TRUST
Air Conditioners

INVERTER VRF SYSTEM

(I SERIES-TOP DISCHARGE)

TRUST AIR CONDITIONING EQUIPMENT CO.
Prepared By: Engineering & R & D Department.

Shiraz- May 2017

Troubleshooting

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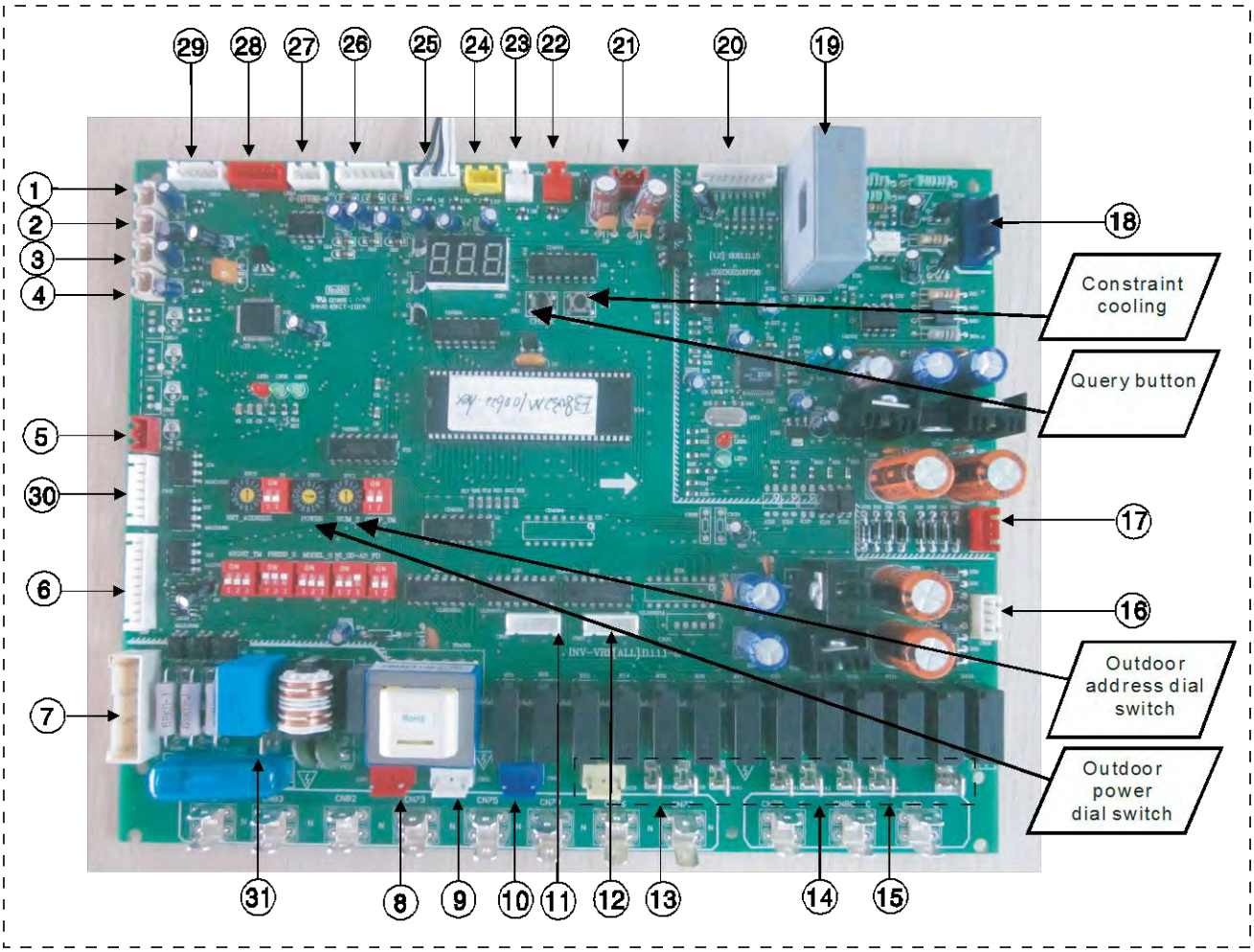
توجه:

شرکت تراست حق تغییر مشخصات دستگاه ها را در جهت بهبود و ارتقای کیفیت برای خود محفوظ می دارد.

2015-03

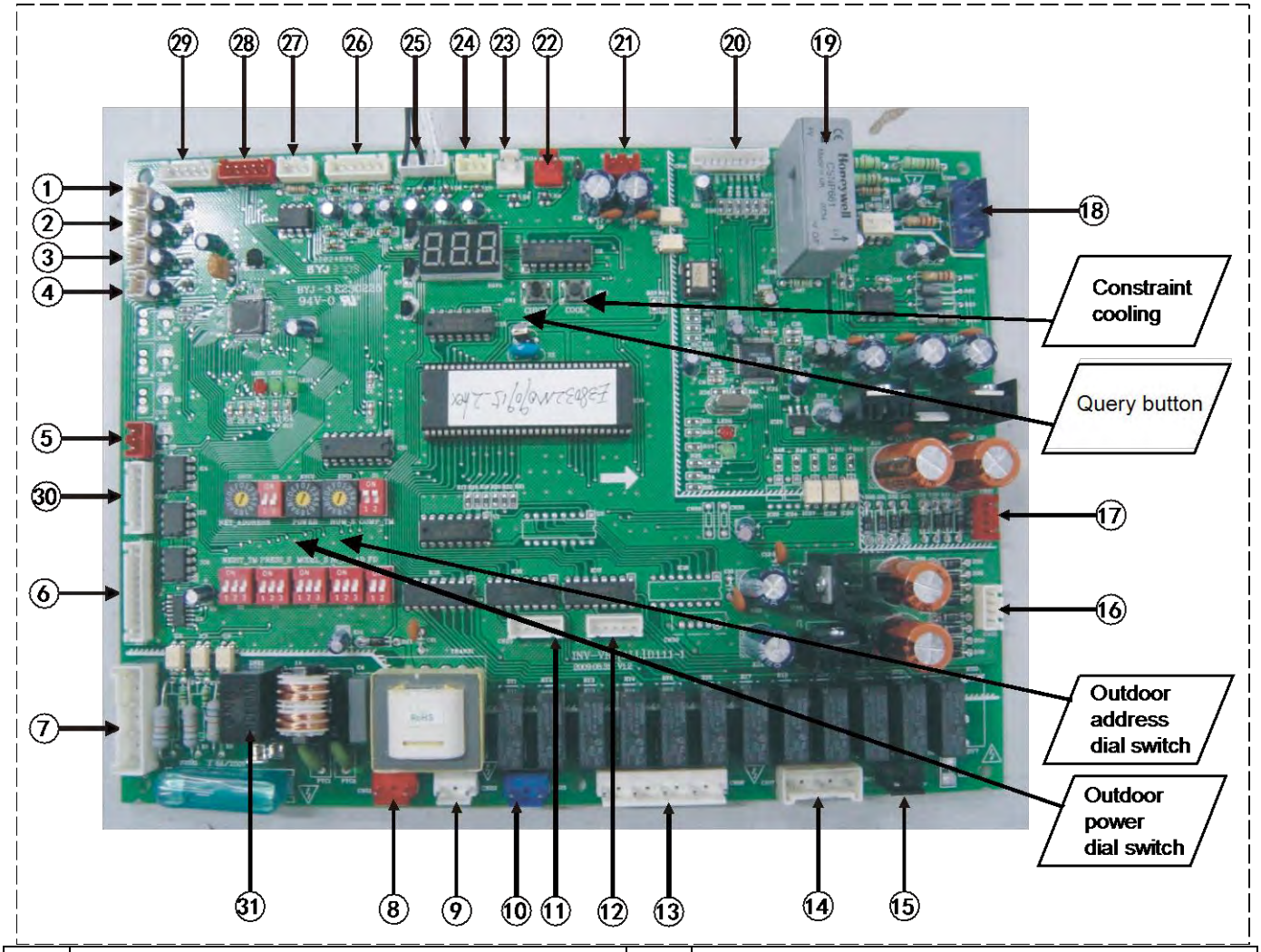
1. Main PCB ports instructions

TMVV4I252(8) TMVV4I280(10)



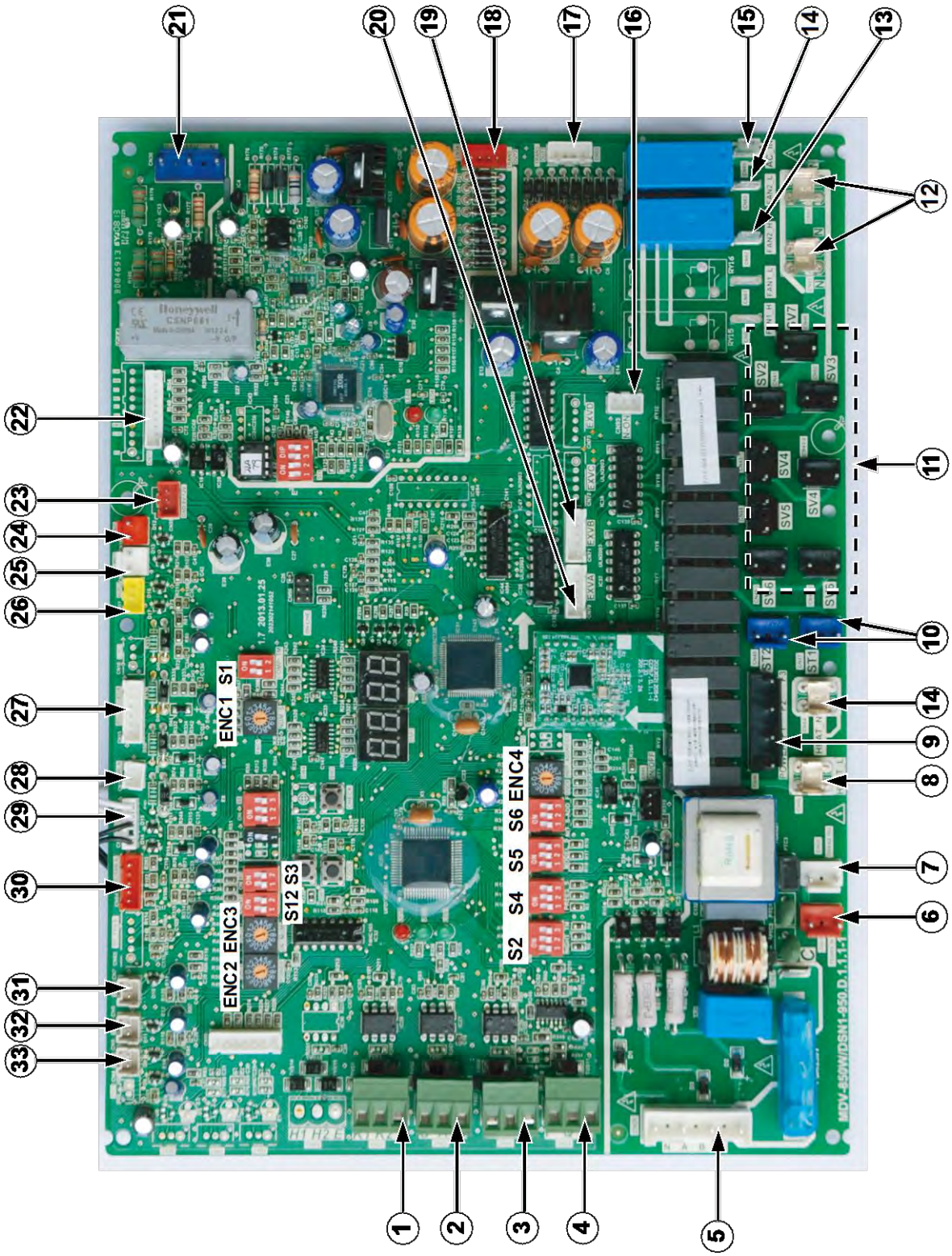
No.	Content	No.	Content
1	Reserved	17	Power output of the No.2 transformer
2	Reserved	18	Port for inverter module voltage inspection
3	Air discharge temp. sensed port at the No.1 fixed frequency compressor	19	Mutual inductor for DC main lead current inspection
4	Air discharge temp. sensed port at the inverter compressor	20	Activation port of inverter module
5	Power supply port in the Mid-adapted panel	21	Power supply connected port of the main control panel
6	Communication between indoor and outdoor units, indoor unit network, outdoor unit network and terminal of network accounting	22	ON/OFF signal input port for system low pressure inspection
7	Phase inspection port	23	ON/OFF signal input port for system Hi-pressure inspection
8	Power input of the No.1 transformer	24	Input port for system pressure inspection
9	Power input of the No.2 transformer	25	Inspection port for outdoor ambient temp. and condenser coil temp.
10	Loading output terminal	26	Current inspection port of the inverter compressors
11	Reserved	27	Communication ports among outdoor units
12	NO.1 EXV activation port	28	Control port of DC fan 1
13	Loading output terminal	29	Reserve
14	Loading output terminal	30	Reserve
15	Loading output terminal	31	C phase power supply
16	Power output of the No.1 transformer	—	

TMVV4I335(12) TMVV4I400(14) TMVV4I450(16)



No.	Content	No.	Content
1	Reserved	17	Power output of the No.2 transformer
2	Air discharge temp. sensed port at the No.2 fixed frequency compressor	18	Port for inverter module voltage inspection
3	Air discharge temp. sensed port at the No.1 fixed frequency compressor	19	Mutual inductor for DC main lead current inspection
4	Air discharge temp. sensed port at the inverter compressor	20	Activation port of inverter module
5	Power supply port in the Mid-adapted panel	21	Power supply connected port of the main control panel
6	Communication between indoor and outdoor units, indoor unit network, outdoor unit network and terminal of network accounting	22	ON/OFF signal input port for system low pressure inspection
7	Phase inspection port	23	ON/OFF signal input port for system Hi-pressure inspection
8	Power input of the No.1 transformer	24	Input port for system pressure inspection
9	Power input of the No.2 transformer	25	Inspection port for outdoor ambient temp. and condenser coil temp.
10	Loading output terminal	26	Current inspection port of the inverter, No.1 and No.2 fixed frequency compressors
11	NO.2 EXV activation port	27	Communication ports among outdoor units
12	NO.1 EXV activation port	28	Control port of DC fan 1
13	Loading output terminal	29	Control port of DC fan 2
14	Loading output terminal	30	Reserve
15	Loading output terminal	31	C phase power supply
16	Power output of the No.1 transformer	—	

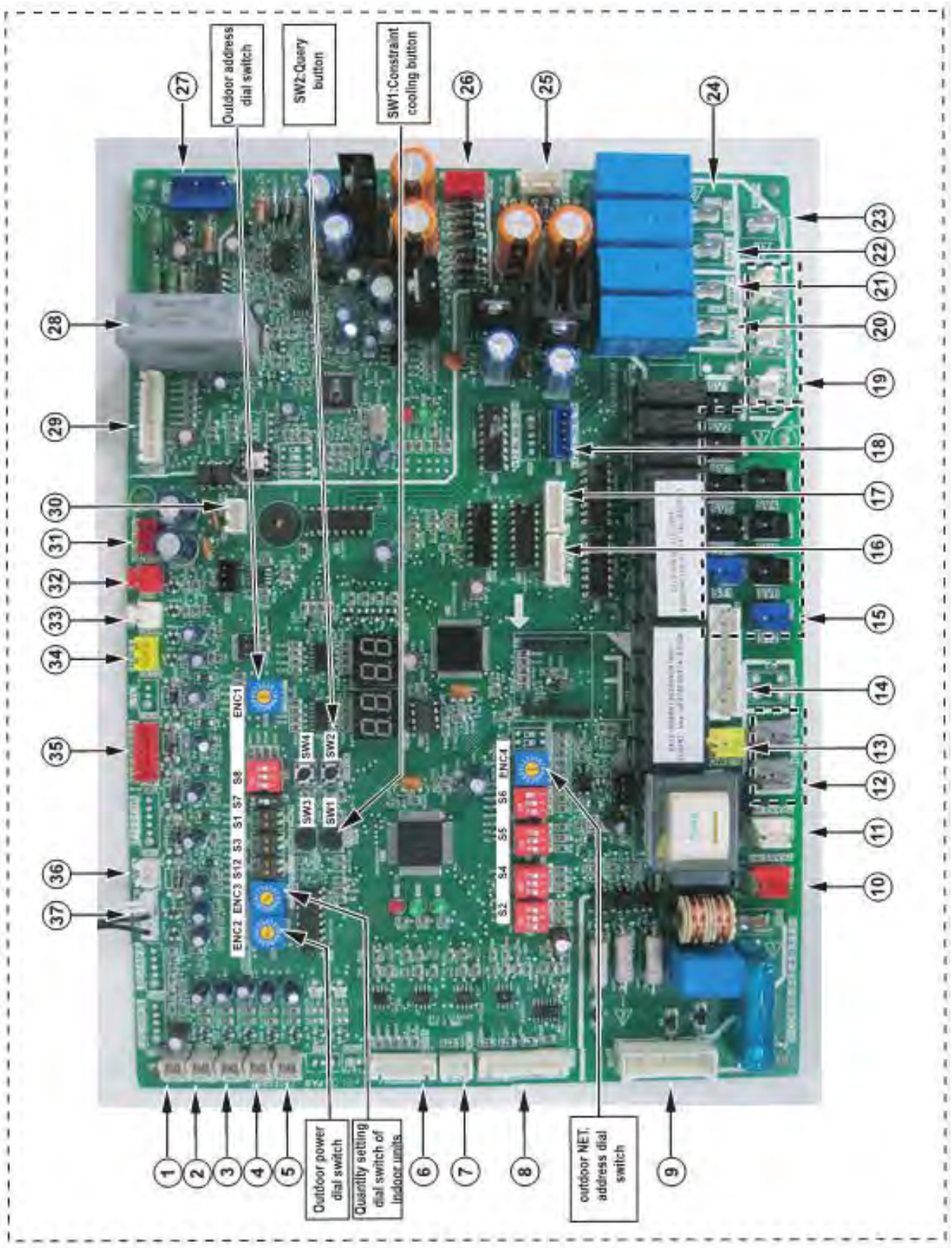
TMVV4I560(20) TMVV4I615(22) TMVV4I670(24)



Ports instructions:

No.	Content	Port voltage
1	Outdoor centralized controller connection port	DC 2.5~2.7V
2	Digital electric ammeter connection port	DC 2.5~2.7V
3	Indoor centralized controller connection port	DC 2.5~2.7V
4	Communication port between indoor and outdoor unit	DC 2.5~2.7V
5	Phase-sequence detection port	380V
6	Power supply port of No. 1 transformer	220V
7	Power supply port of No. 2 transformer	220V
8	Wiring port of inverter compressor heater	220V
9	Control port of power supply and fixed compressor	220V
10	Output port of four-way valve (ST1)	220V
11	Output port of valve (SV2,SV4,SV5,SV6,SV7)	220V
12	Zero line connection port	220V
13	High fan peed control port of AC fan	DC 0~12V
14	Low fan peed control port of AC fan	DC 0~12V
15	Power supply port of AC fan	220V
16	Control port of module power supply	0.3-0.7V (the upper pin) 0.3-0.7V (the medium pin) 12V (the lower pin)
17	Power output port of No.1 transformer	AC 13.5V (between upper two pins) AC 9V (between under two pins)
18	Power output port of No.2 transformer	AC 14.5V (between upper two pins) AC 14.5V (between under two pins)
19	Drive port of EXVB	The first pin on left: DC 12V The other four pins: in dynamic change
20	Drive port of EXVA	
21	Voltage detection port of inverter module	DC 540V (between P and N), +DC 15V (between +15V and N)
22	Drive port of inverter module	The third pin on left: DC 3.3V
23	PCB power supply port	+5V(between GND and 5V pins) +12V(between GND and 12V pins)
24	Signal input port for system low pressure detection switch	DC 0~5V (in dynamic change)
25	Signal input port for system high pressure detection switch	DC 0~5V (in dynamic change)
26	System high pressure detection port	DC 0~5V (in dynamic change)
27	Current detection port of fixed compressor	AC 0~7.8V (in dynamic change)
28	Current detection port of inverter compressor	AC 0~7.8V (in dynamic change)
29	Temperature detection port of ambient temp and condenser temp	DC 0~5V (in dynamic change)
30	DC fan control port	The first pin on left: DC 5V The other four pins: in dynamic change
31	Discharge temp detection port of inverter compressor	DC 0~5V (in dynamic change)
32	Discharge temp detection port of No. 1 fixed compressor	DC 0~5V (in dynamic change)
33	Discharge temp detection port of No. 2 fixed compressor	DC 0~5V (in dynamic change)

TMVV4I730(26) TMVV4I785(28) TMVV4I850(30) TMVV4I900(32)



Ports instructions:

No.	Content	Port voltage
1	Discharge temp. sensed port of the inverter compressor	DC 0~5V (in dynamic change)
2	Discharge temp. sensed port of the No.1 fixed compressor	DC 0~5V (in dynamic change)
3	Discharge temp. sensed port of the No.2 fixed compressor	DC 0~5V (in dynamic change)
4	Discharge temp. sensed port of the No.3 fixed compressor	DC 0~5V (in dynamic change)
5	Discharge temp. sensed port of the No.4 fixed compressor	DC 0~5V (in dynamic change)
6	Reserve	/
7	Reserve	/
8	Wiring port for communication between indoor and outdoor units, indoor unit network, outdoor unit network and network accounting	DC 2.5~2.7V
9	Phase-sequence detection port	380V
10	Power input of the No.1 transformer	220V
11	Power input of the No.2 transformer	220V
12	Heat output terminal of inverter compressor	220V
13	Power control output terminal	220V
14	Fixed compressor control output terminal	220V
15	Solenoid valve output terminal	220V
16	EXV B driving port	The first pin on the left: DC12V The other four pins: in dynamic change
17	EXV A driving port	
18	Port for fan 1 and fan 2 control	The right pin: +5V
19	Null line terminal	220V
20	Low speed output terminal of fan 4	DC 0~12V
21	High speed output terminal of fan 4	DC 0~12V
22	Low speed output terminal of fan 3	DC 0~12V
23	Power input terminal of fan 3 and fan 4	220V
24	High speed output terminal of fan 3	DC 0~12V
25	Power output of the No.1 transformer	AC 13.5V (between upper two pins) AC 9V (between under two pins)
26	Power output of the No.2 transformer	AC 14.5V (between upper two pins) AC 14.5V (between under two pins)
27	Voltage detection port of inverter module	DC 540V (between P and N), +DC 15V (between +15V and N)
28	The sensor of inverter module current	/
29	Inverter module drive port	The third pin on the left: DC3.3V Other pins: in dynamic change
30	Null line control port	220V
31	Main PCB power supply port	+5V(between GND and 5V pins) +12V(between GND and 12V pins)
32	Signal input port for system low pressure detection switch	DC 0~5V (in dynamic change)
33	Signal input port for system high pressure detection switch	DC 0~5V (in dynamic change)
34	System high pressure detection port	DC 0~5V (in dynamic change)
35	Current inspection port of the fixed compressors	AC 0~7.8V (in dynamic change)
36	Current inspection port of the inverter compressors	AC 0~7.8V (in dynamic change)
37	Inspection port for temp. of outdoor ambient and condenser coil	DC 0~5V (in dynamic change)

2. Main PCB parts instructions

2.1 TMVV4I252(8) TMVV4I280(10) TMVV4I335(12) TMVV4I400(14) TMVV4I450(16)

2.1.1 Query content instructions

No.	Content (present frequency)	Note
1	Outdoor unit address	0
2	Outdoor unit capacity	8,10
3	Modular outdoor unit qty.	Available for master unit
4	Outdoor unit total capacity	Capacity requirement
5	Indoor unit total capacity requirement	Available for master unit
6	The corrected total capacity of master unit	Available for master unit
7	Operation mode	0, 1, 2, 3, 4
8	The actual operation capacity of this outdoor unit	Capacity requirement
9	Fan status	0, 1, 2, 3, 4, 5, 6, 7, 8, 9
10	T2 average temp.	Actual value
11	T3 pipe temp.	Actual value
12	T4 ambient temp.	Actual value
13	Inverter air discharge temp 1.	Actual value
14	Inverter air discharge temp 2.	Actual value
15	Reserved	Reserved
16	Inverter current	Actual value
17	Reserved	Reserved
18	Reserved	Reserved
19	EXV opening degree	
20	Air discharge pressure	Actual value×0.1MPa
21	The limitation of Indoor unit proformed mode	0,1,2,3,4
22	Indoor unit qty	Actual value
23	The last time error orprotective code	Without protection or error displays as 00
24	- -	Check end

Normal display:

When in standby, it displays the indoor unit qty. When receive the capacity requirement, it will display the compressor rotation frequency (indoor unit qty. is the unit qty. that could communicate with outdoor unit)

Operation mode: 0—OFF; 1—Air supply; 2—cooling; 3—heating; 4—Constraint cooling

Rotation speed: 0—fan stop; 1~9 rotation speed turn down sequentially, 9 is the maximum speed

The limitation of Indoor unit proformed mode : 0—Heating Priority Mode; 1—Cooling Priority Mode; 2—Priority Mode; 3—Only Respond The Heating Mode; 4—Only Respond The Cooling Mode.

PMV opening angle: pulse count=display value×8; ENC1: Outdoor unit address setting switch; ENC2: Outdoor unit capacity setting switch; ECN3: Network address setting switch. SW1: spot check button; SW2: forced cooling button.

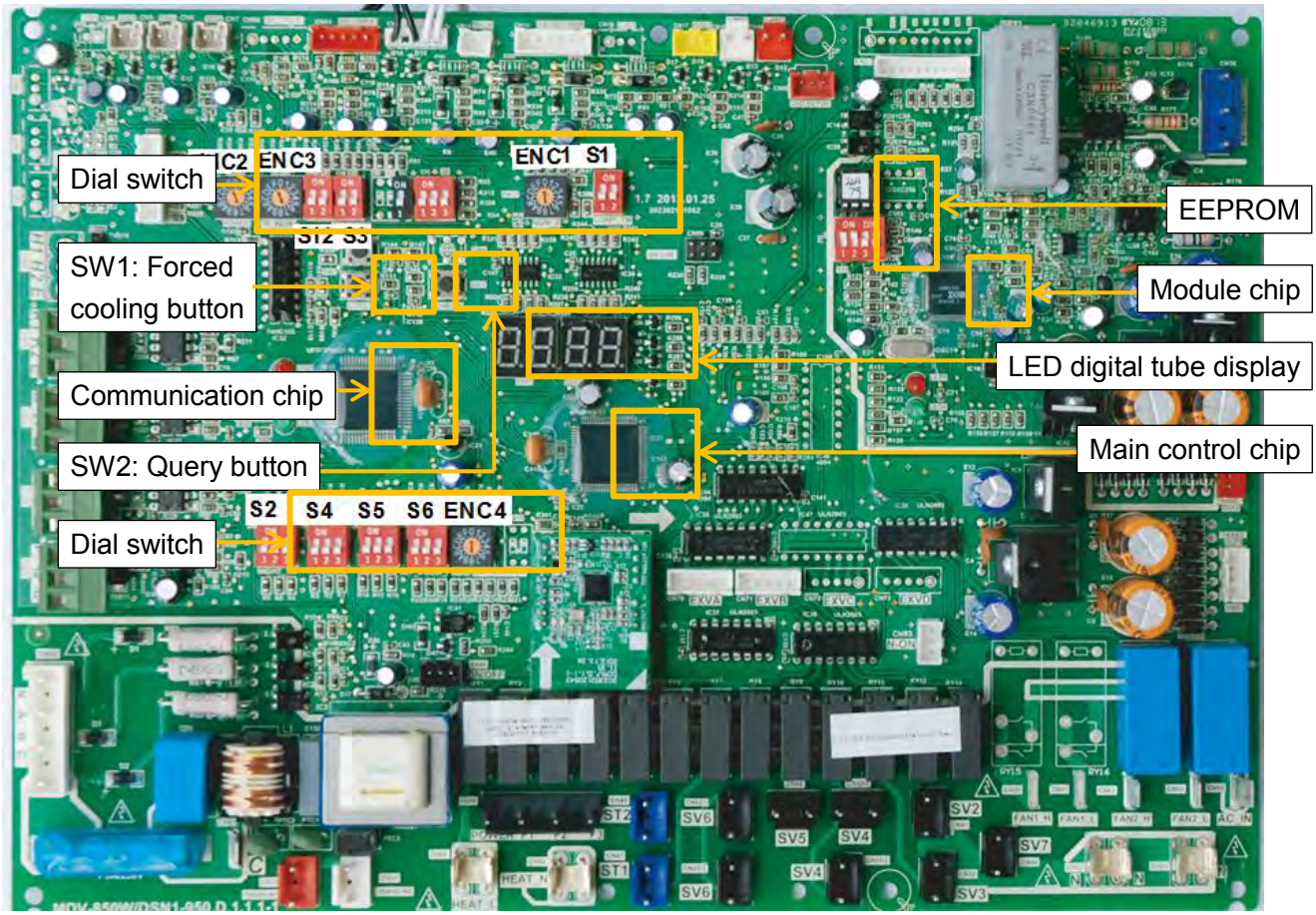
2.1.2 System setting dial switches instructions

ENC3 S3 ENC2 ENC1 S1 S2 S4 S5 S6 S7

S1 definition	
	Starting time is set about 3 minutes
	Starting time is set about 12 minutes (Default the Factory Set)
S2 definition	
	Night time selection is 6h/10h (Default the Factory Set)
	Night time selection is 8h/10h
	Night time selection is 6h/12h
	Night time selection is 8h/8h
S3 definition	
	Reserve
S4 definition	
	Static pressure mode is 0 MPa (Default the Factory Set)
	Static pressure mode is high pressure (Specified for custom-made)
S5 definition	
	Heating priority mode (Default the Factory Set)
	Cooling priority mode
	Priority mode
	Only Respond the heating mode
	Only Respond the cooling mode
S6 definition	
	Night noise control mode and automatic search address.

S6 ON 1 2 3	Night noise control mode and nonautomatic search address. (The communication way of the original digital indoor unit) (Default the Factory Set)
S6 ON 1 2 3	Clean the indoor unit addresses.
S6 ON 1 2 3	Non-night noise control mode and automatic search address.
S6 ON 1 2 3	Non-night noise control mode and non- automatic search address. (The communication way of the original digital indoor unit)
S7 definition	
S7 ON 1 2	Reserve

2.2 TMVV4I560(20) TMVV4I615(22) TMVV4I670(24)



2.2.1 Query content instructions

No.	Normal display	Content (present frequency)	Note
1	0.- -	Outdoor unit address	0 (individual type)
2	1.- -	Outdoor unit capacity setting[1]	Refer to note 1
3	2.- -	Outdoor unit quantity	Available for No.0 outdoor unit
4	3.- -	Setting quantity of indoor units	Available for No.0 outdoor unit
5	4.- -	Total capacity of outdoor units	Capacity requirement
6	5.- -	Total capacity requirement of indoor units	Available for No.0 outdoor unit
7	6.- -	Revised total capacity requirements of outdoor unit	Available for No.0 outdoor unit
8	7.- -	Running mode[2]	Refer to note 2
9	8.- -	Actual running capacity of this outdoor unit	Capacity requirement
10	9.- -	No.1 fan speed	Refer to note 3
11	10.- -	No.2 fan speed	Refer to note 3
12	11.- -	T2B/T2 average temperature	Actual value=display value
13	12.- -	T3 pipe temperature	Actual value=display value
14	13.- -	T4 ambient temperature	Actual value=display value
15	14.- -	Discharge temperature of inverter compressor	Actual value=display value
16	15.- -	Discharge temperature of No.1 fixed compressor	Actual value=display value
17	16.- -	Discharge temperature of No.2 fixed compressor	Actual value=display value
18	17.- -	Reserved	/
19	18.- -	Saturation temperature according to discharge pressure	Actual value=display+30
20	19.- -	Inverter compressor current	Actual value=display value
21	20.- -	No.1 fixed compressor current	Actual value=display value
22	21.- -	No.2 fixed compressor current	Actual value=display value
23	22.- -	Reserved	/
24	23.- -	EXVA opening degree	Pulsed value=display value×8
25	24.- -	EXVB opening degree	Pulsed value=display value×8
26	25.- -	High pressure value	Actual value=display value×10
27	26.- -	Indoor units quantity	Actual value=display value
28	27.- -	Running indoor units quantity	Actual value=display value
29	28.- -	Mode priority	Refer to note 4
30	29.- -	Silent mode	Refer to note 5
31	30.- -	Static pressure mode	Refer to note 6
32	31.- -	DC voltage	Actual value=display value
33	32.- -	Reserved	/
34	33.- -	The last error or protection code	Display 888 when there has no error of
35	- -	- -	Over

Note:

When the outdoor unit is in standby, the LED digital tube will display the indoor unit's quantity which can communicate with outdoor unit, and it will display inverter compressor running frequency when there has capacity requirement.

1. Outdoor unit capacity setting: capacity code 6—20HP; capacity code 7—22HP; capacity code 8—24HP.

2. Running mode: 0—closed; 2—cooling mode; 3—heating mode; 4—forced cooling mode.

3. Fan speed: 0—closed; 1~15—fan speed increase in sequence.

4. Mode priority: 0—heating priority; 1—cooling priority; 2—No.63 indoor unit running mode priority when there has No.63 indoor unit or larger capacity requirement priority when there has on No.63 indoor unit; 3—only response to heating; 4—only response to cooling.

5. Silent mode: 0—nighttime silent mode; 1—silent mode; 2—super silent mode; 3—no silent mode.

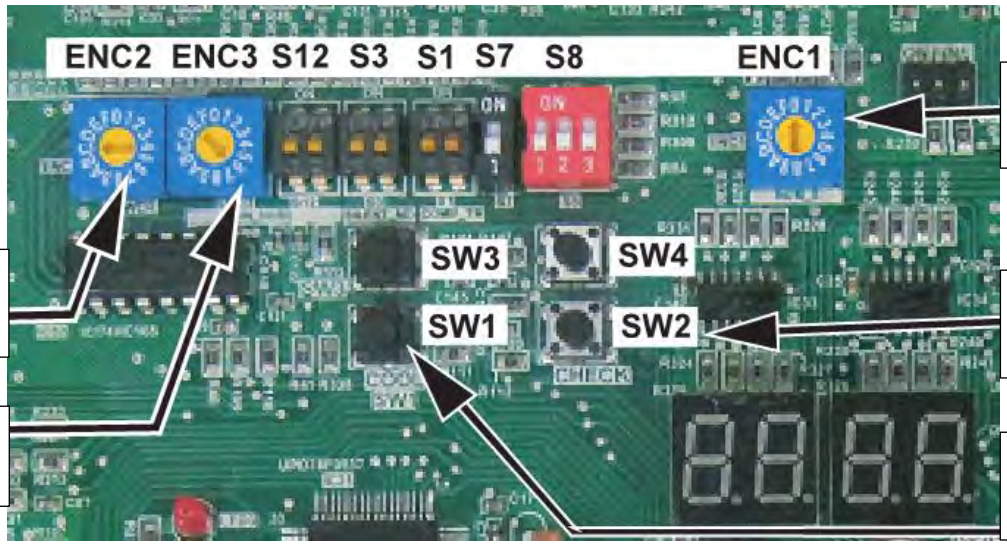
6. Static pressure mode: 0—no static pressure; 1—low static pressure; 2—medium static pressure; 3—high static pressure.

