1)	C11	Error code "C11" and address code are displayed alternately every 1s (★1)	Error code "C11" is displayed
IDU with repeated address codes (number of addresses N>1)	C11	If the number of repeated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

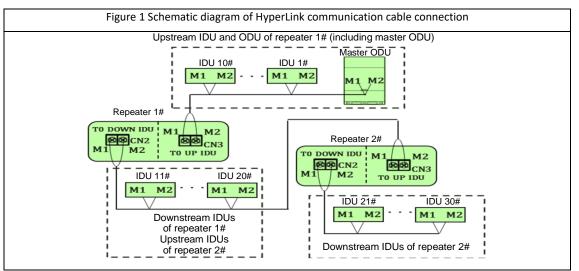


# 2.15 C21 - Abnormal communication between IDU and ODU

Error impact  Error trigger  Error recovery  Possible cause	Cause 2: Care not o	rm IDU displays the code "Ed"). Meaning of the code: ODU s the code "H7"). Meaning of the code: IDU qty decrease DU for 2 min
Error trigger Error recovery	the EEV is closed, and error code "A51" is displayed (V6 platform fault  ODU of the same system:  stops.  Error code "C26" is displayed (V6 platform ODU displays fault  If the IDU has not received any communication signal from ODA Automatic recovery  See the Troubleshooting section.  If the indoor and outdoor units communicate via RS-485  Cause 1: Fable short cable short or cause 2: Cause 2: Cause 1: Fable short or cause 2: Cause 2: Cause 3: Fable short or c	the code "H7"). Meaning of the code: IDU qty decrease  DU for 2 min  P/Q/E communication t-circuits or cuts off (1)  Communication cables  Connect the cables in a
Error recovery	Automatic recovery  See the Troubleshooting section.  If the indoor and outdoor units communicate via RS-485  Cause 1: F cable short  Cause 2: Care not of	P/Q/E communication t-circuits or cuts off (1)  Properly connect the cable  Communication cables  Connect the cables in a
-	See the Troubleshooting section.  If the indoor and outdoor units communicate via RS-485  Cause 1: I cable short  Cause 2: Care not of	P/Q/E communication t-circuits or cuts off (1)  Properly connect the cable  Communication cables  Connect the cables in a
Possible cause	■ If the indoor and outdoor units communicate via RS-485  Cause 1: If cable shorts  Cause 2: Care not of the capture of the c	P/Q/E communication t-circuits or cuts off (1)  Properly connect the cable  Communication cables  Connect the cables in a
	Cause 1: F cable short  Cause 2: C are not c	P/Q/E communication t-circuits or cuts off (1)  Properly connect the cable  Communication cables  Connect the cables in a
Troubleshooting	Cause 4: cable do  Cause 4: cabl	Connect P/Q/E to the right port  The communication es not have a shield layer  Use shielded cables  Separate the communication cable from the strong-current power cables (over 220 V)  Eliminate sources of interference or add one more shield to the cable  Connect the communication cable from the strong-current power cable  Eliminate sources of interference or add one more shield to the cable  Connect the communication cable to the right port based on the type of the communication network  The IDU main control board  Replace the damaged main control board  de E of the IDU main control board, normally the resistance







- 1) The UP communication port of 1# repeater is connected to the communication port of 10# IDU, and the DOWN communication port of 1# repeater is connected to the communication port of 11# IDU.
- 2) The UP communication port of 2# repeater is connected to the communication port of 20# IDU, and the DOWN communication port of 2# repeater is connected to the communication port of 21# IDU.
- 3) For each repeater added, 10 IDUs and 200 m communication distance can be added. A refrigerant system allows the addition of a maximum of 2 repeaters and can connect to up to 30 IDUs. If more than 30 IDUs are connected, please allocate separate refrigerant systems.
- 3. If communication cables connecting the communication ports of the repeater, IDU and ODU form a closed loop, it will cause a communication fault.
- 4. RS-485 communication cables must be connected hand in hand. If communication is unstable, a matching resistor needs to be added to the last IDU on the PQ (in the accessory bag of the ODU). However, a matching resistor should not be added between M1 and M2. Otherwise, a communication fault may occur.
- 5. To select the communication mode HyperLink (M1M2), users must go to the ODU menu item to change the mode (For the setting method, refer to the ODU Installation Manual). Otherwise, communication faults may occur.
- 6. The V8 platform ODU typically uses the V8 communication protocol. If there are any IDUs that use a non-V8 platform, users must go to the ODU menu item to change the communication protocol (Please refer to the ODU Installation Manual for setup instructions). Otherwise, these IDUs will display communication fault codes (For the code number, please refer to the IDU wiring nameplate).



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

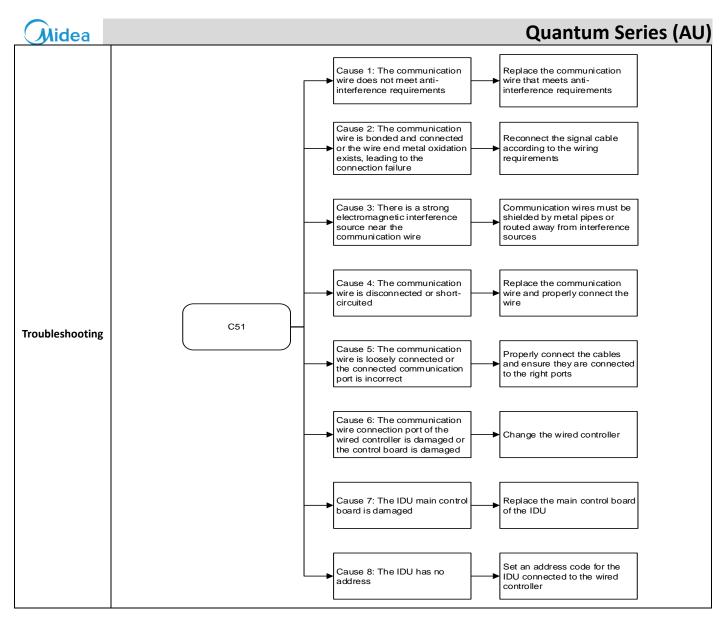
	Digital display Display position		
Error display	888	Panel, display box, and wired controller	
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.		
	ODU of the same system: operate normally.		
Error trigger	If the main control board of an IDU has lost communication with the fan drive board for 2 min (3)		
Error recovery	Automatic recovery		
	■ The fan drive board is damaged.		
Possible cause	■ 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	Cause 2: The board is	Reconnect the loose plug  IDU main control ecome loose (1)  Replace the main control board of the IDU  fan drive board is aged (2)  Replace the fan drive board	
	Note:  1. Communication cables are only provided for units whose board.  2. For units whose fan drive board is welded onto the main of board becomes faulty, the whole control board has to be replaced.	control board, if either the fan drive board or main control	



