Haier

ATW Split Service Manual

SYJS-2022.B

Edition: 2022.B

Haier

CONTENTS

1. Lineup

Hydronic box

Appearance


Model	Power Supply (V/Ph/Hz)	Capacity	Compatible outdoor unit model
HU062WAMNA	220/1/50	6kW	AW042SSCHA AW062SSCHA
HU102WAMNA	220/1/50	9kW	AW082SNCHA AW102SNCHA

Outdoor units

Appearance


Model	Power Supply (V/Ph/Fre)	Capacity	Compressor type	A/C mode	Hydraulic module	Refrigerant
AW042SSCHA	220/1/50	4kW	Inverter	Heat pump	Split	R32
AW062SSCHA	220/1/50	6kW	Inverter	Heat pump	Split	R32

Appearance						
						
Model	Power Supply (V/Ph/Hz)	Capacity	Compressor type	A/C mode	Hydraulic module	Refrigerant
AW082SNCHA	220/1/50	8kW	Inverter	Heat pump	Split	R32
AW102SNCHA	220/1/50	10kW	Inverter	Heat pump	Split	R32

2. Feature

2.1 Excellent performance

- Eco-friendly R32
- Seasonal space heating energy efficiency class is up to A+++ at 35˚C leaving water temperature.
- 60°C hot water is guaranteed without using a backup heater when the outdoor temperature is higher than -15°C.
- Heat the water even at -25 ˚C ambient temperature. For space cooling it can work at even 48˚C

2.2 Ultimate Comfort

- There are backup heaters of 1kW and 3kW inside the indoor unit.
- It allows the system to be combined with a third-party boiler as an auxiliary heating source.
- Fast DHW mode
- 2 zones control
- Quiet Mode

2.3 Super Convenience

- Climate Curves
- Sterilization Function
- 5-inch colorful controller on the front panel and an optional wired controller

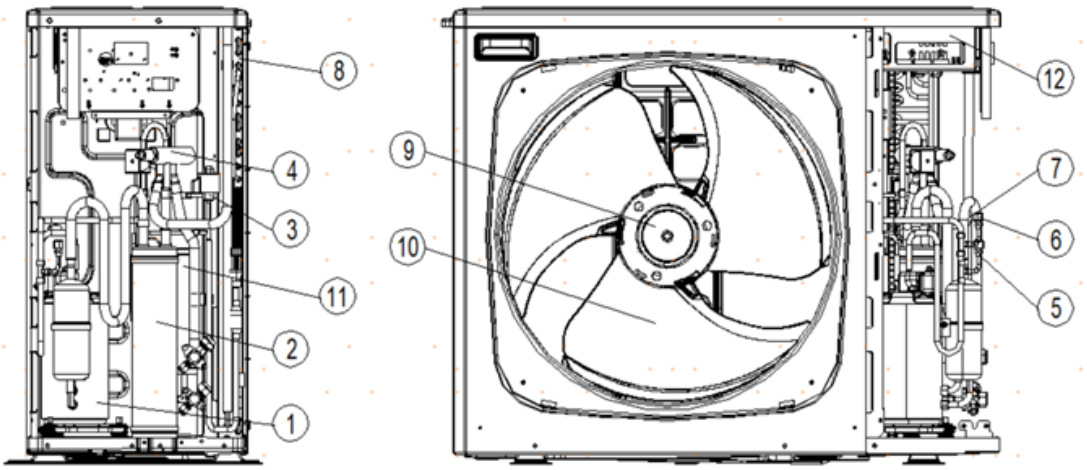
2.4 Intelligence

- Smart Grid Ready
- Easy 3rd Party BMS Solution
- Scheduling Programs
- Anti-freeze function

3. Description Of Main Components

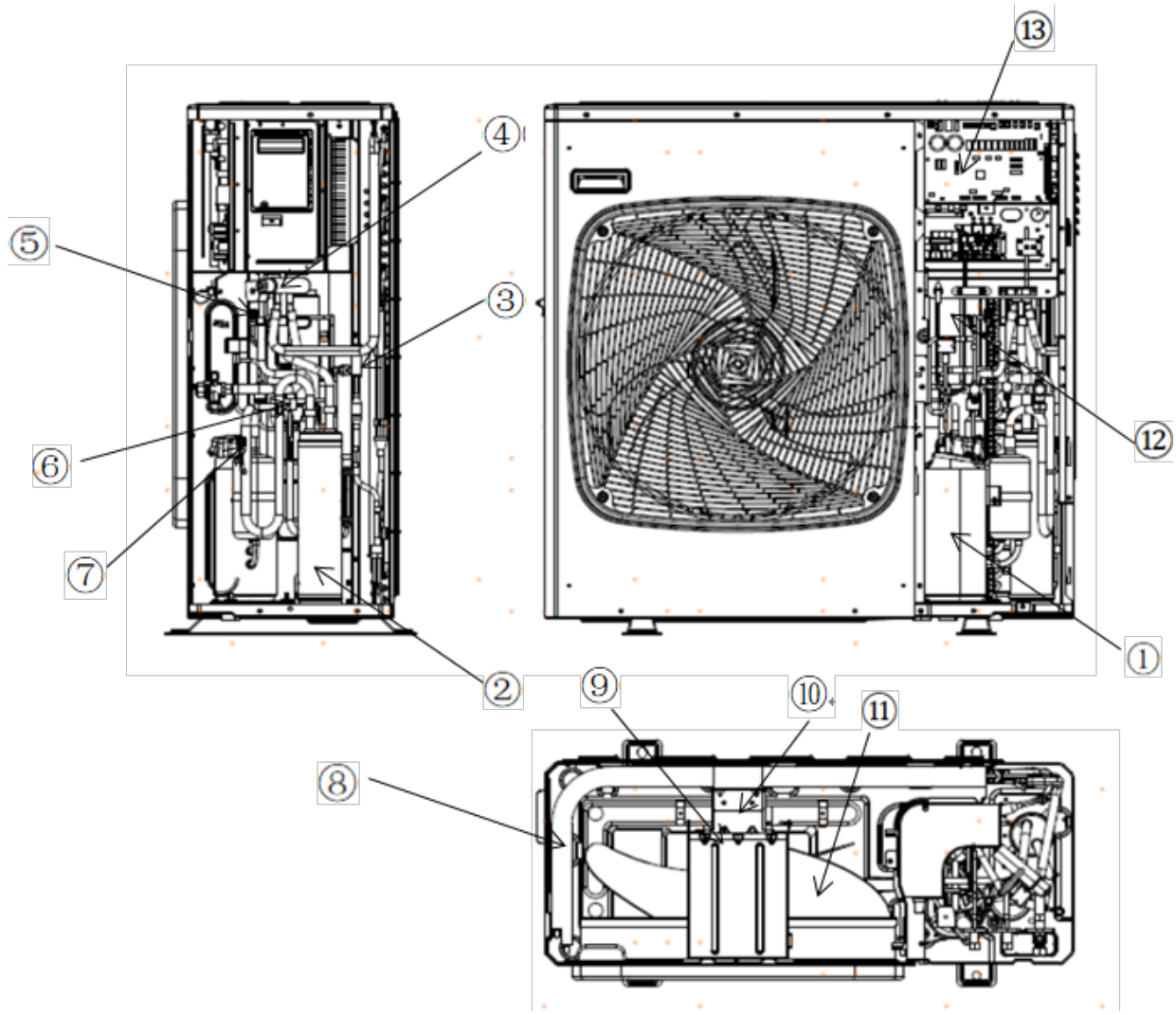
Structure
Panels and base are made from galvanized steel plate painted with epoxy powder to ensure total resistance to atmospheric pollution, condensate collection pan as standard.
Air cooled coils:
The coils are made from high performance and seamless copper tuber and high surface area aluminum fins to ensure optimum heat exchange capability. Condenser coil protection grill is standard.
Fan motor:
To achieve high efficiency heat exchange, the unit is equipment with the high performance axial-flow fans. The fan is driven directly by weather proof motor to ensure reliable operation, the fan motor is six-pole electric motor with built-in thermal cut-out.
Hydraulic module:
It is fully integrated and equipped with key hydraulic components such as plate-heat exchanger and water circulating pump.The water pressure difference switch is provided in the units to protect against damage to the water pump.
Power and control electrical panel
Power and control electrical panel constructed in accordance with IEC 204-1/EN60335-2-40, complete with compressor contactor,control via control panel.

AW042SSCHA AW062SSCHA



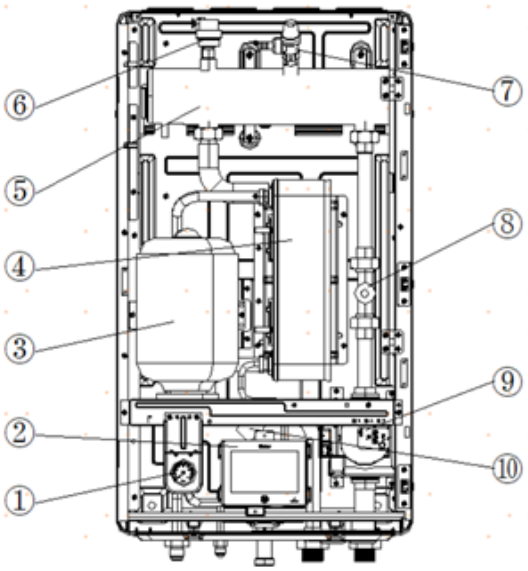
1. Compressor
2. Gas liquid separator
3. Electronic expansion valve
4. 4-way valve
5. High pressure switch
6. High pressure sensor
7. Low pressure sensor
8. Condenser
9. Motor
10. Fan
11. Accumulator
12. Electrical panel

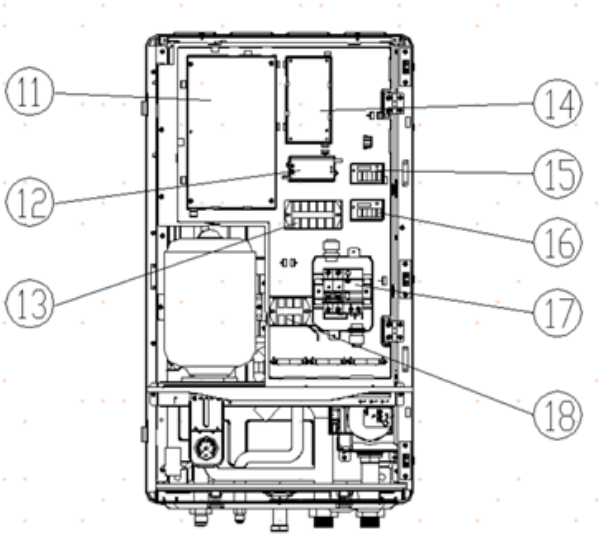
AW082SNCHA AW102SNCHA



1. Compressor
2. Gas liquid separator
3. Electronic expansion valve
4. 4-way valve
5. High pressure switch
6. High pressure sensor
7. Low pressure sensor
8. Condenser
9. Moter bracket
10. Motor
11. Fan
12. Accumulator
13. Electrical panel

HU062WAMNA HU102WAMNA





1. Water pressure gauge
2. Controller
3. Expansion Vessel
4. Plate heat exchanger
5. Heater
6. Air purge valve
7. Pressure relief valve
8. Flow sensor
9. Pump
10. Water filter
11. Main control board
12. Controller power supply
13. Power transfer terminal block (A/B/C/P/Q)
14. Water pump and electric heating control PCB
15. Small PCB 1
16. Small PCB 2
17. Leakage protector
18. Terminal block (power supply)

4. Specifications

Item		Unit	HU062WAMNA	HU102WAMNA
Operation Range	Outdoor Ambient	°C	Cooling: 10 ~ 48 Heating: -25 ~ 35	Cooling: 10 ~ 48 Heating: -25 ~ 35
	Water Outlet	°C	Cooling: 5/25 Heating: 20 / 50 (Outdoor Ambient temp≤-15 °C) Heating: 15 / 60 (Outdoor Ambient temp ＞ -15 °C)	Cooling: 5/25 Heating: 20 / 50 (Outdoor Ambient temp≤-15 °C) Heating: 15 / 60 (Outdoor Ambient temp ＞ -15 °C)
Internal Pressure Differential		kPa	Cooling:20 Heating: 20	Cooling:30 Heating: 30
Noise Level (dB)		Sound power level	42	42
Dimension	Height	mm	850	850
	Width	mm	480	480
	Depth	mm	310	310
Net Weight		kg	41	43
Refrigerant Pipe Diameter	Liquid	mm	9.52	9.52
	Gas	mm	15.88	15.88
Water Pipe Diameter	Inlet	mm	25.4	25.4
	Outlet	mm	25.4	25.4
Pump	Motor Type		DC Motor	DC Motor
	Input Power	W	75	75
Hot Water Coil	Type		Brazed Plate	Brazed Plate
	No. of Plates		52	48
	Size(WxHxL)	mm	324*94*82	333*121*87
Pressure Relief Valve Water Circuit		kPa	Open: 550, Close: ≤500	Open: 550, Close: ≤500
Flow Switch			Electronic Sensor	Electronic Sensor
Expansion Vessel	Volume		5	5
	MWP	bar	10	10
Capacity of Integrated Electric Heater		kW	1+3	1+3
Max running current		A	20	20
Built-in circuit breaker		A	63	63

Item		Unit	AW042SSCHA	AW062SSCHA
Cooling capacity		Condition (Ambient/water)	A35/W7	A35/W7
		kW	4	6
Cooling EER		W/W	3.1	3.05
Heating capacity		Condition (Ambient/water)	A7W35	A7W35
		kW	4	6
Heating COP		W/W	5.02	4.98
Heating ERP	Low Temperature Application (W35)		Average	Average
	Application	Climate		
	Pdesign	kW	4	6
	Tbivalent / TOL	°C	-10/-10	-10/-10
	SCOP / ns	(W/W) / %	5.00/197	4.80/189
	Class		A+++	A+++
	Medium Temperature Application (W55)		Average	Average
	Application	Climate		
	Pdesign	kW	4	6
	Tbivalent / TOL	°C	-10/-10	-10/-10
	SCOP / ns	(W/W) / %	3.45/135	3.38/132
	Class		A++	A++
Noise Level	Sound pressure level	dB	44	45
	Sound power level	dB	58	61
Air Flow		m^3/h	2200	2200
Refrigeration Control Device			Expansion valve	Expansion valve
Refrigerant (R32) Precharge/Maximum		kg	1.2	1.2
F-GAS	GWP		675	675
	CO2eq (ton)		0.81	0.81
Dimension	Height	mm	920	920
	Width	mm	760	760
	Depth	mm	372	372
Net Weight		kg	55	55
Pipe Diameter	Liquid	mm	6.35	6.35
	Gas	mm	15.88	15.88
Standard Length		m	5	5
Pipe Length Range		m	3 ~ 30	3 ~ 30
IDU & ODU Height Difference		m	20	20
Additional Gas Amount		g/m	20	20
Pipe length without additional charge		m	10	10
Compressor	Brand		Mitsubishi Electric	Mitsubishi Electric
	Model		SYB140FAPMC-L3	SVB172FNQMC-L2
	Type		Hermetic Motor	Hermetic Motor
	Compressor quantity		1	1
	Capacity	kw	4.55	5.43
	Power Input	kw	1.44	1.77
	Rated current(RLA)	A	5.8	6.0
	Speed	rps	85	85
	Refrigerant oil type		FW68S	FW68S
	Refrigerant oil charge	ml	600	350

Item		Unit	AW042SSCHA	AW062SSCHA
Fan motor	Brand		SHIBAURA	SHIBAURA
	Model		SIC-71FW-F190-3	SIC-71FW-F190-3
	Voltage	V	310	310
	Type/quantity		DC Motor / 1	DC Motor / 1
	Insulation class		E	E
	Output	W	90	90
	Speed	rpm	950	950
Fan	Brand		shunwei	shunwei
	Material		AS+20%GF	AS+20%GF
	Type		Axial fan	Axial fan
	Diameter	mm	550	550
	Height	mm	125	125
Heat Exchanger	Fin material		Aluminium	Aluminium
	Fin Type		Corrugated Fin	Corrugated Fin
	Row × Stage × FPI		2 × 34 × 21	2 × 34 × 21
	Size (W × H × L)	mm	1093 × 714 × 26.6	1093 × 714 × 26.6
Power Supply (Phase, Voltage, Hz)			Single	Single
		V	220-240	220-240
		Hz	50	50
Input Power		Condition (Ambient/Water)	A7W35	A7W35
		kW	0.8	1.2
Maximum Input Power For Heat Pump System		kW	2.4	2.7
Running Current		Condition (Ambient/Water)	A7W35	A7W35
		A	4.6	5.5
Maximum Current For Heat Pump System		A	12.5	13
Recommended circuit breaker		A	16	16
Thermostat11			Electronic Control	Electronic Control
Protection Device			Electronic Control	Electronic Control

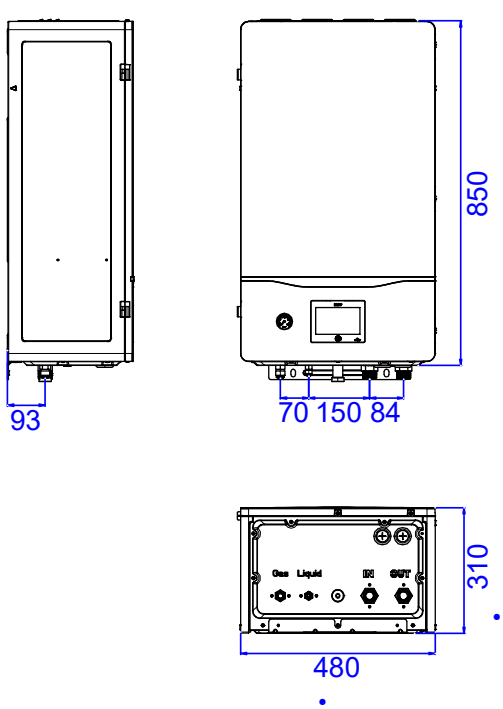
Item		Unit	AW082SNCHA	AW102SNCHA
Cooling capacity		Condition (Ambient/water)	A35/W7	A35/W7
		kW	8	9
Cooling EER		W/W	3.04	3
Heating capacity		Condition (Ambient/water)	A7W35	A7W35
		kW	8	10
Heating COP		W/W	5	4.6
Heating ERP	Low Temperature Application (W35)		Average	Average
	Application	Climate		
	Pdesign	kW	8	10
	Tbivalent / TOL	°C	-10/-10	-10/-10
	SCOP / ns	(W/W) / %	4.90/193	4.85/191
	Class		A+++	A+++
	Medium Temperature Application (W55)		Average	Average
	Application	Climate		
	Pdesign	kW	8	10
	Tbivalent / TOL	°C	-10/-10	-10/-10
	SCOP / ns	(W/W) / %	3.32/130	3.30/129
	Class		A++	A++
Noise Level	Sound pressure level	dB	49	53
	Sound power level	dB	65	68
Air Flow		m^3/h	4200	4200
Refrigeration Control Device			Expansion valve	Expansion valve
Refrigerant (R32) Precharge/Maximum		kg	1.6	1.6
F-GAS	GWP		675	675
	CO2eq (ton)		1.08	1.08
Dimension	Height	mm	950	950
	Width	mm	965	965
	Depth	mm	370	370
Net Weight		kg	76	76
Pipe Diameter	Liquid	mm	9.52	9.52
	Gas	mm	15.88	15.88
Standard Length		m	5	5
Pipe Length Range		m	3 ~ 50	3 ~ 50
IDU & ODU Height Difference		m	30	30
Additional Gas Amount		g/m	38	38
Pipe length without additional charge		m	10	10
Compressor	Brand		Mitsubishi Electric	Mitsubishi Electric
	Model		SYB280FBAMC-L	SYB280FBAMC-L
	Type		Hermetic Motor	Hermetic Motor
	Compressor quantity		1	1
	Capacity	kw	9.1	9.1
	Power Input	kw	2.88	2.88
	Rated current(RLA)	A	9.9	9.9
	Speed	rps	80	85
	Refrigerant oil type		FW68S	FW68S
	Refrigerant oil charge	ml	870	870

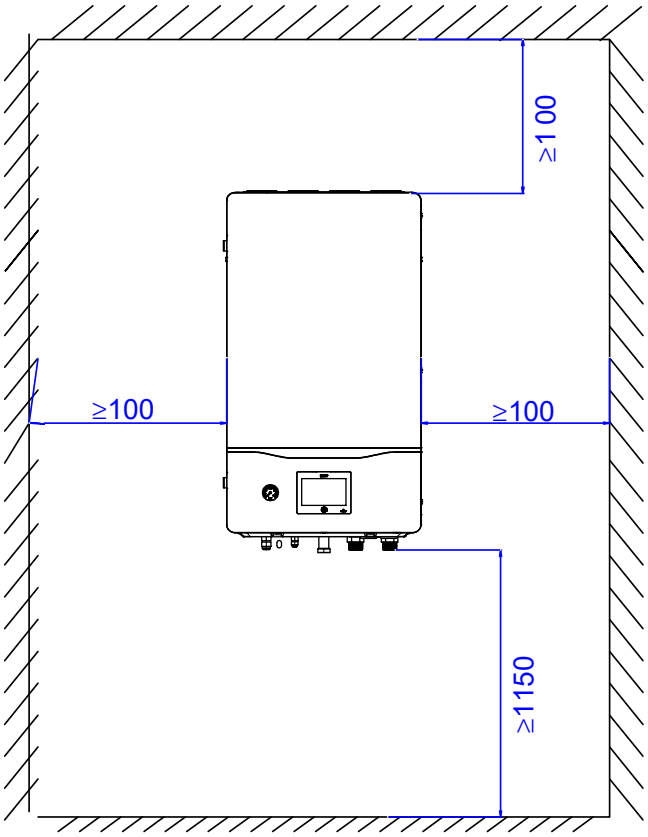
Item		Unit	AW082SNCHA	AW102SNCHA
Fan motor	Brand		SHIBAURA	SHIBAURA
	Model		SIC-88FWJ-F1180-1	SIC-88FWJ-F1180-1
	Voltage	V	310	310
	Type/quantity		DC Motor / 1	DC Motor / 1
	Insulation class		E	E
	Output	W	180	180
	Speed	rpm	900	900
Fan	Brand		shunwei	shunwei
	Material		PP+30%GF	PP+30%GF
	Type		Axial fan	Axial fan
	Diameter	mm	547	547
	Height	mm	191	191
Heat Exchanger	Fin material		Aluminium	Aluminium
	Fin Type		Corrugated Fin	Corrugated Fin
	Row × Stage × FPI		2 × 44 × 21	2 × 44 × 21
	Size (W × H × L)	mm	1170 × 924 × 26.6	1170 × 924 × 26.6
Power Supply (Phase, Voltage, Hz)			Single	Single
		V	220-240	220-240
		Hz	50	50
Input Power		Condition (Ambient/Water)	A7W35	A7W35
		kW	1.7	2.2
Maximum Input Power For Heat Pump System		kW	4.4	5.1
Running Current		Condition (Ambient/Water)	A7W35	A7W35
		A	7.2	9.5
Maximum Current For Heat Pump System		A	19	22
Recommended circuit breaker		A	25	32
Thermostat			Electronic Control	Electronic Control
Protection Device			Electronic Control	Electronic Control

5. Dimensions

HU062WAMNA HU102WAMNA

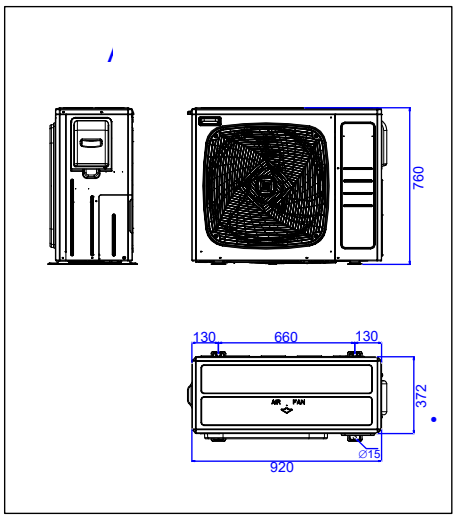
Unit: mm

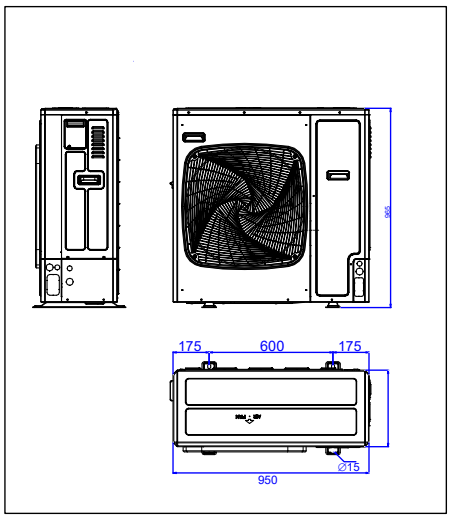




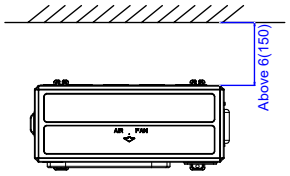
AW042SSCHA AW062SSCHA AW082SNCHA AW102SNCHA

Unit: mm

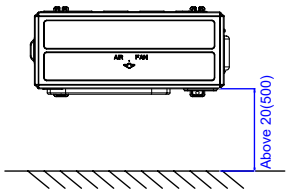




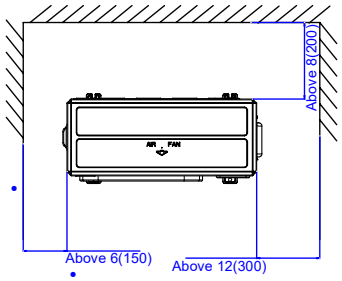
BACK



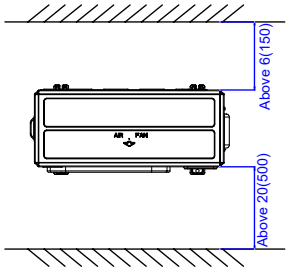
Front



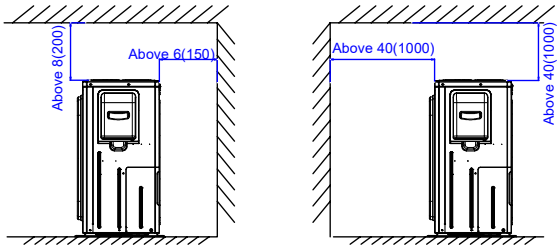
Back and side



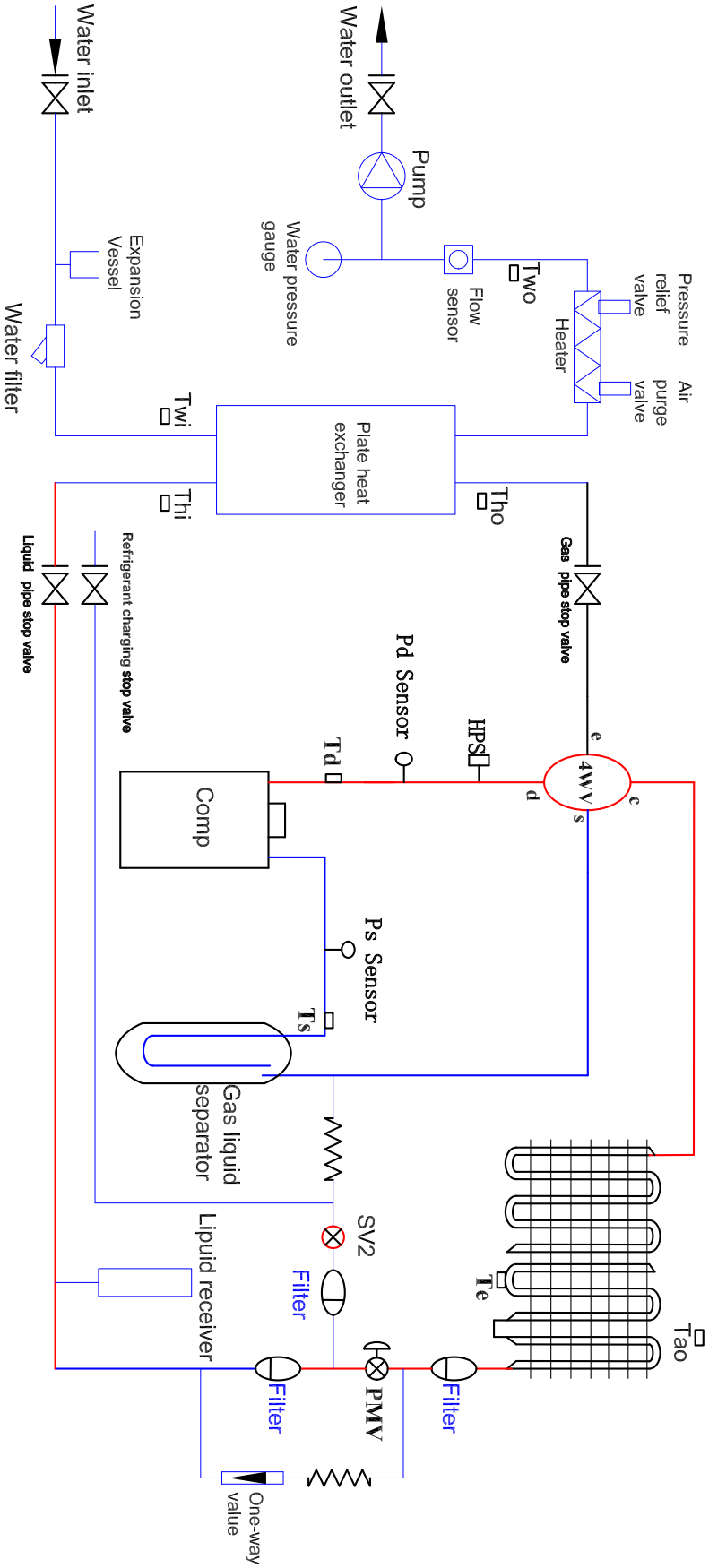
Front and BACK



When barriers exists above the unit



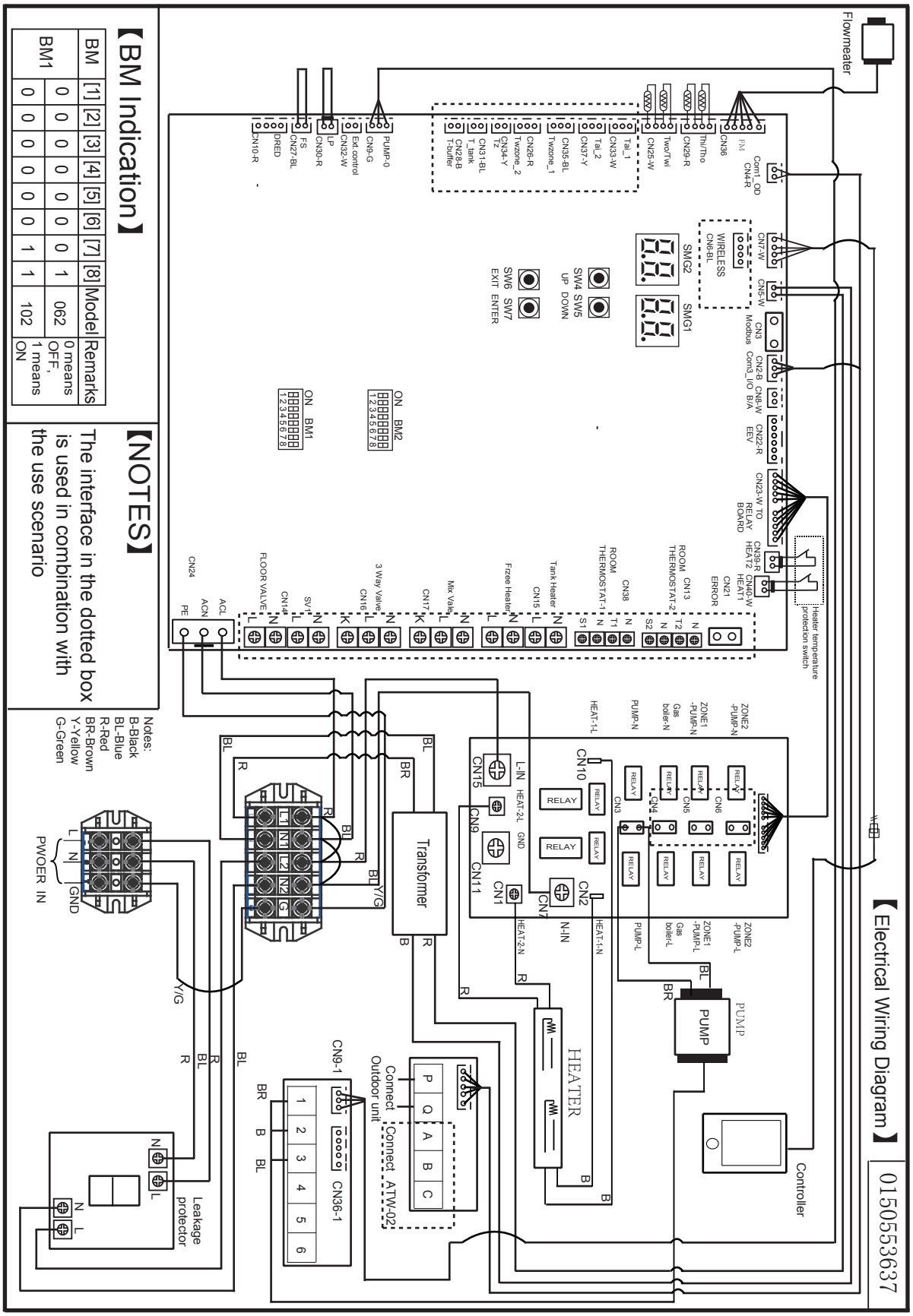
6. Piping Diagram



Part name	Model	abbr.	Function	Characteristics
Compressor	AW042SSCHA	Comp.	Capacity control, meet indoor load request by adjusting the frequency	Motor resistance (at 20°C): 2.32Ω
	AW062SSCHA			Motor resistance (at 20°C): 1.96Ω
	AW082SNCHA AW102SNCHA			Motor resistance (at 20°C): 1.82Ω
Pressure sensor	All	Pd	High pressure detection	Pressure range:0 to 4.15MPa
		Ps	Low pressure detection	Pressure range:0 to 1.7MPa
Pressure switch	All	Hps	High pressure protection	4.15MPa, OFF
Electronic expansion valve	AW062SSCHA AW042SSCHA	EEV	In heating, refrigerant flow control	Φ1.5
	AW082SNCHA AW102SNCHA			Φ1.8
4-way valve	All	4WV	Change over between cooling and heating	AC220V, electrified in heat; not electrified in cooling or defrosting
Solenoid valve	All	SV2	Refrigerant jet protection when discharging temp. is too high	AC220V
Liquid receiver	All	/	Used to storage the refrigerant	Volume:0.3L
Gas-liquid separator	All	/	Used to separate the gas and liquid	Volume:1.28L
Refrigerant valve	All	/	Used to charge the refrigerant to unit	φ6.35
Flow sensor	All	/	Detect water flow	5-80L/min
Pump	All	Pump	Transport liquid	Pumping head:8m
Water pressure gauge	All	/	Detect water pressure	0-0.4MPa
Heater	All	/	Auxiliary heating at low temperature	1+3KW
Expansion Vessel	All	/	Pressure fluctuation of buffer system	5L
Water filter	All	/	Filter impurities in water	40 mesh
Plate heat exchanger	All	/	Used to exchange the heat from refrigerant to water	Design pressure: water side:1.5MPa; Refrigerantside:4.2MPa
Pressure relief valve	All	/	Reduce system pressure	Operation pressure:0.55MPa
Air purge valve	All	/	Release gas from heating system and water supply pipeline	/
Temp. sensor	All	Td	Detect the discharging temp. of compressor	R (80°C)=50KB (25/80°C)=4450K
		Ts	Suction temp. of compressor	R(25°C)=10KB (25/50°C)=3700K
		Te	Check frost condition of outdoor heat exchanger	
		Tao	Detect ambient temp. set primary setting for fan speed target pressure and PMV open angle	
		Thi	Detect the refrigerant inlet temp. of heat exchanger	
		Tho	Detect the refrigerant outlet temp. of heat exchanger	
		Twi	Detect the water inlet temp. of heat exchanger	
		Two	Detect the water outlet temp. of heat exchanger	

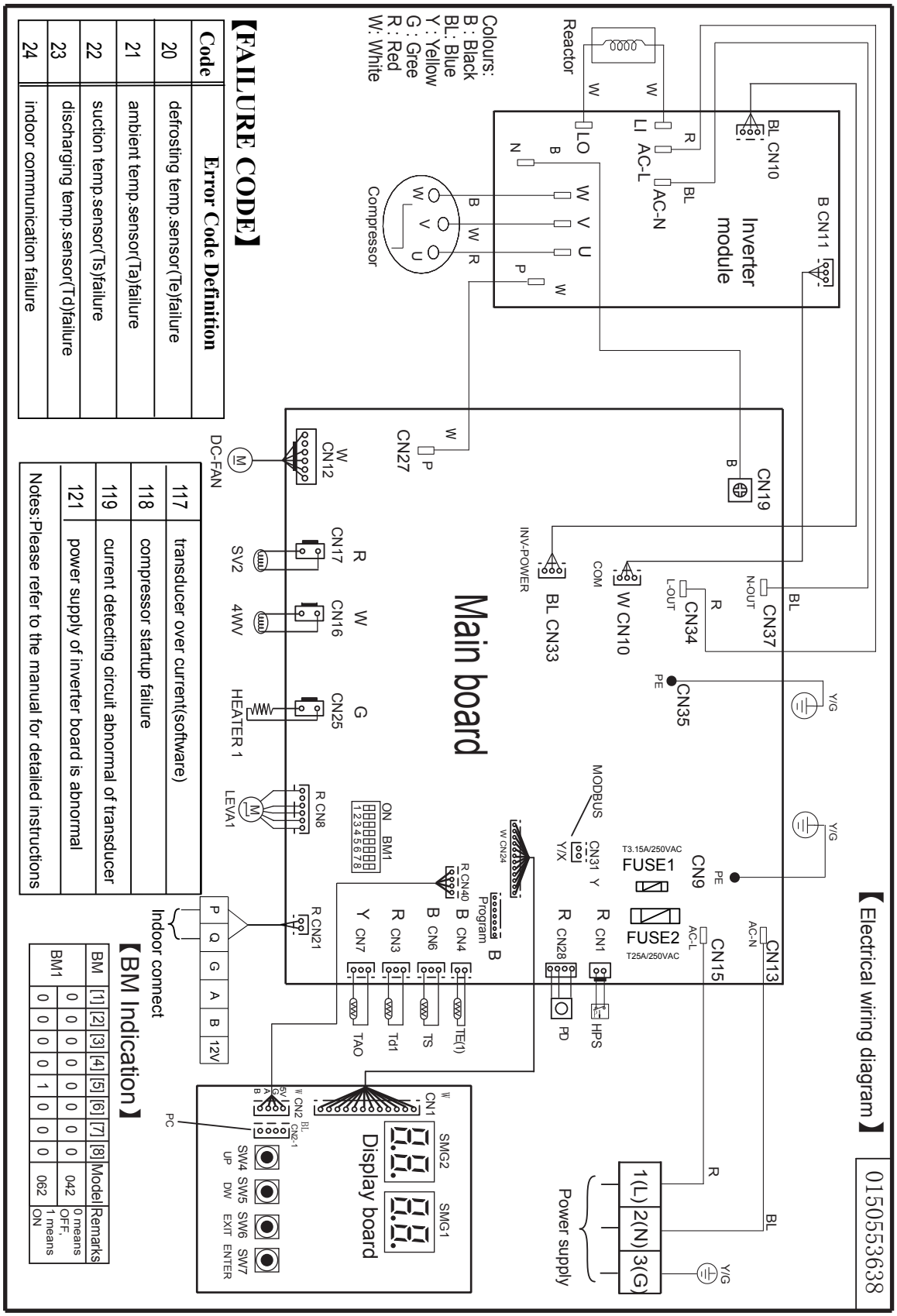
7. Wiring Diagram

HU062WAMNA HU102WAMNA



BM	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	Model	Remarks
BM1	0	0	0	0	0	0	0	1	062	0 means OFF, 1 means ON
	0	0	0	0	0	0	1	1	102	

AW042SSCHA AW062SSCHA



【FAILURE CODE】

Code	Error Code Definition
20	defrosting temp.sensor(Te)failure
21	ambient temp.sensor(Ta)failure
22	suction temp.sensor(Ts)failure
23	discharging temp.sensor(Td)failure
24	indoor communication failure
117	transducer over current(software)
118	compressor startup failure
119	current detecting circuit abnormal of transducer
121	power supply of inverter board is abnormal

Notes:Please refer to the manual for detailed instructions

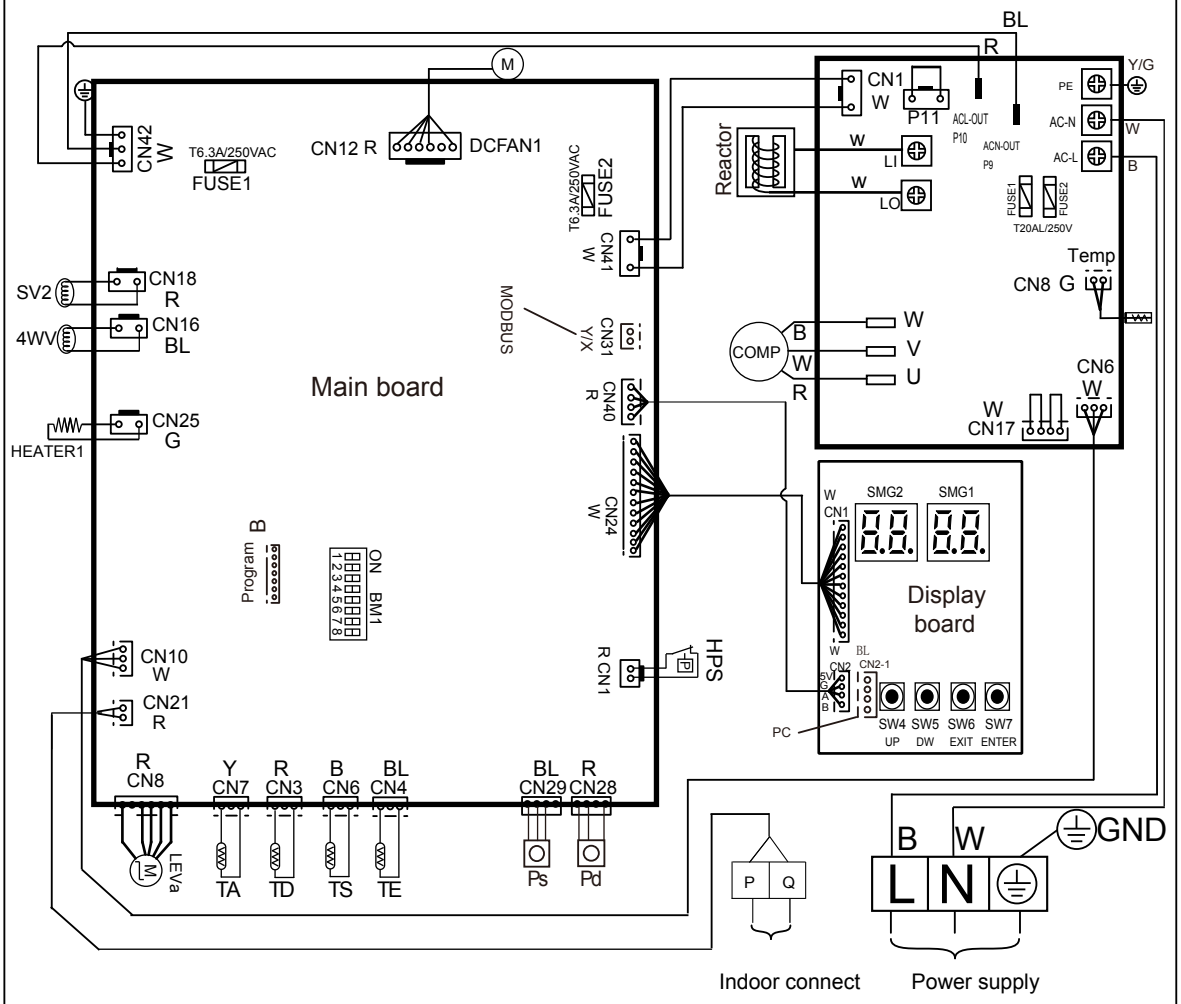
【BM Indication】

BM1	BM	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	Model	Remarks
		0	0	0	0	0	0	0	0	042	0 means OFF, 1 means ON
0	0	0	0	0	1	0	0	0	0	062	

AW082SNCHA AW102SNCHA

【Electrical wiring diagram】

0150553639



Colours B :-Black BL: Blue
Y : Yellow G : Green
R : Red W: White

【BM Indication】

BM	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	Model	Remarks
BM1	0	0	0	1	0	0	0	0	82	0 - OFF
	0	0	0	1	1	0	0	0	102	1 - ON

Symbol	Signification
ACL	live Wire
ACN	neutral wire
HEATER	heater
4WV	4 way valve
DCFAN1	fan
HPS	high pressure switch
TE(1)	defrost temp sensor

Symbol	Signification
LEVa	electronic expansion valve
TD	compressor discharge sensor
Pd	high pressure sensor
Ps	low pressure sensor
TA	ambient temp sensor
TS	compressor suction sensor

【FAILURE CODE】

Code	Error Code Definition
20	defrosting temp.sensor(Te)failure
21	ambient temp.sensor(Ta)failure
22	suction temp.sensor(Ts)failure
23	discharging temp.sensor(Td)failure
26	indoor communication failure

115	voltage too high of DC bus line
116	communication abnormal between transducer and control PCB
117	transducer over current(software)
118	compressor startup failure
119	current detecting circuit abnormal of transducer
121	power supply of inverter board is abnormal
Notes:Please refer to the manual for detailed instructions	

8. Electric Characteristics

Model	Outdoor Unit			Power Supply		Compressor	OFM	
	Hz	Voltage	Phase	MCA	MFA	MSC	kW	FLA
AW042SSCHA	50Hz	220~240V	1Ph	12.5	16	2.4	0.09	0.5
AW062SSCHA	50Hz	220~240V	1Ph	13	16	2.4	0.09	0.5
AW082SNCHA	50Hz	220~240V	1Ph	19	25	2.4	0.18	0.74
AW102SNCHA	50Hz	220~240V	1Ph	22	32	2.4	0.18	0.74

