



# Technical & Service Manual

## MINI ARV DC Inverter T1

ARV-H080/NR1A

ARV-H120/SR1DCS7

ARV-H100/NR1A

ARV-H140/SR1DCS7

ARV-H120/NR1A

ARV-H160/SR1DCS7

ARV-H140/NR1A

ARV-H140/SR1DCSA

ARV-H160/NR1A

ARV-H160/SR1DCSA

ARV-H080/NR1

ARV-H220/SR1DCS7

ARV-H100/NR1

ARV-H260/SR1DCS7

ARV-H120/NR1

ARV-H220/5R1A

ARV-H140/NR1

ARV-H280/5R1A

ARV-H160/NR1

## CONTENT

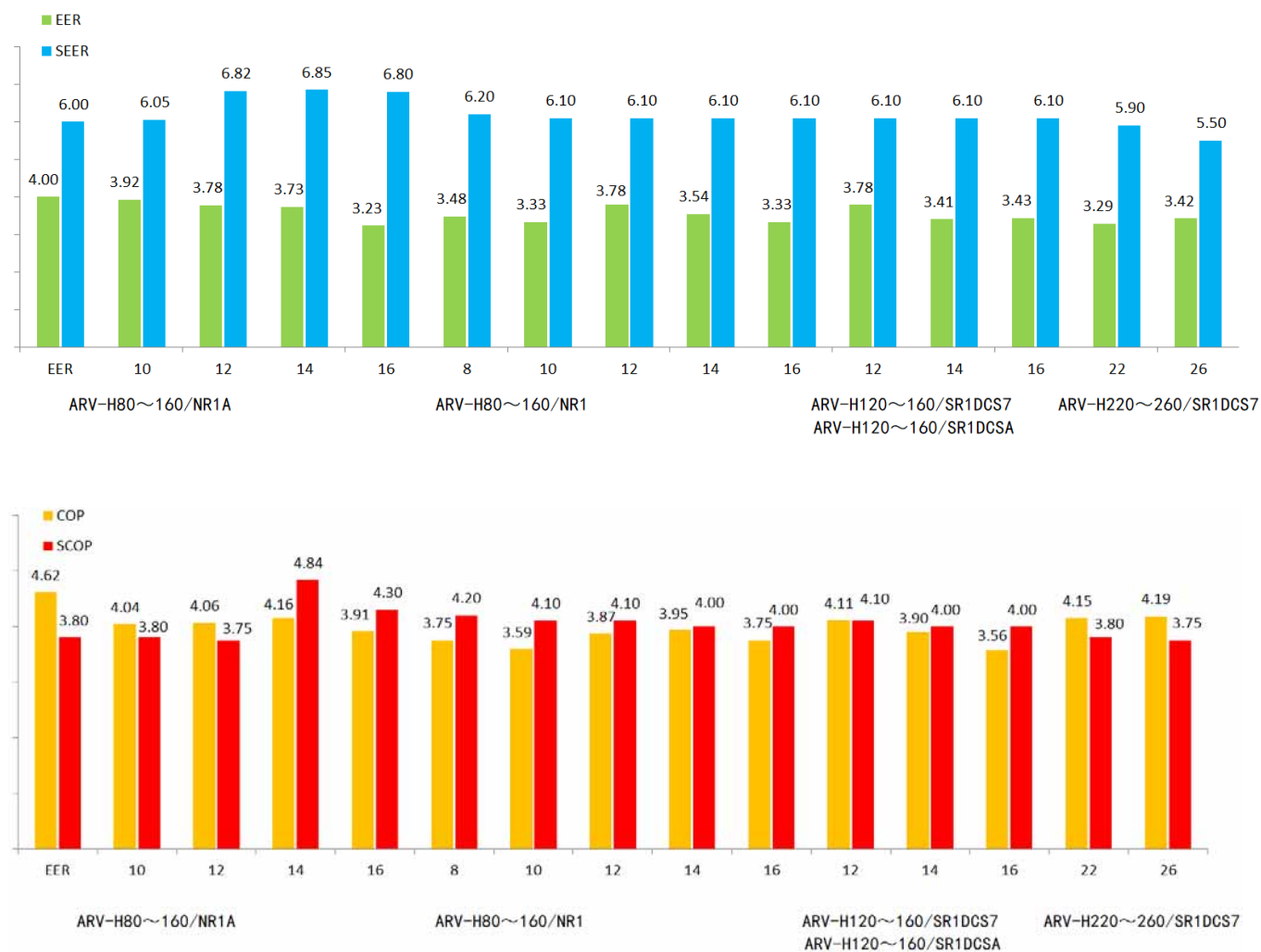
|                                            |           |
|--------------------------------------------|-----------|
| <b>Part1 General Information .....</b>     | <b>3</b>  |
| <b>Part2 Outdoor Engineering Data.....</b> | <b>8</b>  |
| <b>Part3 Refrigerant Circuit.....</b>      | <b>10</b> |
| <b>Part4 Installation .....</b>            | <b>14</b> |
| <b>Part5 Commissioning .....</b>           | <b>14</b> |
| <b>Part6 Function and Control.....</b>     | <b>45</b> |
| <b>Part7 Trouble shooting .....</b>        | <b>50</b> |
| <b>更新记录表 .....</b>                         | <b>75</b> |

# Part1 General Information

## 1.Product features and benefits

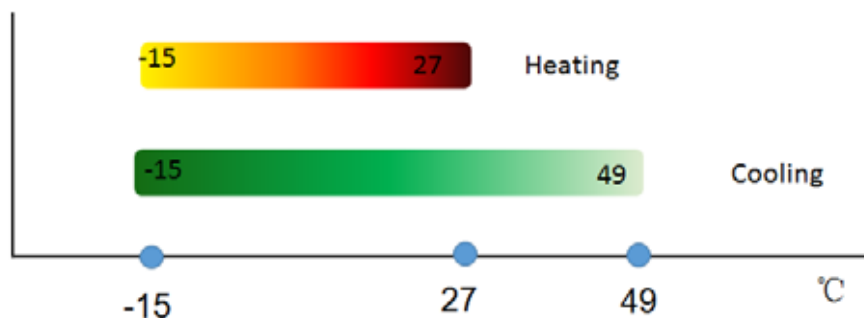
### 1.1 High EER/COP energy saving

High EER/COP means the same capacity but the lower power input, Lower power consumption, lower cost.



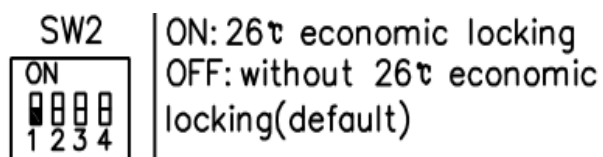
## 1.2 Wide operation range

Operates stably under extreme conditions ranging from - 15 to 49.



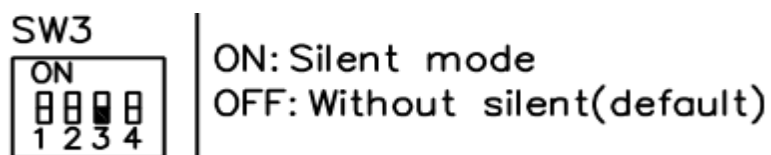
## 1.3 26°C economic locking

All indoor units will run as energy saving mode state.



## 1.4 Silent Mode-ODU

About 3 dB reduce than normal mode, Little influence with your neighbors.



## 1.5 Refrigerant cooling

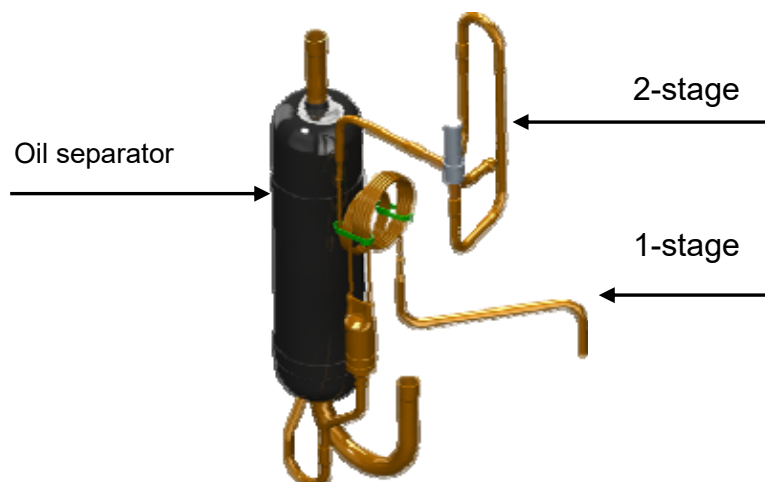
Resulted in reduce air flow resistance and ensures stability of PCB temperature.



### 1.6 2 -stage oil return

1-stage capillary oil return: Normal environment high efficiency and low consumption.

2-stage solenoid valve oil return: Poor environment Guarantee oil return, high efficiency and reliability.



### 1.7 Auxiliary heating belt

Auxiliary heating belt can increase compressor oil temperature in the winter, make sure oil not freeze to protect compressor



### 1.8 Intelligent defrosting

AUX intelligent defrosting technology, extend the heating operation and decrease the frequency of defrosting. Result in stable room temperature, offer comfort life

### 1.9 Diversification of installation

A various of indoor units can be connected together, 2~9 indoor units can be freely combined together in one systems. So Mini VRF is the best choose for some place which had 2 ~ 9 rooms.

### 1.10 Automatic address setting

After install indoor and outdoor unit , Power on the system , can set SW2 -2 to ON , means you had chosen the auto addressing function ,then the system will auto distribute the indoor address instead of manual setting , more convenient for commissioning .

## 2. Product lineup

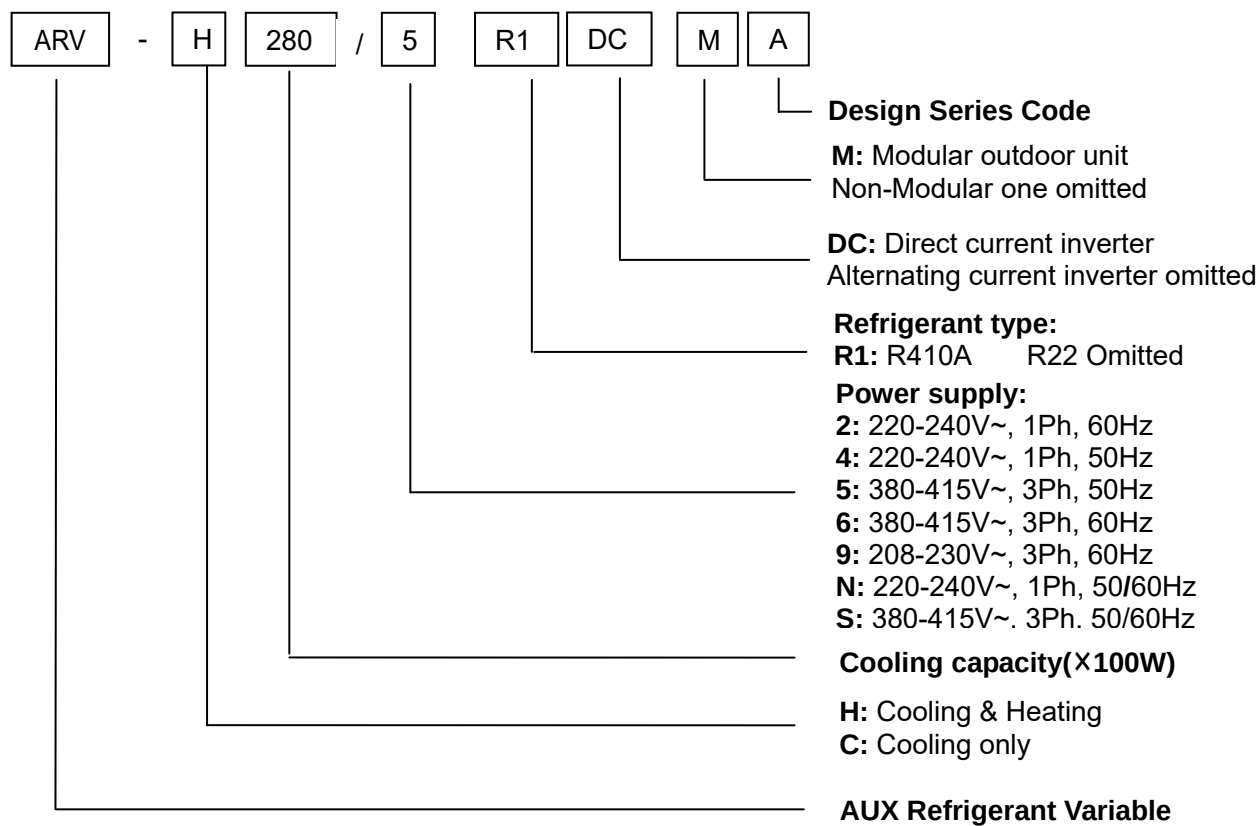
### 2.1 Outdoor unit

| Appearance                                                                          | Capacity<br>( cooling/ heating ) | Power                    | Model                                |
|-------------------------------------------------------------------------------------|----------------------------------|--------------------------|--------------------------------------|
|    | 8/9                              | 220V-240V/1-50<br>&60Hz  | ARV-H80/NR1A                         |
|                                                                                     | 10/12                            |                          | ARV-H100/NR1A                        |
|                                                                                     | 12.1/14                          |                          | ARV-H120/NR1A                        |
|    | 14/16                            |                          | ARV-H140/NR1A                        |
|                                                                                     | 15.5/18                          |                          | ARV-H160/NR1A                        |
|  | 8/9                              |                          | ARV-H80/NR1                          |
|                                                                                     | 10/11.5                          |                          | ARV-H100/NR1                         |
|  | 12.3/13.2                        | 380-415V/3N ~<br>50&60Hz | ARV-H120/NR1                         |
|                                                                                     | 14/16                            |                          | ARV-H140/NR1                         |
|                                                                                     | 16/18                            |                          | ARV-H160/NR1                         |
|                                                                                     | 12.3/14                          |                          | ARV-H120/SR1DCS7                     |
|                                                                                     | 14/16                            |                          | ARV-H140/SR1DCS7<br>ARV-H140/SR1DCSA |
|                                                                                     | 16/18                            |                          | ARV-H160/SR1DCS7<br>ARV-H160/SR1DCSA |
|                                                                                     | 22.4/24.5                        |                          | ARV-H220/SR1DCS7                     |
|  | 26.0/28.5                        |                          | ARV-H260/SR1DCS7                     |
|                                                                                     | 22.4/24.5                        | 380-415V/3N ~<br>50HZ    | ARV-H220/5R1A                        |
|                                                                                     | 26.0/28.5                        |                          | ARV-H280/5R1A                        |

## 2.2 Indoor unit

※please refer to indoor units technical manual

## 2.3 Nomenclatures



## Part2 Outdoor Engineering Data

### 1. Specifications

※ Please refer to EXCEL

### 2. Capacity table

ARV-H80/NR1A、ARV-H100/NR1A、ARV-H120/NR1A、ARV-H140/NR1A、ARV-H160/NR1A

ARV-H80/NR1、ARV-H100/NR1、ARV-H120/NR1、ARV-H140/NR1、ARV-H160/NR1、

ARV-H120/SR1DCS7、ARV-H140/SR1DCS7、ARV-H160/SR1DCS7

ARV-H140/SR1DCSA、ARV-H160/SR1DCSA

ARV-H224/SR1DCS7、ARV-H260/SR1DCS7

ARV-H220/5R1A、ARV-H280/5R1A

※ Cooling and Heating capacity table see another handbook in detail

※ The specifications are subject to change without prior notice. Final specifications please refer to technical specification provided by sales representative

### 3. Connection ratio

Connection ratio is 50~130%

|                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------|
| $\frac{\sum \text{Total capacity of indoor units (one system)}}{\sum \text{Capacity of outdoor units(one system)}} = \text{Connection ration}$ |
|------------------------------------------------------------------------------------------------------------------------------------------------|

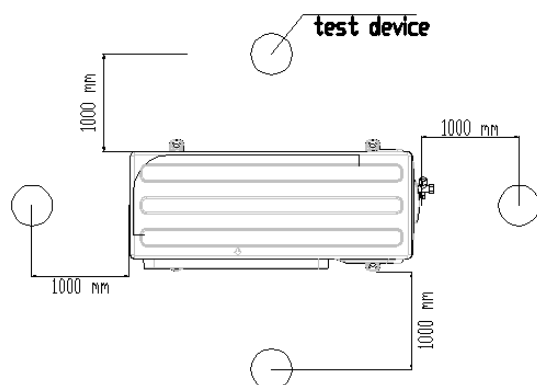
### 4. Long Piping Length

※ Please refer to Installation & Operation Manual

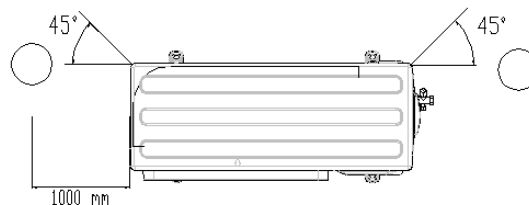
### 5. Sound level

1. The operating condition are assumed to be standard (JIS Condition).
2. These operating values were obtained in a dead room (conversion values).  
Sound level will vary depending on a range of factors such as the construction (acoustic absorption coefficient) of the particular room in which the equipment installed.
3. The result is the biggest one of four testing device.
4. Test height (Unit height +1)/2m, horizontal distance: 1m.

## Vertical View



## side view

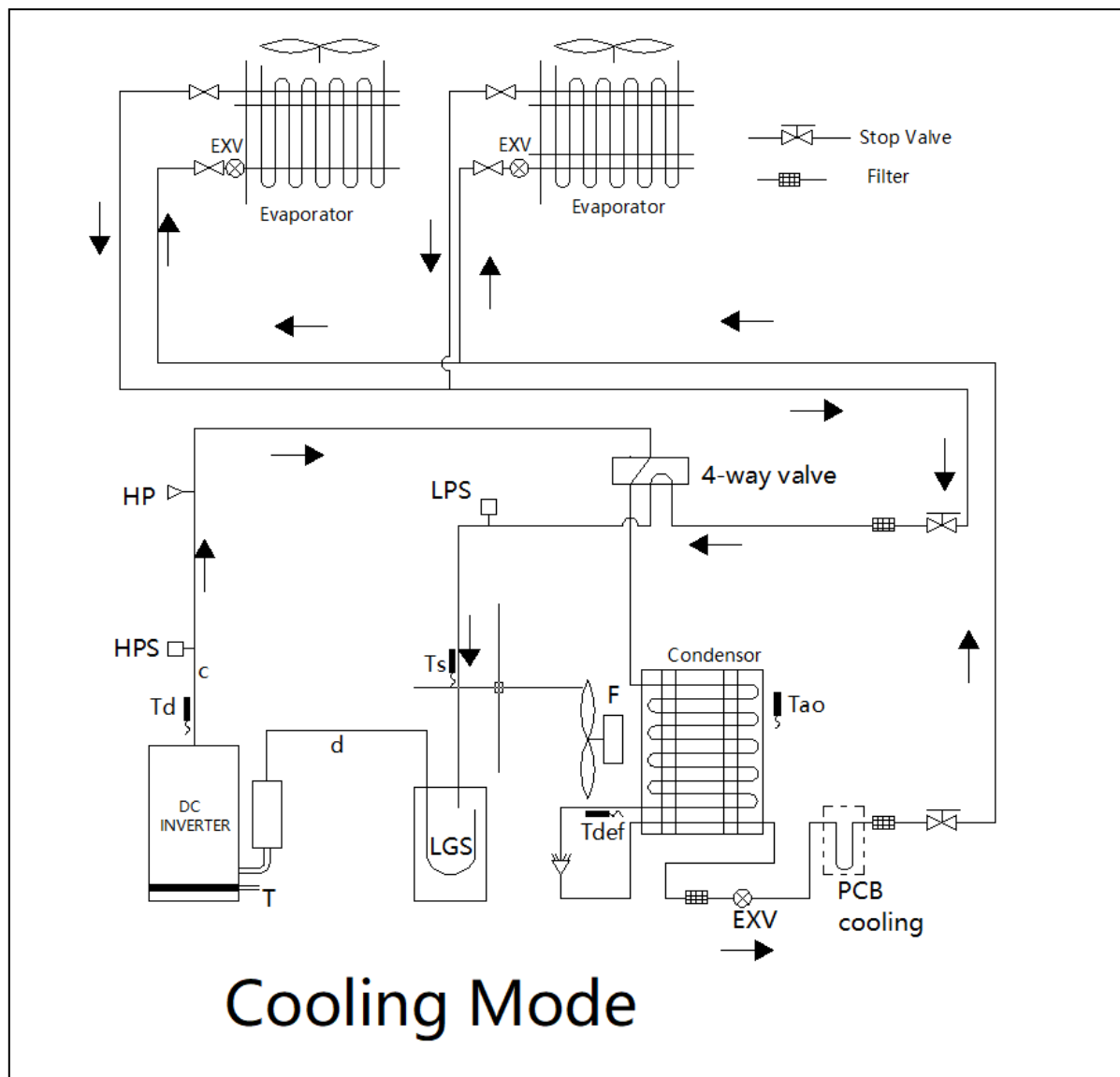


| Model            | Sound (dB) |
|------------------|------------|
| ARV-H80/NR1A     | 54         |
| ARV-H100/NR1A    | 54         |
| ARV-H120/NR1A    | 56         |
| ARV-H140/NR1A    | 56         |
| ARV-H160/NR1A    | 56         |
| ARV-H80/NR1      | 56         |
| ARV-H100/NR1     | 56         |
| ARV-H120/NR1     | 57         |
| ARV-H140/NR1     | 57         |
| ARV-H160/NR1     | 57         |
| ARV-H120/SR1DCS7 | 56         |
| ARV-H140/SR1DCS7 | 57         |
| ARV-H140/SR1DCSA |            |
| ARV-H160/SR1DCS7 | 57         |
| ARV-H160/SR1DCSA |            |
| ARV-H224/SR1DCS7 | 62         |
| ARV-H260/SR1DCS7 | 62         |
| ARV-H220/5R1A    | 60         |
| ARV-H280/5R1A    | 60         |

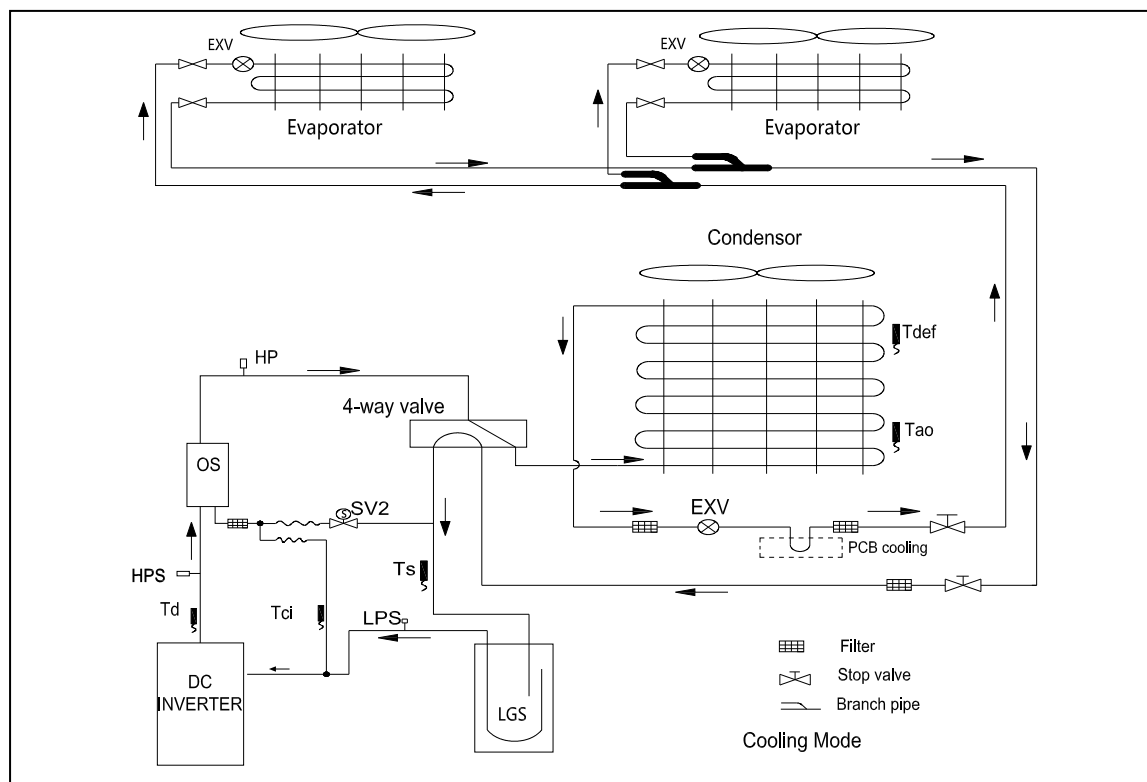
## Part3 Refrigerant Circuit

### 1.Piping diagrams

#### 1.1 Cooling Mode



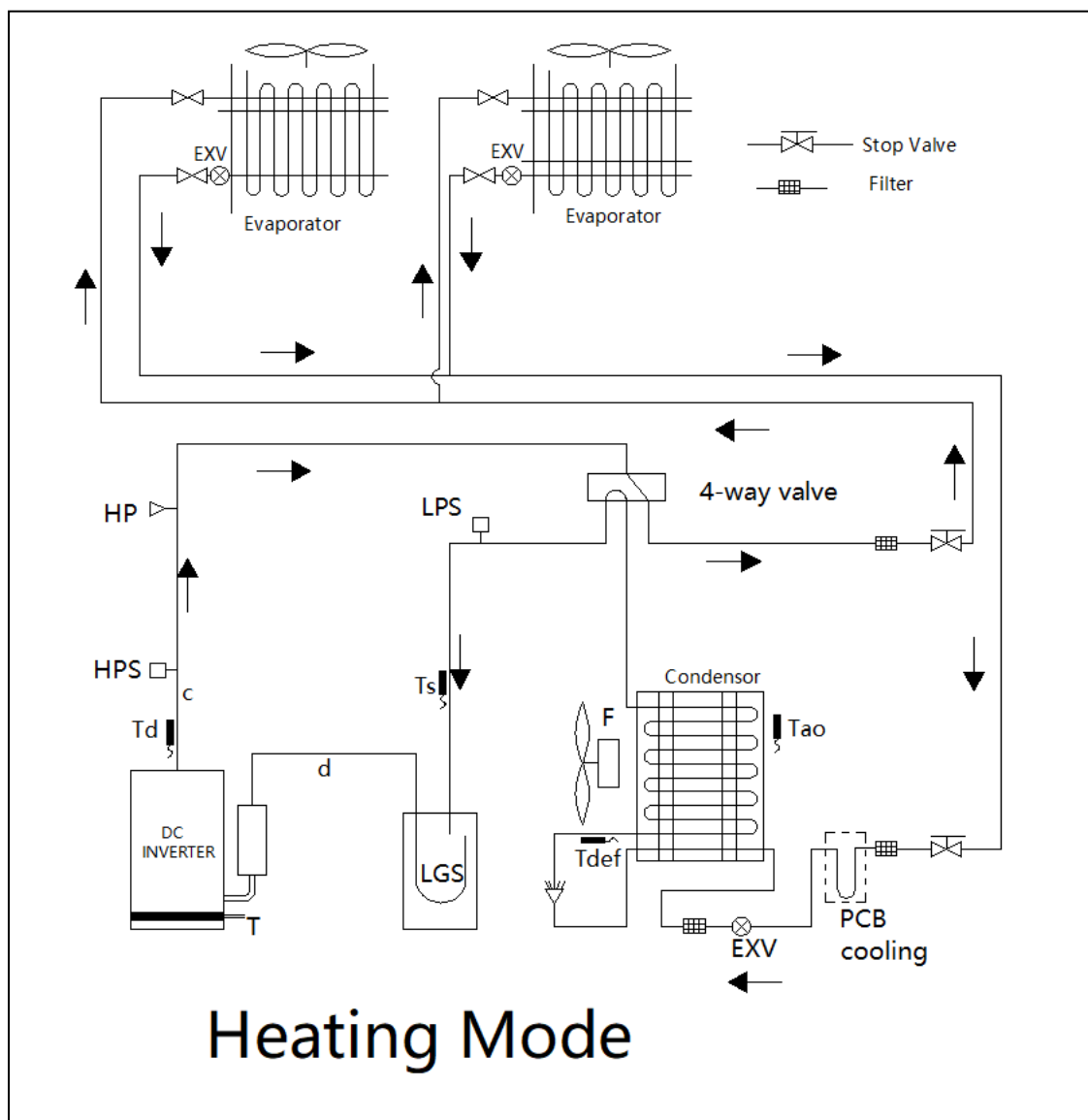
| Model         |
|---------------|
| ARV-H80/NR1A  |
| ARV-H100/NR1A |
| ARV-H120/NR1A |



