5. Maintenance

5.1 Failure code

Failure code description: (failure code of the whole system is showed as 8 bits, so totally 256 codes. Indoor failure code should be judged by the table and the unit number)

Outdoor failure code exists in EEPROM, in which 5 failure codes can be kept.
Indoor failure code exists in EEPROM, in which 5 failure codes can be kept.
Clear failure code by indoor or outdoor.
Failure codes are distributed as follows:
0~19: Indoor failure code
20~99: Outdoor failure code
100~109: DC motor failure code
110~125: Inverter module failure code
126~127: Software auto-check failure code

Physical master unit:
Dip switches SW9, SW10, SW11 are at 0, 0, 0, LD displays failure code 20~127, it is the master failure code.
Dip switches SW9, SW10, SW11 are 1, 0, 0, LD displays failure code 20~127, it is failure code of No. 1 slave unit.
Dip switches SW9, SW10, SW11 are 2, 0, 0, LD displays failure code 20~127, it is failure code of No. 2 slave unit.
Physical slave unit:
Dip switches SW9, SW10, SW11 are at 0, 0, 0, LD displays failure code 20~127, it is single slave unit failure code.

Outdoor failure code display principle on wired controller:
When outdoor compressor is running, indoor wired controller will display the failure code of outdoor with higher priority. When compressor stops, it displays all indoor failures. The indoor failures will be classified as below: sensor failure, inverter board failure, fan motor driving board failure, any protections etc.

Inverter outdoor unit failure code indication on master unit

LED indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
20-0	14	Defrosting temp. sensor Tdef1 failure	AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, sensor has no alarm when abnormal in cooling mode.	Resumable
20-1	14	Defrosting temp. sensor Tdef2 failure		

LED indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
21	15	Ambient temp. sensor Tao failure	AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds.	Resumable
22-0	16	Suction temp. sensor Tsi failure		
22-1	16	Suction temp. sensor Tsacc failure	AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, sensor has no alarm when abnormal in cooling mode.	
22-2	16	Outdoor gas pipe temp. sensor Tsuc(Tdp) failure	AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds. If Tao≤0°C, no need to detect the open circuit failure (AD value is below 11.)	Resumable
23-0	17	Discharging temp. sensor Tdi failure		
23-1	17	Discharging temp. sensor Td1 failure		
24-0	18	Oil temp. sensor Toilp failure	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm. If Tao<0°C, there is no open circuit alarm. If Tao>=0°C and ET>=0°C, no open circuit alarm within 5 minutes.	Resumable
24-1	18	Oil temp. sensor Toili failure	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm. If Tao<0°C or not normal running, no open circuit alarm.	
25-0	19	Heat exchanger inlet temp. Toci1 failure	AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, sensor has no alarm when abnormal in cooling mode.	Resumable
25-1	19	Heat exchanger inlet temp.Toci2 failure		

Maintenance

LED indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
26-0	1A		Not finding connected indoor units for continuous 200 cycles.	
26-1	1A		The searched indoor unit quantity is less than the set quantity for continuous 270 seconds.	
26-2	1A		The searched indoor unit quantity is more than the set quantity for continuous 170 seconds.	
26-3	1A	Outdoor unit and indoor unit communication failure	The searched valve box quantity is less than set quantity for continuous 5 minutes.	Resumable
26-4	1A		The searched valve box quantity is more than set quantity for continuous 5 minutes.	
26-5	1A		After power on, the rearched quantity of the indoor units which don't connect with the valve box is inconsistent with the actual quantity. Note: any indoor or outdoor unit which finishes the maintenance, must repower all the units in the system.	
27	1B	Oil temp. too high protection (Toili)	Toili ≥120°C (E)at interval 25msec, continuous 2sec, and over the set value, then stop and alarm. The oil temp. 10°C lower than the alarm condition for 3 minutes after stop. If it occurs 4 times in an hour, confirm the failure. (the same as Td too high protection.)	Once confirmed, un-resumable
28	1C	High pressure sensor Pd failure	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
29	1D	Low pressure sensor Ps failure		
30-0	1E	High pressure switch HPSi failure	When power on, the confirmation of OFF for continuous 2sec, alarm. If it occurs 4 times in an hour, confirm the failure.	Once confirmed, un-resumable
30-1	1E	High pressure switch HPS1 failure		
32-0	20	Heat exchanger outlet temp. Tsco failure	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm, sensor has no alarm when abnormal in heating mode.	Resumable
32-1	20	Liquid pipe SC temp. of subcooler Tliq failure		