#### 2.17 C51: communication exception between the IDU and wired controller

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

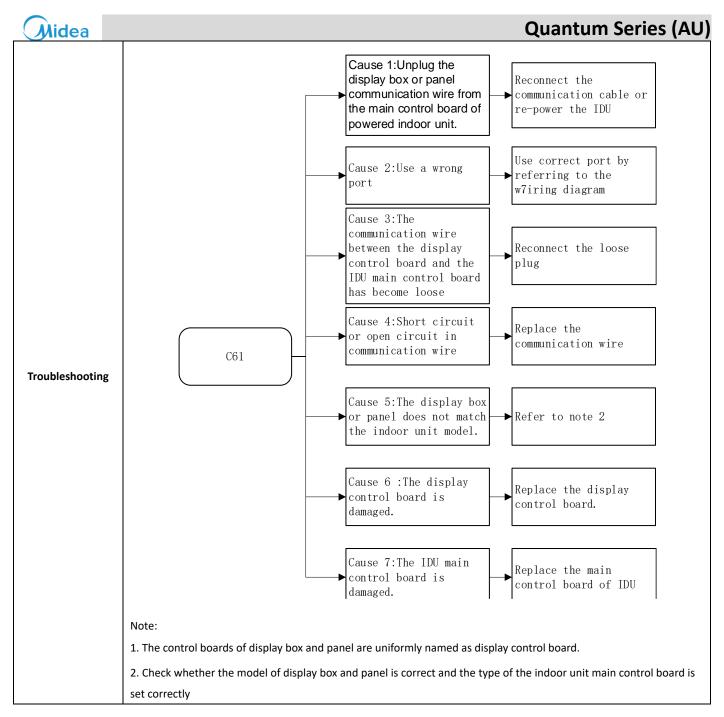
	LED display Display position			
		If a powered-on IDU does not receive any message from the wired controller: 1) Wired		
		controller: "C51" is displayed; 2) Panel or display box: The LED display and the error code		
Fault Display		bit on the inspection interface are displayed normally.		
		If a powered-on 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.		
	■ Triggered at the IDU side: The faulty IDU and other IDUs of the same system operate normally.			
Fault Impact	■ Triggered at the wired co	ntroller side: The wired controller is unavailable.		
	ODU of the same system operates normally.			
	■ 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			
Fault Trigger				
	board for one continuous minute.			
Fault Recovery	Automatic recovery			
	■ The wired controller is damaged.			
Possible Cause	Cause The IDU main control board is damaged.			
		e loose or the communication port is faulty.		
		ve short-circuited or been cut off.		
		The communication wire does not meet anti-interference requirements or is affected by strong-current interference.		
i	■ IDU has no address.			





# **2.18 C61 - Abnormal communication between the IDU main control board and display control board**Note: The error code C61 can be triggered either at the IDU side or at the panel or display box side.

	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;		
Error display		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.			
Error impact	ODU of the same system: operate normally.			
	■ Triggered at the IDU side: If the main control board of the IDU has been connected to the display boar			
Error trigger	not communicated with the display board for 2 min;			
Lifoi trigger	■ 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			
	■ 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.			
Possible cause	Short circuit or open circuit in communication w	ire		
	■ The display box or panel does not match the inde	oor unit model.		
	■ The display control board is damaged.			
	■ The IDU main control board is damaged.			





#### 2.19 C73 - Abnormal communication between the linked humidifying IDU and master IDU

	Digital display	Display position	n (master IDU)	
Error display		Panel or display box Wired co		
		Error code is not displayed		
Error impact	Master IDU: operates normally. Humidifying IDUs: stop. Other IDUs of the same system: operate normally.			
	ODU of the same system: operate normally.			
Error trigger	If the main control board of the master IDU has lost communication with the main control board of the humidifying for 2 min			
Error recovery	Automatic recovery			
Possible cause	<ul> <li>The main control board of the humidifying IDU is danged.</li> <li>The master IDU's main control board is damaged.</li> <li>Communication cables are loose or the communication</li> <li>Communication cables have short-circuited or been communication.</li> </ul>	on port is faulty.		
Troubleshooting	Cause 2: To also define the mas  Cause 3: The of the mas  Cause 4: The of the height and the hei	humidifying IDU and ntrol board of master connected or short circuited  The communication een the main control humidifying IDU and control board of the has become loose or ted to a wrong port  Replacement of the has become loose or ted to a wrong port  Replacement of the has become loose or ted to a wrong port  Replacement of the has become loose or ted to a wrong port  Replacement of the has become loose or ted to a wrong port  Replacement of the has become loose or ted to a wrong port	Replace the inication cable and erly connect the cable overly connect the sand ensure they needed to the right ports.  The main control of the master IDU of the humidifying IDU	
	Note:			



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

- 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.

	Digital display	Display position (master IDU)
Error display Panel, display box		Panel, display box, and wired controller
Error impact	The master IDU and the linked FAPU: stop. Other IDUs of the same system: operate normally.	
	ODU of the same system: operate normally.	
Error trigger	If the main control board of the master IDU has lost communication with the main control board of the FAPU for 2 r	
Error recovery	Automatic recovery	
Possible cause	<ul> <li>The main control board of the FAPU is damaged.</li> <li>The master IDU's main control board is damaged.</li> <li>Communication cables are loose or the communication process.</li> <li>Communication cables have short-circuited or been cut or cables.</li> </ul>	
Troubleshooting	Cause 1: The commute between the main control of FAPU and the main control of recuited and the main	Replace the communication cable and properly connect the cables and ensure they are connected to the right ports  Properly connect the cables and ensure they are connected to the right ports  Replace the communication cable and properly connect the cables and ensure they are connected to the right ports  Replace the main control board of the master IDU  Replace the main control board of the FAPU

Note:



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

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.

Digital display	Display position	on (master IDU)	
Panel or display box Wi			
	Spot check interface query	Error code is not displayed	
Master IDU: operates normally. FAPU: stops. Other IDUs of the same system: operate normally.  ODU of the same system: operate normally.			
			If the main control board of the master IDU has lost communication with the main control board of the FAPU for 2 min
Automatic recovery			
<ul><li>The master IDU's main control board is damaged.</li><li>Communication cables are loose or the communicati</li></ul>			
Cause 2: Table between the control boar is disconnected.  Cause 2: Cable between the control boar has been connected.  Cause 3: The of the mas	communication een the main control a FAPU and the main rd of the master IDU cated or short circuited  The communication een the main control a FAPU and the main control are faPU and the main rd of the master IDU come loose or is ed to a wrong port  Replation of the main control board are recommended in the main control board are recommended in the main control board.	Replace the sunication cable and perly connect the cable  operly connect the es and ensure they connected to the right ports  ace the main control d of the master IDU	
	Master IDU: operates normally. FAPU: stops. Other IDUs of ODU of the same system: operate normally.  If the main control board of the master IDU has lost commod Automatic recovery  The main control board of the FAPU is damaged.  Communication cables are loose or the communication cables have short-circuited or been do a look of the control board of the control boa	Panel or display box  Spot check interface query  Master IDU: operates normally. FAPU: stops. Other IDUs of the same system: operate nor  ODU of the same system: operate normally.  If the main control board of the master IDU has lost communication with the main control  Automatic recovery  The main control board of the FAPU is damaged.  Communication cables are loose or the communication port is faulty.  Communication cables have short-circuited or been cut off.  Cause 1: The communication cable between the main control board of the master IDU is disconnected or short circuited  Cause 2: The communication cable between the main control board of the master IDU is disconnected or short circuited  Cause 3: The main control board of the master IDU is damaged  Cause 3: The main control board of the master IDU is damaged  Cause 3: The main control board of the master IDU is damaged  Cause 3: The main control board of the master IDU is damaged  Cause 4: The main control board of the master IDU is damaged	