Model	Outdoor Unit			Power Supply		Electric Heater	
	Hz	Voltage	Phase	MCA	MFA	kW	FLA
HU062WAMNA	50Hz	220~240V	1Ph	19	25	4	19.1
HU102WAMNA	50Hz	220~240V	1Ph	19	25	4	19.1

Remark:
MCA: Min. Current Amps. (A)
MFA: Max. Fuse Amps. (A)
MSC: Max. Starting Amps. (A)
OFM: Outdoor Fan Motor
FLA: Full Load Amps. (A)
kW: Rated Motor Output (kW)

9. Capacity Tables

9.1 Cooling capacity

AW042SSCHA HU062WAMNA										
Water Out (°C)	5		7		14		18		25	
Outdoor Air (°C)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)
10	3350	900	4120	880	4310	850	4450	820	4700	790
15	3020	1170	4090	1020	4270	940	4360	880	4650	850
25	2920	1300	4050	1140	4150	1060	4280	940	4410	890
35	2840	1550	4030	1280	4030	1160	4050	830	4220	920
48	2780	1840	3860	1540	3950	1370	4010	1100	4130	980

AW062SSCHA HU062WAMNA										
Water Out (°C)	5		7		14		18		25	
Outdoor Air (°C)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)
10	4270	1100	6200	1060	6660	990	7020	960	7410	940
15	4050	1370	6130	1270	5940	1140	6490	1090	6640	1090
25	3860	1530	6020	1640	5370	1380	6250	1150	6030	1240
35	3610	1790	6060	1980	4780	1570	6010	1200	5470	1400
48	3420	2040	3840	1920	4280	1830	4410	1700	4800	1560

AW082SNCHA HU102WAMNA										
Water Out (°C)	5		7		14		18		25	
Outdoor Air (°C)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)
10	5600	1310	8210	1280	8530	1230	8900	1170	9800	1100
15	5230	1520	8100	1670	8020	1480	8610	1350	8730	1310
25	4950	1740	8050	2120	7250	1640	8320	1600	7580	1540
35	4610	1970	8060	2650	5890	2200	8100	1850	6670	1690
48	4320	2280	4680	2170	4950	2030	5360	1950	5650	1840

AW102SNCHA HU102WAMNA										
Water Out (°C)	5		7		14		18		25	
Outdoor Air (°C)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)
10	6430	1500	9320	1460	9940	1420	10850	1380	12600	1330
15	5820	1810	9250	2140	9500	1940	10520	1880	11040	1520
25	5350	2140	9190	2630	8360	2240	10300	2160	8950	1750
35	4890	2390	9100	3000	7250	2680	10000	2400	7420	1960
48	4500	2680	4830	2520	5160	2410	5540	2280	6060	2100

9.2 Heating capacity

AW042SSCHA HU062WAMNA										
Water Out (°C)	25		35		45		55		60	
Outdoor Air (°C)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)
-25	3250	1410	3140	1650	2930	2090	-	-	-	-
-15	3600	1380	3580	1530	3430	1820	3350	2230	2850	2160
-7	4010	1220	3980	1420	3960	1690	3680	2040	3240	2010
2	4360	1010	4320	1200	4300	1540	4060	1910	3680	1960
7	4430	730	4270	830	4150	1090	4260	1480	3950	1630
25	5350	580	5190	620	4960	870	4710	1290	4360	1360

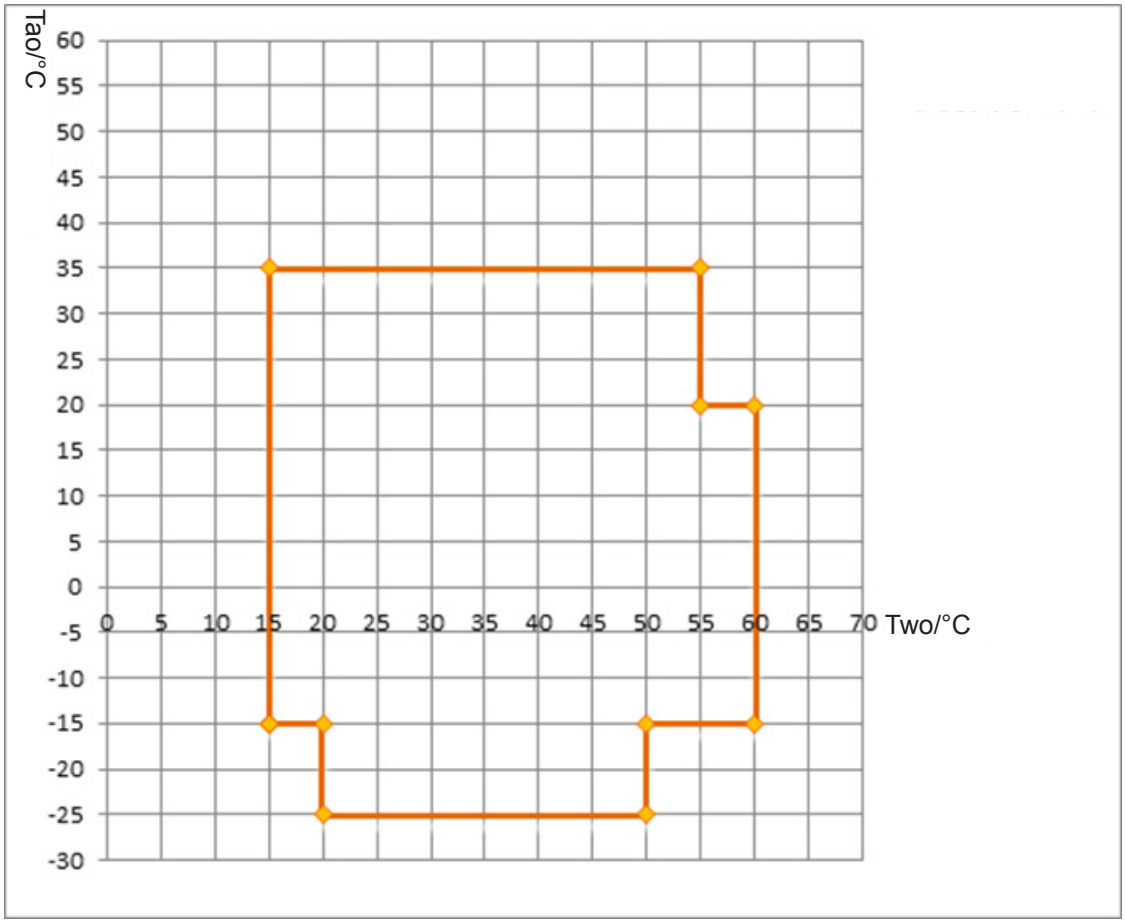
AW062SSCHA HU062WAMNA										
Water Out (°C)	25		35		45		55		60	
Outdoor Air (°C)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)
-25	4470	1940	3920	2050	3650	2340	-	-	-	-
-15	4900	1840	4410	1980	4230	2450	3640	2620	3180	2630
-7	5410	1730	4980	1940	4860	2330	4360	2560	4050	2680
2	5940	1460	5490	1730	5400	1990	5200	2450	4920	2580
7	6440	1040	6080	1220	5950	1680	6030	2120	5350	2430
25	7200	800	7060	1020	6710	1240	6440	1460	5800	1540

AW082SNCHA HU102WAMNA										
Water Out (°C)	25		35		45		55		60	
Outdoor Air (°C)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)
-25	5100	2020	4720	2110	4480	2770	-	-	-	-
-15	5900	2010	5500	2300	5110	2690	4970	3270	4620	3450
-7	6800	1880	6300	2170	6020	2550	5600	2870	5130	3020
2	7600	1770	7100	2090	6700	2370	6620	2880	5610	2740
7	8400	1290	8060	1620	8110	2280	8040	2720	6100	2520
25	9250	1010	9020	1190	8670	1640	8110	2100	6520	1970

AW102SNCHA HU102WAMNA										
Water Out (°C)	25		35		45		55		60	
Outdoor Air (°C)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)	Capacity (W)	Input Power (W)
-25	5900	2310	5530	2630	5280	3110	-	-	-	-
-15	7200	2540	6700	2890	6400	3320	5420	3540	4910	3750
-7	8400	2380	7700	2750	7400	3290	6500	3380	5700	3300
2	9500	2200	9000	2640	8750	3140	7800	3390	6500	2960
7	10300	1670	10043	2130	10005	2860	10120	3540	7200	2880
25	11500	1320	11100	1760	10700	2180	10300	2690	7800	2220

10. Operation Limits Delivery-Leaving

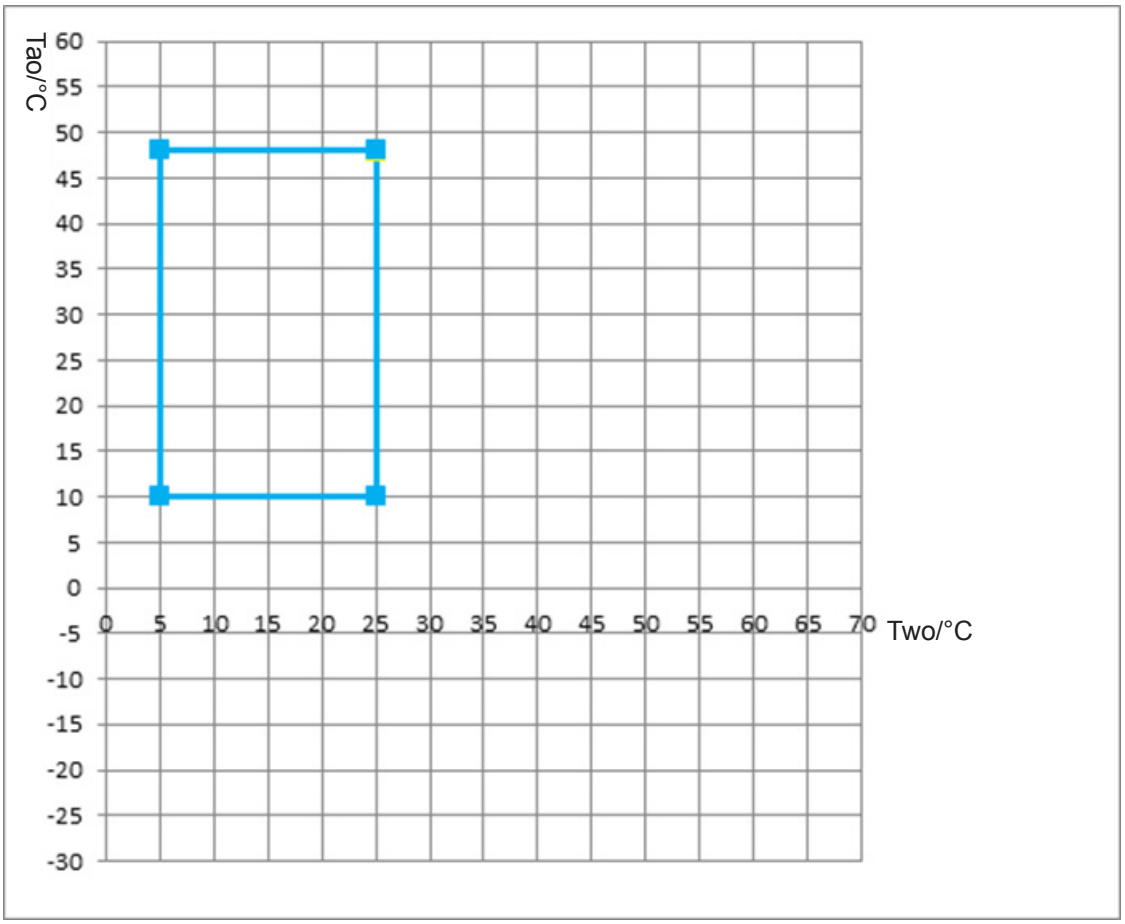
Heating



Ta: Ambient temperature

Two: Outlet water temperature

Cooling



Ta: Ambient temperature

Two: Outlet water temperature

a)Ethylene Glycol Solutions
Water and ethylene glycol solutions used as a thermal vector in the place of water reduce the performance of the unit. Multiply the performance figures by the values given in the following table.

Freezing point (°C)						
	0	-5	-10	-15	-20	-25
Percentage of ethylene glycol in weight						
	0	12%	20%	28%	35%	40%
cPf	1	0.98	0.97	0.965	0.96	0.955
cQ	1	1.02	1.04	1.075	1.11	1.14
cdp	1	1.07	1.11	1.18	1.22	1.24

cPf: correction factor of heating/cooling capacity
cQ: correction factor of flow rate
cdp: correction factor of pressure drop

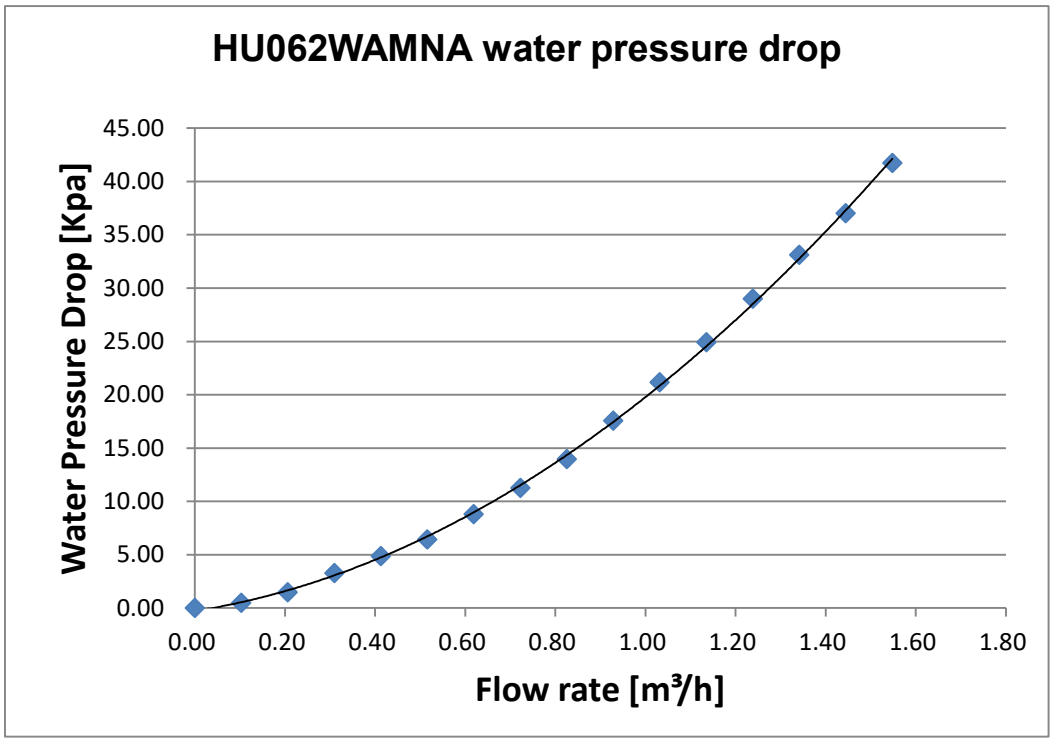
Note:
1. During winter leaving the unit unused, please drain water out completely from unit if no anti-freeze were charged into pipeline, or keep power on (at standby or off status) and ensure that water is contained inside of unit.
2. When ambient temperature lower than 5°C, running cooling mode must be charged antifreeze. Refers to upper parameters for the charged volume.

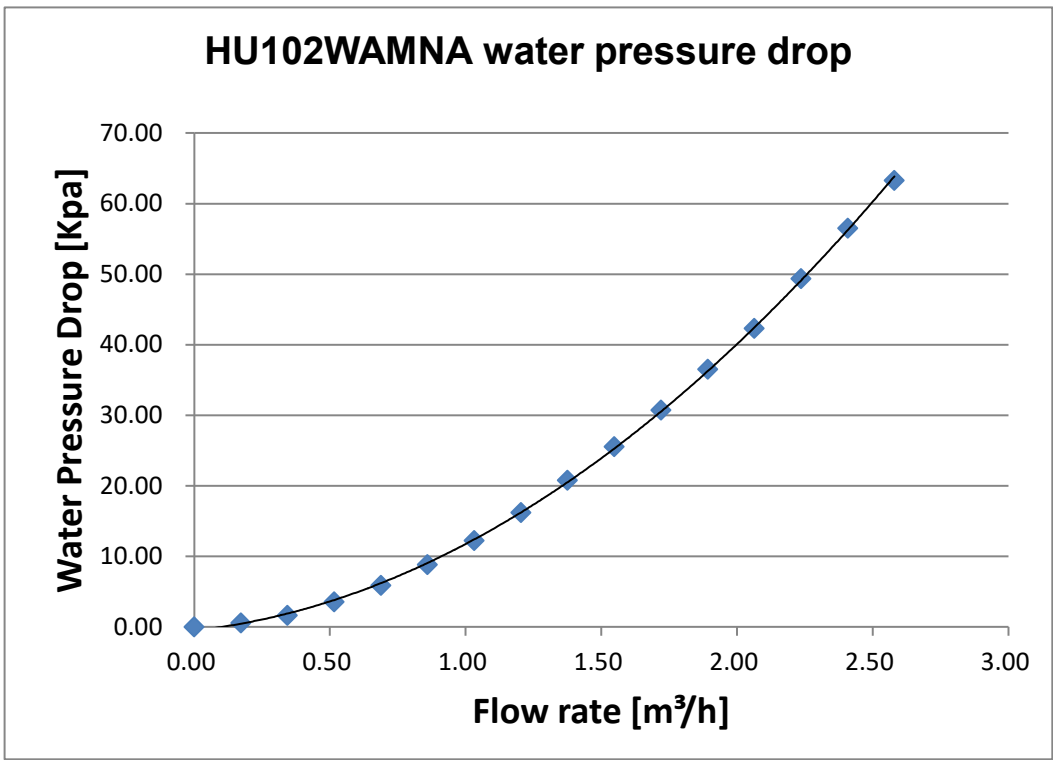
b) Fouling Factors
The performance data given refer to conditions with clean evaporator plates (fouling factor=1). For different fouling factors, multiply the figures in the performance tables by the coefficient given in the following table.

Fouling factors	Evaporator		
(m^2· °C/W)	f1	fk1	fx1
4.4×10-5	-	-	-
0.86×10-4	0.96	0.99	0.99
1.72×10-4	0.93	0.98	0.98

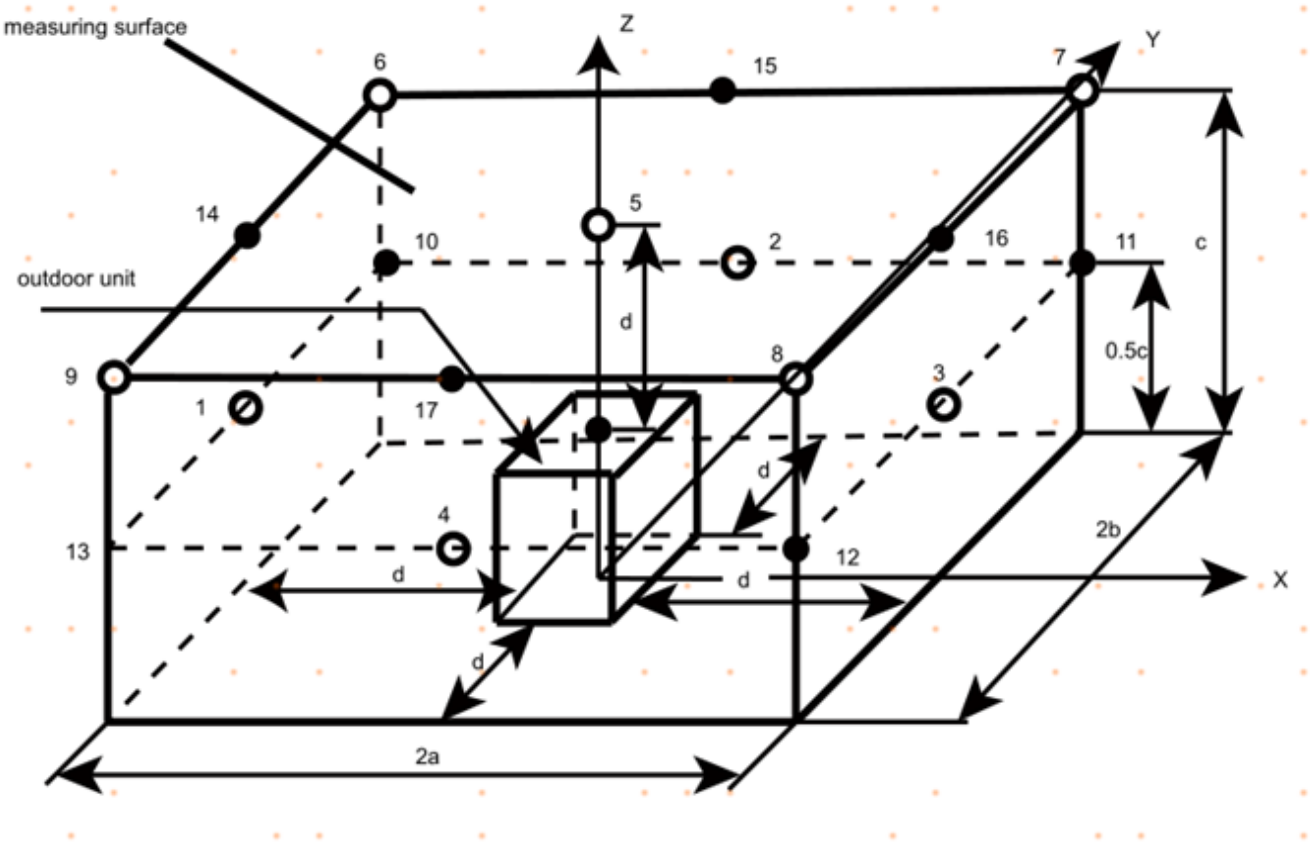
f1: correction factor of capacity
fk1: power input correction factor of compressor
fx1: correction factor of total power input

11. Water Pressure Drop





12. Sound Level

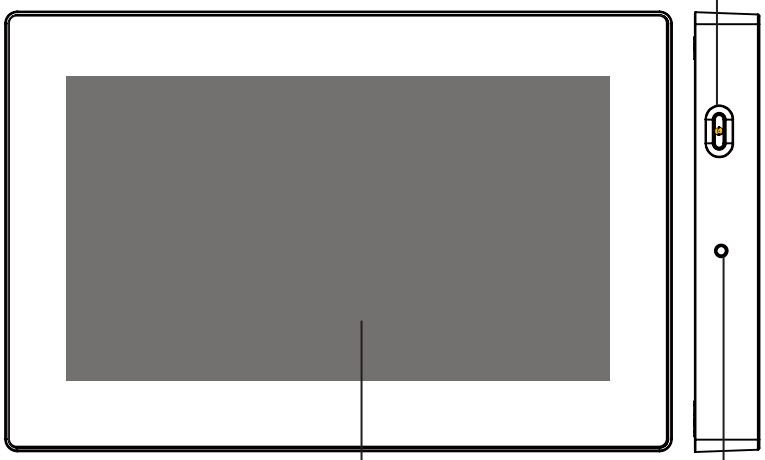


Model	Sound pressure level (dB)	Sound power level (dB)
AW042SSCHA	44	58
AW062SSCHA	45	61
AW082SNCHA	49	65
AW102SNCHA	53	68
HU062WAMNA	/	42
HU102WAMNA	/	42

13. Controller Operation & Installation

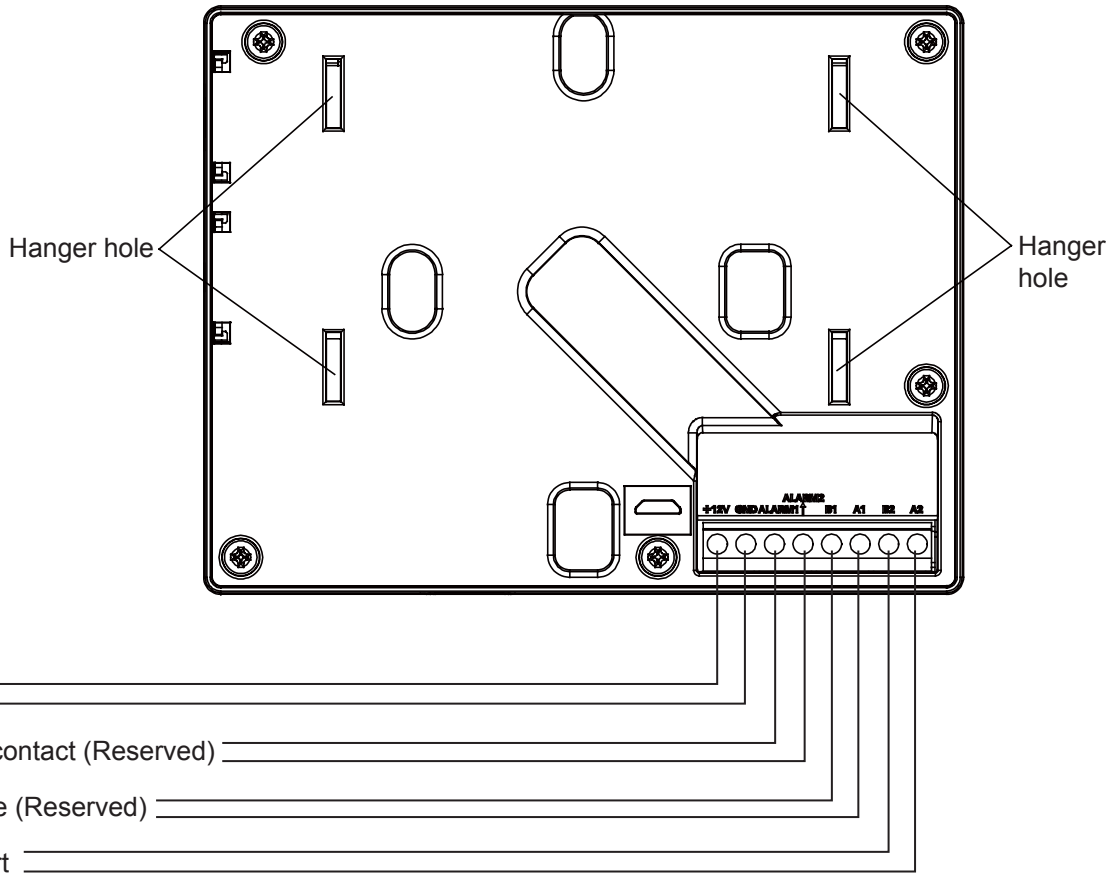
Part information for controller

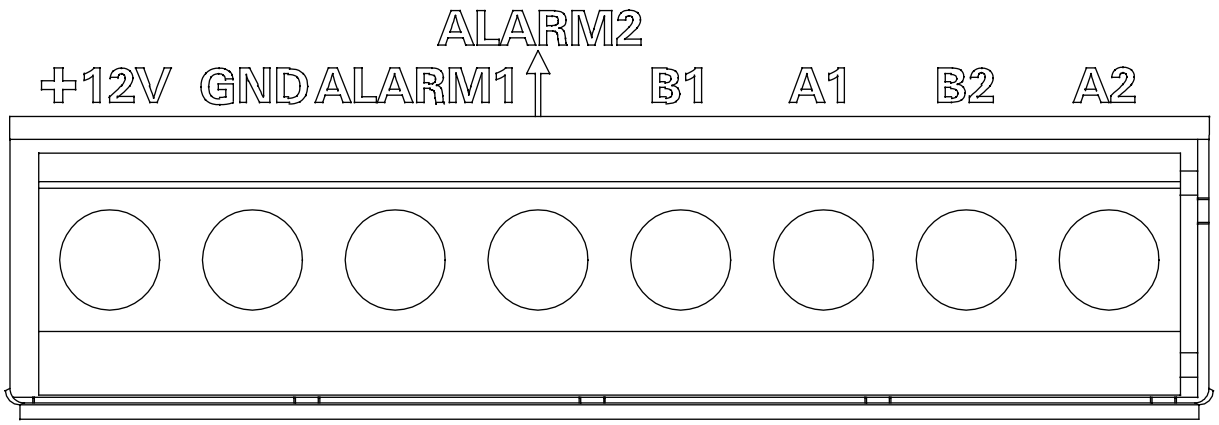
Restart button ① :
Hold Restart button for 10s to restart controller. Check whether the controller software is normal.



Display / Touch area

Restart button ② :
Press to restart controller. Check whether the controller chip is normal.





Power supply (12V, GND): 12V DC, please pay attention to “+, -” of power supply.
Fire alarm linkage contact (ALARM1, ALARM2): Short circuit the ALARM1 and ALARM2 (Reserved port).
Third party interface (B1, A1): A1 — 485+, B1—485-(Reserved port).
Communication port (B2, A2): It is used for connecting converter, please pay attention to “+, -”, A2—485+, B2—485-
Note: B1, A1 are unavailable to the Split Controller; B2, A2 are available.

Controller Installation

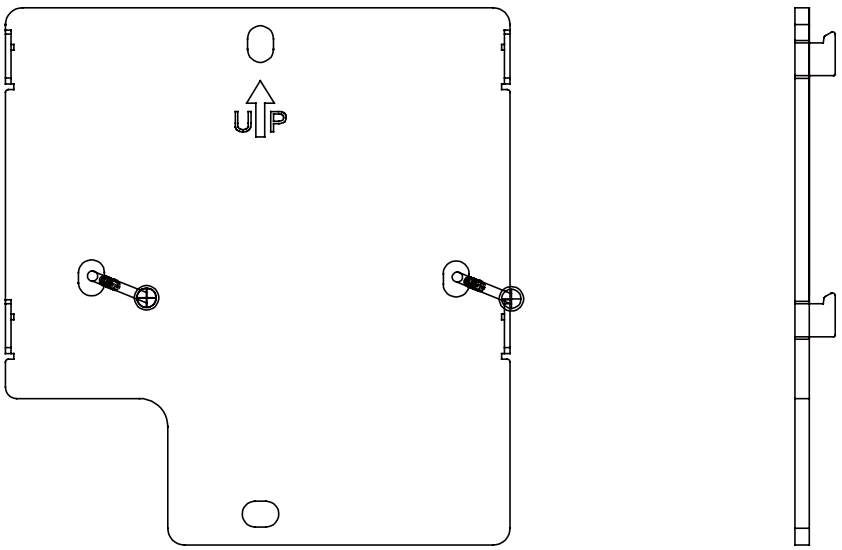
The unit can be connected to the sub controller. Only one main controller is allowed in the whole split system, and the rest controllers are sub. If the controller is set as a sub controller, the controller can only view the unit parameters and cannot change the unit operation status.

Installation condition

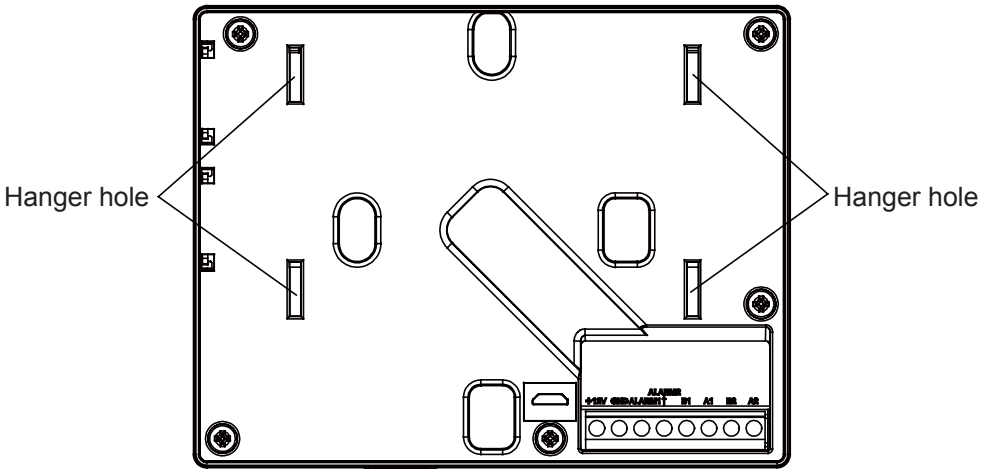
Don’t install near devices that produce electrical interference such as AC motor, radio transmitters like network routers and consumer electronics.
Other electrical noise producers could include computers, auto-door openers, elevators, or other equipment what can produce noise.
Don’t install in wet locations.
It will cause failure if you install in a place that shakes violently.
Don’t install in the place where it is exposed to direct sunlight or near to the heat. This will cause failure.

Mounting control

First, attach the mounting plate to the wall. Using a job box is preferred. Use A and B holes for an 86mm box, use C and D holes for a 120mm box. Please take note of the UP indicator.

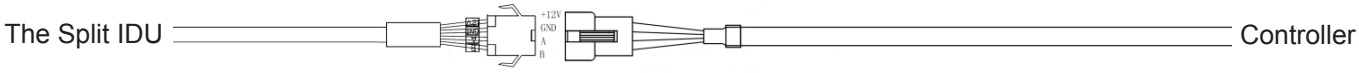


The hanging plate is placed in the direction of the illustration, where A/B is the location of the 86 cassette screws, and the C/D is the position of the 120 cassette screws. The pendant is fixed to the hole of the pendant, please pay attention to the UP direction.

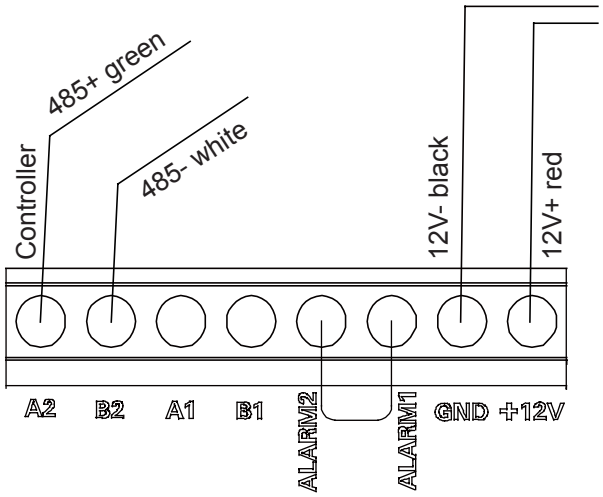


The black terminal of the controller communication line is connected with the black harness terminal at the lower outgoing line port of the unit. The other end of the controller communication line is pressed on the wiring base of the controller, and the corresponding relationship is red~+12V, black~GND, green~A2 and white~B2.

Connection terminal between controller communication line and IDU:



All of the power supply and communication 485 cables between each module and terminal module to the controller are double core shielded twisted-pair cable. Specific wiring as the table below:



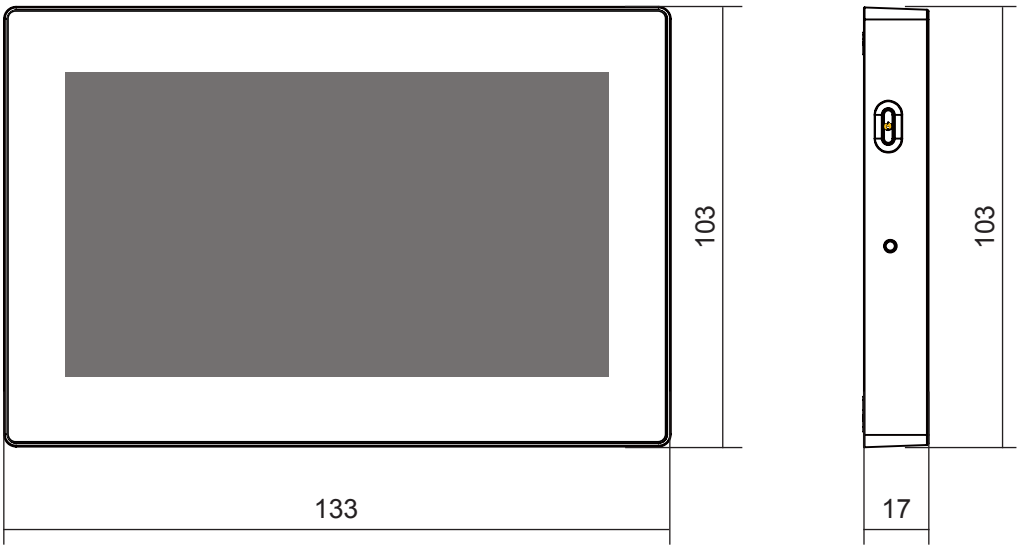
The communication line is connected with the controller

The length of signal line	Wiring dimension
≤100m	0.75mm^2×4

Fix the screw through the bracket on the 86 cassettes and connect the connection. The red connects to the +12V and black to GND, the green connects to A2, and the white connects to B2. Please pay attention to the line order. Then the controller is fixed down.

Notes:
1. B1 and A1 are unavailable.
2. B2 and A2 for 485 interface, access to split unit's 485 B and A, paying attention to line order.
3. ALARM1 and ALARM2 factory default is connected, if not be connected, then the main interface of the controller will display alarm information, and all indoor units will be turned off.

Controller Dimension:



Set controller as sub

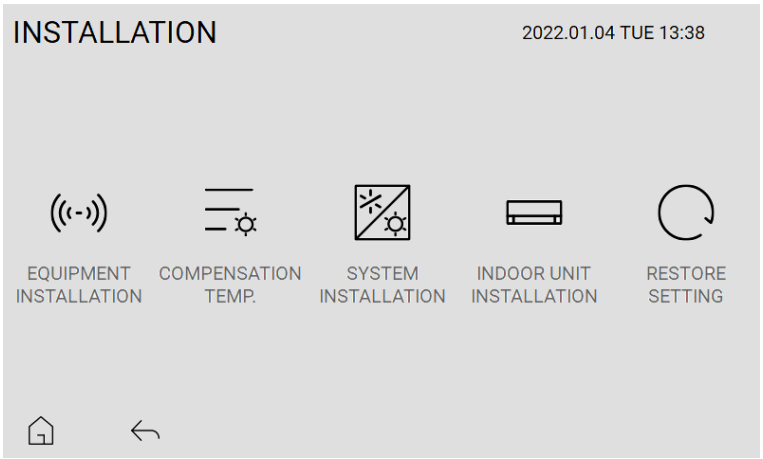
① Tap on menu icon in main interface→SETTING→GENERAL

② Setting “Main/Sub Set” function.
③ MAIN: This controller is main, and you can use this controller to set and view unit parameters.
SUB: This controller is sub, and you can only use this controller to view the unit parameters, not to control the unit operation status.

Installation settings

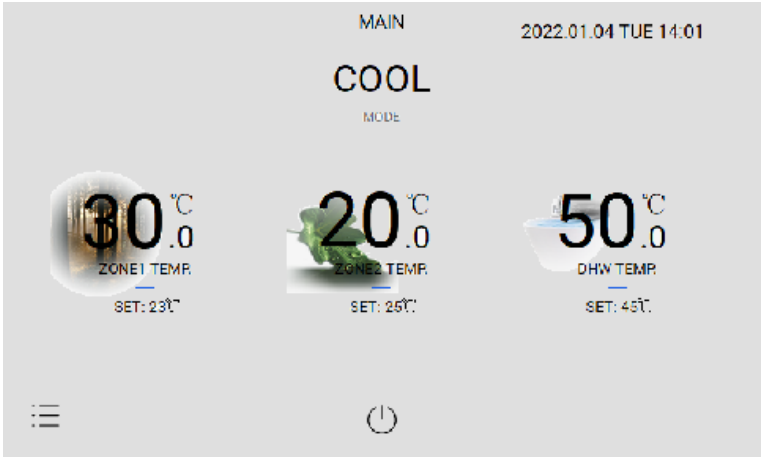
① Tap on menu icon in main interface→SETTING→INSTALLATION

② Enter the correct password (841226), go into the installation interface. Please refer to the Setting→Installation function description below for detailed operation methods.



Function operation

Main interface display

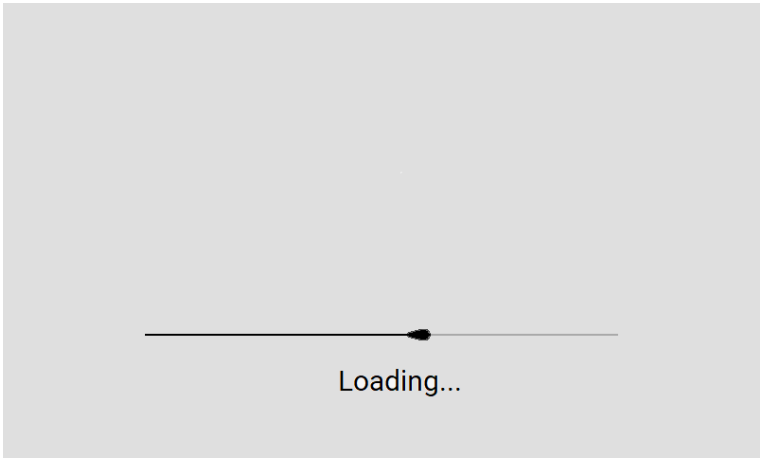


Picture 1

This controller can control all parts temperature of the split system, including Zone1, Zone2, DHW (Domestic Hot Water), and Pool.
During installation, Zone1, Zone2, DHW, and Pool can be set to ON or OFF.
Note: If one Zone in the system, set Zone 1 on; If two zones in the system, set Zone1 on and Zone 2 on.

Initialization

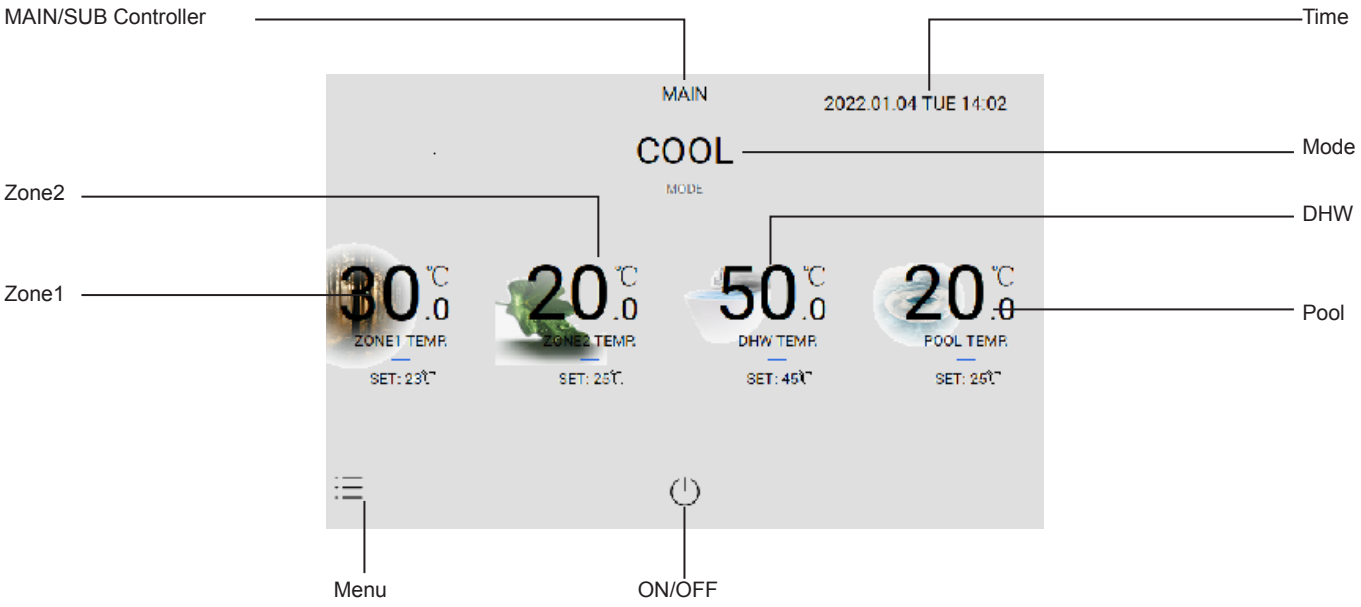
After powering on, controller starts to search IDU (Indoor Unit) shown as picture 2 below:



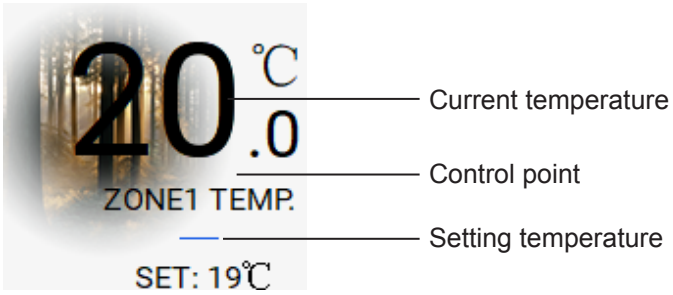
Picture 2

Main interface

When search is completed, the main interface will show as below. Picture 3 is the example. The interface display is subject to the "Equipment Installation" function in installation settings.

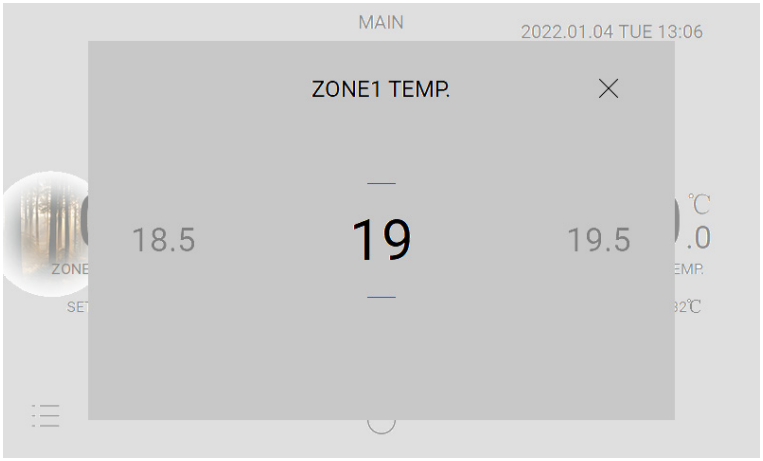


Picture 3



Picture 4

In the main interface, you can control ON/OFF, mode, and setting temperature. Click the mode area and slide left and right to change the unit operation mode. Click each current temperature area and slide left and right to adjust the set temperature.