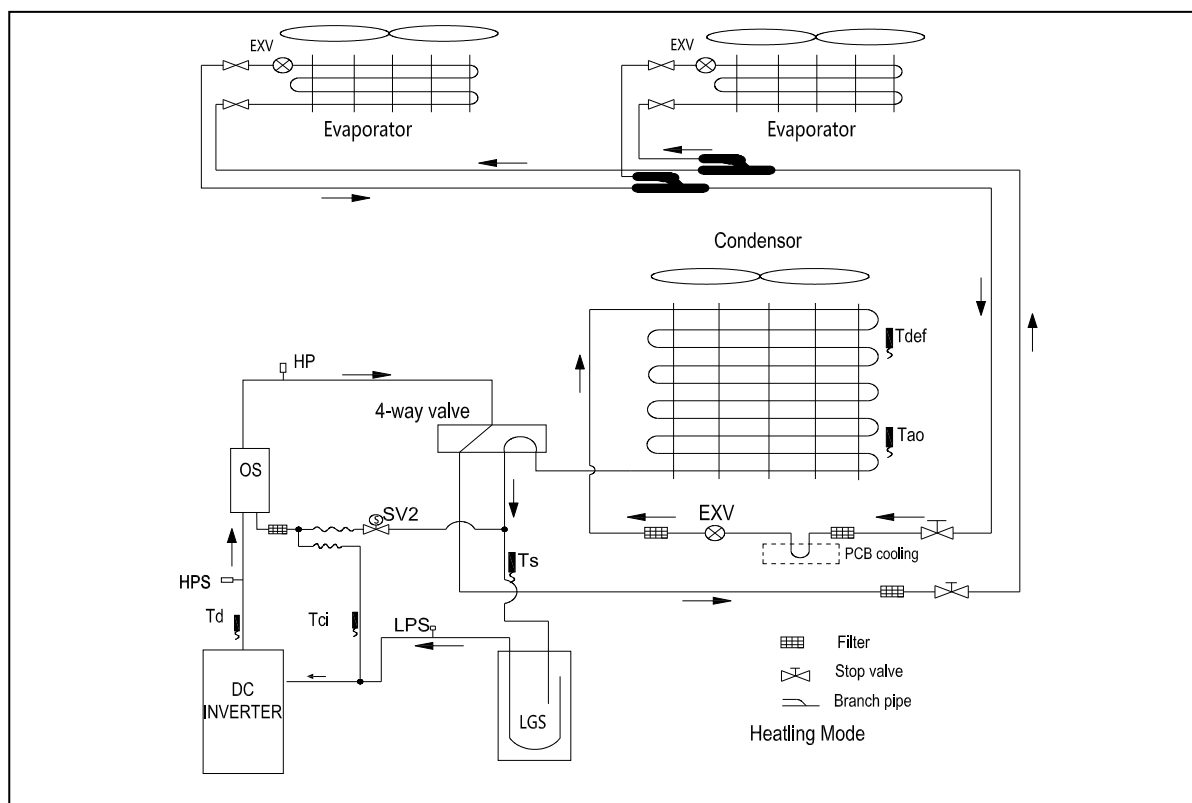
| Model            | Model            |
|------------------|------------------|
| ARV-H140/NR1A    | ARV-H140/SR1DCS7 |
| ARV-H160/NR1A    | ARV-H140/SR1DCSA |
| ARV-H80/NR1      | ARV-H160/SR1DCS7 |
| ARV-H100/NR1     | ARV-H160/SR1DCSA |
| ARV-H120/NR1     | ARV-H224/SR1DCS7 |
| ARV-H140/NR1     | ARV-H260/SR1DCS7 |
| ARV-H160/NR1     | ARV-H220/5R1A    |
| ARV-H120/SR1DCS7 | ARV-H280/5R1A    |

| Comp. | Component description      | Comp. | Component description                  |
|-------|----------------------------|-------|----------------------------------------|
| Td    | Exhaust temperature sensor | LGS   | Gas-liquid separator                   |
| HPS   | High pressure switch       | Ts    | Suction temperature sensor             |
| OS    | Oil separator              | EXV   | Electronic expansion valve             |
| HP    | High pressure sensor       | Tdef  | Defrost temperature sensor             |
| SV2   | Oil return valve           | Tao   | Outside environment temperature sensor |
| Tci   | Oil temperature sensor     | LPS   | Low pressure switch                    |

## 1.2 Heating Mode



| Model         |
|---------------|
| ARV-H80/NR1A  |
| ARV-H100/NR1A |
| ARV-H120/NR1A |



| Model            | Model            |
|------------------|------------------|
| ARV-H140/NR1A    | ARV-H140/SR1DCS7 |
| ARV-H160/NR1A    | ARV-H140/SR1DCSA |
| ARV-H80/NR1      | ARV-H160/SR1DCS7 |
| ARV-H100/NR1     | ARV-H160/SR1DCSA |
| ARV-H120/NR1     | ARV-H224/SR1DCS7 |
| ARV-H140/NR1     | ARV-H260/SR1DCS7 |
| ARV-H160/NR1     | ARV-H220/5R1A    |
| ARV-H120/SR1DCS7 | ARV-H280/5R1A    |

| Comp. | Description                | Comp. | Description                            |
|-------|----------------------------|-------|----------------------------------------|
| Td    | Exhaust temperature sensor | LPS   | Low pressure switch                    |
| HPS   | High pressure switch       | LGS   | Gas-liquid separator                   |
| OS    | Oil separator              | Ts    | Suction temperature sensor             |
| HP    | High pressure sensor       | EXV   | Electronic expansion valve             |
| SV2   | Oil return valve           | Tdef  | Defrost temperature sensor             |
| Tci   | Oil temperature sensor     | Tao   | Outside environment temperature sensor |

## Part4 Installation

※ Please refer to the installation & operation manual

## Part5 Commissioning

### 1. Preparatory work

#### 1.1 Inspection and confirmation before commissioning

- ✧ Confirm that refrigeration piping and communication wire of indoor and outdoor units have been connected to the same refrigeration system in order avoid unnecessary malfunctions.
- ✧ Confirm power voltage is within  $\pm 10\%$  rated voltage.
- ✧ Confirm that the power wire and control wire are correctly connected, the power phase sequence of outdoor unit is corrected, and the outdoor unit can detect each indoor unit.
- ✧ Confirm wired controller is properly connected.
- ✧ Confirm all units have passed nitrogen pressure-keeping test for 24 hours.
- ✧ Confirm the system has been carried out vacuum drying and charged with refrigeration as required.

#### 1.2 Preparation before start up

- ✧ Turn on power switches of outdoor unit in advance, and keep connected for a minimum of 8 hours to ensure refrigerant oil is sufficiently heated.
- ✧ Turn on all valves. If valves are not fully open unit may be damaged.
- ✧ All dial switches of indoor / outdoor units have been set according to the technical requirements.

#### 1.3 Commissioning

Inspection list of trial run:

- ✧ Confirm the fan impeller is rotating according to its intended route and turns smoothly.
- ✧ Check for abnormal noise during operation of refrigerant system and compressor.
- ✧ Confirm drainage is smooth and its lift pump is operational.
- ✧ Confirm operating current is within the allowed range.

- ✧ Confirm each operating parameter is within the range permitted by the equipment.

**Note:** Separately test cooling mode and heating mode to judge the stability and reliability of the system.

#### 1.4 Refrigerant leakage caution

This air conditioner adopts R410A as refrigerant, which is safe and noncombustible.

R410A critical thickness: 0.3kg/m<sup>3</sup> (Critical thickness: the max thickness of Freon without any harm to person).

Calculate the critical thickness through following steps, and take necessary actions.

- 1) Calculate the refrigerant charge volume A, A= factory charge volume + additional charge volume
- 2) Calculate the indoor area volume (B) (as the minimum volume)
- 3) Calculate the refrigerant thickness,  $A/B \leq$  critical thickness 0.3kg/m<sup>3</sup>.

**Note:**

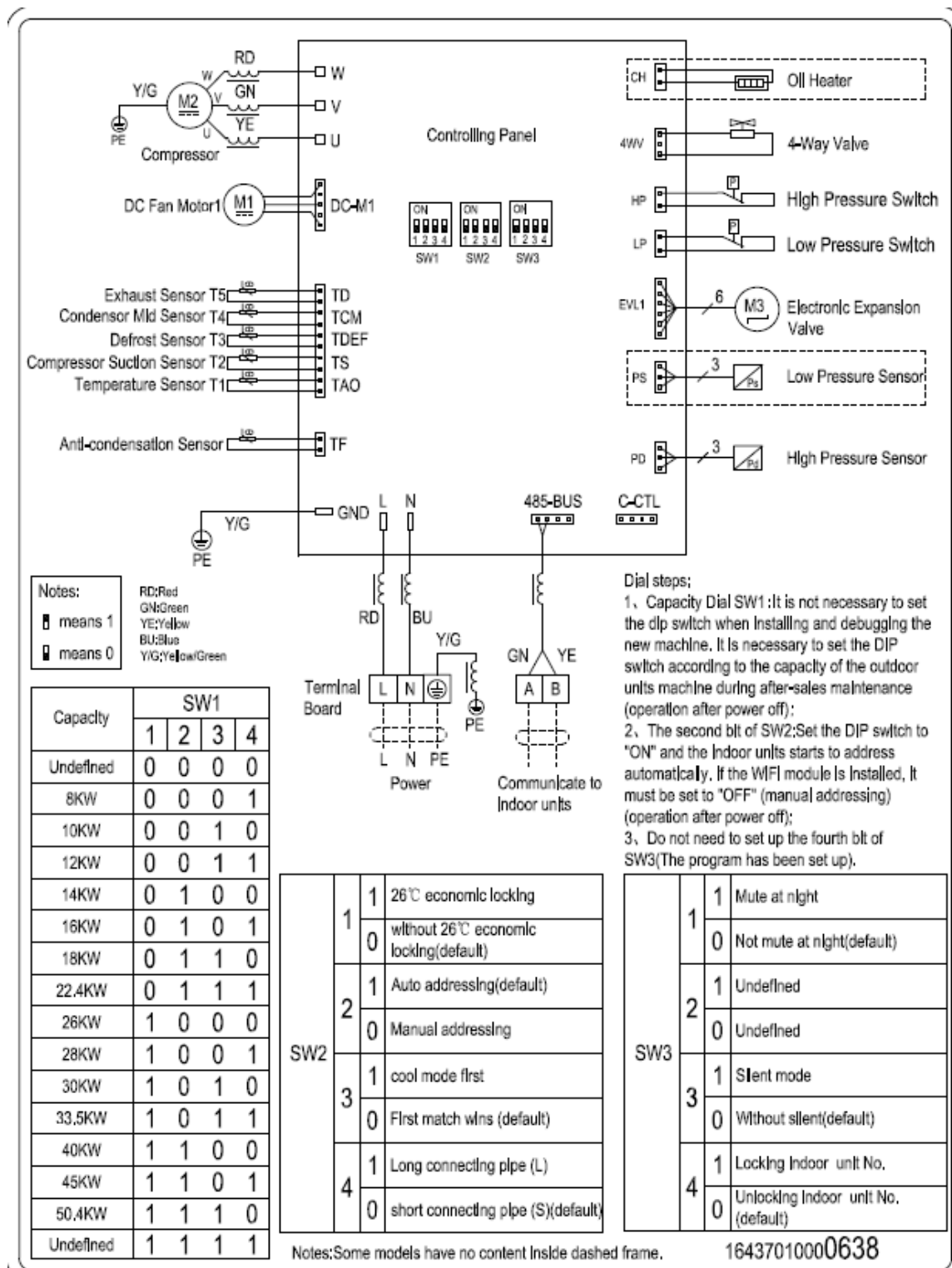
In winter, supply power 6 hours in advance for initial operation so that crankshaft case can be preheated in advance.

In winter, after main power supply is interrupted for 6 hours, conduct trial operation again only after 2.5 hours of power-on.

## 2. Electrical schematic diagram

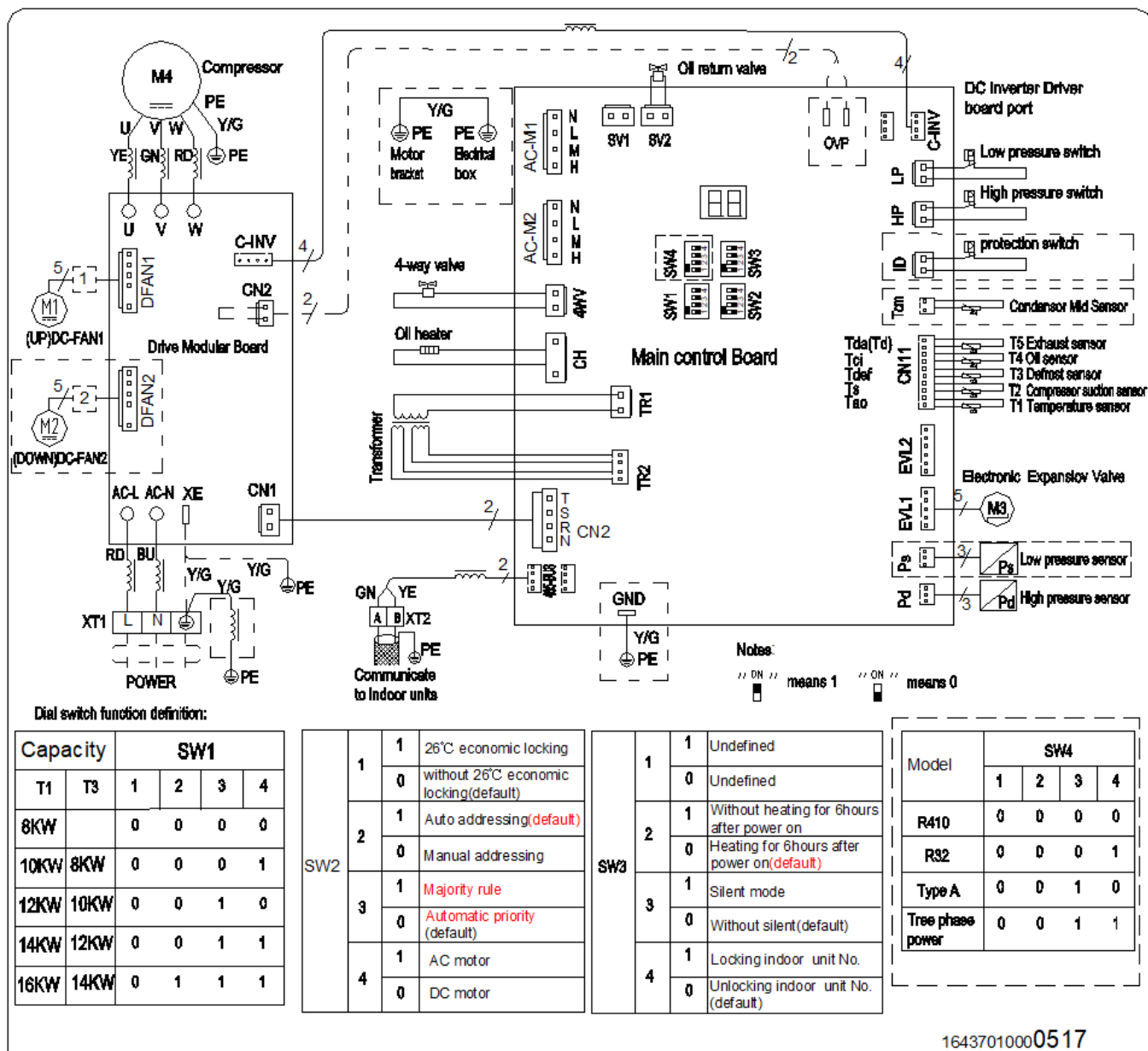
### 2.1 ARV-H80/NR1A、ARV-H100/NR1A、ARV-H120/NR1A、ARV-H140/NR1A、

### ARV-H160/NR1A



## 2.2 ARV-H80/NR1、ARV-H100/NR1 、ARV-H120/NR1 、ARV-H140/NR1A 、

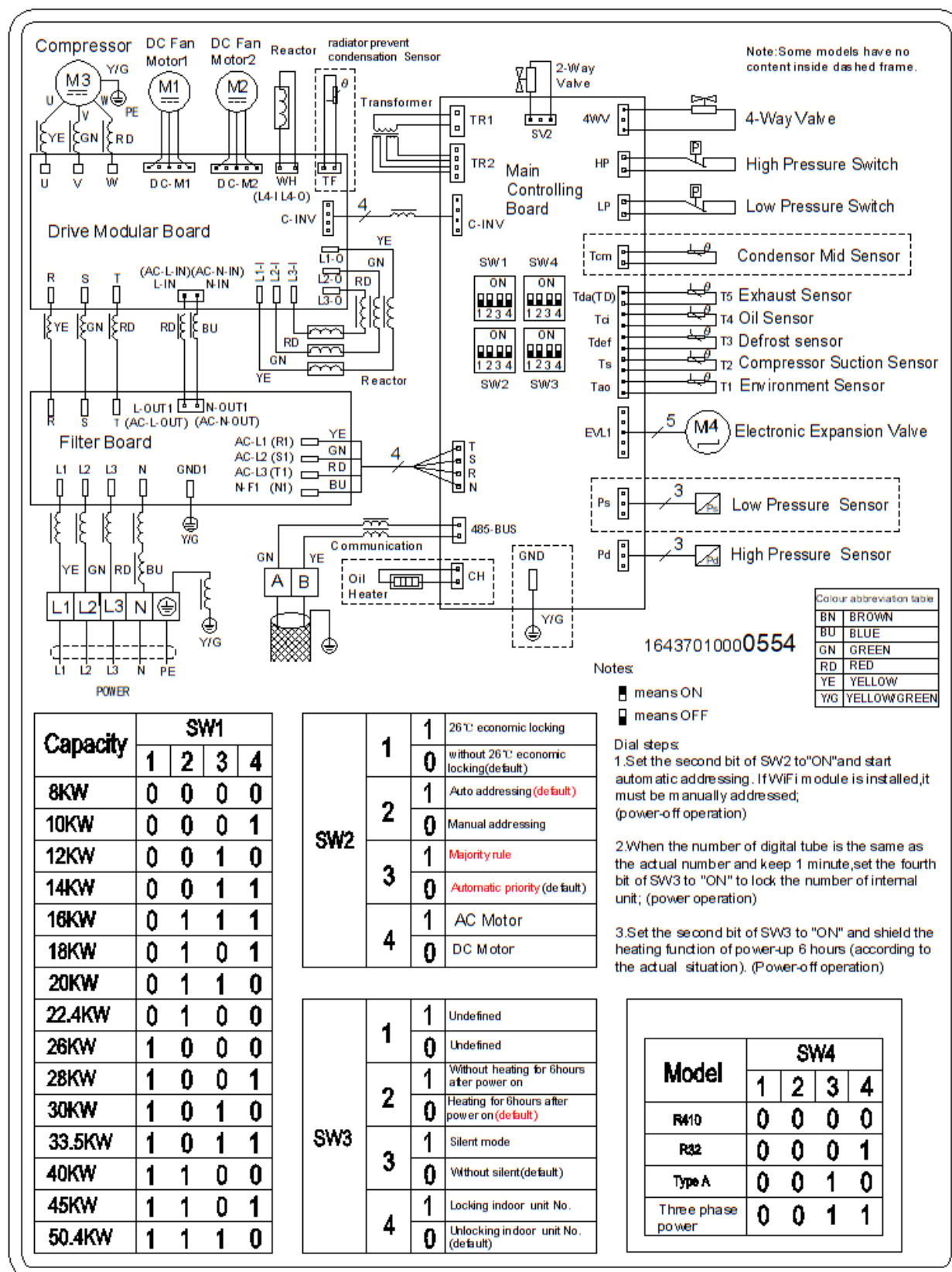
## ARV-H160/NR1



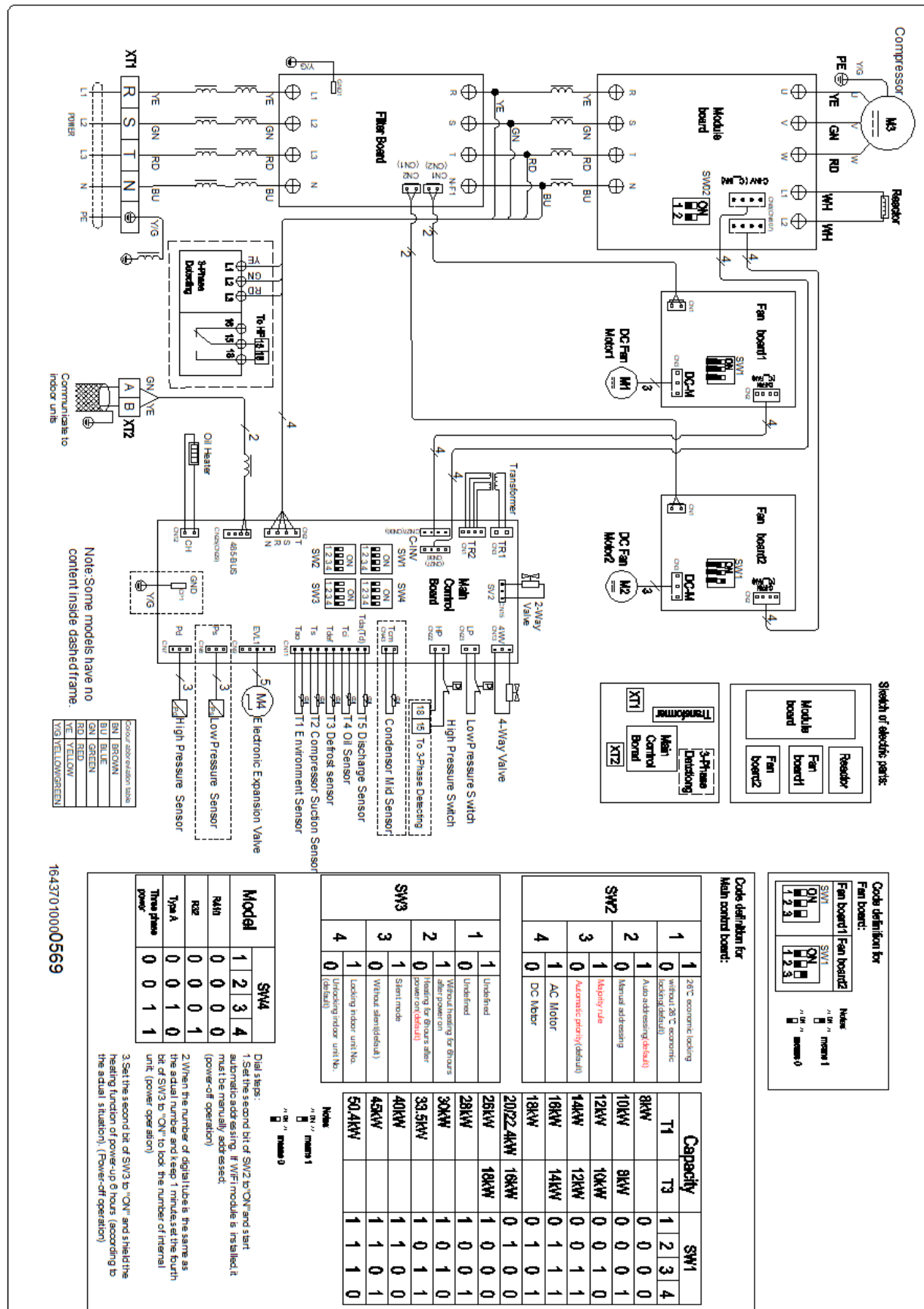
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### 2.3 ARV-H120/SR1DCS7、ARV-H140/SR1DCS7、ARV-H140/SR1DCSA、