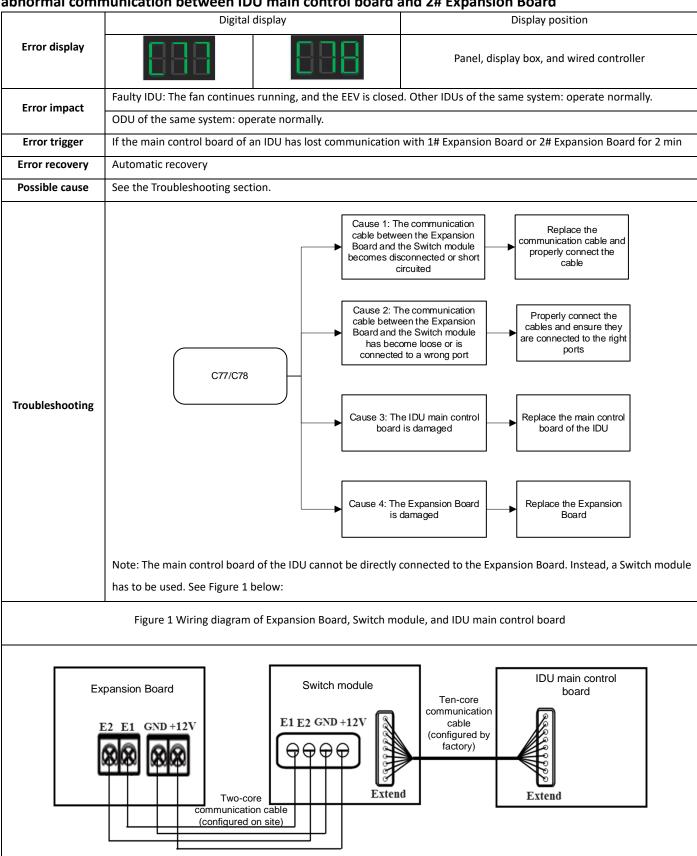


# **2.22 C76 - Abnormal communication between the main wired controller and secondary wired controller**Note: The error code C51 can be triggered either at the IDU side or at the wired controller side.

	Digital display  The error code "C76" is displayed only on the secondary wired con		
Error display			
Error impact	The faulty IDU and other IDUs of the same s ODU of the same system: operate normally.	system: operate normally. The wired controller does not work.	
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	<ul> <li>The secondary wired controller is dam</li> <li>Communication cables are loose or th</li> <li>Communication cables have short-circ</li> </ul>	e communication port is faulty.	
Troubleshooting	C76	Cause 1: The communication cable between the secondary wired controller and the main wired controller has become disconnected or short circuited  Cause 2: The communication cable between the secondary wired controller and the main wired controller has become loose or is connected to a wrong port  Replace the communication cable between the secondary wired controller and the main wired controller has become loose or is connected to a wrong port	
		Cause 3: The secondary wired controller is damaged  Replace the secondary wired controller	

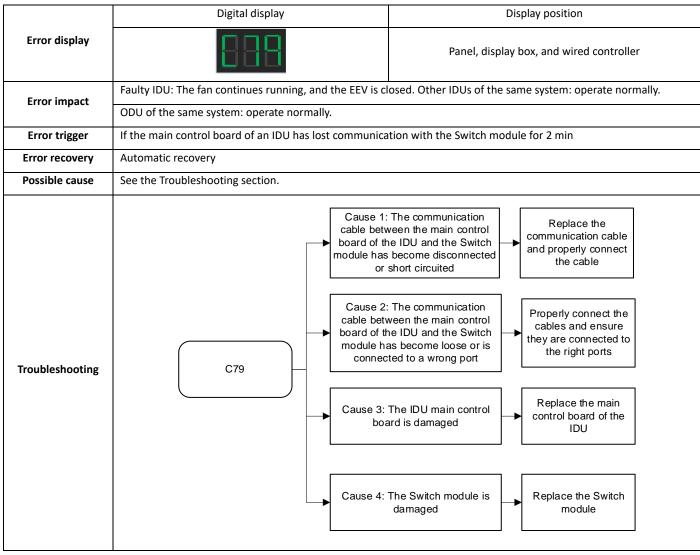


2.23 C77, C78 - Abnormal communication between IDU main control board and 1# Expansion Board, abnormal communication between IDU main control board and 2# Expansion Board





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





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

	Digital display	Display position
Error display	888	Central controller or various types of control terminal software
Error impact	the central controller or various types of control  Other indoor units in the same system are opera	ting normally. mally, displaying 'd41' (There are indoor units in the system that
Error trigger	The power supply to the indoor unit has been detected	d as being cut off.
Error recovery	The faulty indoor unit will automatically resume opera	tion once power supply is restored.
Possible cause	<ul><li>The power supply to the indoor unit has been cu</li><li>The main control board of the indoor unit is dam</li></ul>	
Troubleshooting	Locate the powered-off indoor unit, restore its power supply, and observe whether the fault is resolved.  Replace the main control board  Note: The C81 fault trigger is only supported when bot communication line between the indoor and outdoor of the communication of the communicati	Check the reason for the power supply being cut off (such as intentional power outage/short circuit, circuit breaker tripped due to leakage), and correct it  the the indoor and outdoor units belong to the V8 series and the units is connected to the M1/M2 ports.



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

	Digital display			Display position
Error display			Panel, displa	ay box, and wired controlle
	The faulty IDU stops. Other IDUs of the same syste	em: operate noi	mally.	
Error impact	ODU of the same system: operate normally.			
Error trigger	If the air inlet temperature of the IDU is lower that IDU Manual) for 5 min in heating mode	an the set value	e (See the operation	ng temperature range set
Error recovery	Automatic recovery			
Possible cause	See the Troubleshooting section.			
	t in m	ause 1: Spot chec emperature and n let air temperatur heck result is the easured result (er a normal protect or the unit. Otherv cause 2/3	neasure the e. If the point same as the ror ≤ 1°C), it ion measure vise, refer to	It is a normal protection measure for the IDU. When the inlet air temperature exceeds the set value, the fault will be cleared
	d16	ause 2: Remove telet air temperature the main control to IDU, measure its value, and compa Table of Sensor Femperature Character for the temperature deviates frouinlet air temperature than 5°C, the sequence of the sequence	e sensor from poard of the resistance re it with the tesistance - acteristics (1). ture that e resistance m the actual ure by more sensor is	Replace the inlet air temperature sensor
roubleshooting	sc will	Cause 3: The secomes into contactource, such as low conden sed wate surface of a heat hich causes the dbe lower than the	t with a cold v-temperature and cold exchanger, etected value	Eliminate the interference of external cold source to the sensor
	cl be	Cause 4: If the err leared after cause en eliminated, the board of the IDU	es 1/2/3 have e main control	Replace the main control board of the IDU
	Note:  1. The inlet air temperature sensor is commonly for resistance and temperature characteristics are sim Temperature Sensor Resistance Characteristics list features.	nilar to T1 - retu	ırn air temperature	e sensor. Please refer to th