LED indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
33-0	21	EEPROM (AT24C04) failure	EEPROM communication failure	Un-resumable
33-1			EEPROM data check failure(model code, check, etc.)	
33-2			EEPROM data logistic failure(data beyond limit, reverse sequence, etc.)	
34-0	22	Discharging temp. too high protection(Tdi)	Tdi/Td1≥130°C (E)at interval 25msec, continuous 2sec, and over the set value, then stop and alarm. The oil temp. 10°C lower than the alarm condition for 3 minutes after stop, then resume automatically. If it occurs 4 times in an hour, confirm the failure.	Once confirmed, un-resumable
34-1	22	Discharging temp. too high protection ((Td1)		
35-0	23	4-way valve reversing failure	After the 4-way valve is electrified for 3 minunts, if the below conditions can be met for continuous 10 seconds, that is conversing successfully: ⌐This outdoor unit compressor is running normally ⌐Tdp — Tdef1≥10°C ⌐Tdp — Tdef2≥10°C ⌐Pd — Ps≥βMpa Otherwise, stop protection. (Tao>-10°C, β=0.60; Tao≤-10°C, β=0.40) *4-way valve OFF starts up again after 3 minutes *If Thermo. OFF for 2 continuous times, Error stop.	Once confirmed, un-resumable
35-1	23	4-way valve reversing failure	If there is 4-way valve of submachine not electrified after host heating detection starts up for 20 min, alarm 35-1 failure.	
36	24	Oil temp. too low protection (Toili)	In normal operation (exclude start up, defrosting, oil return, remain, stop), if Toil<CT+10°C for continuous 5 minutes, the unit stops for 170 seconds and then resumes automatically. If it occurs 3 time in an hour, lock the alarm. *The same as Td too low protection	Once confirmed, un-resumable
37-0	25	Lack of phase of 3N power supply or wrong phase sequence	Reserved	Un-resumable
37-1			S phase lack	
37-2			T phase lack	
37-3			S phase & T phase normal, but wrong phase sequence	
37-4			Power frequency 50 hz / 60 hz detection unconsistent with the dip switch setting	

Maintenance

LED indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
38	26	High pressure sensor Pd too low protection	Not applicable for this mode.	Once confirmed, unresumable
39-0	27	Low pressure sensor Ps too low protection	After compressor is running(except for residual operation), if in cooling, Ps<0.10MPa; in heating, Ps<0.05MPa, in oil return, Ps<0.03MPa for continuous 5 minutes, stop and alarm. 170 seconds later, resume automatically. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, unresumable
39-1	27	Compressor ratio ε too high protection	After compressor is running, compression ratio ε>8.0 for continuous 5 minute, then stop and alarm. If in cooling, compression ratio ε>9.0 for continuous 1 minute or in heating, compression ratio ε>8.5 for continuous 1 minute or in heating, stop and alarm. 170 seconds later, resume automatically. If it occurs 4 times in an hour, confirm the failure.	
40	28	High pressure sensor Pd too high protection	After compressor is running, if continuous 2 sec Pd≥4.15MPa, stop and alarm.170 seconds later, resume automatically. If it occurs 4 times in an hour, confirm the failure. (Like high pressure switch alarm)	Once confirmed, unresumable
43-0	2B	Discharging temp. sensor Tdi too low protection	After 10 minutes for normal operation (exclude start up, defrosting, oil return, remain, stop), if Td<CT+10°C for continuous 5 minutes, stop and alarm. If it occurs 3 times in an hour, lock the alarm.	Once confirmed, unresumable
43-1	2B	Discharging temp. sensor Td1 too low protection		