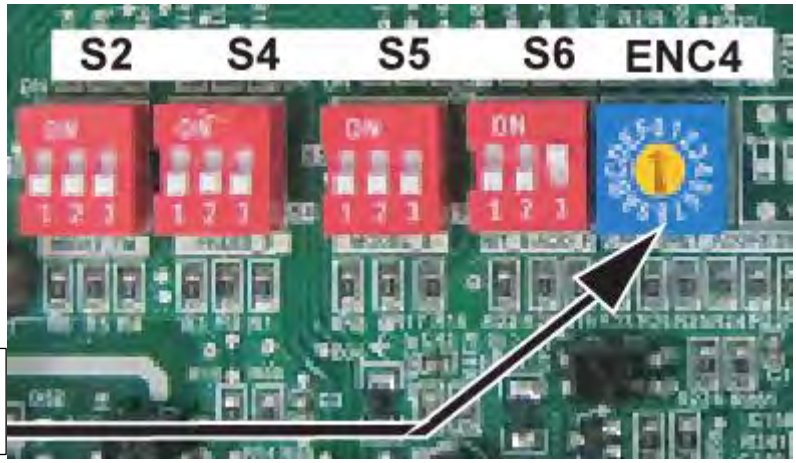
2.2.2 System setting dial switches instructions

ENC2: Outdoor unit capacity setting	
ENC2	Outdoor unit capacity setting: 0-8 are available (6-8 stand for 8-24HP)
ENC3+S12: Quantity of indoor units setting	
ENC3 S12 ON	The quantity of indoor unit is 0-15 0~9 on ENC3 refer to 0~9 indoor units; A~F on ENC3 refer to 10~15 indoor units.
ENC3 S12 ON	The quantity of indoor unit is 16-31 0~9 on ENC3 refer to 16~25 indoor units; A~F on ENC3 refer to 26~31 indoor units.
ENC3 S12 ON	The quantity of indoor unit is 32-47 0~9 on ENC3 refer to 32~41 indoor units; A~F on ENC3 refer to 42~47 indoor units.
ENC3 S12 ON	The quantity of indoor unit is 48-63 0~9 on ENC3 refer to 48~57 indoor units; A~F on ENC3 refer to 58~63 indoor units.
S3: Silent mode selection	
S3 ON 1 2	Nighttime silent mode (factory default)
S3 ON 1 2	Silent mode
S3 ON 1 2	Super silent mode
S3 ON 1 2	No silent mode
ENC1: Outdoor unit address setting	
ENC1	Outdoor units address setting: 0-3 is available. 0—main unit; 1~3—slave units (only 0 is available for individual series)
S1: Starting time setting	
S1 ON 1 2	Starting time is 5 minutes
S1 ON 1 2	Starting time is 12 minutes (factor default)
S2: Night silent time selection	
S2 ON 1 2 3	Nighttime silent time 6h/10h (factory default)
S2 ON 1 2 3	Nighttime silent time 6h/12h
S2 ON 1 2 3	Nighttime silent time 8h/10h
S2 ON 1 2 3	Nighttime silent time 8h/12h
S4: Static pressure mode selection	

	No static pressure mode (factory default)
	Low static pressure mode (should be customized)
	Medium static pressure mode (should be customized)
	High static pressure mode (should be customized)
S5: Locking modes selection	
	Heating priority mode (factory default)
	Cooling priority mode
	No.63 indoor unit running mode priority when there has No.63 indoor unit or larger capacity requirement priority when there has on No.63 indoor unit
	Only response to heating mode
	Only response to cooling mode
S6: Addressing mode selection	
	Auto addressing mode
	Manual addressing mode (factory default)
	Clean the indoor unit address (only available for auto searching new indoor unit)
ENC4: Outdoor unit network address setting	
	Outdoor unit network address setting (0-7 is effective)

2.3 TMVV4I730(26) TMVV4I785(28) TMVV4I850(30) TMVV4I900(32)



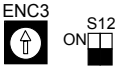
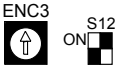
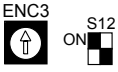
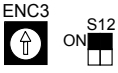


2.3.1 Query content instructions

No.	Normal display	Display content(Current frequency)	Note
1	0--	Outdoor unit address	0
2	1--	Outdoor unit itself capacity	26,28,30,32
3	2--	Modular outdoor unit Qty	Available for main unit
4	3--	Qty. setting of indoor units	Available for main unit
5	4--	Total capacity of ODU	Capacity requirements
6	5--	Total requirement of indoor unit capacity	Available for main unit
7	6--	Total requirement of main unit corrected capacity	Available for main unit
8	7--	Operation mode	0,2,3,4
9	8--	This outdoor unit actual operation capacity	Capacity requirement
10	9--	Speed of fan A	
11	10--	Speed of fan B	
12	11--	T2B/T2 average Temp.	Actual value
13	12--	T3 pipe Temp.	Actual value
14	13--	T4 ambient Temp.	Actual value

15	14--	Discharge Temp. of inverter compressor	Actual value
16	15--	Discharge Temp. of No.1 fixed compressor	Actual value
17	16--	Discharge Temp. of No.2 fixed compressor	Actual value
18	17--	Discharge Temp. of No.3 fixed compressor	Actual value
19	18--	Discharge Temp. of No.4 fixed compressor	Actual value
20	19--	Discharge pressure corresponding to the saturation temperature	Actual value+30
21	20--	Current of inverter compressor	Actual value
22	21--	Current of No.1 fixed compressor	Actual value
23	22--	Current of No.2 fixed compressor	Actual value
24	23--	Current of No.3 fixed compressor	Actual value
25	24--	Current of No.4 fixed compressor	Actual value
26	25--	Opening angle of EXV A	
27	26--	Opening angle of EXV B	
28	27--	High pressure	Display value *0.1MPa
29	28--	Qty. of indoor units	
30	29--	Qty. of the working indoor units	Actual value
31	30--	Priority mode	0,1,2,3,4
32	31--	Night noise control mode	0,1,2,3
33	32--	Static pressure mode	0,1,2,3
34	33--	DC voltage	
35	34--	Reserve	
36	35--	The last-time error or the protection code	If there is no protection or error, the panel will display 8.8.8
37	--		Check end

2.3.2 System setting dial switches instructions

ENC2: Outdoor unit capacity setting	
ENC2 	Outdoor unit capacity setting: 9-C are available (9-C Stand for 26HP~32HP)
ENC3+S12: Quantity of indoor units setting	
ENC3  S12 ON	The quantity of indoor unit is 0-15 0~9 on ENC3 refer to 0~9 indoor units; A~F on ENC3 refer to 10~15 indoor units.
ENC3  S12 ON	The quantity of indoor unit is 16-31 0~9 on ENC3 refer to 16~25 indoor units; A~F on ENC3 refer to 26~31 indoor units.
ENC3  S12 ON	The quantity of indoor unit is 32-47 0~9 on ENC3 refer to 32~41 indoor units; A~F on ENC3 refer to 42~47 indoor units.
ENC3  S12 ON	The quantity of indoor unit is 48-63 0~9 on ENC3 refer to 48~57 indoor units; A~F on ENC3 refer to 58~63 indoor units.
S3: Silent mode selection	
S3 ON 1 2	Nighttime silent mode (factory default)

	Silent mode
	Reserved
	No silent mode
ENC1: Outdoor unit address setting	
	Outdoor units address setting: 0-3 is available. 0—main unit; 1~3—slave units (only 0 is available for individual series)
S1: Starting time setting	
	Starting time is 5 minutes
	Starting time is 12 minutes (factor default)
S2: Night silent time selection	
	Nighttime silent time 6h/10h (factory default)
	Nighttime silent time 6h/12h
	Nighttime silent time 8h/10h
	Nighttime silent time 8h/12h
S4: Static pressure mode selection	
	No static pressure mode (factory default)
	Low static pressure mode (should be customized)
	Medium static pressure mode (should be customized)
	High static pressure mode (should be customized)
S5: Locking modes selection	
	Heating priority mode (factory default)
	Cooling priority mode
	No.63 indoor unit running mode priority when there has No.63 indoor unit or larger capacity requirement priority when there has on No.63 indoor unit
	Only response to heating mode
	Only response to cooling mode
S6: Addressing mode selection	

S6 ON 1 2 3	Auto addressing mode
S6 ON 1 2 3	Manual addressing mode (factory default)
S6 ON 1 2 3	Clean the indoor unit address (only available for auto searching new indoor unit)
ENC4: Outdoor unit network address setting	
ENC4 	Outdoor unit network address setting (0-7 is effective)

3. Error code table

Error code	Content	Note
E1	Phase sequence error	Available for all models
E2	Indoor units and master unit communication error	Available for all models
E4	Pipe temp T3/ambient temp T4 sensor error	Available for all models
E5	Voltage error	Available for all models
E7	Discharge temp sensor error	Available for all models
E9	Voltage malfunction	Only available for 25.2-45KW top air discharge models
H0	Communication error between main control chip and module chip	Available for all models
H1	Communication error between main control chip and communication chip	Available for all models
H4	P6 protection appears three times in 60 minutes	Available for all models
H5	P2 protection appears three times in 60 minutes	Available for all models
H6	P4 protection appears three times in 100 minutes	Available for all models
H7	Quantity of indoor units decrease	Available for all models
H8	High pressure sensor error	Available for all models
H9	P9 protection appears three times in 60 minutes	Available for all models
HC	Outdoor unit capacity setting error	Only available for 56-90kW top air discharge models
P0	Top temperature protection of inverter compressor	Available for all models
P1	High pressure protection	Available for all models
P2	Low pressure protection	Available for all models
P3	Current protection of inverter compressor	Available for all models
P4	Discharge temperature protection	Available for all models
P5	Pipe temperature protection	Available for all models
P6	Module protection (don't display)	Available for all models
XP7	Current protection of No.X fixed compressor (X refers to fixed compressor sequence number)	Only available for 56-90kW top air discharge models
P9	Module protection of DC fan	Available for all models
PP	Insufficient overheat degree protection of compressor discharge	Only available for 73-90kW top air discharge models
F0	PP protection appears three times in 150 minutes	
L0	Inverter module error	Available for all models
L1	Low voltage protection of DC generatrix	Available for all models

L2	High voltage protection of DC generatrix	Available for all models
L3	Reserved	Available for all models
L4	MCE error/ synchronization/ closed loop	Available for all models
L5	Zero speed protection	Available for all models
L6	Reserved	Available for all models
L7	Phase sequence error	Available for all models
L8	Frequency difference in one second more than 15Hz protection	Available for all models
L9	Frequency difference between the real and the setting frequency more than 15Hz protection	Available for all models

Note: P6, L0~L9 error codes can't display on digital tube automatically, these error codes will display on digital tube only through SW3 button (pressure SW3 ten times, every one second for a time)

The large capacity V4+ individual system (56-90kW) have the function of refrigerant volume automatic judgment.

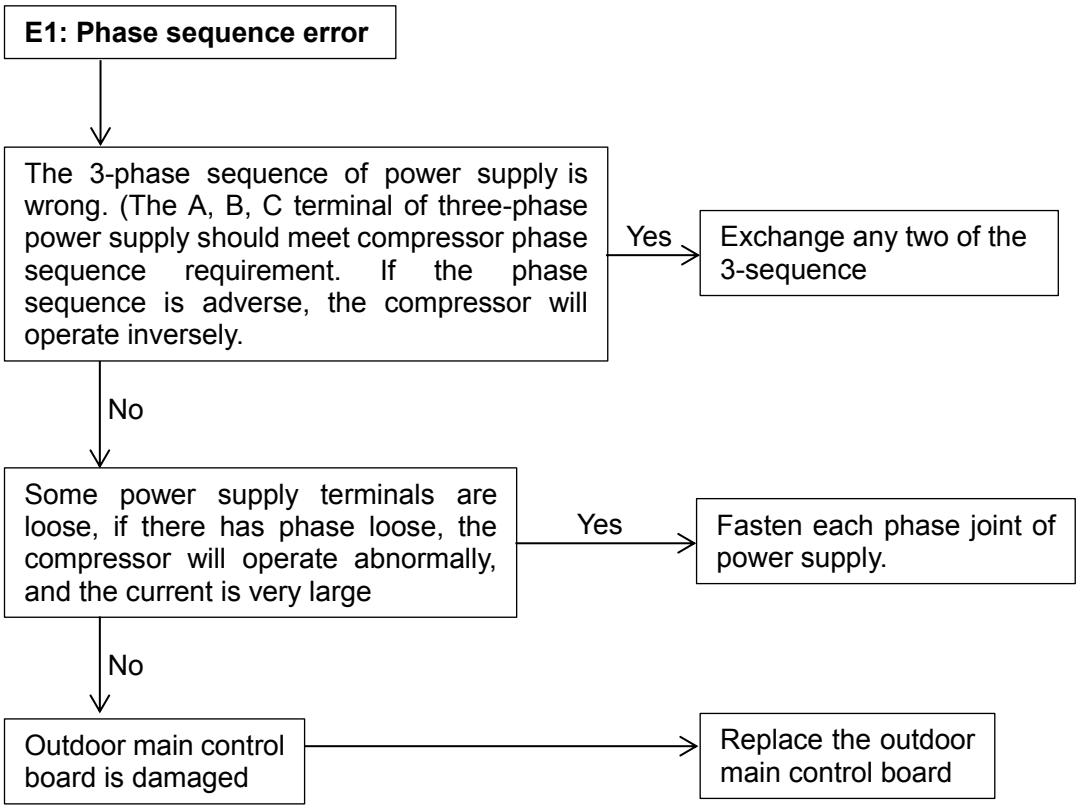
When all the indoor units are in cooling or heating mode, the system will be in refrigerant volume judgment mode automatically. If the system judges that the refrigerant volume is normal, the system will operate normally, no error code will display. If the system judges that the refrigerant volume is abnormal, corresponding error code will display on digital tube.

When only partial indoor units are in cooling or heating mode, the system will not judge the refrigerant volume and the digital tube will reserve the last judging result.

Error code	**Content**
r1	Lack of refrigerant
r2	Obvious lack of refrigerant
r3	Serious lack of refrigerant
R1	Too much refrigerant
R2	Serious too much refrigerant

4. Troubleshooting

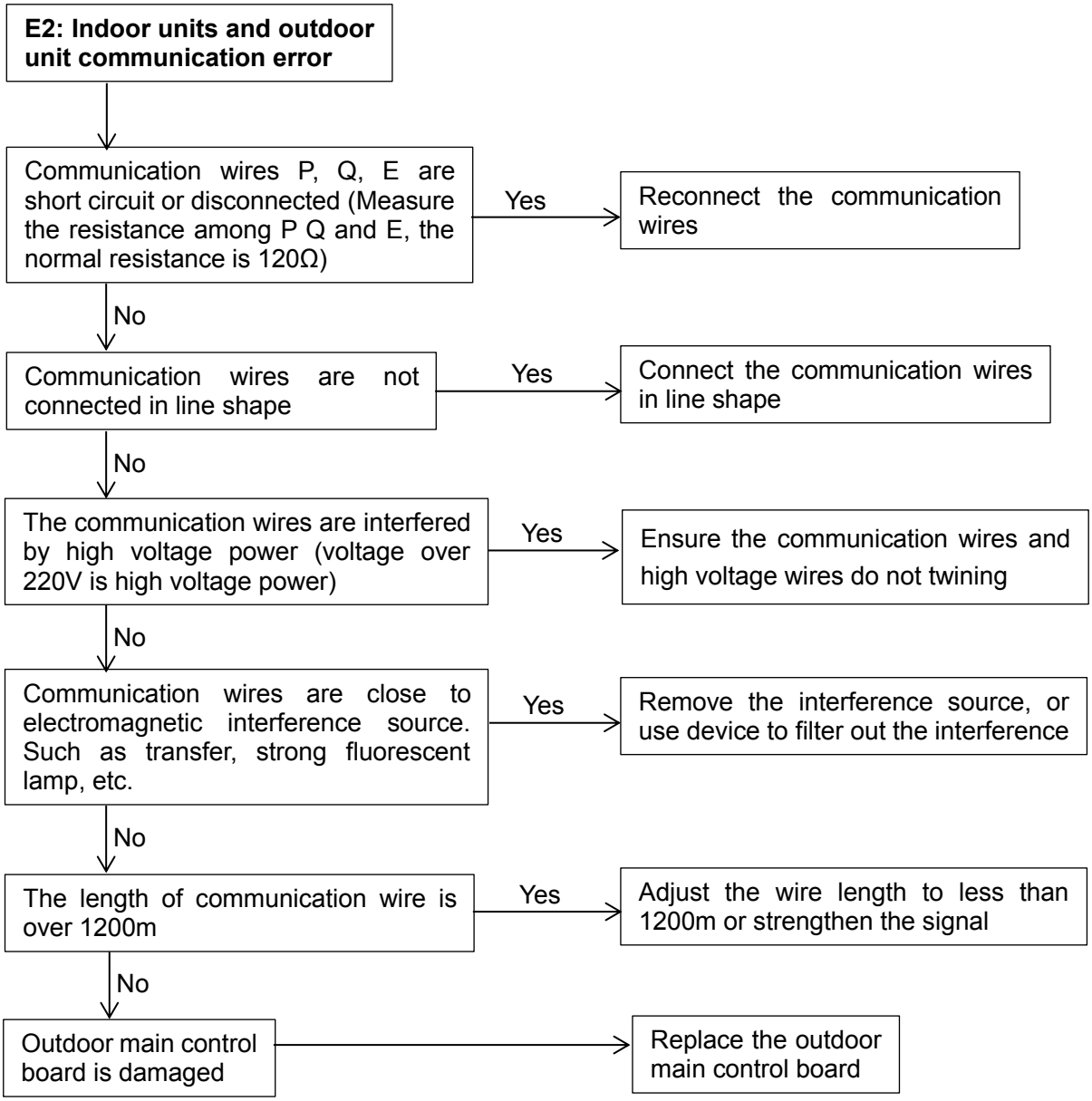
4.1 E1: Phase sequence error



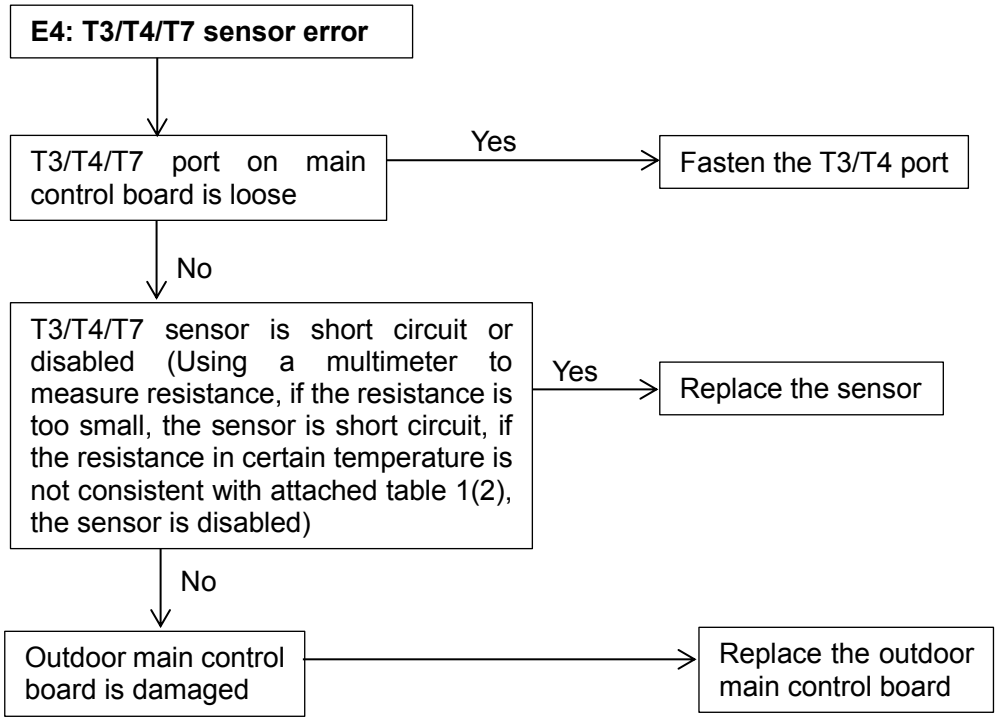
Note:

If the wiring connection of each outdoor unit is according to A, B, C phase sequence, when the quantity of outdoor units is large, the current difference between C phase and A, B phase will be very large for the power supply load of each outdoor unit is on C phase, it is very easy to lead to air switch break and wiring terminal burnout. So when the quantity of outdoor units is large, the phase sequence should be staggered, then the current can be distributed to the three phases equally.