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

	Digital display	Display position
Error display	888	Panel, display box, and wired controller
	The faulty IDU stops. Other IDUs of the same system: opera	te normally.
Error impact	ODU of the same system: operate normally.	
Error trigger	If the air inlet temperature of the IDU is higher than the set of IDU Manual) for 5 min in cooling mode	value (See the operating temperature range set ou
Error recovery	Automatic recovery	
Possible cause	See the Troubleshooting section.	
	Cause 1: Spot check temperature and meas temperature. If the poi is the same as the me (error ≤ 1°C), it is a not measure for the unit. Ot cause 2/3  Cause 2: Remove the pl temperature sensor from board of the IDU, measurely value, and compare it with Sensor Resistance - Characteristics (1). If the corresponds to the redeviates from the autemperature by more that is damage.	protection measure for the IDU. When the inlet air temperature is lower than the set value, the fault will be cleared  lug of the inlet air in the main control ure its resistance with the Table of Temperature temperature that esistance value ctual inlet air an 5°C, the sensor
Troubleshooting	Cause 3: The sensor bo contact with a hot source sunlight or hot surfarexchanger, which cause value to be lower than to the main control board damage.	interference of external hot source to the normal value interference of external hot source to the sensor  Replace the main control board of the IDU is
	Note:	
	The inlet air temperature sensor is commonly found in the	e fresh air IDUs (The sensor code is defined as TO)
	its resistance and temperature characteristics are similar to	
	Table of Temperature Sensor Resistance Characteristics liste	
	sensor's features.	

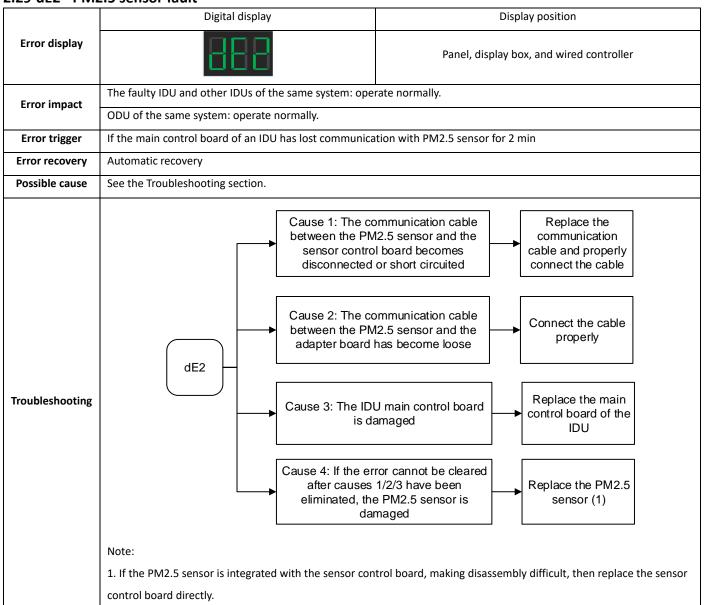


#### 2.28 dE1 - Sensor control board fault

	Digital display	Display position	
Error display	888	Panel, display box, and wired controller	
Error impact	The faulty IDU and other IDUs of the same system: ODU of the same system: operate normally.		
Error trigger	If the main control board of an IDU has lost commi	of an IDU has lost communication with sensor control board for 2 min	
Error recovery	Automatic recovery		
Possible cause	See the Troubleshooting section.		
Troubleshooting	Cause 2: T between the IDU and	The communication cable he main control board of and the sensor control become disconnected or short circuited  The communication cable he main control board of the adapter board has become loose  The IDU main control board is damaged  Replace the communication cable connect the cable properly  Connect the cable properly  Replace the main control board of the IDU  Replace the sensor control board of the IDU  Replace the sensor control board of the IDU	

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#### 2.29 dE2 - PM2.5 sensor fault





# 2.30 dE3 - CO2 sensor fault

	Digital display	Display position
Error display	888	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	cause 2: The ID is d  Cause 3: If the cleared after cate eliminated, the content of the content	Properly connect the pins  U main control board amaged  Replace the main control board of the IDU  Replace the CO2 sensor is  Replace the CO2 sensor (1)
•	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.	



#### 2.31 dE4 - Formaldehyde sensor fault

	Digital display	Display position	
Error display	888	Panel, display box, and wired controller	
Error impact	The faulty IDU and other IDUs of the same system: operate normally.		
Lifoi impact	ODU of the same system: operate normally.		
Error trigger	If the main control board of an IDU has lost communica	tion with formaldehyde sensor for 2 min	
Error recovery	Automatic recovery		
Possible cause	See the Troubleshooting section.		
Troubleshooting	pins are improved as a sense.  Cause 2: The is cause 3: If the after causes 1, the formaldeh.	reformaldehyde sensor operly connected to the pins  Replace the main control board of the IDU  Replace the formaldehyde sensor (1)  Replace the main control board of the IDU  Replace the formaldehyde sensor (1)	
	<ul><li>2) When inserting and removing the sensor, do not touch</li><li>3) When inserting and removing the sensor: Operators</li></ul>	ch or squeeze the white sensor film with your hand.  s must keep their hands clean and dry; the antistatic wrist strap	
		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.		



#### 2.32 dE5 - Human Detect sensor fault

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

	Digital display	Display position
Error display	888	Panel, wired controller
Error impact	The faulty IDU and other IDUs of the same system: ope	erate normally.
Lifoi impact	ODU of the same system: operate normally.	
Error trigger	If the control board of intelligent panel has lost commu	nication 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.	
	between the hicontrol board of	communication cable uman detector and the on the intelligent panel is loose  Connect the cable properly
	<b></b>	DU main control board damaged  Replace the main control board of the IDU
Troubleshooting		Replace the control board on the panel is damaged  Replace the control board on the intelligent panel
		Replace the panel or IDU
	cleared after been eliminate	the error cannot be required to a causes 1/2/3/4 have ed, the human detector damaged  Replace the human detector



2.33 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

off			
	Digital display	Display position	
Error display	888	Panel, display box, and wired controller	
Error impact	The faulty IDU stops. Other IDUs of the same system: operate	e normally.	
Lifoi impact	ODU of the same system: operate normally.		
Error trigger	When detecting that the temperature sensor short-circuits or	r cuts off	
Error recovery	Automatic recovery		
Possible cause	<ul> <li>The temperature sensor is damaged.</li> <li>The sensor plug to the T0/T1/TA port in the IDU main control board is loose.</li> <li>The IDU main control board is damaged.</li> </ul>		
Troubleshooting	connecting to the IDU main control board loose?	ug with a multimeter. A resistance value close to 0 sor, and a resistance value close to infinity indicates an it is able to determine if the T1 sensor is short-circuited or sensors are short-circuited or open-circuited. is able to determine if the T0 or TA sensors are short-the T1 sensor is short-circuited or open-circuited.	