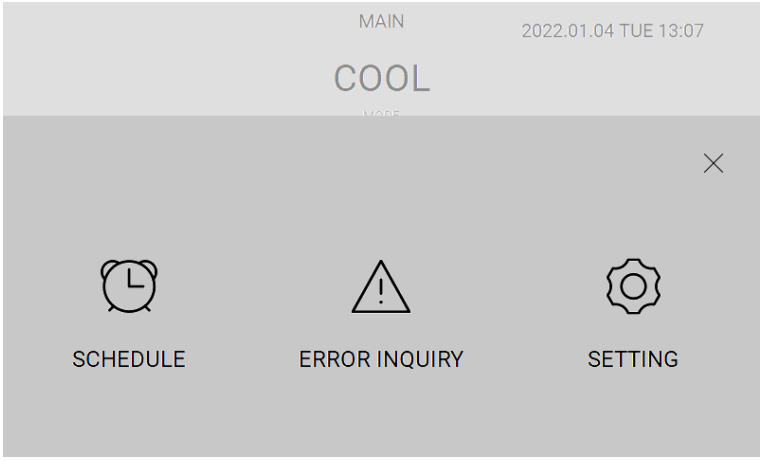


Picture 5

Note:
During heating operation of the unit, the setting temperature of zone 1 is higher than zone 2; during cooling operation of the unit, the set temperature of zone 1 is lower than zone 2. If the temperature of the later adjustment exceeds the limit, the temperature in another area will change accordingly.
For example, in the heating mode, the set temperature of zone 1 is 45 °C, and the set temperature of zone 2 must be less than or equal to 45 °C. If the set temperature of adjustment zone 2 is 48 °C, the set temperature of zone 1 will automatically change to 48 °C.
If a third-party controller is selected, the setting temperature of the point displays "Link", and the controller cannot change the set temperature, the temperature is determined by the third-party controller.

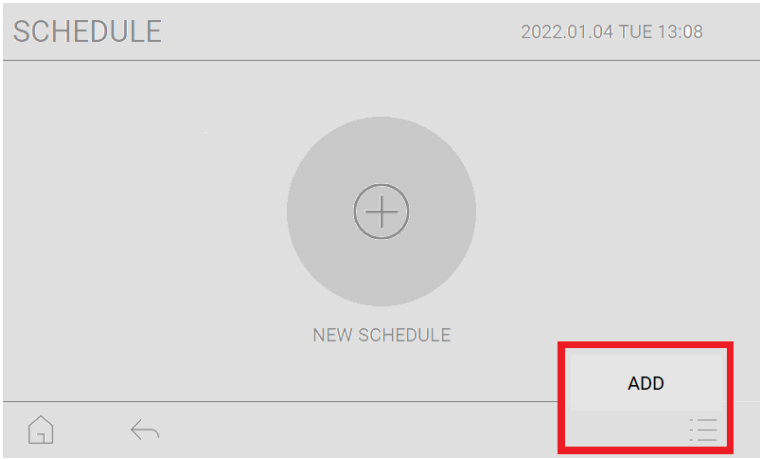
Menu

Tap the lower left menu icon , It will show the following interface:



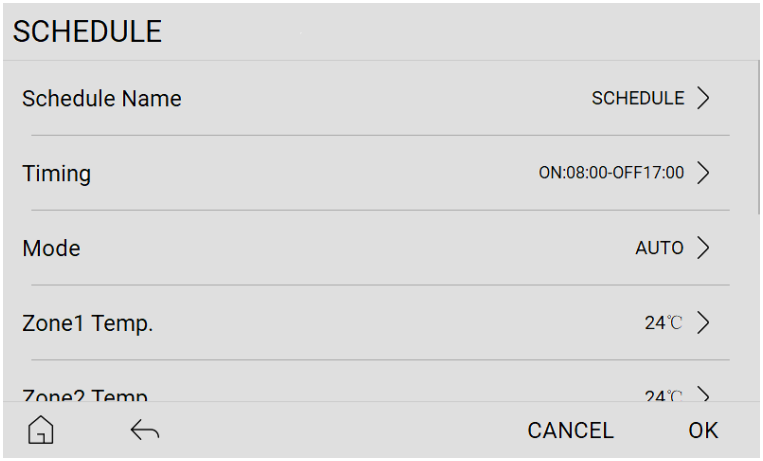
Picture 6

1. Schedule
① Add
Tap on “SCHEDULE” in picture 6. If schedule has been set, the set of schedule information is displayed. If you enter schedule for the first time, it will be blank like below.

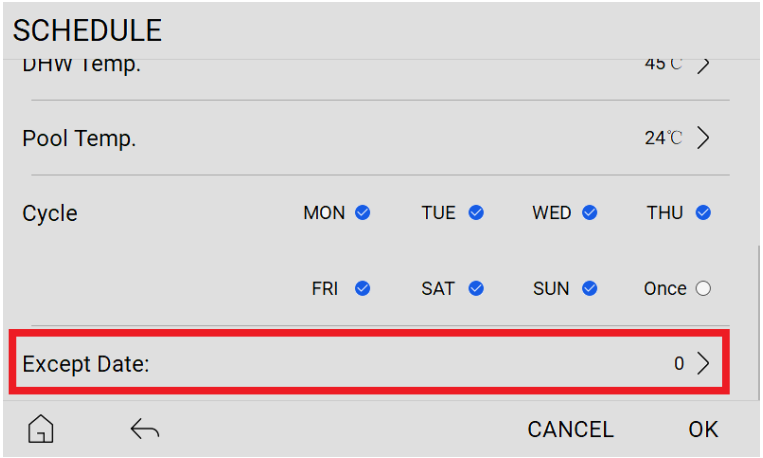


Picture 7

Tap the “+” icon in the center of the screen or the icon at the lower right corner, and tap “ADD” to add a new schedule. You can set schedule on (start) and off (end) time, mode, temperature, and cycle days, etc.

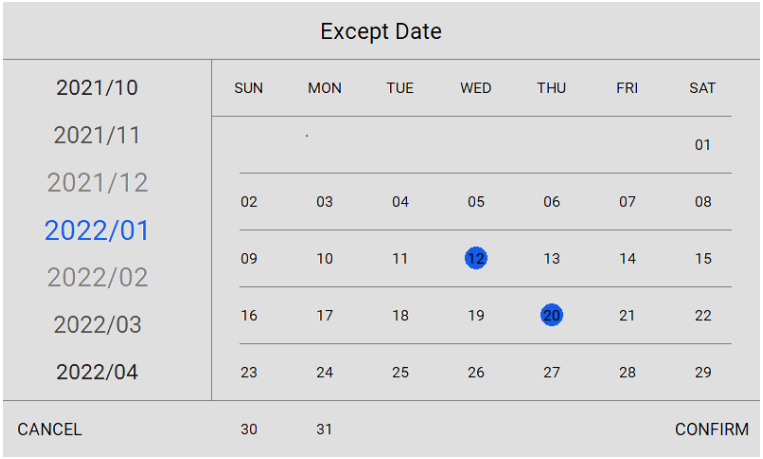


Picture 8



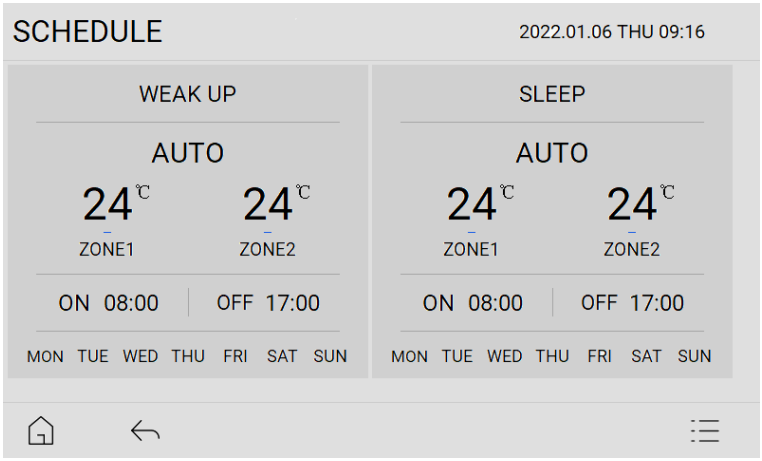
Picture 9

You can set except dates for the schedule in Picture 9. Schedule information is not executed on exceptional days.



Picture 10

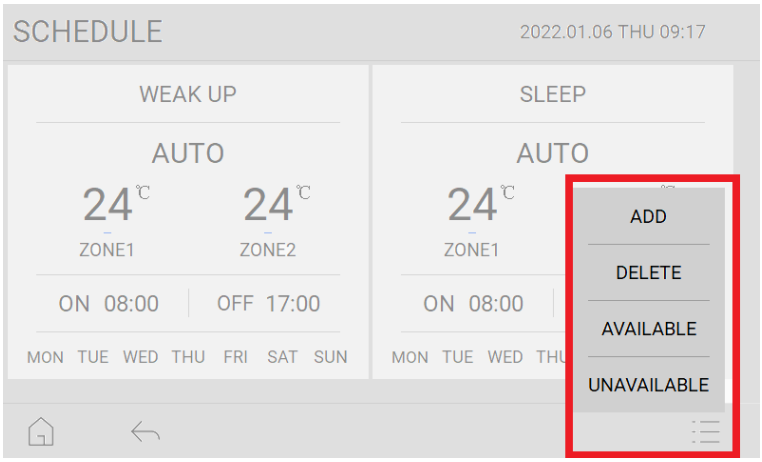
Tap “OK” in Picture 8, the display interface is as follows. Repeat steps to add another schedule.



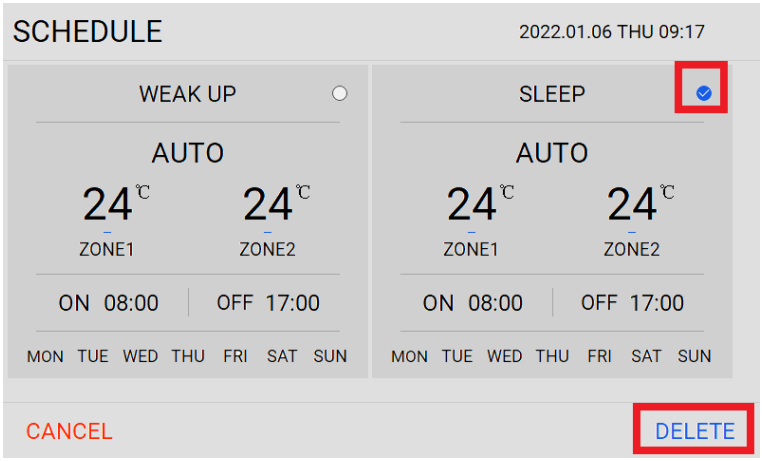
Picture 11

② Delete

First, tap the “DELETE” icon in the Picture 12, then small circle will appear like Picture 13; Second, select the schedules to be deleted. Last, press the “DELETE” icon in the lower right corner.



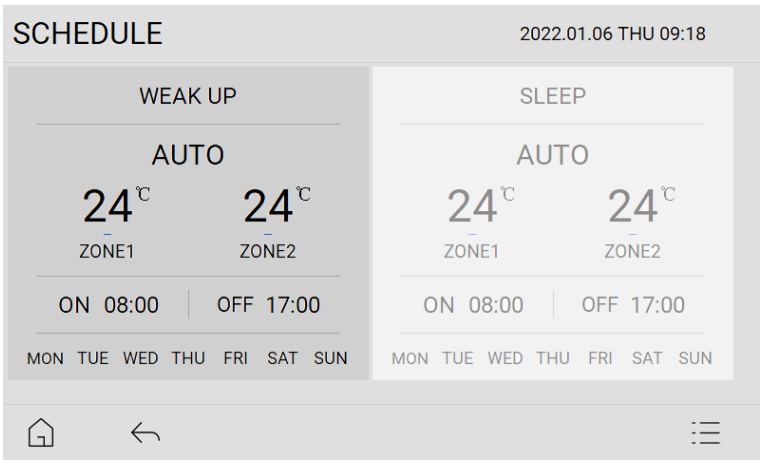
Picture 12



Picture 13

③ Unavailable

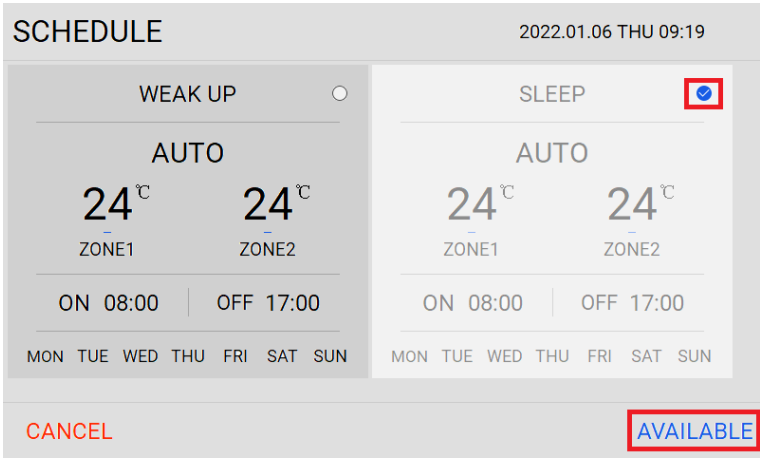
To make a schedule unavailable, tap on the “UNAVAILABLE” icon, see Picture 12. Tap the icon of the desired schedule(s) to unavailable. After tapping “UNAVAILABLE”, unavailable schedules are grayed out as seen in Picture 14.



Picture 14

④ Available

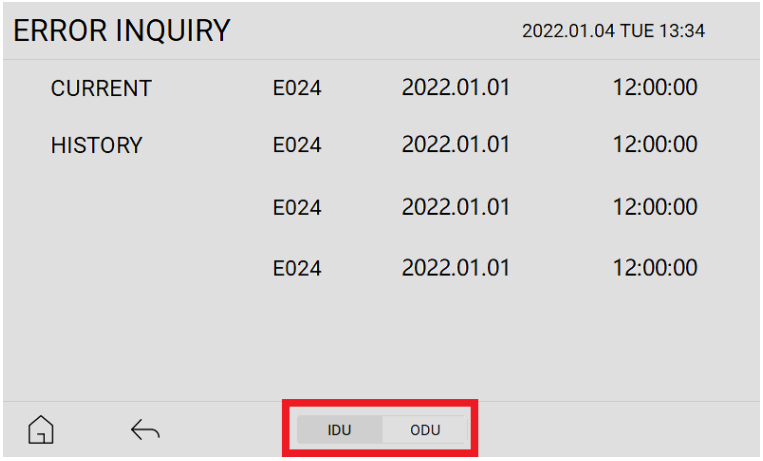
To reactivate a schedule that is unavailable, then tap “AVAILABLE” as seen at the lower right of Picture 12. Tap the icon of the desired schedule(s) to reactivate. Then tap “AVAILABLE” at the lower right of the screen to reactivate the schedule information.



Picture 15

2. Error inquiry

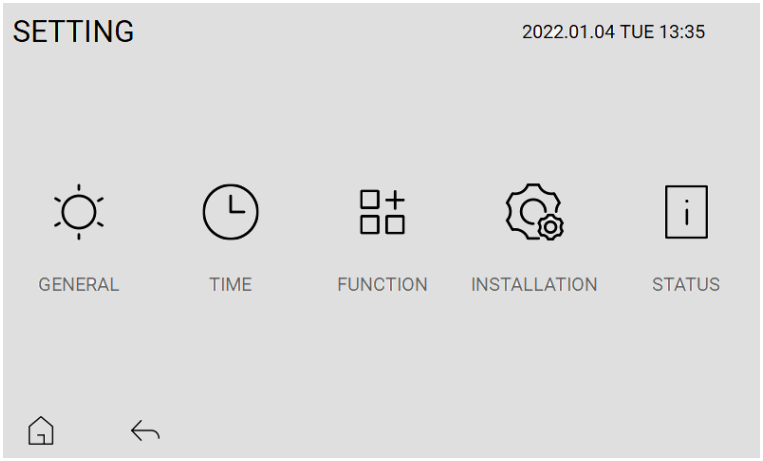
Tap “ERROR INQUIRY” in menu to check errors. Click the middle position of the lower sidebar of the screen to view the outdoor unit’s error parameters.



Picture 16

3. Setting

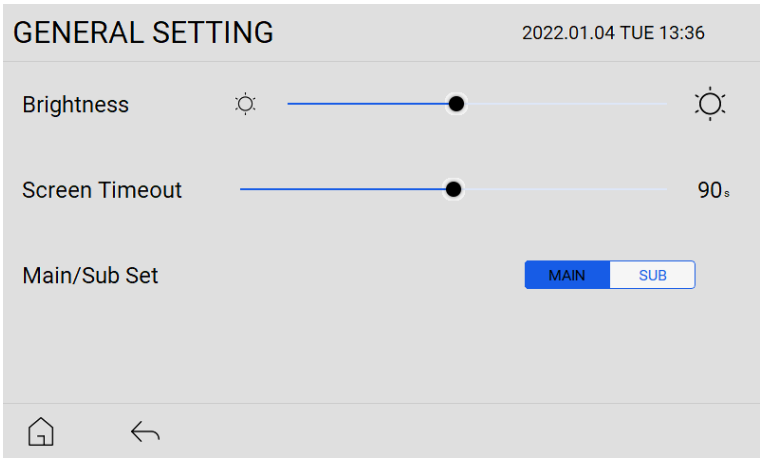
Tap “SETTING” on the interface of Picture 6 to enter the setting interface, shown in Picture 17.



Picture 17

1) General setting

You can change the Backlight brightness, Screensaver time, and Main/Sub controller switch by taping and dragging the slider.



Picture 18

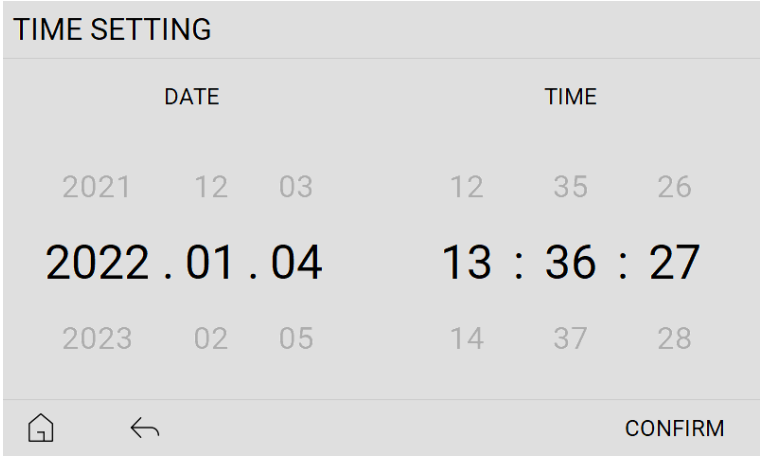
Note:

If the controller is set as a sub controller, the controller can only view the unit parameters and cannot change the unit operation status.

You can set any one of the controllers in the system as Main controller but be sure there is only one main controller in the system at any time. If you want to operate, please do this with the main controller.

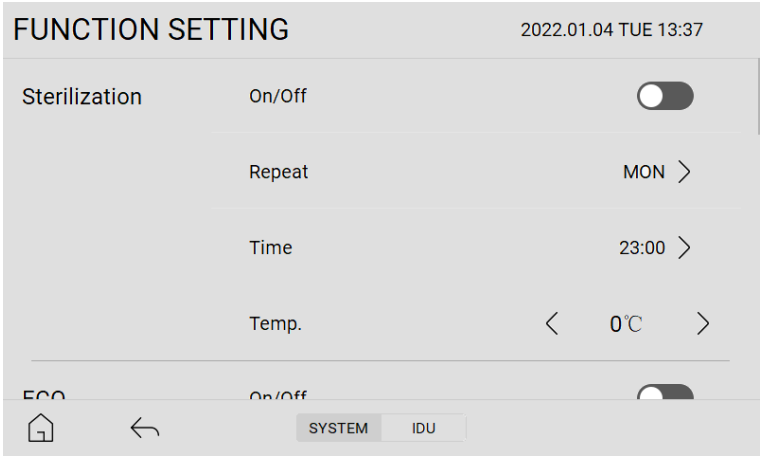
2) Time setting

You can adjust the date & clock time by slide numbers up and down. After adjusting the clock parameters, click the “CONFIRM” to confirm.



Picture 19

3) Function setting



Picture 20

Press “FUNCTION” icon to enter the function setting interface, shown in Picture 20. In this interface, you can turn on or off some common functions, and adjusting its working hours. In this interface, you can set following functions.

System functions of user setting

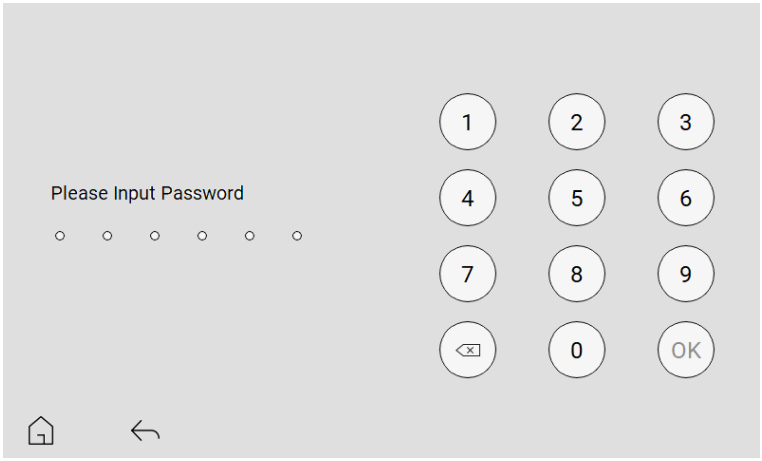
Function		Parameter Range	Default	Remarks
Sterilization	Operation	On/Off	Off	When the unit is sterilizing, the sterilization icon is flashing displayed in the main interface
	Week	Monday ~ Sunday	Monday	
	Time	00:00~24:00	23:00	
	Temp.	50°C~75°C	75°C	
ECO (economy) Mode	Operation	On/Off	Off	It’s only valid at heating mode. During the energy-saving operation of the unit, the outlet water temperature is △ T lower than the set temperature.
	Time	24 hours	22:00~07:00	
	△ T (Difference between energy saving temperature and actual temperature.)	-15°C~0°C	-5°C	
Holiday Mode	Operation	On/Off	Off	To save energy, a holiday period may be set to lower the temperature during the period.
	Date	Start date ~ End date	Current date~ Current date	
	Setting Temp. of Zone1	0°C~30°C	15°C	
	Setting Temp. of Zone2	0°C~30°C	15°C	
Quiet	Operation	On/Off	Off	To operate quietly during the preset period.
	Time1	Start time ~ End time	Current time~ Current time	
	Time2	Start time ~ End time	Current time~ Current time	
Turbo	Operation	On/Off	Off	Turbo mode is use to increase the capacity of heat pump to achieve higher target temperature.
	Timer	30min/60min/90min/ Continuous	60min	
Fast DHW		On/Off	Off	/
DHW Priority		On/Off	On	No matter what mode the unit is in, the domestic hot water shall be heated first.
Dry Concrete of Zone1		On/Off	Off	/
Dry Concrete of Zone2		On/Off	Off	/
IDU Antifreeze Protection		On/Off	On	/
IDU Antifreeze Temp.		0~15°C	5°C	/

Click the middle position of the lower sidebar of the screen to set the functions of IDU (Indoor Units).
IDU functions of user setting

Function	Parameter Range	Default	Remarks
Force Defrost	On/Off	Off	Each IDU is controlled separately
Heater1 Electric Heating	Auto/Forced ON/Forced OFF	Auto	Each IDU is controlled separately
Heater2 Electric Heating	Auto/Forced ON/Forced OFF	Auto	Each IDU is controlled separately

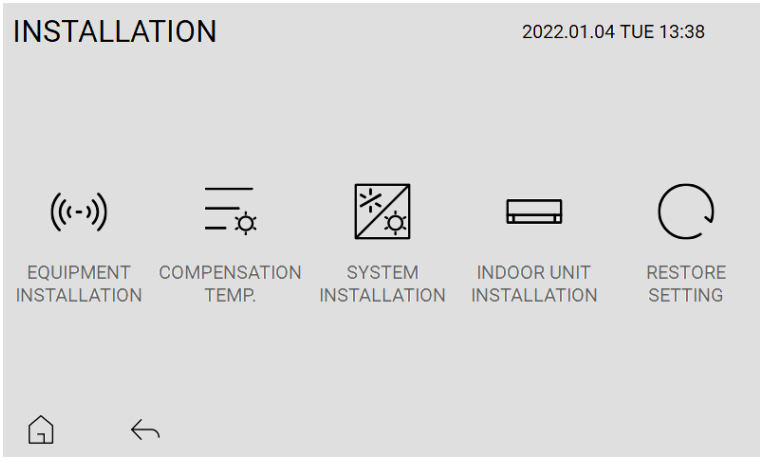
Note:
① Do not use the system during sterilization in order to prevent scalding with hot water, or overheating of shower.
② Quiet function and Turbo function cannot be turned on at the same time.

4) Installation
Tap “INSTALLATION” icon in Picture 17, then prompts to enter password interface.



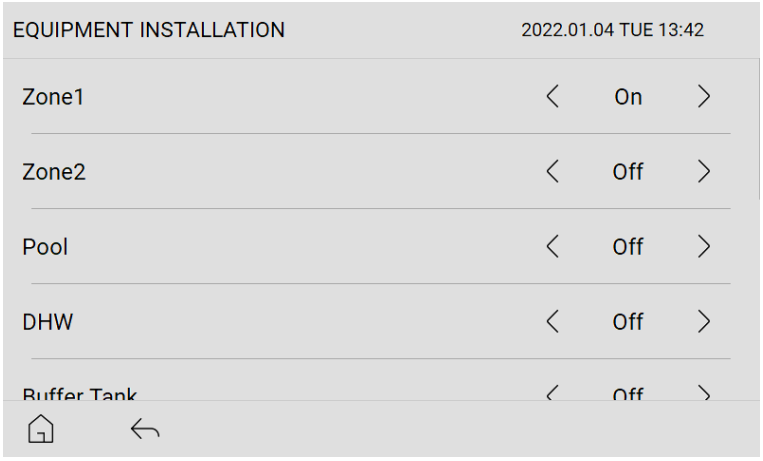
Picture 21

Enter the correct password (841226), go into Picture 22.



Picture 22

① Equipment installation



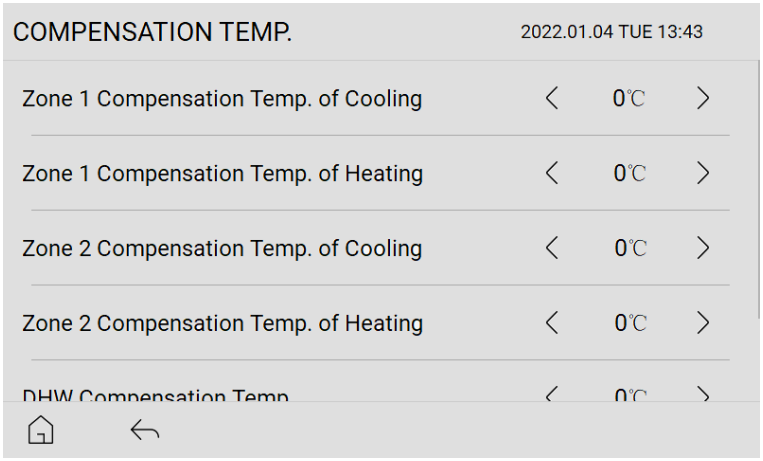
Picture 23

Tap “EQUIPMENT INSTALLATION” icon to enter the unit configuration interface. You can turn on or off the corresponding functions in this interface.

Function	Parameter Range	Default
Zone 1	On/Off	On
Zone 2	On/Off	Off
Pool	On/Off	Off
DHW	On/Off	Off
Buffer Tank	On/Off	Off
Solar Thermistor	On/Off	Off
Allow Cool Mode	On/Off	On
Allow Cool Mode of Zone2	On/Off	Off
SG Ready Control.	On/Off	Off
Bivalent Connection	On/Off	Off
Bivalent Temp.	-20°C~20°C	-10°C

Note: If one Zone in the system, set Zone 1 on; If two zones in the system, set Zone1 on and Zone 2 on.

② Compensation Temp.
Tap “COMPENSATION TEMP.” icon in Picture 22 to enter the compensation temperature setting interface. You can set the compensation temperature for each control object.



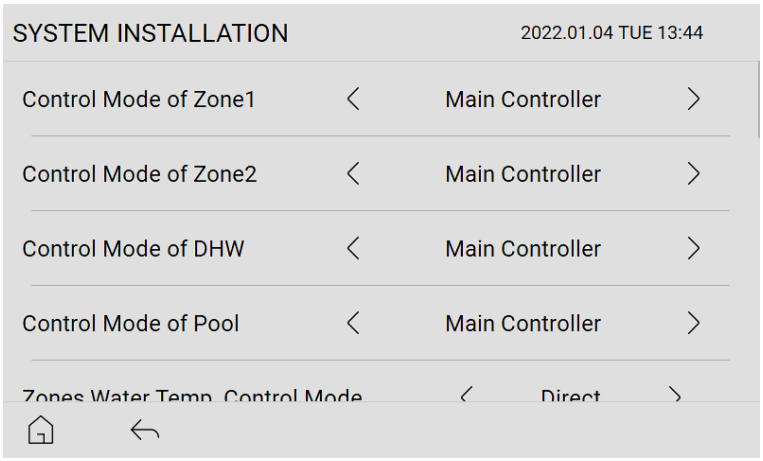
Picture 24

Function	Parameter Range	Default
Zone 1 Compensation Temp. of Cooling	-15~15°C	0°C
Zone 1 Compensation Temp. of Heating	-15~15°C	0°C
Zone 2 Compensation Temp. of Cooling	-15~15°C	0°C
Zone 2 Compensation Temp. of Heating	-15~15°C	0°C
DHW Compensation Temp.	-15~15°C	0°C
Swimming Pool Compensation Temp.	-15~15°C	0°C

Note: Actual target temperature of system=Set target temperature of controller + Compensation temperature

③ System installation

Tap “SYSTEM INSTALLATION” icon in Picture 22 to enter the system control parameters setting interface. You can set the operating parameters for the system.

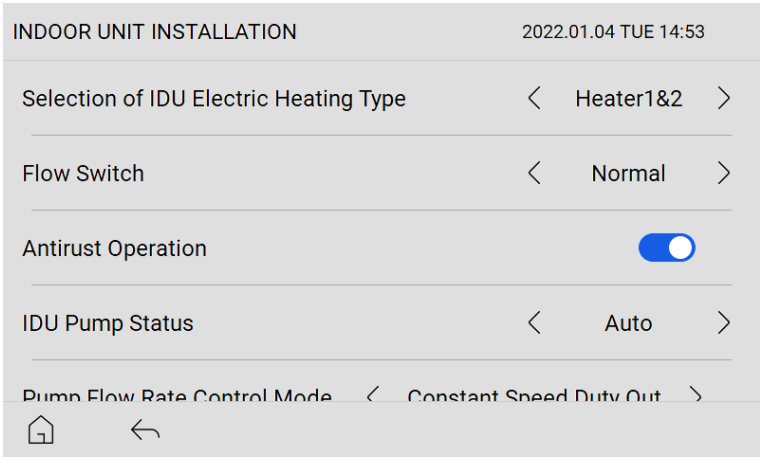


Picture 25

Function	Parameter Range	Default
Control Mode of Zone1	Main controller, Third party controller, IDU ambient Temp. sensor	Main controller
Control Mode of Zone2	Main controller, Third party controller, IDU ambient Temp. sensor	Main controller
Control Mode of DHW	Main Controller, Third Party Controller	Main Controller
Control Mode of Pool	Main Controller, Third Party Controller	Main Controller
Zones Water Temp. Control Mode	Direct, Auto curve, Set curve	Direct
Auxiliary Heat Source	IDU Electric Heater, Boiler, IDU Electric Heater + Boiler	IDU electric Heating
Outdoor Temp. for (Heat to Cool)	0~30°C	15°C
Outdoor Temp. for (Cool to Heat)	0~30°C	10°C
DHW On Temp.	30~55°C	45°C
Ambient Temp. of Heating Off	5~35°C	27°C
△ T for Heating On	0~15°C	6°C
Outdoor Temp. for Heater On	-20~15°C	0°C
Heater On Delay Time	0~120min	60min
Heater On △ T of Target Temp.	-10~-2°C	-3°C
Heater Off △ T of Target Temp.	-8~0°C	-1°C
Tank Re-heat Temp.	-12~2°C	-3°C
△ T for Cooling On	1~15°C	5°C
Target Temp. of DHW IO Board	25~75°C	45°C
Target Temp. of Pool IO Board	20~30°C	24°C
Travel Time of Mixing Valve	30s~90s	60s

Note:
Zones water temperature control mode is valid at zone1 and zone2.
a. Direct: set direct water temperature (fixed value).
b. Auto curve: set water temperature depends on outdoor ambient temperature. The unit automatically adjusts the set temperature according to the curve, which cannot be changed by users.
c. Set curve: set water temperature depends on outdoor ambient temperature. The unit automatically adjusts the set temperature according to the curve, and the curve can be changed by users.

④ Indoor unit installation
Tap “INDOOR UNIT INSTALLATION” icon in Picture 22 to enter the IDU parameters setting interface. You can set the operating parameters for the IDU.



Picture 26

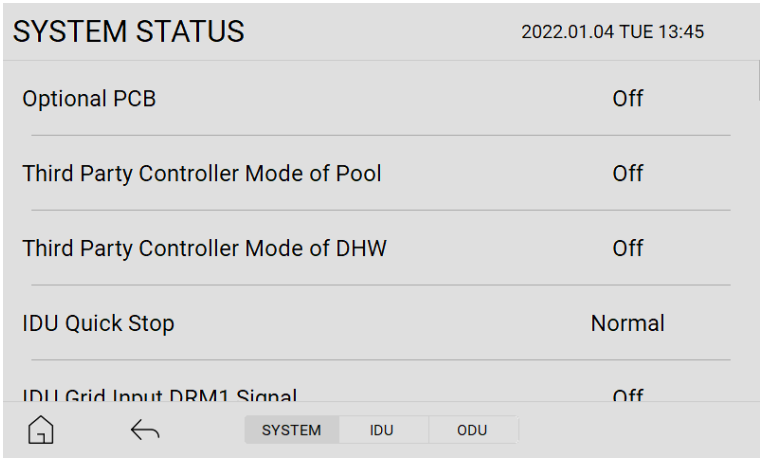
Function	Parameter Range	Default
Selection of IDU Electric Heating Type	None, Heater 1, Heater2, Heater 1 +Heater2	Heater 1+ Heater2
Flow Switch	Normal, shielded	Normal
Antirust Operation	On/Off	On
IDU Pump Status	Auto/Open/Close	Auto
Pump Flow Rate Control Mode	△ T Between Out and In Water, Max. Duty Out	Max. Duty Out
IDU Pump Duty Out	0%~100%	0%
Indoor Unit Reset	On/Off	Off
Floor Sensor Type	Flow Meter/Flow Switch	Flow Meter
Test Operation	None, Cooling Test, Heating Test	None
△ T of Cool Pump	0~15°C	5°C
△ T of Heat Pump	0~15°C	6°C

⑤ Restore setting
Tapping “RESTORE SETTING”, the system will be resettled to factory defaults and clear all settings.

Picture 27

If you click “YES” to reinitialize, the controller will restart. If you click “Cancel”, then exit POP.

5) Status
Tapping “STATUS” to enter status viewing interface. Click the tab at the bottom of the screen, and you can select the parameter category to view.

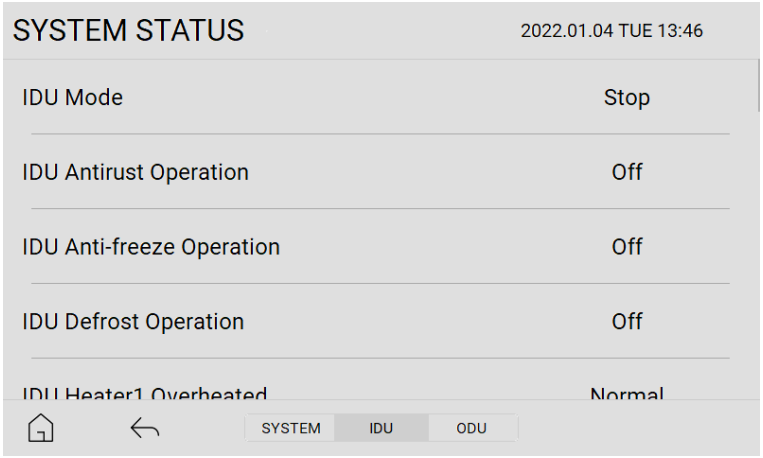


Picture 28

① System

Function	Remarks
Optional PCB	On indicates that there is an optional PCB (IO board), and Off indicates that there is no optional PCB.
Third Party Controller Mode of Pool	On/Off
Third Party Controller Mode of DHW	On/Off
IDU Quick Stop	Normal, Stop
IDU Grid Input DRM1 Signal	On/Off
IDU Grid Input DRM2 Signal	On/Off
IDU Grid Input DRM3 Signal	On/Off
Third Party Controller Mode of Zone1	None/Cool/Heat
Pump1 Output of Zone1	On/Off
Zone1 Floor Valve State	On/Off
Zone1 Indoor Temp.	Display accuracy: 0.1°C
Zone1 3Way Valve Temp.	Display accuracy: 0.1°C
Third Party Controller Mode of Zone2	None/Cool/Heat
Pump2 Output of Zone2	On/Off
Opening Status of Zone2 Water Mixing Valve	On/Off
Closed Status of Zone2 Water Mixing Valve	On/Off
Zone2 Indoor Temp.	Display accuracy: 0.1°C
Zone2 Mixing Valves Temp.	Display accuracy: 0.1°C
Pump3 Output of Pool	On/Off
Pump4 Output of Pool	On/Off
Opening Status of Pool Water Mixing Valve	On/Off
Closing Status of Pool Water Mixing Valve	On/Off
Mixing Valve Temp. of Pool	Display accuracy: 0.1°C
Pool Temp.	Display accuracy: 0.1°C
Parameter Control of DHW	Wired Controller, Optional PCB
DHW 3Way Valve	On/Off
Sterilization	On/Off
Tank Heater Output	On/Off
Buffer Tank Temp.	Display accuracy: 0.1°C
DHW Tank Temp.	Display accuracy: 0.1°C
Input Status of Water Make-up Micro Switch	Open/Close
Status of Leakage Proof Electric Valve	On/Off
Solar Pump Output	On/Off
Solar Sensor Temp.	Display accuracy: 0.1°C
Gas Boiler Output	On/Off
Humidity	Display accuracy: 1%
0~10V Sampling Voltage	Display accuracy: 0.1V
0~10V Voltage	Display accuracy: 0.1V

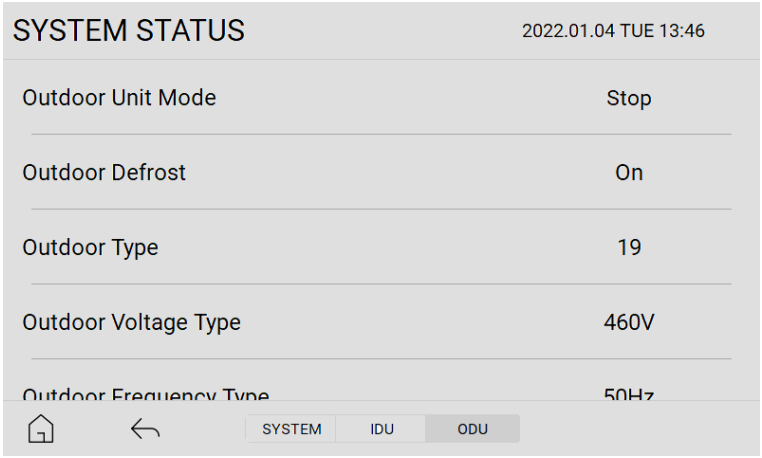
② IDU Status



Picture 29

Function	Remarks
IDU Mode	Stop, Cool, Heat, DHW, Pool
IDU Antirust Operation	On/Off
IDU Anti-freeze Operation	On/Off
IDU Defrost Operation	On/Off
IDU Heater1 Overheated	Normal, Overheated
IDU Heater2 Overheated	Normal, Overheated
IDU Heater1(1kW) Output	On/Off
IDU Heater2(3kW) Output	On/Off
IDU Antifreeze Heater Output	On/Off
IDU Pump	On/Off
IDU Solenoid Valve1	On/Off
IDU Solenoid Valve2	On/Off
IDU Flow Switch	Open/Close
IDU Low Pressure Switch	Open/Close
IDU Pump Duty	Display accuracy: 1%
IDU Pump Actual Speed	Display accuracy: 1r/min
IDU PMV Open	Display accuracy: 1pls
IDU Antifreeze Temp.	Display accuracy: 0.1°C
IDU Inlet Water Temp.	Display accuracy: 0.1°C
IDU Outlet Water Temp.	Display accuracy: 0.1°C
IDU Liquid Pipe Temp.	Display accuracy: 0.1°C
IDU Gas Pipe Temp.	Display accuracy: 0.1°C
IDU Flow Meter	Display accuracy: 0.1L/min
IDU Capacity	Range: 0~16
Target Temp. of Indoor Valve	Display accuracy: -64~63°C
IDU Cumulative Running Time	Display accuracy: 1h
IDU Continuous Running Time	Display accuracy: 1h
IDU Program Version	/
IDU EE Version	/

③ ODU Status



Picture 30

Function	Remarks
Outdoor Unit Mode	Stop, Cool, Heat
Outdoor Defrost	On/Off
Outdoor Type	/
Outdoor Voltage Type	Power supply voltage of outdoor unit.
Outdoor Frequency Type	50Hz/60Hz
Outdoor Refrigerating Capacity	Display accuracy: 0.5HP
Outdoor Compressor Target Frequency	Display accuracy: 1rps
Outdoor Compressor Actual Frequency	Display accuracy: 1rps
Outdoor Fan1 Speed	Display accuracy: 5rps
Outdoor Fan2 Speed	Display accuracy: 5rps
Outdoor Electronic Expansion Valve	Display accuracy: 1rps
Outdoor Target Discharge Pressure	Range: 0~5kg
Outdoor Actual Discharge Pressure	Range: 0~5kg
Target Discharge Saturation Temp.	Display accuracy: 0.1°C
Actual Discharge Saturation Temp.	Display accuracy: 0.1°C
Outdoor Target Suction Pressure	Range: 0~5kg
Outdoor Actual Suction Pressure	Range: 0~5kg
Target Suction Saturation Temp.	Display accuracy: 0.1°C
Actual Suction Saturation Temp.	Display accuracy: 0.1°C
Outdoor Discharge Temp.	Display accuracy: 0.1°C
Outdoor Suction Temp.	Display accuracy: 0.1°C
Outdoor Ambient Temp.	Display accuracy: 0.1°C
Outdoor Defrost Temp.	Display accuracy: 0.1°C
Outdoor Oil Temp.	Display accuracy: 0.1°C
Outdoor Compressor Module Temp.	Display accuracy: 0.1°C
Outdoor Compressor Current	Display accuracy: 0.2A
Outdoor Compressor Voltage	Display accuracy: 4V
Outdoor Cumulative Running Time	Display accuracy: 1h
Outdoor Continuous Running Time	Display accuracy: 1h
Outdoor Program Version	/
Outdoor EE Version	/

14. Installation

14.1 Hydronic box

Safety Precautions

- Read the following "SAFETY PRECAUTIONS" carefully before installation.
- Electrical works and water installation works must be completed by a qualified electrician and qualified water system installer respectively in accordance with local and national building codes.
- The caution items stated here must be followed to minimize the risk of fire, electric shock or personal injury. Incorrect installation due to ignoring of the instruction will cause harm or damage.
- After completion of installation, confirm there is no leakage of water and refrigerant gas. It will cause water damage, electrical shock, fire, explosion or death and may generate toxic gas.
- The installing technician should carry out a trial running to confirm there is no abnormality about the system after completing the installation. Please remind the customer to keep the installation manual for future reference.
- If the unit is transferred to a new user, this manual shall also be transferred along with the machine.
- If there is any doubt about the installation procedure or operation, always contact the authorized dealer for advice and information.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer. Any unfit or incompatible material may cause product damage, burst and serious injury.
- Do not use unspecified cord, modified cord, joint cord or extension cord for power supply cord. Do not share the single outlet with other electrical appliances. Poor contact, poor insulation or over current will cause electrical shock or fire.
- Do not tie up the power supply cord into a bundle by band. Abnormal temperature rise on power supply cord may happen.
- Children should be prevented access to the equipment. Keep the package material away from children.
- Do not expose the appliance to heat, flame, sparks. or other sources of ignition. Else, it may explode and cause injury or death.
- Use only Haier accessories and components with this equipment. Failure to use unapproved or 3rd party accessories could result in damage, electrical shock or fire.
- Do not add or replace refrigerant other than the specified, it may cause product damage, burst and Injury etc.
- Make sure installation is completed by authorized dealer or technician, installation done by the user it will cause water leakage, shock or fire.
- Take measures to protect the equipment against severe weather and earthquakes during installation.
- This is a R32 model, use piping, flare nut and tools which is specified for R32 refrigerant. Using of existing (R22) piping, flare nut and tools may cause abnormally high pressure in the system, and possibly result in explosion and injury.
- Install at a strong and firm location which is able to withstand weight of the set. If the strength is not enough or installation is not property done, the set will drop and cause injury.
- Tighten the flare nut with torque wrench according to specified method. If the flare nut is over tightened, the flare may break and cause refrigerant gas leakage.
- Make sure there is adequate ventilation in the room if refrigerant gas leakage occurs during operation. It may cause explosion or toxic gas generation.
- The unit is only for use in closed water system. An open water circuit may lead to excessive corrosion of water piping and risk of incubating bacteria colonies, especially Legionella in water.
- The piping installation work must be flushed before indoor unit is connected to remove contaminants. Contaminants may damage the Indoor Unit components.
- Both the liquid and gas refrigeration lines should be insulated or condensate water damage could occur.
- Consideration should be given for locating the outdoor equipment. Air discharging from equipment can damage plants and vegetation.
- Follow equipment clearance requirements when installing this equipment. Adequate clearance should be given for service access and maintenance.
- This system is multi supply appliance. All circuits must be disconnected before accessing the unit terminals.
- This equipment must be properly earthed. Earth line must not be connected to gas pipe, water pipe, earth of lightning rod and telephone. Otherwise, may cause electrical shock in case of equipment breakdown or insulation breakdown.
- Do not install this appliance in a laundry room or other high humidity location. This condition will cause rust and

damage to the unit.