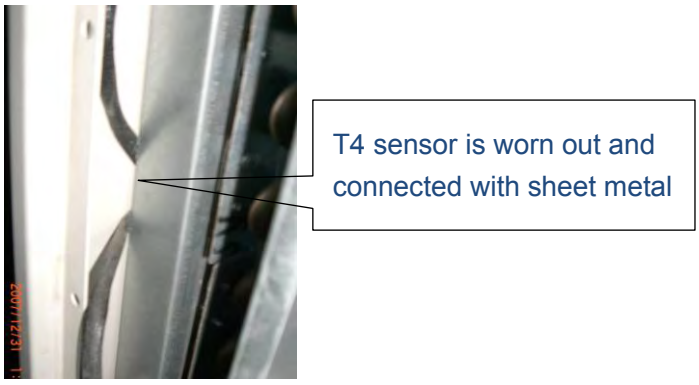
4.2 E2: Indoor units and outdoor unit communication error

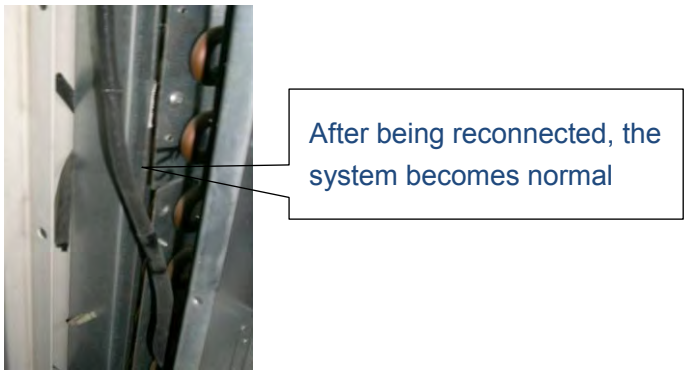


4.3 E4: Pipe temp T3/ambient temp T4 sensor error; E7: Discharge temp sensor T7 error

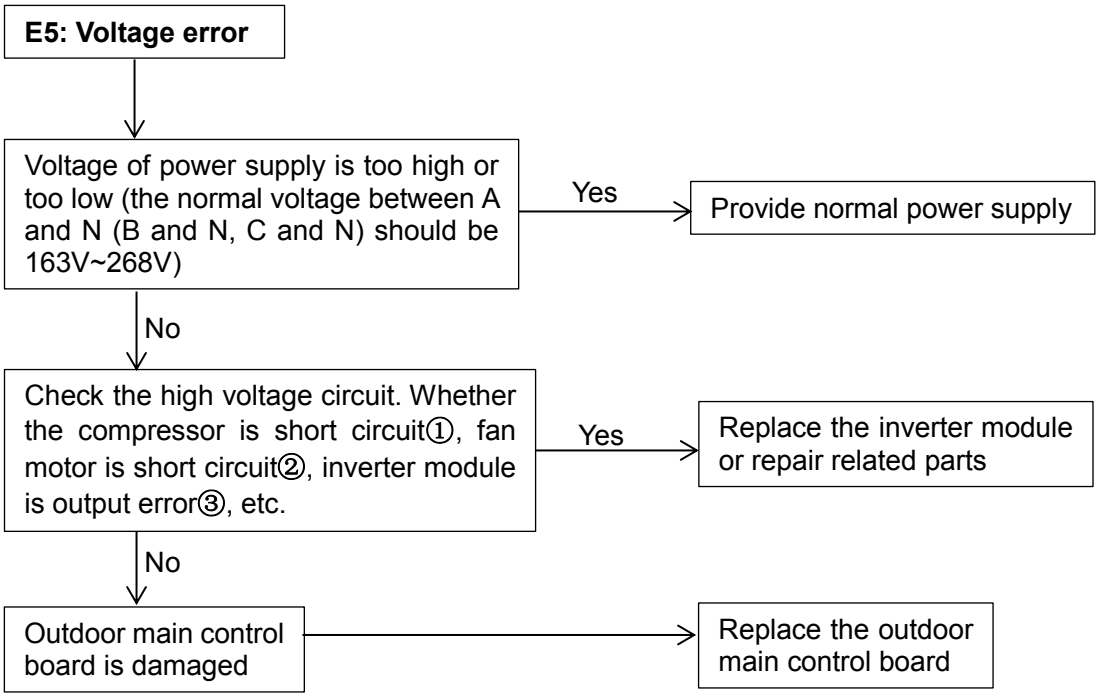


Case: There is no display on main control board, and the problem still exists after replacing main control board. Voltage values on measuring plate (such as 220V, 5V, 12V, etc.) are normal; after measuring resistance value of sensor, find that T4 thermo-bulb is earth-continuity, and further discover that the thermal cable of T4 sensor is punched by bolt, as follows:





4.4 E5: Voltage error



Note:

1. How to check whether the compressor is short circuit①:

The normal resistance value of inverter compressor among U V W is 0.7~1.5Ω, and infinity to earth. If the resistance value is out of the range, the compressor is abnormal.

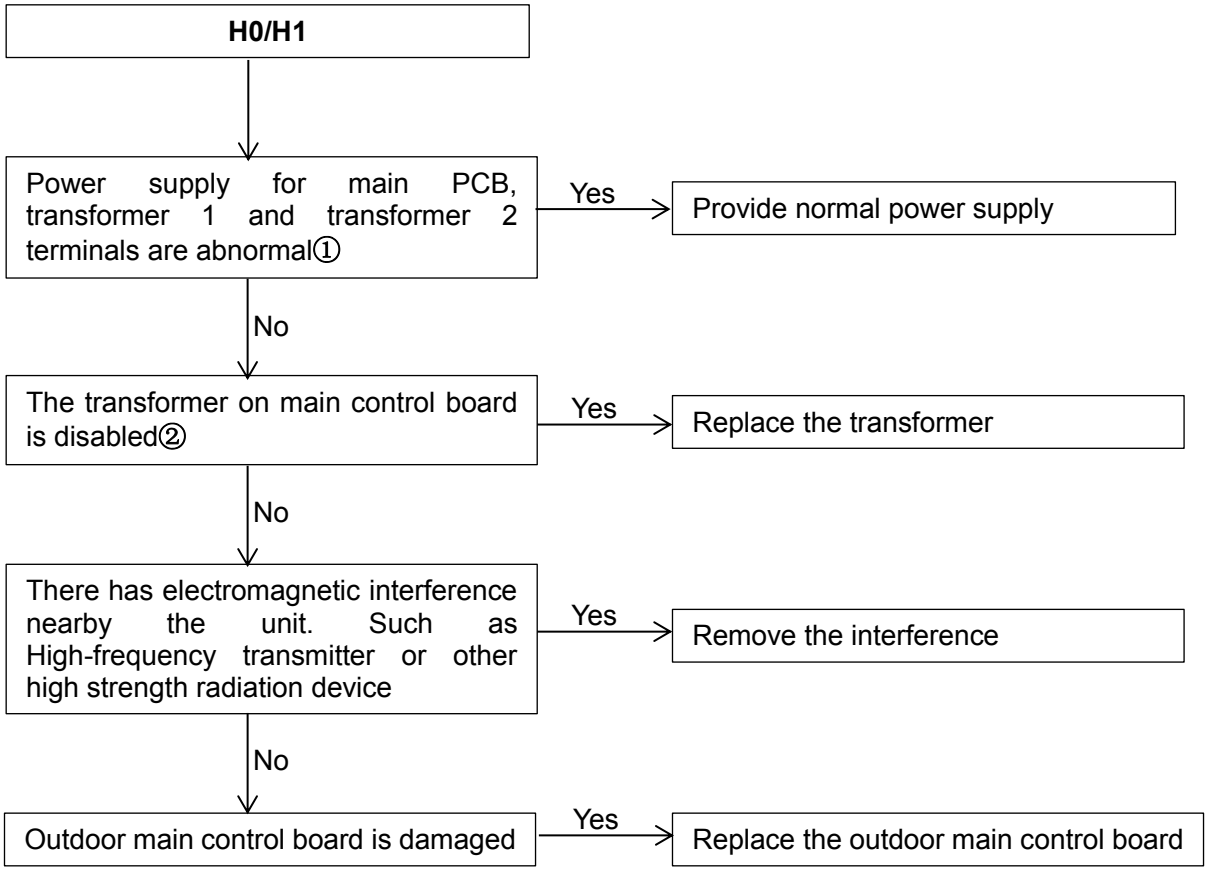
2. How to check whether the fan motor is short circuit②:

The normal value of DC fan motor coil among U V W is less than 10Ω, and the value of AC fan motor coil is from a few ohm to hundreds of ohm for different fan motor model. If the measured value is 0Ω, the fan motor is short circuit.

3. How to check whether the inverter module is output error③:

Dial the multimeter to diode file, black pen on P and red pen respectively on U,V,W, if the multimeter displays 0.4~0.7 V, it is normal; Red pen on N, black pen respectively on U,V,W, if the multimeter displays 0.4~0.7 V, it is normal. Satisfying the above two conditions at the same time indicates that the inverter module has no problem.

4.5 H0: Communication error between main control chip and module chip; H1: Communication error between main control chip and communication chip



Note:

1. How to check whether power supply of main PCB, transformer 1 and transformer 1 terminals are abnormal①

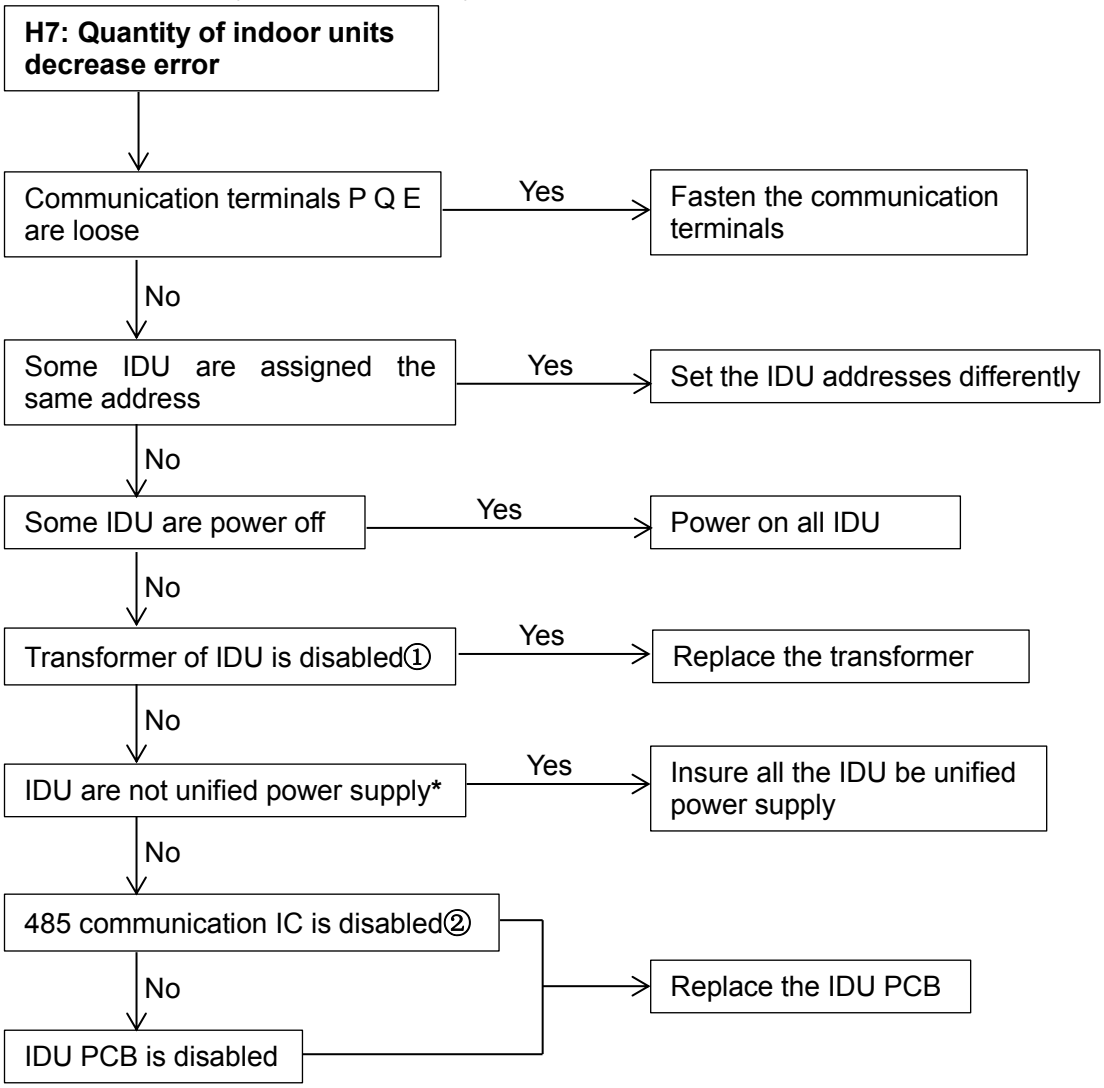
The voltage of power supply for transformer 1 and transformer 1 terminals are both 220V, the voltage between “GND” and “+5V” terminals of Power supply for main PCB ports is 5V, and between “GND” and “+12V” terminals of Power supply for main PCB ports is 12V.

2. How to check whether the transformer on main control board is disabled②

The voltage of power supply for transformer 1 and transformer 2 terminals are both 220V, the voltage of transformer 1 output terminals is AC9V (between left two pins) and AC13.5V (between rights two pins); the voltage of transformer 2 output terminal is AC14.5V (between left two pins) and AC 14.5V (between rights two pins). If the voltage is out of the range, the transformer is disabled.

4.6 H7: Quantity of indoor units decrease error

H7 error will display when the quantity of indoor units decrease above 3 minutes.



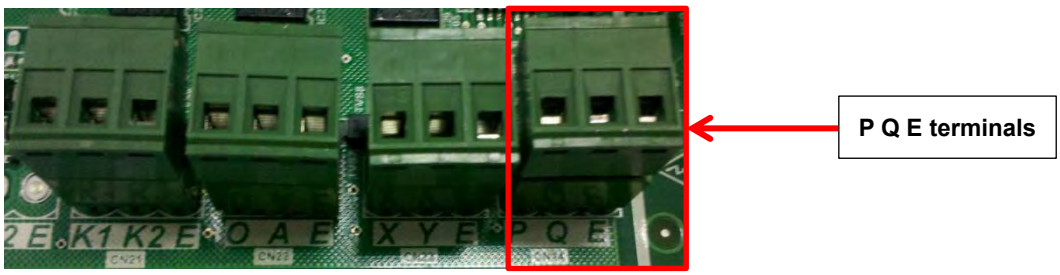
Note:

1. How to check whether the transformer of IDU is disabled①

The voltage input for IDU transformer is 220V, the voltage output of is AC9V (yellow-yellow) and AC13.5V (brown-brown)

2. How to check whether the 485 communication IC is disabled②

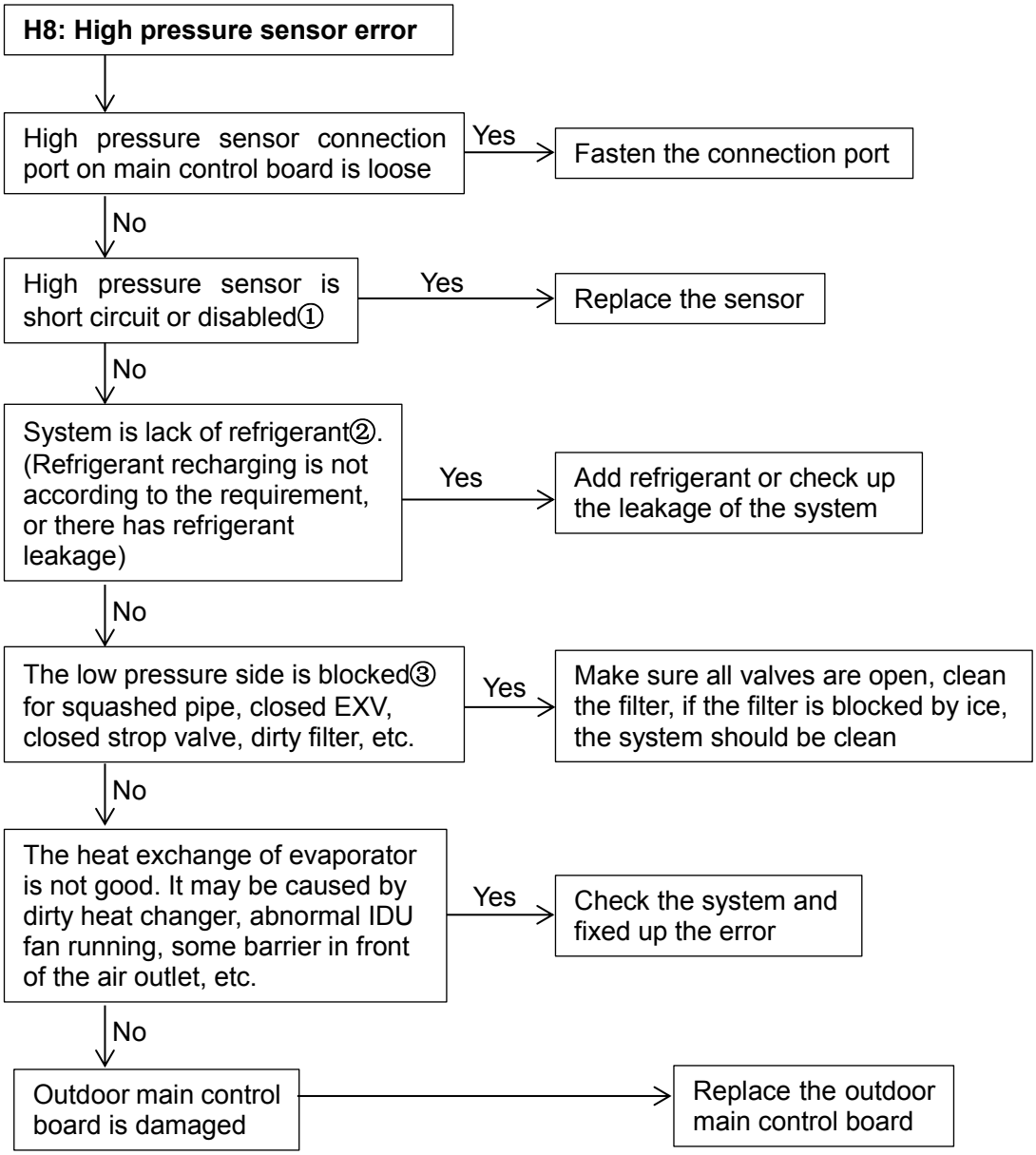
The normal voltage between “P” and “GND” is DC2.5~2.7V, between “Q” and “GND” is DC2.5~2.7V. If the voltage is out of the normal range, the 485 communication IC is disabled.