# 2.34 E31: wired controller temperature sensor failure

	LED display	Display position	
Fault Display		Panel or display box	Wired controller
		Panel, display box, a	nd wired controller
Fault Impact	The faulty IDU and other IDUs of the same system operate	normally.	
	ODU of the same system operates normally.		
Fault Trigger	When the V8 series FAPU uses room temperature control, the "Follow Me" temperature value received from the wired controller is abnormal.		
Fault Recovery	Automatic recovery		
Possible Cause	<ul> <li>The built-in room temperature sensor of the wired controller is short-circuited or open-circuited.</li> <li>The wired controller is damaged.</li> <li>The main control board of the FAPU is damaged.</li> </ul>		
Troubleshooting	Replace the main control board of the IDU  Note:  1. After replacing the wired controller of the same model, "Follow Me" function according to the engineering parameters are processing Unit.		the wired d



# Quantum Series (AU) 2.35 EA2 - Return air humidity sensor fault

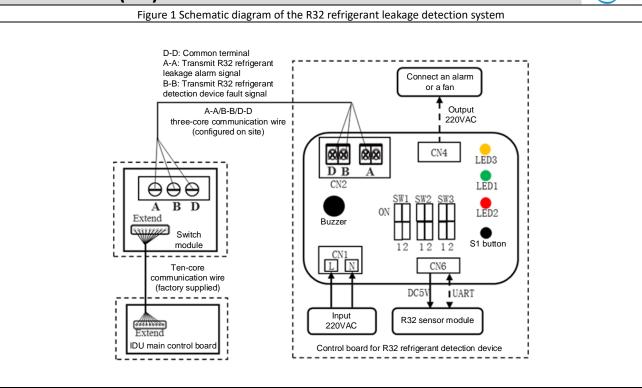
	Digital display	Display po	sition	
Error display	Panel or display box		Wired controller	
		Spot check interface query	Error code is not displayed	
Error impact	The faulty IDU and other IDUs of the same system: operate normally.			
Error impact	ODU of the same system: operate normally.			
Error trigger	If the main control board of an IDU has lost communicat	ion with the return air humidity se	ensor for 2 min	
Error recovery	Automatic recovery			
	■ The humidity sensor board is damaged.			
	■ The cable plug connecting to the RH port in the IDI	U main control board is loose.		
Possible cause	■ The cable plug connecting to the humidity sensor b	board is loose.		
	■ The IDU main control board is damaged.			
	( EA2 )			
	<u> </u>			
	Is the cable plug			
	(with one end connecting to RH port of the IDU main control	Yes		
	board and the other end connecting	Reconnect the	plug tightly	
	to humidity sensor board)			
	loose?			
	No _			
	Are wires short circuited or	Yes → Replace the wi	res	
	disconnected? (1)	'		
Troubleshooting				
	No ↓			
	Replace the humidity sensor board and	Yes		
	power on the system again. Is the	Fault cleared		
	fault cleared?			
	No.			
	No .			
	Replace the main control			
	board of the IDU			
	1			
	Note:			
		the pin in the plug at two ends of	each wire. A resistance	
	Note:  1. Use a multimeter to measure the resistance between value close to 0 indicates a short circuit has occurred in t			



# 2.36 EC1: R32 refrigerant leakage sensor fault

	LED display	Display position	
Fault Display	888	Panel, display box, and wired controller	
Fault Impact	Faulty IDU: stops. Other IDUs of the same system: operate	e normally.	
rault iiiipact	ODU of the same system operates normally.		
Fault Trigger	The IDU main control board receives sensor module fault	signal from the R32 refrigerant detection device.	
Fault Recovery	No sensor module fault signal is detected by the IDU mair	n control board.	
Possible Cause	See the Troubleshooting section.		
Troubleshooting	Open the cover of the R32 refrigerant detection device and these the status of the yellow LED3 indicator and buzzer  Open the cover of the R32 refrigerant detection device and check the status of the yellow LED3 indicator and buzzer  Cause 5: The yellow LED3 indicator and buzzer rings one evand the buzzer an interval of one s Refrigerant detection device ontrol board EB portion to the period of one s Refrigerant detection device ontrol board EB. Detection device ontrol board of the period of the perio	Replace the R32 sensor module and then press and hold S1 for 10 seconds to reset it (1)  Replace the R32 sensor module and then press and hold S1 for 10 seconds to reset it (1)  Reconnect the communication wire between the sensor module and the control board. If the fault between and detection overd  Replace the R32 sensor module and the control board. If the fault persists, replace the communication wire  Reconnect the communication wire between the sensor module and the control board. If the fault persists, replace the communication wire  Replace the R32 sensor module and then press and hold S1 for 10 seconds to reset it (1)  Replace the R32 sensor module and then press and hold S1 for 10 seconds to reset it (1)  Replace the control board of the refrigerant detection device. After the repair, press and hold S1 for 10 seconds to reset it (1)  Replace the control board of the refrigerant detection device. After the repair, press and hold S1 for 10 seconds to reset it (1)  Replace the main control board of the refrigerant detection device. After the repair, press and hold S1 for 10 seconds to reset it (1)  Replace the main control board of the IDU  Replace the control board of the refrigerant detection device. After the repair, press and hold S1 for 10 seconds to reset it (1)  Replace the control board of the refrigerant detection device. After the repair, press and hold S1 for 10 seconds to reset it (1)  Replace the main control board of the IDU  Replace the main control board of the IDU  Replace the main control board of the IDU  Replace the main control board of the IDU	
	device control board EEPROM fault: After faults have been cleared, press and hold the S1 button on th board for 10 seconds to reset the unit. After resetting, all the LED indicators are lit for two seconds between dimmed. The R32 sensor life recorded by the control board EEPROM is cleared. Communication the sensor and the control board for the detection device is automatically restored.  2. The communication connection between the control board for the detection device and the switch A/B/D is shown in Figure 1 below.		







2.37 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

	Digital display	Display position
Error display	888 888	Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate	e normally.
,	ODU of the same system: operate normally.	
Error trigger	When detecting that the temperature sensor short-circuits of	r cuts off
Error recovery	Automatic recovery	
Possible cause	<ul> <li>The temperature sensor is damaged.</li> <li>The sensor plug connecting to the T2A/T2/T2B port in the IDU main control board is loose.</li> <li>The IDU main control board is damaged.</li> </ul>	
Troubleshooting	plug connecting to the IDU main control board getting loose?	ug with a multimeter. A resistance value close to 0 sor, and a resistance value close to infinity indicates an imperature sensors in the parallel control of the AHU kit,

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# 2.38 P31/P34 - Fan drive board AC side overcurrent protection

	Digital display	Display position	
Error display	888	Panel, display box, and wired controller	
Error impact	The faulty IDU stops. Other IDUs of the same syste	m: operate normally.	
Error impact	ODU of the same system: operate normally.		
Error trigger	<ul> <li>P31: The current value detected on the AC side of the fan drive board exceeds the programmed overcurrent protection value</li> <li>P34: Six P31 failures within an hour.</li> </ul>		
Error recovery	■ P31: Automatic recovery ■ P34: Power-on again		
Possible cause	<ul> <li>The actual static pressure resistance of the indoor unit outlet is less than the static pressure value of indoor unit</li> <li>Instantaneous power failure or violent voltage fluctuation</li> <li>Indoor unit fan driver board is damaged</li> <li>Indoor unit main control board is damaged</li> </ul>		
Troubleshooting	P31/P34  Cause 2:I power fail voltage flu  Cause 3:I cannot be other causeliminated control both board is discovered by the causeliminated by the causelim	Power-on again, check whether the power supply voltage is stable, if the fluctuation is violent, the power supply needs to be rectified  Replace the main control board or fan drive board is should be noted: For models where the fan drive board is rd, if either the fan drive board or the indoor unit main control	