- Make sure the insulation of power supply cord does not contact with hot part to prevent from insulation failure (melt).
- Do not apply excessive force to water pipes that may damage the pipes, it may cause water leakage and damage to other properties.
- Select an installation location which is easy for maintenance. Any incorrect installation, service or repair of this indoor unit may result in damage or injury to the unit and other properties.
- Make sure that drainage piping is installed properly according to this instruction, preventing the water entering the room and cause damage to properties.
- Take use of the attached accessories parts and specified parts for installation. Otherwise, it will cause the drop of unit, water leakage, fire or electrical shock.
- This installation must be subjected to building regulation approval applicable to respective country that may require to notify the local authority before installation.
- For refrigeration system work, install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire.
- Do not install the Indoor unit at place where leakage of flammable gas may occur. In case gas leakage and accumulates at surrounding of the unit, it may cause fire.
- Please use tap water and confirm that the water quality is not hard. If hard water quality is used, the lifespan of backup heater, heat exchanger, various valves, electric heating etc. will usually be shorten.
- Do not disconnect the power supply of the unit when it is not in operation. The water pump will run regularly for a period of time to avoid water freezing. Otherwise, freezing may occur and causes system damage.
- Be sure to drain the circulating water in the system out when the unit will be not in use for a long time. If the power supply is turned off directly without pumping out the circulating water in the system, the system will be damaged due to freezing. If the interval between the installation and putting into use exceeds 1 month, please pump out the circulating water in the system.
- Be sure to install earth leakage circuit breaker. If the earth leakage circuit breaker is not installed, it may cause electric shock or fire.
- Please set the water pump piping according to the installation instructions to ensure smooth drainage, and heat insulation of the piping to prevent condensate accumulation. Poor piping will lead to water leakage or poor function.
- Make sure that the unit must be at least 1m away from the TV or radio to avoid image interference or noise.

PRECAUTION FOR USING R32 REFRIGERANT

⚠ CAUTION

Do not use means to accelerate the defrosting process or to clean. Other than those recommended by the manufacturer. Any unfit or using incompatible material may cause product damage, burst and serious injury.

R32 REFRIGERANT

This AIR-TO-WATER HEAT PUMP INDOOR UNIT contains and operates with refrigerant R32. This product must only be installed or serviced by qualified personnel.
Refer to National, State, Territory and local legislation, regulations, codes, installation & operation manuals, before the Installation, maintenance and/or service of this product.

- When connecting flare at indoor side, make sure that the flare connection is used only once, if torqued up and released, the flare must be remade. Once the flare connection was torqued up correctly and teak test was made, thoroughly clean and dry the surface to remove oil, dirt and grease by following instructions of silicone sealant. Apply neutral cure (Alkoxy type) & ammonia-free silicone sealant that is non-corrosive to copper & brass to the external of the flared connection to prevent the ingress of moisture on both the gas & liquid sides. (Moisture may cause freezing and premature failure of the connection)
- The appliance shall be stored, installed and operated in a well ventilated room with comply to Indoor Floor Area Requirement and without any continuously operating ignition source. Keep away from open flames, any operating gas appliances or any operating electric heater. Else, it may explode and cause injury or death.

Indoor floor area requirement

- If the total refrigerant charge in the system is <1.84 kg, there is no additional minimum floor area is required.
- If the total refrigerant charge in the system is ≥1.84 kg, additional minimum floor area complies requirements described as below:

Symbol	Description	Unit
m_c	Total refrigerant charge in system	kg
m_{max}	Maximum refrigerant charge allowed	kg
m_{excess}	$m_c - m_{max}$	kg
H	Installation height	m
VA_{min}	Minimum ventilation opening area	cm^2
$A_{room}/B_{room}/A_{min}$	Room area	m^2

- Total refrigerant charge in system, m_c (kg)=Pre-charged refrigerant amount in unit (kg) + Additional refrigerant amount after installation (kg)

1) Determine Maximum refrigerant charge allowed, m_{max}
   a. Calculate Installation Room Area, A_{room}.
   b. Based on Table 1, select m_{max} which corresponds to the calculated A_{room} value.
   c. If $m_{max} \geq m_c$, the unit can be installed in the installation room with the specified installation height in Table 1 and without additional room area or any additional ventilation.
   d. Else, proceed to 2) and 3).
2) Determine Total Floor Area of A_{room} and B_{room} compliance to A_{min} total
   a. Calculate the B_{room} area adjacent to the A_{room}.
   b. Determine the A_{min} total based on the Total Refrigerant Charge, m_c from Table 2.
   c. The total floor area of both A_{room} and B_{room} must exceed A_{min} total.
3) Determine Minimum Venting Opening Area, VA_{min} for natural ventilation
   a. From Table 3, calculate mexcess.
   b. Then determine VA_{min}, corresponding to the calculated mexcess for natural ventilation between A_{room} and B_{room}.
   c. The unit can be installed at specific room only when the following conditions are fulfilled:
      • Two permanent openings, one at bottom, another at top, for ventilation purposes are made between A_{room} and B_{room}.
      • Bottom opening:
        - Must comply to the minimum area requirement of VA_{min}.
        - Opening must be located 300mm from the floor.
        - At least 50% of required opening area must be 200mm from the floor.
        - The bottom of the opening shall not be higher than the point of release when the unit is installed and must be situated 100mm above the floor.
        - Must be as close as possible to the floor and lower than H.
      • Top opening:
        - The total size of the Top opening must be more than 50% of VA_{min}.
        - Opening must be located 1500mm above the floor.
      • The height of the openings must be more than 20mm.
      • A direct ventilation opening to outside is not encouraged for ventilation (the user can block the opening when it is cold).

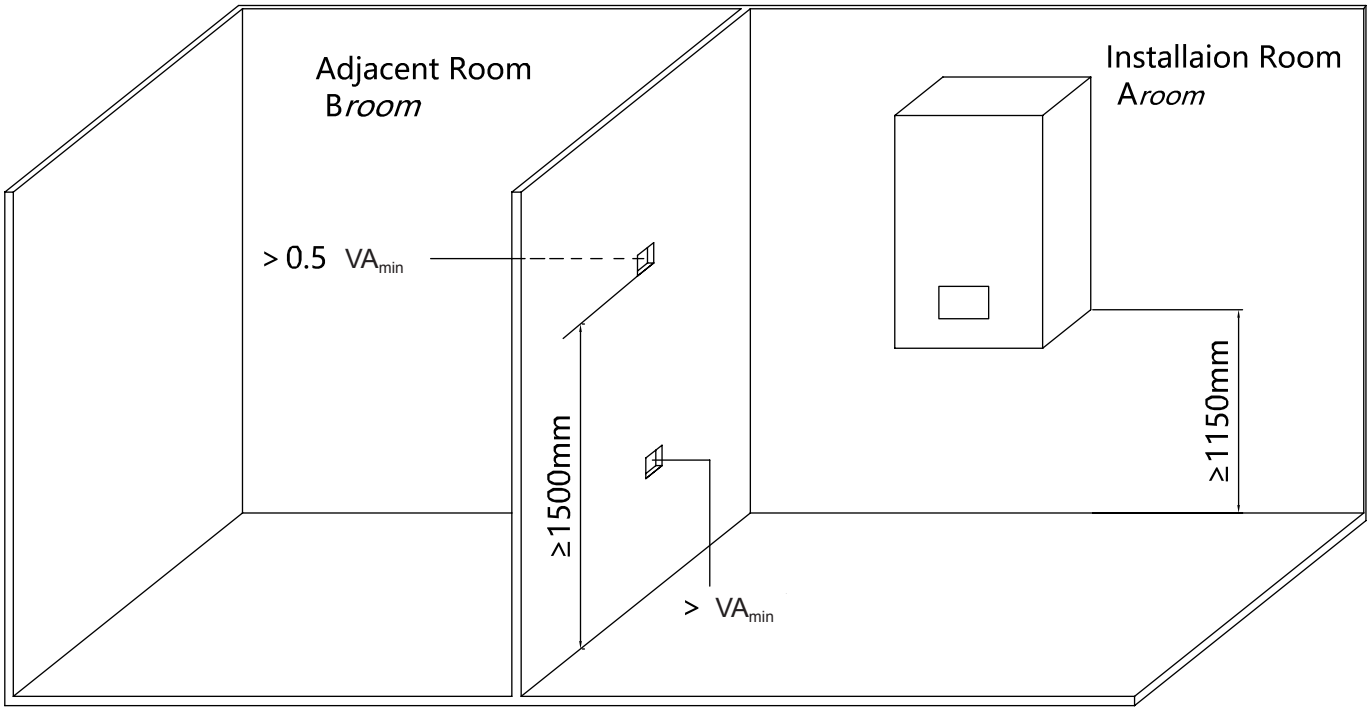


Table 1 – Maximum refrigerant charge allowed in a room

Aroom (m²)	Maximum refrigerant charge in a room / m_{max} (kg)							
	H=1.15m	H=1.20m	H=1.30m	H=1.40m	H=1.50m	H=1.60m	H=1.70m	H=1.80m
1	0.265	0.276	0.299	0.322	0.345	0.368	0.391	0.414
2	0.530	0.553	0.599	0.645	0.691	0.737	0.783	0.829
3	0.794	0.829	0.898	0.967	1.036	1.105	1.174	1.243
4	1.059	1.105	1.197	1.289	1.382	1.474	1.566	1.658
5	1.324	1.382	1.497	1.612	1.727	1.842	1.957	2.072
6	1.589	1.658	1.796	1.934	2.072	2.210	2.349	2.487
7	1.738	1.814	1.965	2.116	2.267	2.418	2.570	2.721
8	1.858	1.939	2.101	2.262	2.424	2.585	2.747	2.909
9	1.971	2.057	2.228	2.399	2.571	2.742	2.914	3.085
10	2.078	2.168	2.349	2.529	2.710	2.891	3.071	3.252
11	2.179	2.274	2.463	2.653	2.842	3.032	3.221	3.411
12	2.276	2.375	2.573	2.771	2.969	3.166	3.364	3.562

- For intermediate H values, the value that corresponds to the lower H value from the table considered.
  Example:
  For H=1.25 m, the value that corresponds to H=1.20 m is considered.
- For intermediate B_{room} values, the value that corresponds to the lower A_{room} value from the table is considered.
  Example:
  For A_{room} =10.5 m², the value that corresponds to A_{room} =10 m² is considered.

Table 2 – Minimum floor area

m_c (kg)	Minimum floor area/ A_{min} total (m^2)							
	H=1.15m	H=1.20m	H=1.30m	H=1.40m	H=1.50m	H=1.60m	H=1.70m	H=1.80m
1.84	7.84	7.20	6.15	5.71	5.33	4.99	4.70	4.44
1.86	8.02	7.36	6.27	5.77	5.39	5.05	4.75	4.49
1.88	8.19	7.52	6.41	5.83	5.44	5.10	4.80	4.54
1.90	8.36	7.68	6.54	5.89	5.50	5.16	4.85	4.58
1.92	8.54	7.84	6.68	5.96	5.56	5.21	4.91	4.63
1.94	8.72	8.01	6.82	6.02	5.62	5.27	4.96	4.68
1.96	8.90	8.17	6.96	6.08	5.68	5.32	5.01	4.73
1.98	9.08	8.34	7.11	6.14	5.73	5.37	5.06	4.78
2.00	9.27	8.51	7.25	6.25	5.79	5.43	5.11	4.83
2.02	9.45	8.68	7.40	6.38	5.85	5.48	5.16	4.87
2.04	9.64	8.85	7.54	6.51	5.91	5.54	5.21	4.92
2.06	9.83	9.03	7.69	6.63	5.96	5.59	5.26	4.97
2.08	10.02	9.21	7.84	6.76	6.02	5.65	5.31	5.02
2.10	10.22	9.38	8.00	6.89	6.08	5.70	5.37	5.07
2.12	10.41	9.56	8.15	7.03	6.14	5.75	5.42	5.12
2.14	10.61	9.74	8.30	7.16	6.24	5.81	5.47	5.16
2.16	10.81	9.93	8.46	7.29	6.35	5.86	5.52	5.21
2.18	11.01	10.11	8.62	7.43	6.47	5.92	5.57	5.26
2.20	11.21	10.30	8.77	7.57	6.59	5.97	5.62	5.31
2.22	11.42	10.49	8.94	7.70	6.71	6.03	5.67	5.36
2.24	11.62	10.68	9.10	7.84	6.83	6.08	5.72	5.40
2.26	11.83	10.87	9.26	7.98	6.96	6.13	5.77	5.45
2.27	11.94	10.96	9.34	8.06	7.02	6.17	5.80	5.48

- For intermediate H values, the value that corresponds to the lower H value from the table considered.
  Example:
  For H=1.25 m, the value that corresponds to H=1.20 m is considered.
- For intermediate m_c values, the value that corresponds to the higher m_c value from the table is considered.
  Example:
  If mc =1.85 kg, the value that corresponds to mc =1.86 kg is considered.
- Systems with total refrigerant charge lower than 1.84 kg are not subjected to any room area requirements.
- Charges above 2.27 kg are not allowed in the unit.

Table 3 Minimum venting opening area for natural ventilation

m_c (kg)	m_{max} (kg)	m_{excess} (kg) = m_c - m_{max}	Minimum venting opening area (VA_{min}) (cm^2)							
			H= 1.15m	H= 1.20m	H= 1.30m	H= 1.40m	H= 1.50m	H= 1.60m	H= 1.70m	H= 1.80m
2.27	0.1	2.17	634	621	596	575	555	538	522	507
2.27	0.3	1.97	576	564	541	522	504	488	473	460
2.27	0.5	1.77	517	506	486	469	453	438	425	413
2.27	0.7	1.57	459	449	431	416	402	389	377	367
2.27	0.9	1.37	400	392	377	363	351	339	329	320
2.27	1.1	1.17	342	335	322	310	299	290	281	273
2.27	1.3	0.97	283	277	267	257	248	240	233	227
2.27	1.5	0.77	225	220	212	204	197	191	185	180
2.27	1.7	0.57	170	163	157	151	146	141	137	133
2.27	1.9	0.37	117	112	103	98	95	92	89	86

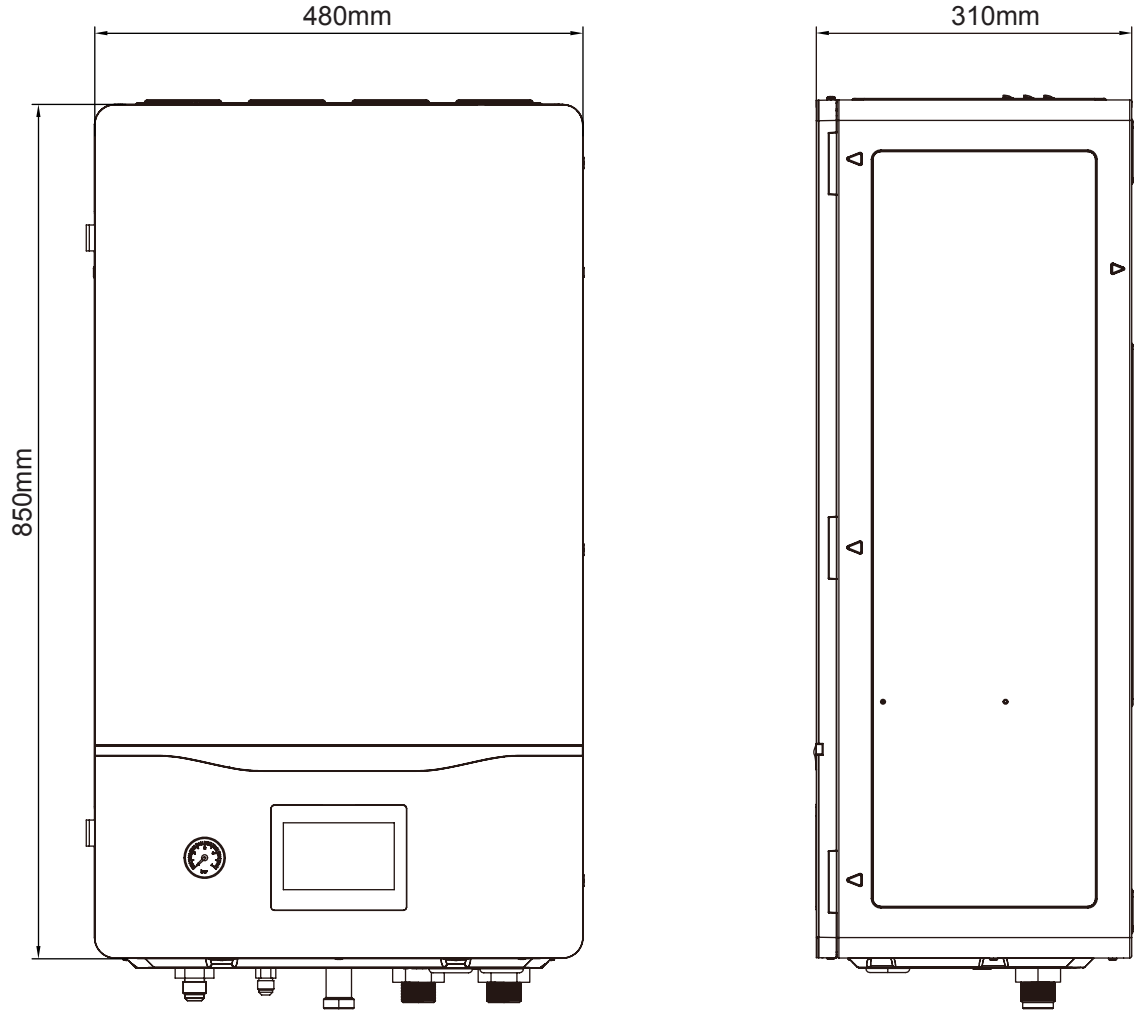
- For intermediate H values, the value that corresponds to the lower H value from the table considered.
  Example:
  For H=1.25 m, the value that corresponds to H=1.20 m is considered.
- For intermediate mexcess values, the value that corresponds to the higher mexcess value from the table is considered.
  Example:
  If mexcess =1.45 kg, the value that corresponds to m_c =1.6 kg is considered.

Attached Accessories

No.	Accessories part	Qty.	Remarks	Place position
1	Installation plate I	1	/	Fixed on wooden base
2	Installation plate II	1	/	Fixed on wooden base
3	Installation manual	1	/	Accesory bag
4	Reducing pipe	1	Only for HU062WAMNA	Accesory bag

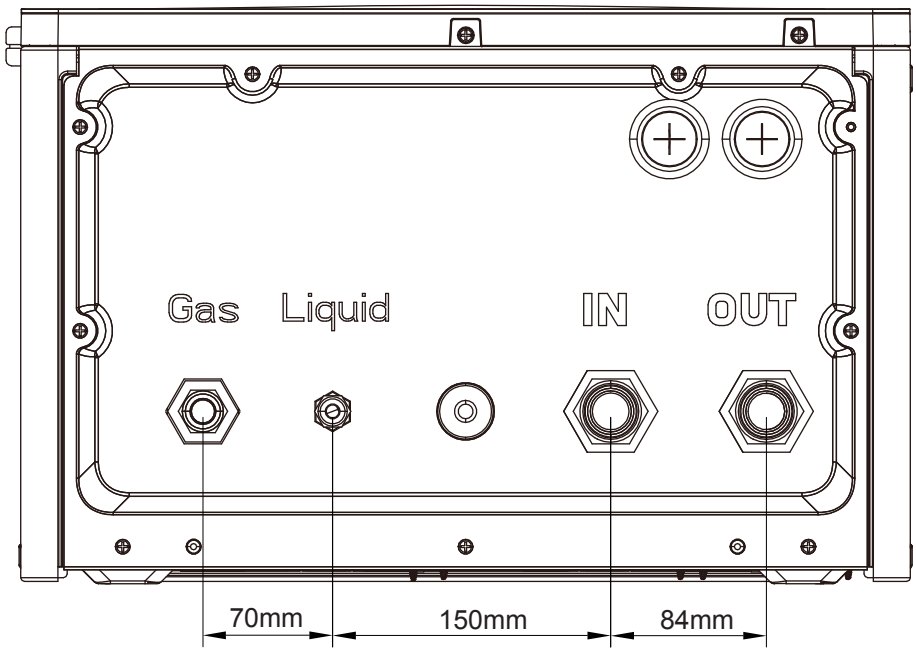
Installation instructions

Dimension Diagram



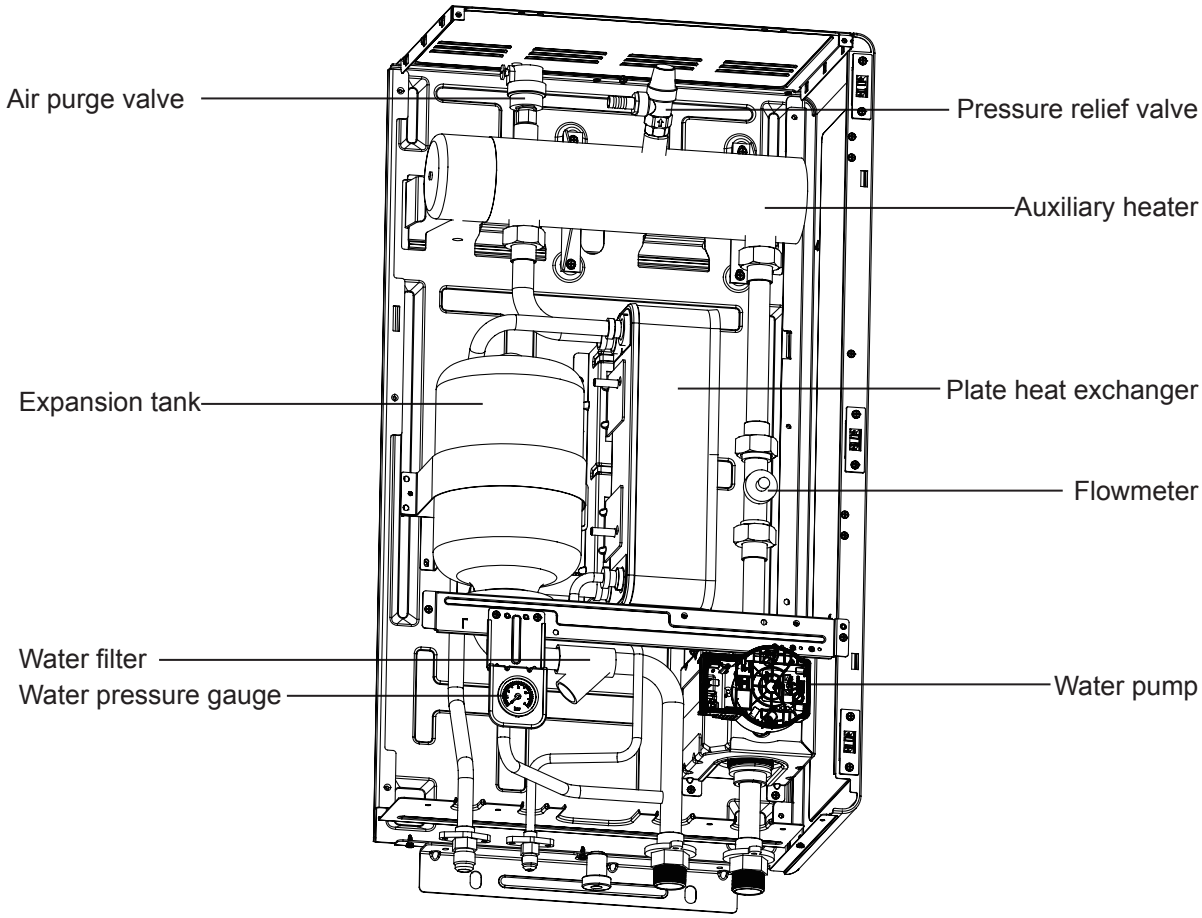
Front View

Side View



Bottom View

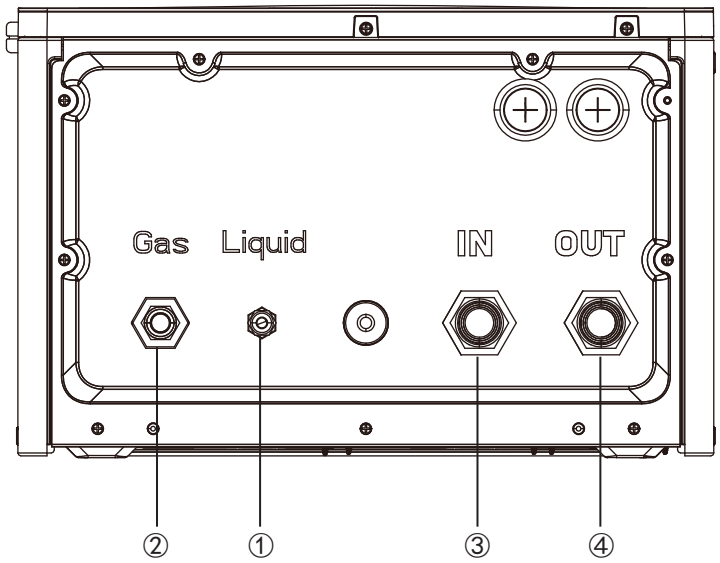
Main Components diagram



⚠ CAUTION

- Expansion tank should be overhauled once a year, Please replace and update in time if necessary.
- When the water capacity of the water system is more than 180L, an additional expansion tank is required.

Pipe Position Diagram



No.	Pipe Description	Connection Size (in./mm)	
		HU062WAMNA	HU102WAMNA
①	Refrigerant liquid pipe	1/4(6.35)	3/8(9.52)
②	Refrigerant gas pipe	5/8(15.88)	5/8(15.88)
③	Water inlet pipe	1(25.4)	1(25.4)
④	Water outlet pipe	1(25.4)	1(25.4)

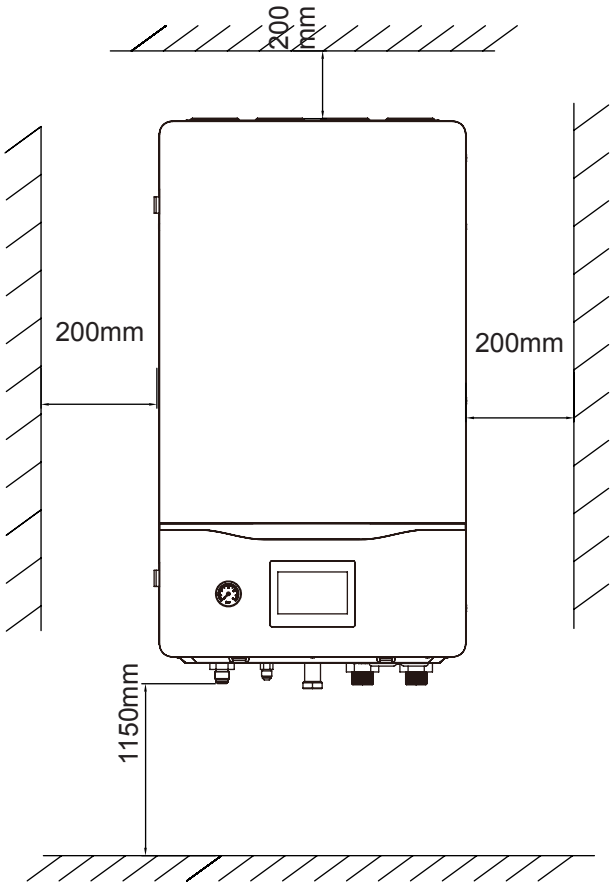
A. Select the Best Installation Location

The unit must be installed indoors, and the requirements are as follows.

- The indoor unit must be installed on a vertical wall.
- The mounting wall must be even and nonflammable, it must be strong and solid enough to hold the unit and prevent it from vibration.
- There should not be any heat source or steam near the indoor unit.
- A place where freezing, leakage of corrosive gas and flammable gas or dust, carbon fibre or flammable particals suspension will never occur around the unit.
- A place where the ventilation is enough.
- A place where drainage can be easily done (e.g. Utility room).
- A place where the operation noise will not cause discomfort to the user.
- Ensure there is enough clearance around the unit from wall, ceiling, or other equipment for service and air circulation.
- The recommended minimum installation height for indoor unit is 1150mm.

Note:

- If there's any possibility of small animals entering the unit from pipe outlet, then block it.
- Do not install the unit outdoors. The unit is designed for indoor installation only.
- When install electrical equipment at wooden building of metal lath or wire lath, according to electrical facility technical standard, no electrical contact between equipment and building is allowed.

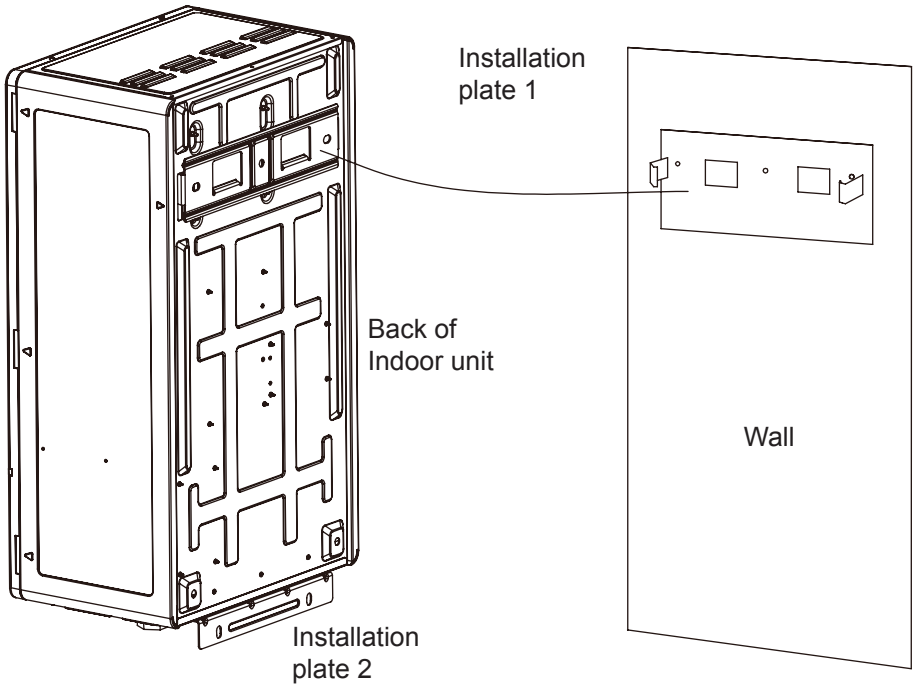


B. Fix the Installation Plate

- The distance between the center of installation plate and left or right wall shall be more than 375 mm.
- The distance from ground to the lower edge installation plate 1 should be more than 1956mm.
- Mount the installation plate 1 horizontally by aligning the marking thread and check with a level gauge.
- The installation plate 1 shall be fixed to the wall with 3 bolts of size M8.

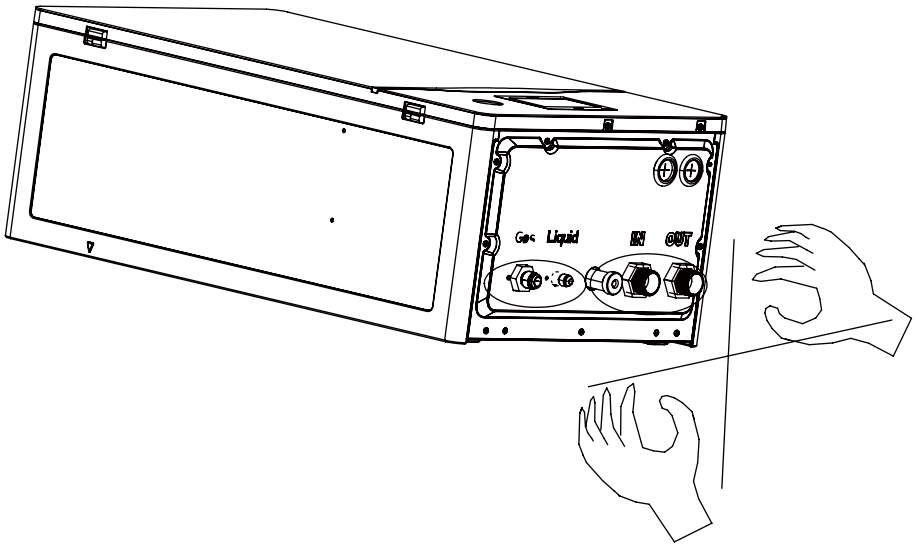
C. Indoor Unit Installation

- Secure the installation plate 2 to the bottom of the unit with 3 screws.
- Lift up the unit and hang the slots behind of the unit on the hook of the installation plate 1.
- Fix the installation plate 2 on the wall with 3 bolts of size M8.

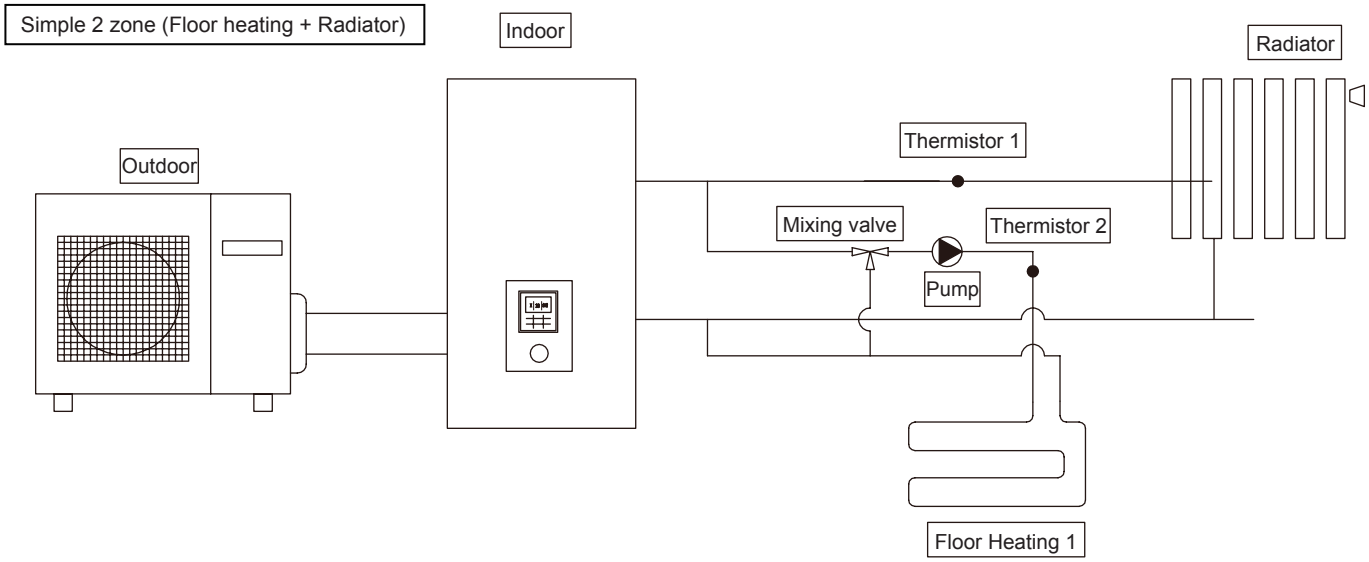


⚠ CAUTION

Do not lift the indoor unit by holding the refrigerant and water pipes to prevent damage of the pipes during the installation.



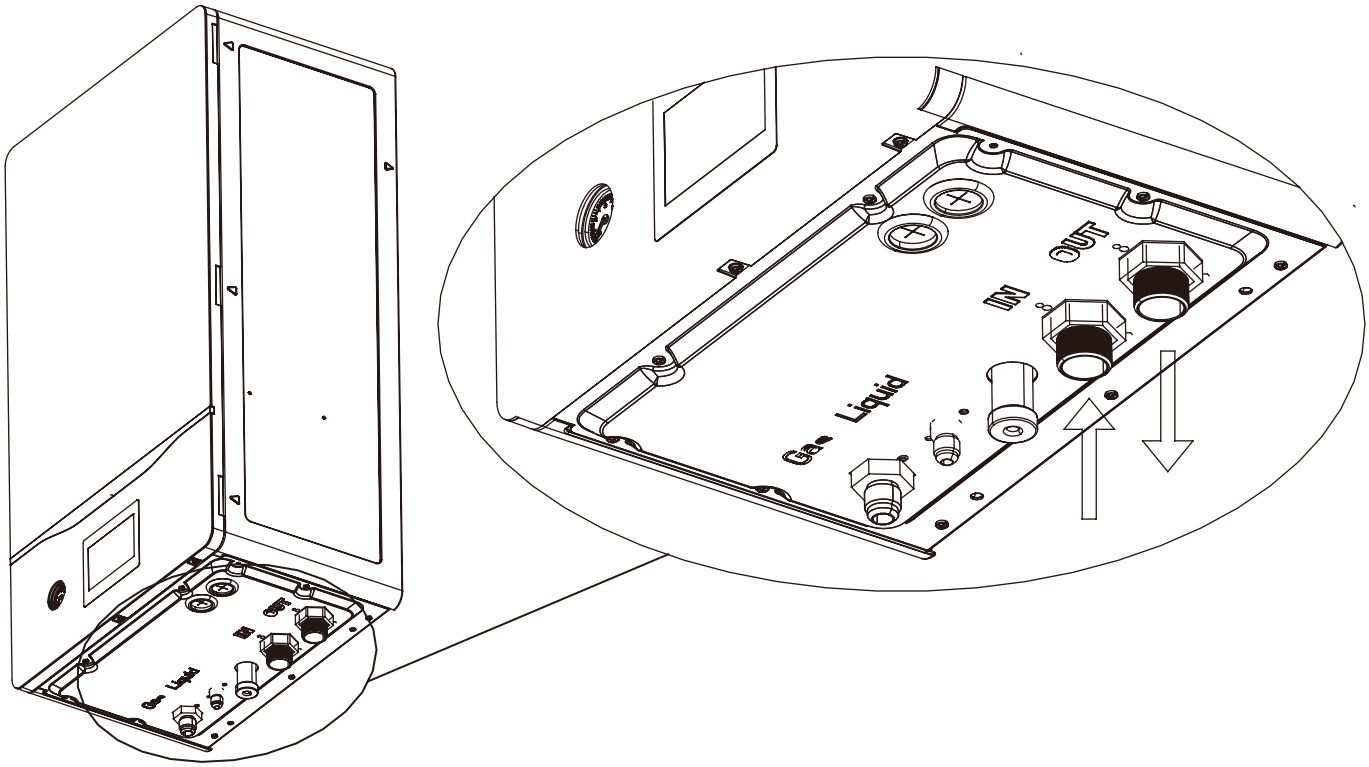
D. Water Piping Installation



- Make sure the water piping is connected complying the European regulations.
- Cover the pipe end to prevent dust entering the water piping when inserting it through a hole in the wall.
- Flush tap water through the water piping before connecting to indoor unit to ensure there is no impurities in the water system.
- Use two spanners to connect the water piping with the unit.
- The water piping should be covered insulation materials to reduce heat loss.
- Check the water leakage condition along the piping especially in connecting joint during trial running.

Note:

- Do not charge water to the system before completing the installation and insulating the piping in winter.
- Drain the water out of the system if the unit does not operate for a long time.
- Choose proper buffer tank and auxiliary electrical water heater to connect to the system.
- Do not over tighten, over tightening may cause water leakage.



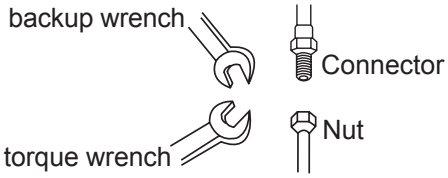
E. Refrigerant Piping Installation

- Please make flare after inserting flare nut (located at joint portion of tube assembly) onto the copper pipe. (in case of using long piping)
- Do not use pipe wrench to open refrigerant piping. Flare nut may be broken and cause leakage. Use proper spanner or ring wrench.
- Connect the piping:
  - Align the center of piping and sufficiently tighten the flare nut with hands.
  - Be sure to use two spanners to tighten the connection. Further tighten the flare nut with torque wrench in specified torque as stated in table.

Note:

- Do not over tighten, over tightening may cause gas leakage.
- Do not pull and push refrigerant piping excessively, pipe deformation may cause refrigerant leakage.

Always use a backup wrench when tightening and loosening flare nuts. Tubing will twist if not properly supported.



The flare nut or the flare fitting will be damaged if the tubing is not properly aligned with the flare fitting when starting the flare nut. Do not use tools to start the flare nut, but use hands only to begin threading the nut.

Cutting and flaring the piping

- Please cut the pipe with pipe cutter and make sure there is no burrs remained, or gas leakage may be caused.
- Remove the burrs with reamer, and hold the pipe with end in a downward direction to avoid the metal powder entering the piping inside.
- Please make flare after inserting the flare nut onto the copper pipes.

F. Leakage test, Evacuation, Check valve operation, Additional refrigerant charging

- See it in the outdoor installation manual.

G. Charging the Water

Water quality requirement

It is necessary to analyse the quality of water by checking pH, electrical conductivity, ammonia ion content, sulphur content, and others. The following is the recommended standard water quality.

Contents	Unit	Value
Standard Quality pH(25°C)	/	7.5-9
Electrical conductivity {2}	μS/cm	10-500
Alcalinity HCO_3^-	mg/l	70-200
Sulphate SO_4^{2-}	mg/l	<70
Alcalinity /Sulphate HCO_3^-/ SO_4^{2-}	mg/l	>1.5
Ammonium NH_4^+	mg/l	<2
Free chlorine Cl_2	mg/l	<1
Hydrogen sulfide H_2S	mg/l	<0.05
Free carbon dioxide(aggressive) CO_2	mg/l	<5
Nitrate NO_3^-	mg/l	<100
Iron Fe	mg/l	<0.2
Aluminium Al	mg/l	<0.2
Manganese Mn	mg/l	<0.1
Chloride content Cl-	mg/l	≤50
Total Hardness $CaCO_3$	(°dH)	4.5-8.5
Ammonia NH_3	mg/l	<0.5

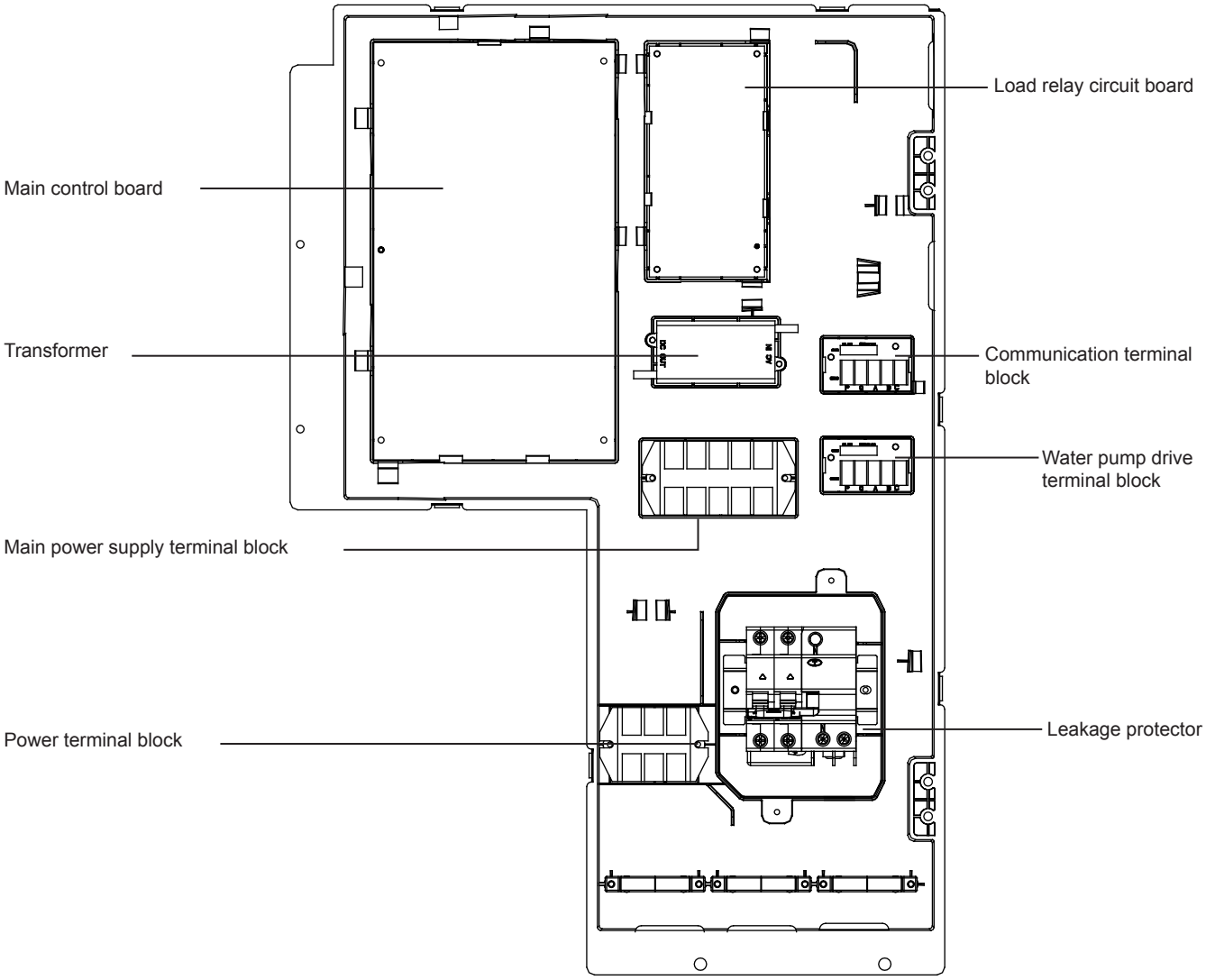
⚠ CAUTION

If the Chloride content (Cl-) in the circulating water of the system exceeds the required limits, please add zinc rod to the system to remove the excessive chloride.

Electric wiring and the application

Before opening the front plate and electrical cabinet, always switch off all power supply (i.e. indoor unit power supply, electrical water heater power supply and tank unit power supply). Only authorized and licensed electrician can open the front plate and electrical cabinet to install and maintain the unit.