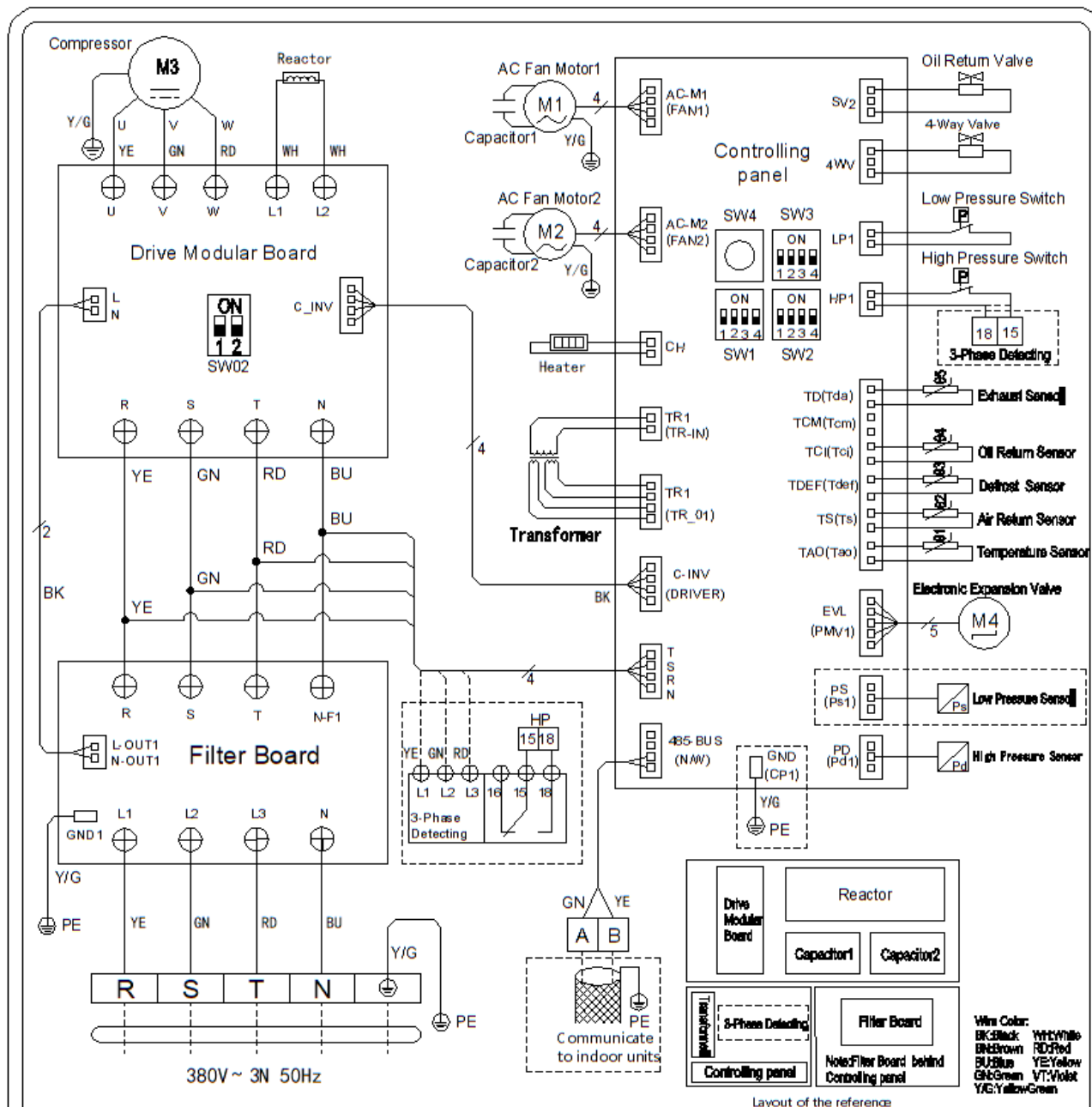
**ARV-H160/SR1DCS7、ARV-H160/SR1DCSA**



## 2.4 ARV-H220/SR1DCS7、ARV-H260/SR1DCS7



## 2.5 ARV-H220/5R1A、ARV-H280/5R1A



| SW1 function definition: the unit capacity setting |   |   |   |          |        |   |   |          |   |        |   | SW2 function definition: function selection                          |   |   |   | SW3 function definition: function selection                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |  | Note: |
|----------------------------------------------------|---|---|---|----------|--------|---|---|----------|---|--------|---|----------------------------------------------------------------------|---|---|---|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--|-------|
| Capacity                                           |   |   |   | Capacity |        |   |   | Capacity |   |        |   | 1                                                                    |   | 2 |   | 3                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ON |  |       |
| 1                                                  | 2 | 3 | 4 | 1        | 2      | 3 | 4 | 1        | 2 | 3      | 4 | 1                                                                    | 2 | 1 | 2 | 1                                                                                                | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ON |  |       |
| 8KW                                                | 0 | 0 | 0 | 0        | 18KW   | 0 | 1 | 0        | 1 | 30KW   | 1 | 0                                                                    | 1 | 0 | 1 | 1: Single phase unit<br>0: Three phase unit (default)                                            | Dis steps:<br>1. Set the second bit of SW2 to "ON" and alert automatic addressing. If WIFI module is installed, must be manually addressed; (power-off operation)<br>2. When the number of digital tube is the same as the actual number and keep 1 minute, set the fourth bit of SW3 to "ON" to lock the number of internal unit; (power operation)<br>3. Set the second bit of SW3 to "ON" and shield the heating function of power-up 6 hours (according to the actual situation). (Power-off operation) |    |  |       |
| 10KW                                               | 0 | 0 | 0 | 1        | 20KW   | 0 | 1 | 1        | 0 | 33.5KW | 1 | 0                                                                    | 1 | 1 | 2 | 1: Without heating for 6 hours after power on<br>0: Heating for 6 hours after power on (default) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |  |       |
| 12KW                                               | 0 | 0 | 1 | 0        | 22.4KW | 0 | 1 | 0        | 0 | 40KW   | 1 | 1                                                                    | 0 | 0 | 3 | 1: Silent mode<br>0: Without silent (default)                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |  |       |
| 14KW                                               | 0 | 0 | 1 | 1        | 26KW   | 1 | 0 | 0        | 1 | 45KW   | 1 | 1                                                                    | 0 | 1 | 4 | 1: Locking indoor unit No.<br>0: Unlocking indoor unit No. (default)                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |  |       |
| 16KW                                               | 0 | 1 | 1 | 1        | 28KW   | 1 | 0 | 0        | 1 | 50.4KW | 1 | 1                                                                    | 1 | 0 |   |                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |  |       |
|                                                    |   |   |   |          |        |   |   |          |   |        |   | 1: 26℃ economic locking<br>2: without 26℃ economic locking (default) |   | 1 |   |                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |  |       |
|                                                    |   |   |   |          |        |   |   |          |   |        |   | 2: 1: Auto addressing<br>0: Manual addressing (default)              |   | 2 |   |                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |  |       |
|                                                    |   |   |   |          |        |   |   |          |   |        |   | 3: 1: cool mode first<br>0: First match wins (default)               |   | 3 |   |                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |  |       |
|                                                    |   |   |   |          |        |   |   |          |   |        |   | 4: 1: AC Motor<br>2: DC Motor                                        |   | 4 |   |                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |  |       |

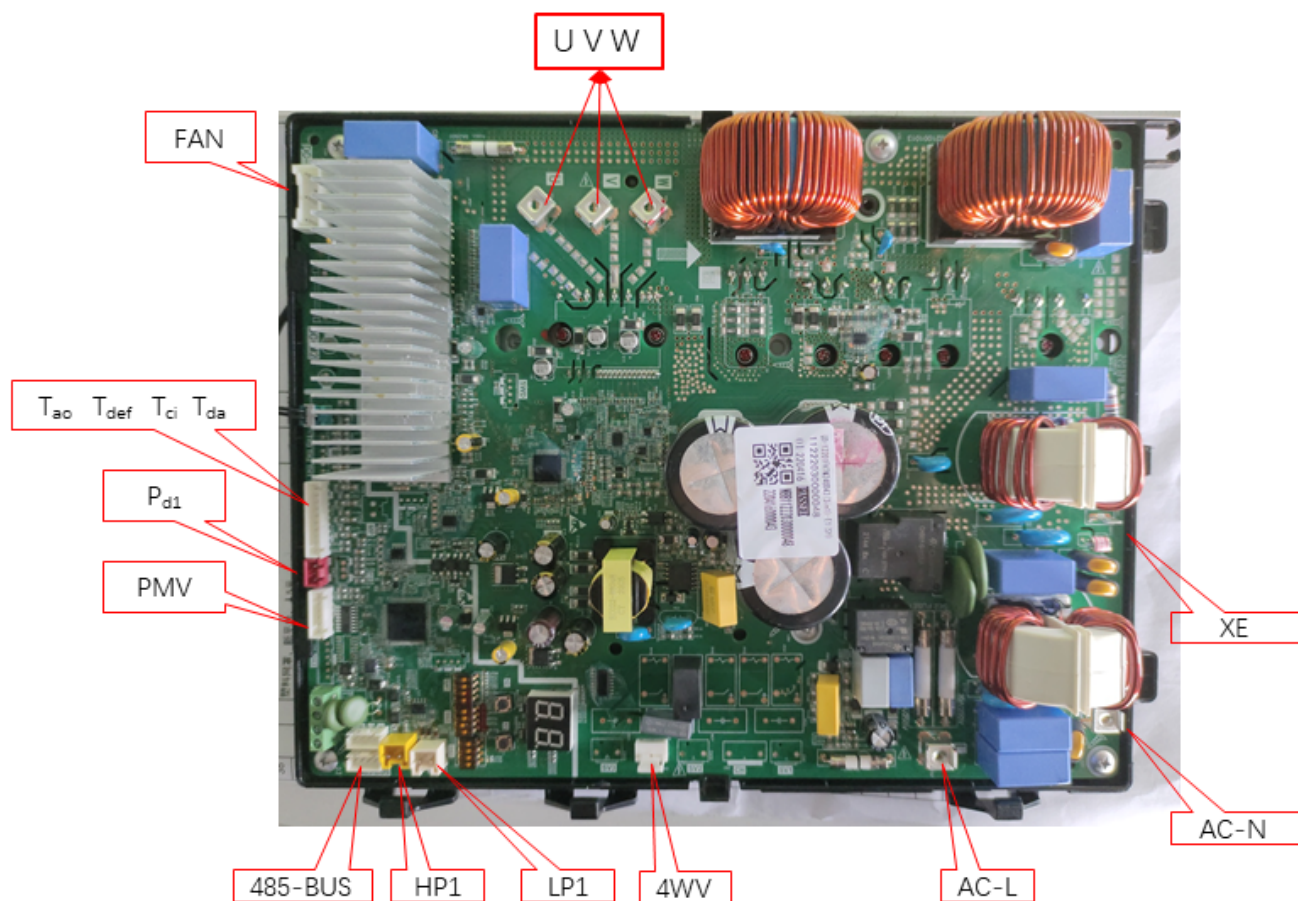
Note: Some models have no content inside dashed frame.

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### 3.1 Control PCB port

#### 3.1 ARV-H80/NR1A、ARV-H100/NR1A 、ARV-H120/NR1A 、ARV-H140/NR1A 、 ARV-H160/NR1A

- Integrated PCB

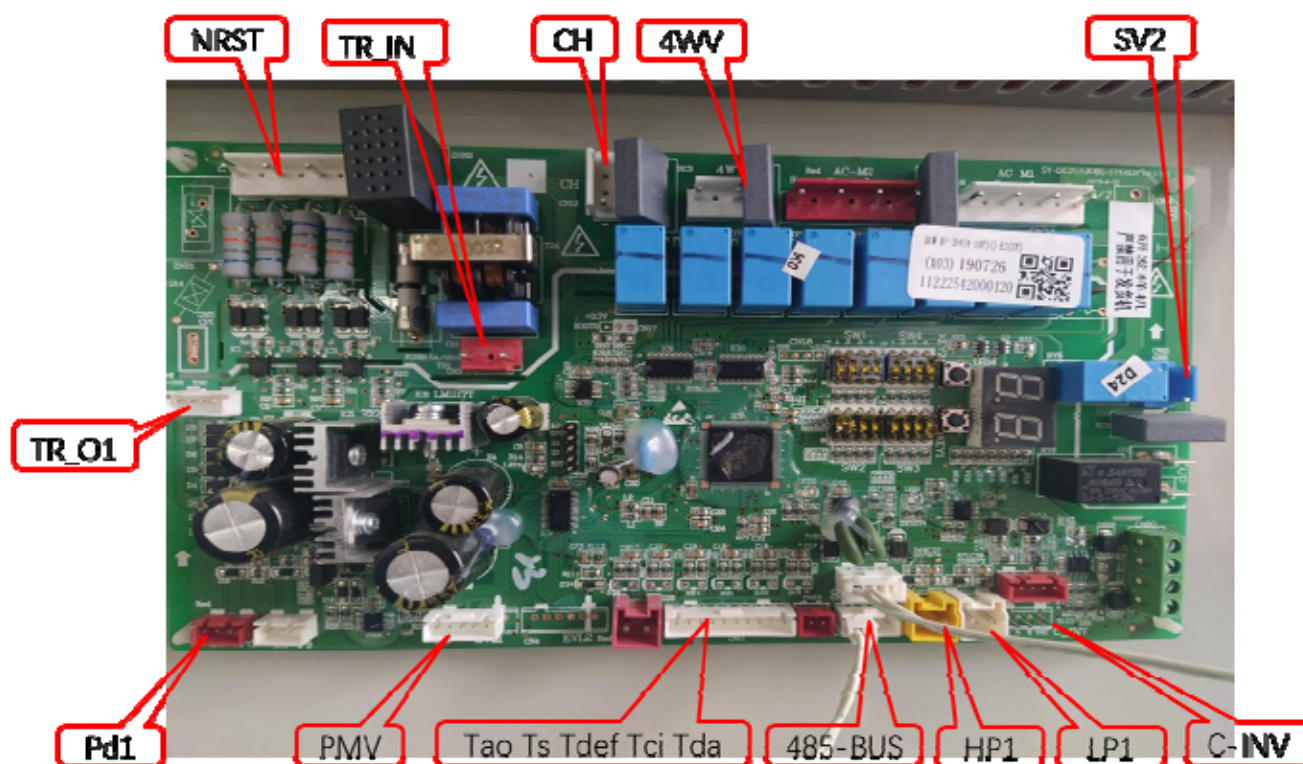


|         |                            |      |                                |
|---------|----------------------------|------|--------------------------------|
| U V W   | Power                      | Tda  | Environment temperature Sensor |
| FAN     | DC FAN                     | Tao  | Exhaust temperature sensor     |
| 4WV     | 4-way valve                | PWV  | EXV                            |
| LP1     | Low pressure switch        | Pd1  | High pressure sensor           |
| HP1     | High pressure switch       | AC-L | Power (L )                     |
| 485-BUS | Communication              | AC-N | Power (N )                     |
| Tao     | Exhaust temperature sensor | XE   | Ground wire                    |
| Tdef    | Defrost Sensor             |      |                                |
| Tci     | Compressor suction sensor  |      |                                |

| Model         | Code           | Name                                           | Remark                                                          |
|---------------|----------------|------------------------------------------------|-----------------------------------------------------------------|
| ARV-H080/NR1A | 11222030000048 | 散热器模块组件<br>QD-12201FKTM240D43<br>(3in1)-E1(SY) | 1、 Same appearance<br>2、 Same connect port<br>Different program |
| ARV-H100/NR1A |                |                                                |                                                                 |
| ARV-H120/NR1A | 11222030000047 | 散热器模块组件<br>QD-12211FQXAS-D32z<br>X090B-E1(SY)  |                                                                 |
| ARV-H140/NR1A | 11222030000046 | 散热器模块组件                                        |                                                                 |
| ARV-H160/NR1A |                | QD-1232(5KD420ZAA21<br>) (3in1)-E1(SY)         |                                                                 |

### 3.2 ARV-H80/NR1、 ARV-H100/NR1、 ARV-H120/NR1、 ARV-H140/NR1、 ARV-H160/NR1

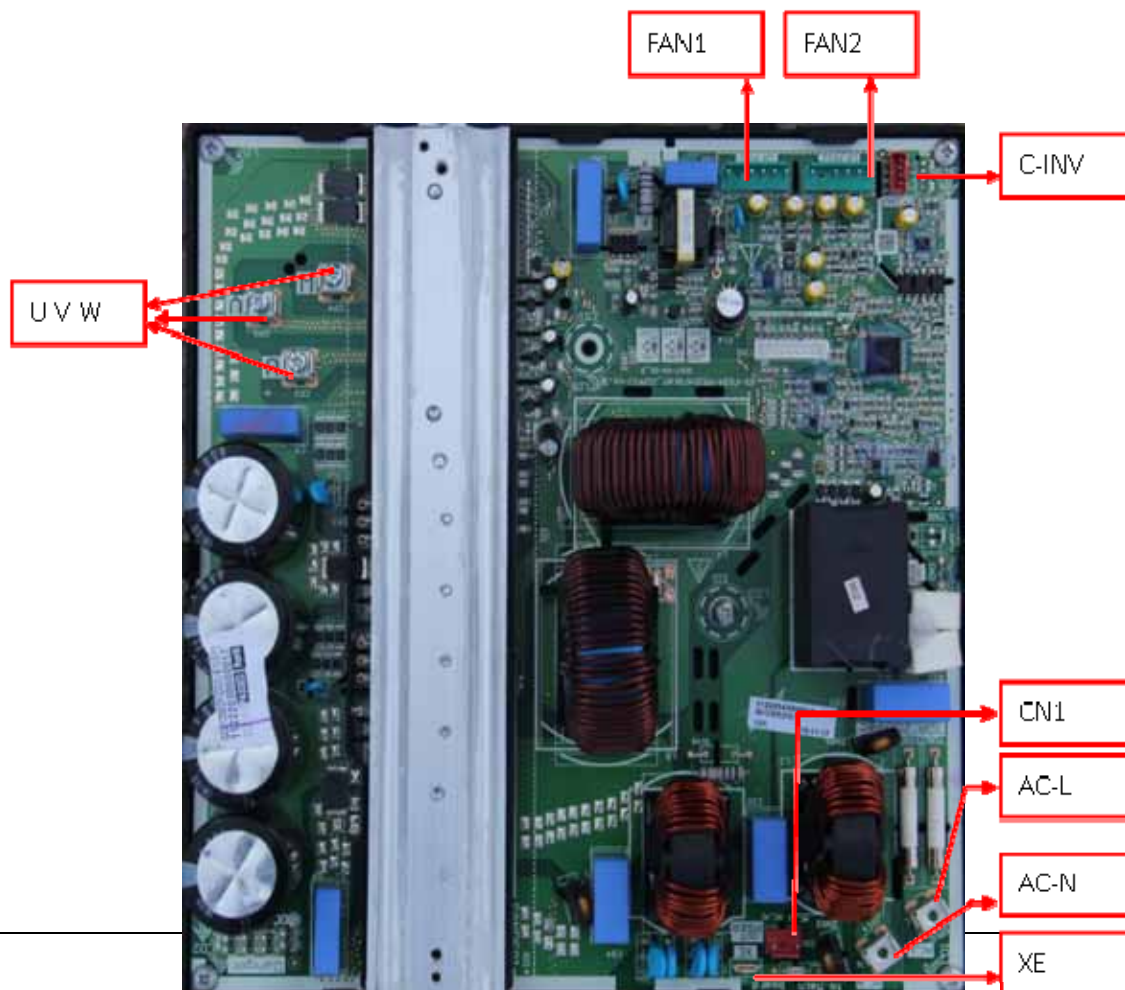
- Main PCB



|         |                 |         |                            |
|---------|-----------------|---------|----------------------------|
| N R S T | Power input     | 485-BUS | Communication              |
| TR_IN   | Transform input | Tao     | Exhaust temperature sensor |

|       |                                   |      |                                |
|-------|-----------------------------------|------|--------------------------------|
| TR_O1 | Transform output                  | Ts   | Oil temperature sensor         |
| CH    | Compressor preheating/ Oil heater | Tdef | Defrost Sensor                 |
| 4WV   | 4-way valve                       | Tci  | Compressor suction sensor      |
| SV2   | Oil return valve                  | Tda  | Environment temperature Sensor |
| C-INV | DC Inverter driver board port     | PWV1 | EXV                            |
| LP1   | Low pressure switch               | Pd1  | High pressure sensor           |
| HP1   | High pressure switch              |      |                                |

| Model        | Code           | Name                                        | Remark                                                        |
|--------------|----------------|---------------------------------------------|---------------------------------------------------------------|
| ARV-H80/NR1  | 11222542000128 | CJ 控制板<br>DLW-BP-3F4(3-10P)(小多<br>联)-E4(SY) | 1、Same appearance<br>2、Same connect port<br>Different program |
| ARV-H100/NR1 |                |                                             |                                                               |
| ARV-H120/NR1 |                |                                             |                                                               |
| ARV-H140/NR1 |                |                                             |                                                               |
| ARV-H160/NR1 |                |                                             |                                                               |



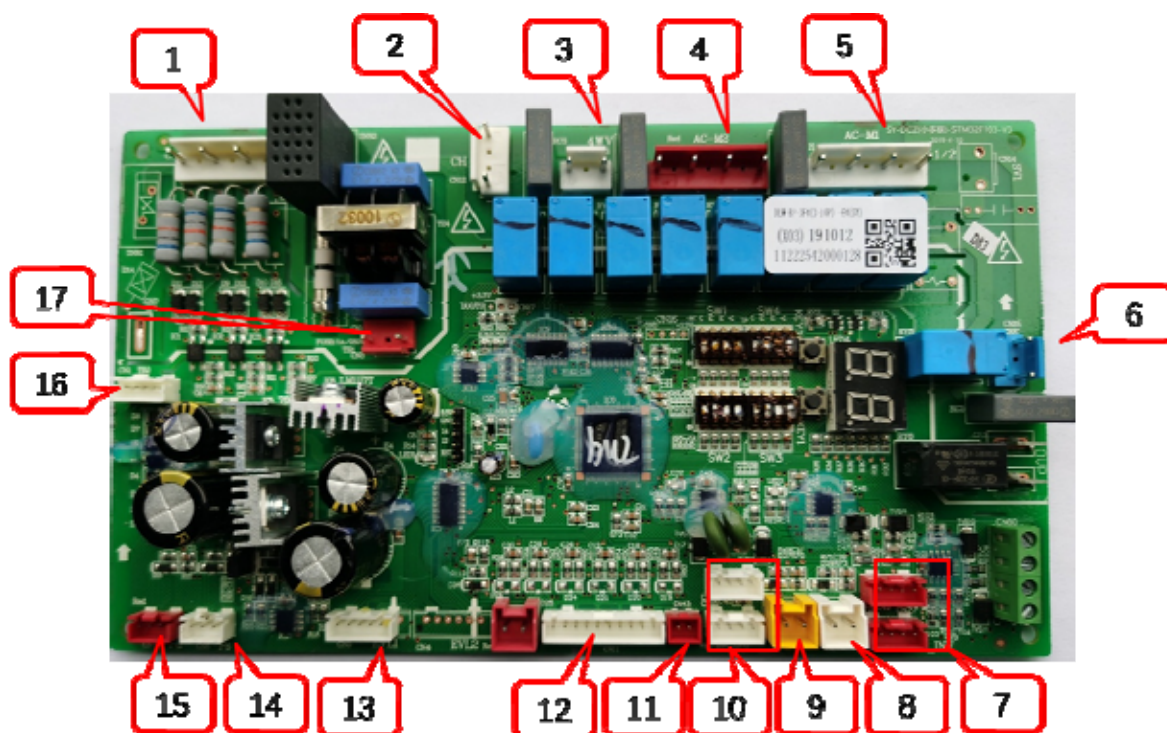
|              |                               |
|--------------|-------------------------------|
| <b>U V W</b> | Power                         |
| <b>FAN 1</b> | DC FAN 1(UP)                  |
| <b>FAN 2</b> | DC FAN 2(DOWN)                |
| <b>C-INV</b> | DC Inverter driver board port |
| <b>CN1</b>   | Power (L N )                  |
| <b>AC-L</b>  | Power (L )                    |
| <b>AC-N</b>  | Power (N )                    |
| <b>XE</b>    | Ground wire                   |

### Compressor & Fan drive modular

| Model        | Code           | Name                       | Remark                                                        |
|--------------|----------------|----------------------------|---------------------------------------------------------------|
| ARV-H80/NR1  | 11222030000020 | 散热器模块组件                    | 1、Same appearance<br>2、Same connect port<br>Different program |
| ARV-H100/NR1 |                | QD-12201F(DA250)           |                                                               |
| ARV-H120/NR1 | 11222030000017 | 散热器模块组件                    |                                                               |
| ARV-H140/NR1 |                | QD-12302F(D32)             |                                                               |
| ARV-H160/NR1 | 11222030000016 | 散热器模块组件<br>QD-12302F(F428) |                                                               |

### 3.3 ARV- H120/SR1DCS7、ARV- H140/SR1DCS7、ARV- H140/SR1DCSA、ARV- H160/SR1DCS7、ARV- H160/SR1DCSA

- Main PCB

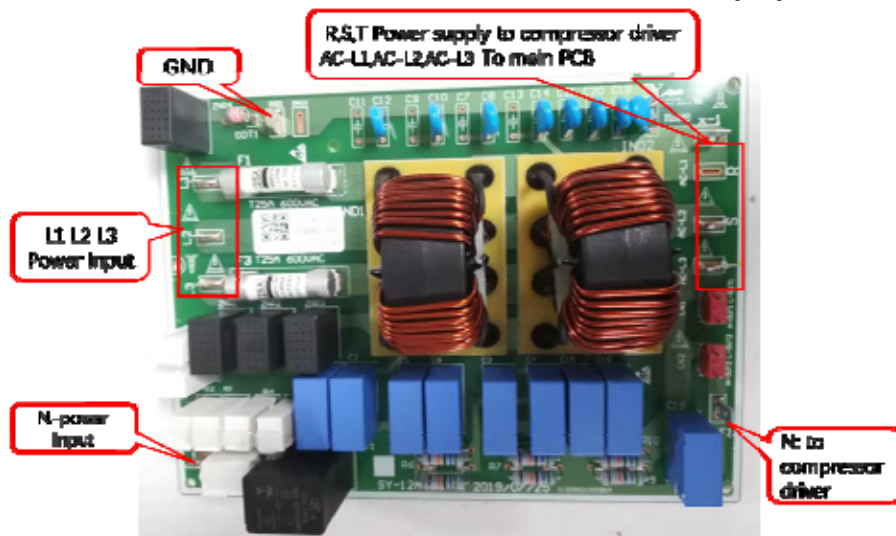


|   |                                                           |    |                             |
|---|-----------------------------------------------------------|----|-----------------------------|
| 1 | N R S T Power input from filter board                     | 10 | 485-BUS 485 signal          |
| 2 | CH electrical heater                                      | 11 | CN 43 condenser mid sensor  |
| 3 | 4WV To four way value                                     | 12 | CN11 sensor group           |
| 4 | AC-M2 to AC fan motor 1                                   | 13 | EVL1 to EXV                 |
| 5 | AC-M1 to AC fan motor 2                                   | 14 | CN6 to low pressure sensor  |
| 6 | SV2 Solenoidised value                                    | 15 | CN7 to high pressure sensor |
| 7 | CN27 To compressor drive board<br>CN30 To fan drive board | 16 | CN1 to transformer          |
| 8 | LP low pressure switch                                    | 17 | CN3 to transformer          |
| 9 | HP high pressure switch                                   |    |                             |