# 2.39 P52 - The voltage of the power supply is too low

	Digital display	Display position
Error display	888	Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system	: operate normally.
Error impact	ODU of the same system: operate normally.	
Error trigger	■ Power supply voltage is below the programme	d protection threshold (165V)
Error recovery	■ Automatic recovery	
Possible cause	Power supply voltage is lower than 165V	
1 000.010 00000	Indoor unit fan driver board is damaged	
Troubleshooting	Use a multimeter to check whether the power supply voltage of the indoor unit is lower than 165V  No  Replace the fan drive board or main control board  YES  Rectify the power supply	

# Quantum Series (AU) 2.40 P71 - Main control board EEPROM fault



	Digital display	Display position
Error display	888	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	Power off and then power on the IDU	



#### 2.41 P72 - IDU display control board EEPROM fault

	Digital display	Display position
Error display	Panel or display box	
Error impact	The faulty IDU operates normally, and the error code is displayed on the panel or display box only. Other IDUs of the same system: operate normally.  ODU of the same system: operate normally.	
Error trigger	Unable to read data from display control board EEPROM (EEPROM: a non-volatile memory whose data are kept even when powered off)	
Error recovery	Automatic recovery	
Possible cause	<ul><li>The display control board is damaged.</li><li>External interference (such as noise and electromagnetic)</li></ul>	
Troubleshooting	Power off and then power on the IDU  Is the fault cleared?  Yes  The display control board is normal and subject to external interference (such as noise and electromagnetic)	No Replace the display control board



# 2.42 U01 - Locked (electronic lock)

	Digital display	Display position	
Error display	888	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	Unlock the ODU depending on the type of ODUs (1)  Note 1: To get unlocking methods and tools, please contact your local dealer or technical support personnel.		
	Note 1: To get unlocking methods and tools, please contact your local dealer or technical support personnel.		



#### 2.43 U11 - Unit model code not set

	Panel, display box, and wired controller	
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.)		
When detecting that the unit model code for IDU main control board is not set		
Automatic recovery		
■ The unit model code has not been set after replacing the IDU main control board.		
■ The IDU main control board is damaged.		
Use the dedicated tooling (1) to set the model code for the main control board of IDU, and power on the unit again  No Replace the main control board of the IDU  Yes  Fault cleared  Note 1: For specialized tooling and instructions, please contact your local dealer or technical support personnel.		
	2) Other IDUs of the same system:  If the address for the faulty IDU was not set, other V6 platform displays "Ed" code)  ODU of the same system:  If the address for the faulty IDU was not set, the If the address of the faulty IDU was not set, the (The outdoor unit of V6 platform displays "H7" compared to the code of the same system:  When detecting that the unit model code for IDU main Automatic recovery  The unit model code has not been set after replation of IDU main control board is damaged.  U11  Use the dedicated tooling (1) to set the model code for the main control board of IDU, and power on the unit again  Is the fault cleared?	



# 2.44 U12 - Capacity(HP) code not set

	Digital display	Display position	
Error display	888	Panel, display box, and wired controller	
	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.		
Error impact	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		
	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	<ul> <li>The capacity(HP) code has not been set after replacing the IDU main control board.</li> <li>The new IDU main control board is damaged.</li> </ul>		
Troubleshooting	Use the dedicated tooling (1) to set the capacity(HP) code for the main control board of IDU, and power on the unit again  Is the fault cleared?  No Replace the main control board of the IDU  Yes  Fault cleared  Note 1: For specialized tooling and instructions, please contact your local dealer or technical support personnel.		



#### 2.45 U26 - Mismatch between indoor unit model and outdoor unit model

2.43 020 - 1411311	Digital display	Display position	
Error display	888	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	<ul> <li>There is a conflict between the model series code of indoor unit and the model series code of outdoor unit</li> <li>The communication flag bit (Myhome identification flag bit) between indoor unit and outdoor unit has a matching conflict</li> </ul>		
Error recovery	Automatic recovery		
Possible cause	<ul> <li>Model series code setting error when replacing the main control board of indoor unit.</li> <li>Mismatch between indoor unit model and outdoor unit model in the same system.</li> <li>Myhome configuration code setting error when replacing the main control board of indoor unit</li> <li>Myhome configuration indoor unit and non-Myhome configuration outdoor unit are connected in one system</li> <li>Non-Myhome configured indoor unit and Myhome configured outdoor unit are connected in one system</li> </ul>		
Troubleshooting	Cause 2:1 configurary error whe main contindoor un  Cause 3:1 between i model and model in the system.  Cause 4:1 configurary and non-Not configurary unit are continuity are continuity are continuity and Myhodoutdoor unit connected.  Note:	(1) to set the Myhome code for the main control board of IDU, and power on the unit again  Wismatch and or unit do outdoor unit he same  Wyhome tion indoor unit Myhome tion outdoor unit or indoor unit(2)  Won-Myhome di indoor unit me configured nit are di in one system  Replace the outdoor unit(2)  Replace the outdoor unit(2)	



#### 2.46 U38 - Address code not detected

	Digital display	Display position
Error display	888	Panel, display box, and wired controller
	1) The faulty IDU stops running.	
	2) Other IDUs of the same system: The fan continues i	running, the EEV is closed, and ODU error code "A51" is displayed
Error impact	(V6 platform IDU displays the code "Ed").	
	ODU of the same system: Otherwise, the ODU will dis	play 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 co	ntrol board has not been set
Error recovery	Automatic recovery	
Possible cause	■ The address code has not been set after replacing	g the IDU main control board.
i ossibie eduse	■ The new IDU main control board is damaged.	
Troubleshooting	Use the remote controller or wired controller (1) to set the address code for the main control board of IDU, and power on the unit again  Is the fault cleared?  Yes  Fault cleared  Note 1: For instructions on how to set up addresses for	



2.47 J01 - Mot	or failed more than on	ce			
	Digital	display		Display positio	n
Error display	8		Panel, display box, and wired controller		
	The faulty IDU stops. Other II	OUs of the sam	e system: operat	e normally.	
Error impact	ODU of the same system: ope	erate normally.			
Error trigger	If fan control faults have occu	rred 10 times i	in 120 min (1)		
Error recovery	After troubleshooting, power	on again			
Possible cause	The fan drive faults have caus	sed the motor t	to fail more than	once.	
Troubleshooting	Note:  1. Enter the spot check interfamethods, please refer to this  No.  1 2 3 4 5 6 7		Enter the sinterface of the the fan element of the fault personnel or the fault personnel o	ge fault sample bias error le) and IDU unmatched	
	8	J52	Motor blocking	g protection	
	9	J55		mode setting error	
	6 7 8	J47 J5E J52	IPM (fan modu Motor startup Motor blocking Speed control	le) and IDU unmatched failure g protection	



# 2.48 J1E: IPM (fan module) overcurrent protection

	LED display	Display position
Fault Display		Panel, display box, and wired controller
Fault Impact	The faulty IDU stops. Other IDUs of the same system: operate	e normally.
Tault 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/V  of the IPM.  2) A fault signal output by the IPM protection circuit is detect	W on the IPM exceeds the set overcurrent protection value
Fault Recovery	Automatic recovery	
Possible Cause	<ul> <li>There is no fan wheel installed on the motor.</li> <li>The motor insulation is damaged or motor coils are short-circuited.</li> <li>The fan drive board is damaged.</li> <li>The IDU main control board is damaged.</li> </ul>	
Troubleshooting	on the motor. A load is too le exceeds the print.  Cause 2: Me winding resistate white, and blate power cable circuit or an opin is set to be a large of the company of the	