*Indoor units should be unified power supply, which can prevent compressor from liquid hammer caused by dropped indoor units with EXV unclosed.

4.7 H8: High pressure sensor error

When the discharge pressure is lower than 0.3MPa, the system will display H8 error, the ODU in standby. When the discharge pressure is back to normal, H8 disappears and normal operation resumes.



Note:

1. How to check whether the high pressure sensor is short circuit or disabled①

Measure the resistance among the three terminals of the pressure sensor, if the resistance value is megohm or infinite, the pressure sensor is disabled, otherwise, it may be normal.

2. The phenomenon of lack of refrigerant②:

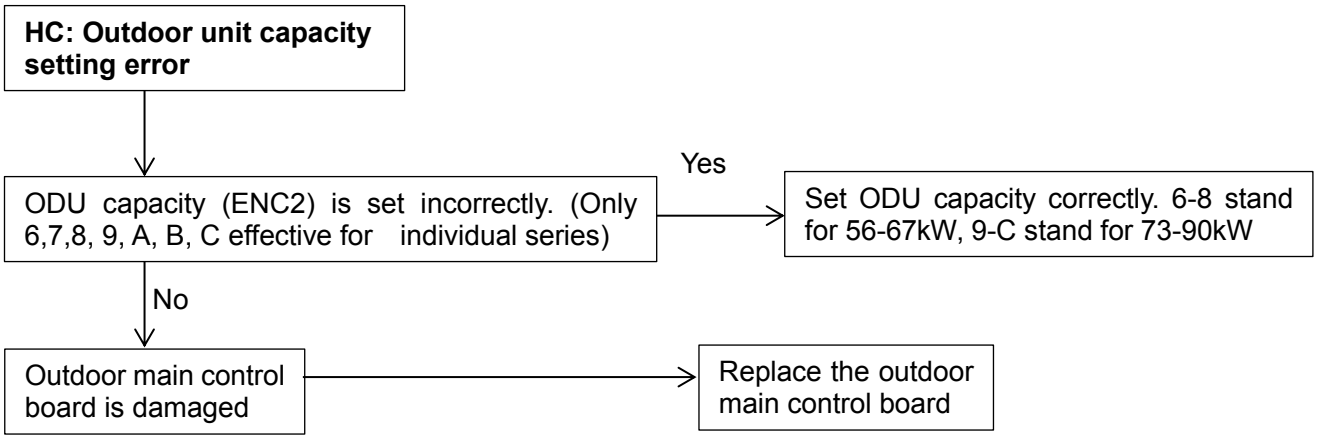
Top temperature and discharge temperature of all compressors are higher than normal value, discharge pressure and suction pressure are both lower than normal value, current is lower than normal value, suction pipe may be frosting. All the phenomenon will disappear after recharging refrigerant.

3. The phenomenon of the low pressure side is blocked③:

The discharge temperature is higher than normal value*, low pressure is lower than normal value*, current is lower than normal value* and suction pipe may be frosting.

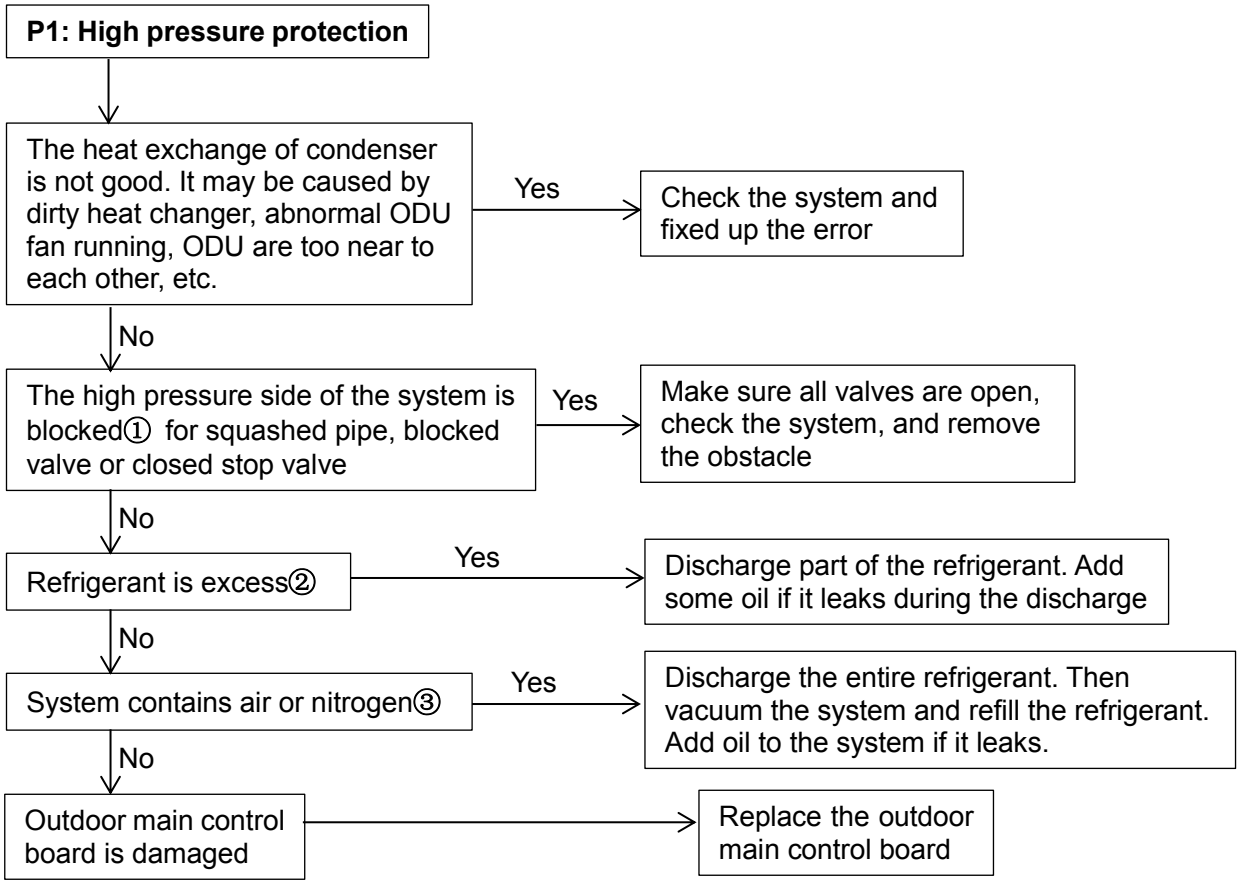
*The normal system running parameters please refer to attached table 3.

4.8 HC: Outdoor unit capacity setting error



4.9 P1: High pressure protection

When the pressure is over 4.4MPa, the system will display P1 protection, the ODU in standby. When the pressure is lower than 3.2MPa, P1 disappears and normal operation resumes.



Note:

1. The phenomenon of The high pressure side of the system is blocked①:

The high pressure is higher than normal value, the low pressure is lower than normal value, and the discharge temperature is higher than normal value.

2. The phenomenon of the refrigerant is excess②:

The high pressure is higher than normal value, the low pressure is higher than normal value, and the discharge temperature is lower than normal value.

3. The phenomenon of the system contains air or nitrogen③:

The high pressure is higher than normal value, current is larger than normal value, discharge temperature is higher than normal

value, compressor makes noise, pressure meter do not display steady.

*The normal system running parameters please refer to attached table 3.

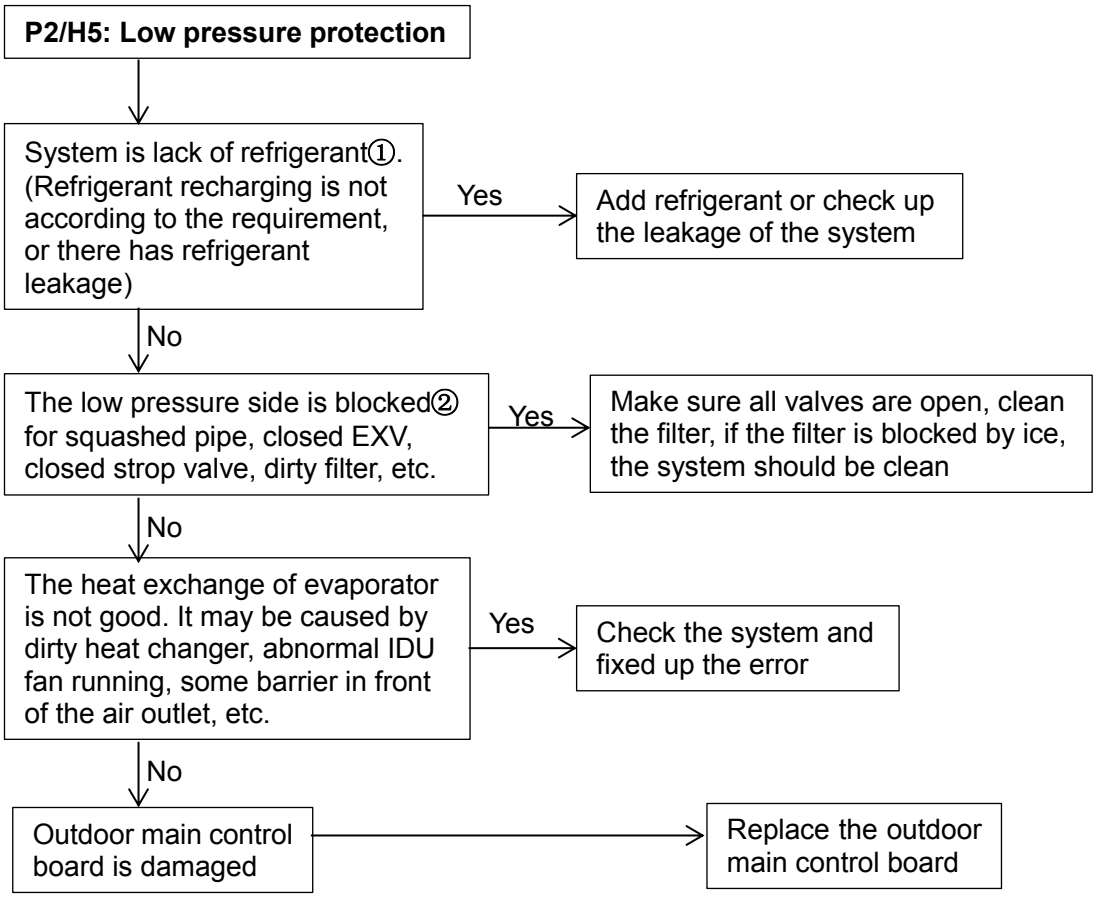
*If the system install three-phase protector, and the three-phase protector connect with high pressure switch in series connection, the system will display P1 protection when fist power on, and P1 protection will disappear after system is steady.

*If the system install three-phase protector, and the three-phase protector connect with low pressure switch in series connection, the system will display P2 protection when fist power on, and P2 protection will disappear after system is steady.

4.10 P2/H5: Low pressure protection

When the pressure is lower than 0.05MPa, the system will display P2 protection, the ODU in standby. When the pressure is higher than 0.15MPa, P2 disappears and resumes normal operation.

H5 error will display when system appear 3 times P2 protection in 60 minutes, it cannot resume automatically, and it can resume only by restarting the machine.



Note:

1. The phenomenon of lack of refrigerant①:

Top temperature and discharge temperature of all compressors are higher than normal value, discharge pressure and suction pressure are both lower than normal value, current is lower than normal value, suction pipe may be frosting. All the phenomenon will disappear after recharging refrigerant.

2. The phenomenon of the low pressure side is blocked②:

The discharge temperature is higher than normal value*, low pressure is lower than normal value*, current is lower than normal value* and suction pipe may be frosting.

*The normal system running parameters please refer to attached table 3.

*If the system install three-phase protector, and the three-phase protector connect with high pressure switch in series connection, the system will display P1 protection when fist power on, and P1 protection will disappear after system is steady.

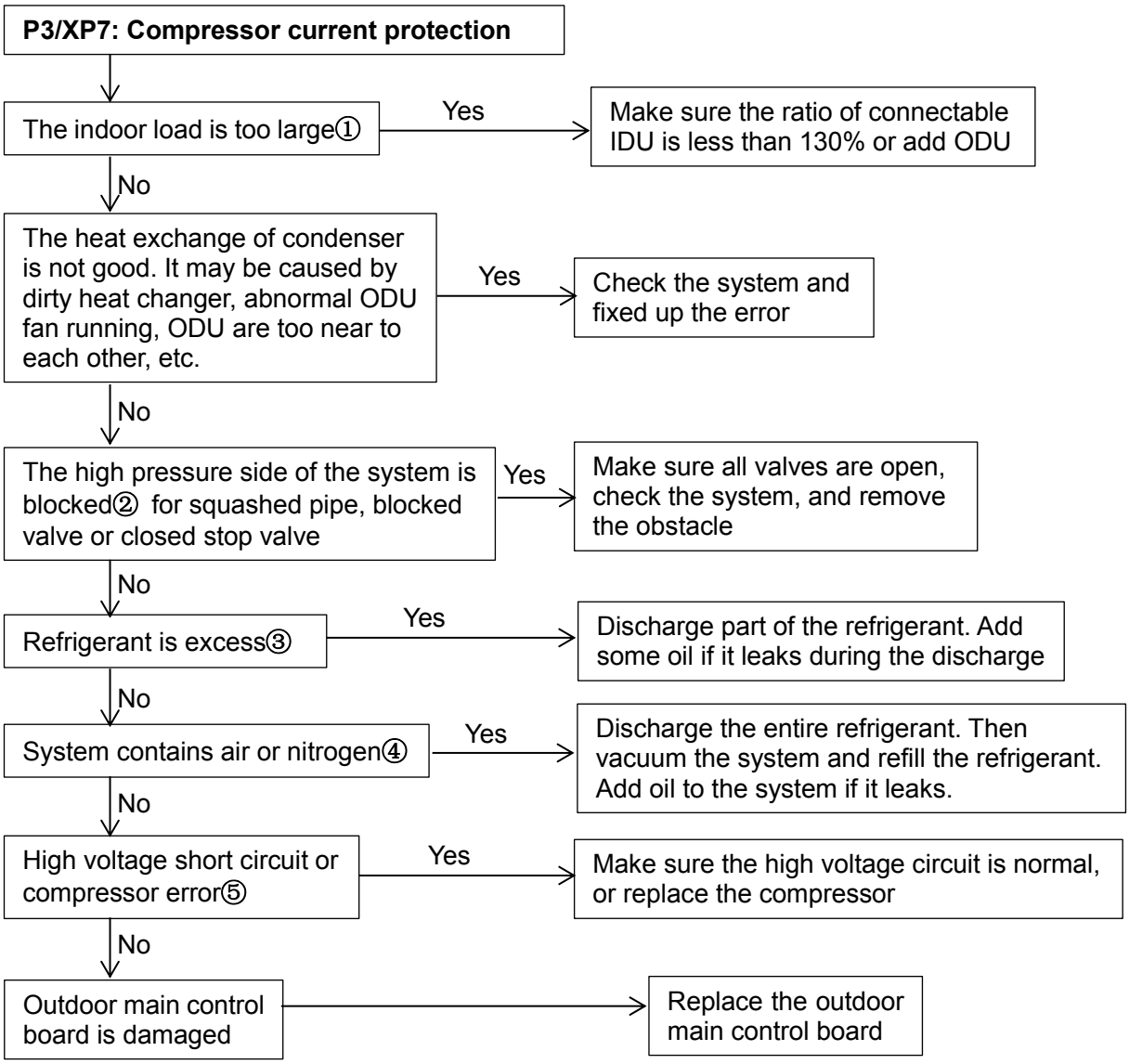
*If the system install three-phase protector, and the three-phase protector connect with low pressure switch in series connection, the system will display P2 protection when fist power on, and P2 protection will disappear after system is steady.

4.11 P3: Current protection of inverter compressor; XP7: Current protection of No.X fixed compressor (X refers to fixed compressor sequence number)

P3: When the current of inverter compressor is over12A, the system will display P3 protection, the ODU in standby. When the current goes back to normal range, P3 disappears and normal operation resumes.

XP7: Current protection of No.1/No.2 fixed compressor

When the current of fixed compressor is over 17A, the system will display P7 protection, the ODU in standby. When the current goes back to normal range, P7 disappear and normal operation resumes.



Note:

1. The phenomenon of the indoor load is too large①:

The suction temperature and discharge temperature are both higher than normal value.

2. The phenomenon of The high pressure side of the system is blocked②:

The high pressure is higher than normal value, the low pressure is lower than normal value, and the discharge temperature is higher than normal value.

3. The phenomenon of the refrigerant is excess③:

The high pressure is higher than normal value, the low pressure is higher than normal value, and the discharge temperature is lower than normal value.