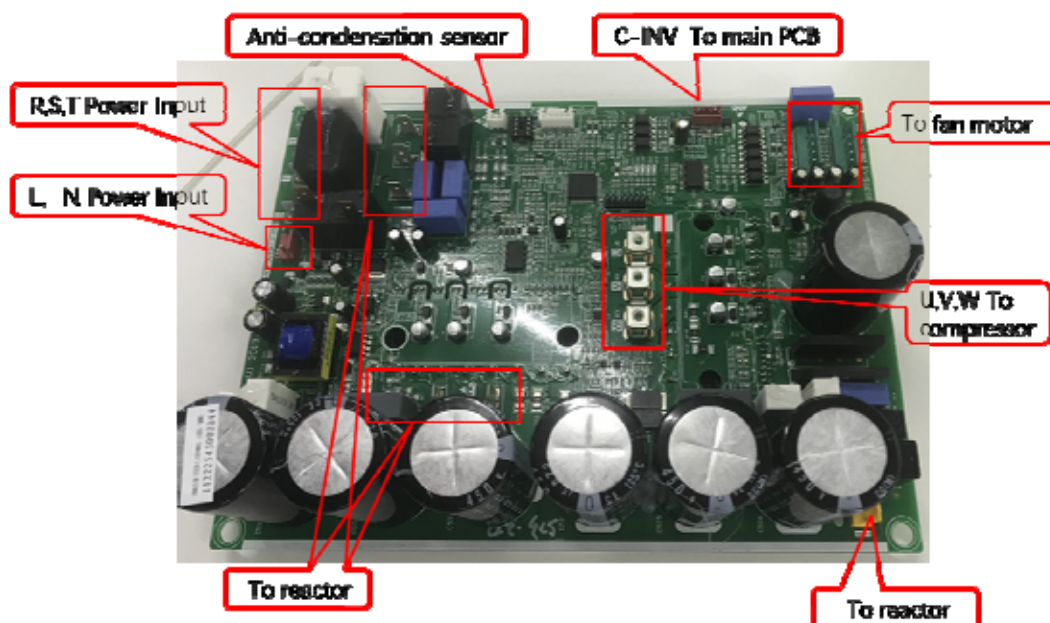
| Model            | Code           | Name                                     | Remark                                                              |
|------------------|----------------|------------------------------------------|---------------------------------------------------------------------|
| ARV-H120/SR1DCS7 | 11222542000128 | CJ 控制板 DLW-BP-3F4(3-10P)(小<br>多联)-E4(SY) | 1、 Same appearance<br><br>2、 Same connect port<br>Different program |
| ARV-H140/SR1DCS7 |                |                                          |                                                                     |
| ARV-H160/SR1DCS7 |                |                                          |                                                                     |
| ARV-H140/SR1DCSA | 11222542000134 | CJ 控制板 DLW-BP-3F4(3-10P)(小               |                                                                     |

|                  |  |                 |  |
|------------------|--|-----------------|--|
| ARV-H160/SR1DCSA |  | 多联)(以色列)-E4(SY) |  |
|------------------|--|-----------------|--|

- Filter board 1122254800003 CJ 滤波板 LB-4312-1(SY)



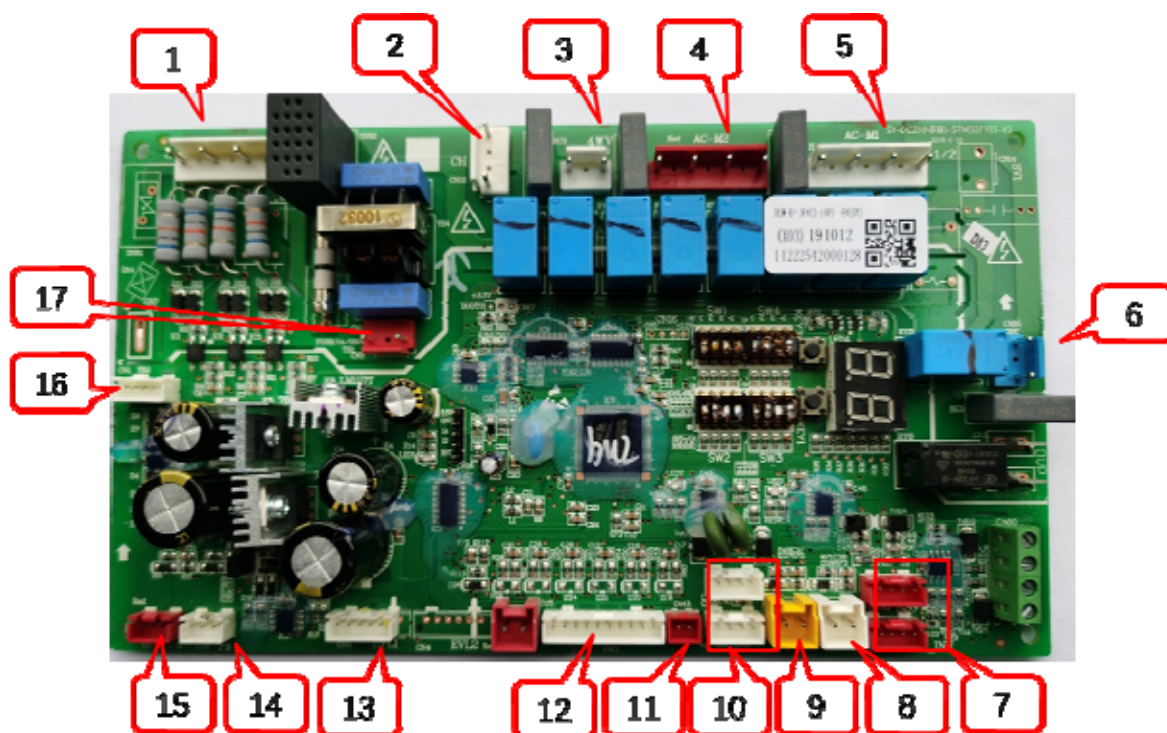
- Compressor & fan motor drive modular



| Model            | Code           | Name                                                | Remark                                                              |
|------------------|----------------|-----------------------------------------------------|---------------------------------------------------------------------|
| ARV-H120/SR1DCS7 | 11222543000047 | CJ 模块板 QD-33322F(KTF310D)三相<br>小多联 12KW-1(SY)       | 1、 Same appearance<br><br>2、 Same connect port<br>Different program |
| ARV-H140/SR1DCS7 | 11222543000044 | CJ 模块板 QD-33322F(美芝 KTF400D)<br><br>三相小多联/以色列-1(SY) |                                                                     |
| ARV-H160/SR1DCS7 |                |                                                     |                                                                     |
| ARV-H140/SR1DCSA |                |                                                     |                                                                     |
| ARV-H160/SR1DCSA |                |                                                     |                                                                     |

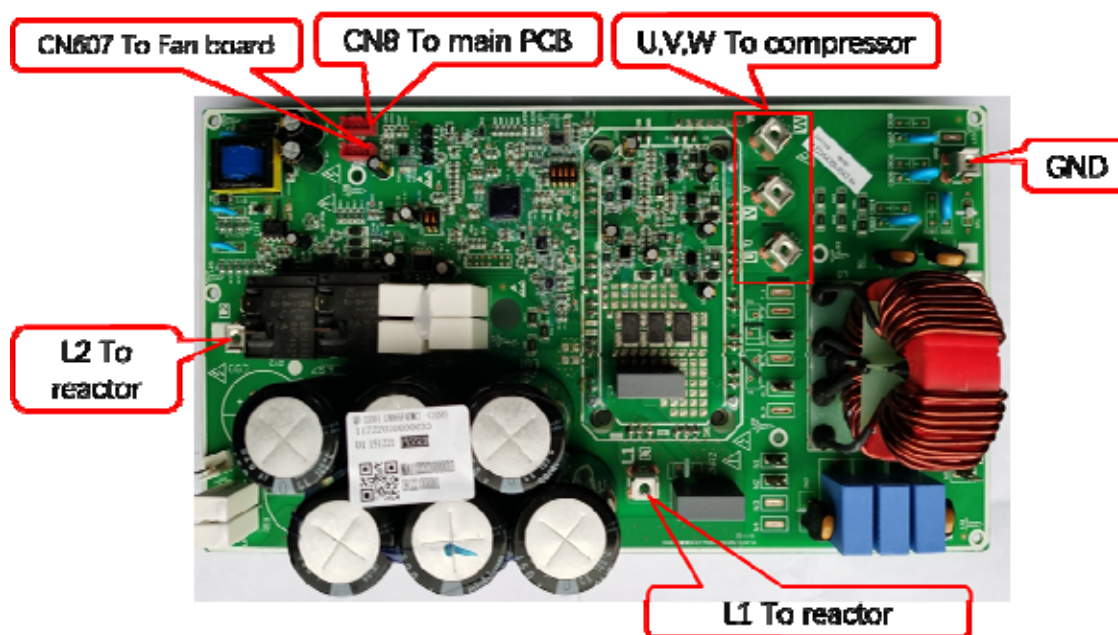
### 3.4 ARV- H220/SR1DCS7、 ARV- H260/SR1DCS7

- **Main PCB** 11222542000128 CJ 控制板 DLW-BP-3F4(3-10P)(小多联)-E4(SY)

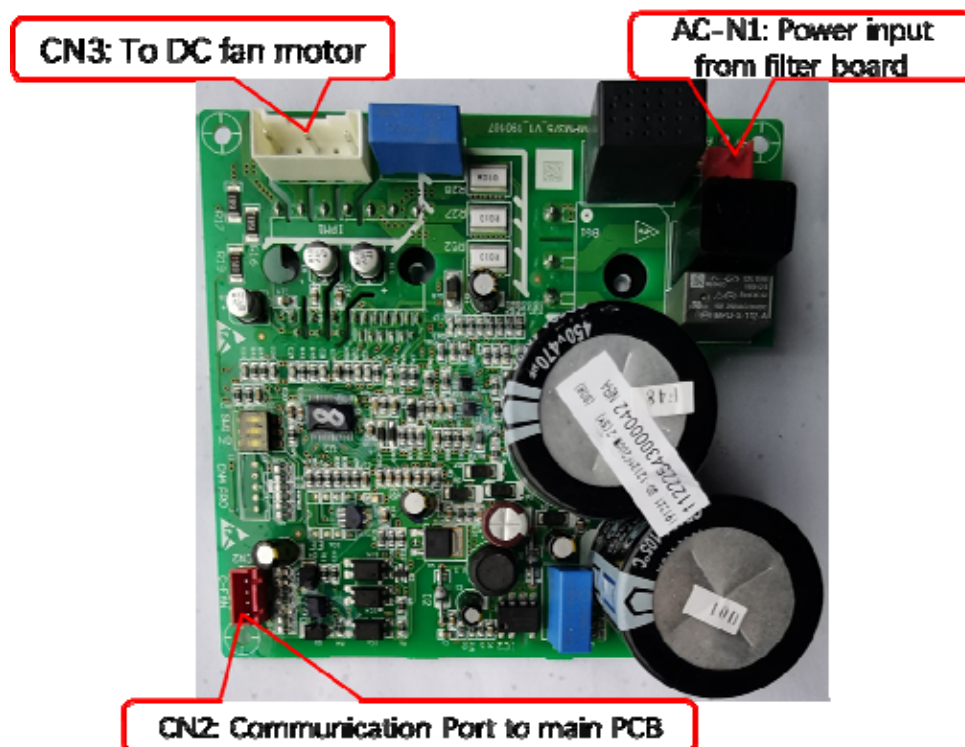


|   |                                                           |    |                             |
|---|-----------------------------------------------------------|----|-----------------------------|
| 1 | N R S T Power input from filter board                     | 10 | 485-BUS 485 signal          |
| 2 | CH electrical heater                                      | 11 | CN 43 condenser mid sensor  |
| 3 | 4WV To four way valve                                     | 12 | CN11 sensor group           |
| 4 | AC-M2 to AC fan motor 1                                   | 13 | EVL1 to EXV                 |
| 5 | AC-M1 to AC fan motor 2                                   | 14 | CN6 to low pressure sensor  |
| 6 | SV2 Solenoid valve                                        | 15 | CN7 to high pressure sensor |
| 7 | CN27 To compressor drive board<br>CN30 To fan drive board | 16 | CN1 to transformer          |
| 8 | LP low pressure switch                                    | 17 | CN3 to transformer          |
| 9 | HP high pressure switch                                   |    |                             |

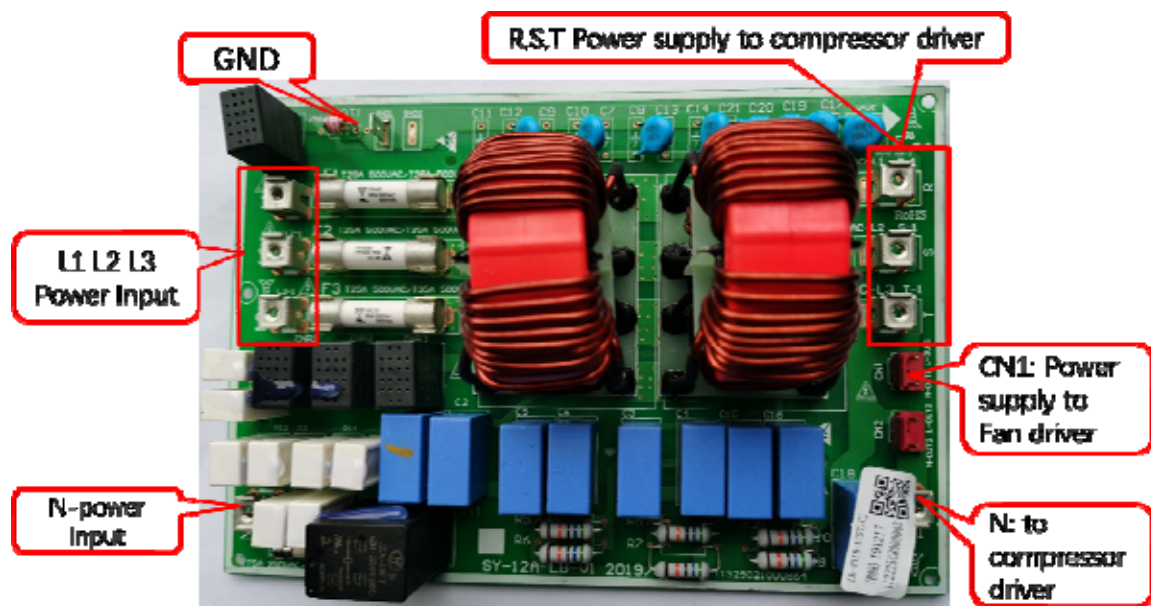
- Compressor drive modular 11222030000033 散热器模块组件 QD-3330(三菱 LNB65FAEMC)  
改压机-C2(SY)



- Fan drive modular 11222543000042 CJ 模块板 QD-12121F200W 风机驱动-2(SY)

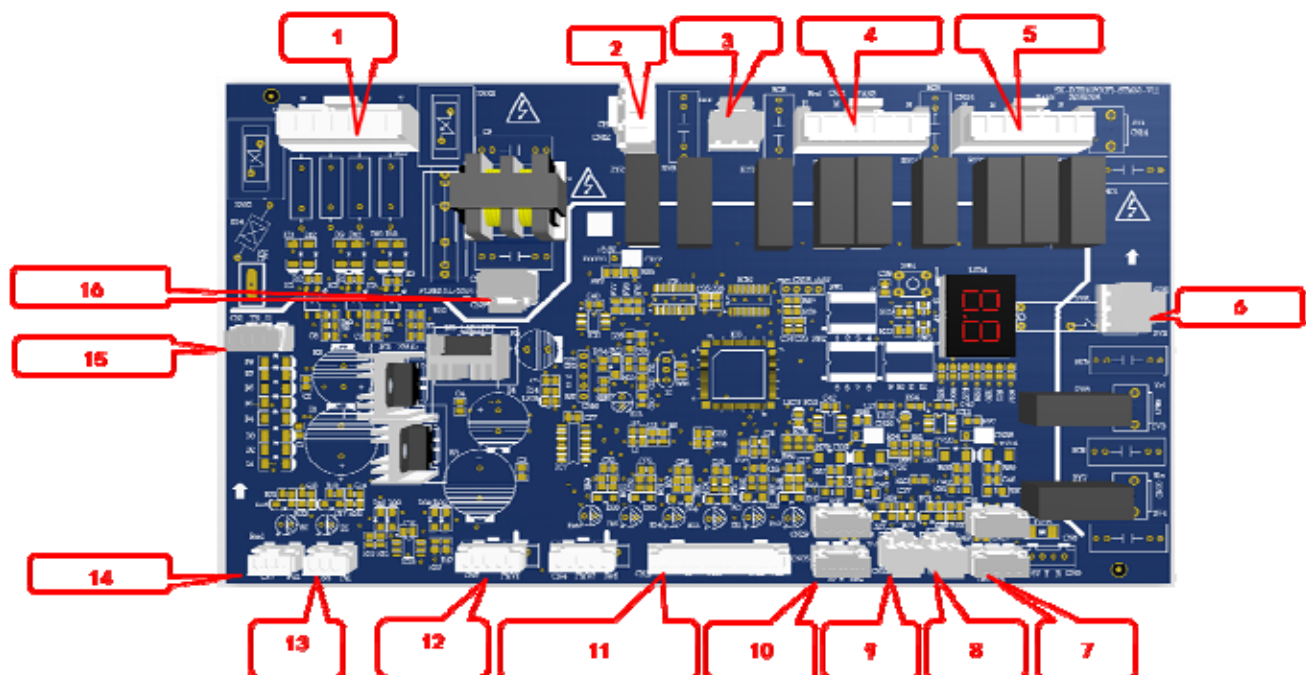


- Filter board 11222548000005 CJ 滤波板 LB-4318-1(SY)CJ



### 3.5 ARV-H220/5R1A、ARV-H280/5R1A

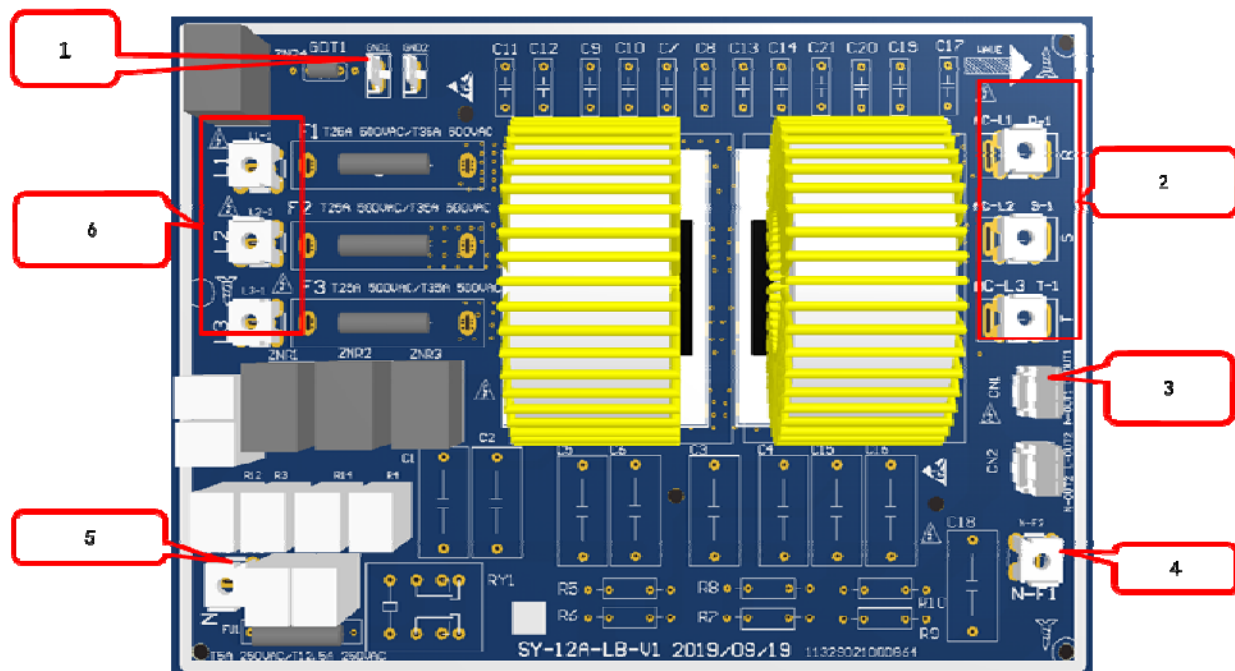
Master control PCB 11222542000004 控制板 CJ-SW(10PCCF)-SYEDCZ-1



1. Power Input N R S T
2. Oil temperature tropical CH
3. Four-way valve 4WV
4. AC fan FAN2
5. AC fan FAN1
6. Oil return valve SV2
7. Inter-board communication DRIVER
8. Low voltage switch LP1

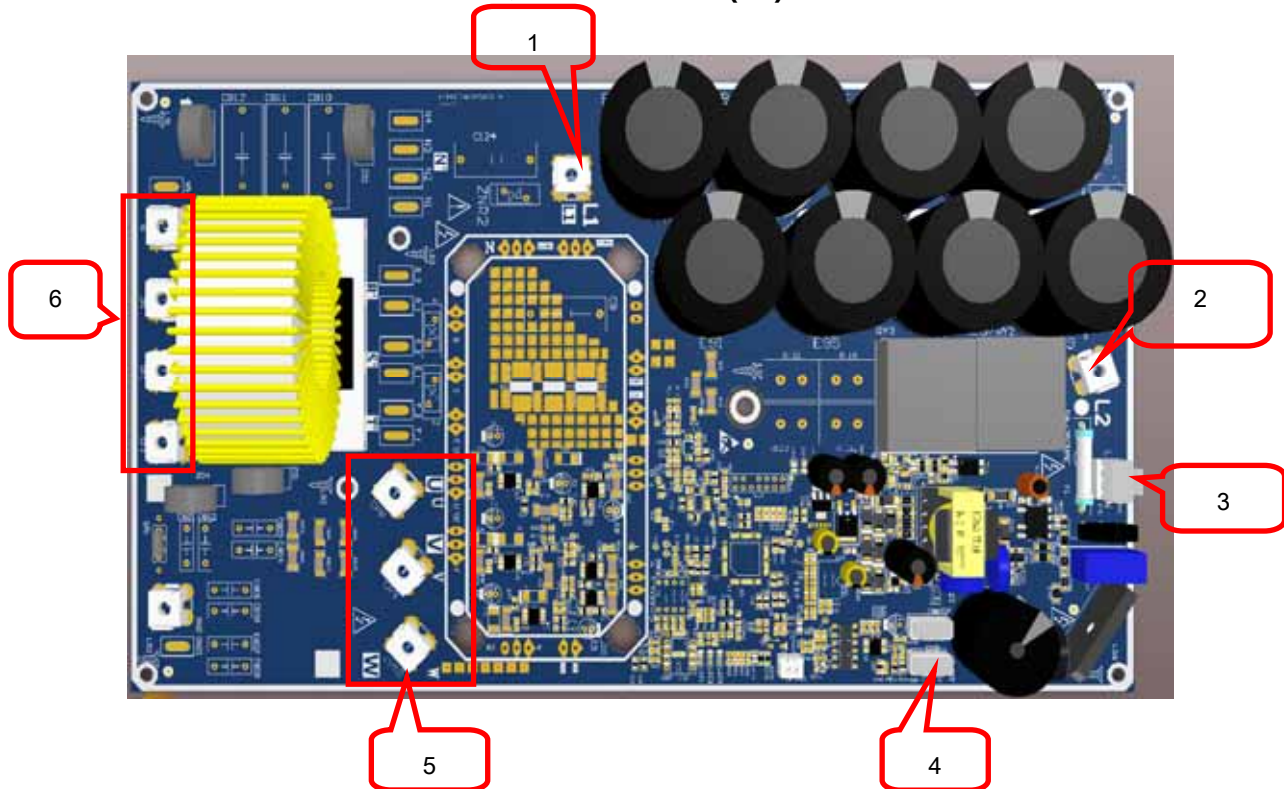
9. High voltage switch LP2
10. 485 communication N/W
11. Temperature transducer Tao Ts Tdef Tei Tda
12. Electronic expansion valve PMV1
13. Low voltage sensor Ps1
14. High voltage sensor Pd1
15. Transformer secondary TR\_01
16. Transformer Primary TR\_IN

Drive PCB 11222030000040 散热器模块组件 QD-3330(三菱 LNB53FCAMC)改压机-E1(SY)



1. Ground Terminal
2. Drive board input R S T
3. Drive power supply L-OUT1 N-OUT1
4. Drive board input N
5. Power terminal board
6. Power terminal board input L1 L2 L3

Filter board 11222548000005 CJ 滤波板 LB-4318-1(SY)CJ

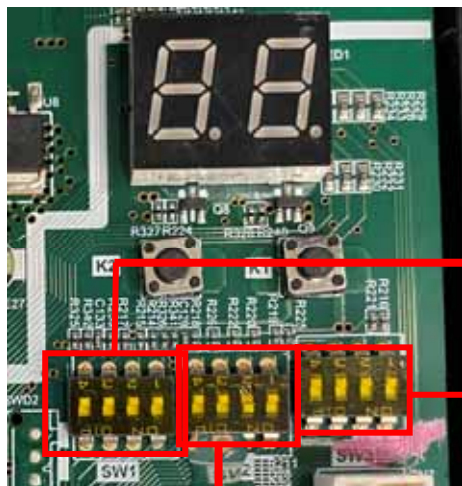


1. Reactor L1
2. Reactor L2
3. Power terminal L N
4. Inter-board communication C\_INV
5. Compressor U V W
6. Drive power input N R S T