#### 2.49 J11: instantaneous overcurrent protection for phase current

	LED display	Display position	
Fault Display		Panel, display box, and wired controller	
Fault Impact	The faulty IDU stops. Other IDUs of the same system: operate normally.		
- date impact	ODU of the same system operates normally.		
Fault Trigger	The current value (AC) detected for any phase line of U/V/W of the driver.	on the IPM exceeds the set overcurrent protection value	
Fault Recovery	Automatic recovery		
Possible Cause	<ul> <li>There is no fan wheel installed on the motor.</li> <li>Motor coils are short-circuited, or the motor bearing is worn, resulting in an abnormal increase of motor current</li> <li>The fan drive board is damaged.</li> <li>The IDU main control board is damaged.</li> </ul>		
Troubleshooting	Cause 2: Mewinding resist red, white, an motor power short circuit the motor to create noise to define the data of		

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#### 2.50 J3E - Low bus voltage fault

	Digital display				
Error display		Panel or display b	ox Wired controller		
		Spot check interface	query Error code is not displayed		
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.				
Error impact	ODU of the same system: operate normally.				
Error trigger	When the bus voltage (DC voltage) is belo	When the bus voltage (DC voltage) is below the threshold value of the driver (165 V)			
Error recovery	Automatic recovery				
	■ The input voltage is too low, resulting	ng in low bus voltage.			
	■ The input voltage encounters transic	ent drop and interruption, resu	lting in too low transient bus voltage.		
Possible cause	■ The fan drive board is damaged, so t	the bus voltage detection circu	it becomes abnormal.		
	■ The IDU main control board is dama	ged.			
	the low instance of the lo	use 1: Measure the input voltage of e IDU. If the voltage is significantly wer than the normal value (≤140 V) or the voltage interrupts or drops stantaneously, the power supply is abnormal  ause 2: If the input power supply is mal, and the voltage (DC) between			
	J3E is vo	and N is normal (the normal voltage about 310 V), it indicates that the oltage detection circuit for fan drive board is abnormal (1)  Cause 3: If the error cannot be	Replace the fan drive board (2)		
	cleared after causes 1/2 have been eliminated, the main control board of the IDU is damaged  Replace the main control board of the IDU				
	Note:				
	1. Please refer to the figure below when n	neasuring voltage between P a	nd N. Make sure P/N measuring points a		
	selected according to PCB type.				
Troubleshooting	PCB type 1	PCB ty	ne 2		
Troubleshooting	1 52 3/10 2	. 22 3,			
	P/N measuring point	P/N measuring point	P/N measuring point		
		(front of PCB)	(back of PCB)		
	CN24 [2.0] 2022.1.18	FUSTED TO STATE OF THE PARTY OF			
	2. Please observe the following rule when	replacing the fan drive board:	For units whose fan drive board is welde		

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.



#### 2.51 J31 - High bus voltage fault

	Digital display		Display position
Error display	888		Panel, display box Wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate normally.		
Error impact	ODU of the same system: operate norm	nally.	
Error trigger	When the bus voltage (DC voltage) is gr	reater than the threshold value	of the driver (450V)
Error recovery	Automatic recovery		
Possible cause	<ul> <li>The input voltage is too high, resulting in high bus voltage.</li> <li>Instantaneous high input voltage.</li> <li>The fan drive board is damaged, so the bus voltage detection circuit becomes abnormal.</li> <li>The IDU main control board is damaged.</li> </ul>		
	J31  Cause 2: normal, at P and N is about voltage of b  Cause 3: If after cause	Measure the input voltage of voltage is significantly higher formal value (≥318 V) or the creases instantaneously, the ver supply is abnormal  If the input power supply is not the voltage (DC) between s normal (the normal voltage 310 V), it indicates that the detection circuit for fan drive oard is abnormal (1)  If the error cannot be cleared as 1/2 have been eliminated, control board of the IDU is damaged	Replace the fan drive board (2)  Replace the main control board of the IDU
	Please refer to the figure below when selected according to PCB type.	n measuring voltage between P	and N. Make sure P/N measuring points
Troubleshooting	PCB type 1	PCB	type 2
	P/N measuring point	P/N measuring point (front of PCB)	P/N measuring point (back of PCB)
	CN24 [2.0] 2022.1.18	FUSES FSS156A Control Control	
	2. Please observe the following rule when replacing the fan drive board: For units whose		a: For units whose fan drive board is wel
	and the material of the second	ha fan datus haar 1 - 1 - 1	rol board becomes faulty, the whole con

board has to be replaced.



### 2.52 J43 - Phase current sample bias error

	Digital display	Display position	
Error display	888	Panel, display box Wired controller	
Error impact	The faulty IDU stops. Other IDUs of the same system: operat	te normally.	
Litoi impact	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	<ul><li>The current sampling circuit of the fan drive board is d</li><li>The IDU main control board is damaged.</li></ul>	amaged.	
Troubleshooting	Replace the fan drive board. Is the fault cleared? No  Replace the main control board of the IDU  Note 1: Please observe the following rule when replacing the welded onto the main control board, if either the fan drive by		



#### 2.53 J45 - Motor and IDU unmatched

	Digital display	Display position	
Error display	888	Panel, display box, and wired controller	
Error impact	The faulty IDU stops. Other IDUs of the same system: operate	e normally.	
	ODU of the same system: operate normally.		
Error trigger	If the motor code sent by the IDU main control board is not for	ound in the fan driver	
Error recovery	Automatic recovery		
Possible cause	<ul><li>Unit model code or capacity code is incorrectly set.</li><li>The fan drive board is wrong or damaged.</li></ul>		
Troubleshooting	Use the dedicated tooling (1) to set the model code and capacity code for the main control board of IDU according to the IDU model or nominal capacity, and power on the unit again    Sthe fault cleared   Fault cleared	rive board: For units whose fan drive board is welded onto	



#### 2.54 J47 - IPM (fan module) and IDU unmatched

	Digital display	Display position
Error display	888	Panel, display box, and wired controller
Error impact	The faulty IDU stops. Other IDUs of the same system: operate	normally.
Error impact	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	<ul><li>Unit model code or capacity(HP) code is incorrectly set.</li><li>The fan drive board is wrong or damaged.</li></ul>	
Troubleshooting	Use the dedicated tooling (1) to set the model code and capacity code for the main control board of IDU according to the IDU model or nominal capacity, and power on the unit again    Sthe fault cleared   Standard Color	rive board: For units whose fan drive board is welded onto



#### 2.55 J5E - Motor startup failure

2.55 J5E - Motor					
	Digital display Display position				
Error display	Panel, display box				
	Wired controller				
_	The faulty IDU stops. Other IDUs of the same system: operate normally.				
Error impact	ODU of the same system: operate normally.				
Error trigger	Motor startup failure				
Error recovery	Automatic recovery				
	■ 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				
Possible cause	■ Fan blade is not installed				
	■ The fan drive module is damaged.				
	■ The IDU main control board is damaged.				
	Cause 1: Measure the inter-turn winding resistance between the red, white, and black wires of the motor power cable. If there is a short circuit or an open circuit, the motor is damaged  Cause 2: The fan is blocked by foreign matters and cannot rotate  Remove foreign matter.  Cause 3: The unit's model code or capacity code are set incorrectly  Reset the code				
Troubleshooting	Cause 4: The fan blades are not installed  Install the fan blade				
	Cause 5: The fan drive board is damaged  Replace the fan drive board (1)				
	Cause 6: If the error cannot be cleared after all other causes have been eliminated, the main control board of the IDU is damaged  Replace the main control board of the IDU				
	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.				