4. The phenomenon of the system contains air or nitrogen④:

The high pressure is higher than normal value, current is larger than normal value, discharge temperature is higher than normal

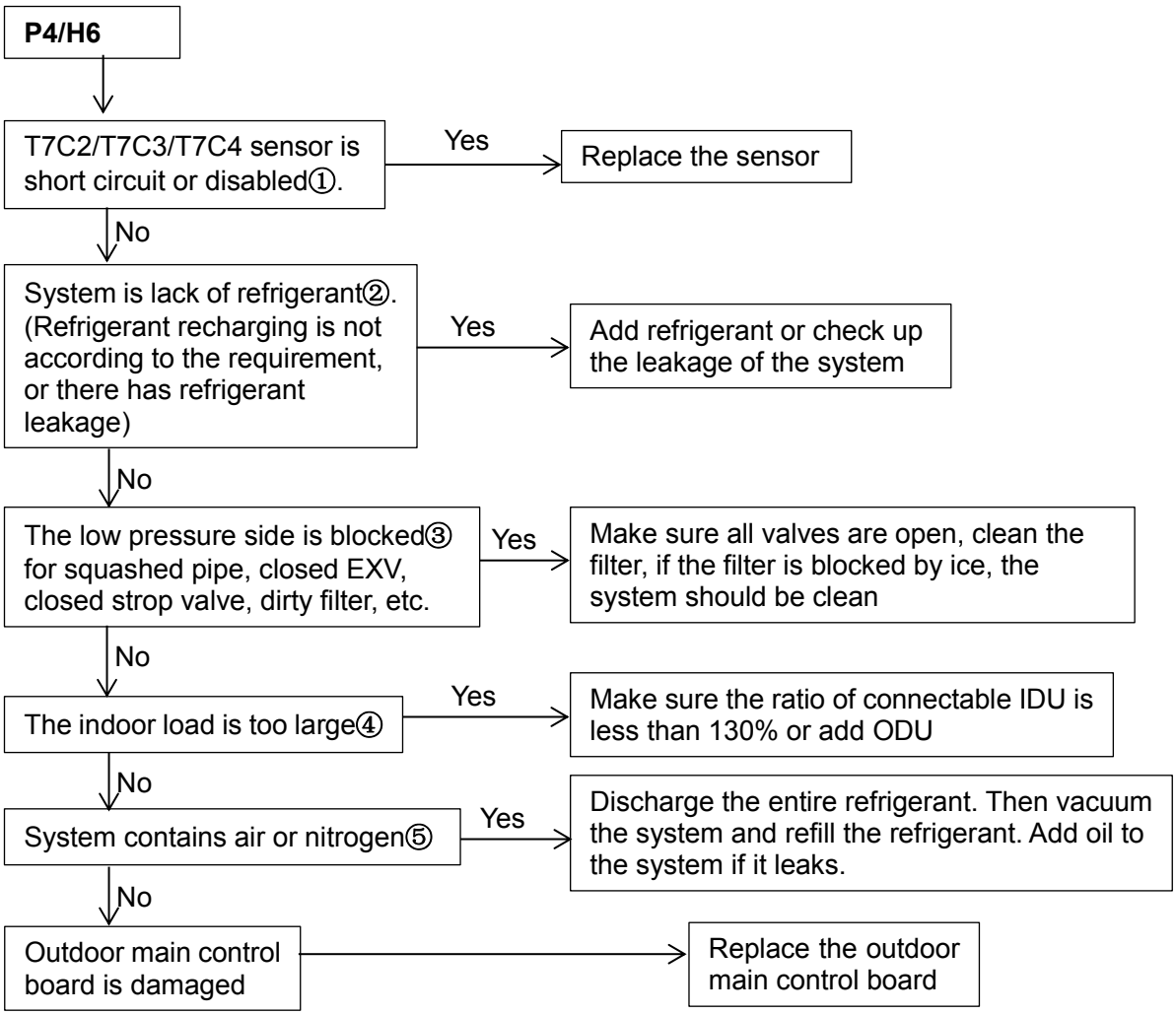
value, compressor makes noise, pressure meter do not display steady.

5. How to check whether compressor is error⑤:

Measure the resistance between two terminals among the three terminals of compressor. The resistance between two terminals is 2-5Ω, the resistance between each terminal and ground is infinity, if the resistance is out of the normal range, the compressor is error.

*The normal system running parameters please refer to attached table 3.

4.12 P4: Discharge temperature protection; H6: P4 protection appears three times in 100 minutes



Note:

H6 error cannot resume automatically, and it can resume only by restarting the machine.

1. How to check whether the T7C2/T7C3/T7C4 sensor is short circuit or disabled①:

Using a multimeter to measure resistance, if the resistance is too small, the sensor is short circuit, if the resistance in certain temperature is not consistent with attached table 2, the sensor is disabled

2. The phenomenon of lack of refrigerant②:

Top temperature and discharge temperature of all compressors are higher than normal value, discharge pressure and suction pressure are both lower than normal value, current is lower than normal value, suction pipe may be frosting. All the phenomenon will disappear after recharging refrigerant.

3. The phenomenon of the low pressure side is blocked③:

The discharge temperature is higher than normal value*, low pressure is lower than normal value*, current is lower than normal value* and suction pipe may be frosting.

4. The phenomenon of the indoor load is too large④:

The suction temperature and discharge temperature are both higher than normal value.

5. The phenomenon of the system contains air or nitrogen⑤:

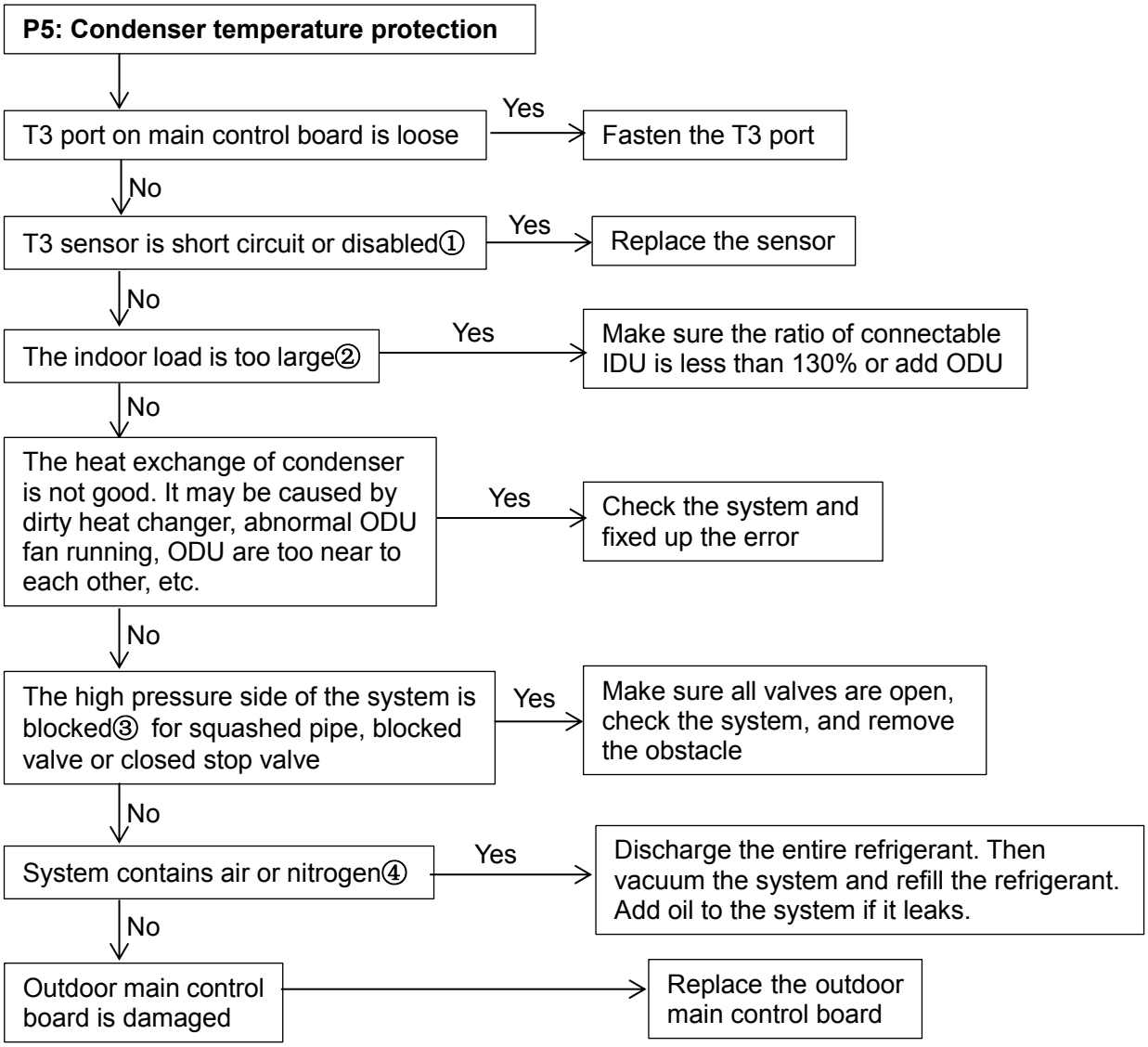
The high pressure is higher than normal value, current is larger than normal value, discharge temperature is higher than normal

value, compressor makes noise, pressure meter do not display steady.

*The normal system running parameters please refer to attached table 3.

4.13 P5: Condenser temperature protection

When condenser temperature is over 65℃, the system will display P5 protection, the ODU in standby. When the temperature goes back to normal range, P5 disappear and normal operation resumes.



Note:

1. How to check whether the T3 sensor is circuit or disabled①:

Using a multimeter to measure resistance, if the resistance is too small, the sensor is short circuit, if the resistance in certain temperature is not consistent with attached table 1, the sensor is disabled

2. The phenomenon of the indoor load is too large②:

The suction temperature and discharge temperature are both higher than normal value.

3. The phenomenon of The high pressure side of the system is blocked③:

The high pressure is higher than normal value, the low pressure is lower than normal value, and the discharge temperature is higher than normal value.

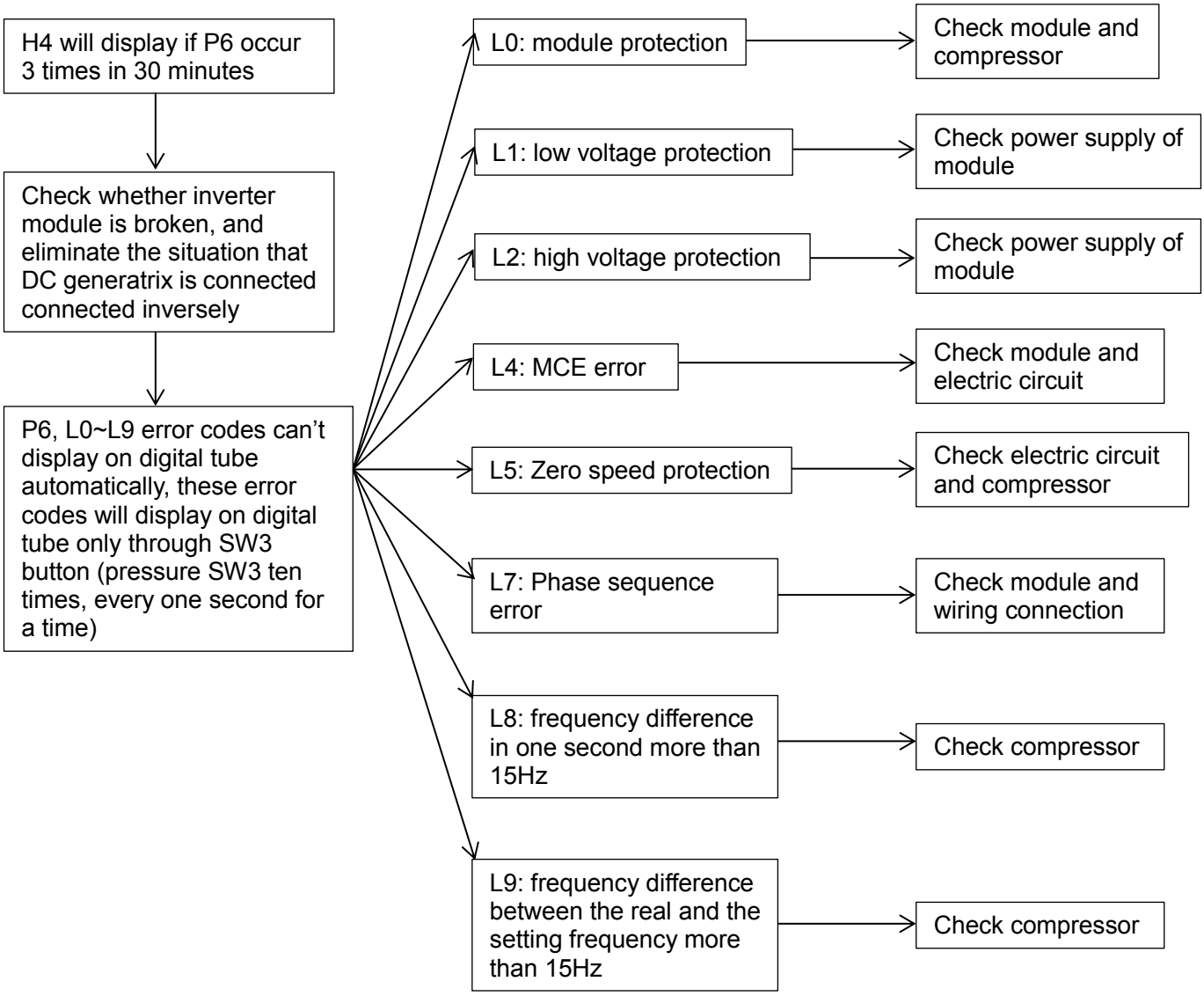
4. The phenomenon of the system contains air or nitrogen④:

The high pressure is higher than normal value, current is larger than normal value, discharge temperature is higher than normal value, compressor makes noise, pressure meter do not display steady.

4.14 P6/H4: Module protection

P6, L0~L9 error codes can't display on digital tube automatically, these error codes will display on digital tube only through SW3 button (pressure SW3 ten times, every one second for a time)

If the system display three times P6 protection in 60 minutes, the system will stop and display H4 error code. When the system displays H4 error code, the system can resume only by restarting the machine. At this time, malfunction should be disposed promptly to avoid further damage.



1) L0 troubleshooting

Step 1: Compressor check

Measure the resistance between each two of U, V, W terminals of the compressor, all the resistance should be the same and equal to 0.9~5 Ohms. (Fig. A and Fig. B)

Measure the resistance between each of U, V, W terminals of the compressor to ground (Fig. C), all the resistance should trend to infinity (Fig. D), otherwise the compressor has been malfunction, needs to be replaced.

Fig. A

Fig.B

Fig.C

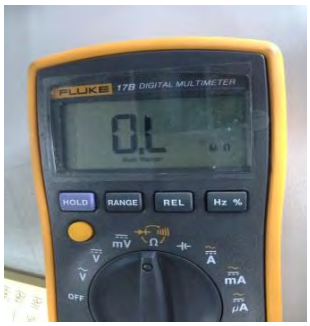
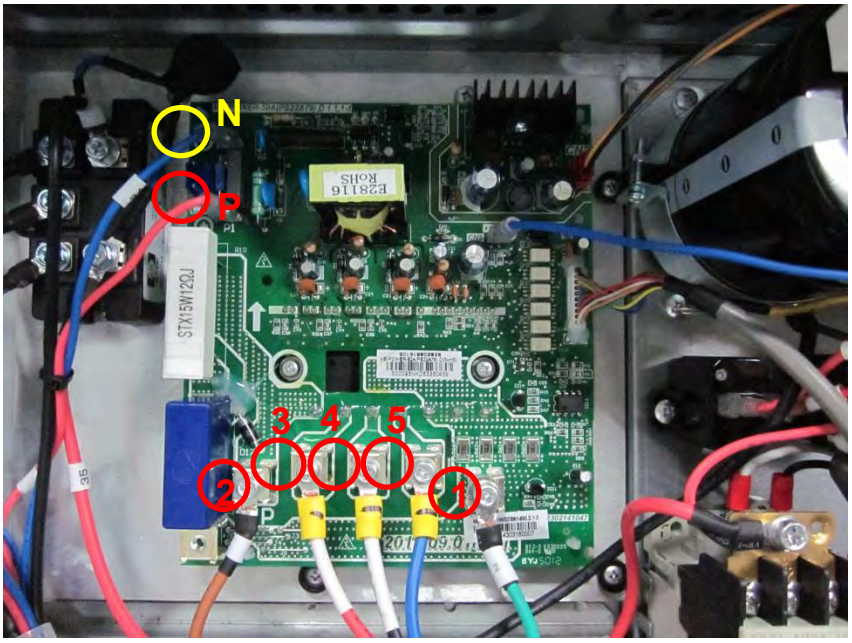


Fig.D

If the resistance value are normal, then go to step 2.

Step 2: Module check

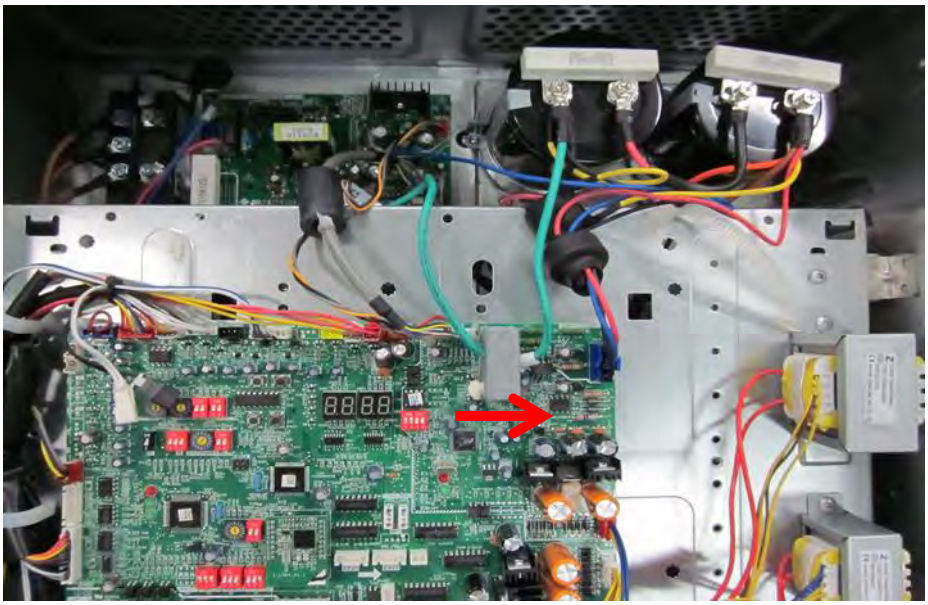


1) DC voltage between terminal P and terminal N should be 1.41 times of the local power supply voltage.
2) DC voltage between terminal 1 and 2 should be 510V～580V.
3) Disconnect the terminal 3, 4, and 5 from inverter compressor. Measure the risistance between any two terminals among terminal 1, 2, 3, 4, 5. All the values should be infinity. If any of the value approximates to 0, the inverter module is damaged and should be replaced.

After replaced the inverter module, if the system is still abnormal, then go to step 3.

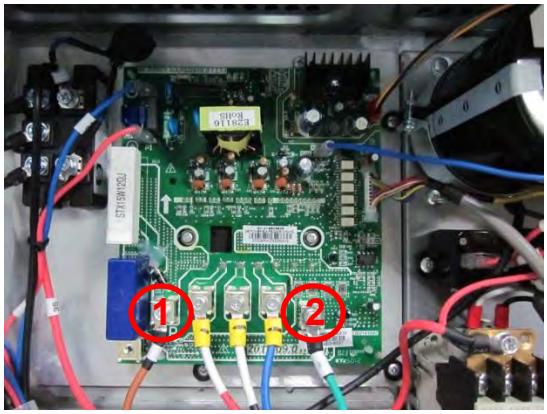
Step 3: DC generatrix check

Direction of the current in DC supply wire which is running through the inductor should be the same as the direction of arrow marked on the inductor.