## 4. DIP switch

### 4.1 ARV-H80/NR1A、 ARV-H100/NR1A 、 ARV-H120/NR1A、 ARV-H140/NR1A、

### ARV-H160/NR1A



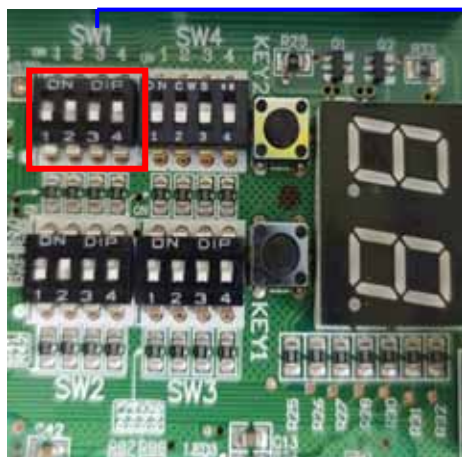
| SW1     | SW1     | SW1     | SW1     | SW1     |
|---------|---------|---------|---------|---------|
| ON      | ON      | ON      | ON      | ON      |
| 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 |
| 8kW     | 10kW    | 12kW    | 14kW    | 16kW    |

|     |   |   |                                       |
|-----|---|---|---------------------------------------|
| SW2 | 1 | 1 | 26℃ economic locking                  |
|     |   | 0 | without 26℃ economic locking(default) |
|     | 2 | 1 | Auto addressing(default)              |
|     |   | 0 | Manual addressing                     |
|     | 3 | 1 | cool mode first                       |
|     |   | 0 | First match wins (default)            |
|     | 4 | 1 | Long connecting pipe (L)              |
|     |   | 0 | short connecting pipe (S)(default)    |

|     |   |   |                                     |
|-----|---|---|-------------------------------------|
| SW3 | 1 | 1 | Mute at night                       |
|     |   | 0 | Not mute at night(default)          |
|     | 2 | 1 | Undefined                           |
|     |   | 0 | Undefined                           |
|     | 3 | 1 | Silent mode                         |
|     |   | 0 | Without silent(default)             |
|     | 4 | 1 | Locking indoor unit No.             |
|     |   | 0 | Unlocking indoor unit No. (default) |

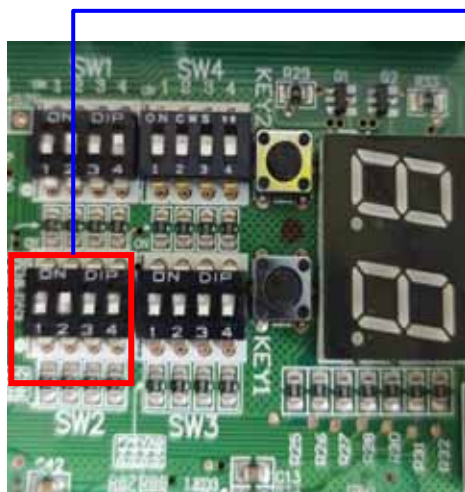
### 4.2 ARV-H80/NR1、 ARV-H100/NR1 、 ARV-H120/NR1、 ARV-H140/NR1、 ARV-H160/NR1

Capacity setting- SW1



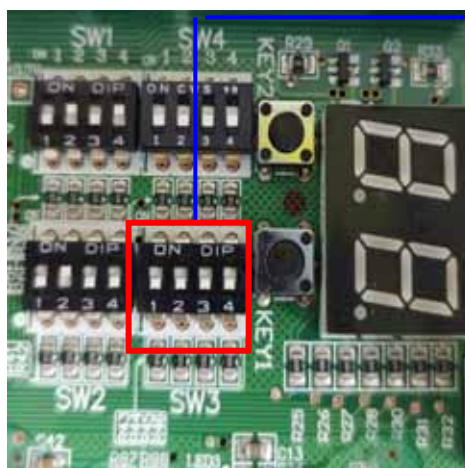
| SW1     | SW1     | SW1     | SW1     | SW1     |
|---------|---------|---------|---------|---------|
| ON      | ON      | ON      | ON      | ON      |
| 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 |
| 8kW     | 10kW    | 12kW    | 14kW    | 16kW    |

## Function setting- SW2



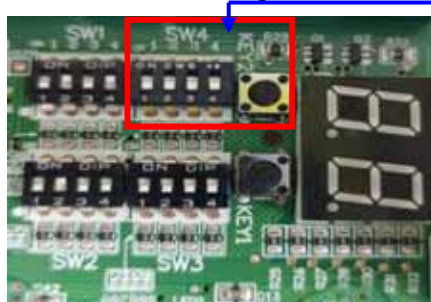
|     |   |   |                                       |
|-----|---|---|---------------------------------------|
| SW2 | 1 | 1 | 26℃ economic locking                  |
|     |   | 0 | without 26℃ economic locking(default) |
|     | 2 | 1 | Auto addressing                       |
|     |   | 0 | Manual addressing                     |
|     | 3 | 1 | cool mode first                       |
|     |   | 0 | First match wins (default)            |
|     | 4 | 1 | AC Motor                              |
|     |   | 0 | DC Motor                              |

## Function setting - SW3

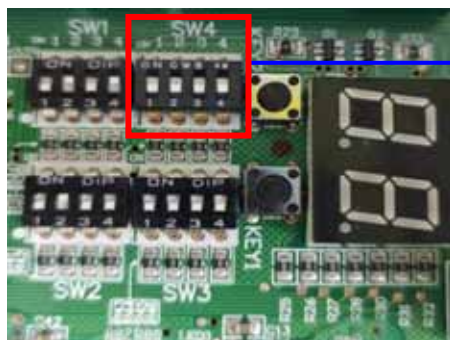


|     |   |   |                                           |
|-----|---|---|-------------------------------------------|
| SW3 | 1 | 1 | Undefined                                 |
|     |   | 0 | Undefined                                 |
|     | 2 | 1 | Without heating for 6hours after power on |
|     |   | 0 | Heating for 6hours after power on         |
|     | 3 | 1 | Silent mode                               |
|     |   | 0 | Without silent(default)                   |
|     | 4 | 1 | Locking indoor unit No.                   |
|     |   | 0 | Unlocking indoor unit No. (default)       |

## Parameter checking- SW4



1. Long press "KEY2" button for 5s enter the parameter checking.
  2. Digital tube will display NO "F0", press "KEY2" again will turn to "F1", "F2"...
- If no action, 5s later will display the details (like the compressor frequency) and last for 1min.
3. Press the "KEY2" button while displaying the details, then will come back to NO.

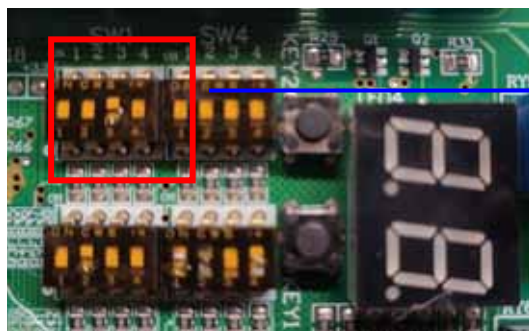


| Model             | SW4 |   |   |   |
|-------------------|-----|---|---|---|
|                   | 1   | 2 | 3 | 4 |
| R410              | 0   | 0 | 0 | 0 |
| R32               | 0   | 0 | 0 | 1 |
| Type A            | 0   | 0 | 1 | 0 |
| Three phase power | 0   | 0 | 1 | 1 |

#### 4.3 ARV-H120/SR1DCS7、ARV-H140/SR1DCS7、ARV-H140/SR1DCSA、

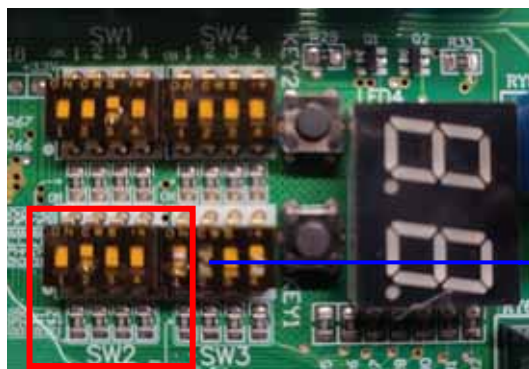
#### ARV-H160/SR1DCS7、ARV-H160/SR1DCSA

Capacity setting- SW1



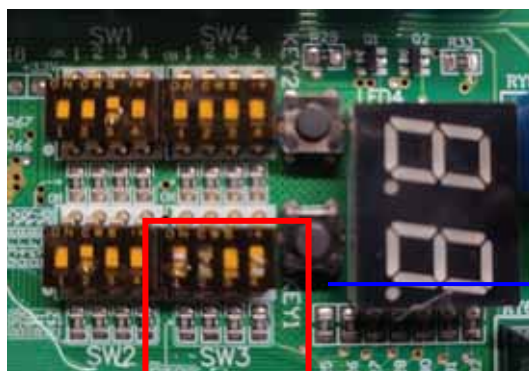
| Capacity | SW1 |   |   |   |
|----------|-----|---|---|---|
|          | 1   | 2 | 3 | 4 |
| 8KW      | 0   | 0 | 0 | 0 |
| 10KW     | 0   | 0 | 0 | 1 |
| 12KW     | 0   | 0 | 1 | 0 |
| 14KW     | 0   | 0 | 1 | 1 |
| 16KW     | 0   | 1 | 1 | 1 |
| 18KW     | 0   | 1 | 0 | 1 |

Function setting- SW2



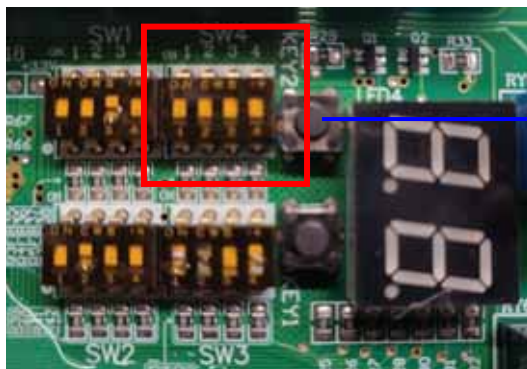
| SW2 | 1 | 1 | 26°C economic locking                  |
|-----|---|---|----------------------------------------|
|     |   | 0 | without 26°C economic locking(default) |
|     | 2 | 1 | Auto addressing(default)               |
|     |   | 0 | Manual addressing                      |
|     | 3 | 1 | Majority rule                          |
|     |   | 0 | Automatic priority (default)           |
|     | 4 | 1 | AC Motor                               |
|     |   | 0 | DC Motor                               |

Function setting - SW3



| SW3 | 1 | 1 | Undefined                                  |
|-----|---|---|--------------------------------------------|
|     |   | 0 | Undefined                                  |
|     | 2 | 1 | Without heating for 6hours after power on  |
|     |   | 0 | Heating for 6hours after power on(default) |
|     | 3 | 1 | Silent mode                                |
|     |   | 0 | Without silent(default)                    |
|     | 4 | 1 | Locking indoor unit No.                    |
|     |   | 0 | Unlocking indoor unit No. (default)        |

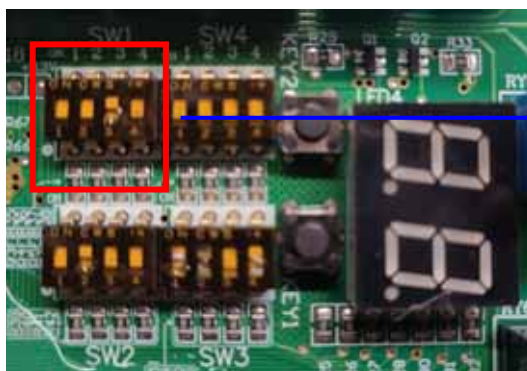
Parameter checking- SW4



| Model             | SW4 |   |   |   |
|-------------------|-----|---|---|---|
|                   | 1   | 2 | 3 | 4 |
| R410              | 0   | 0 | 0 | 0 |
| R32               | 0   | 0 | 0 | 1 |
| Type A            | 0   | 0 | 1 | 0 |
| Three phase power | 0   | 0 | 1 | 1 |

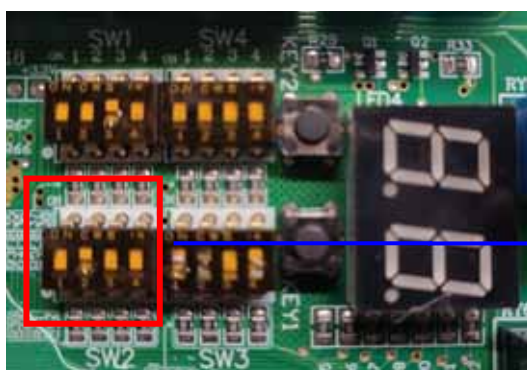
#### 4.4 ARV- H220/SR1DCS7、 ARV- H260/SR1DCS7

Capacity setting- SW1



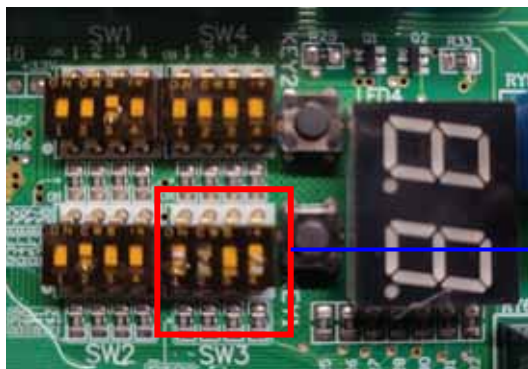
| Capacity  |      | SW1 |   |   |   |
|-----------|------|-----|---|---|---|
| T1        | T3   | 1   | 2 | 3 | 4 |
| 8kW       |      | 0   | 0 | 0 | 0 |
| 10kW      | 8kW  | 0   | 0 | 0 | 1 |
| 12kW      | 10kW | 0   | 0 | 1 | 0 |
| 14kW      | 12kW | 0   | 0 | 1 | 1 |
| 16kW      | 14kW | 0   | 1 | 1 | 1 |
| 18kW      |      | 0   | 1 | 0 | 1 |
| 20/22.4kW | 16kW | 0   | 1 | 0 | 0 |
| 26kW      | 18kW | 1   | 0 | 0 | 0 |
| 28kW      |      | 1   | 0 | 0 | 1 |
| 30kW      |      | 1   | 0 | 1 | 0 |
| 33.5kW    |      | 1   | 0 | 1 | 1 |
| 40kW      |      | 1   | 1 | 0 | 0 |
| 45kW      |      | 1   | 1 | 0 | 1 |
| 50.4kW    |      | 1   | 1 | 1 | 0 |

Function setting- SW2



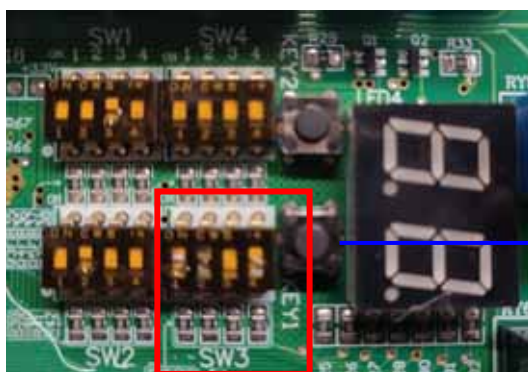
| SW2 | 1 | 1 | 26℃ economic locking                  |
|-----|---|---|---------------------------------------|
|     |   | 0 | without 26℃ economic locking(default) |
|     | 2 | 1 | Auto addressing(default)              |
|     |   | 0 | Manual addressing                     |
|     | 3 | 1 | Majority rule                         |
|     |   | 0 | Automatic priority(default)           |
|     | 4 | 1 | AC Motor                              |
|     |   | 0 | DC Motor                              |

## Function setting - SW3



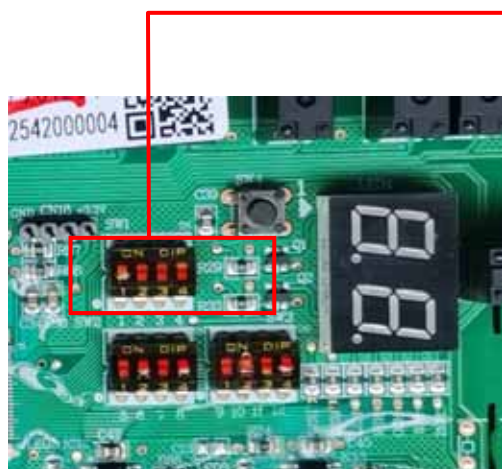
|     |   |   |                                            |
|-----|---|---|--------------------------------------------|
| SW3 | 1 | 1 | Undefined                                  |
|     |   | 0 | Undefined                                  |
|     | 2 | 1 | Without heating for 6hours after power on  |
|     |   | 0 | Heating for 6hours after power on(default) |
|     | 3 | 1 | Silent mode                                |
|     |   | 0 | Without silent(default)                    |
|     | 4 | 1 | Locking indoor unit No.                    |
|     |   | 0 | Unlocking indoor unit No. (default)        |

## Parameter checking- SW4

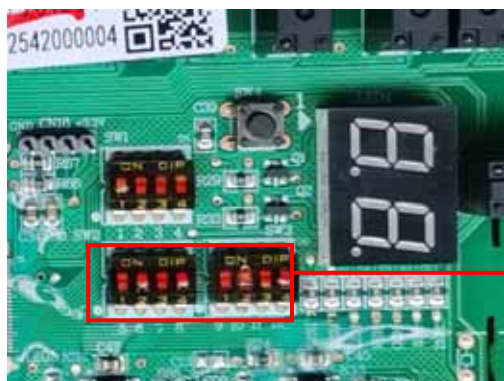


| Model             | SW4 |   |   |   |
|-------------------|-----|---|---|---|
|                   | 1   | 2 | 3 | 4 |
| R410              | 0   | 0 | 0 | 0 |
| R32               | 0   | 0 | 0 | 1 |
| Type A            | 0   | 0 | 1 | 0 |
| Three phase power | 0   | 0 | 1 | 1 |

## 4.5 ARV-H220/5R1A、ARV-H280/5R1A



| SW1 function definition: the unit capacity setting |   |   |   |   |          |   |   |   |   |          |   |   |   |   |  |
|----------------------------------------------------|---|---|---|---|----------|---|---|---|---|----------|---|---|---|---|--|
| Capacity                                           | 1 | 2 | 3 | 4 | Capacity | 1 | 2 | 3 | 4 | Capacity | 1 | 2 | 3 | 4 |  |
| 8KW                                                | 0 | 0 | 0 | 0 | 18KW     | 0 | 1 | 0 | 1 | 30KW     | 1 | 0 | 1 | 0 |  |
| 10KW                                               | 0 | 0 | 0 | 1 | 20KW     | 0 | 1 | 1 | 0 | 33.5KW   | 1 | 0 | 1 | 1 |  |
| 12KW                                               | 0 | 0 | 1 | 0 | 22.4KW   | 0 | 1 | 0 | 0 | 40KW     | 1 | 1 | 0 | 0 |  |
| 14KW                                               | 0 | 0 | 1 | 1 | 26KW     | 1 | 0 | 0 | 0 | 45KW     | 1 | 1 | 0 | 1 |  |
| 16KW                                               | 0 | 1 | 1 | 1 | 28KW     | 1 | 0 | 0 | 1 | 50.4KW   | 1 | 1 | 1 | 0 |  |



| SW2 function definition: function selection |                                           | SW3 function definition: function selection |                                                 |
|---------------------------------------------|-------------------------------------------|---------------------------------------------|-------------------------------------------------|
| 1                                           | 1: 26℃ economic locking                   | 1                                           | 1: Single phase unit                            |
|                                             | 0: without 26℃ economic locking (default) |                                             | 0: Three phase unit (default)                   |
| 2                                           | 1: Auto addressing                        | 2                                           | 1: Without heating for 6 hours after power on   |
|                                             | 0: Manual addressing (default)            |                                             | 0: Heating for 6 hours after power on (default) |
| 3                                           | 1: cool mode first                        | 3                                           | 1: Silent mode                                  |
|                                             | 0: First match wins (default)             |                                             | 0: Without silent (default)                     |
| 4                                           | 1: AC Motor                               | 4                                           | 1: Locking indoor unit No.                      |
|                                             | 0: DC Motor                               |                                             | 0: Unlocking indoor unit No. (default)          |

| NO.     | Definition                | Remark(unit)                          |
|---------|---------------------------|---------------------------------------|
| F0      | Compressor Frequency      | rps                                   |
| F1      | High pressure value       | bar                                   |
| F2      | Discharge temperature     | ℃                                     |
| F3      | Defrosting temperature    | ℃                                     |
| F4      | Suction temperature       | ℃                                     |
| F5      | Oil temperature           | ℃                                     |
| F6      | 1# fan speed              | AC type(0,1,2,3), DC type(10 rpm)     |
| F7      | 2# fan speed              | AC type(0,1,2,3), DC type(10 rpm)     |
| F8      | EXV pulse                 | 10 pulse                              |
| F9      | Compressor current        | A                                     |
| F10(FA) | Driver module temperature | ℃                                     |
| F11(FH) | IDU total capacity        | HP (3, 4, 5, 6...)                    |
| F12(FC) | ODU operation mode        | Standby(00), cooling(C0), heating(HE) |
| F13(FJ) | Version number            | /                                     |
| F14(FE) | Reserve                   | /                                     |

## 5. Commissioning

※ Before all steps of setting, keep the system power on and standby, after setting, restart the whole system

### 3.1 Check capacity setting

1. Check the nameplate's capacity and the capacity setting in main PCB's dip switch. If not the same, you should change the setting

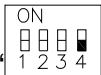
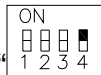
2. For example: nameplate's capacity is "16kw" but the "SW1" dip switch setting is "", through check the "[2.1 Capacity setting- SW1](#)", find out setting capacity was "8kw", so should

change the switch to"  "

### 3.2 Check fan motor setting

1. Check the fan motor's type, through the fourth switch in "SW2"

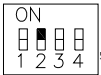
2. For example: if the ODU's fan motor is **DC type**, through check the "[2.2 Function](#)

[setting-SW2](#)" ,so should be set to ""; **AC type** should be set to "

### 3.3 Preheating 6 hours setting

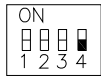
1. Preheating 6 hours function is factory default, this function is used for heating mode in low ambient temperature, and the system will operation after 6 hours

2. So when system used for cooling mode, you can cancel preheating 6 hours function, it does not affect the operation and no need wait for 6 hours, through the second switch in

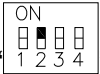
"SW3" check the "[2.3 Function setting-SW3](#)" ,then set to" 

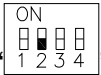
### 3.4 IDU address setting

1. Before IDU address setting, should unlock IDU's quantity through the fourth switch in

"SW3" check the "[2.3 Function setting-SW3](#)" then set to" 

2. After set, through the second switch in "SW2" choose IDU address setting function, check

the "[2.3 Function setting-SW2](#)", "Auto addressing" set to "" means automatic distribute

indoor address, "Manual addressing" set to "" means one by one address setting by remote or wired controller

3. After above 2 steps, restart the whole system then the digital tube (LED) in main PCB will display quantity of indoor units, check is it consistent with the actual installation quantity, if it is not consistent detect the communication between IDU and ODU

4. If consistent then should lock IDU's quantity through the fourth switch in "SW3" check

the "2.3 Function setting-SW3" then set to "  ", the whole commissioning complete

## 6. IDU Parameter setting by Controller

### 6.1 Parameter Setting Items

| No. | Parameter Setting Items                    | Default value | Min. value | Max. value | Remark                                                                                                                                                                                               |
|-----|--------------------------------------------|---------------|------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | communication address of indoor unit       | 1             | 1          | 64         |                                                                                                                                                                                                      |
| 2   | centralized address of indoor unit         | 1             | 1          | 64         |                                                                                                                                                                                                      |
| 3   | address of wired controller of indoor unit | 1             | 1          | 16         |                                                                                                                                                                                                      |
| 4   | model of indoor unit                       | 1             | 0          | 36         | <p>1. When replacing the PCB board, first record the parameters of the previous PCB board, and then set the parameters to the corresponding new PCB.</p> <p>2. When the PCB board is broken, you</p> |

|    |                                                 |   |   |     |                                                                                                                                                                            |
|----|-------------------------------------------------|---|---|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                 |   |   |     | need to provide the machine nameplate to our company, and our company will provide the corresponding parameters, and then set the parameters to the corresponding new PCB. |
| 5  | capacity of indoor unit                         | 8 | 1 | 100 | 280W/unit                                                                                                                                                                  |
| 7  | selection of room silent mode                   | 0 | 0 | 1   | 0--normal<br>1--silent mode                                                                                                                                                |
| 8  | auto restart function of indoor unit            | 1 | 0 | 1   | 0—Available<br>1--not available                                                                                                                                            |
| 9  | room card selection                             | 0 | 0 | 6   | /                                                                                                                                                                          |
| 10 | clearing time of filter net                     | 5 | 1 | 99  | 100h/unit                                                                                                                                                                  |
| 11 | operating mode displayed by wired controller    | 1 | 0 | 2   | 0--[auto][heating]<br>[dehumidification][cooling][ventilation]<br>1--[heating]<br>[dehumidification][cooling][ventilation]<br>2--[dehumidification][cooling][ventilation]  |
| 12 | installation height of indoor unit              | 0 | 0 | 1   | 0-- installation height is lower than 2.7m<br>1--installation height is higher than 2.7m                                                                                   |
| 13 | switching between Celsius degree and Fahrenheit | 0 | 0 | 1   | 0--Celsius degree<br>1--Fahrenheit                                                                                                                                         |
| 14 | display of room temperature                     | 0 | 0 | 1   | 0-- room temperature not to be displayed<br>1-- room temperature to be displayed                                                                                           |
| 15 | selection of room temperature                   | 0 | 0 | 1   | 0-- temperature sensor of return air<br>1--temperature sensor of wired controller                                                                                          |

## 6.2 Parameter setting by YK – L

### 6.2.1 Enter the setting interface

- ① Make sure the remote controller is off

- ② Press the two white button at the down side simultaneously more than 10s to enter the address setting mode.
- ③ First, will display“1”,“1”,
- ④ the above number means : Series parameter number from 1~15
- ⑤ the below number means : Meaning of parameter correspondence

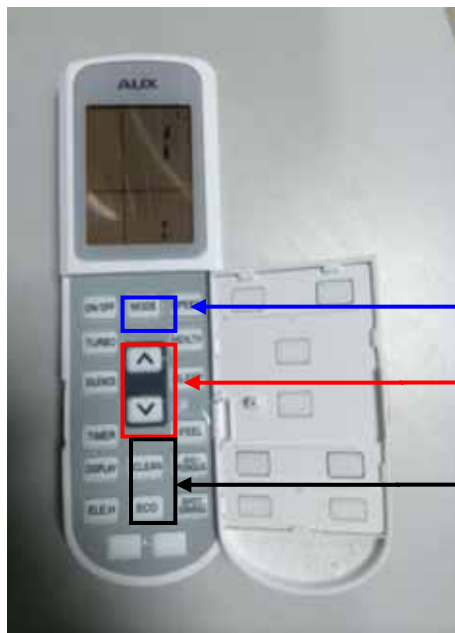
**For example:**

Check “6.1 Parameter Setting Items” for number of parameters and corresponding meaning.