# 2.56 J52: motor blocking protection

	blocking protection		
	LED display	Display position	
Fault Display		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 motor is blocked.		
Fault Recovery	Automatic recovery		
Possible Cause	<ul> <li>There is no fan wheel installed on the motor.</li> <li>The motor shaft gets stuck.</li> <li>The fan drive board is damaged.</li> <li>The IDU main control board is damaged.</li> </ul>		
Troubleshooting	Cause 2: Tologged by  Cause 3: The data after thave been e	Assemble and fix the matched fan wheel and motor, and then start the unit.  The motor shaft is y foreign material  Replace the motor  Replace the fan drive board (1)  Replace the main control board of the IDU board is damaged  Fan drive board: For units whose fan drive board is welded	



#### 2.57 J55 - Speed control mode setting error

	Digital display	Display position
Error display	888	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 p flow control mode.	rogram sets the fan speed according to the constant ai
Error recovery	Automatic recovery	
	■ The IDU model is set incorrectly.	
Possible cause	■ The IDU main control board is damaged.	
Troubleshooting	Use the dedicated tooling (1) to set the model code for the main control board of IDU, and power on the unit again  Is the fault cleared?  Yes  Fault cleared	Replace the main control board of the IDU
	Note 1: For specialized tooling and instructions, please contac	t your local dealer or technical support personnel.

# Quantum Series (AU) 2.58 J6E - Phase lack protection of motor



		Display position
rror display		Panel, display box Wired controller
	<del> </del>	
The faulty IDU stops. Other IDUs of the		te normally.
ODU of the same system: operate nor		
rror trigger When the motor phase lacks protection	on	
ror recovery Automatic recovery		
■ The motor plug connecting to the	ie U/V/W port in the ID	DU main control board is loose.
ssible cause   The fan drive board is damaged		
■ The IDU main control board is d	amaged.	
		Replace the fan drive board (1)  Replace the fan drive board (1)  Replace the main control board of the IDLI



# 3 Appendix

#### **3.1 Temperature Sensor Resistance Characteristics**

Table 9.1: Indoor temperature sensors resistance characteristics

R25=10KΩ±3% B25/50=4100K±3%

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



Table 9.1: Indoor temperature sensors resistance characteristics (continued)

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



Table 9.1: Indoor temperature sensors resistance characteristics (continued)

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



#### 3.2 Ambient Temperature and Standard Saturation Pressure of R410A

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

	Table 9.2: Ambient Temperature and Standard Saturation Pressure of R410A (saturated vapor state)							
Ambient Temperature (°C)	Saturated gauge pressure (kPa)	Saturated gauge pressure (psi)		Saturated gauge pressure (kPa)	Saturated gauge pressure (psi)	Ambient Temperature (°C)	Saturated gauge pressure (kPa)	Saturated gauge pressure (psi)
-70	-65.879	-9.5549	-30	168.02	24.37	10	983.49	142.64
-69	-63.608	-9.2256	-29	179.3	26.005	11	1015.9	147.35
-68	-61.22	-8.8793	-28	190.93	27.693	12	1049.1	152.15
-67	-58.711	-8.5154	-27	202.94	29.434	13	1083	157.07
-66	-56.077	-8.1332	-26	215.32	31.23	14	1117.6	162.09
-65	-53.312	-7.7322	-25	228.09	33.081	15	1153	167.22
-64	-50.411	-7.3115	-24	241.25	34.99	16	1189.1	172.47
-63	-47.371	-6.8706	-23	254.81	36.957	17	1226	177.82
-62	-44.186	-6.4087	-22	268.78	38.983	18	1263.8	183.29
-61	-40.852	-5.925	-21	283.17	41.07	19	1302.3	188.88
-60	-37.362	-5.4189	-20	297.98	43.218	20	1341.6	194.58
-59	-33.713	-4.8896	-19	313.23	45.43	21	1381.8	200.41
-58	-29.898	-4.3363	-18	328.91	47.705	22	1422.7	206.35
-57	-25.913	-3.7583	-17	345.05	50.046	23	1464.6	212.42
-56	-21.752	-3.1548	-16	361.65	52.453	24	1507.3	218.61
-55	-17.409	-2.525	-15	378.71	54.928	25	1550.8	224.93
-54	-12.88	-1.868	-14	396.26	57.472	26	1595.3	231.37
-53	-8.1571	-1.1831	-13	414.28	60.086	27	1640.6	237.95
-52	-3.2361	-0.46936	-12	432.8	62.772	28	1686.8	244.65
-51	1.8893	0.27402	-11	451.82	65.531	29	1734	251.49
-50	7.2252	1.0479	-10	471.35	68.364	30	1782.1	258.47
-49	12.777	1.8532	-9	491.4	71.272	31	1831.1	265.58
-48	18.552	2.6908	-8	511.98	74.257	32	1881.1	272.83
-47	24.556	3.5615	-7	533.1	77.32	33	1932.1	280.23
-46	30.794	4.4663	-6	554.76	80.462	34	1984	287.76
-45	37.274	5.4062	-5	576.99	83.685	35	2037	295.44
-44	44.002	6.382	-4	599.77	86.99	36	2091	303.27
-43	50.985	7.3947	-3	623.13	90.378	37	2146	311.25
-42	58.228	8.4453	-2	647.08	93.851	38	2202	319.37
-41	65.739	9.5347	-1	671.62	97.41	39	2259.1	327.66
-40	73.525	10.664	0	696.76	101.06	40	2317.3	336.09
-39	81.592	11.834	1	722.51	104.79	41	2376.5	344.69
-38	89.947	13.046	2	748.89	108.62	42	2436.9	353.44
-37	98.598	14.3	3	775.9	112.53	43	2498.4	362.36
-36	107.55	15.599	4	803.55	116.54	44	2561	371.45
-35	116.81	16.942	5	831.85	120.65	45	2624.8	380.7
-34	126.39	18.332	6	860.82	124.85	46	2689.8	390.12
-33	136.3	19.768	7	890.45	129.15	47	2755.9	399.71
-32	146.53	21.252	8	920.77	133.55	48	2823.3	409.48
-31	157.1	22.786	9	951.78	138.04	49	2891.8	419.43



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

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

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

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



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

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



#### 3.3 Ambient Temperature and Standard Saturation Pressure of R32

Table 9.4: Ambient Temperature and Standard Saturation Pressure of R32

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



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

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



#### 3.4 Sensor codes and definitions applicable to the table

Table 9.5: Sensor codes and definitions

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

<sup>\*</sup> Indicates that this sensor is only available for Fresh Air Processing Unit

T-LSAC-AU Ver. 2025-11

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Note: Product specifications change from time to time as product improvements and

developments are released and may vary from those in this document.