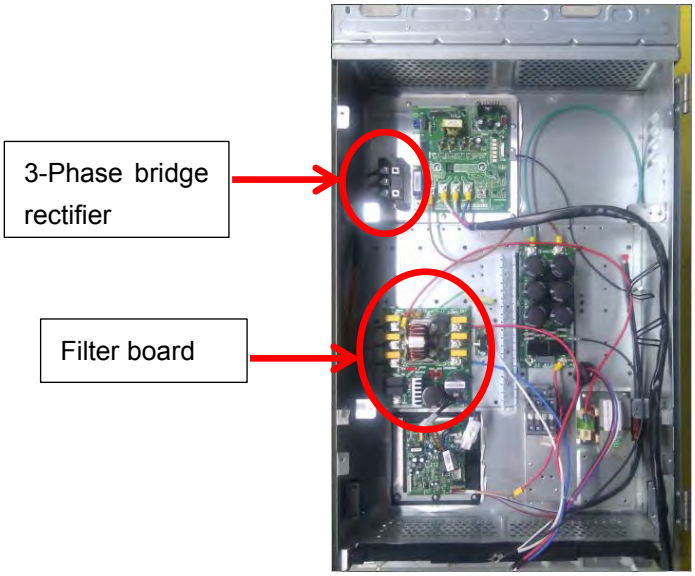


2) L1/L4 troubleshooting

Step 1: Check the DC voltage between 1 and 2 terminal, the normal value should be 510V~580V, if the voltage is lower than 510V, go to step 2.



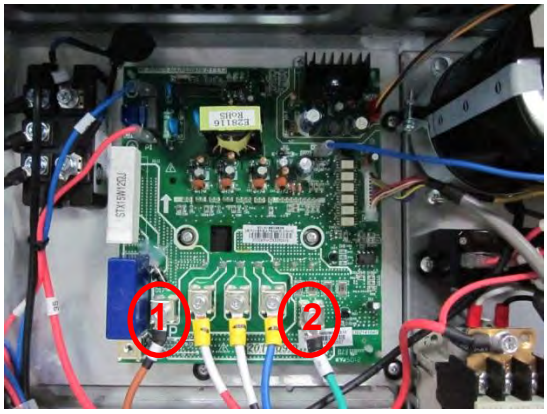
Step 2: Check whether the wires of rectifier circuit are loose or not. If wires are loosen, fasten the wires. If wires are OK, replace the main PCB.



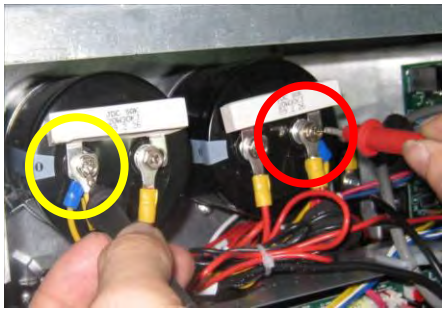
3) L2 troubleshooting

Step 1: Check the DC voltage between 1 and 2 terminal, the normal value should be 510V~580V, if the voltage

is higher than 580V, go to step 2.



Step 2: Check the voltage between the two electrolytic capacitors, the normal value should be 510V~580V.



Turn the measure range of the meter to 1kV, measure the voltage between two electrolytic capacitors

If the value is not in the range, that means the power supply for electrolytic capacitors has problem, you should check the power supply, whether the voltage is too high and whether the voltage is stable.

If the voltage value is normal, then the main PCB has malfunction, it needs to be replaced.

4) L8/L9 troubleshooting

Step 1: Compressor check

Measure the resistance between each two of U, V, W terminals of the compressor, all the resistance should be the same and equal to 0.9~5 Ohms. (Fig. A and Fig. B)

Measure the resistance between each of U, V, W terminals of the compressor to ground (Fig. C), all the resistance should trend to infinity (Fig. D), otherwise the compressor has been malfunction, needs to be replaced.

Fig. A

Fig. B

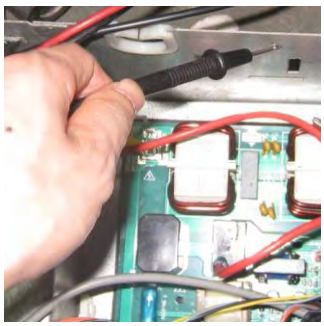


Fig. C

Fig. D

If the resistance value are normal, then go to step 2.

Step 2: Disconncet the power wiring from the compressor(named compressor A) of the faulted system(named system A).

If there is a system running normally nearby(named system B):

Extend the power line of the inverter compressor of system B, connect compressor A to the control box of system B, make sure that the U, V, W terminals are connected in right order, then start system B.

If compressor A can start normally, that means compressor is OK, the control box of system A is malfunction, then raplace the main PCB of system A with correct wire connection.
If compressor A can not start normally, that means compressor A is demaged, needs to be replaced.

If there is no normal system nearby:
Replace the main PCB of system A with correct connection, if compressor A can start normally, it means the main PCB which is replaced is damaged. If compressor A still can't start normally, replace the compressor.

5) Guide for compressor replacement

Step 1: Take out the compressor from the faulty outdoor unit, pour out the oil from the compressor according to the method illustrated. Normally the oil will outflow from the discharge pipe of the compressor.

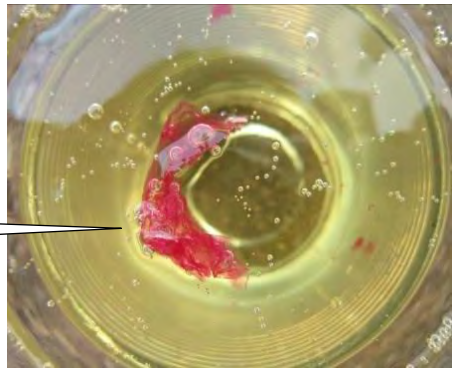
Step 2: check the oil of the system
Normally the oil is clear and transparent, if it is a little yellowing, it is also OK. However, if the oil is become black, feculent, or even there is impurity in the oil, that means the system has problems and the oil has gone

bad, the oil need to be replaced.

The oil is black, it has been carbonized

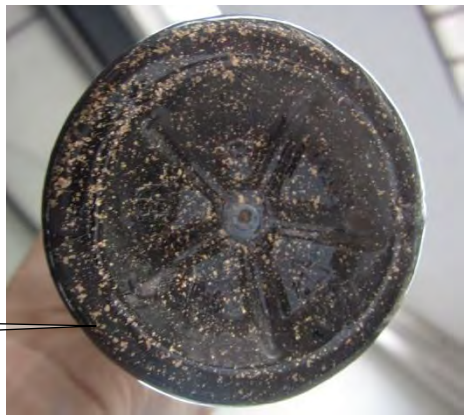
The oil is a little yellowing, but it is clear and transparent, the quality is OK

The oil is still transparent, but there is impunity in the oil, the impunity may clog the filter



The oil becomes cloudy and gray

The oil contains a lot of copper scrap



If the oil has gone bad:

The compressor can’t be lubricated effectively.

↓

The scroll plate, the crankshaft and the bearing of the compressor is worn

↓

Abrasion leads to larger load, higher current

↓

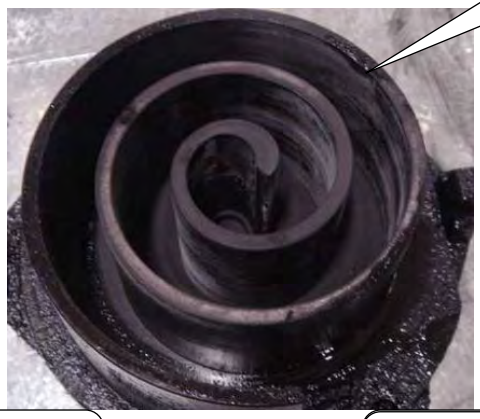
The electric heat will rise and the temperature of the motor becomes increasingly high

↓

The motor is burned and the compressor is damaged at last

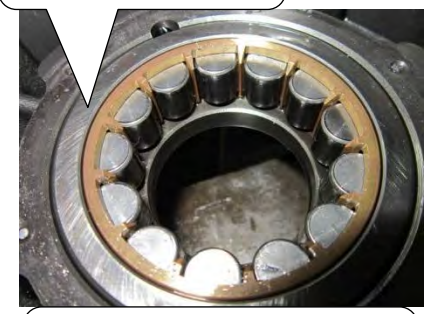
The crankshaft is worn.

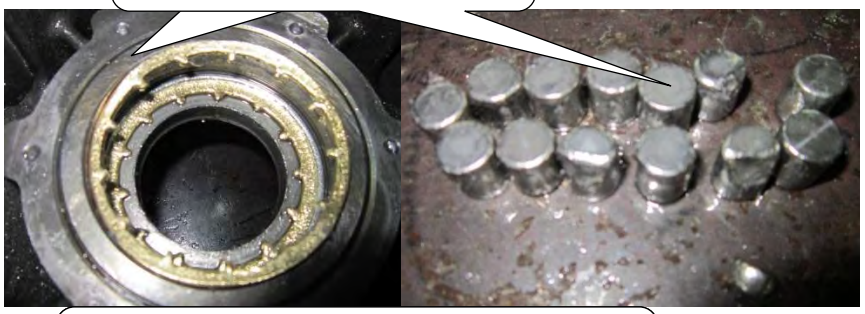
The scroll plate is worn.



A normal bearing of the compressor

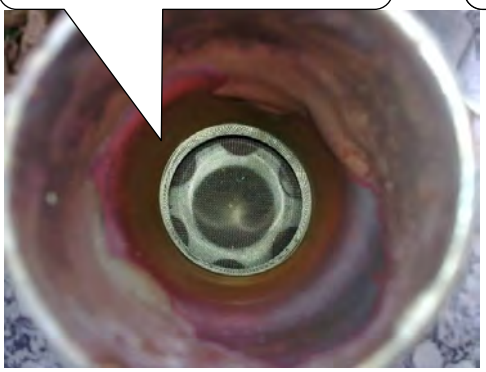
The bearing is worn seriously, it is damaged completely

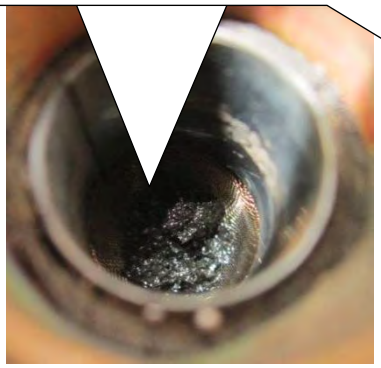




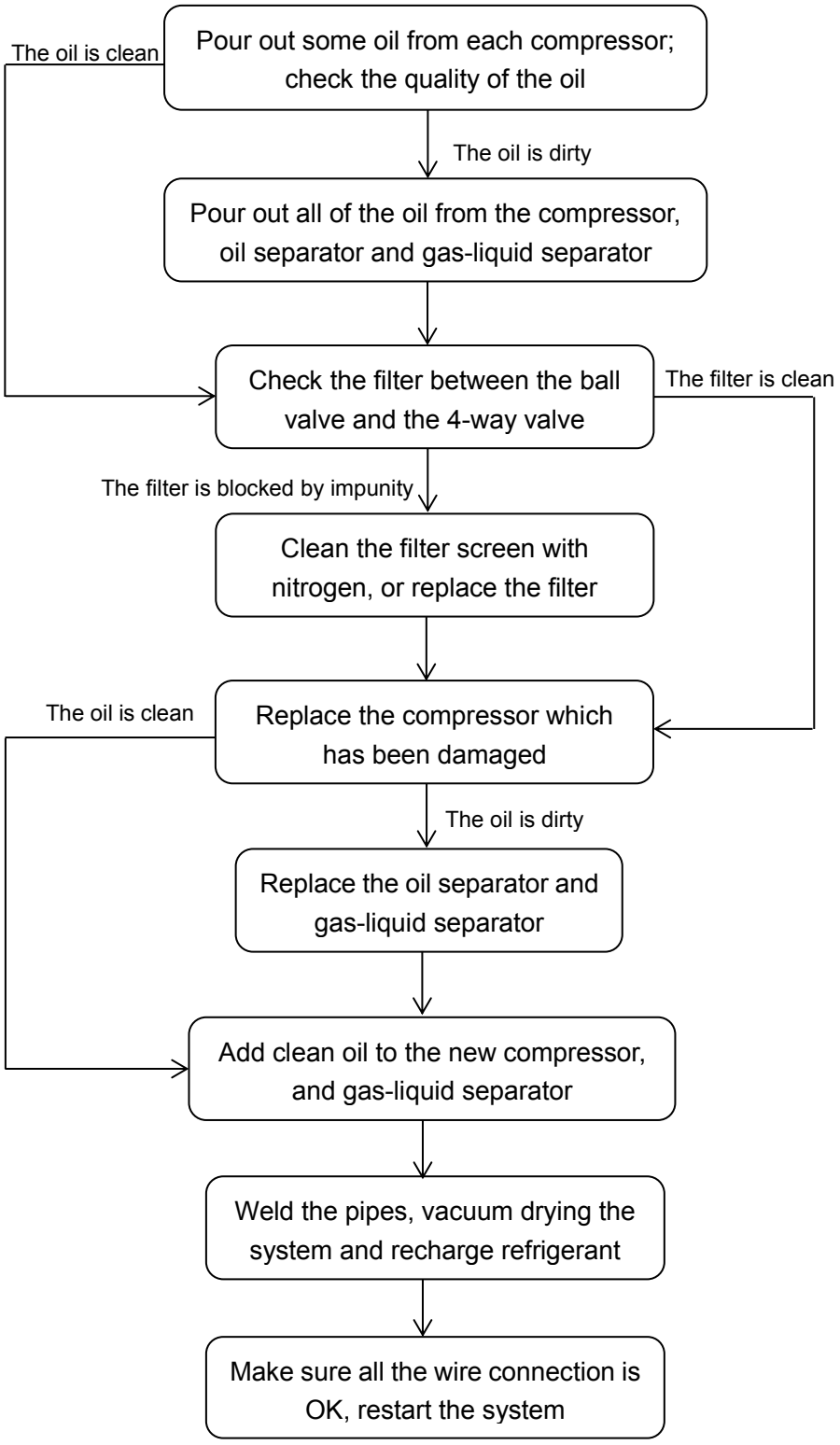
A clean filter (on the suction pipe of the system)

The filter is blocked by impunity, the suction of the compressor will be abnormal





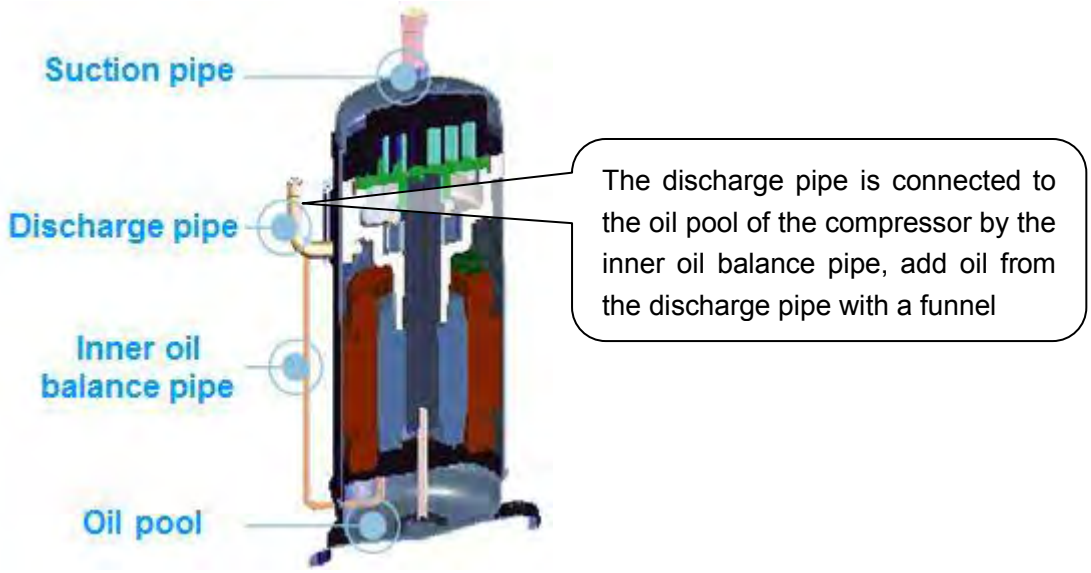
Step 3: Replace the compressor



Note:

1. Before pouring out the oil, shake the compressor, oil separator and gas-liquid separator first, because impunity may deposit at the bottom of the tank.
2. If the oil of one compressor is clean, there's no need to check the oil of the other compressor. If the oil of one compressor has gone bad, check the oil of the other compressor is necessary. If all the oil of an outdoor unit needs to be replaced, after adding oil to the compressors, the rest oil should be charged to the gas-liquid separator.