“1”,“1”: The indoor unit’s address is 1#

“4”,“32”: The indoor unit’s type is Wall - Mounted (L Type )

**6.2.2 Parameter Setting**



Press “**MODE**” button to send order; When hearing buzzer once, it indicates successful setting

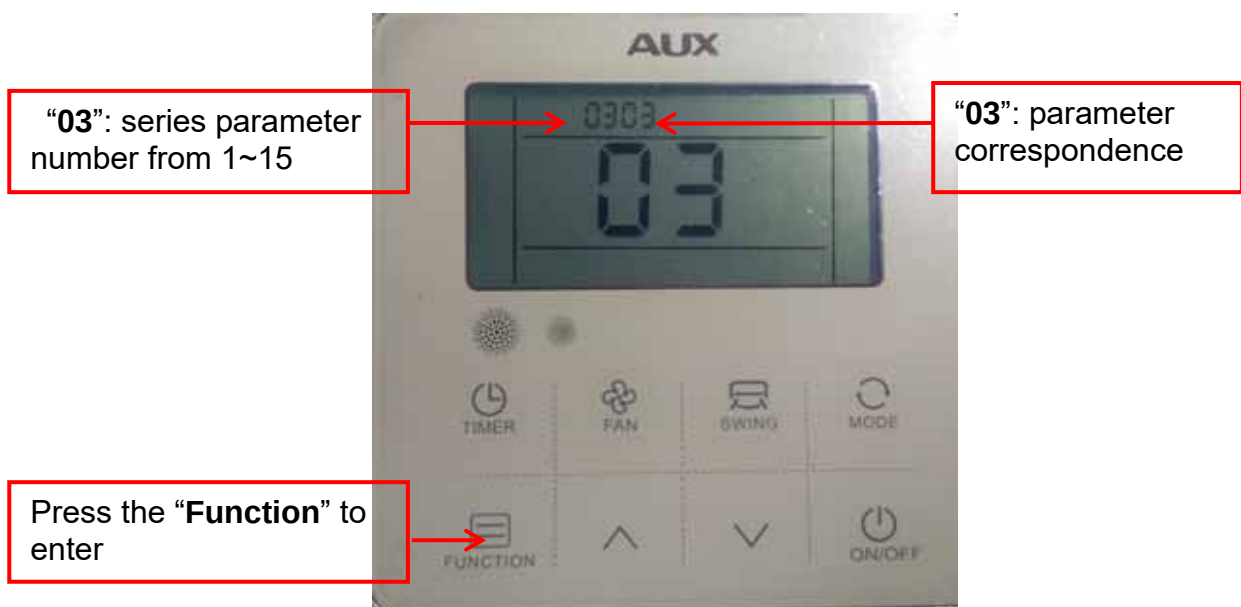
Press the “**up**” or “**down**” button to change the parameter series number

Press the “**Iclean**” or “**ECO**” button to change the parameter correspondence

### 6.3 Parameter setting by XK-05A

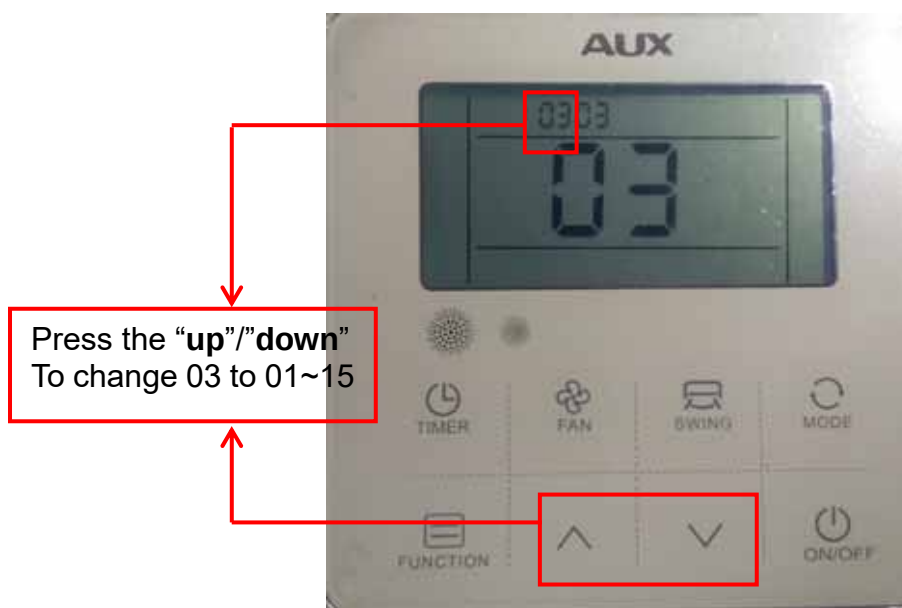
#### 6.3.1 Enter the setting interface

- ① Press “**Function**” button for 10 s to enter the setting interface.
- ② “**0303**” means address of wired controller of indoor unit. Check “[6.1 Parameter Setting Items](#)” for number of parameters and corresponding meaning.



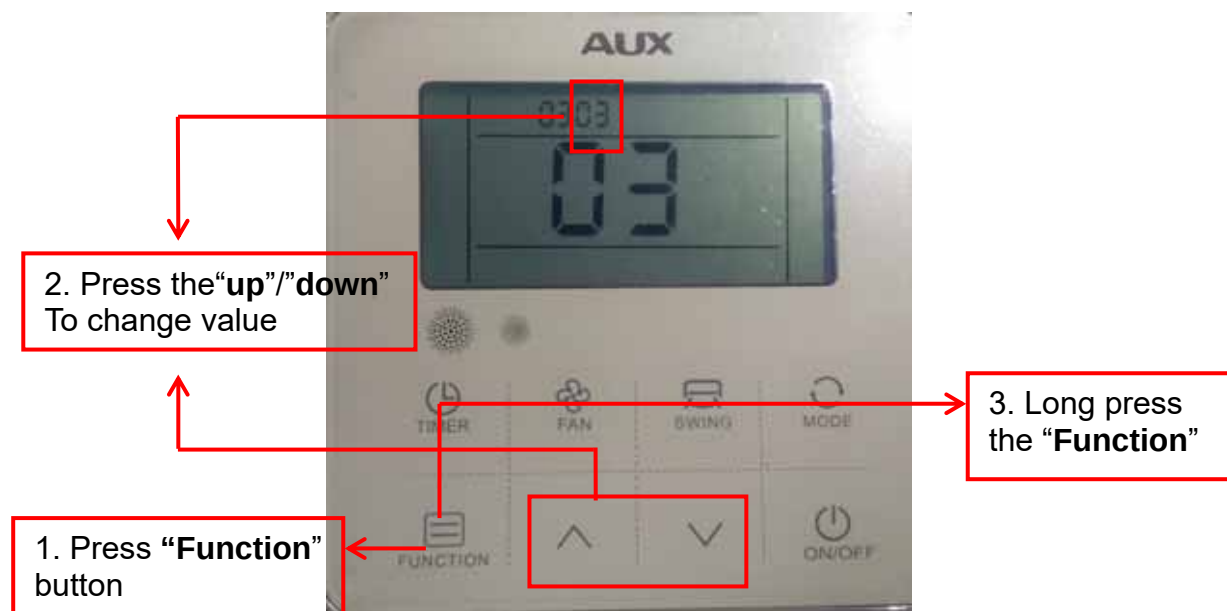
#### 6.3.2 Change series parameter number

- ① Press “up” /”down” button to change the number.



### 6.3.3 Parameter correspondence setting.

- ① Press “**Function**” button , the second “03” will flash  
② Press “up” /”down” button to change the number  
③ press [**Function Button**] to confirm



## Part6 Function and Control

### 1. Compressor control

#### 1.1 Compressor type:

Rotary DC inverter compressor

#### 1.2 Start-up control:

The minimum operation time of compressor is 6 minute, after compressor start to work, which means it cannot stop working immediately if the working time is less than 6 minute except shutdown by failure. Similarly, the compressor will not restart until more than 3 minute after stop operation

#### 1.3 Operation control:

The compressor can auto-adjust its frequency according to the target evaporating temperature (on cooling mode) and target condensing temperature (on heating mode) to get the target value.

#### 1.4 Protection adjustment control:

2.4.1 High pressure control (cooling mode) :

When the high pressure value  $P_d < 25\text{bar}$ , the compressor will regulate its frequency according to target evaporating temperature.

When the high pressure value  $25\text{bar} \leq P_d < 40\text{bar}$ , the compressor will regulate its frequency to match with target high pressure value 38bar, 10s as a adjustment cycles.

When the high pressure value  $P_d \geq 40\text{bar}$  and lasts 10s. Indoor and outdoor will stop running and display an error code which means high pressure value too high to protect

#### 2.4.2 High pressure control (heating mode) :

When the high pressure value  $P_d < 28\text{bar}$ , the compressor will regulate its frequency according to target condensation temperature.

When the high pressure value  $28\text{bar} \leq P_d < 39\text{bar}$ , the compressor will regulate its frequency to match with target high pressure value 28bar, 10s as a adjustment cycles.

When the high pressure value  $P_d \geq 39\text{bar}$  and lasts 10s. Indoor and outdoor will stop running and display an error code which means high pressure value too high to protect

## 2. Fan motor control

### 2.1 Motor type:

The DC brushless fan motor which with 10 kinds of motor speed mode.

### 2.2 Control function:

Fan motor fault: if fan motor running speed out of range ( normal range from 70% to 130%) and last for 120s, or fan motor speed lower than 200rpm and last for 120s, then whole system will stop running and display an error code which means fan motor fault. After 120s will recover normal running mode, if this error code display 6 times within 1 hour, then this error code will be locked.

When compressor stops running, fan motor will keep previous running statue for 1 minute then stop.

Cooling mode, fan motor's running speed will increase and reduce according to the detect high pressure value's increase and reduce

Heating mode, fan motor's running speed will change according to the detect condenser's superheat degree, when superheat degree lower than normal value, fan

motor's running speed will increase, when superheat degree higher than normal value, fan motor's running speed will reduce

### 3. Four-way valve Control

Four-way valve will be **OFF** when cooling and dehumidifying and it will be on when heating.

Heating mode: Four-way valve will be **NO** after compressor running about 30s

Shutdown in heating mode: four-way valve will keep **NO** When ambient temperature lower than 25°C, four-way valve will be **OFF** after an hour when ambient temperature higher than 25°C

Four-way valve will be **OFF** when operation cooling / dehumidifying / defrosting / oil return mode

### 4. Compressor preheating control

When compressor in standby state and standby time over than 1 hour and less than 240h, then start up compressor preheating function

### 5. Defrost control

#### 5.1 Defrosting condition

Heating mode: According to detect running time of compressor / defrost temperature of condenser / high pressure value to judge whether enter defrost

#### 5.2 Defrosting

Heating mode → The preparation of defrosting (20Hz , 40S)→defrosting→Complete defrosting (20Hz , 40S) → Heating mode

#### 5.3 Exit condition

Defrosting will be finished if any requirements below are satisfied.

6.3.1 Defrost temperature of condenser higher than 10°C and last for 1 minute, or higher than 12°C and last for 30 s

6.3.2 High pressure value higher than 30 bar

6.3.3 Discharge temperature higher than 100 °C

6.3.4 Total defrosting time more than 10 minutes

## 6. Oil return control

### 6.1 Oil return condition

Compressor running frequency lower than the setting frequency and last for 4 hours

### 6.2 Oil return

#### 7.2.1 Cooling mode

Cooling mode → Oil return running (65Hz) → Cooling mode

#### 7.2.2 Heating mode

Heating mode → The preparation of oil return (20Hz , 40S) → oil return running →

Complete oil return (20Hz , 40S) → Heating mode

### 6.3 Exit oil return

Oil return will be finished if any requirements below are satisfied.

6.3.1 After running 2 minutes, if discharge temperature higher than 100 °C

6.3.2 After running 2 minutes, if high pressure value higher than 34 bar

6.3.3 Oil return running last for 3 minutes

## 7. EXV control

7.1 Initialization: EXV will be initialized when turning on at the first time.

7.2 EXV will not be reset when turning on/off unless the downtime of it is more than 24h.

7.3 EXV Control info is as follows.

| Mode    | Status    | Open degree | Instruction                                                             |
|---------|-----------|-------------|-------------------------------------------------------------------------|
| Cooling | Operation | 480         | Unchanged                                                               |
|         | Standby   | 0           | Unchanged                                                               |
| Heating | Operation | 65~480      | Self-adjusting according to the degree of suction temperature superheat |
|         | Standby   | 0           | Unchanged                                                               |

## 8. Protection control

### 8.1 Pressure switch protection

Disconnection pressure value of high pressure switch: 4.2MPa±0.05Mpa

Connection pressure value of high pressure switch:  $3.3\text{MPa}\pm 0.05\text{Mpa}$

Disconnection pressure value of low pressure switch:  $0.1\text{MPa}\pm 0.05\text{Mpa}$

Connection pressure value of low pressure switch:  $0.15\text{MPa}\pm 0.05\text{Mpa}$

## **8.2 Discharge temperature too high control**

When the discharge temperature lower than  $80^{\circ}\text{C}$ , compressors will auto-adjust its frequency

When the discharge temperature is equal to or higher than  $80^{\circ}\text{C}$ , but lower than  $115^{\circ}\text{C}$ , the frequency of compressor will be adjusted limitedly

When the discharge temperature higher than  $115^{\circ}\text{C}$  and last for 10s, compressors will stop running and display an error code, after 3 minutes will recovery to the previous status. But if the error code display 3 times within 1 hour then this error code will be locked unless it is solved.

## **8.3 Discharge temperature too low control**

When the superheat of discharge temperature lower than  $3^{\circ}\text{C}$  and last for 15minutes, compressors will stop running and display an error code, after 3 minutes will recovery to the previous status. But if the error code display 3 times within 1 hour then this error code will be locked unless it is solved.

## **8.4 Communication fault between IDU and ODU**

ODU cannot receive any signal from any indoor units within 1 minute, then will stop running and display an error code (Communication failure protection). It can recovery automatically when the communication between IDU and OUD is good.

## **8.5 Module failure protection**

Units shut down immediately when IPM Module failure happened, which can be recovered.

## **8.6 Temperature of IPM too high protection**

The units will stop working when the IPM temperature checked is higher than the setting value. It will recovery automatically after 3min.If this kind of situation happened 6 times within 1h, units will be locked and cannot work regularly unless it is solved.

## **8.7 Capacity ratio out of range**

When the capacity ratio (total capacity of IDUs / capacity of ODU) over than 130% then will display an error code and be locked once happen.

## Part7 Trouble shooting

### 1. Poor effect of cooling and heating

Some phenomenon in using process is similar to failures, which are not failures in fact. Therefore, when cooling performance isn't satisfactory, eliminate the following factors first:

| Phenomenon                                                                                                                                                                         | Cause Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| If there is high ambient temperature outside and more people in room, air conditioner works in full load and cool air is blown from outlet, but room temperature can't be lowered. | In case of high ambient temperature, infiltration heat from outside increases, which increases cooling load of air conditioner; if there are more people (e.g. 10 people) in room, each person discharges 120W heat, 10 people discharge 1200W heat altogether, which consume half cooling capacity of air conditioner, therefore, cooling capacity of air conditioner seems not enough and room temperature can't be lowered. It's normal and not the fault of air conditioner. |
| Air conditioner is hard to start, stops after starting or fuse is blown due to under voltage of power supply.                                                                      | It is not failure. It's necessary to check the cause of power supply. If it is caused by under voltage of power grid, user should install additional voltage stabilizer for power supply to enable voltage to reach 220V or 380V and use air conditioner normally.                                                                                                                                                                                                               |

|                                                                                                                                               |                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| When it operates under high air velocity, room temperature can't cool down and there is no much air flow volume at outlet.                    | Filth blockage of air filter makes cooling capacity can't be taken out by flowing air timely, causing insufficient cooling capacity that can be solved by removing and cleaning filtering net.                |
| When it operates under high air velocity, unit vibrates and makes loud noise                                                                  | It is normal that the unit vibrates and makes loud noise when it operates in maximum speed.                                                                                                                   |
| Temperature controller isn't properly adjusted and doesn't bring maximum function of cooling, so room temperature can't cool down.            | Adjust temperature controller to solve the problem                                                                                                                                                            |
| Heat pump-type air conditioner has unsatisfactory heating effect in cold winter, which is reasonable.                                         | Minimum ambient temperature for starting heating function of air conditioner is - 15°C. So air conditioner can't effectively heat below this temperature.                                                     |
| Improper installation position of air conditioner can also result in uneven indoor temperature or poor cooling effect.                        | Readjust the installation position of air conditioner.                                                                                                                                                        |
| mist blown out from indoor unit                                                                                                               | It is caused when cool airflow in air conditioner cools down the air in indoor unit.                                                                                                                          |
| noise                                                                                                                                         | Air conditioner will make noise when stopping operation, because refrigerant in the unit flows to opposite direction;                                                                                         |
|                                                                                                                                               | Air conditioner will expand or shrink due to air temperature change, causing harsh sound; sound of water flow is caused by refrigerant flowing in the unit.                                                   |
| odor in room sometimes                                                                                                                        | Air conditioner won't bring odor by itself, so it must be caused by odor accumulated in environment.                                                                                                          |
|                                                                                                                                               | Solution: clean air filtering net.                                                                                                                                                                            |
| In case of heating, air isn't blown out immediately after starting the unit and "Operation" indicator flickers when wired controller is used. | The heating state is used to prevent blowing out cool air. Please wait for a moment.                                                                                                                          |
|                                                                                                                                               | The unit has restart function upon power-on after power failure. Air conditioner will automatically start in case of power-on after power failure and operate according to the mode set before power failure. |

## 2 . IDU Fault code table

| Serial | Error code | Error code definition                                          | Recovery or not | Problem possible reasons                            |
|--------|------------|----------------------------------------------------------------|-----------------|-----------------------------------------------------|
| 1      | A1         | Indoor ambient temperature sensor failure                      | Yes             | Indoor PCB is broken                                |
|        |            |                                                                |                 | The fuse of indoor PCB is broken                    |
|        |            |                                                                |                 | temperature sensor broken , or exceed test limit    |
| 2      | A2         | Temperature sensor about middle position of evaporator failure | Yes             | Indoor PCB is broken                                |
|        |            |                                                                |                 | The fuse of indoor PCB is broken                    |
|        |            |                                                                |                 | temperature sensor broken , or exceed test limit    |
| 3      | A3         | Indoor coil pipe inlet temperature sensor failure              | Yes             | Indoor PCB is broken                                |
|        |            |                                                                |                 | The fuse of indoor PCB is broken                    |
|        |            |                                                                |                 | temperature sensor broken , or exceed test limit    |
| 4      | A4         | Indoor coil pipe outlet temperature sensor failure             | Yes             | Indoor PCB is broken                                |
|        |            |                                                                |                 | The fuse of indoor PCB is broken                    |
|        |            |                                                                |                 | temperature sensor is broken , or exceed test limit |
| 5      | A5         | Indoor water pump failure                                      | Yes             | Water pump no power                                 |
|        |            |                                                                |                 | Water pump switch short-circuit or unconnected      |
|        |            |                                                                |                 | Water pump is broken                                |
|        |            |                                                                |                 | Drain pipe block or up lean                         |
|        |            |                                                                |                 | Indoor PCB is broken                                |
| 6      | A6         | Failure of indoor PG fan                                       | No              | Fan motor failure                                   |
|        |            |                                                                |                 | Fan motor block                                     |
|        |            |                                                                |                 | The connection between PCB and fan motor failure.   |
|        |            |                                                                |                 | Indoor fan block                                    |
| 7      | A7         | Failure of reversible synchronous motor                        | No              | Step motor failure                                  |
|        |            |                                                                |                 | The connection between PCB and step motor failure.  |
| 8      | A8         | Indoor unit ERRPROM module failure                             | No              | Indoor unit PCB is broken                           |
|        |            |                                                                |                 | Error module is broken.                             |

|    |               |                                                                    |     |                                                                                          |
|----|---------------|--------------------------------------------------------------------|-----|------------------------------------------------------------------------------------------|
| 9  | <b>A9</b>     | The communication between indoor unit and outdoor unit failed      | No  | The communication wire between indoor unit and outdoor unit is broken.                   |
|    |               |                                                                    |     | Indoor unit power close                                                                  |
|    |               |                                                                    |     | Indoor PCB is broken                                                                     |
| 10 | <b>AA</b>     | The communication between indoor unit and wire controller failed   | No  | The communication wire between indoor unit and outdoor unit is broken.                   |
|    |               |                                                                    |     | Indoor unit power close                                                                  |
|    |               |                                                                    |     | Indoor PCB is broken                                                                     |
|    |               |                                                                    |     | Wire controller is broken                                                                |
| 11 | <b>AC</b>     | Two or more indoor unit central control system address repeated    | Yes | The central control address setting incorrect                                            |
| 12 | <b>AE</b>     | Operation mode conflict                                            | Yes | The operation mode setting incorrect                                                     |
| 13 | <b>AH</b>     | Two or more indoor unit refrigerant system address repeated        | Yes | System address setting incorrect                                                         |
| 14 | <b>AJ</b>     | Indoor unit total capacity exceeded                                | Yes | Stop some indoor units                                                                   |
| 15 | <b>AF</b>     | The EXV leakage                                                    | Yes | EXV is blocked                                                                           |
|    |               |                                                                    |     | Indoor unit temperature sensor issue.                                                    |
|    |               |                                                                    |     | Evaporator inlet sensor failure.                                                         |
| 16 | <b>A0</b>     | The EXV to open failure                                            | No  |                                                                                          |
| 17 | <b>99</b>     | Communication failure between internal machine and fan drive board | Yes | Drive board, power supply shall not be electrified                                       |
|    |               |                                                                    |     | Communication lines are not connected or loose                                           |
|    |               |                                                                    |     | Module board failure                                                                     |
| 18 | <b>9A</b>     | Indoor fan module temperature protection                           | Yes | The temperature of the inner fan module is too high                                      |
| 19 | <b>9H(9B)</b> | The Indoor fan module fails to start or runs out of step           | No  | There is foreign matter in the indoor cavity or the fan blade screw is loose             |
|    |               |                                                                    |     | The motor model set in the internal machine does not match the actual indoor motor Model |
|    |               |                                                                    |     | Module board failure                                                                     |

|    |        |                                         |    |                                                                                   |
|----|--------|-----------------------------------------|----|-----------------------------------------------------------------------------------|
|    |        |                                         |    | Motor failure                                                                     |
| 20 | 9C     | Overcurrent protection of Indoor fan    | No | Internal parameters static pressure setting is relatively large                   |
|    |        |                                         |    | There is foreign matter in the indoor cavity or the wind vane screw is loose      |
|    |        |                                         |    | Internal machine setting motor model does not match the actual indoor motor Model |
|    |        |                                         |    | Module board failure                                                              |
|    |        |                                         |    | Motor failure                                                                     |
| 21 | 9J(9D) | DC overvoltage protection of Indoor fan | No | The fan line is not connected or loose                                            |
|    |        |                                         |    | Module board failure                                                              |
|    |        |                                         |    | Motor failure                                                                     |
| 22 | 9E     | Indoor fan driver board IPM alarm       | No | Internal parameters static pressure setting is relatively large                   |
|    |        |                                         |    | There is foreign matter in the indoor cavity or the wind vane screw is loose      |
|    |        |                                         |    | Internal machine setting motor model does not match the actual indoor motor Model |
|    |        |                                         |    | Module board failure                                                              |
|    |        |                                         |    | Motor failure                                                                     |
| 23 | 9F     | Indoor fan drive board EE fault         | No | Module board failure, unable to read EE parameter after power-on                  |
|    |        |                                         |    | EE parameter is manually changed                                                  |