Main components of electrical cabinet



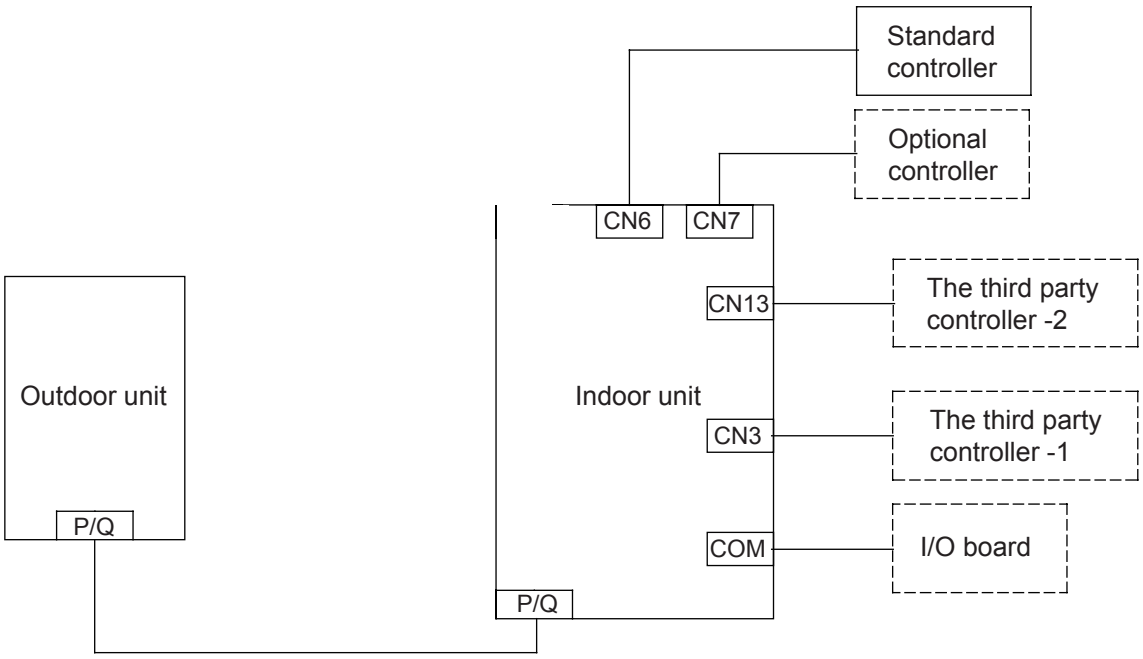
Power supply cord installation instruction

- The fluctuation range of power supply voltage must be within 10% of the working voltage of the unit.
- The wiring is allowed to pass 1.25 times of the rated current.
- The communication line must be twisted-pair wiring or shielded wire which diameter must be greater than 0.75mm2.
- The insulation resistance between all electrical terminals of the unit and the machine body shall not be less than 3MΩ.
- The power cord and control wiring shall not be bundled with the refrigerant pipeline and water piping, and they must be arranged separately through conduit.

Model	Power source	Sectional area of power line (mm²)	Rated current of circuit breaker (A)	Leakage current / action current of leakage protector (mA)
HU062WAMNA	1PH, 220-240V~, 50HZ	6	32	32A 30mA less than 0.1S
HU102WAMNA	1PH, 220-240V~, 50HZ	6	32	32A 30mA less than 0.1S

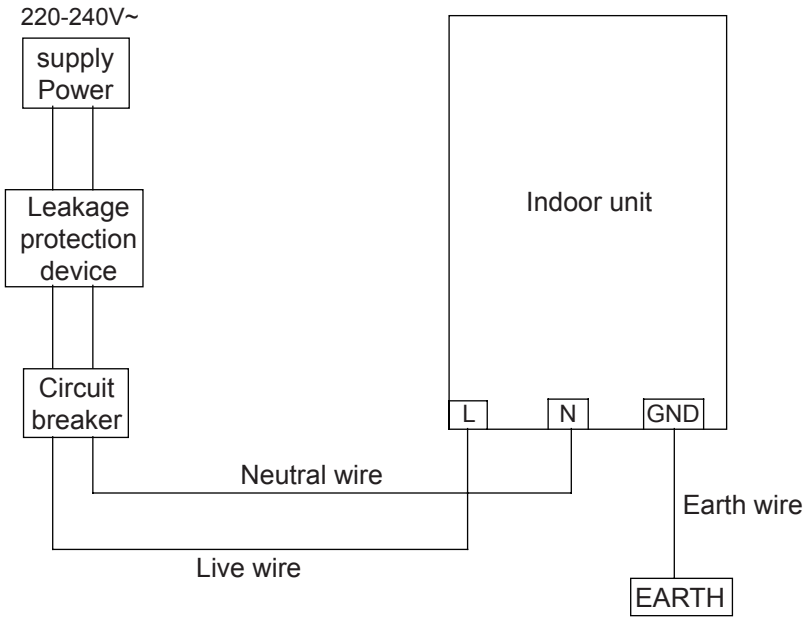
- Earth resistance should meet the national standard requirement.
- The yellow and green double color line of air conditioning unit is ground wire, do not move, splice or use it for any other purpose. Unit ground terminal cannot be connected with a self-tapping screw or risk electric shock.
- This equipment must be properly grounded per local codes. Please take reliable measures to ensure that the ground connecting is secure and all equipments is grounded.
- The user's power supply must provide reliable grounding. Please don't connect the ground wire to the following places. (1) water pipe (2) gas pipe; (3) drainage pipe; (4) The other places where are unreliable.

Communication wiring figure



- The communication terminal block for indoor unit and outdoor unit is marked as P/Q.
- The device within the dotted box is optional and needs to be configured separately, which is not the standard configuration of the unit.

Electrical wiring diagram



- The outdoor unit and indoor unit require independent power distribution.
- The power supply terminal block for outdoor unit AW042SSCHA & AW062SSCHA is marked as 1, 2 and 3, which correspond to live line, neutral line and earth line respectively. For indoor unit and outdoor unit AW082SNCHA & AW102SNCHA, the live line, neutral line and earth line is marked as L, N and G.

14.2 Outdoor units

EUROPEAN REGULATIONS CONFORMITY FOR THE MODELS

CE

All the products are in conformity with the following European provision:
-Low voltage Directive
-Electomagnetic Compatibility

ROHS

The products are fulfilled with the requirements in the directive 2011/65/EU of the European parliament and of council on the Restriction of the use of Certain Hazardous Substances in Electrical and Electronic Equipment(EU RoHS Directive)

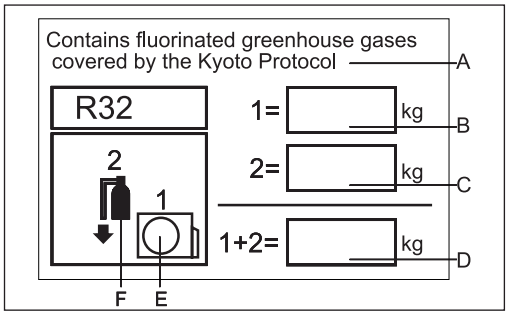
WEEE

In accordance with the directive 2012/19/EU of the European parliament, herewith we inform the consumer about the dis-posal requirements of the electrical and electronic products.

DISPOSAL REQUIREMENTS:

Your air conditioning product is marked with this symbol.This means that electrical and electronic products shall not be mixed with unsorted household waste.Do not try to dismantle the system yourself:the dismantling of the air conditioning system,treatment of the refrigerant,of oil and of other part must be done by a qualified installer in accordance with relevant local and national legislation.
Air conditioners must be treated at a specialized treatment facility for reuse, recycling and recovery.By ensuring this product is disposed of correctly,you will help to prevent potential negative cons-equences for the environment and human health.Please contact the installer or local authority for more information.
Battery must be removed from the remote controller and dis-posed of separately in accordance with relevant local and national legislation.

IMPORTANT INFORMATION REGARDING THE REFRIGERANT USED



This product contains fluorinated greenhouse gases covered by the Kyoto Protocol.Do not vent into the atmosphere.
Refrigerant type:R32
GWP*value:675
GWP=global warming potential
Please fill in with indelible ink,
1 the factory refrigerant charge of the product
2 the additional refrigerant amount charged in the field and 2 = 0 kg
1+2 the total refrigerant charge on the refrigerant charge label supplied with the product.
The filled out label must be adhered in the proximity of the product charging port(e.g.onto the inside of the stop value cover).
A contains fluorinated greenhouse gases covered by the Kyoto Protocol
B factory refrigerant charge of the product:see unit name plate
C additional refrigerant amount charged in the field
D total refrigerant charge
E outdoor unit
F refrigerant cylinder and manifold for charging

⚠Warning

- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
- The appliances are not intended to be operated by means of an external timer or separate remote-control system.
- Keep the appliance and its cord out of reach of children less than 8 years.
- Disconnect the appliance from its power source during maintenance service and when replacing parts.
- If the disconnection is not foreseen, a disconnection with a locking system in the isolated position shall be provided.
- The appliances working temperature: cooling 10~46 degree, heating -20~35 degree.
- This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.
- We recommend that this appliances be installed properly by qualified installation technicians in accordance with the installation instructions provided with the unit.
- The appliance shall be installed in accordance with national wiring regulations.
- Wiring must be done by a qualified electrician. All the wiring must comply with the local electrical codes.
- Means for disconnection, such as circuit breaker, which can provide full disconnection in all poles, must be incorporated in the fixed wiring in accordance with the wiring rules. Use an ELB (Electric Leakage Breaker). If not used, it will cause an electric shock or a fire. Details of type and rating of fuses, or rating of circuit breakers / ELB is detailed in below part.
- The method of connection of the appliance to the electrical supply and interconnection of separate components is detailed in below part. The wiring diagram with a clear indication of the connections and wiring to external control devices and supply cord is detailed in below part. The cord of the H07RN-F type or the electrically equivalent type must be used for power connection and interconnection between outdoor unit and indoor unit. The size of the cord is detailed in below part.
- The information of dimensions of the space necessary for correct installation of the appliance including the minimum permissible distances to adjacent structures is detailed in below part.

Safety

	Read the precautions in this manual carefully before operating the unit.		warning; Risk of fire/Flammable materials. This appliance is filled with R32.
	Read the operator's manual .		Service indicator, read technical manual.

After reading this handbook, hand it over to those who will be using the unit.
The user of the unit should keep this mamual at hand and make it available to those who will be performing repairs or relocating the unit. Also, make it available to the new user when the user changes hands.

⚠WARNING

- Ask your dealer or qualified personnel to carry out installation work.Do not attempt to install the air conditioner yourself. Improper Installation may result in water leakage, electric shocks, fire or explosion.
- All the cables shall have got the European authentication certificate. During installation, when the connecting cables break off, it must be assured that the grouding wire is the last one to be broken off.
- If refrigerant gas leaks during installation, ventilate the area immediately.oxic gas may be produced.if the refrigerant comes into contact with fire,and explosion may be happen.
- Make sure ground connection is correct and reliable.Do not earth the unit to a utility pipe, lightning conductor or telephone earth lead. Imperfect earthing may result in electric shocks.
- The breaker of the air conditioner should be all-pole switch and explosion-proof. The distance between its two contacts should not be no less than 3mm. Such means for disconnection must be incorporated in the wiring.
- The electrical sockets should be placed 1m above from the air conditioner, nor under the air conditioner. Be sure not to use open flame, high static electrical or high temperature equipments etc.nearby the air conditioner.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- The appliance must be stored in a room without continuously operating ignition sources, the radius of the storage area should be no less than 2.5 m (for example:open flames, an operating gas appliance or an operating electric heater).
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odour.
- The appliance must be installed, operated and stored in a room with a floor area larger than the Minimum Room Area specified in the table on the following pages,The room should be well ventilated.
- Comply with national gas regulations.
- This appliance can be used by children aged 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given superivision or instruction concering use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
- The air conditioner can not be discarded or scrapped Randomly If you need please contact customer service personnel of Haier to scrap in order to obtain the correct disposal methods.
- Reusable mechanical connectors and flared joints are not allowed indoor.

⚠CAUTION

- Do not install the air conditioner at any place where there is danger of flammable gas leakage.In the event of a gas leakage, build-up of gas near the air conditioner may cause a fire to break out.
- Take adequate steps to prevent the outdoor unit being used as a shelter by small animals.Small animals.making contact with electrical parts can cause malfunctions, smoke or fire.
- Please instruct the customer to keep the area around the unit clean
- The temperature of refrigerant circuit will be high, please keep the inter-unit wire away from copper pipes that not thermally insulated.
- Only qualified personnel can handle, fill, purge and dispose of the refrigerant.

⚠WARNING
The installation, maintenance, service and repair operations of this product shall be carried out by professional personnel, who have been trainedand certified by national training organizations that areaccredited to teach the relevant national competency standards that may be set in legislation. Improper installation may cause water leakage, electrical shock, fire, or explosion.
Install the air conditioner according to the instructions given in this manual. Incomplete installation may cause water leakage, electrical shock, fire, or explosion.
Be sure to use the supplied or specified installation parts. Use of other parts may cause the unit to cometo lose, water leakage, electrical shock, fire, or explosion.
Install the air conditioner on a solid base that can support the unit's weight. An inadequate base or incomplete installation may cause injury in the event the unit falls off the base.
Electrical work should be carried out in accordance with the installation manual and the national electrical wiring rules or code of practice. Insufficient capacity or incomplete electrical work may cause electrical shock, fire, or explosion.
Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.
For wiring, use a cable long enough to cover the entire distance with no connection. Do not use an extension cord. Do not put other loads on the power supply, use a dedicated power circuit. (Failure to do so may cause abnormal heat, electrical shock, fire, or explosion.)
After connectiong interconnecting and supply wiring be sure to shape the cables so that they do not put undue force on the electrical covers or panels. Install covers over the wires. Incomplete cover installation may cause terminal overheating, electrical shock, fire, or explosion.
If any refrigerant has leaked out during the installation work, ventilate the room. (The refrigerant produces a toxic gas if exposed to flames, may cause explosion.)
After all installation is complete, check to make sure that no refrigerant is leaking out. (The refrigerant produces a toxic gas if exposed to flames, may cause explosion.)
When installing or relocating the system, be sure to keep the refrigerant circuit free from substancs other than the specified refrigerant(R32), such as air. (Any presence of air or other foreign substance in the refrigerant circuit causes an abnormal pressure rise or rupture, resulting in injury.)
During pump-down, stop the compressor before removing the refrigerant piping. If the compressor is still running and the stop valve is open during pump-down, air will be sucked in when the compressor is run, causing abnormal pressure in the freezer cycle which will lead to breakage and even injury.
Be sure to establish an earth. Do not earth the unit to a utility pipe, arrester, or telephone earth. Incomplete earth may cause electrical shock, fire, or explosion. A high surge current from lightning or other sources may cause damage to the air conditioner. The installation of pipe-work shall be kept to a minimum. Pipe-work shall be protected from physical damage and shall not be installed in an unventilated space, if that space is smaller than the Minimum Room Area specified in the table on the following pages. Mechanical connections shall be accessible for maintenance purposes. Information for handling, installation, cleaning, servicing and disposal of refrigerant. Warning: Keep any required ventilation openings clear of obstruction. Notice: Servicing shall be performed only as recommended by this manual instruction.
Be sure to install an earth leakage breaker. Failure to install an earth leakage breaker may result in electric shocks, fire, or explosion.

Loading and Unloading/Transporting Management/Storage Requirements

Loading and Unloading Requirements

1) The products shall be carefully handled during loading and unloading.
2) Rude and barbarous handling such as kicking, throwing, dropping, bumping, pulling and rolling is not allowed.
3) The workers engaged in loading and unloading must be subject to necessary trainings on the potential hazards caused by barbarous handling.
4) Dry powder extinguishers or other suitable fire extinguishing apparatus within the period of validity shall be equipped at the loading and unloading site.
5) The untrained personnel cannot be engaged in loading and unloading of flammable refrigerants air conditioner.
6) Before loading and unloading, anti-static measures shall be taken, and phones cannot be answered during loading and unloading.
7) Smoking and open fire are not allowed around the air conditioner.

Transporting Management Requirements

1) The maximum transporting volume of finished products shall be determined as per local regulations.
2) The vehicles used for transporting shall be operated as per local laws and regulations.
3) Dedicated after-sales vehicles shall be used for maintenance, and exposed transporting of refrigerant cylinders and the products to be maintained is not allowed.
4) The rain cover or similar shielding material of transporting vehicles shall be provided with certain flame retardancy.
5) Leakage warning device of flammable refrigerant shall be installed inside the closed-type compartment.
6) Anti-static device shall be equipped inside the compartment of transporting vehicles.
7) Dry powder extinguishers or other suitable fire extinguishing apparatus within the period of validity shall be equipped inside the driver's cab.
8) Orange-white or red-white reflective stripes shall be pasted on the sides and tail of the transporting vehicles, to remind the vehicles behind of keeping distance.
9) The transporting vehicles shall run at a constant speed, and heavy acceleration/deceleration shall be avoided.
10) Combustibles or the static articles cannot be transported simultaneously.
11) High-temperature area shall be avoided during transporting, and necessary radiating measures shall be taken in case the temperature inside the compartment is too high.

Storage Requirements

1) The storage package of equipment used shall be such that no leakage of refrigerant will be caused due to mechanical damage of the equipment inside.
2) The appliance must be stored in a room without continuously operating ignition sources, the radius of the storage area should be no less than 2.5 m (for example:open flames, an operating gas appliance or an operating electric heater).
3) Do not pierce or burn.
4) The maximum quantity of the equipment allowed to be stored together shall be determined as per local regulations.

Minimum Room Area									
Type	LFL (kg/m³)	Hv (m)	Total Mass Charged/kg Minimum Room Area/m						
R32	0.306		1.224	1.836	2.448	3.672	4.896	6.12	7.956
		0.6		29	51	116	206	321	543
		1.0		10	19	42	74	116	196
		1.8		3	6	13	23	36	60
		2.2		2	4	9	15	24	40

Safety Awarenes

1.Procedures: operation shall be made as per controlled procedures to minimize the probability of risks.
2.Area: area shall be divided and isolated appropriately, and operation in an enclosed space shall be avoided. Before the refrigeration system is started or before working, ventilation or opening of the area shall be guaranteed.
3.Site inspection: the refrigerant shall be checked.
4.Fire control: the fire extinguisher shall be placed nearby, and fire source or high temperature is not allowed; the sign of "No smoking"shall be arranged.

Unpacking Inspection

1.Indoor unit: nitrogen is sealed during the delivery of indoor units (inside the evaporator), and the red sign at the top of the green plastic seal cap on the evaporator air pipes of the indoor unit shall be checked first after unpacking. In case the sign is raised, the nitrogen sealed still exists. Afterwards, the black plastic seal cap at the joint of evaporator liquid pipes of the indoor unit shall be pressed, to check whether nitrogen still exists. In case no nitrogen is sprayed out, the indoor unit is subject to leakage, and installation is not allowed.

2.Outdoor unit: the leak detection equipment shall be extended into the packing box of the outdoor unit, to check whether the refrigerant is leaking. If the refrigerant leakage is identified, installation is not allowed, and the outdoor unit shall be delivered to the maintenance department.

Inspection on Installation Environment

1.Inspection on the surrounding environment of place of installation: the outdoor unit of flammable refrigerants air conditioner cannot be installed inside an enclosed room reserved.

2.Power supply, switches or other high-temperature articles such as the fire source and oil heater shall be avoided below the indoor unit.

3.The power supply shall be provided with earthing wire and be reliably earthed.

4.While punching the wall with an electric drill, whether embedded water/electricity/gas pipelines are designed at the hole preset by the user shall be verified in advance. It is recommended that the through-wall holes reserved shall be used as much as possible

Safety Principles of Installation

1. Favorable ventilation shall be maintained at the place of installation (doors and windows are opened).
2. Open fire or high-temperature heat source (including welding, smoking and oven) higher than 548 is not allowed within the scope of flammable refrigerant.
3. Anti-static measures shall be taken, such as the wearing of cotton clothes and cotton gloves.
4. The place of installation shall be convenient for installation or maintenance. Barriers shall be avoided around the air inlet/outlet of the indoor/outdoor unit, and the electrical appliance, power switches, sockets, valuables and high-temperature products within the scope of both sidelines of the indoor unit shall be avoided, and cannot be adjacent to heat source and flammable and combustible environment.
5. In case the product is damaged, it must be delivered to the maintenance point. Welding of refrigerant pipelines at the user's site is not allowed.


Caution, risk of fire


No Smoking


Cotton clothes


Anti-static gloves


BEWARE ELECTROSTATICS


Goggles

Electrical Safety Requirements

1.The surrounding conditions (ambient temperature, direct sunlight and rainwater) shall be noticed during electrical wiring, with effective protective measures being taken.

2.Copper wire cable in line with local standards shall be used as the power line and connector wire.

3.Outdoor unit shall be reliably earthed.

4.The dedicated branch circuit must be used, and leakage protector with sufficient capacity must be installed.

Qualification Requirements of Installer

Relevant qualification certificate must be obtained as per national laws and regulations.

Outdoor Unit Installation

Fixing and connection

Note:

a) Fire source shall be avoided within 3m around the place of installation.

b) The leak detection equipment of refrigerant shall be placed at a low position in the outdoor, and shall be opened.

Fixing
The support of the outdoor unit shall be fixed onto the wall surface, and then the outdoor unit shall be fixed onto the support horizontally. In case the outdoor unit is wall-mounted or roof-mounted, the support shall be firmly fixed, to avoid the damage of strong wind.

Post-installation Inspection Items and Test Run
Post-installation Inspection Items

Items to Be Checked	Consequence of Improper Installation
Whether the installation is firm or not	The unit may fall, vibrate or make a noise
Whether the inspection on air leakage is completed	The refrigerating capacity (heating capacity) may be insufficient
Whether the unit is fully insulated	Condensation or drip may occur
Whether the drainage is smooth or not	Condensation or drip may occur
Whether the power voltage is identical to that marked on the nameplate	Failure may occur or the parts may be burned
Whether the circuit and pipeline are installed correctly	Failure may occur or the parts may be burned
Whether the unit is safely earthed	Electric leakage may occur
Whether the type of wire is in line with relevant regulations	Failure may occur or the parts may be burned
Whether barriers are identified at the air inlet/outlet of the outdoor unit	The refrigerating capacity (heating capacity) may be insufficient

Maintenance Instructions
Maintenance Precautions
Precautions
- For all the faults requiring welding the refrigeration pipelines or components inside the refrigeration system of R32 refrigerant air conditioners, maintenance at the user's site is never allowed.
- For the faults requiring radical disassembly and bending operation of the heat exchanger, such as the replacement of the outdoor unit chassis and integral disassembly of the condenser, inspection and maintenance at the user's site are never allowed.
- For the faults requiring replacement of the compressor or parts & components of refrigeration system, maintenance at the user's site is not allowed.
- For other faults not involved in the refrigerant container, internal refrigeration pipelines and refrigeration elements, the maintenance at the user's site is allowed, including the cleaning and dredging of the refrigeration system requiring no disassembly of refrigeration elements and no welding.
- In case replacement of gas/liquid pipes is required during maintenance, the joint of evaporator gas/liquid pipes of the indoor unit shall be cut off with a cutting knife. Connection is only allowed after re-flaring (the same to the outdoor unit).

Qualification Requirements of Maintenance Personnel
1. All the operators or the maintenance personnel involved in refrigerating circuits shall be provided with the effective certificate issued by an industry-accepted assessment institute, to ensure that they are qualified for safety disposal of refrigerant as required in the assessment regulations.
2. The equipment can only be maintained and repaired as per the method recommended by the manufacturer.
In case the assistance from personnel of other disciplines is required, the assistance shall be supervised by the personnel with qualification certificate involved in flammable refrigerant.

Inspection on Maintenance Environment

- Before operation, the refrigerant leaked in the room is not allowed.
- The area of the room in which maintenance is made shall be in line with this manual.
- Continuous ventilation shall be maintained during maintenance.
- Open fire or high-temperature heat source higher than 548 degree which can easily give birth to open fire is not allowed inside the room within the maintenance area.
- During maintenance, the phones and the radioactive electronics of all the operators inside the room must be powered off.
- One dry powder or carbon dioxide extinguisher shall be equipped inside the maintenance area, and the extinguisher must be under available state.

Maintenance Site Requirements

- The maintenance site shall be provided with favorable ventilation and must be flat. Arrangement of the maintenance site inside the basement is not allowed.
- Welding zone and non-welding zone shall be divided at the maintenance site, and shall be clearly marked. A certain safety distance must be guaranteed between the two zones.
- Ventilators shall be installed at the maintenance site, and exhaust fans, fans, ceiling fans, floor fans and dedicated exhaust duct can be arranged, to meet the requirements of ventilation volume and uniform exhaust, and to avoid accumulation of refrigerant gas.
- Leak detection equipment for flammable refrigerant shall be equipped, with relevant management system being established. Whether the leak detection equipment is under available state shall be confirmed before maintenance.
- Sufficient dedicated vacuum pumps of flammable refrigerant and refrigerant charging equipment shall be equipped, with relevant management system for maintenance equipment being established. It shall be guaranteed that the maintenance equipment can only be used for vacuumizing and charging of one type of flammable refrigerant, and mixed usage is not allowed.
- The master power switch shall be arranged outside the maintenance site, with protective (anti-explosive) device being equipped.
- Nitrogen cylinders, acetylene cylinders and oxygen cylinders shall be placed separately. The distance between the gas cylinders above and the working area involved in open fire shall be at least 6m. The anti-backfire valve shall be installed for the acetylene cylinders. The color of the acetylene cylinders and oxygen cylinders installed shall meet the international requirements.
- The warning sign of " No Fire" ,"No Smoking", or"Anti static"shall be arranged inside the maintenance area.
- Fire control device suitable for electric appliance such as the dry powder extinguisher or carbon dioxide extinguisher shall be equipped, and shall always be under the available state.
- The ventilator and other electrical equipment at the maintenance site shall be relatively fixed, with standardized pipe routing. Temporary wires and sockets at the maintenance site are not allowed.

Leak Detection Methods

- The environment in which the refrigerant leakage is checked shall be free from potential ignition source. Leak detection with halogen probes (or any other detector with open fire) shall be avoided.
- For the system containing flammable refrigerant, leak detection may be realized with electronic leak detection equipment. During leak detection, the environment in which the leak detection equipment is calibrated shall be free from refrigerant. It shall be guaranteed that the leak detection equipment will not become potential ignition source, and is applicable to the refrigerant to be detected. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.
- The fluid used for leak detection shall be applicable to most of the refrigerant. The use of chlorine-containing solvent shall be avoided, to avoid chemical reaction between chlorine and refrigerant and corrosion to copper pipelines.
- In case leakage is suspected, the open fire at the site shall be evacuated or be put out.
- In case welding is required at the leakage position, all the refrigerants shall be recovered, or be isolated at a position far from the leak point with a stop valve. Before and during welding, the whole system shall be purified with OFN.

Safety Principles

- The power supply should be cut off before the maintenance.
- During product maintenance, favorable ventilation shall be guaranteed at the maintenance site, and the close of all the doors/windows is not allowed.
- Operation with open fire is not allowed, including welding and smoking. The use of phones is also not allowed. The user shall be informed that cooking with open fire is not allowed.
- During maintenance in a dry season, when the relative humidity is less than 40%, anti-static measures shall be taken, including the wearing of cotton clothes and cotton gloves.
- In case the leakage of flammable refrigerant is identified during maintenance, forced ventilation measures shall be taken immediately, and the source of leak shall be plugged.
- In case the product damaged must be maintained by disassembling the refrigeration system, the product must be delivered to the maintenance point. Welding of refrigerant pipelines at the user's site is not allowed.
- During maintenance, in case re-treatment is required due to lack of fittings, the air conditioner shall be reset.
- The refrigeration system must be safely earthed in the whole course of maintenance.
- For the door-to-door service with refrigerant cylinders, the refrigerant charged inside the cylinder cannot exceed the specified value. The cylinder placed in vehicles or at the installation/maintenance site shall be fixed perpendicularly and be kept away from heat sources, ignition source, source of radiation and electric appliance.

Maintenance Requirements

- Before the refrigeration system is operated, the circulating system shall be cleaned with nitrogen. Afterwards, the outdoor unit shall be vacuumized, the duration of which cannot be less than 30 minutes. Finally, 1.5~2.0MPa OFN shall be used for nitrogen flushing (30 seconds~1 minute), to confirm the position requiring treatment. Maintenance of the refrigeration system is only allowed after the residual gas of flammable refrigerant is removed.
- During the use of refrigerant charging tools, cross contamination of different refrigerants shall be avoided. The total length (including the refrigerant pipelines) shall be shortened as much as possible, to reduce the residual of refrigerant inside.
- The cylinders of refrigerant shall be kept upright, and be fixed.
- After maintenance of the refrigeration system, the system shall be sealed with a safe manner.
- The maintenance in progress shall not damage or lower the original class of safety protection of the system.

Maintenance of Electrical Components

- Partial of the electrical component under maintenance shall be subject to inspection on refrigerant leakage with dedicated leak detection equipment.
- After the maintenance, the components with safety protection functions cannot be disassembled or removed.
- During the maintenance of sealing elements, before opening the seal cover, the air conditioner shall be powered off first. When power supply is required, continuous leak detection shall be carried out at the most dangerous position, to avoid potential risks.
- During maintenance of electrical components, the replacement of enclosures shall not affect the level of protection.
- After maintenance, it shall be guaranteed that the sealing functions will not be damaged or the sealing materials will not lose the function of preventing the entry of flammable gas due to aging. The substitute components shall meet the recommended requirements of the air conditioner manufacturer.

Maintenance of Intrinsically Safe Elements

- The intrinsically safe element refers to the components working continuously inside flammable gas without any risks.
- Before any maintenance, leak detection and inspection on earthing reliability of the air conditioner must be carried out, to ensure no leakage and reliable earthing.
- In case the allowable voltage and current limit may be surpassed during the service of the air conditioner, any inductance or capacitance cannot be added in the circuit.
- Only the elements appointed by the air conditioner manufacturer can be used as the parts and components replaced, or otherwise a fire or explosion may be triggered in case of refrigerant leakage.
- For the maintenance not involved in system pipelines, the system pipelines shall be well protected, to ensure that no leakage will be caused due to maintenance.
- After maintenance and before test run, the air conditioner must be subject to leak detection and inspection on earthing reliability with leak detection equipment or leak detecting solution. It shall be guaranteed that the startup inspection is carried out without leakage and under reliable earthing.

Removal and Vacuumizing

- The maintenance or other operations of the refrigeration circuit shall be made as per conventional procedures. Moreover, the flammability of refrigerant shall also be mainly considered. The following procedures shall be followed:
- Refrigerant cleaning;
- Pipeline purification with inert gas;
- Vacuumizing;
- Pipeline purification again with inert gas;
- Pipeline cutting or welding. The refrigerant shall be recovered to a proper cylinder. The system shall be purged with OFN, to ensure safety. The step above may need to be repeated for several times. Compressed air or oxygen cannot be used for purging.
  In the course of purging, OFN shall be charged inside the refrigeration system under vacuum state, to reach the operating pressure. Afterwards, the OFN shall be discharged to the atmosphere. Finally, the system shall be vacuumized. The step above shall be repeated until all the refrigerants in the system are cleared. The OFN charged for the last time shall be discharged to the atmosphere. Afterwards, the system can be welded. The operation above is necessary in case of pipeline welding.
  It shall be guaranteed that no alight fire source is around the outlet of the vacuum pump and the ventilation is favorable.

Welding

- Favorable ventilation must be guaranteed in the maintenance area. After the maintenance machine is subject to the vacuumizing above, the system refrigerant can be discharged on the outdoor unit side.
- Before the outdoor unit is welded, it must be guaranteed that no refrigerant is inside the outdoor unit and the system refrigerant has been discharged and cleared.
- The refrigeration pipelines cannot be cut with a welding gun under any circumstance. The refrigeration pipelines must be disassembled with a pipe cutter, and the disassembly must be carried out around a ventilation opening.

Refrigerant Charging Procedures

The following requirements are added as the supplementation of conventional procedures:

- During the use of refrigerant charging tools, cross contamination of different refrigerants shall be avoided. The total length (including the refrigerant pipelines) shall be shortened as much as possible, to reduce the residual of refrigerant inside;
- The cylinders of refrigerant shall be kept upright;
- Before refrigerant charging, the refrigeration system shall be earthed;
- A label must be pasted on the refrigeration system after refrigerant charging;
- Excessive charging is not allowed; the refrigerant shall be charged slowly;
- In case system leakage is identified, refrigerant charging is not allowed unless the leak point is repaired;
- During refrigerant charging, the charging amount shall be measured with an electronic scale or a spring scale. The connecting hose between the refrigerant cylinder and the charging equipment shall be relaxed appropriately, to avoid impact on the measuring accuracy due to stress.

Requirements on storage site of refrigerant

- The cylinder of refrigerant shall be placed in a -10~50 environment with favorable ventilation, and warning labels shall be pasted;
- The maintenance tool in contact with the refrigerant shall be stored and used separately, and the maintenance tool of different refrigerants cannot be mixed.

Scrapping and Recovery

Scrapping

Before scrapping, the technician shall be completely familiar with the equipment and all its features. The safe recovery of refrigerant is recommended. In case the refrigerant recovered needs to be reused, before which the sample of refrigerant and oil shall be analyzed.

(1) The equipment and operation shall be well known;

(2) Power supply shall be switched off;

(3) The followings shall be guaranteed before scrapping:

The mechanical equipment shall be convenient for operation on the cylinder of refrigerant (if necessary);

All personal protective equipment is available and being used correctly;

The whole course of recovery shall be guided by qualified personnel;

The recovery equipment and cylinders shall be in line with corresponding standards.

(4) The refrigeration system shall be vacuumized if possible;

(5) In case the vacuum state cannot be reached, vacuumizing shall be carried out from numerous positions, to pump the refrigerant in each part of the system out;

(6) It shall be guaranteed that the capacity of cylinders is sufficient before recovery;

(7) The recovery equipment shall be started and operated as per the operation instructions of the manufacturer;

(8) The cylinder cannot be charged too full. (The refrigerant charged cannot exceed 80% of the capacity of cylinders)

(9) The maximum operating pressure of cylinders cannot be surpassed even only lasting for a short term;

(10) After refrigerant recovery is completed, the cylinder and equipment must be evacuated rapidly, and all the stop valves on the equipment must be closed;

(11) Before purification and tests, the refrigerant recovered cannot be charged into another refrigeration system.

Note:

The air conditioner shall be marked (with dates and signature) after being scrapped and the refrigerant is discharged. It shall be guaranteed that the sign on the air conditioner can reflect the flammable refrigerant charged inside.

During maintenance or scrapping, the refrigerant inside the refrigeration system needs to be cleared. It is recommended that the refrigerant be cleared thoroughly.

The refrigerant can only be charged into a dedicated cylinder, the capacity of which shall match with the refrigerant amount charged in the whole refrigeration system. All cylinders to be used are designated for the recovered refrigerant and labeled for that refrigerant (Dedicated Cylinder for Refrigerant Recovery). The cylinders shall be equipped with pressure relief valves and stop valves under favorable state. The empty cylinder shall be vacuumized before usage and be kept under normal temperature.

The recovery equipment shall always be under favorable working state, and be equipped with operation instructions, to facilitate information search. The recovery equipment shall be applicable to the recovery of flammable refrigerant. Moreover, weighing apparatus under available state with measurement certificates shall be equipped. In addition, removable attachment joints free from leakage shall be used as the hose, and shall always be under favorable state. Whether the recovery equipment is under favorable state and is properly maintained and whether all the electrical components are sealed shall be checked before usage, to avoid fire or explosion in case of refrigerant leakage. If you have any question, please consult the manufacturer.

The refrigerant recovered shall be delivered back to the manufacturer in appropriate cylinders, with transporting instructions being attached. Mixing of refrigerant in recovery equipment (especially the cylinders) is not allowed.

During transporting, the space in which the flammable refrigerant air conditioners are loaded cannot be sealed. Anti-static measures shall be taken for the transporting vehicles. Meanwhile, during the transporting, loading and unloading of air conditioners, necessary protective measures shall be taken, to protect the air conditioner from being damaged.

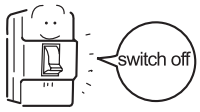
During removal of the compressor or clearing of the compressor oil, it shall be guaranteed that the compressor is vacuumized to a proper level, to ensure no residual flammable refrigerant is left inside the lubricating oil. The vacuumizing shall be completed before the compressor is delivered back to the manufacturer. The vacuumizing can only be accelerated by heating the compressor housing through electrical heating. Safety shall be guaranteed when the oil is discharged from the system.disassembled with a pipe cutter, and the disassembly must be carried out around a ventilation opening

Carefully read the following information in order to operate the air conditioner correctly.
Below are listed three kinds of Safety Precautions and Suggestions.
⚠WARNING Incorrect operations may result in severe consequences of death or serious injuries.
⚠CAUTION Incorrect operations may result in injuries or machine damages; in some cases may cause serious consequences.
INSTRUCTIONS: These information can ensure the correct operation of the machine.
The following safety symbols are used throughout this manual:
⃠ : Indicates an action that must be avoided.
❗ : Indicates that important instructions must be followed.
⏚ : Indicates a part which must be grounded.
ϟ : Beware of electric shock (This symbol is displayed on the main unit label.)
After completing installation, test the unit to check for installation errors. Give the user adequate instructions concerning the use and cleaning of the unit according to the Operation Manual.

Be sure to conform with the following important Safety Precautions.

⚠WARNING

• If any abnormal phenomena is found (e. g.smell of firing), please open the window and well ventilated the room immediately, then cut off the power supply immediately, and contact the dealer to find out the handling method.
In such case, to continue using the conditioner will damage the conditioner, and may cause electrical shock, fire, or explosion hazard.



• After a long time use of air-conditioner, the base should be checked for any damages.
If the damaged base is not repaired, the unit may fall down and cause accidents.

• No goods or nobody is permitted to placed on or stand on outdoor unit.The falling of goods and people may cause accidents.

• Don't operate the air-conditioner with damp hands.Otherwise it will be shocked.

• Only use correctly-typed fuse.
May not use wire or any other materials replacing fuse, otherwise it may cause faults or fire accidents.

• Use drain pipe correctly to ensure efficient drainage.
Incorrect pipe use may cause water leaking.

• Have the unit professionally installed.
Improper installation by an unqualified person may result in water leak, electric shock, fire, or explosion.

• Don't dismantle the outlet of the outdoor unit.
The exposure of fan is very dangerous which may harm human beings.

• When need maintenance and repairment, call dealer to handle it.
Incorrect maintenance and repairment may cause water leak, electrical shock, fire, and explosion hazard.

• Air-conditioner can't be installed in the environment with inflammable gases because the inflammable gases near air-conditioner may cause fire and explosion hazard.
Please let the dealer be responsible for installing the conditioner. Incorrect installation may cause water leak, electrical shock, fire, and explosion hazard.

• Call the dealer to take measures to prevent the refrigerant from leaking.
If conditioner is installed in a small room, be sure to take every measure in order to prevent suffocation and explosion accident even in case of refrigerant leakage.

• When conditioner is installed or reinstalled, the dealer should be responsible for them.
Incorrect installation may cause water leaking, electrical shock, fire, and explosion hazard.

• Connect earthing wire.
Earthing wire should not be connected to the gas pipe, water pipe, lightning rod or phone line, incorrect earthing may cause shock.

• Installed explosion-proof electrical-leaking circuit breaker.
It easily cause electrical shock without circuit breaker.

• Be sure to carefully follow each step in this handbook when installing the unit.
Improper installation may result in water leak, electric shock, smoke or fire.

<table>
<tr><th colspan="2">⚠WARNING</th></tr>
<tr><td>• Place the unit on a stable, level surface that withstands the weight of the unit to prevent the unit from tipping over or falling causing injury as a result.</td><td>• Be sure to carefully follow each step in this handbook when installing the unit.
Improper installation may result in water leak, electric shock, smoke or fire.</td></tr>
<tr><td>• Only use specified cables for wiring. Securely connect each cable, and make sure that the cables are not straining the terminals.
Cables not connected securely and properly may generate heat and cause fire and explosion.</td><td rowspan="2">• Have all electrical work performed by a licensed electrician according to the local regulations and the instructions given in this manual. Secure a circuit designated exclusively to the unit.
Improper installation or a lack of circuit capacity may cause the unit to malfunction or present a risk of electric shock, smoke,and fire.</td></tr>
<tr><td>• Take necessary safety measures against typhoons and earthquakes to prevent the unit from falling over.</td></tr>
<tr><td>• Do not make any changes or modifications to the unit. In case of problems, consult the dealer.
If repairs are not made properly, the unit may leak water and present a risk of electric shock, or it may produce smoke or cause fire and explosion.</td><td>• Securely attach the terminal cover(panel) on the unit.
If installed improperly, dust and/or water may enter the unit and present a risk of electric shock, smoke, fire, or explosion.</td></tr>
<tr><td>• Do not touch the fins on the heat exchanger with bare hands, for they are sharp and dangerous.</td><td>• Only use refrigerant R32 as indicated on the unit when installing or relocating the unit.
The use of any other refrigerant or an introduction of air into the unit circuit may cause the unit to run an abnormal cycle and abnormal cycle and cause the unit to burst.</td></tr>
<tr><td>• In the event of a refrigerant gas leak, provide adequate ventilation to the room.
If leaked refrigerant gas is exposed to a heat source, noxious gases, fire or explosion will be caused.</td><td>• When installing the unit in a small room, safeguard against hypoxia that results from leaked refrigerant reaching the threshold level.
Consult the dealer for necessary measures to take.</td></tr>
<tr><td>• Do not try to defeat the safety features of the devices, and do not change the settings.
Defeating the safety features on the unit such as the pressure switch and temperature switch or using parts other than the dealer or specialist may result in fire or explosion.</td><td>• When relocating the air conditioner, consult the dealer or a specialist.
Improper installation may result in water leak, electric shock, or fire.</td></tr>
<tr><td>• Only use specified parts.
Have the unit professionally installed. Improper installation may cause water leak, electric shock,smoke, fire, explosion.</td><td>• After completing the service work, check for a refrigerant gas leak.
If leaked gas refrigerant is exposed to a heat source such as fan heater,stove,and electric grill, noxious gases may form.</td></tr>
</table>

Precautions for Handling Units for Use with R32

<table>
<tr><th colspan="2">⚠CAUTION</th></tr>
<tr><td>Do not use the existing refrigerant piping
• The old refrigerant and refrigerator oil in the existing piping contain a large amount of chlorine, which will cause the refrigerator oil in the new unit to deteriorate.
• R32 is a high-pressure refrigerant, and the use of the existing piping may result in bursting.</td><td>Use a vacuum pump with a reverse-flow check valve.
• If other types of valves are used, the vacuum pump oil will flow back into the refrigerant cycle and cause the refrigerator oil to deteriorate.</td></tr>
<tr><td>Keep the inner and outer surfaces of the pipes clean and free of contaminants such as sulfur, oxides, dust/dirt shaving particles,oils,and moisture.
• Contaminants inside the refrigerant piping will cause the refrigerant oil to deteriorate.</td><td rowspan="2">Do not use the following tools that have been used with the conventional refrigerants. Prepare tools that are for exclusive use with R32.
(Gauge manifold, charging hose, gas leak detector, reverse-flow check valve, refrigerant charge base,vacuum gauge, and refrigerant recovery equipment.)
• If refrigerant and/or refrigerant oil left on these tools are mixed in with R32, or if water is mixed with R32, it will cause the refrigerant to deteriorate.
• Since R32 does not contain chlorine, gas-leak detectors for conventional refrigerators will not work.</td></tr>
<tr><td rowspan="2">Store the piping to be used during installation indoors, and keep both ends of the piping sealed until immediately before brazing.(keep elbows and other joints wrapped in plastic.)
• If dust, dirt, or water enters the refrigerant cycle, it may cause the oil in the unit to deteriorate or may cause the compressor to malfunction.</td></tr>
<tr><td>Do not use a charging cylinder.
• The use of charging cylinder will change the composition of the refrigerant and lead to power loss.</td></tr>
<tr><td>Use a small amount of ester oil, ether oil, or alkylbenzene to coat flares and flange connections.
• A large amount of mineral oil will cause the refrigerating machine oil to deteriorate.</td><td>Exercise special care when handling the tools.
• An introduction of foreign objects such as dust, dirt or water into the refrigerant cycle will cause the refrigerating machine oil to deteriorate.</td></tr>
<tr><td>Use liquid refrigerant to charge the system.
• Charge the unit with gas refrigerant will cause the refrigerant in the cylinder to change its composition and will lead to a drop in performance</td><td>Only use R32 refrigerant.
• The use of refrigerants containing chlorine(i.e. R22) will cause the refrigerant to deteriorate.</td></tr>
</table>

Before Installing the Unit

<table>
<tr><th colspan="2">⚠CAUTION</th></tr>
<tr><td>Do not install the unit in a place where there is a possibility of flammable gas leak.
• Leaked gas accumulated around the unit may start a fire or explosion.</td><td rowspan="2">When installing the unit in a hospital, take necessary measures against noise.
• High-frequency medical equipment may interfere with the normal operation of the air conditioning unit or the air conditioning unit may interfere with the normal operation of the medical equipment</td></tr>
<tr><td>Do not use the unit to preserve food, animals, plants, artifacts, or for other special purposes.
• The unit is not designed to provide adepuate conditions to preserve the quality of these items.</td></tr>
<tr><td>Do not use the unit in an unusual environment
• The use of the unit in the presence of a large amount of oil, steam, acid, alkaline solvents or special types of sprays may lead to a remarkable drop in performance and/or malfunction and presents a risk of electric shock, smoke, fire, or explosion.
• The presence of organic solvents, corroded gas (such as ammonia,sulfur compounds,and acid may cause gas or water leak.)</td><td>Do not place the unit on or over things that may not get wet.
• When humidity level exceeds 80% or when the drainage system is clogged, indoor units may drip water.
• Installation of a centralized drainage system for the outdoor unit may also need to be considered to prevent water drips from the outdoor units.</td></tr>
</table>

Before Installing (Relocating) the Unit or Performing Electric Work

⚠CAUTION	
Ground the unit. • Do not connect the grounding on the unit to gas pipes,water pipes, lightning rods, or the grounding terminals of telephones. Improper grounding presents a risk of electric shock, smoke, fire, explosion, or the noise caused by improper grounding may cause the unit to malfunction.	Do not spray water on the air conditioners or immerse the air conditioners in water. • Water on the unit presents a risk of electric shock.
Make sure the wires are not subject to tension. • If the wires are too taut, they may break or generate heat and/or smoke and cause fire or explosion.	Periodically check the platform on which is placed for damage to prevent the unit from falling. • If the unit is left on a damaged plarform, it may topple over, causing injury.
Install a breaker for current leakage at the power source to avoid the risk of electric shock. • Without a breaker for current leakage, there is a risk of electric shock, smoke or fire.	When installing draining pipes, follow the instructions in the manual, and make sure that they properly drain water so as to avoid dew condensation. • If not installed properly, they may cause water leaks and damage the furnishings.
Use breakers and fuses (electrical current breaker, remote switch<switch+Type-B fuse>,molded case circuit breaker) with a proper current capacity. • The use of large-capacity fuses, steel wire, or copper wire may damage the unit or cause smoke or fire.	Properly dispose of the packing materials. • Things such as nails may be included in the package. Dispose of them properly to prevent injury. • Plastic bags present a choking hazard to children. Tear up the plastic bags before disposing of them to prevent accidents.