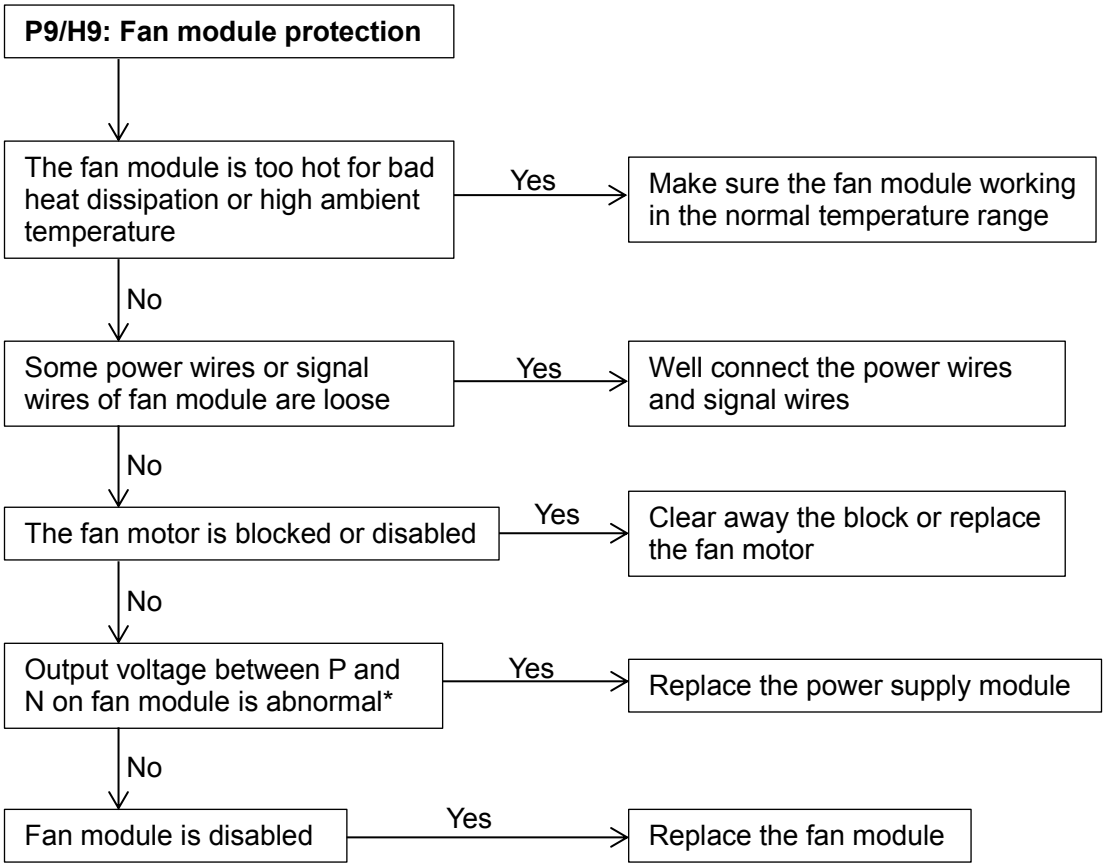
3. Add oil to the compressor from the discharge pipe.



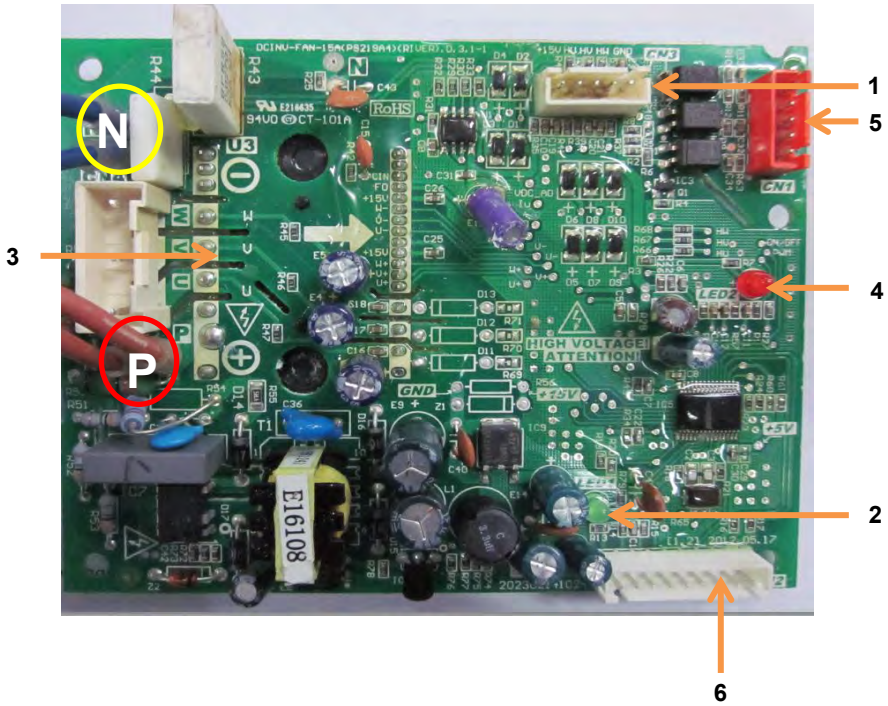
4. The type of the oil is FVC-68D, make sure the type of the oil is right because different compressor need different type of oil, if the type is wrong there will be various kinds of problems.

4.15 P9/H9: DC fan module protection

If the system display three times P9 protection in 60 minutes, the system will stop and display H9 error code. When the system displays H9 error code, the system can resume only by restarting the machine. At this time, malfunction should be disposed promptly to avoid further damage.



Fan module instruction



1 Program input port
2 Power supply indicator lamp
3 Fan motor U, V, W output port
4 Fault indicator lamp
5 PCB control signal input port
6 Signal feedback port

*** The normal value of output voltage between P and N on fan module is DC 310V**

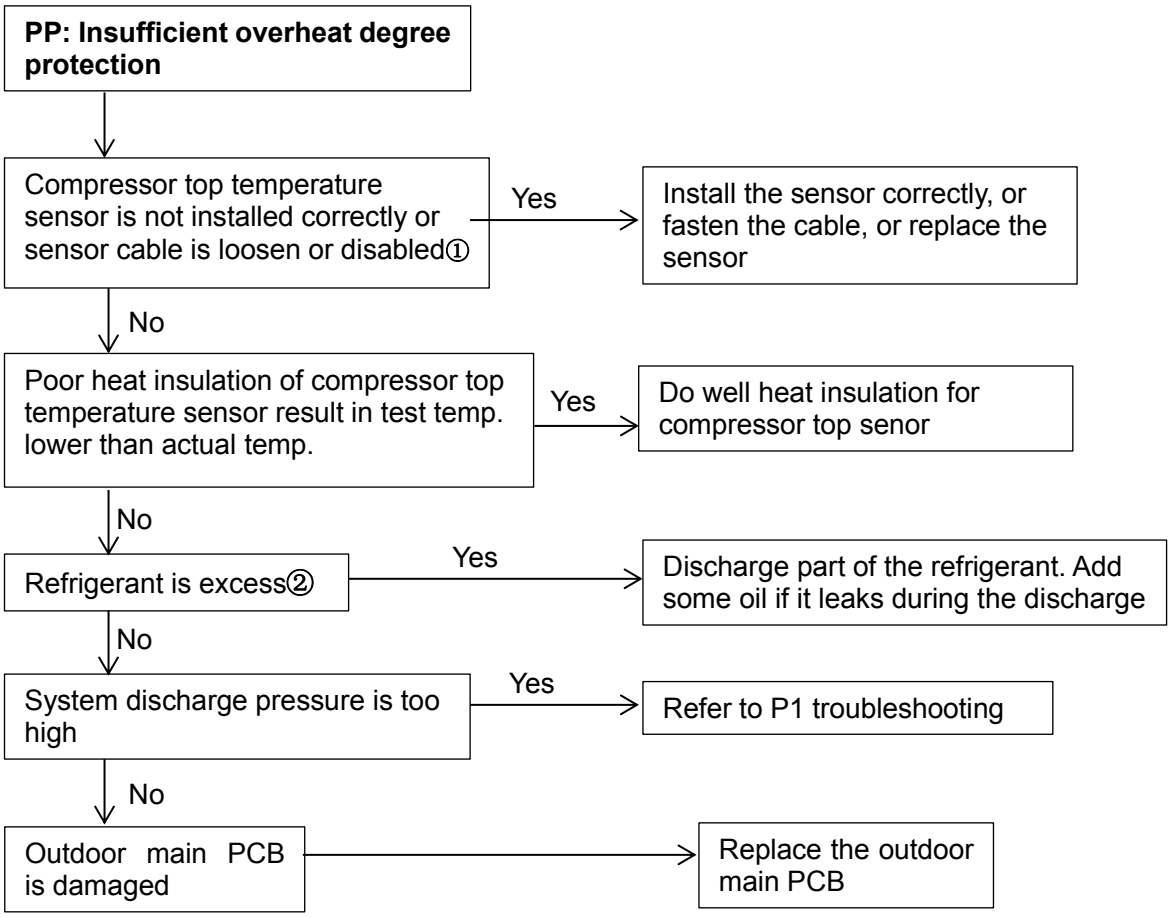
P9 protection analysis

Conditions	Fault indicator lamp of fan module	Power supply indicator lamp of fan module	Digital tube display	Malfunction analysis
Power on	Off	Off	Quantity of IDU or “0”	Check the power supply circuit for fan module. Check whether there has power supply for lightning protection plate, whether the protective tube is broken, whether the voltage after rectification is normal, whether the bridge rectifier is broken.
Power on	Off	Flicker	Quantity of IDU or “0”	Power supply of fan module has problem, needs to replace the fan module.
When fan motor start	At first the lamp is on then the lamp is off	On	P9/H9	Check whether the drive port and signal feedback port is loose, whether the fan module and fan motor is installed firmly. If above conditions are all OK, it needs to replace the fan module.
When fan motor start	At first the lamp is on then the lamp flicker	On	P9/H9	Check whether the transformer in lightning protection plate Is open circuit, whether the relay is broken. If occurs above problem, it needs to replace the lightning protection plate.
Fan motor running several minutes	On	On	P9/H9	Check whether the capacity setting from dial switch is accordance with actual ODU capacity, whether the capacity from spot check is accordance with actual ODU capacity. If occurs above problem, it needs to adjust the capacity setting. If above conditions are both OK, it needs to replace the main control board.

4.16 PP/F0: Insufficient overheat degree protection of compressor discharge temperature

When the discharge temperature overheat degree is≤0°C for 20min; or the overheat degree is ≤5°C for 60min, it will display PP protection.

If the system display three times PP protection in 150 minutes, the system will stop and display F0 error code. When the system displays F0 error code, the system can resume only by restarting the machine.



Note:

1. How to check whether the temperature sensor is short circuit or disabled①:

Using a multi-meter to measure resistance, if the resistance is too small, the sensor is short circuit, if the resistance in certain temperature is not consistent with attached table 2, the sensor is disabled.

2. The phenomenon of the refrigerant is excess②:

The high pressure is higher than normal value, the low pressure is higher than normal value, and the discharge temperature is lower than normal value.

Attached table 1: Resistance value of ambient temperature and pipe temperature sensor

Temperature (℃)	Resistance value (kΩ)	Temperature (℃)	Resistance value (kΩ)	Temperature (℃)	Resistance value (kΩ)	Temperature (℃)	Resistance value (kΩ)
-20	115.266	**20**	12.6431	**60**	2.35774	**100**	0.62973
-19	108.146	**21**	12.0561	**61**	2.27249	**101**	0.61148
-18	101.517	**22**	11.5	**62**	2.19073	**102**	0.59386
-17	96.3423	**23**	10.9731	**63**	2.11241	**103**	0.57683
-16	89.5865	**24**	10.4736	**64**	2.03732	**104**	0.56038
-15	84.219	**25**	10	**65**	1.96532	**105**	0.54448
-14	79.311	**26**	9.55074	**66**	1.89627	**106**	0.52912
-13	74.536	**27**	9.12445	**67**	1.83003	**107**	0.51426
-12	70.1698	**28**	8.71983	**68**	1.76647	**108**	0.49989
-11	66.0898	**29**	8.33566	**69**	1.70547	**109**	0.486
-10	62.2756	**30**	7.97078	**70**	1.64691	**110**	0.47256
-9	58.7079	**31**	7.62411	**71**	1.59068	**111**	0.45957
-8	56.3694	**32**	7.29464	**72**	1.53668	**112**	0.44699
-7	52.2438	**33**	6.98142	**73**	1.48481	**113**	0.43482
-6	49.3161	**34**	6.68355	**74**	1.43498	**114**	0.42304
-5	46.5725	**35**	6.40021	**75**	1.38703	**115**	0.41164
-4	44	**36**	6.13059	**76**	1.34105	**116**	0.4006
-3	41.5878	**37**	5.87359	**77**	1.29078	**117**	0.38991
-2	39.8239	**38**	5.62961	**78**	1.25423	**118**	0.37956
-1	37.1988	**39**	5.39689	**79**	1.2133	**119**	0.36954
0	35.2024	**40**	5.17519	**80**	1.17393	**120**	0.35982
1	33.3269	**41**	4.96392	**81**	1.13604	**121**	0.35042
2	31.5635	**42**	4.76253	**82**	1.09958	**122**	0.3413
3	29.9058	**43**	4.5705	**83**	1.06448	**123**	0.33246
4	28.3459	**44**	4.38736	**84**	1.03069	**124**	0.3239
5	26.8778	**45**	4.21263	**85**	0.99815	**125**	0.31559
6	25.4954	**46**	4.04589	**86**	0.96681	**126**	0.30754
7	24.1932	**47**	3.88673	**87**	0.93662	**127**	0.29974
8	22.5662	**48**	3.73476	**88**	0.90753	**128**	0.29216
9	21.8094	**49**	3.58962	**89**	0.8795	**129**	0.28482
10	20.7184	**50**	3.45097	**90**	0.85248	**130**	0.2777
11	19.6891	**51**	3.31847	**91**	0.82643	**131**	0.27078
12	18.7177	**52**	3.19183	**92**	0.80132	**132**	0.26408
13	17.8005	**53**	3.07075	**93**	0.77709	**133**	0.25757
14	16.9341	**54**	2.95896	**94**	0.75373	**134**	0.25125
15	16.1156	**55**	2.84421	**95**	0.73119	**135**	0.24512
16	15.3418	**56**	2.73823	**96**	0.70944	**136**	0.23916
17	14.6181	**57**	2.63682	**97**	0.68844	**137**	0.23338
18	13.918	**58**	2.53973	**98**	0.66818	**138**	0.22776
19	13.2631	**59**	2.44677	**99**	0.64862	**139**	0.22231

Attached table 2: Resistance value of compressor discharge temperature sensor

Temperature (℃)	Resistance value (kΩ)	Temperature (℃)	Resistance value (kΩ)	Temperature (℃)	Resistance value (kΩ)	Temperature (℃)	Resistance value (kΩ)
-20	542.7	**20**	68.66	**60**	13.59	**100**	3.702
-19	511.9	**21**	65.62	**61**	13.11	**101**	3.595
-18	483	**22**	62.73	**62**	12.65	**102**	3.492
-17	455.9	**23**	59.98	**63**	12.21	**103**	3.392
-16	430.5	**24**	57.37	**64**	11.79	**104**	3.296
-15	406.7	**25**	54.89	**65**	11.38	**105**	3.203
-14	384.3	**26**	52.53	**66**	10.99	**106**	3.113
-13	363.3	**27**	50.28	**67**	10.61	**107**	3.025
-12	343.6	**28**	48.14	**68**	10.25	**108**	2.941
-11	325.1	**29**	46.11	**69**	9.902	**109**	2.86
-10	307.7	**30**	44.17	**70**	9.569	**110**	2.781
-9	291.3	**31**	42.33	**71**	9.248	**111**	2.704
-8	275.9	**32**	40.57	**72**	8.94	**112**	2.63
-7	261.4	**33**	38.89	**73**	8.643	**113**	2.559
-6	247.8	**34**	37.3	**74**	8.358	**114**	2.489
-5	234.9	**35**	35.78	**75**	8.084	**115**	2.422
-4	222.8	**36**	34.32	**76**	7.82	**116**	2.357
-3	211.4	**37**	32.94	**77**	7.566	**117**	2.294
-2	200.7	**38**	31.62	**78**	7.321	**118**	2.233
-1	190.5	**39**	30.36	**79**	7.086	**119**	2.174
0	180.9	**40**	29.15	**80**	6.859	**120**	2.117
1	171.9	**41**	28	**81**	6.641	**121**	2.061
2	163.3	**42**	26.9	**82**	6.43	**122**	2.007
3	155.2	**43**	25.86	**83**	6.228	**123**	1.955
4	147.6	**44**	24.85	**84**	6.033	**124**	1.905
5	140.4	**45**	23.89	**85**	5.844	**125**	1.856
6	133.5	**46**	22.89	**86**	5.663	**126**	1.808
7	127.1	**47**	22.1	**87**	5.488	**127**	1.762
8	121	**48**	21.26	**88**	5.32	**128**	1.717
9	115.2	**49**	20.46	**89**	5.157	**129**	1.674
10	109.8	**50**	19.69	**90**	5	**130**	1.632
11	104.6	**51**	18.96	**91**	4.849		
12	99.69	**52**	18.26	**92**	4.703		
13	95.05	**53**	17.58	**93**	4.562		
14	90.66	**54**	16.94	**94**	4.426		
15	86.49	**55**	16.32	**95**	4.294	B(25/50)=3950K	
16	82.54	**56**	15.73	**96**	4.167		
17	78.79	**57**	15.16	**97**	4.045	R(90℃)=5KΩ+-3%	
18	75.24	**58**	14.62	**98**	3.927		
19	71.86	**59**	14.09	**99**	3.812		

Attached table 3: Commissioning and operating parameters of refrigerant system

Conditions 1: Make sure outdoor unit can detect all the indoor units, the quantity of indoor units display steadily and be equal to actual quantity of installed indoor units.

Conditions 2: Make sure all the valves in outdoor unit are open, indoor units EXV have connected to indoor PCB.

Conditions 3: The ratio of connectable indoor units is 100%. When ambient temperature is high, operate the system in cooling mode and set the temperature 17℃. When ambient temperature is low, operate the system in heating mode and set the temperature 30℃. Then get the parameters after system running normally more than 30 minutes.

Outdoor unit cooling parameters table

Ambient temperature (T4)	℃	20-27	27-33	33-38	38-45
Discharge pressure (spot check)	MPa	2.1-2.3	2.8-3.1	3.3-3.5	3.7-3.9
Pressure of high pressure valve	MPa	1.8-2.0	2.4-2.7	2.8-3.0	3.2-3.5
Pressure of low pressure valve	MPa	0.7-0.9	0.8-1.0	1.0-1.2	1.2-1.4
Discharge temperature (spot check)	℃	50-65	70-85	70-90	80-90
DC Inverter compressor current (spot check)	A	4-5	6-7	7-8	9-11
Fixed compressor current (spot check)	A	6-7	8-9	9-11	11-12
Average temperature of evaporator outlet T2B	℃	8-9	12-15	16-17	20

Outdoor unit heating parameters table

Ambient temperature (T4)	℃	-15--5	-5-5	5-12	12-18
Discharge pressure (spot check)	MPa	2.0-2.2	2.2-2.7	3.0-3.1	2.6-2.7
Pressure of high pressure valve	MPa	1.7-1.8	1.8-2.4	2.6-2.8	2.1-2.4
Pressure of low pressure valve	MPa	2.0-2.2	2.2-2.6	3.0-3.1	2.5-2.7
Discharge temperature (spot check)	℃	50-70	60-70	60-85	60-70
DC Inverter compressor current (spot check)	A	5	5-6	6-8	5-6
Fixed compressor current (spot check)	A	6	6-7	9-10	8-9
Average temperature of condenser outlet T2	℃	33	33-40	46-50	39-41

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