### 3. ODU Fault code table

| Serial | Error Code | Error code definition                  | Recovery or not | Possible reason                      |
|--------|------------|----------------------------------------|-----------------|--------------------------------------|
| 1      | F3         | High pressure too high protection "Pd" | Yes             | Exhaust pipe or condenser pipe block |
|        |            |                                        |                 | Condenser dirty                      |
|        |            |                                        |                 | Outdoor unit fan stop or low speed   |
|        |            |                                        |                 | Refrigerant overcharge               |

|   |                |                                                                      |    |                                                                                 |
|---|----------------|----------------------------------------------------------------------|----|---------------------------------------------------------------------------------|
| 2 | <b>F6</b>      | Low pressure too low protection<br>"Ps"                              | No | Indoor unit fan stop or low speed                                               |
|   |                |                                                                      |    | Evaporator dirty                                                                |
|   |                |                                                                      |    | Indoor EXV full open in cooling mode<br>(Outdoor EXV full open in heating mode) |
|   |                |                                                                      |    | Lack refrigerant                                                                |
|   |                |                                                                      |    | The pipe between evaporator and suction port block                              |
| 3 | <b>FH (FB)</b> | Discharge temperature<br>"Tdi" too low limit<br>frequency protection | No | Once confirm the unrecoverable                                                  |
| 4 | <b>H1 (B1)</b> | High pressure switch<br>failure "HPSa"                               | No | System pressure exceed high pressure switch limit.                              |
|   |                |                                                                      |    | High pressure switch failure                                                    |
|   |                |                                                                      |    | High pressure sensor failure                                                    |
|   |                |                                                                      |    | Instantaneous power-off                                                         |
|   |                |                                                                      |    | Stop valve closed                                                               |
|   |                |                                                                      |    | Outdoor unit fan stop                                                           |
|   |                |                                                                      |    | Outdoor unit air outlet block                                                   |
|   |                |                                                                      |    | In heating mode indoor unit fan stop                                            |
|   |                |                                                                      |    | In heating mode indoor unit EXV block                                           |
| 5 | <b>H4(B4)</b>  | Low pressure switch<br>failure "HPSa"                                | NO | System pressure exceed high pressure switch limit.                              |
|   |                |                                                                      |    | Low pressure switch failure                                                     |
|   |                |                                                                      |    | Low pressure sensor failure                                                     |
|   |                |                                                                      |    | Instantaneous power-off                                                         |
|   |                |                                                                      |    | Stop valve closed                                                               |
|   |                |                                                                      |    | Outdoor unit fan stop                                                           |
|   |                |                                                                      |    | Outdoor unit air outlet block                                                   |
|   |                |                                                                      |    | In heating mode indoor unit fan stop                                            |
|   |                |                                                                      |    | In heating mode indoor unit EXV block                                           |
| 6 | <b>H5</b>      | Refrigerant shortage<br>fault                                        | No | System leakage                                                                  |
| 7 | <b>HJ</b>      | Main power failure                                                   | No | Supply power phase-reversal                                                     |
|   |                |                                                                      |    | Supply power phase lack                                                         |
|   |                |                                                                      |    | Outdoor unit PCB failure                                                        |

|    |    |                                                                                      |     |                                                                                                                                                                                                                                                                                        |
|----|----|--------------------------------------------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8  | E3 | No.1-DC Compressor<br>"Tda" discharge<br>temperature too high<br>shutdown protection | No  | 1.System less refrigerant<br>2.DC inverter Compressor failure<br>3.Compressor air return filter block<br>4.EXV open degree is small<br>5.EXV block<br>6.Gas pipe stop valve closed<br>7.Liquid pipe stop valve closed<br>8.System exhaust sensor failure<br>9.Outdoor unit PCB failure |
| 9  | J7 | Outdoor unit main<br>control PCB ERROM<br>module failure                             | No  | Mail PCB failure                                                                                                                                                                                                                                                                       |
| 10 | JJ | Indoor unit total capacity<br>exceeding                                              | Yes | Indoor units' total capacity over 130% of the<br>outdoor units' total capacity                                                                                                                                                                                                         |
| 11 | 47 | Indoor unit loss failure                                                             | Yes | Communication wire between indoor units<br>failure<br>Indoor PCB failure<br>Power supply of indoor units failure                                                                                                                                                                       |
| 12 | E1 | The 4-way valve is fault                                                             | NO  | /                                                                                                                                                                                                                                                                                      |
| 13 | E9 | Drive refrigerant cooling<br>pipe low temperature<br>protection                      | NO  | /                                                                                                                                                                                                                                                                                      |
| 14 | C1 | Ambient "Tao"<br>temperature sensor<br>failure                                       | Yes | 1.Temperature sensor failure<br>2.Test temperature exceed limit<br>3.Sensor connection is incorrect<br>4.Outdoor unit PCB failure                                                                                                                                                      |
| 15 | C2 | Defrosting "Tdef"<br>temperature sensor<br>failure                                   | Yes |                                                                                                                                                                                                                                                                                        |
| 16 | C3 | Compressor 1#<br>discharge "Tda"<br>temperature sensor<br>failure                    | Yes |                                                                                                                                                                                                                                                                                        |
| 17 | C6 | Suction pipe of<br>compressor "Ts"<br>temperature sensor<br>failure                  | Yes |                                                                                                                                                                                                                                                                                        |

|    |           |                                                                      |     |                                                                                                                                                                       |
|----|-----------|----------------------------------------------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18 | <b>C8</b> | Condenser Mid temperature sensor failure                             | Yes |                                                                                                                                                                       |
| 19 | <b>CJ</b> | Oil "Toila" temperature sensor failure                               | Yes |                                                                                                                                                                       |
| 20 | <b>F1</b> | High pressure sensor failure<br>"Pd"                                 | Yes | High pressure sensor failure                                                                                                                                          |
|    |           |                                                                      |     | High pressure sensor connection is incorrect.                                                                                                                         |
|    |           |                                                                      |     | Outdoor unit PCB failure                                                                                                                                              |
| 21 | <b>F4</b> | Low pressure sensor failure<br>"Ps"                                  | Yes | Low pressure sensor is broken.                                                                                                                                        |
|    |           |                                                                      |     | The connection between sensor and outdoor PCB incorrect                                                                                                               |
|    |           |                                                                      |     | Outdoor unit PCB failure                                                                                                                                              |
| 22 | <b>J2</b> | Communication failure between outdoor and indoor unit                | Yes | The communication wire between indoor unit and outdoor unit disconnect, short circuit or connect incorrect.                                                           |
|    |           |                                                                      |     | Indoor unit main power failed                                                                                                                                         |
|    |           |                                                                      |     | Indoor unit PCB failure                                                                                                                                               |
| 23 | <b>J3</b> | Communication failure between PCB and INV drive module               | Yes | The connection between driving module and main PCB failure                                                                                                            |
|    |           |                                                                      |     | The communication part of outdoor unit control PCB failure                                                                                                            |
|    |           |                                                                      |     | Frequency driving board failure                                                                                                                                       |
|    |           |                                                                      |     | Compressor failure                                                                                                                                                    |
| 24 | <b>J4</b> | Communication failure between main PCB and DC fan motor drive module | Yes | DC fan motor drive module failure                                                                                                                                     |
|    |           |                                                                      |     | DC fan failure                                                                                                                                                        |
| 25 | <b>31</b> | Compressor 1# drive Module IPM protection (F0)                       | Yes | 1. Supply voltage below level let the current excessive<br>2. Supply voltage exceed limit<br>3. Outdoor fan stop or low speed<br>4. Drive module temperature too high |
| 26 | <b>32</b> | Compressor 1# drive Module hardware protection                       | Yes |                                                                                                                                                                       |
| 27 | <b>33</b> | Compressor 1# drive Module software                                  | Yes |                                                                                                                                                                       |

|    |        |                                                                     |     |                                                                                                                                                                                                                                                                                       |
|----|--------|---------------------------------------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |        | protection                                                          |     |                                                                                                                                                                                                                                                                                       |
| 28 | 34     | Compressor 1# drive module unconnected                              | Yes | The connect of driving module and DC inverter compressor incorrect                                                                                                                                                                                                                    |
|    |        |                                                                     |     | Driving module failure                                                                                                                                                                                                                                                                |
|    |        |                                                                     |     | Compressor failure                                                                                                                                                                                                                                                                    |
| 29 | 35     | Compressor 1# phase current overload protection                     | Yes | Compressor overload                                                                                                                                                                                                                                                                   |
|    |        |                                                                     |     | Compressor coil disconnect                                                                                                                                                                                                                                                            |
|    |        |                                                                     |     | Inverter driving board failure                                                                                                                                                                                                                                                        |
|    |        |                                                                     |     | Compressor failure                                                                                                                                                                                                                                                                    |
| 30 | 36     | Compressor 1# DC bus voltage over-voltage or under-voltage failure  | Yes | Supply voltage below level                                                                                                                                                                                                                                                            |
|    |        |                                                                     |     | Supply voltage exceed limit                                                                                                                                                                                                                                                           |
|    |        |                                                                     |     | Driving module failure                                                                                                                                                                                                                                                                |
| 31 | 37     | Compressor 1# temperature sensor of drive module heat fins failure  | No  | Inverter driving board failure                                                                                                                                                                                                                                                        |
| 32 | 38     | Compressor 1# drive module high temperature limit frequency failure | Yes | Driving module failure                                                                                                                                                                                                                                                                |
|    |        |                                                                     |     | Compressor failure                                                                                                                                                                                                                                                                    |
|    |        |                                                                     |     | Outdoor unit fan stop or low speed                                                                                                                                                                                                                                                    |
| 33 | 39     | Compressor 1# drive module high temperature shutdown protection     | Yes | Driving module failure                                                                                                                                                                                                                                                                |
|    |        |                                                                     |     | Compressor failure                                                                                                                                                                                                                                                                    |
|    |        |                                                                     |     | Temperature sensor failure                                                                                                                                                                                                                                                            |
| 34 | 3E     | Compressor 1# drive module AC Input over current protection         | No  | Once confirm the unrecoverable                                                                                                                                                                                                                                                        |
| 35 | 3F     | Compressor 1# drive Module PFC protection (F0)                      | Yes | /                                                                                                                                                                                                                                                                                     |
| 36 | 3H(3B) | DC fan 1 module startup failure or running out of step              | Yes | 1. Loose fan blade screws, abnormal air inlet or overstocking of snow<br>2. Incorrect external capacity setting (Dialing) or incorrect model setting (Dialing)<br>3. fan controller EE parameter does not match the actual motor Model<br>4. Module board failure<br>5. Motor failure |

|    |               |                                                        |     |                                                                                                                                                                                                                                                                                       |
|----|---------------|--------------------------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 37 | <b>HE(BE)</b> | High AC input voltage protection of unit               | Yes | 1. Unstable voltage<br>2. Abnormal connection                                                                                                                                                                                                                                         |
| 38 | <b>3C</b>     | DC fan 1 overcurrent protection                        | Yes | 1. Loose fan blade screws, abnormal air inlet or overstocking of snow<br>2. Incorrect external capacity setting (Dialing) or incorrect model setting (Dialing)<br>3. fan controller EE parameter does not match the actual motor Model<br>4. Module board failure<br>5. Motor failure |
| 39 | <b>3J(3D)</b> | DC fan 1DC over-voltage protection                     | Yes | 1. The fan line is not connected or loose<br>2. Module board failure<br>3. Motor Failure                                                                                                                                                                                              |
| 40 | <b>43</b>     | DC Fan 1 driver board hardware protection              | No  | 1. Module board failure, unable to read EE parameter after power-on<br>2. EE parameter is manually changed                                                                                                                                                                            |
| 41 | <b>4H(4B)</b> | DC Fan 2 driver board hardware protection              | No  | 1. Module board failure, unable to read EE parameter after power-on<br>2. EE parameter is manually changed                                                                                                                                                                            |
| 42 | <b>5H(5B)</b> | DC Fan 2 module startup failure or running out of step | Yes | 1. Loose fan blade screws, abnormal air inlet or overstocking of snow<br>2. Incorrect external capacity setting (Dialing) or incorrect model setting (Dialing)<br>3. fan controller EE parameter does not match the actual motor Model<br>4. Module board failure<br>5. Motor failure |
| 43 | <b>5C</b>     | DC Fan 2 overcurrent protection                        | Yes | 1. Loose fan blade screws, abnormal air inlet or overstocking of snow<br>2. Incorrect external capacity setting (Dialing) or incorrect model setting (Dialing)<br>3. fan controller EE parameter does not match the actual motor Model<br>4. Module board failure<br>5. Motor failure |
| 44 | <b>5J(5D)</b> | DC Fan 2 DC over-voltage protection                    | Yes | 1. The fan line is not connected or loose<br>2. Module board failure<br>3. Motor Failure                                                                                                                                                                                              |

## 4. Error code display

### 4.1 Error code display by wired control – YK-05A



“ **E0A1** ” means the first error code “**A1**”, through the “2.1 IDU Fault code table” to check error code definition

“**E2A3**” means the second error code is “**A3**”

Press “ **Function** ” “**Up**” button at the same time to enter the error code check

### 4.2 Error code display by digital tube – panel

“**E0**” error code

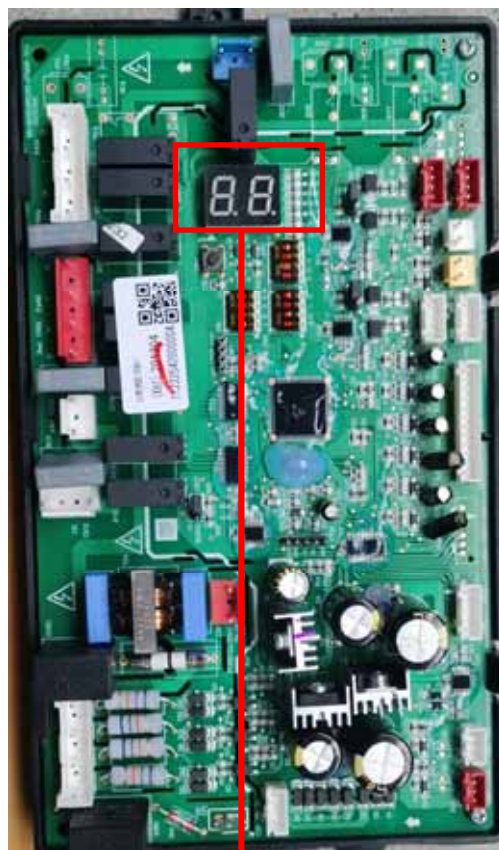


#### 4.3 Outdoor unit error code display

For outdoor units, the error code displays on the main PCB (Master unit).

**Outdoor unit main PCB**

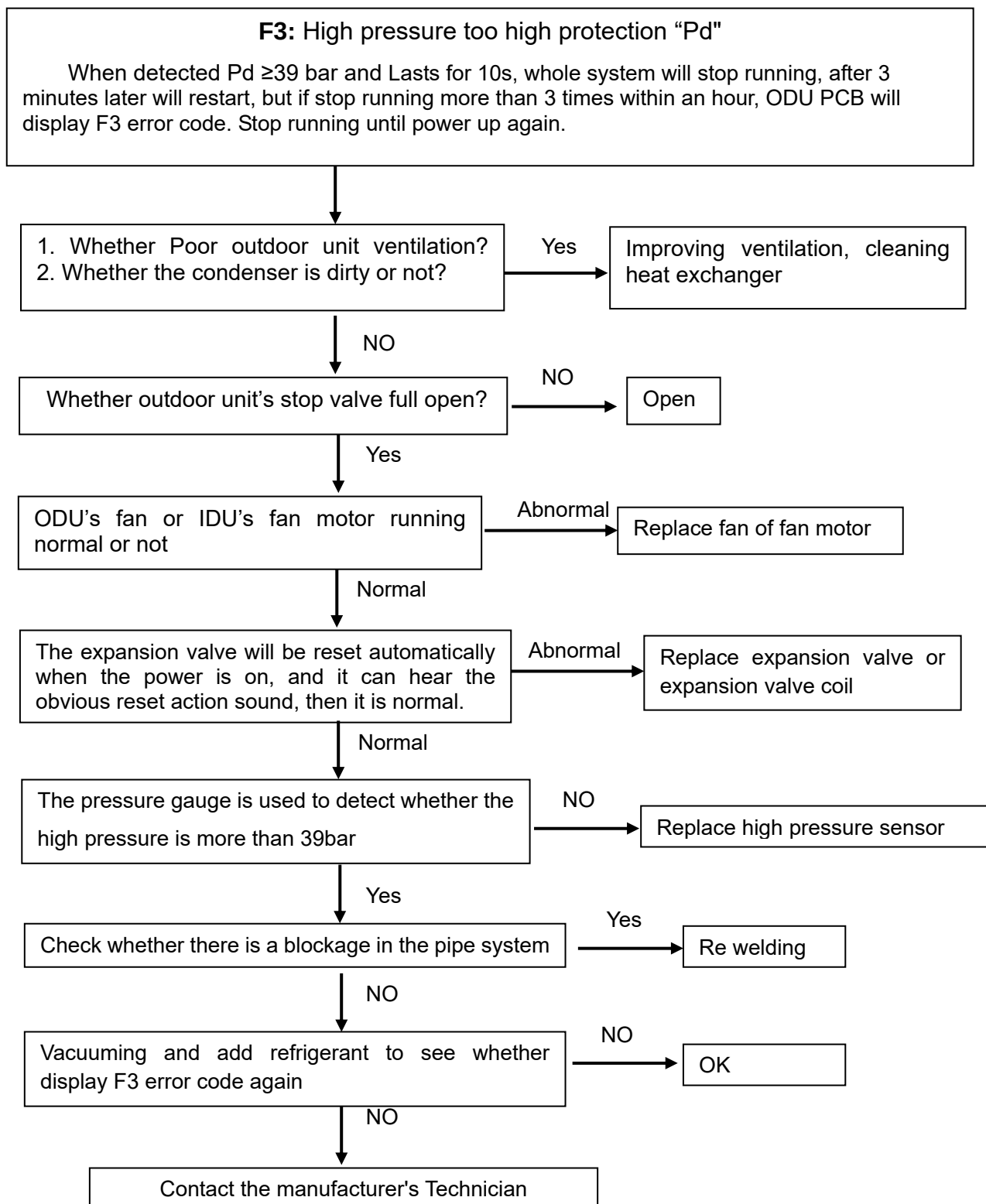
**Outdoor unit main PCB**



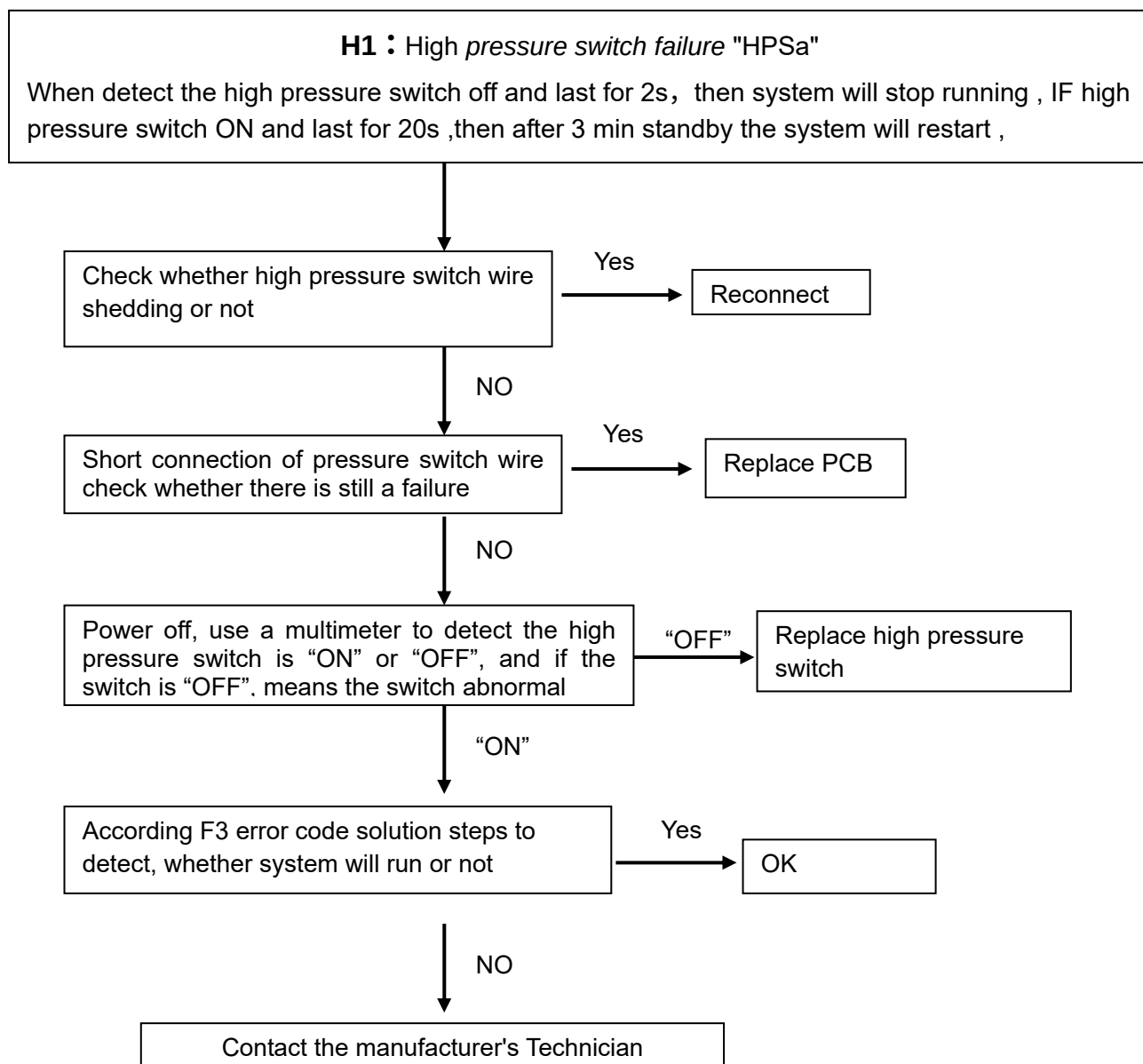
Error code “H5”, through the “2.2 ODU Fault code table” to check the definition: system leakage