Before the Test Run

⚠CAUTION	
Do not operate switches with wet hands to avoid electric shock. Do not touch the refrigerant pipes with bare hands during and immediately after operation. • Depending on the state of the refrigerant in the system, certain parts of the unit such as the pipes and compressor may become very cold or hot and may subject the person to frost bites or burning.	Do not turn off the power immediately after stopping the unit. • Allow for at least five minutes before turning off the unit, otherwise the unit may leak water or experience other problems.
Do not operated the unit without panels and safety guards in their proper places. • They are there to keep the users from injury for accidentally touching rotating, high-tempreture or high-voltage parts.	Do not operate the unit without air filters. • Dust particles in the air may clog the system and cause malfunction.

Accessories

No.	Drawing	Name of parts	Quantity
1		Drainage elbow	4
2		Rubber cushion	4

Transportation and Lifting

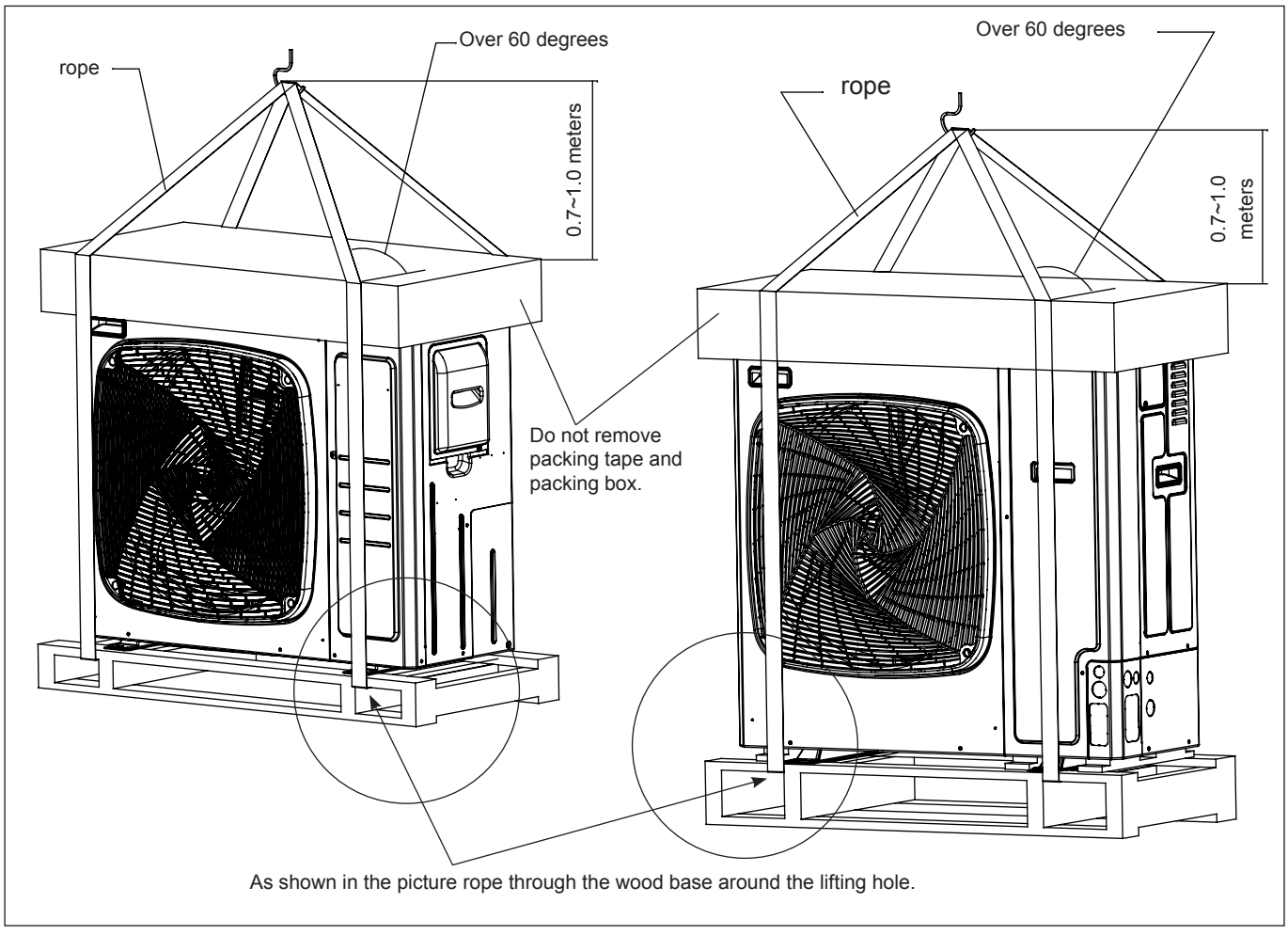
Lifting

In front of the unit shipped from unpacking location as close as possible.

⚠CAUTION
• Do not place anything on the device. • Two ropes shall be used for lifting the outdoor unit.

Hoisting method

Hoisting to ensure that the level of outdoor machine, slowly lifting.
1. Removal of outer packing is strictly prohibited
2. As shown by two ropes hoist with outdoor machine packaging.



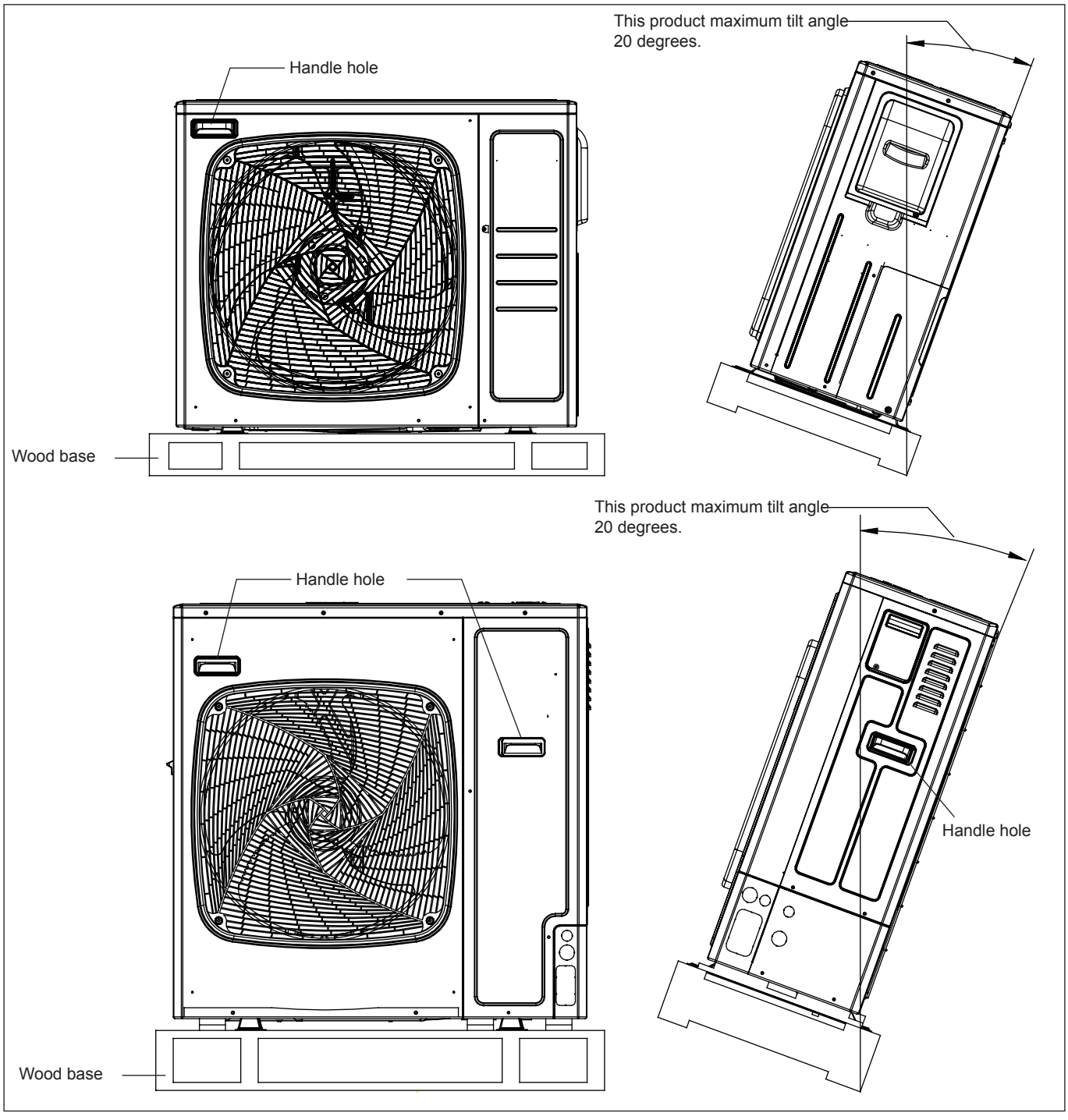
⚠CAUTION
• In order to ensure safety, maintain the level of lifting, slowly lifting. • Do not lift the elevator to the packing and outer packing of the equipment. • External protection should be used when lifting, such as cloth or cardboard.

Handling

⚠CAUTION
• In the installation and commissioning, the outdoor machine do not put any irrelevant material, to ensure that there is no debris inside the machine, or there may be a fire or accident.

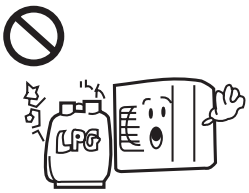
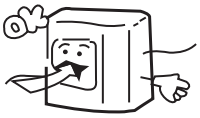
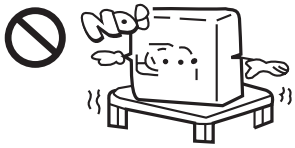
Pay attention to the following points when handling the equipment manually:

1. No demolition wood base.
2. In order to prevent the dumping of the outdoor machine, the center of gravity of the unit should be noted as shown in the figure.
3. Two or more people to carry out the outdoor machine.



Installation instruction

(1) Installation place selection

<table>
<tr>
<td>Air-conditioner can't be installed in the place with inflammable gas. Or it will cause fire hazard.
 
</td>
<td>The unit should be installed at the place with good ventilation. No obstacle at the air inlet/outlet. And no strong wind blows the unit.
 
The installation space refers to the latter info.</td>
<td>The unit should be installed at the strong enough place. Or it will cause vibration and noise.
  </td>
</tr>
<tr>
<td>The unit should be installed at the place where the cold/hot air or noise will not interfere the neighbours.
  </td>
<td>• The place where the water can flow fluently.
• The place where no other heat source will affect the unit.
• Pay attention to the snow against clogging the outdoor.
• In installation, install the anti-vibration rubber between the unit and the bracket.</td>
<td>• The unit is better not be installed at the below places, or it will cause damage.The place where there is corrosive gas (spa area etc).
• The place blowing salty air (seaside etc).
• Exsits the strong coal smoke.
• The place with high humidity.
• The place where there is device emitting Hertzian waves.
• The place where voltage changes greatly.</td>
</tr>
</table>

Note:

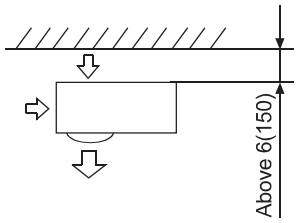
1. In snowy area, install the unit under the bracket or the snow-proof cover against the accumulative snow on the unit.
2. Do not install the unit at the place where the flammable gas will leak.
3. Install the unit at the strong enough place.
4. Install the unit at the flat place.
5. When being installed at the place with strong wind, set the air outlet of the unit and the wind direction vertical.
6. The installation site should be far away from the place where the noise is higher. At the same time for the noise of higher places should ensure that the outdoor machine vibration and wall insulation measures to prevent vibration caused by thin wall or acoustic noise problems.
7. Aluminum foil fin is very sharp, pay attention to prevent scratches.
8. In addition to the maintenance of the roof, or the installation of outdoor machines, other people can not contact the outdoor machine.

(2) Installation and maintenance space

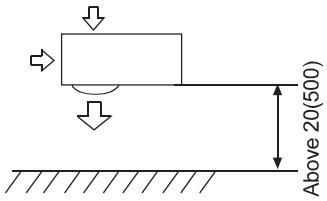
Selection of installation location of outdoor

(1) Single-unit installation (unit: in.(mm))

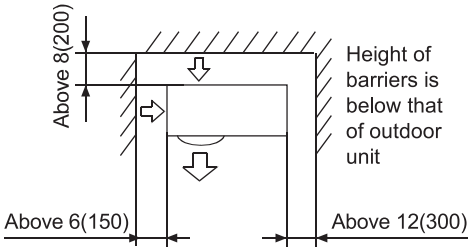
Back



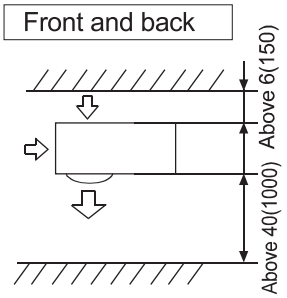
Front



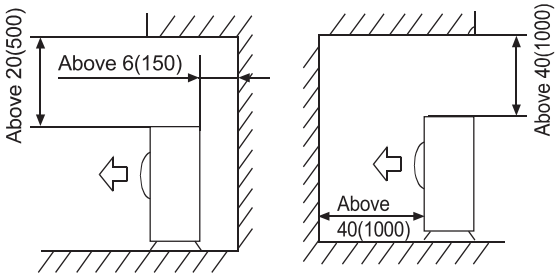
Back and side



Front and back



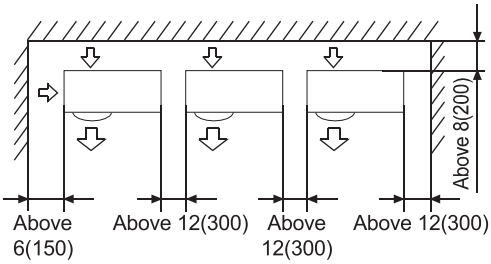
When barriers exist above the unit



The top and two side surfaces must be exposed to open space, and barriers on at least one side of the front and back shall be lower than the outdoor unit.

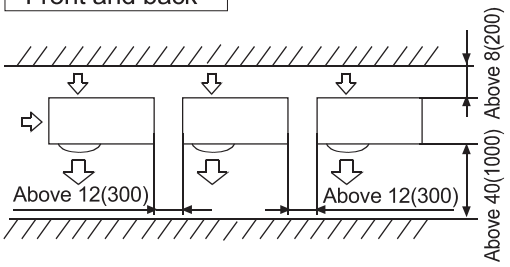
(2) Multi-unit installation (unit: in.(mm))

Back and side



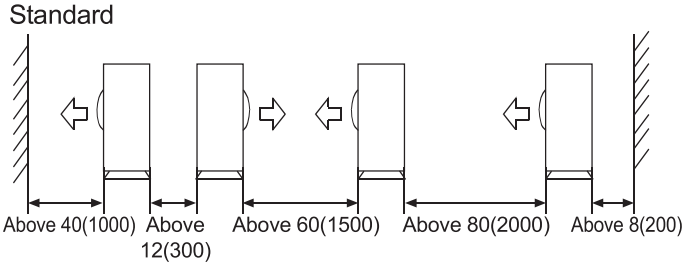
Height of barriers is below that of outdoor unit

Front and back



(3) Multi-unit installation in front and back (unit: in.(mm))

Standard



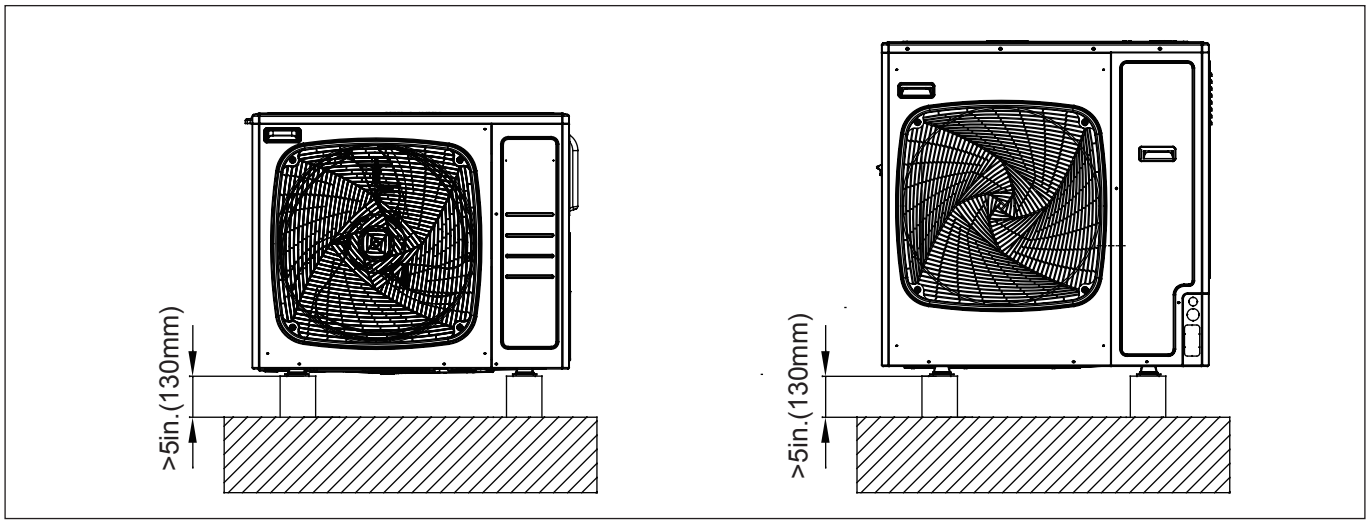
The top and two side surfaces must be exposed to open space, and barriers on at least one side of the front and back shall be lower than the outdoor unit.

- The installation service spaces shown in the illustrations are based on an air intake temperature of 95°F(35°C)(DB) for COOL operation. In regions where the air intake temperature regularly exceeds 95°F(35°C)(DB), or if the heat load of outdoor units is expected to regularly exceed the maximum operating capacity, reserve a larger space than that indicated at the air intake side of units.
- Regarding the required air outlet space, position the units with consideration to the space required for the onsite refrigerant piping work as well. Consult your dealer if the work conditions do not match those in the drawings.

(3) Precautions on installation

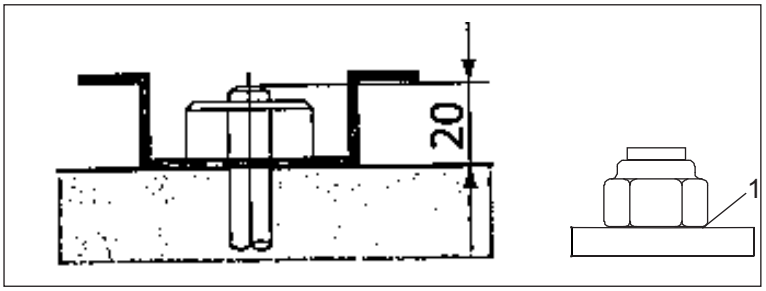
NOTICE

If drain holes of the outdoor unit are covered by a mounting base or by floor surface, raise the unit in order to provide a free space of more than 5in.(130mm) under the outdoor unit.



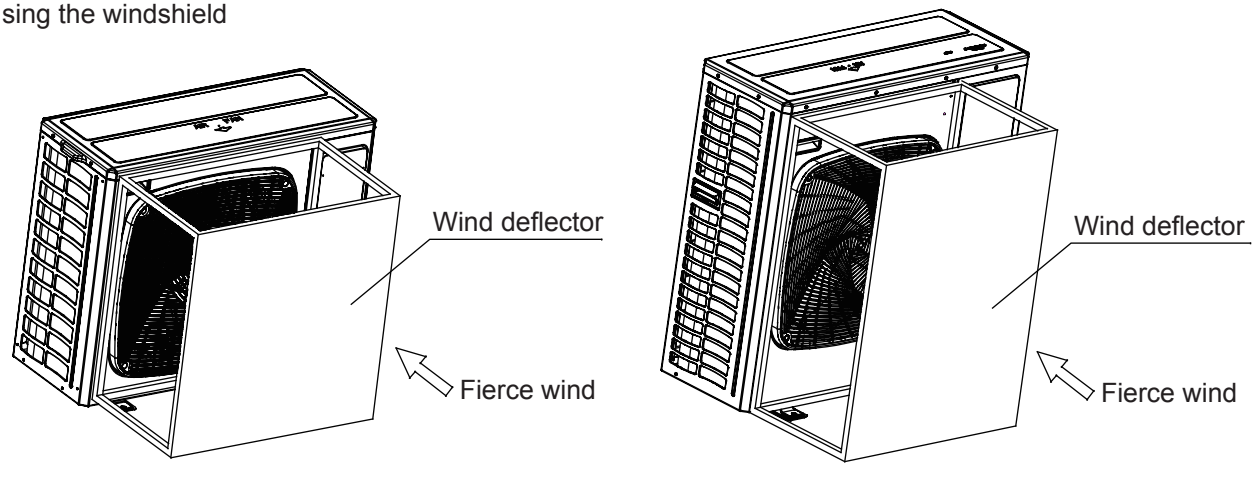
Foundation work

- Check the strength and level of the installation ground so that the unit will not cause any operating vibration or noise after installation.
- In accordance with the foundation drawing in the figure, fix the unit securely by means of the foundation bolts.
- It is best to screw in the foundation bolts until their length are 0.8in.(20mm) from the foundation surface.

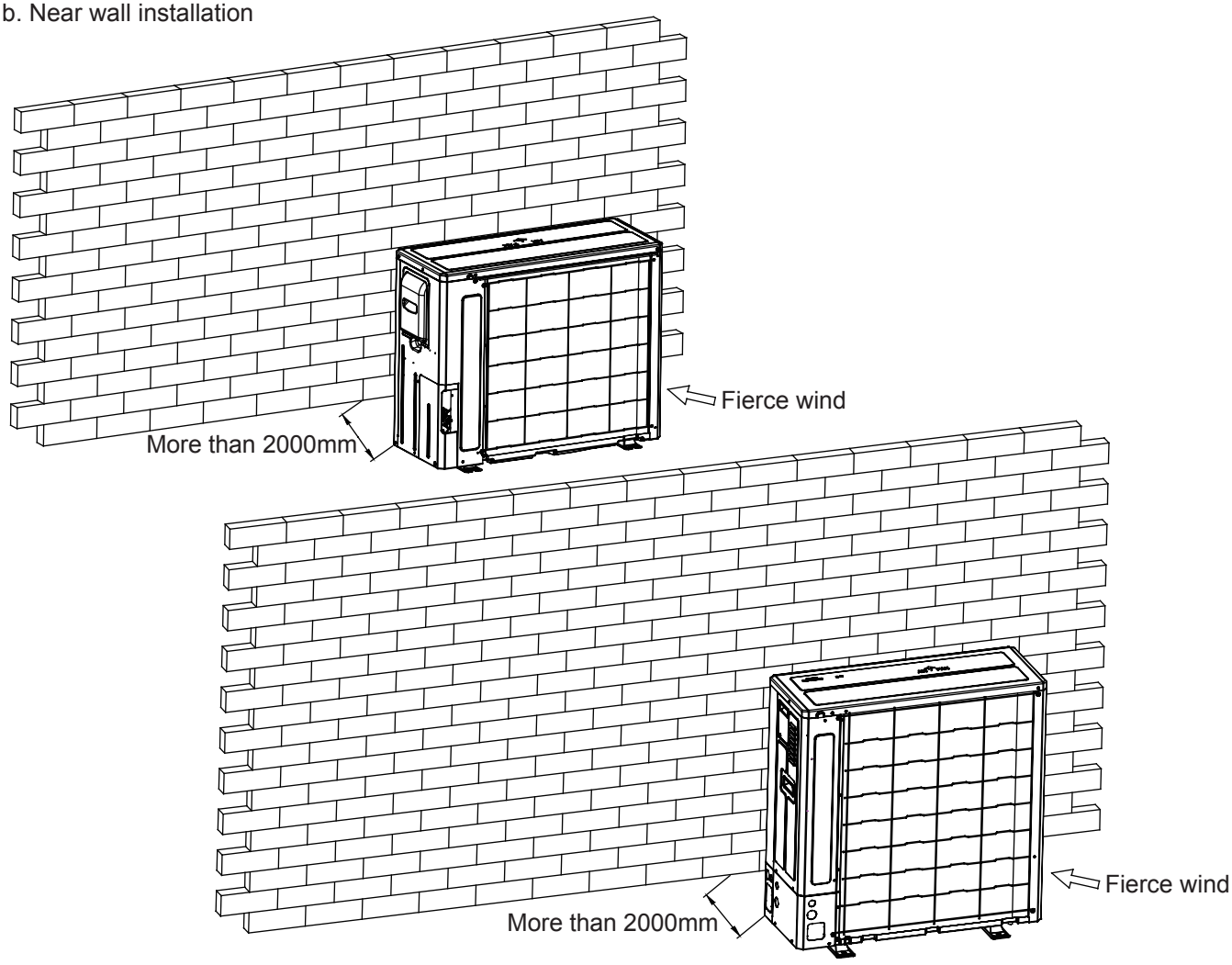


- Fix the outdoor unit to the foundation bolts using nuts with resin washers(1) as shown in the figure.
- If there is no need to install the outdoor machine in the open space of the building or the enclosure, the following two ways can be used to avoid the fan reversal or damage caused by strong wind blowing.

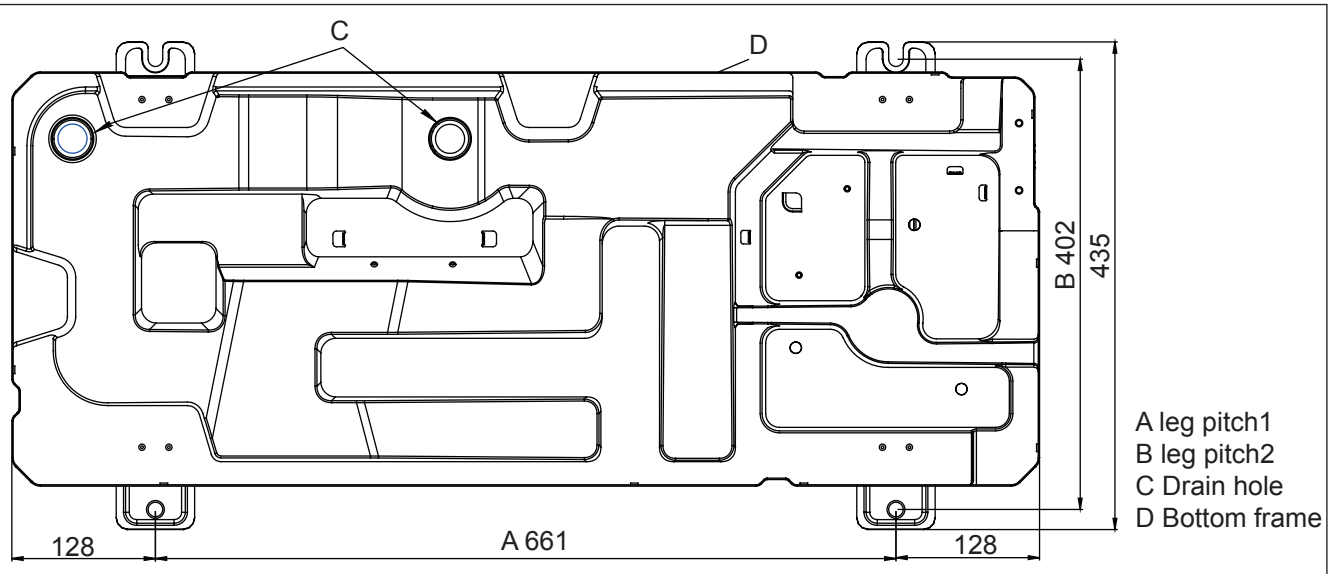
a. Using the windshield



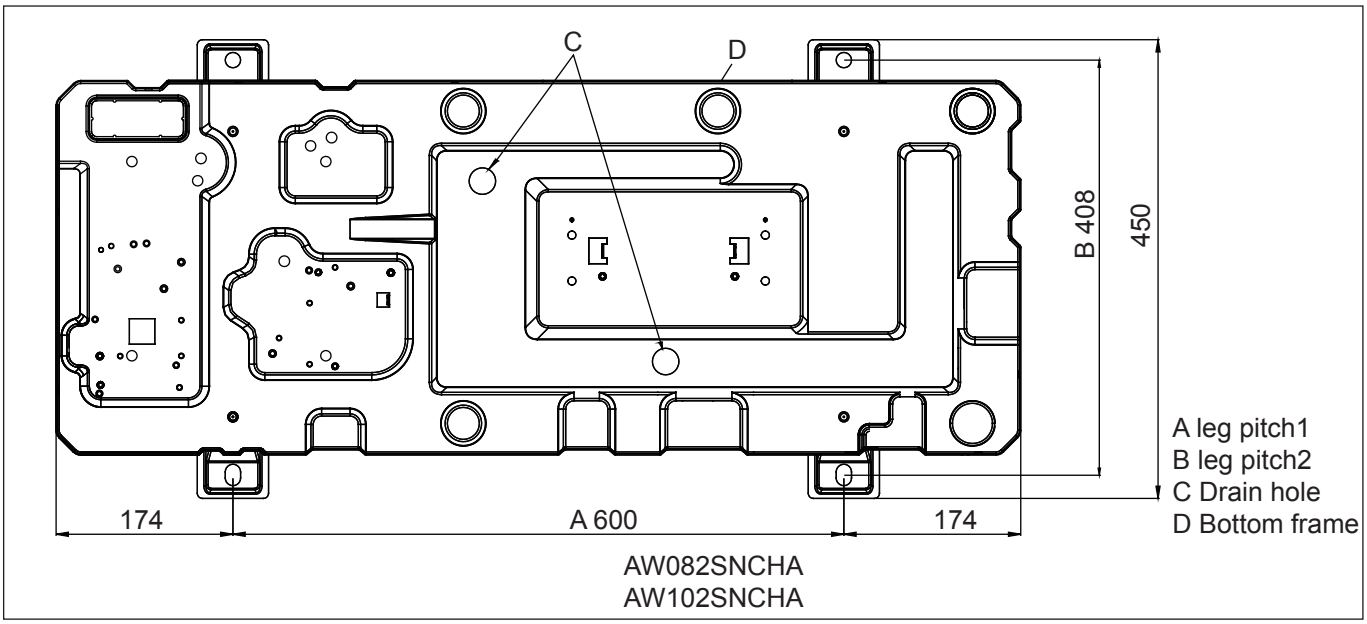
b. Near wall installation



If the coating on the fastening area is stripped off, the nuts rust easily.
Dimensions (bottom view) (unit of measurement: mm)



AW042SSCHA
AW062SSCHA



(4) Drain work of the outdoor unit

In case drain work on your outdoor unit is neccessary, follow the guidelines below.

- One drain outlets are provided in the bottom plate of unit (drain plug and drain hose are field supply).
- In cold areas, do not use a drain hose with the unit. Otherwise,drain water may freeze and block the drain. In case the use of a drain hose is unavoidable for one reason or another, it is recommended to install a heater tape in order to protect drain from freezing.
- Make sure the drain works properly.

NOTICE

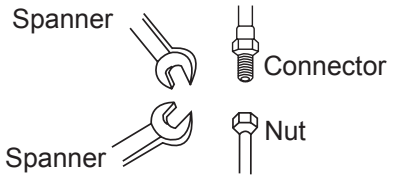
If drain holes of the outdoor unit are covered by a mounting base or by floor surface, raise the unit in order to provide a free space of more than 100 mm under the outdoor unit.

(5) Refrigerant pipe connection

Pipe connection method:

- To ensure the efficiency, the pipe should be as short as possible.
- Daub the refrigerant oil on the connector and the flare nut.
- When bending the pipe, the bending semi-diameter should be as large as possible against the pipe being broken or bent.
- When connecting the pipe, aim at the center to thread the nut by hand and tighten it with the double spanners.
- Don't let the impurity such as sand, water etc into the pipe.

When fastening and loosing the nut, operate with double spanners, because only one spanner cannot execute firmly.



If threading the nut as not aiming at the center, the screw thread will be damaged, further it will cause leakage.

Cautions in piping installation:

- When welding the connector with hard solder, charge nitrogen into the pipe against oxidation. Or the oxygen film in the pipe will clog the capillary and the expansion valve, even caue the deathy accident.
- The refrigerant pipe should be clean. If the water and the other impurity enter the pipe, charge the nitrogen to clean the pipe. The nitrogen should flow under the pressure of about 0.5Mpa and when charging the nitrogen, stop up the end of the pipe by hand to enhance the pressure in the pipe, then loose the hand (meanwhile stop up the other end).
- The piping installation should be executed after the stop valves are closed.
- Before welding the valve and the pipes, use the wet cloth to cool down the valve and the pipes.
- When the connection pipe and the branch pipe need to be cut down, please use the special shears and cannot use the saw.

Pipe specification

Outdoor Model	Gas pipe(mm)	Liquid pipe(mm)
AW042/062SSCHA	15.88	6.35
AW082/102SNCHA	15.88	9.52

Note: 6.35mm pipe diameter is recommended for piping with liquid pipe length of 5 meters or less.

Electric wiring and the application

General check

- Make sure that the following conditions related to power supply installation are satisfied:The power capacity of the electrical installation is large enough to support the power demand of the HAIER system.
  The power supply voltage is within ±10% of the rated voltage.
  The impedance of the power supply line is low enough to avoid any voltage drop of more than 15% of the rated voltage.
- Following the Council Directive 2004/108/EC, relating to electromagnetic compatibility, the table below indicates the Maximum permitted system impedance Zmax at the interface point of the user's supply, in accordance with EN61000 3 11.

Model	Power supply	ZMax.(Ω)
AW042SSCHA	1PH, 220-240V~, 50Hz	0.24
AW062SSCHA		0.24
AW082SNCHA		0.24
AW102SNCHA		0.24

The cord of the H07RN-F type or the electrically equivalent type must be used for power connection and interconnection between outdoor unit and indoor unit.

WARNING

- Switch off the main power switch of the indoor and outdoor machine for more than 1 minutes before the wiring or regular inspection.
- To prevent the destruction of wires and electrical components by rats or other animals. Serious, it may lead to the occurrence of fire.
- To avoid damage to the wire, avoid contact with refrigerant pipes, steel edges and electrical components. Serious, it may lead to the occurrence of fire.

CAUTION

- Secure the power cord with a wire tie in the machine.

Note:
when the wiring of the outdoor machine is not using the wire, it should be fixed with the rubber ring.

CAUTION

- In the case of 3 phase 5 wire type, the power supply of the indoor machine must be connected use L1 line and N line, prohibit the use of L1-L2, L1-L3, Otherwise the electrical part will be damaged.

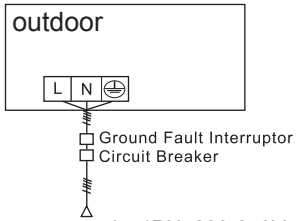
Inspect

- To ensure that the electrical equipment used on the installation site (main power switch, circuit breaker, wire, conduit and wiring terminals, etc.) have been selected according to current data, to ensure that the device in line with national standards.
- Check the power supply voltage in the range of 10% of the rated voltage and the ground wire is included in the power supply line. Otherwise, electrical parts will be damaged.
- Check whether the power supply is satisfied. Otherwise, the compressor will not start when the voltage is too low.
- By measuring the insulation resistance between the ground and the electrical device terminals, to ensure that more than 1 MΩ. Otherwise, the system can not be started until the cause of leakage and maintenance.

Connection

- Connect the power cord to the terminal of the indoor unit and the outdoor mechanical and electrical gas box, connect the ground wire to the grounding bolt of the outdoor machine and the indoor mechanical and electrical air box.
- Connect the external and internal communication lines to the 1 and the 2 terminals on the terminal. If the power cord is connected, the printed circuit board will be damaged. And the use of shielded twisted pair wire.
- Do not connect the fastening screws on the front of the cover.
- The power cord must be made of copper wire, and the power supply must be in line with IEC 60245 requirements. If the power cord length exceeds 20m, the need to increase the size.
- The power supply line is fixed with a round connection terminal with an insulating protective sleeve. Not with sheet metal contact and extrusion, in order to avoid the cut line of skin caused by fire.

Power wiring figure



power supply: 1PH, 220-240V~, 50Hz

Outdoor power source and power cable

Item / Model		Power source	Power cable section (mm^2)	Circuit breaker (A)	Rated current of residual circuit breaker (A) Ground fault interruptor (mA) response time (S)	Ground wire	
						Section (mm^2)	Screw
Individual power	AW042SSCHA	1PH, 220-240V~, 50Hz	6	25	25A 30mA below 0.1S	6	M4
	AW062SSCHA		6	25	25A 30mA below 0.1S	6	M4
	AW082SNCHA		6	32	32A 30mA below 0.1S	8	M4
	AW102SNCHA		6	32	32A 30mA below 0.1S	8	M4

- Power cable must be fixed firmly.
- To avide electrical shock, make sure to disconnect the power supply 1 minute or more before servicing the electrical parts.Even after 1 minute,always measure the voltage at the terminals of main circuit capacitors or electrical parts and before touching, make sure that those voltages are 50VDC or less.
- To persons in charge of electrical wiring work: Do not operate the unit until the refrigerant piping is complete. (Running it before the piping is ready will break the compressor)
- Each outdoor must be earthed well.
- When power cable exceeds the range, thichen it appropriately.
- The appliance shall be installed in accordance with national wiring regulations.
- All wiring must be performed by an authorized electrician.
- Be sure to install an earth leakage circuit breaker in accordance with applicable legislation.Failure to do so many cause electrical shock.

Outdoor power input

MODEL	COOLING(1)	HEATING(2)	MAX
AW042SSCHA	1.27kW	0.81kW	2.4kW-12.5A
AW062SSCHA	1.96kW	1.21kW	2.7kW-13A
AW082SNCHA	2.66kW	1.66kW	4.4kW-19A
AW102SNCHA	3.09kW	2.15kW	5.1kW-22A

(1) Water in/out 12/7°C - Outdoor 35°C
(2) Water in/out 30/35°C - Outdoor 7°CDB/6°CWB

Communication wire for wired controller

Length of Signal Line (m)	Wiring Dimensions
≤100	0.75mm^2 × 4 core shielding line

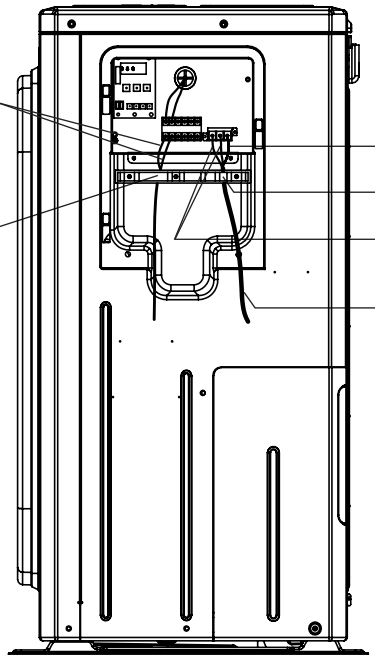
- The shielding lay of the signal line must be grounded at one end.
- The total length of the signal line shall not be more than 100m.

Indoor and outdoor communication wire

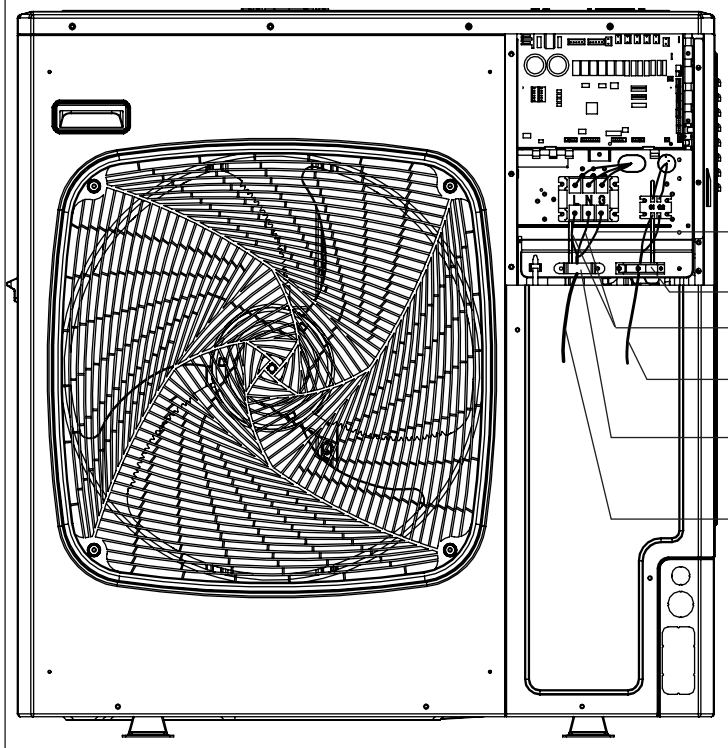
Length of Signal Line (m)	Wiring Dimensions
≤500	0.75mm^2 × 2 core shielding line

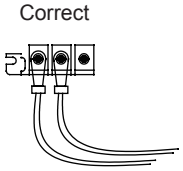
Outdoor unit electrical wiring

AW042SSCHA
AW062SSCHA

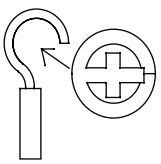


AW082SNCHA
AW102SNCHA





When using a single terminal without terminal, the terminal can not be directly used without flux. Otherwise, it will cause abnormal heating of terminal crimping part. If a single core wiring is used in the wiring, it can be connected directly in the manner shown in the diagram.



Electric wiring and the application

5-minute delay function

- If starting up the unit after being powered off, the compressor will run about 5 minutes later against being damaged.

Cooling/heating operation

- If the cool mode and the heat mode are existing simultaneously, the unit set latter will be standby, and the unit set earlier will run normally. If the A/C manager sets the unit at cooling or heating mode fixedly, the unit can not run at the other modes.

Defrosting in heating mode

- In heating mode, outdoor defrosting will affect the heating efficiency. The unit will defrost for about 2~10 minutes automatically, at this time, the condensate will flow from outdoor, also in defrosting, the vapour will appear at outdoor, which is normal.

The unit operation condition

- To use the unit properly, please operate the unit under the allowed condition range. If operating beyond the range, the protection device will act.
- The relative humidity should be lower than 80%. If the unit runs at the humidity over 80% for a long period, the dew on the unit will drop down and the vapour will be blowed from air outlet.

Protection device (such as high pressure switch)

- High pressure switch is the device which can stop the unit automatically when the unit runs abnormally.
  When the high pressure switch acts, the cooling/heating mode will stop but the running LED on wired controller will be light still. The wired controller will display failure code.
  When the following cases occur, the protection device will act:
  In cooling mode, air outlet and air inlet of outdoor are clogged.
  In heating mode, indoor filter is sticked with duct; indoor air outlet is clogged.
  When protection device acts, please cut off the power source and re-start up after eliminating the trouble.

When power failure

- When power is failure in running, all the operations will stop.
- After being electrified again, if with re-satrt up function, the unit can resume to the state before power off automatically; if without re-satrt up function, the unit needs to be switched on again.
- When abnormal occurs in running because of the thunder, the lightning, the interference of car or radio, etc, please cut off the power source, after eliminating the failure, press "ON/OFF" button to start up the unit.

Heating capacity

- The heating mode adopts the heat pump type that absorbs outdoor heat energy and releases into indoor. So if outdoor temperature goes down, the heating capacity will decrease.

Trial operation

- Before trial operation:
  Before being electrified, measure the resistor between power terminal block (live wire and neutral wire) and the earthed point with a multimeter, and check if it is over 1MΩ. If not, the unit can not operate.
  To protect compressor, electrify the outdoor unit for at least 12 hours before the unit runs.If the crankcase heater is not electrified for 6 hours, the compressor will not work.
  Confirm the compressor bottom getting hot.
  Measure the system pressure with pressure gauge, at the same time, operate the unit.
- Trial operation
  In trial operation, refer to the information of performance section. When the unit can not start up at the room temperature, make trial operation for outdoor.