LED indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
44	2C	Low pressure sensor Ps too high protection	Not applicable for this mode	Once confirmed, unresumable
45	2D	Communication failure among outdoor units	No communication within 30 seconds continuously (E)	Resumable
46	2E	Communication with INV board failure	No communication within 30 seconds continuously (E)	
53-0	35	Current detector CT failure	Detect before starting up, show incorrect voltage of sensor, stop for 3 minutes, resume to be normal automatically	Resumable
64-0	40	Current detector CT over current failure	Current of fixed compressor at interval 25msec exceed the current limit for 2 times and then stop. Stop for 3 minutes, then resume to be normal automatically. If it occurs 4 times in an hour, lock the alarm. ＊ But, in 4 seconds after startup, not detected.	Once confirmed, unresumable
67	43	Communication with motor driving board failure	Without communication for 4 minutes.	Resumable
71-0	47	Fan 1 locked-rotor (Left)	Running at speed below 20rpm for 30s, or at speed of 70% lower than target for 2 minutes, stop. 170 seconds later, resume automatically. If it occurs 4 times in an hour, confirm the failure.	Once confirmed, unresumable
71-1	47	Fan 2 locked-rotor (Right)		
75-0	4B	No pressure drop between high pressure and low pressure	In 1 minute after INV compressor starts up, Pd-Ps≤0.1MPa,then stop. 170 seconds later, resume automatically. If it occurs 4 times in an hour, confirm the failure.	Once confirmed, unresumable
75-4	4B	Too small pressure drop between high pressure and low pressure	If Pd-Ps≤0.4MPa for 3 minutes, the outdoor unit protection stop. ■ 5 minutes after stopping protection, restart. ■ If there are more than 6 times of stopping protecting within 2 hours, Error stop.	Once confirmed, unresumable

Maintenance

LED indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
76-0	4C	Incorrect outdoor unit quantity, address or capacity setting	Submachine quantity setting are not in conformance with data in EEPROM of the host.	Reset
76-1			Submachine address setting are not in conformance with data in EEPROM of the host.	
76-2			Submachine capacity setting are not in conformance with data in EEPROM of the host.	
77	4D	Oil equalization protection among outdoor units	If ToilpB-ToilpA≤10°C, alarm and stop. Not detecting in the course of startup, defrosting and oil return and in 10 minutes after oil return finishes.170 seconds later, resume automatically. If it occurs 2 times in an hour, lock the failure.	Once confirmed, unresumable
78-0	4E	Lack of refrigerant alarm in cooling	When cooling compressor runs, Ps<0.1MPa for 30 minutes.	Resumable
78-1	4E	Lack of refrigerant alarm in heating	When heating compressor runs, Ts1-ET>20 & Ts1-ET>20 & LEV open fully for 60 minutes, output the lack of gas alarm signal and not stop.	
80	50	Capacity not match to the outdoor units	In VRF system, the difference of capacity between slave unit and master unit is more than 6HP, confirm the failure.	Unresumable
83	53	Dip switch for outdoor unit model selection setting wrong	According to the PCB code, detect the dip switch for outdoor unit model selection setting wrong.	Unresumable
99-x	63	The program self-checking fault	x=0~5	Resumable
100	64	DC fan driving board IPM alarm	DC fan driving board IPM alarm because of over current or too high temp. of modular.170 seconds later, resume automatically. If it occurs 4 times in an hour, confirm the failure.	Once confirmed, unresumable
101	65	DC fan driving board detecting out of control	DC fan driving board detecting is out of control. 170 seconds later, resume automatically. If it occurs 4 times in an hour, confirm the failure.	
102	66	DC fan driving board EEPROM faulty	DC fan driving board Eeprom data is wrong. 170 seconds later, resume automatically. If it occurs 4 times in an hour, confirm the failure.	
103	67	DC fan driving board over current or current detector damaged	DC fan driving board over current is over 5A, then alarm.170 seconds later, resume automatically. If it occurs 4 times in an hour, confirm the failure.	