## 5. Outdoor unit trouble shooting

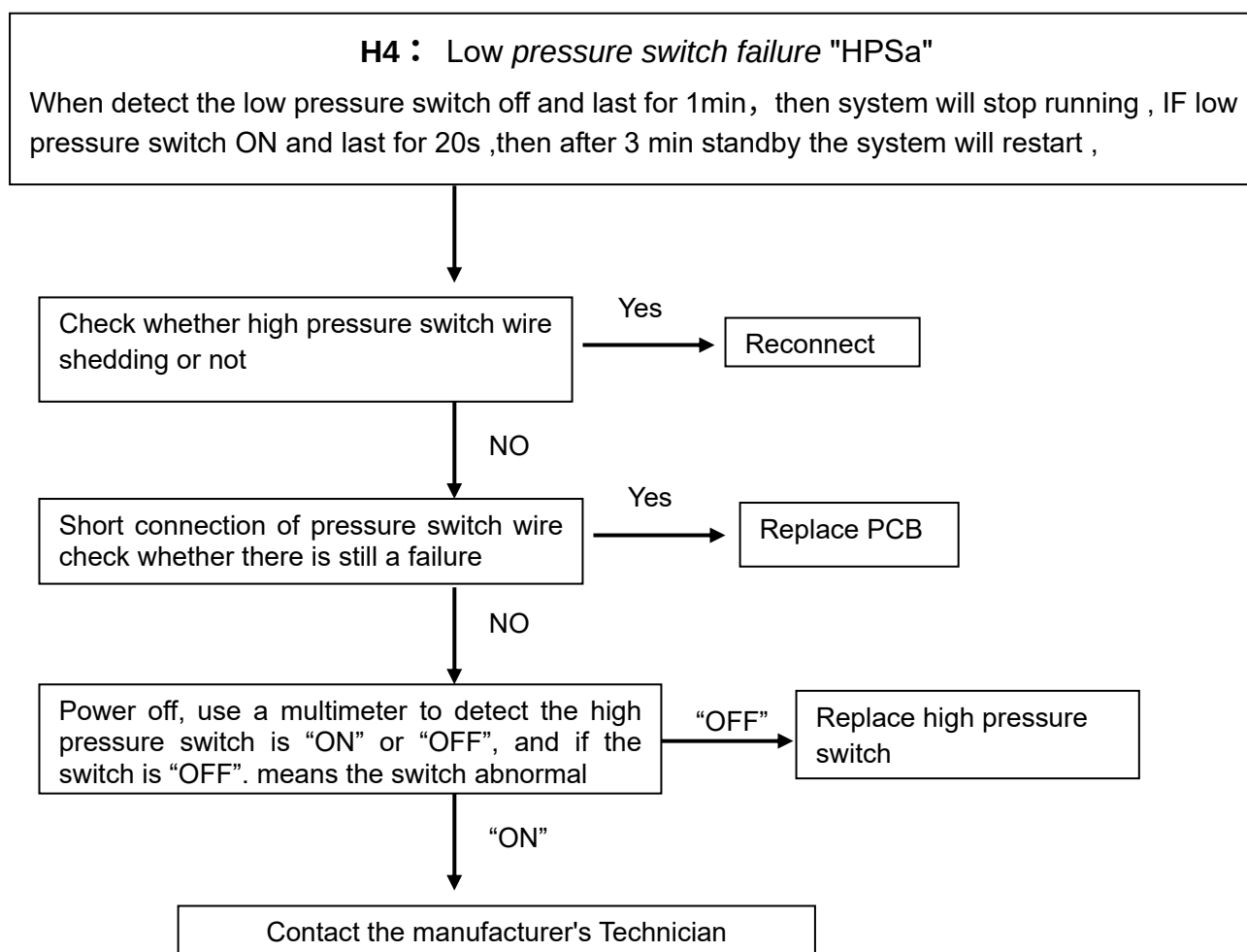
### 5.1 F3 Error Code



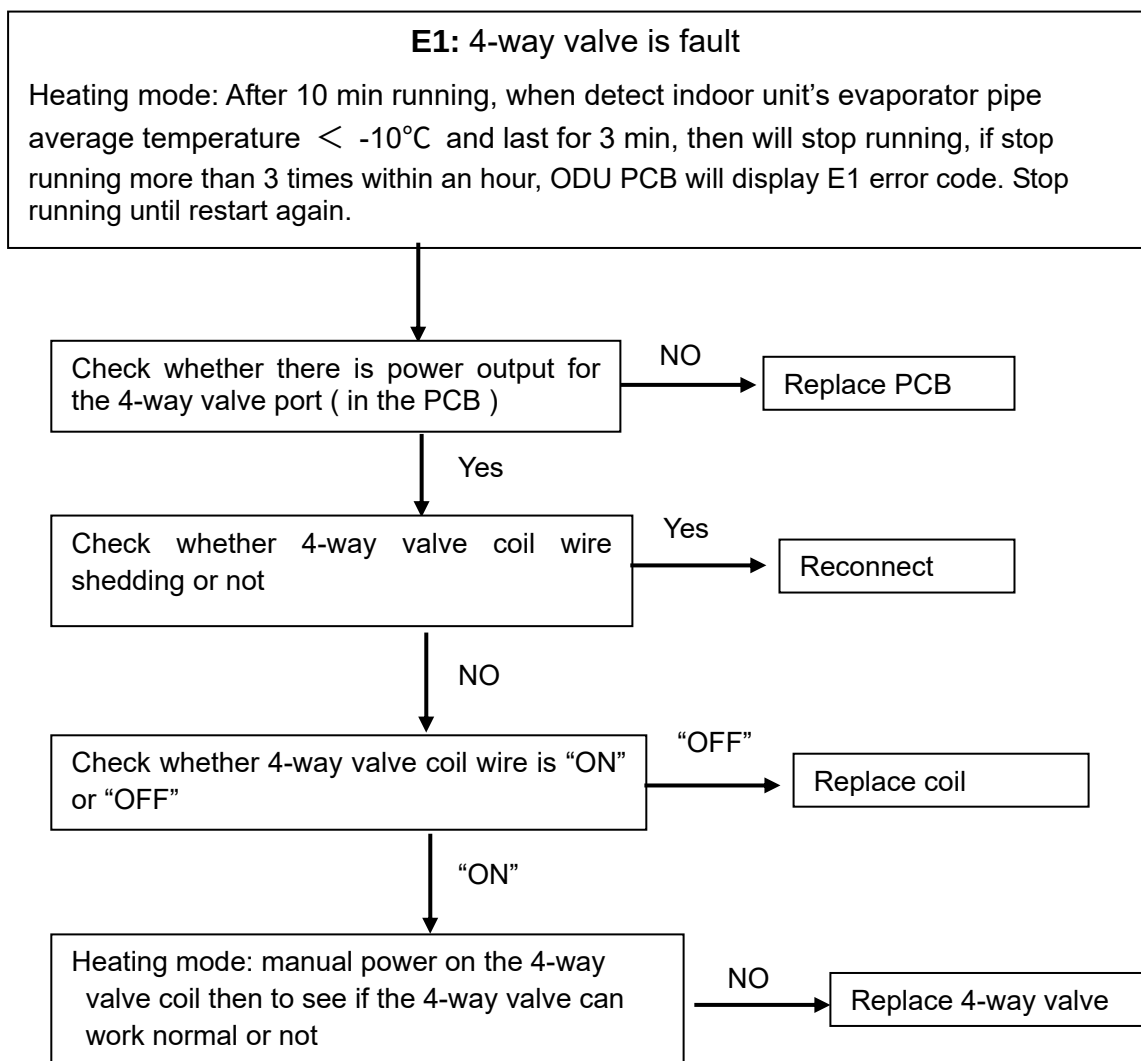
## 5.2 H1 Error code



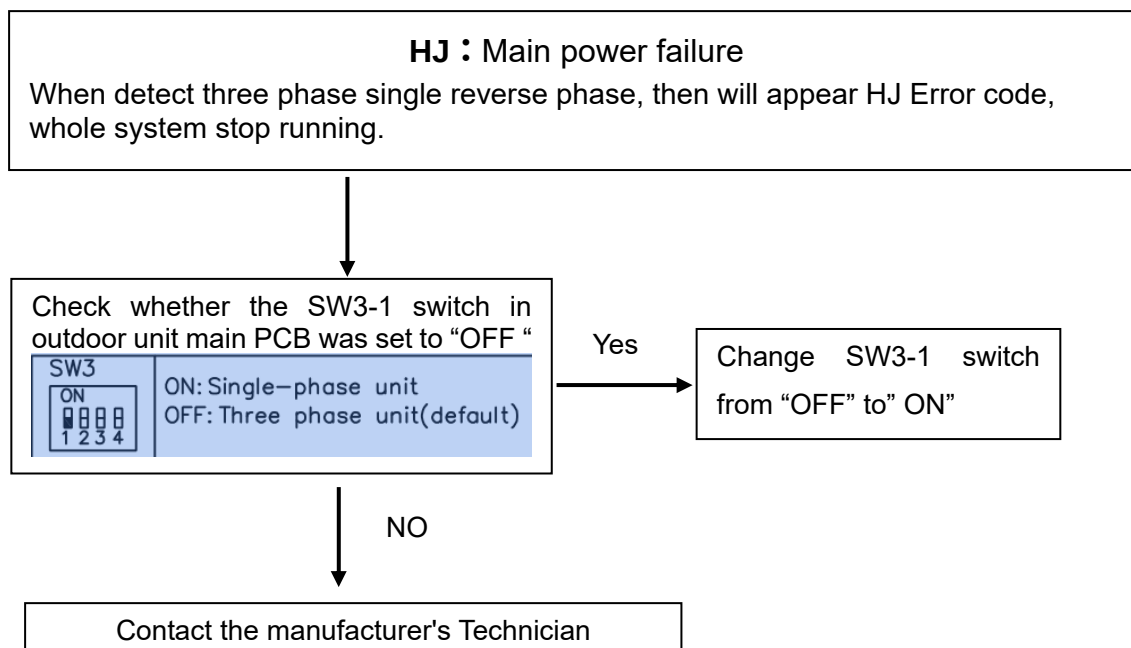
### 5.3 H4 Error code



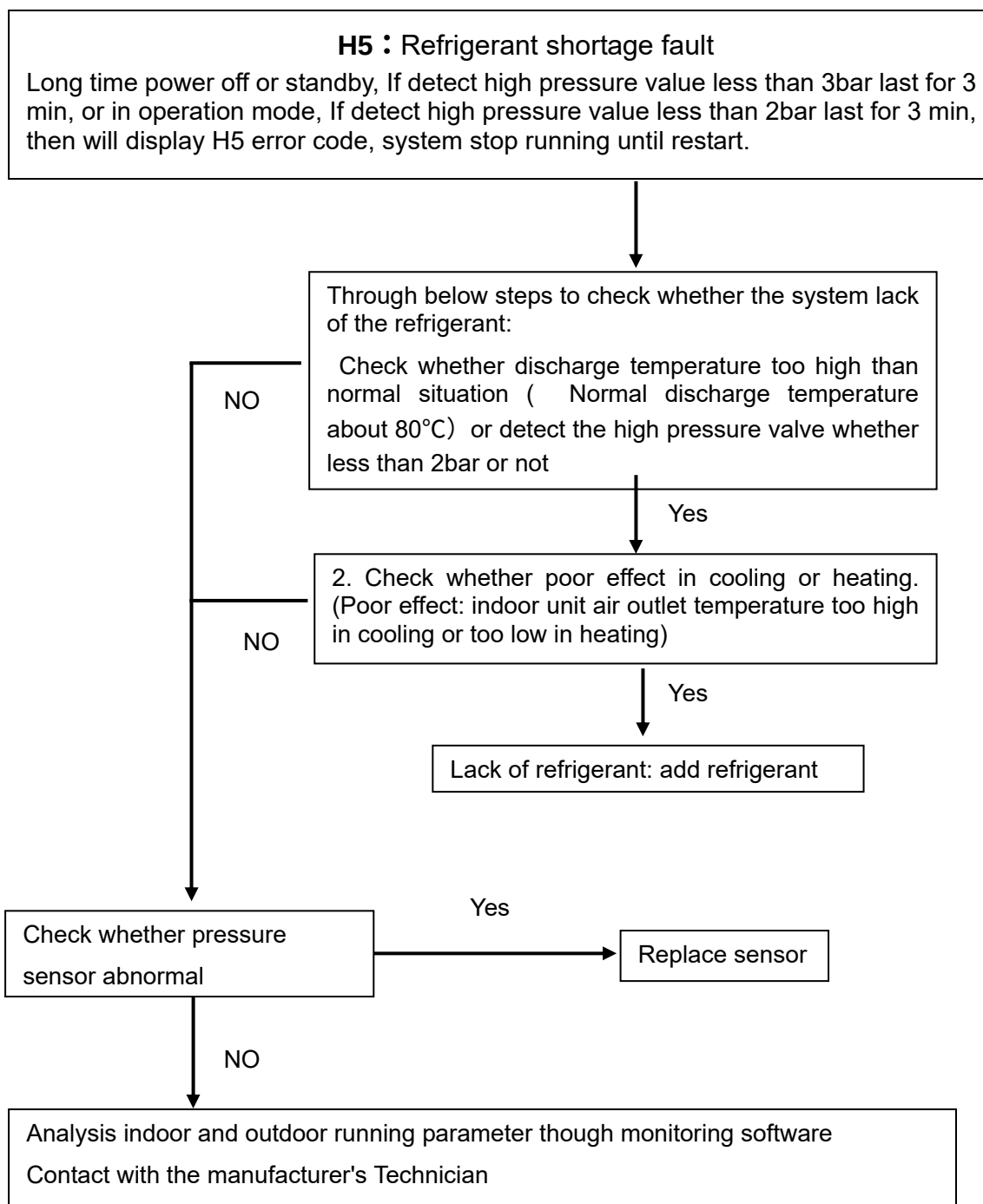
## 5.4 E1 Error code



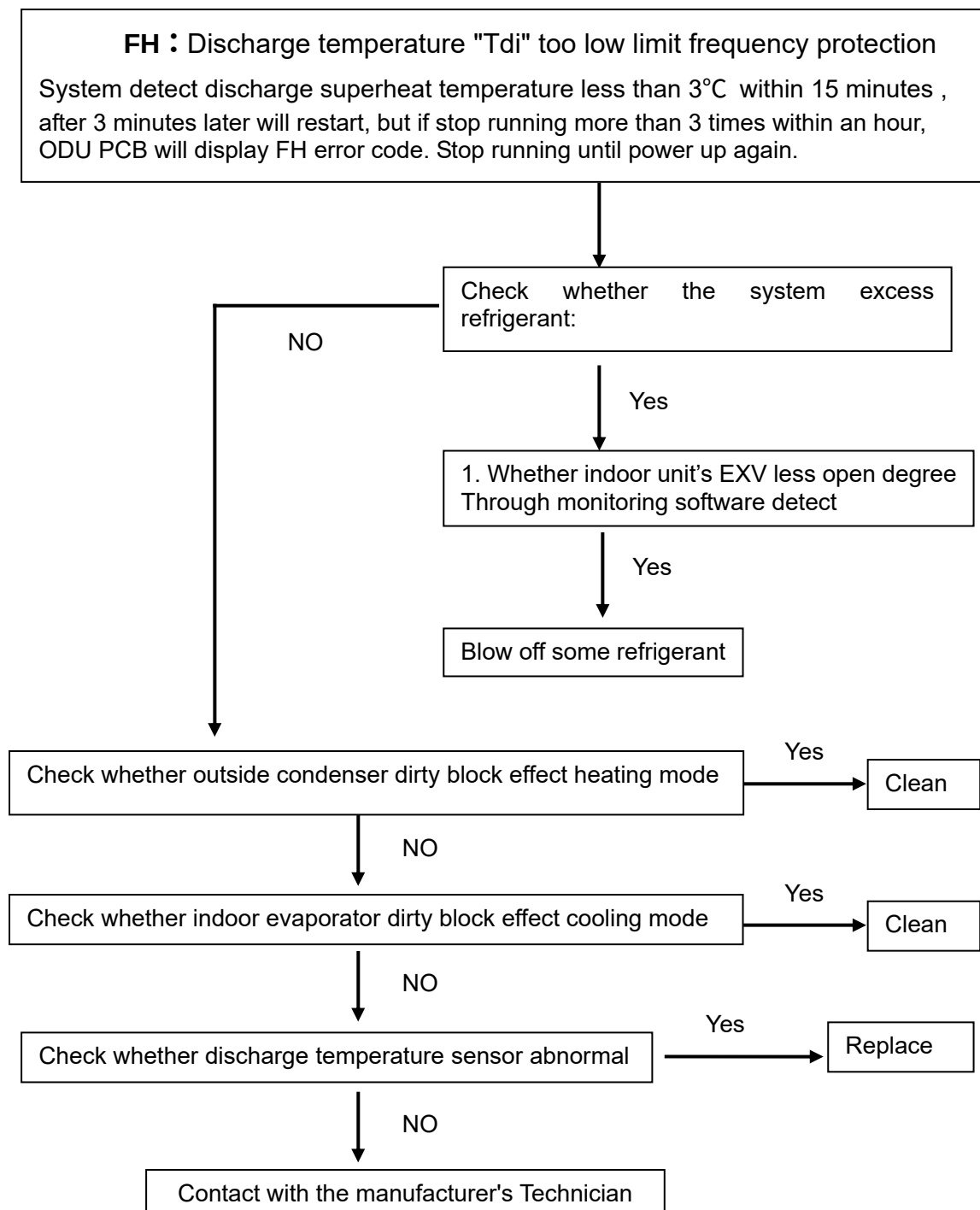
## 5.5 HJ Error code



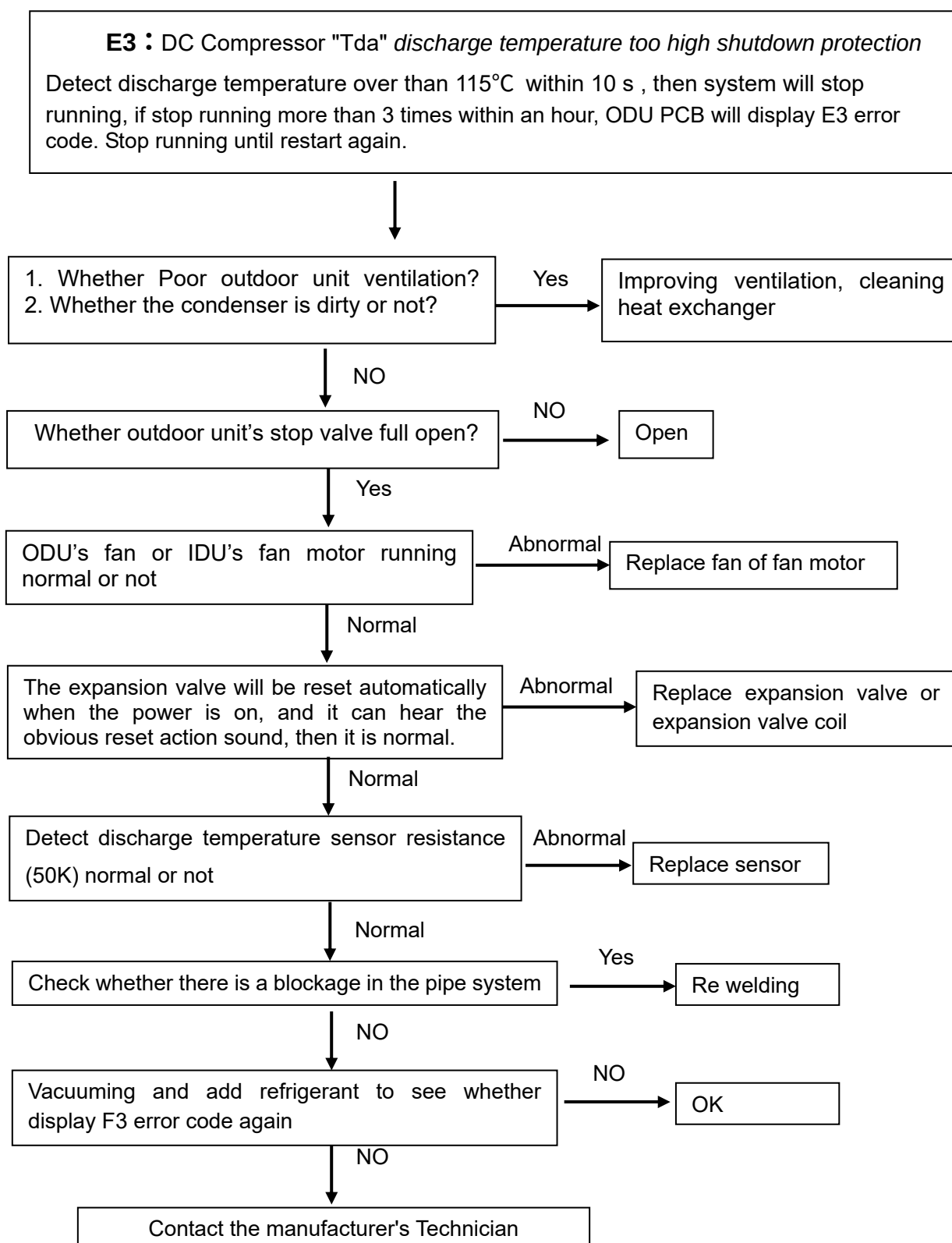
## 5.6 H5 Error code



## 5.7 FH Error code



## 5.8 E3 Error code



## 3. Appendix

**Relation between temperature sensor of compressor and resistance**

| R25=50KΩ±1%      |           |           |           |
|------------------|-----------|-----------|-----------|
| B25/50=3950K ±1% |           |           |           |
| T [°C]           | Rmin [KΩ] | Rnom [KΩ] | Rmax [KΩ] |
| -20              | 449.9     | 464.7     | 479.9     |
| -19              | 425.7     | 439.5     | 453.6     |
| -18              | 402.9     | 415.7     | 428.8     |
| -17              | 381.5     | 393.4     | 405.6     |
| -16              | 361.3     | 372.3     | 383.6     |
| -15              | 342.2     | 352.5     | 363.0     |
| -14              | 324.3     | 333.9     | 343.7     |
| -13              | 307.5     | 316.4     | 325.5     |
| -12              | 291.5     | 299.8     | 308.3     |
| -11              | 276.6     | 284.3     | 292.2     |
| -10              | 262.4     | 269.6     | 276.9     |
| -9               | 249.0     | 255.7     | 262.5     |
| -8               | 236.5     | 242.7     | 249.0     |
| -7               | 224.5     | 230.3     | 236.2     |
| -6               | 213.3     | 218.7     | 224.2     |
| -5               | 202.7     | 207.7     | 212.8     |
| -4               | 192.7     | 197.3     | 202.0     |
| -3               | 183.2     | 187.5     | 191.9     |
| -2               | 174.3     | 178.3     | 182.4     |
| -1               | 165.8     | 169.5     | 173.3     |
| 0                | 157.7     | 161.2     | 164.7     |
| 1                | 150.2     | 153.4     | 156.7     |
| 2                | 142.9     | 145.9     | 148.9     |
| 3                | 136.1     | 138.9     | 141.7     |
| 4                | 129.7     | 132.3     | 134.93    |
| 5                | 123.6     | 126.0     | 128.4     |
| 6                | 117.8     | 120.0     | 122.3     |
| 7                | 112.2     | 114.3     | 116.4     |
| 8                | 107.1     | 109.0     | 111.0     |
| 9                | 102.1     | 103.9     | 105.7     |
| 10               | 97.42     | 99.08     | 100.8     |
| 11               | 92.97     | 94.51     | 96.06     |

|    |       |       |       |
|----|-------|-------|-------|
| 12 | 88.74 | 90.17 | 91.61 |
| 13 | 84.73 | 86.05 | 87.38 |
| 14 | 80.92 | 82.14 | 83.37 |
| 15 | 77.29 | 78.42 | 79.56 |
| 16 | 73.84 | 74.89 | 75.95 |
| 17 | 70.57 | 71.54 | 72.51 |
| 18 | 67.46 | 68.35 | 69.25 |
| 19 | 64.49 | 65.32 | 66.15 |
| 20 | 61.68 | 62.44 | 63.20 |
| 21 | 59.00 | 59.70 | 60.40 |
| 22 | 56.44 | 57.09 | 57.74 |
| 23 | 54.02 | 54.61 | 55.20 |
| 24 | 51.70 | 52.25 | 52.80 |
| 25 | 49.50 | 50.00 | 50.50 |
| 26 | 47.37 | 47.87 | 48.37 |
| 27 | 45.34 | 45.84 | 46.34 |
| 28 | 43.41 | 43.91 | 44.41 |
| 29 | 41.59 | 42.08 | 42.57 |
| 30 | 39.84 | 40.33 | 40.82 |
| 31 | 38.18 | 38.66 | 39.15 |
| 32 | 36.59 | 37.07 | 37.55 |
| 33 | 35.07 | 35.55 | 36.03 |
| 34 | 33.64 | 34.11 | 34.58 |
| 35 | 32.27 | 32.73 | 33.20 |
| 36 | 30.95 | 31.41 | 31.87 |
| 37 | 29.70 | 30.15 | 30.61 |
| 38 | 28.50 | 28.95 | 29.40 |
| 39 | 27.37 | 27.81 | 28.25 |
| 40 | 26.29 | 26.72 | 27.16 |
| 41 | 25.24 | 25.67 | 26.10 |
| 42 | 24.25 | 24.67 | 25.09 |
| 43 | 23.31 | 23.72 | 24.14 |
| 44 | 22.41 | 22.81 | 23.22 |
| 45 | 21.53 | 21.93 | 22.33 |
| 46 | 20.71 | 21.10 | 21.50 |
| 47 | 19.92 | 20.30 | 20.69 |
| 48 | 19.16 | 19.54 | 19.92 |

|    |       |       |       |
|----|-------|-------|-------|
| 49 | 18.44 | 18.81 | 19.18 |
| 50 | 17.75 | 18.11 | 18.48 |
| 51 | 17.08 | 17.44 | 17.80 |
| 52 | 16.44 | 16.79 | 17.14 |
| 53 | 15.84 | 16.18 | 16.53 |
| 54 | 15.26 | 15.59 | 15.93 |
| 55 | 14.69 | 15.02 | 15.35 |
| 56 | 14.16 | 14.48 | 14.81 |
| 57 | 13.65 | 13.96 | 14.28 |
| 58 | 13.15 | 13.46 | 13.77 |
| 59 | 12.69 | 12.99 | 13.30 |
| 60 | 12.23 | 12.53 | 12.83 |
| 61 | 11.80 | 12.09 | 12.39 |
| 62 | 11.39 | 11.67 | 11.96 |
| 63 | 10.98 | 11.26 | 11.54 |
| 64 | 10.60 | 10.87 | 11.15 |
| 65 | 10.23 | 10.50 | 10.77 |
| 66 | 9.880 | 10.14 | 10.41 |
| 67 | 9.537 | 9.792 | 10.05 |
| 68 | 9.211 | 9.460 | 9.715 |
| 69 | 8.897 | 9.141 | 9.391 |
| 70 | 8.595 | 8.834 | 9.078 |
| 71 | 8.306 | 8.539 | 8.778 |
| 72 | 8.028 | 8.256 | 8.490 |
| 73 | 7.759 | 7.983 | 8.212 |
| 74 | 7.501 | 7.720 | 7.944 |
| 75 | 7.254 | 7.468 | 7.687 |
| 76 | 7.016 | 7.225 | 7.440 |
| 77 | 6.786 | 6.991 | 7.201 |
| 78 | 6.565 | 6.765 | 6.971 |
| 79 | 6.352 | 6.548 | 6.749 |
| 80 | 6.147 | 6.339 | 6.536 |
| 81 | 5.950 | 6.138 | 6.331 |
| 82 | 5.761 | 5.944 | 6.133 |
| 83 | 5.578 | 5.757 | 5.942 |
| 84 | 5.401 | 5.577 | 5.758 |
| 85 | 5.231 | 5.403 | 5.580 |

|     |       |       |       |
|-----|-------|-------|-------|
| 86  | 5.069 | 5.237 | 5.410 |
| 87  | 4.912 | 5.076 | 5.245 |
| 88  | 4.760 | 4.921 | 5.087 |
| 89  | 4.615 | 4.772 | 4.934 |
| 90  | 4.474 | 4.628 | 4.787 |
| 91  | 4.338 | 4.489 | 4.645 |
| 92  | 4.207 | 4.354 | 4.506 |
| 93  | 4.081 | 4.225 | 4.374 |
| 94  | 3.958 | 4.099 | 4.245 |
| 95  | 3.840 | 3.978 | 4.121 |
| 96  | 3.726 | 3.861 | 4.001 |
| 97  | 3.616 | 3.748 | 3.885 |
| 98  | 3.509 | 3.639 | 3.773 |
| 99  | 3.407 | 3.534 | 3.665 |
| 100 | 3.308 | 3.432 | 3.560 |
| 101 | 3.212 | 3.333 | 3.459 |
| 102 | 3.119 | 3.238 | 3.361 |
| 103 | 3.030 | 3.146 | 3.267 |
| 104 | 2.942 | 3.056 | 3.174 |
| 105 | 2.858 | 2.970 | 3.086 |
| 106 | 2.778 | 2.887 | 3.000 |
| 107 | 2.699 | 2.806 | 2.917 |
| 108 | 2.623 | 2.728 | 2.837 |
| 109 | 2.549 | 2.652 | 2.758 |
| 110 | 2.479 | 2.579 | 2.683 |
| 111 | 2.410 | 2.508 | 2.610 |
| 112 | 2.343 | 2.439 | 2.539 |
| 113 | 2.279 | 2.373 | 2.471 |
| 114 | 2.216 | 2.308 | 2.404 |
| 115 | 2.156 | 2.246 | 2.340 |
| 116 | 2.097 | 2.186 | 2.278 |
| 117 | 2.040 | 2.127 | 2.217 |
| 118 | 1.985 | 2.070 | 2.158 |
| 119 | 1.932 | 2.015 | 2.102 |
| 120 | 1.880 | 1.962 | 2.047 |

## 更新记录表

| No. | version    | Updated | Update content                                                                            |
|-----|------------|---------|-------------------------------------------------------------------------------------------|
| 1   | 20200328 版 | 阳露      | 1.删除老版监控软件说明，新版的说明在多联机通用控制器手册体现                                                           |
| 2   | 20200331 版 | 阳露      | 1.删除安装部分信息，以研发说明书为准<br>2.增加电气原理图，修改控制板端口说明<br>3.修改 3D 爆炸图（所有）<br>4.增加总体信息&外机数据，整合技术和售后成一本 |
| 3   | 20200416 版 | 魏文文     | 1.增加 ARV-H120/SR1DCS7、ARV-H140/SR1DCSA、ARV-H160/SR1DCSA 型号及相关信息                           |
| 4   | 20210712 版 | 解凯      | 1.增加 ARV-H220/5R1A、ARV-H280/5R1A 型号及相关信息                                                  |
| 5   | 20210722 版 | 解凯      | 1 增加部分内机故障代码<br>2.增加部分外机故障代码                                                              |
| 6   | 20220929 版 | 解凯      | 1 增加小多联单风叶机型                                                                              |



## Техника для климата

Доставляем оборудование по всей России от 3 дней транспортными компаниями. Реализуем проекты в десятках регионов — от Калининграда до Владивостока.

**9600+**

объектов и поставок

**от 1 дня**

отгрузка в транспортную компанию

### Технические данные файла

Документ: Сервисная инструкция AUX ARV Mini 140-160

Идентификатор библиотеки: LIB-001390

Исходный файл: aux-arv-mini-140-160-servisnaya-instruktsiya.pdf

SHA-256 оригинала: 5ad82c3515c193eb87a3539e77ea9db4cc2780b9d668da47da99d9dfb217a355

Постоянная ссылка: <https://iclim.ru/library/aux-arv-mini-140-160-servisnaya-instruktsiya.pdf>

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