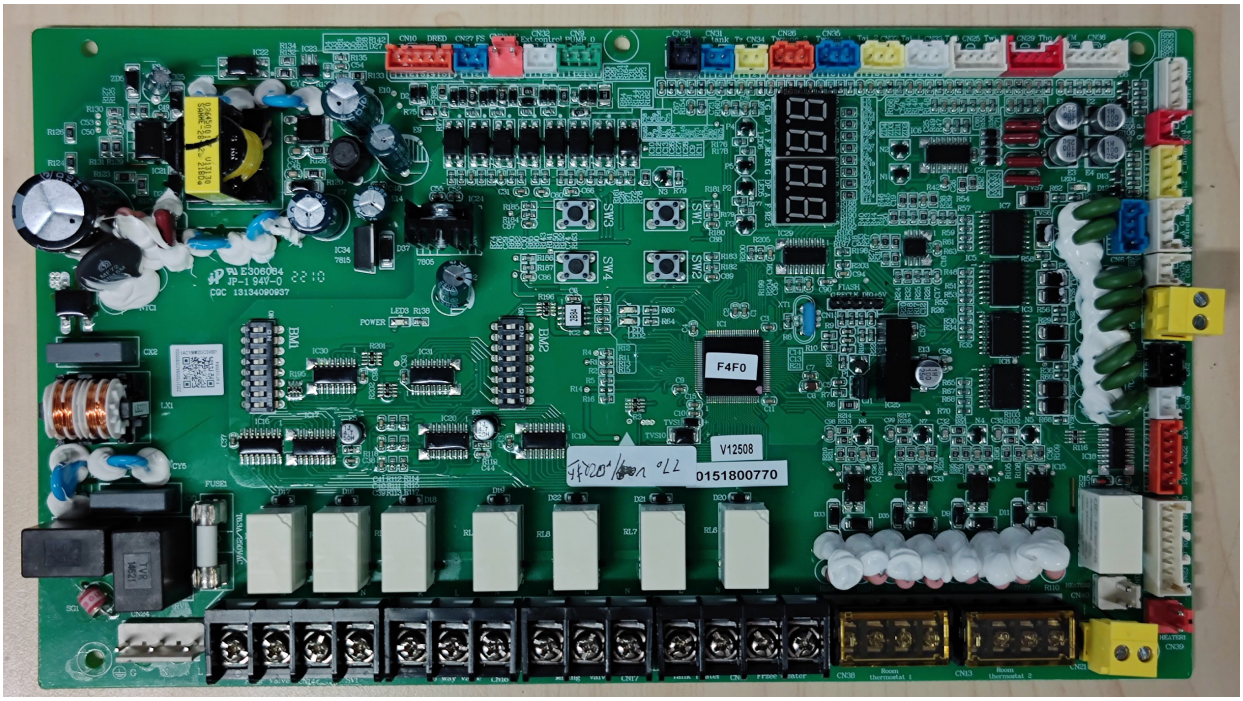
Move and scrap the air conditioning

- When moving, to disassemble and re-install the air conditioning, please contact your dealer for technical support.
- In the composition material of air conditioning, the content of lead, mercury, hexavalent chromium, polybrominated biphenyls and polybrominated diphenyl ethers are not more than 0.1% (mass fraction) and cadmium is not more than 0.01% (mass fraction).
- Please recycle the refrigerant before scrapping, moving, setting and repairing the air conditioning; for the air conditioning scrapping, should be dealt with by the qualified enterprises.

15. PCB Photo

Hydronic box main control board

PCB code: 0151800770



Terminal block	Color	Function
CN4	Red	Indoor and outdoor comunication
CN6/CN7	White	Wired controller
CN5	White	PCB power
CN3	Yellow	Modbus
CN2	Black	I/O board communication
CN22	Red	Electric expansion valve
CN23	White	Relay board
CN36	White	To flow meter
CN25	White	Water inlet/outlet sensor
CN29	Red	Redrigerant inlet/outlet temp. sensor
CN9	Red	To water pump communication PCB CN9-1
CN30	Red	Low pressure switch short circuit
CN27	Blue	Flow switch short circuit
CN39	Red	Heat2, to heater
CN40	White	Heat1, to heater
CN21	Green	Error output
CN24	White	Power input 220V~
CN37	Yellow	Tai-2
CN33	White	Tai-1
CN31	Red	T-Tank
CN26	Red	TWzone2
CN35	Blue	TWzone1
CN32	White	Ext. control
CN31	Red	T-Tank
CN28	Red	T-Buffer
CN34	Red	TZ

Terminal function control logic

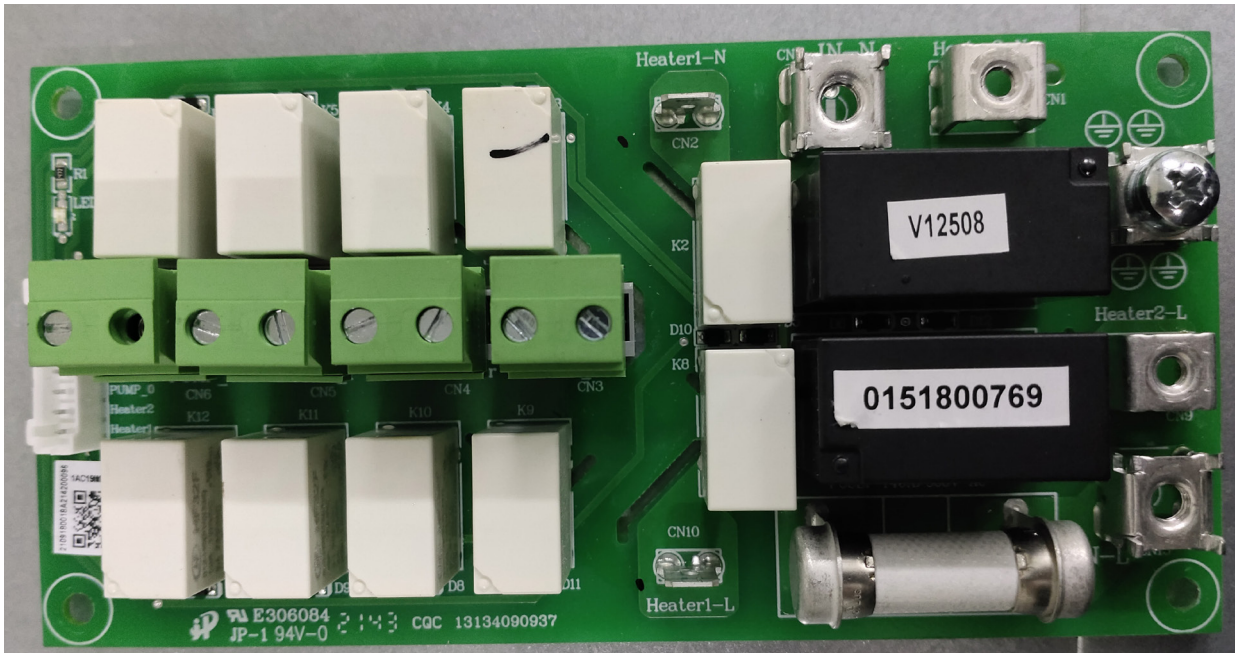
Port	Description	Logic	Remark
CN3	Standard modbus/ Third party protocol	/	
CN4	HU and outdoor communication	/	
CN5	Sub controller power supply	/	12V
CN6	Sub controller	/	
CN13	Room thermostat 2	Zone2 Room thermostat	10K
CN14	Floor valve	Startup: a. Hydronic box heating model, heating or heating+swimming pool b.In defrosting, anti rusting, anti freezing operation OFF: Unit off or cooling mode	220V ~ output
	SV1	Reserved	220V ~ output
CN15	Freeze Heater	Reserved	220V ~ output
	Tank Heater	T_tank>0°C, tank heater is valid 1. Startup condition (and): a. Hot Water Function ON by controller b. T_tank < T_tankset-1 c. Compressor stops for over 10min or Hot Water Function on for more than 60min 2. OFF condition (or): a. Controller off b. T_tank≥T_tankset c. Compressor runs within 0-60min when Hot Water Function on Note: When in fast hot water operation, the tank electric heater will be forced to open, without limit of outdoor ambient temperature and compressor running time	220V ~ output
CN16	3-way valve	3-way valve on: hot water operation 3-way valve off: other mode opeartion	220V~ L/N/K output
CN17	Mixing valve	Rule: Valve open when NL electrified. vlave close when KL electrified; Maintain status when KL power down. KL cannot electrified together. N is common port Control as below after initial power on for 5min: (T is the operation process of mixing valve, default is 60s) A. Zone2 cooling: When Twzone_2>Twzone_2Target+1, valve open 5%*T per min When Twzone_2Target-1≤Twzone_2≤Twzone_2Target+1, maintain When Twzone_2 < Twzone_2Target-1, valve close 5%*T per min B. Zone2 heating: When Twzone_2 < Twzone_2Target-1, valve open 5%*T per min When Twzone_2Target-1≤Twzone_2≤Twzone_2Target+1, maintain When Twzone_2>Twzone_2Target+1, valve close 5%*T per min Note: water mixing valve will stop opening when reating max. and stop closing when reaching min.	220V~ L/N/K output
CN21	Error output	When unit output error, terminal close; otherwisw will open	ON/OFF output
CN38	Room thermostat 1	Zone1 Room thermostat	10K
CN39/ CN40	Electric heater overheat	>95°C overheat protection; ≤65°C reset	12V DC output

Port	Description	Logic	Remark
CN3-XIAO CN9	pump_0	●Ambient temperature control 1. If the following conditions are met at the same time, water pump will start after the 10 seconds minimum stop time. a. ON/OFF by wired controller b. Tai meets the opening conditions 2. If any of the following conditions are met, the water pump delay 1min OFF a. Unit OFF by wired controller b. Tai reaches the setting temperature d. Flow error Water pump is foreced to open when in defrosting, oil return, anti freezing operation ●Water temperature control 1. Water pump open (and) a. Unit ON by wired controller b. There is a cooling or heating signal when selecting a third party controller 2. If any of the following conditions are met, the water pump delay 1min OFF a. No cooling or heating third party signal b. Unit OFF by wired controller c. Flow error Water pump is foreced to open when in defrosting, oil return, anti freezing operation ●Water pump speed control 1. Differential temperature control a. Cooling: Temperature difference between inlet and outlet △ T=Twi-Two=5°C b. Heating: Temperature difference between inlet and outlet △ T=Two-Twi=6°C Operate as max. speed when in startup, defrosting, anti rusting anti freezing 2. Constant speed control Constant speed output according to pump output duty from controller setting(default max. running speed is 0%)	pwm
CN4-XIAO	Gas Boiler	Refer to Aux. heating control and SG function, Bivalent control	220V

Port	Description	Logic	Remark
CN5-XIAO	Zone1 pump	1. Startup condition (and) a. Main controller on or sub controller on b. Or ① Only controled by main and sub controllers, and thermo on ② When controled by third party controller, Zone1 has indoor controller signal ③ When room thermostat control, Zone1 Tai on ④ When there's hot water requirement and hot water thermo on 2. OFF condition (or) a. Main controller off or sub controller off. b. And ① Only controlled by main and sub controllers, and thermo on ② When controled by third party controller, Zone1 has indoor controller signal on ③ When controlled by room thermostat, Zone1 Tai off ④ No hot water requirement or there's hot water requirement and hot water thermo off Water pump is foreced to open when in defrosting, oil return, anti freezing operation; Pump delay 1min OFF Pump stop during flow error	220V
CN6-XIAO	Zone2 pump	Note: When zone2 without zoning, pump no output; When zone 2 has zoning, pump will be controlled by master controller water temp. setting or zone controller 2. 1. Startup condition(and): a. Main controller ON or sub controller ON b. Or ① Only control by main/sub controller, set heating/cooling mode ② When controlled by 3rd party controller, zone2 has indoor controller signal. ③ When controlled by room thermostat, zone2 indoor ambient temp. sensor ON. 2. OFF condition (OR): a. Main controller OFF OR sub controller OFF b. And ① Only controlled by main/sub controller, without heating/cooling mode ② When controlled by 3rd party controller, zone2 has indoor controller signal ③ When controlled by room thermostat, zone2 indoor ambient temp sensor OFF. Pump forced ON during defrosting, oil return, anti-freezing Pump delay 1min OFF Pump stop during flow error Zone2 pump OFF when in hot water priority operation	220V
CN* indicates the terminal on main control board CN*-XIAO indicates the terminal on sub control board			

Hydronic box relay board

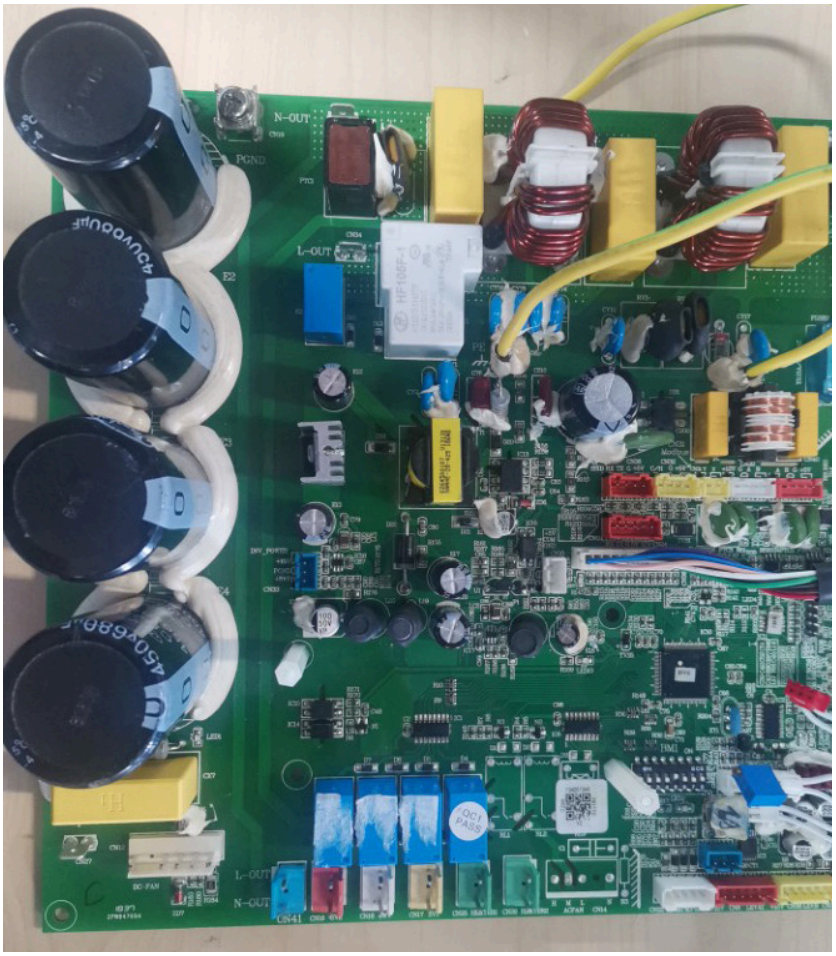
PCB code: 0151800769



Terminal block	Color	Function
CN6	/	Zone2 water pump
CN5	/	Zone1 water pump
CN4	/	Gas boiler
CN3	/	Built-in pump
CN2	/	Heater 1-N
CN10	/	Heater 1-L, 1kW
CN1	/	Heater 2-N
CN9	/	Heater 2-L, 3kW
CN15	/	Power supply - L
CN7	/	Power supply - N
CN11	/	GND
CN8	/	To main PCB CN23

Outdoor main control board--AW042SSCHA/AW062SSCHA

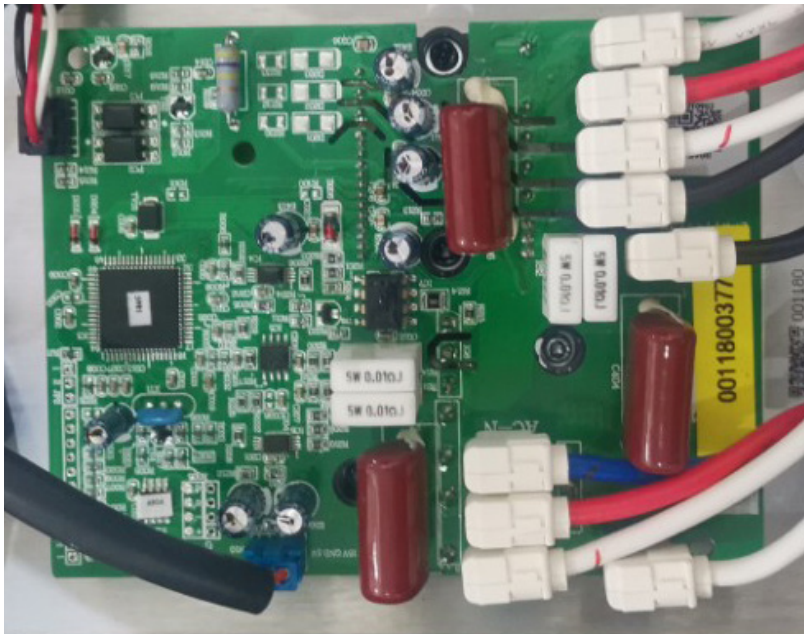
PCB code:0151800423C



Terminal block	Color	Function
CN13	/	Power supply - N
CN40	/	To service board CN2
CN15	/	Power supply - L
CN1	Red	High pressure switch
CN28	Red	High pressure sensor
CN24	White	Digital tube communication
CN4	Blue	Defrosting temp. sensor
CN6	Black	Suction temp. sensor
CN3	Red	Discharge temp. sensor
CN7	Yellow	Ambient temp. sensor
CN21	Red	Indoor and outdoor communication
CN8	Red	Electric expansion valve
CN25	Green	Compressor heater
CN16	White	4-way valve
CN17	Red	SV1
CN12	White	DC fan motor
CN27	/	P, 310V power supply
CN19	/	PGND, 310V power supply
CN37	/	Module power N - out
CN34	/	Module power L - out
CN10	White	COM, Power module communication
CN33	Blue	INV-power

Outdoor power module--AW042SSCHA/AW062SSCHA

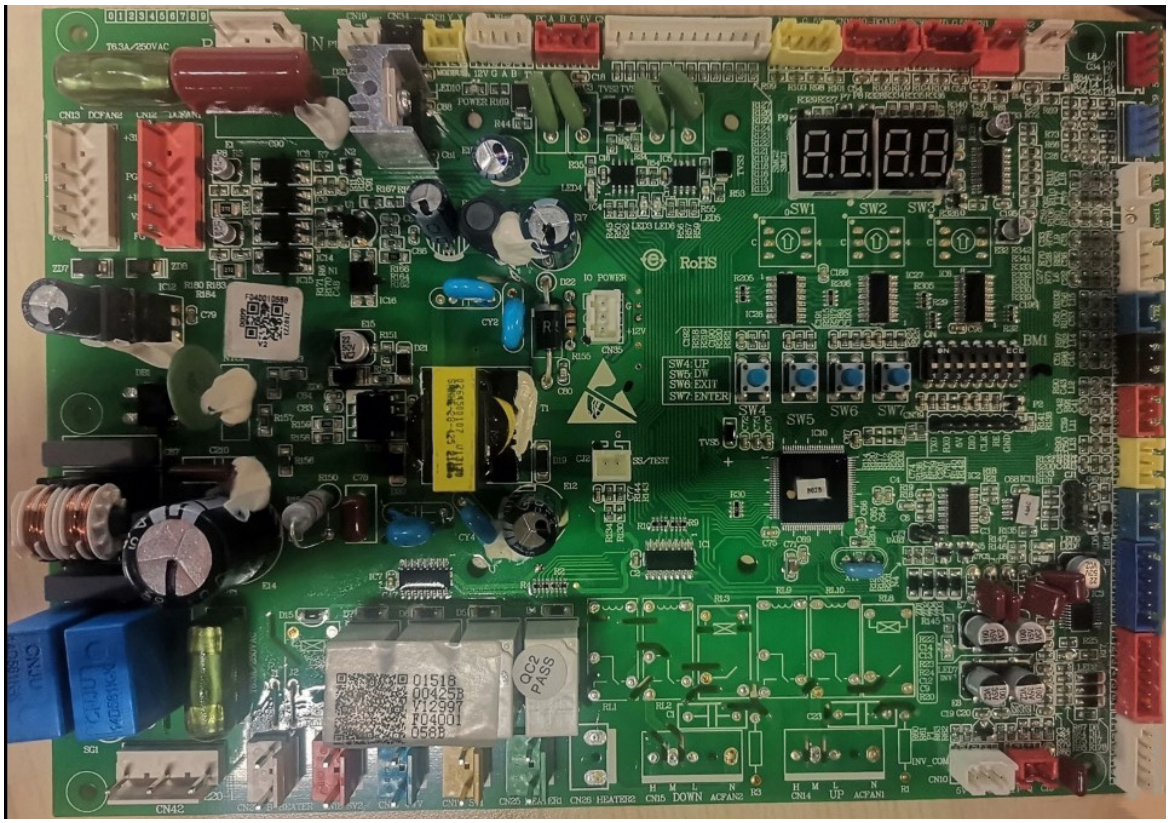
PCB code: 0011800377ABB/0011800377ABA



Terminal block	Color	Function
CN11	Black	COM, Power module communiation
CN10	Blue	Power module low voltage power supply
/	/	LI, to reactor IN
/	/	AC-L, Power module power inlet-L
/	/	AC-N, Power module power inlet-N
/	/	Lo, to reactor OUT
/	/	P/N-N, 310V power supply -N
/	/	U,V,W, to compressor
/	/	P/N-P, 310V power supply -P

Outdoor main control board--AW082SNCHA/AW102SNCHA

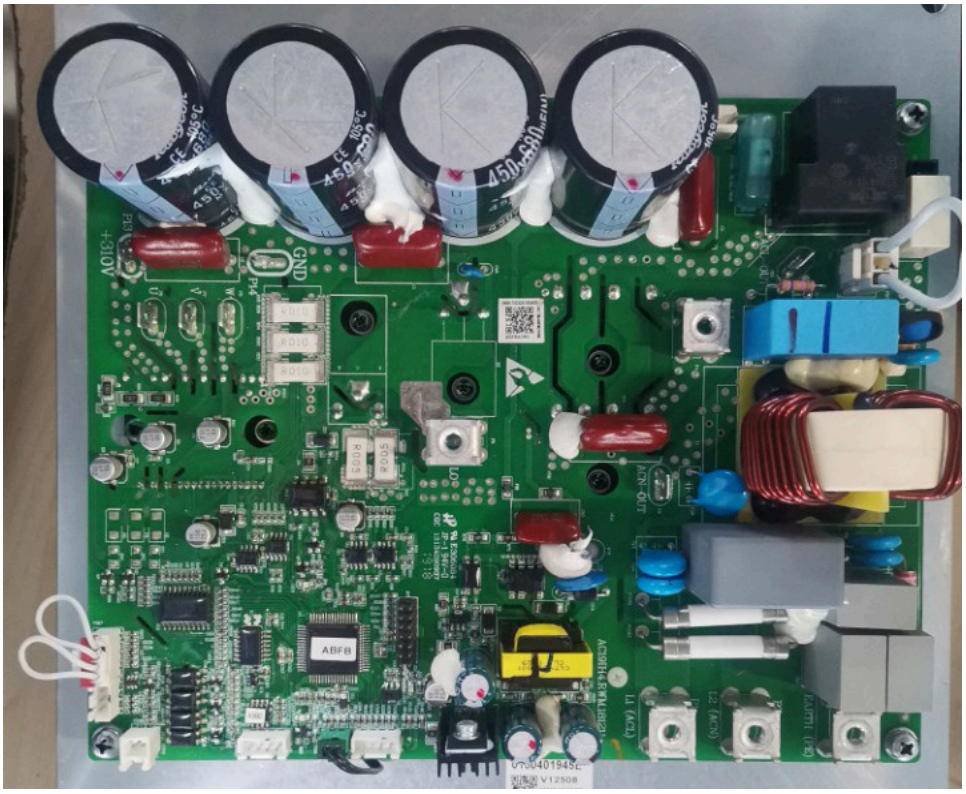
PCB code: 0151800425C



Terminal block	Color	Function
CN42	White	Power supply
CN12	Red	DC fan motor 2 (default)
CN13	White	DC fan motor 1
CN41	White	P/N 310V power supply
CN40	Red	To service board CN2
CN24	White	To service board CN1
CN11	Red	High pressure switch
CN28	Red	Pd, Discharge pressure sensor
CN29	Blue	Ps, Suction pressure sensor
CN4	Blue	Te, Defrost temp. sensor
CN6	Blue	Ts, Suction temp. sensor
CN3	Red	Td, Discharge temp. sensor
CN7	Yellow	Ta, Ambient temp. sensor
CN8	Red	Electric expansion valve
CN21	Red	PQ, Indoor and outdoor communication
CN10	White	COM, Power module communication
CN25	Green	Compressor heater
CN16	Yellow	4-way valve
CN18	Blue	SV2, Injection valve

Outdoor power module--AW082SNCHA/AW102SNCHA

PCB code: 0150401945J



Terminal block	Color	Function
/	/	ACL-OUT to main PCB CN42
/	/	LI, to reactor IN
/	/	Lo, to reactor OUT
/	/	U,V,W to compressor
/	/	ACN-OUT, to main PCB CN42
/	/	PE, GND
/	/	L2, AC-N, to 22v~ power supply
		L1, AC-L to 220v~ power supply
CN6	White	COM, Power module communication, to main PCB CN10
CN8	Green	Tfin, Radiator sensor
CN1	White	P/N 310V power supply, to main PCB CN41

16. Dip Switch Setting

HU062WAMNA HU102WAMNA

- Please turn off the power supply before opening the cover of the electric cabinet and changing the dial code.
- The capacity setting of indoor and outdoor unit must be matched, for example, the outdoor unit model is AW042SSCHA, then the indoor unit capacity must be set according to 042 in the list.
- In the following table, 1 is ON, 0 is OFF.

① BM1 introduction

BM1_1	Reserved	0	Reserved (default)			
		1	Reserved			
BM1_2 BM1_3 BM1_4	Reserved	[2]	[3]	[4]	Reserved	
		0	0	0	Reserved (default)	
		0	0	1	Reserved	
		0	1	0	Reserved	
BM1_5 BM1_6 BM1_7 BM1_8	Indoor unit Model selection	[5]	[6]	[7]	[8]	Indoor unit Model selection
		0	0	0	0	042
		0	0	0	1	062
		0	0	1	0	082
		0	0	1	1	102

② BM2 introduction

BM 2_1	Indoor communication address setting mode	0	Automatic setting (default)					
		1	Dip switch set address					
BM 2_2	Reserved	0	Reserved (default)					
		1	Reserved					
BM 2_3 BM 2_4 BM 2_5 BM 2_6 BM 2_7 BM 2_8	Indoor communication address	[3]	[4]	[5]	[6]	[7]	[8]	Address
		0	0	0	0	0	0	0# (default)
		0	0	0	0	0	1	1#
		0	0	0	0	1	0	2#
		…	…	…	…	…	…	……

AW042SSCHA AW062SSCHA AW082SNCHA AW102SNCHA

1 is ON, 0 is OFF.

BM1 introduction

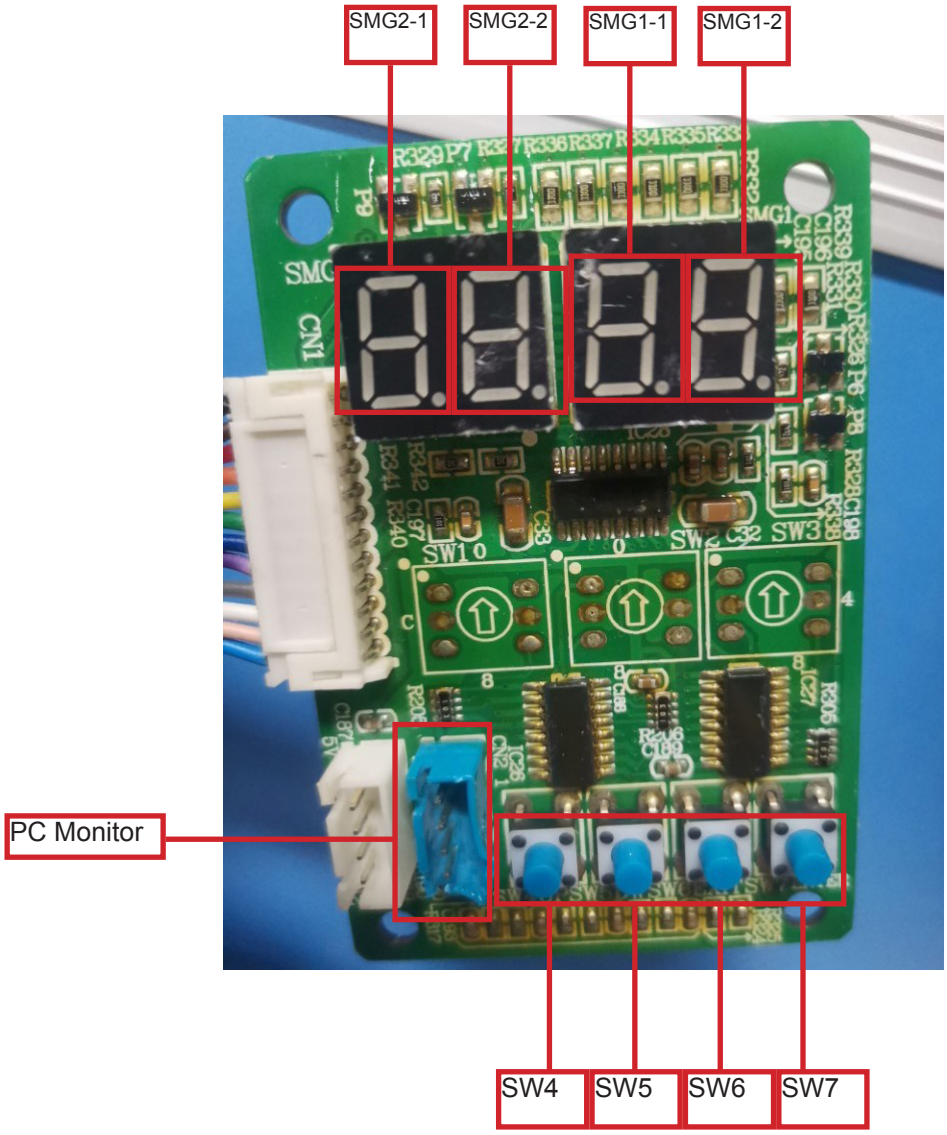
<table>
<tr><td rowspan="2">BM1_1</td><td rowspan="2">Reserved</td><td>0</td><td colspan="5">(default)</td></tr>
<tr><td>1</td><td colspan="5"></td></tr>
<tr><td rowspan="6">BM1_2
BM1_3
BM1_4
BM1_5</td><td rowspan="6">Outdoor unit Model selection</td><td>[2]</td><td>[3]</td><td>[4]</td><td>[5]</td><td>Outdoor unit Model selection</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td>042</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td>062</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td>082</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>1</td><td>102</td></tr>
<tr><td rowspan="2">BM1_6</td><td rowspan="2">Power selection</td><td>0</td><td colspan="4">Single phase (default)</td></tr>
<tr><td>1</td><td colspan="4">Three phases</td></tr>
<tr><td rowspan="5">BM1_7
BM1_8</td><td rowspan="5">Running mode selection</td><td>[7]</td><td>[8]</td><td colspan="3">Running mode selection</td></tr>
<tr><td>0</td><td>0</td><td colspan="3">Normal mode (default)</td></tr>
<tr><td>0</td><td>1</td><td colspan="3">Powerful mode</td></tr>
<tr><td>1</td><td>0</td><td colspan="3">Silent mode</td></tr>
</table>

2. bridge instruction

CJ2:
Short it before power ON-- PCB check its function (used for factory production.
Short it after power ON-- time short function, 60 seconds become to 1 second.

17. Outdoor unit digital tube display

Part code: 0151800405



Main function instruction:

By setting the rotary switch, the digital tube will display the unit parameters, the data is inform of decimal integer. During the process of installation, adjustion and maintenance, the whole system's operating parameters can be tested conveniently which can help to check and solve problems quickly and correctly.

The contents of the display are defined as follows:

- Long press ENTER (SW7) for 3 seconds to paramater setting interface(on the dispaly tube). Short press ENTER (SW7) to switch the edit bit, short press UP (SW4) to increase the data, short press DOWN (SW5) to decrease the data, and short press EXIT (SW6) to exit.
- Display parts: SMG2-1, SMG2-2, SMG1-1, SMG1-2: 4 digital tube from left to right.
- After selecting the corresponding dip switch definition in display tube interface, long press ENTER (SW7) for 3 seconds to view or modify the parameters.Short press up (SW4) to increase the data, short press down (SW5) to decrease the data, short press exit (SW6) to exit the parameter view or modify

Indoor unit parameter view

You can view the indoor machine 128 sets of parameters: SMG2-2 and SMG1-1 represent the indoor unit address, and SMG1-2 range is 3-14 represents the indoor unit parameters

SMG2-2	SMG1-1	Address
0	0-F	1 to 16 (address 0#~15#)
1		17 to 32 (address 16#~31#)
2		33 to 48 (address 32#~47#)
3		49to 64 (address 48#~63#)
7		65 to 80 (address 64#~79#)
8		81 to 96 (address 80#~95#)
9		97 to 112(address 96#~111#)
A		113 to 128(address 112~127#)

SMG 1-2	Function	Digital tube display
3	Indoor unit communication check and program version	Communication normal display indoor machine program version (1 decimal), the communication interrupted normal display “0000” (5 consecutive round of no communication success), communication has not been normal display “---- ----”. Such as 3.9, said the machine version number is V3.9
4	Indoor unit failure	Display indoor unit fault code, no fault display 0
5	Indoor unit capacity	The indoor unit capacity (unit: KW)
6	Indoor unit expansion valve opening	expansion valve opening(pulse)(unit: pls)
7	Indoor unit ambient temperature Tai	Hydronic box: water outlet temperaure Two (°C)
8	Indoor gas temperature Tc1	Hydronic box: gas pipe temperature Tho (°C)
9	Indoor liquid temperature Tc2	Hydronic box: liquid pipe temperature Thi (°C)
A(10)	Indoor unit mode, the actual operation of wind speed and SCODE code	SMG2-2 represents the indoor unit mode O: stop, C: cooling, H: heating; SMG1-1 represents the actual operating speed of the indoor fan (0- stop, 1- low speed, 2- Middle speed , 3- high speed); SMG1-2 represents the SCODE codes (0 ~ 15(F)); For example C3B means the high fan speed under cooling operation, SCODE is 11
B(11)	Indoor set temperature Tset	Hydronic box: water inlet temperature Twi (°C)
C(12)	Reserved	Hydronic box: The first bit: Flow switch (0-disconnect; 1-connect) The sencond bit: Hydronic box water pump (0-close; 1-open) The third bit: Hydronic box heater (0-close; 1-open) ("110" means the flow switch detects water flow and closed, the water pump turns on, and the electric heater off)
D(13)	Reserved	Hydronic box: The first bit: Microswitch (0-disconnect; 1-connect) The sencond bit: 2-way valve interlock (0-disconnect; 1-connect) The third bit: Floor heating main valve (0-close; 1-open) ("101" means the water tank micro switch closed, the two-way valve interlock disconnected, and the floor heating main valve opened)
14 (E)	Forced indoor cooling / heating/ shutdown	(1) Press ENTER (SW7) for 3 seconds, to enter the setting state, flashing display instructions. (2) Adjust instructions (COOL/HEAT/OFF) by UP (SW4) or DOWN (SW5). (3) When the adjustment is completed, press ENTER (SW7) for 3 seconds, the instruction implements and flashing stops

Outdoor unit parameter view

SMG1-2 range of 0, 1, 15, indicates the outdoor parameters.
(When indoor Qty. not locked and without error, the indoor Qty, outdoor capacity and the type of power supply will be displayed in turn and in cycle).
(1) Indoor Qty: No heat storage module and sub-cooling module will be displayed as "U+indoor Qty.", outdoor unit with heat storage module will be displayed as "H+indoor Qty.", outdoor unit with sub-cooling module will be displayed as "C+ indoor Qty."
For example, "U16" means the outdoor unit has no heat storage module or sub-cooling module with 16 indoor units connected, and "H08" means the outdoor unit has heat storage module with 8 indoor units connected
(2) Outdoor capacity: the unit is kw
(3) Power supply type: 220 means single phase 220V, 380 means three phase 380V

SMG2-2	SMG1-1	SMG1-2	Function	Digital tube display
0	0	0	Display outdoor unit fault code	When indoor Qty. not locked and without error, the indoor Qty, outdoor capacity and the type of power supply will be displayed in turn and in cycle. 1) Indoor Qty: No heat storage module and sub-cooling module will be displayed as "U+indoor Qty.", outdoor unit with heat storage module will be displayed as "H+indoor Qty.", outdoor unit with sub-cooling module will be displayed as "C+ indoor Qty. For example, "U16" means the outdoor unit has no heat storage module or sub-cooling module with 16 indoor units connected, and "H08" means the outdoor unit has heat storage module with 8 indoor units connected (2) Outdoor capacity: the unit is kw (3) Power supply type: 220 means single phase 220V, 380 means three phase 380V Special operation code: DRM1: "d1" flashing; DRM2: "d2/compressor freuency" displayed in turn and in cycle; DRM3: "d3/compressor freuency" displayed in turn and in cycle; Self clean mode: flash "CLC" in cooling, and flash "CLH“ in heating.
0	2	0	Display operation mode and outdoor unit operation output ratio	digital tube will be displayed as: "OFF"---shutdown "CCC"---cooling "HHH"---heating "C--"---cooling only "H--"---heating only
0	3	0	Outdoor fan speed 1	"345" represents 345rpm • Press ENTER (SW7) for 3 seconds and digital tube displays 111, then to enter the setting state: The speed and speed level flashes alternatively. The speed will incerese by 1 level each 1 UP (SW4) and decrease by 1 level each 1 DOWN (SW5) . • Press EXIT (SW6) for 3 seconds and digital tube displays 000, then to quit the setting state and stop flashing.
0	4	0	Outdoor fan speed 2	
0	5	0	Inverter compressor INV1 current frequency	"110" represents 110Hz • Press ENTER (SW7) for 3 seconds and digital tube displays 111, then to enter the setting state: data flashing, the frequency will incerese by 1Hz each 1 UP (SW4) and decrease by 1Hz each 1 DOWN (SW5). • Press EXIT (SW6) for 3 seconds and digital tube displays 000, then to quit the setting state and stop flashing. (When the system is in trouble, the compressor is forbidden to start.)

SMG2-2	SMG1-1	SMG1-2	Function	Digital tube display
0	6	0	Power of fan motor 1	Power of fan motor (unit: W)
0	7	0	Outdoor unit LEVa1 open degree	• Press ENTER (SW7) for 3 seconds and digital tube displays 111, valve fully open and the open degree flashes. • Press EXIT (SW6) for 3 seconds and digital tube displays 000, force to quit the fully open state, and stop flashing display.
0	9	0	Outdoor unit LEVb open degree	
0	10（A）	0	Power of fan motor 2	Power of fan motor (unit: W)
0	11（B）	0	Outdoor unit solenoid valve output	SMG2-1： 4WV: 1 ON; 0 OFF SMG2-2： SV1: 1 ON; 0 OFFF SMG1-2： SV2: 1 ON; 0 OFF
0	12（C）	0	Outdoor unit high/low pressure switch output	SMG2-1： HPS： 1 ON 0 OFF SMG1-1： LPS：1 ON 0 OFF SMG1-2： Reserved，display "-"
0	13（D）	0	Outdoor output	SMG2-2： Low standby relay：1 ON; 0 OFF SMG1-1： PTC relay： 1 ON; 0 OFF SMG1-2： Reserved，Display “-”
0	14（E）	0	Heater output	SMG2-2： CH1：1 ON; 0 OFF SMG1-1： BH: 1 ON; 0 OFF SMG1-2：Reserved，Display “-”
0	15（F）	0	Program version	1.0 means Ver1.0

SMG2-2	SMG1-1	SMG1-2	Function	Digital tube display
0	0	1	Pd	Unit: kg, 1 decimal places
0	2	1	Ps	
0	3	1	Td	Unit: °C
0	5	1	Tdef	
0	7	1	Toil	
0	9	1	Tc	
0	14(E)	1	Ts	

SMG2-2	SMG1-1	SMG1-2	Function	Digital tube display
0	0	15（F）	Reserved	
0	1	15（F）	Tao	Unit: °C
0	2	15（F）	Pd_temp	
0	4	15（F）	Ps_temp	
0	5	15（F）	Tliqsc	
0	6	15（F）	Tsco	
0	8	15（F）	Inverter compressor INV1 ON/OFF time	Unit: hour
0	10（A）	15（F）	Inverter compressor INV1 current Im	Unit: A, 1 decimal
0	11（B）	15（F）	Unit input current CT	Unit: A, 1 decimal
0	12（C）	15（F）	Inverter compressor INV1 DC voltage	Unit: V
0	14（E）	15（F）	Inverter compressor INV1 module temperature	Unit: °C

System status display and control (master unit)

SMG2-2	SMG1-1	SMG1-2	Function	Digital tube display
0	0	2	Refrigerant type	410A represents R410A refrigerant
0	1	2	Outdoor capacity	Unit: kw
0	2	2	Qty. of fan coil controller in the system	
0	3	2	Qty. of indoor units	For example: 64
0	4	2	Number of the working indoor units	Temperature sensor ON as a sign of the work of the indoor unit
0	5	2	Qty. of indoor units that has the same operation mode with the outdoor unit	For example: 13
0	6	2	Reserved	
0	7	2	Reserved	
0	12 (C)	2	Indoor unit expansion valve fully opend	• Press ENTER (SW7) for 3 seconds and digital tube displays "111", indoor valve fully opened • Press EXIT (SW6) for 3 seconds and digital tube displays “—”, then exit the indoor valve forced control
0	13 (D)	2	All the indoor unit in cooling	• Press ENTER (SW7) for 3 seconds and digital tube displays "CCC", all indoor units are in cooling mode • Press EXIT (SW6) for 3 seconds and digital tube displays “—”, all indoor units turned off.
0	14（E）	2	All the indoor unit in heating	• Press ENTER (SW7) for 3 seconds and digital tube displays "HHH", all indoor units are in heating mode • Press EXIT (SW6) for 3 seconds and digital tube displays “—”, all indoor units turned off.
0	15（F）	2	Cancel all manual control (running class)	• Press ENTER (SW7) for 3 seconds and digital tube displays "111", manual control cancled • Press EXIT (SW6) for 3 seconds and digital tube displays “000”, manual control cancled • Cancel all manual control anhd all indoor units turned off

E2 control parameters display and setting

Each item needs to be set, setting method as below:
(1)Press ENTER (SW7) for 3 seconds to enter the setting state, flashing display the current value.
(2)Press UP (SW4) or DOWN (SW5) to adjust parameters.
(3)After the adjustment is completed,
<A> In the current state of dip switch, press ENTER (SW7) for 3 seconds in the effective settig time, save the current value then exit the setting state, flash will stop. Power off after 5 seconds then power on again.
<B>Without pressing ENTER (SW7) in the effective settig time, and without saving the current value and exit the setting state, flash will stop

SMG2-2	SMG1-1	SMG1-2	Function	Digital tube display
15 (F)	0	2	Pipe length selection	0: Middle pipe length; 1:Short pipe length; 2: Long pipe length.
15 (F)	1	2	Defrost in selection	0: Area hard to defrost; 1: Area easy to defrost;
15 (F)	2	2	Defrost exit selection	0: Normal defrost; 1: Strength defrost (extend the defrosting time);
15 (F)	3	2	Start mode prior selection	0: First opened in priority; 1: Later opend in priority; 2: Cooling in priority; 3: Heating in priority
15 (F)	4	2	Power suppression operation control mode selection (no connection with I/O board)	0: According to E2 (no outer siginal); 1: According to outer DRM
15 (F)	5	2	Power suppression operation control mode selection (E2 with no outer siginal) (no connection with I/O board)	11 levels in total, level 0 is 0%, level 10 is 100%
15 (F)	6	2	Operation mode	0: heat pump; 1: cooling only; 2: heating only
15 (F)	7	2	Power suppression operation control mode selection (according to the limit value of I/O board)	11 levels in total, level 0 is 0%, level 10 is 100%
15 (F)	8	2	Module low power selection	0: OFF; 1: ON
15 (F)	9	2	Modbus protocol selection	0: Outdoor control board passively respone; 1: Outdoor control board actively siginalling; 2: Knotbase EP485 3: Standard modbus protocol
15 (F)	10 (A)	2	LEV fault masking selection	0: Nromal detect fault 1: Mask fault
15 (F)	11 (B)	2	2-way valve interlock "three no" installation mode special control selection	0: OFF; 1: ON
15 (F)	12 (C)	2	Power limit operation control mode selection	0- By E2 value, 1- By external contact DRM
15 (F)	13 (D)	2	Power output ratio selection (E2 control method is valid)	Maximum capacity to allow the maximum number of files, a total of 11 stalls, 0 stalls for 10, 0%, 100%
15 (F)	14 (E)	2	Heating expansion valve control	0: Normal control (Use of Two) 1: Isentropic control (Use of entropy)

Outdoor unit valves control

SMG2-2	SMG1-1	SMG1-2	Function	Digital tube display
6	0	2	Manually control 4WV	• Parts current state: 1 ON; 0 OFF • Press ENTER (SW7) for 3 seconds and digital tube displays "111", to the setting state: falshing display, UP (SW4) for ON, DOWN (SW5) for OFF; • Press EXIT (SW6) for 3 seconds and digital tube displays "000", exit the setting state, flash stops
6	1	2	Manually control SV1	
6	3	2	Manually control SV2	
6	11 (B)	2	Manually control CHi	
6	13 (D)	2	Manually control CHa	
6	15(F)	2	Cancel all manual control (parts)	• Press ENTER (SW7) for 3 seconds and digital tube displays "111" to cancel, or press EXIT (SW6) for 3 seconds and digital tube displays "000" to cancel. • Cancel includes: All manaully control of outdoor unit operating parts including Compressor, Fan motor, LEV, Solenoid valve etc. (also include evacuation and injection, not include rated/forced operation, indoor ON/OFF)

E2 parameters view

SMG2-2	SMG1-1	SMG1-2	Function	Digital tube display
12 (C)	0	0	The EE data of address 000H (Version E2)	000H-0FFH address EE data display; Address calculation: addr=SMG1-1*10H +SMG1-2 Data display: hexadecimal display, H represents hexadecimal number
	0	1	The EE data of address 001H	
	…	…	…	
	0	F	The EE data of address 00FH	
	1	0	The EE data of address 010H	
	…	…	…	
	1	F	The EE data of address 01FH	
	…	…	…	
	F	F	The EE data of address 0FFH	
13 (D)	0	0	The EE data of address 100H	100H-13FH address EE data display Location: addr=100 H+SMG1-1*10H +SMG1-2 Data display: hexadecimal display, H represents hexadecimal number
	0	1	The EE data of address 101H	
	……	……	……	
	3	F	The EE data of address 13FH	
	4	0	The EE data of address 140H	140H-1FFH address is fault information area
	……	……	……	
	F	F	The EE data of address 1FFH	

ATW Modbus Table

Communication Data Formats

1. Single character data format (Total 10 bits)

Communication parameters	Description
Baud rate	9600
Data bits	8
Check bit	None
Stop bit	1
Start bit	1,one frame command finished, using CRC to check
Function code	Inquiry: 03H. Control: 06H/ 10H
Unit address	1-32

START	b1	b2	b3	b4	b5	b6	b7	b8	STOP
Start bit	Data bit								Stop bit

2. Data frame format definition

Device address	Function code	Data	CRC verification
8 bits	8 bits	N*8bits	16 bits

Attention: In order to avoid data detection errors caused by the frame length being too long, the total length of a data frame in query, setting, and response is controlled within 50 bytes.