LED indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
104	68	Voltage too low protection of DC fan driving board	Voltage of DC fan driving board is lower than 280V, then alarm.170 seconds later, resume automatically. If it occurs 4 times in an hour, confirm the failure.	Once confirmed, unresumable
105	69	Overvoltage protection of DC fan driving board	Voltage of DC fan driving board is more than 400V, then alarm.170 seconds later, resume automatically. If it occurs 4 times in an hour, confirm the failure.	
106	6A	DC fan driving board locked-rotor	Fan speed can not be detected.170 seconds later, resume automatically. If it occurs 4 times in an hour, confirm the failure.	
107	6B	Over speed protection of DC fan	If it occurs 4 times in an hour, lock the alarm.	
110	6E	IPM modular protection(FO)	IPM modular over current, in short circuit, over heat, voltage too low of control circuit.	If it occurs 4 times in an hour, confirm the failure. Once confirmed, unresumable.
111	6F	INV compressor out of control	In the course of compressor startup or running, the unit can not detect the rotor position for 6 times, stop for 5s and then the INV control board resumes automatically.	
112	70	Modular radiator temp. too high	If temp.>94°C, alarm. If temp.≤94°C, INV control board resumes automatically.	
113	71	Inverter controller overload	The output current of inverter controller is too high continually.	
114	72	Voltage too low of modular DC	If power voltage<DC420V, alarm. If voltage≥DC420V, INV control board resumes automatically.	
115	73	Voltage too high of modular DC	If power voltage>DC642V, alarm. If voltage≤DC642V, INV control board resumes automatically.	
116	74	Communication with modular abnormal	If communication signal can not be detected for continuous 30 seconds, alarm. After it can be detected, INV control board resumes automatically.	

Maintenance

LED indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
117	75	Modular software over current	Modular software over current.	If it occurs 4 times in an hour, confirm the failure. Once confirmed, unresumable.
118	76	Modular startup failure	Compressor starts up fail for continuous 5 times.	
119	77	Current detecting circuit abnormal of INV controller	Sensor for detecting current of inverter controller is abnormal. Cannot be connected or wrong connection.	
120	78	Inverter controller power supply abnormal	Power supply of inverter controller stops suddenly.	
121	79	Power supply of inverter controller board is abnormal	Power supply of inverter controller board is broken down instantly.	If it occurs 4 times in an hour, confirm the failure. Once confirmed, unresumable.
122	7A	Radiator temp. sensor of inverter controller is abnormal.	Resistor of temp. sensor abnormal or temp. sensor disconnected.	
125	7D	Compressor frequency un-match	(Current frequency≥INV target frequency+3Hz) or (target frequency>0 & actual frequency=0) for continuous 2 minutes	Resumable
127	7F	MCU reset failure	If the host inspects that MCU of submachine is reset, and the submachine is running, the host alarm MCU reset failure, then the whole system stop. In heating mode, when restart up, 4WV will not be electrified, and the whole system will execute 4WV reversing operation again. If it occurs 4 times in one hour, confirm the failure.	Once confirmed, unresumable.
128	80	MCU program need update	The VRF system program is incompatible, program update prompt.	Unresumable

When there is no failure, if the starting condition can not be met, digital tube on master unit will display stand-by code:

555.0	Stand-by state of capacity overmatch	When capacity is over 135% or lower than 50%, the system is standby.	Resumable.
555.1	Stand-by state of 26°C of heating mode	When it is in heating mode with ambient temp. over 26°C,the system is standby.	
555.2	Stand-by state of low pressure (lack of refrigerant)	When the unit starts in cooling Ps<0.23MPa or heating Ps<0.12MPa, the system is standby.	
555.3	Stand-by state of 54°C of cooling mode	For high ambient models, the unit can not open if ambient temp. over 54°C in cooling mode, and the digital tube display: "555.3"	

VB device failure code list

Failure code	Failure code definition	Judgment method	Remarks
5	VB device EEPROM date failure		Unresumable
6	Communication between VB device and outdoor failure	No communication with the outdoor unit for continuous 120 seconds	Resumable
7	Communication between VB device and indoor failure	When detecting the connected indoor units, the indoor unit quantity is zero.	Resumable
9	VB device repeated address		Resumable
20	Outdoor corresponding failure		Resumable