ATW Modbus point table

Protocol address: 0000-0149 (R—Read Only, R/W—Read and Write)

Address	Content	Point type	Description
0000	Factory ID	R	Two-digit ASCII character factory code, ID: “HE”
0001	Version	R	Current program version, Send Value=Actual value*10 This version is the version number of our program
0002	Operation hours	R	16-bit cycle running time; Return to 0 when booting. Unit: “minute”
0003	Heat machine label	R	16-digit unique code, each model has a code, not a serial number, which is set by the project. The default is 0.
0004	Unit ON/OFF	R/W	0: Power off; 1: Power on
0005	Operating mode	R/W	0: Heating; 1: Cooling
0006	Set water temperature	R/W	Unit: °C Send Value= Actual value *10 int16,16 positive numbers
0007	Water inlet temperature	R	Unit: °C Send Value = Actual value *10 int16,16 numbers with positive and negative
0008	Water outlet temperature	R	Unit: °C Send Value = Actual value *10 int16,16 numbers with positive and negative
0009	Operating current	R	Unit: A Send Value = Actual value *10 int16, 16 positive numbers

0010	Outdoor temperature	R	Unit: °C Send Value = Actual value *10 int16,16 numbers with positive and negative
0011	Reserved	R	Reserved (Default is 0)
0012	Current fault	R	Integer between 0-130, 0 means no fault
0013	Historical fault 1	R	
0014	Historical fault 2	R	
0015	High Pressure	R	Unit: 0.01kgf Send Value = Actual value *100,16 positive numbers
0016	Low Pressure	R	Unit: 0.01kgf Send Value = Actual value *100,16 positive numbers
0017	Frequency	R	Unit 0.1hz, Send Value = Actual value *10,16 positive numbers
0018	The quantity of indoor unit's controllers	R	0-64 (0 means none)
0019	Reserved	R	Reserved
0020~0149	Reserved	R	Reserved (The default is 0)

18. Function & Control

18.1 Startup & Running

a)Preparing for first start up

Restarting after shutting down for long periods
The Heat pump must be started up for the first time by the Technical Service. Before starting up the Heat pumps, make sure that:-All safety conditions have been respected.
-The Heat pump system is adequately fixed to the surface it rests on.
-Functional distances have been respected.
-Hydraulic connections have been carried out as indicated in the manual.
-The water circuit is filled and vented. When draining after heat pump operation, take care as the water may be hot.
-The water circuit valves are open.
-Electrical connections have been carried out correctly.
-Voltage is within a tolerance of 10% of the rated voltage for the unit.
-The unit is correctly earthed.
-All electrical and hydraulic connections are tight and have been completed correctly.

b)Operating characteristics

Set point in cooling mode
(factory set) = 12°C, Hysteresis = 5°C.
The compressor starts with water temperatures above 12°C.
The compressor shuts down with water temperatures of less than 7°C.

Set point in heating mode
(factory set) = 45°C, Hysteresis = 5°C.
The compressor starts with water temperatures below 45°C.
The compressor shuts down with water temperatures above 55°C.
- In the event of a temporary power failure, when power returns, the mode set previously will be retained in the memory.

Compressor start up delay
Two functions prevent the compressor from starting up too frequently
- Minimum time since last start-up 300 seconds.

AC OFF control
When gas-liquid separator has liquid refrigerant left, the refrigerant oil in the compressor will be diluted and the lubricity will decrease, also the liquid compression will be caused, which may damage the compressor. The AC OFF control is designed to prevent this condition.

① Starting conditions

- &
  - When the outdoor unit receives the stop command
  - Td ＜ Pd_t +10°C

② Controls

The compressor is operated in a small capacity to discharge the liquid refrigerant in the gas-liquid separator

- &
  - Compresor output 30Hz
  - Outdoor LEV original opening 120 degree, adjust by superheat
  - Other items are auto control

③ Quit conditions

The compressor is operated in a small capacity to discharge the liquid refrigerant in the gas-liquid separator

- OR
  - Td≥Pd_t+20°C
    Pd ＞ 8*(Ps+0.1)-0.2MPa or Pd ＞ 3.6MPa
  - Ps ＜ 0.07Mpa
    last for 10 minutes

Compressor load control

After starting control, compressor adjust its frequency in every adjustment period (Non-heating mode: 40s; Heating mode: Two≤40°C, 20s; Two ＞ 40°C, 40s;)
When the compressor do not reach the target frequency, if there's frequency reduce requirement, it'll quit the original setting state and operate as the command;
Continue to raise the frequency

Cooling: DerCompSpd= Load%*CompTrgtSpdInit
Heating: DerCompSpd= Load%*CompTrgtSpdInit
*Load% is the load from Hydronic box, the range is [-100%, 100%]
*DerCompSpd is the frequency modification value, the range is [-2rps, 2rps]
*CompTrgtSpdInit is the base frequency

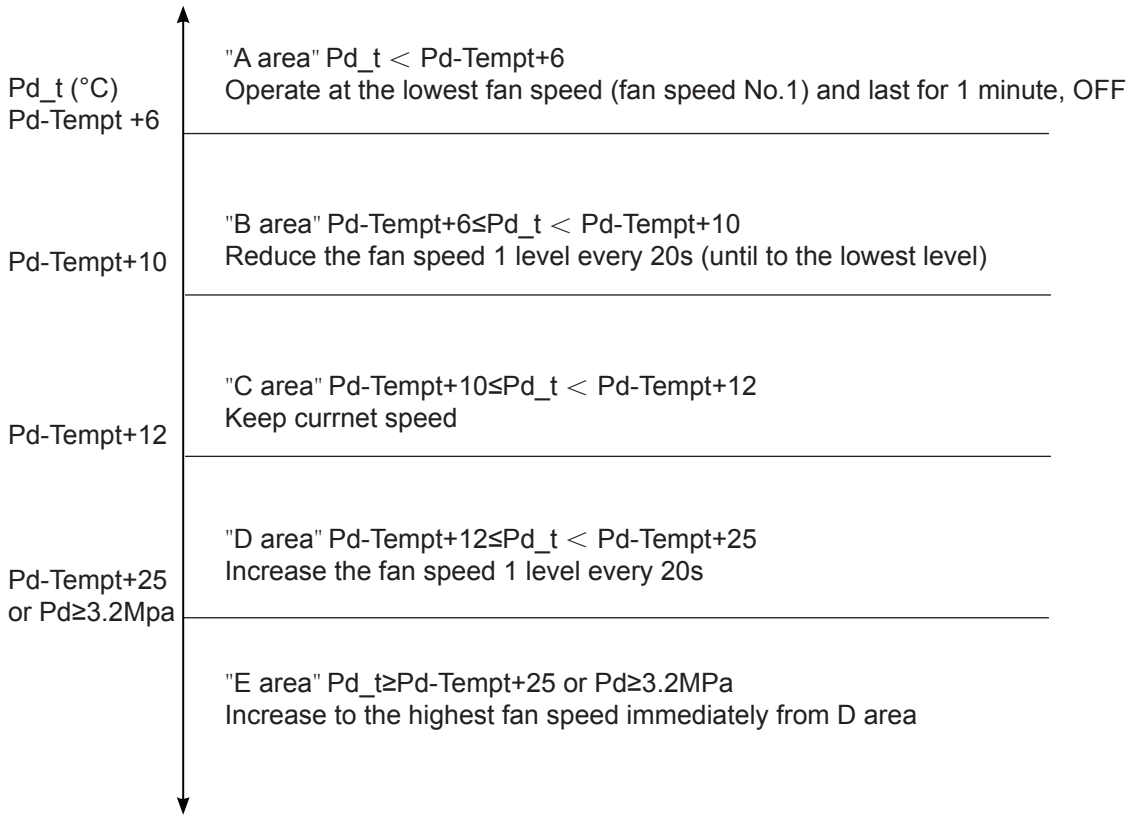
When heating,
DerCompSpd ＞ 0, raise frequency;
DerCompSpd≤0, if Pd-temp≥Two, reduce frequency; if Pd-temp ＜ Two, Der CompSpd=2Hz

18.2 Fan speed control

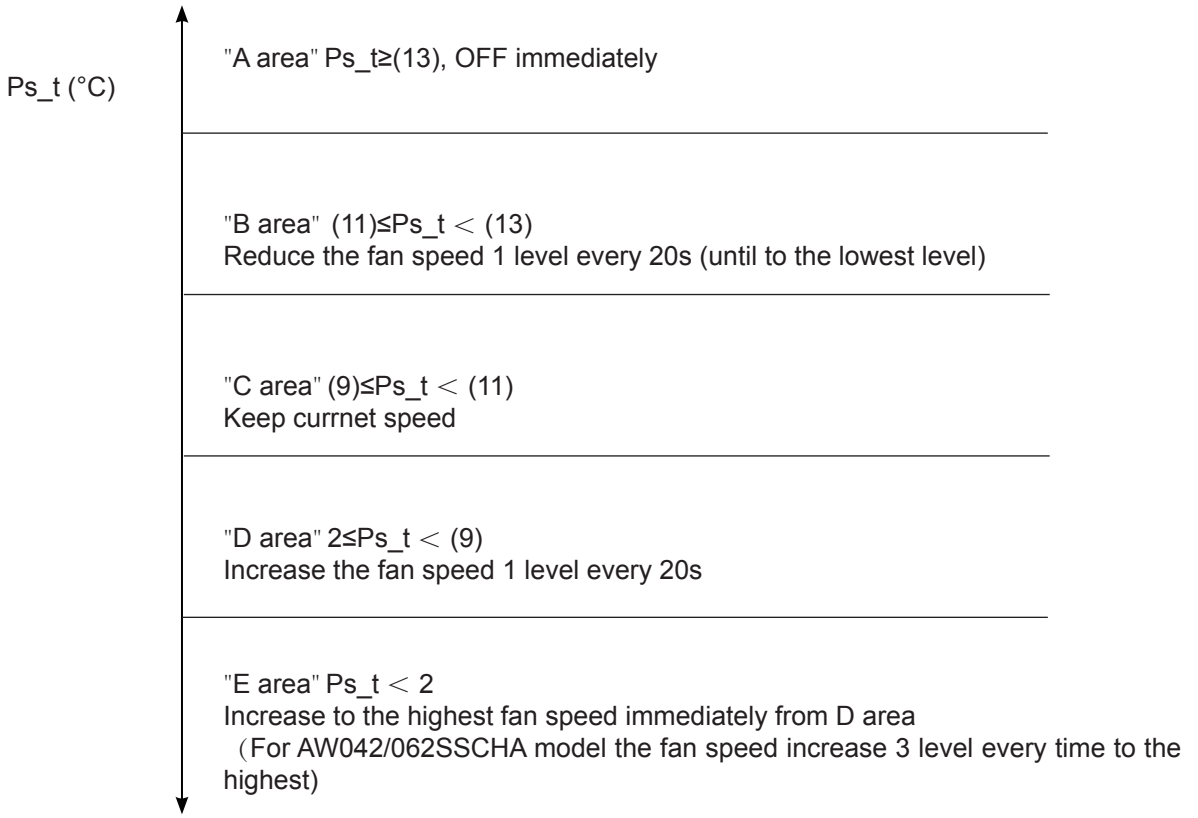
For correct operation of the unit with different outside temperatures, the microprocessor controls the fan speed based on the pressure reading from the pressure probe, thus enabling heat exchange to be increased and/or decreased, maintaining the condensing or evaporation temperature practically constant.
The fan functions independently of the compressor.

High pressure over low in cooling

1.Pd-tempt is the high pressure modification value at different low pressure saturation temperatures
2.Up/down 1 unit fan motor speed level every 20s
3.Pd_t <=Pd-Tempt+1, when last for 5 minutes the system will report the fault " high pressure over low"

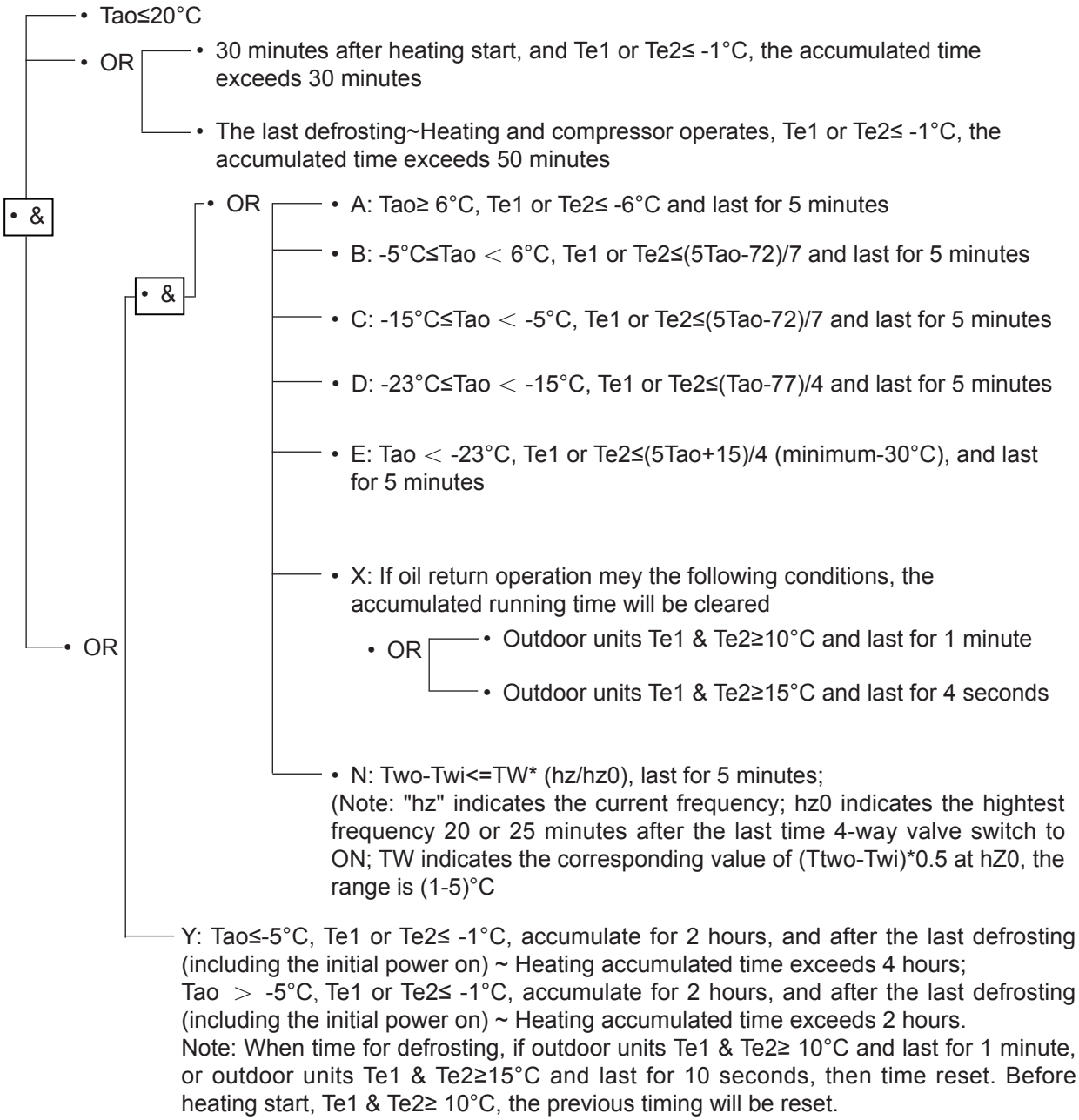


Low pressure over high in heating



18.3 Defrost control

Defrosting control is required for effective heating operation.



18.4 High pressure over high control

To prevent abnormal rise of high pressure and cause system protection stop in cooling or heating.
Start condition: Cooling/Heating mode: Pd_t ≥(58+ HPRmin)°C;
Control compressor speed:
When Pd_t≥62+ HPRmin, compressor stops;
When 60+HPRmin≤Pd_t < 62+ HPRmin, compressor frequency reduced;
When 58+HPRmin≤Pd_t < 62+ HPRmin, compressor frequency forbided to increase;
When Pd_t > 58HPRmin, compressor recovers the frequency rise

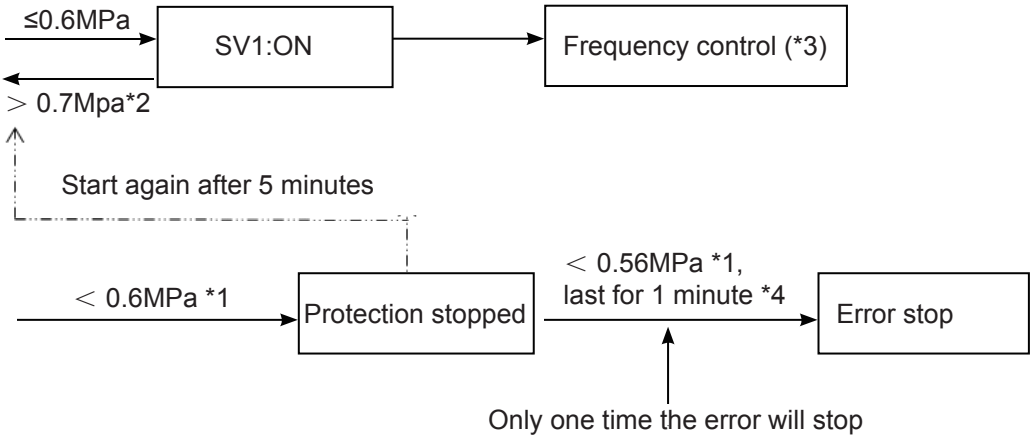
Note: 1.Compressor stop will cause high pressure over high failure
2.HPRmin=min(HPR1,HPR2), HPR1 is the high pressure modification value at different low pressure saturation temperatures
3.In order to keep the normal cooling/heating operation, low pressure protection conrtol is needed through low pressure sensor.

18.5 Low pressure over low control

Cooling

① Starting condition
Ps < 0.6MPa

② Controls



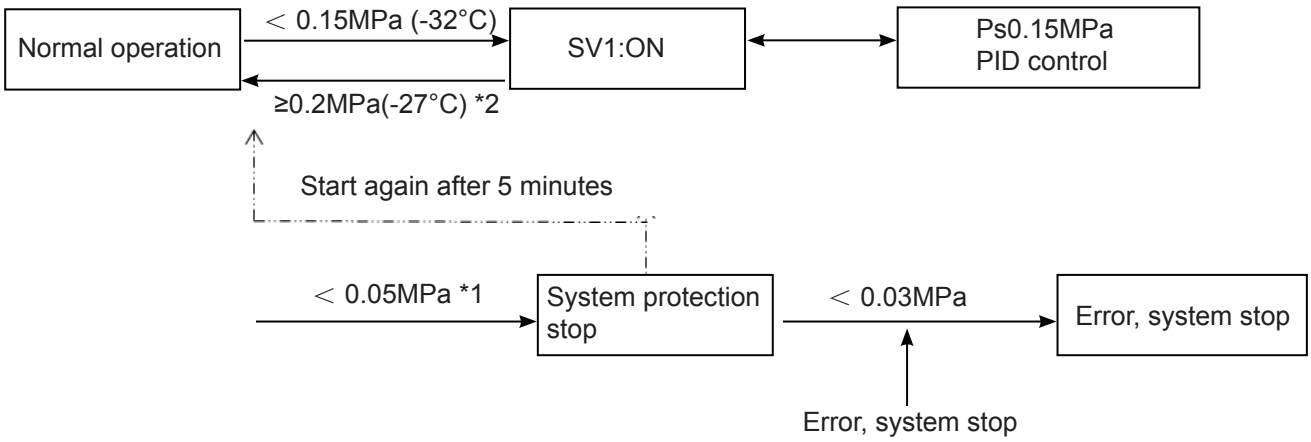
*1: Protection will stop when last for 5 minutes
*2: Minimum power on time for SV1 is 2 minutes or Ps > 0.75MPa in 2 minutes
*3: Compressor frequency control:
When Ps_t < -6°C, compressor stops;
When -6≤Ps_t < -2, compressor frequency reduced;
When -2≤Ps_t < 0, compressor frequency forbided to increase;
When Ps_t > 0, compressor recovers the frequency rise
*4: Ps < 0.56Mpa and last for 1 minute, or Ps_t < -7°C and last for 10 seconds, error stops and system report E39 failure

③ Quit condition
Ps≥0.75MPa

Heating

① Starting condition
Ps ＜ 0.15MPa

② Controls
By SV1control/Compressor frequency conrtol, make low pressure value always higher than the rated value.



*1: When last for 5 minutes system will stop for protection
*2: Minimum power on time for SV1 is 2 minutes or Ps ＞ 0.25MPa in 2 minutes

③ Quit condition
Ps≥0.20MPa

18.6 SV1 control

Pd≥3.8MPa, SV1 open; Pd ＜ 3.5MPa, SV1 close.
Minimum open time for SV1 is 1 minute, or Pd ≤34kgf in 1 minute

18.7 Outdoor LEV control

Cooling super heat control

Control by indoor Tho-Thi target super heat value, and also consider modification value △ SH when discharge temp too high.
Modification target SH= Target SH (Tho-Thi)+ △ SH, -12°C≤SH≤2°C

Heating super heat control

Adjust target exhaust superheat

18.8 Frost prevention alarm

The internal unit of the air conditioner determines whether to enter the antifreeze mode according to the respective water temperature probes of Zone1 / zone2 / poor:

Cooling Antifreeze

To prevent the water freezing and damaging the heat exchanger, the microprocessor shuts down the compressor if the temperature measured by the heat exchanger outlet temperature sensor is less than 3°C. The frost prevention temperature set point can be modified by an authorized service center only and only after verifying that the water circuit contains antifreeze. Tripping of this alarm shuts down the compressor but not the pump, which remains active. To reset normal functions, the outlet water temperature must rise to more than 5°C. Reset is manual.

When the unit is in shutdown or standby mode, the anti-freezing function is effective

If any condition is met after the corresponding relationship between ambient temperature and inlet and outlet water temperature is met, start the unit water pump. When the inlet and outlet temperatures of the unit are greater than 5°C for 1 minute, turn off the water pump and exit the antifreeze mode.

When the water pump can not meet the exit conditions after continuous operation for 10 minutes: that is, the inlet and outlet temperatures of the unit are less than 5°C, a forced start-up signal is sent to the external unit. Regardless of whether E28 is started or not and whether there is a two-way valve signal, the external unit is forced to start-up and run, tset = 25°C (during ambient temperature control, set the water ambient temperature of 25°C and set the mode of the corresponding area). At the same time, E28 receives the "anti freezing" command, that is, open all electric valves and thermoelectric valves.

18.9 Water flow alarm

The microprocessor provides for management of a water flow alarm controlled by a pressure diference switch fitted as standard on the appliance to be installed on the water delivery piping.

This safety device may trip after the first 60 seconds of pump operation when the water flow is up to speed. Tripping of this alarm shuts down the compressor but not the pump, which remains active. To reset normal functions, the alarm contact must be deactivated for at least 15 seconds.

When electrical current exceeds to setting value and condenser temperature over than 62°C, system will shut down, but not returns to normal operation until the condenser temperature decreased less than 52°C.

18.10 Oil return control

This control is mainly to recover the refrigerant oil remaining in the indoor unit, in order to prevent the compressor folding parts from being worn / burned together due to insufficient refrigerant oil in the compressor.

1. Low frequency oil return logic

After start-up, the frequency is less than 35Hz and runs for 1 hour (the frequency is greater than 50Hz for 1 minute, the timing is cleared, and the time is cleared after defrosting (the frequency limit is effective. When the oil return conflicts with refrigeration and antifreeze, antifreeze takes priority), and the frequency increases to the oil return frequency of 50Hz and runs for 1 minute (the frequency limit is effective,)

2. High frequency oil return logic:

The compressor operates at 80Hz and above for more than 3 hours (the frequency ≤ 70Hz lasts for 5 minutes and then counts again). When the maximum frequency drops to 70Hz and operates for 3 minutes, the timing is cleared.

19. Error Code

Hydronic box

Code	Error code definition	Notes
1	in water temp.sensor(Twi)failure	Restorable
2	out water temp.sensor(Two)failure	Restorable
3	in refrigerant temp.sensor(Thi)failure	Restorable
4	out refrigerant temp.sensor(Tho)failure	Restorable
5	EEPROM failure	Unrecoverable
6	Communication failure with outdoor unit	Restorable
7	communication failure with wired controller	Restorable
8	WS abnormal	Restorable If it occurs 3 times in an hour, lock the failure
10	Tank water temp.sensor(Ttank)failure	Restorable
11	IO PCB communication failure	Restorable
12	HU zone2 behind water mixing valve temp.sensor failure	Restorable
14	low pressure abnormal	Restorable
15	antifreeze failure	Restorable If it occurs 3 times in an hour, lock the failure
16	HU in/out water temp. too high	Restorable
17	HU zone1 room temp.sensor failure	Restorable
18	HU zone2 room temp.sensor failure	Restorable
20	Outdoor failure	

Inverter outdoor unit failure code

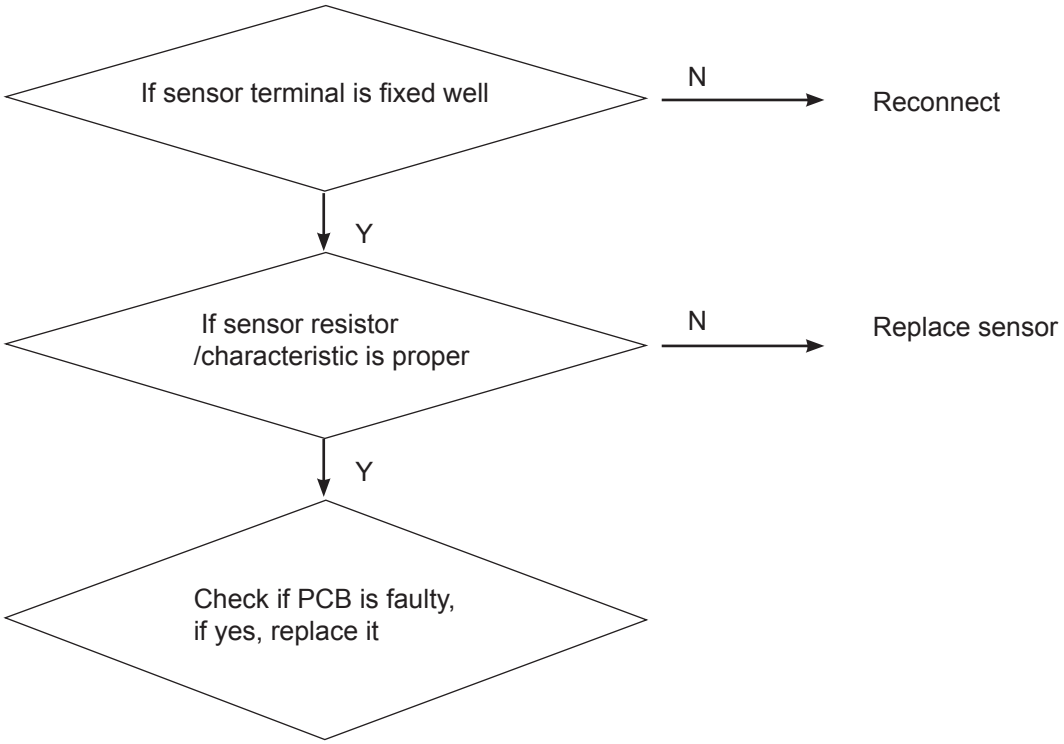
Code	Error code definition	Notes
20	Defrosting temp. sensor (Te) failure	Restorable
21	Ambient temp. sensor (Ta) failure	Restorable
22	Suction temp. sensor (Ts) failure	Restorable
23	Discharging temp. sensor (Td) failure	Restorable
26	Communication failure with indoor	Restorable
28	High pressure sensor failure	Restorable
29	Low pressure sensor failure	Restorable
30	High pressure switch HPS failure	Unrecoverable after locking
33	Outdoor EEPROM failure	Unrecoverable
34	Discharging temp too high protection (Td)	Unrecoverable after locking
35	4-way valve reversing failure	Unrecoverable after locking
38	High pressure too low protection(Pd)	Unrecoverable after locking
39	Low pressure too low(Ps)/compres-sion ratio too high protection/ compres-sion ratio too low protection	Unrecoverable after locking
40	High pressure too high protection(Pd)	Unrecoverable after locking
43	Discharging temp too low protection (Td)	Unrecoverable after locking
46	Discharging communication fault with IGBT Power Moudule	Restorable
71	DC FAN failure	Unrecoverable after locking
78	Too little refrigerant	Restorable
81	Radiator of transducer temp too hiah	Unrecoverable after locking
82	Compressor current protection	Unrecoverable after locking
87	Defrosting with too low water temperature	Restorable
110	Module hardware excess current	If it occurs 3 times in an hour, lock the failure, unrecoverable after locking
111	Compressor out of step	If it occurs 3 times in an hour, lock the failure, unrecoverable after locking
112	Radiator of transducer temp too high	If it occurs 3 times in an hour, lock the failure, unrecoverable after locking
113	Transducer overload	If it occurs 3 times in an hour, lock the failure, unrecoverable after locking
114	Voltage too low of DC bus line	If it occurs 3 times in an hour, lock the failure, unrecoverable after locking
115	Voltage too high of DC bus line	If it occurs 3 times in an hour, lock the failure, unrecoverable after locking
116	Communication abnormal between transducerand control PCB	If it occurs 3 times in an hour, lock the failure, unrecoverable after locking
117	Transducer over current (software)	If it occurs 3 times in an hour, lock the failure, unrecoverable after locking
118	Compressor startup failure	If it occurs 3 times in an hour, lock the failure, unrecoverable after locking
119	Current detecting circuit abnormal of transducer	If it occurs 3 times in an hour, lock the failure, unrecoverable after locking
120	Module power supply abnormal	If it occurs 3 times in an hour, lock the failure, unrecoverable after locking
121	Power supply of inverter board is abnormal	If it occurs 3 times in an hour, lock the failure, unrecoverable after locking
122	Radiator temp. sensor abnormal	If it occurs 3 times in an hour, lock the failure, unrecoverable after locking

When the screen of wire controller display hereinafter code,the unit is standby.Please check the parameters according to standby reason.

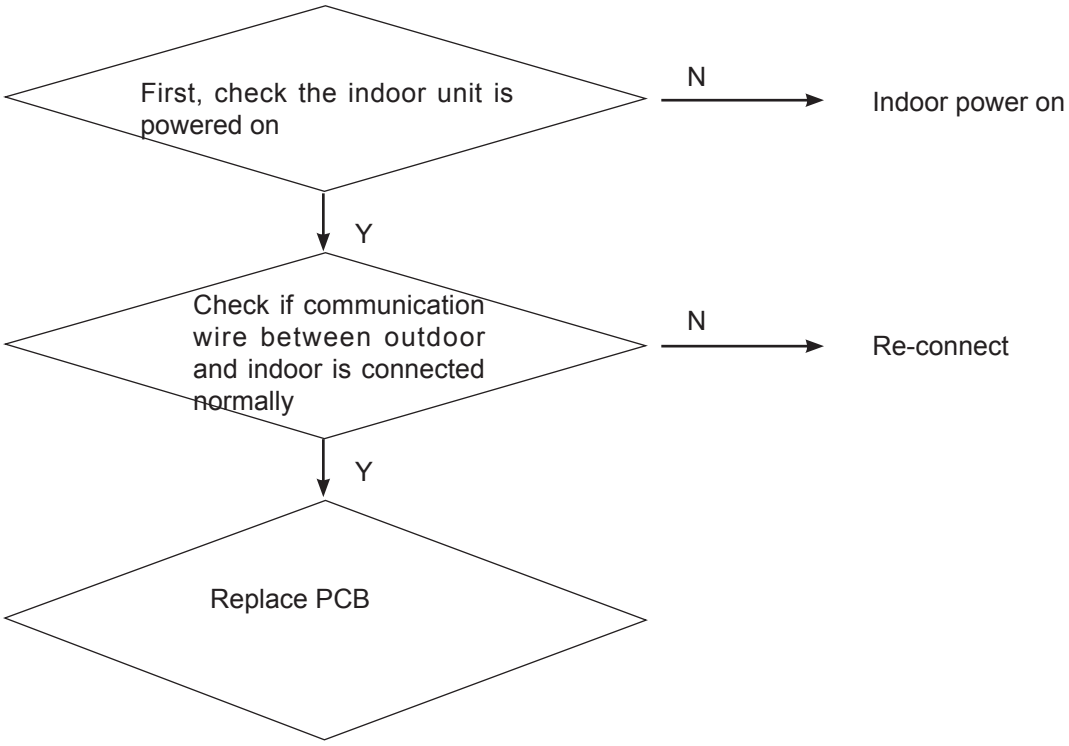
standby code	standby reason	notes
555.3	outer circumstance temp.Ta>54°C or Ta<-10°C, refrigerantion standby	restorable
555.4	oil temp. fail to meet the condition of system start	

20. Troubleshooting

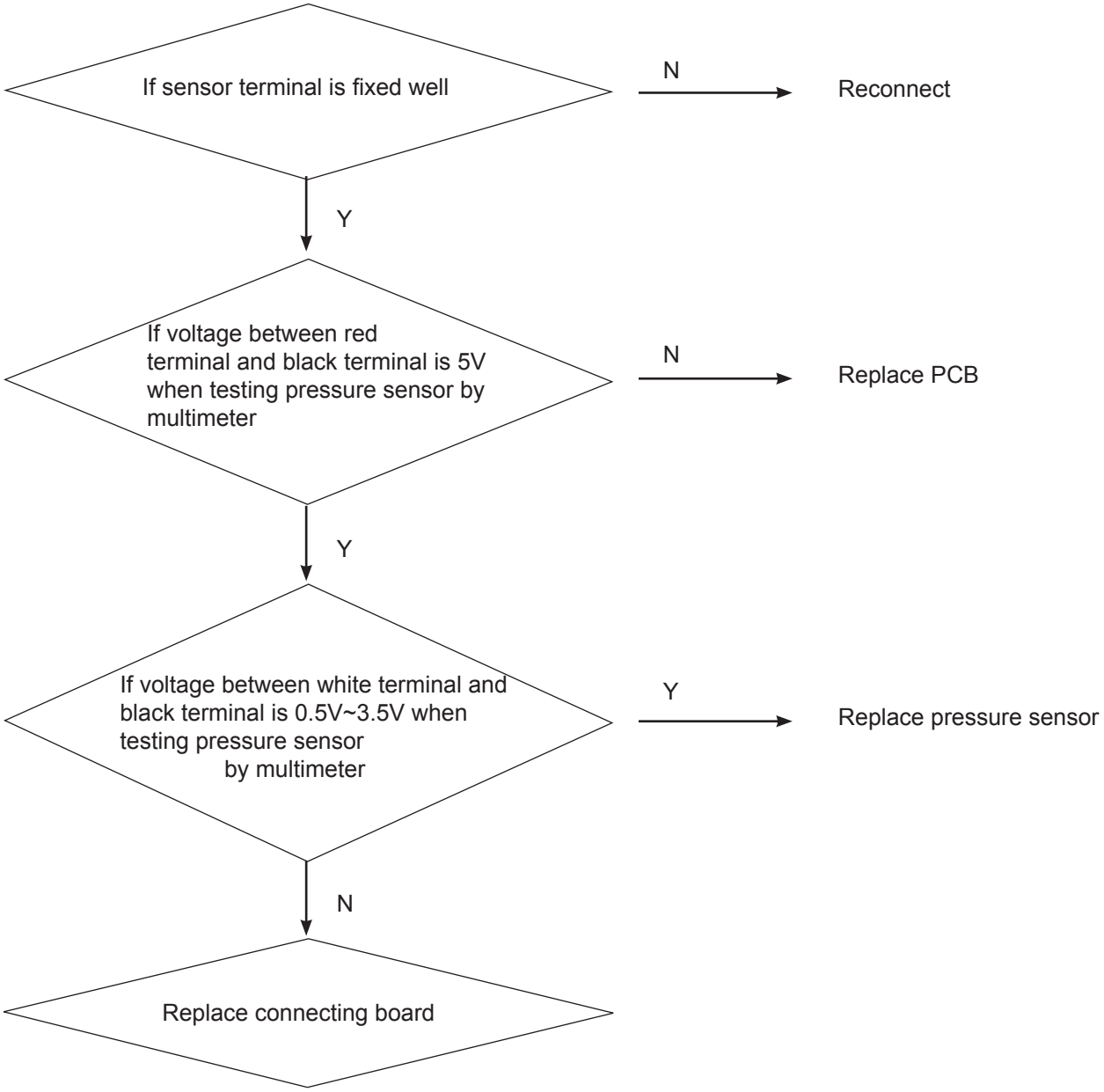
[20,21,22,23] Temperature sensor failure



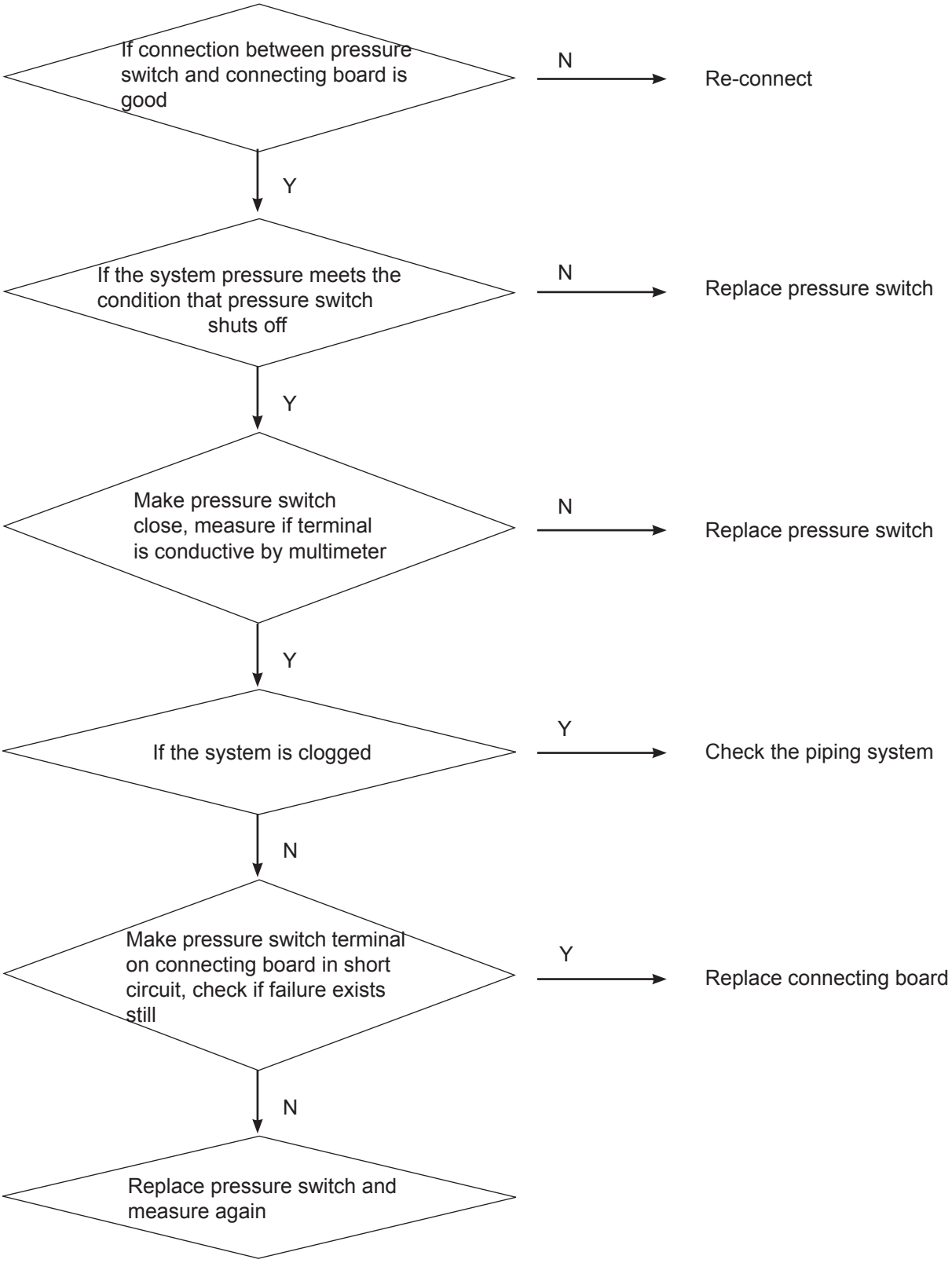
[26] Communication failure with indoor



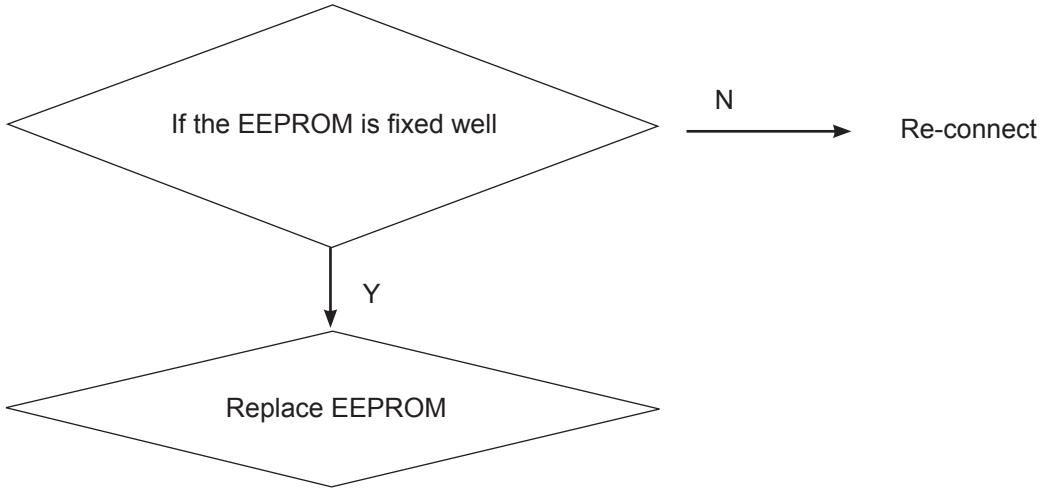
[28, 29] High/low pressure sensor failure



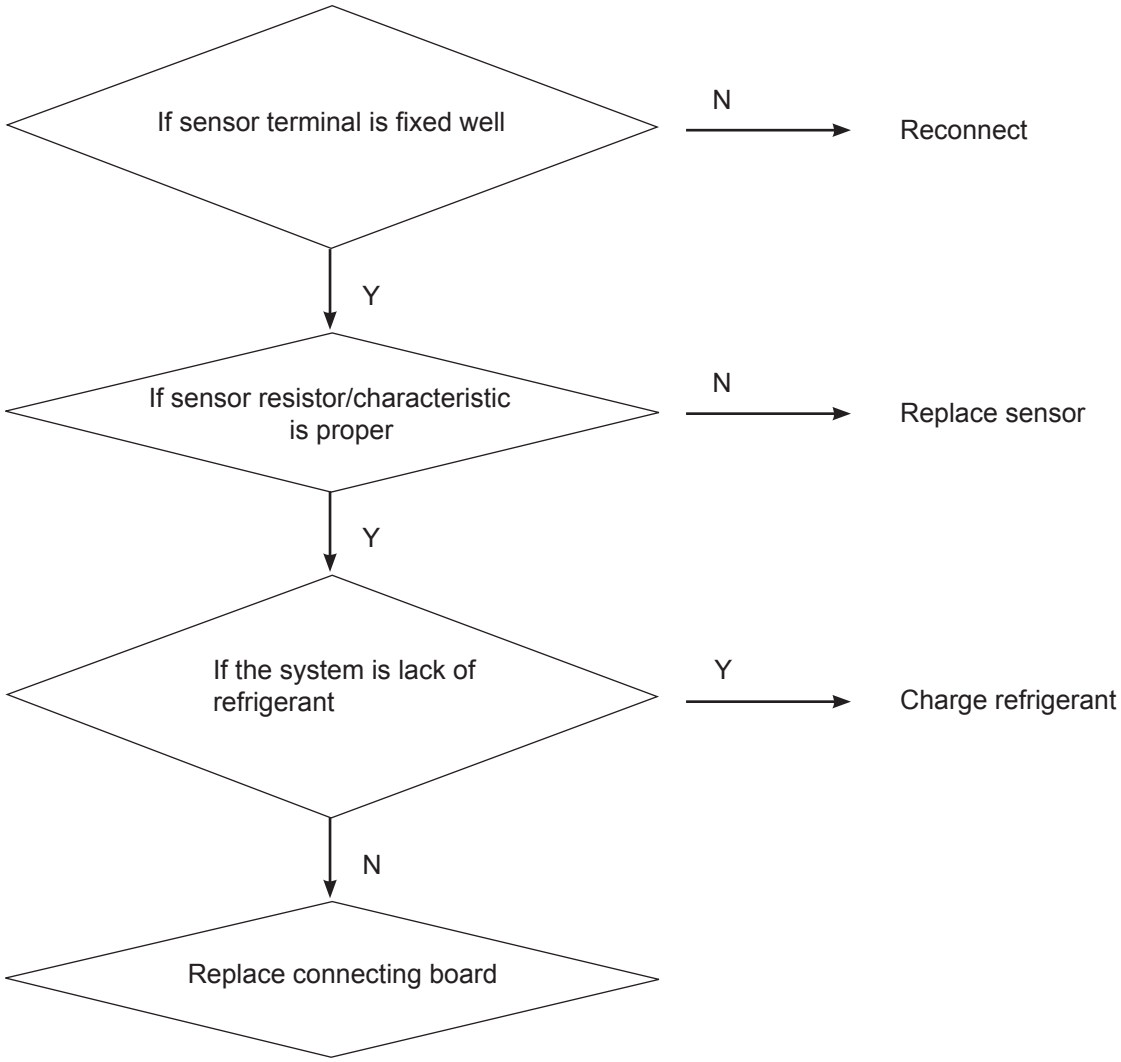
[30] High pressure switch failure



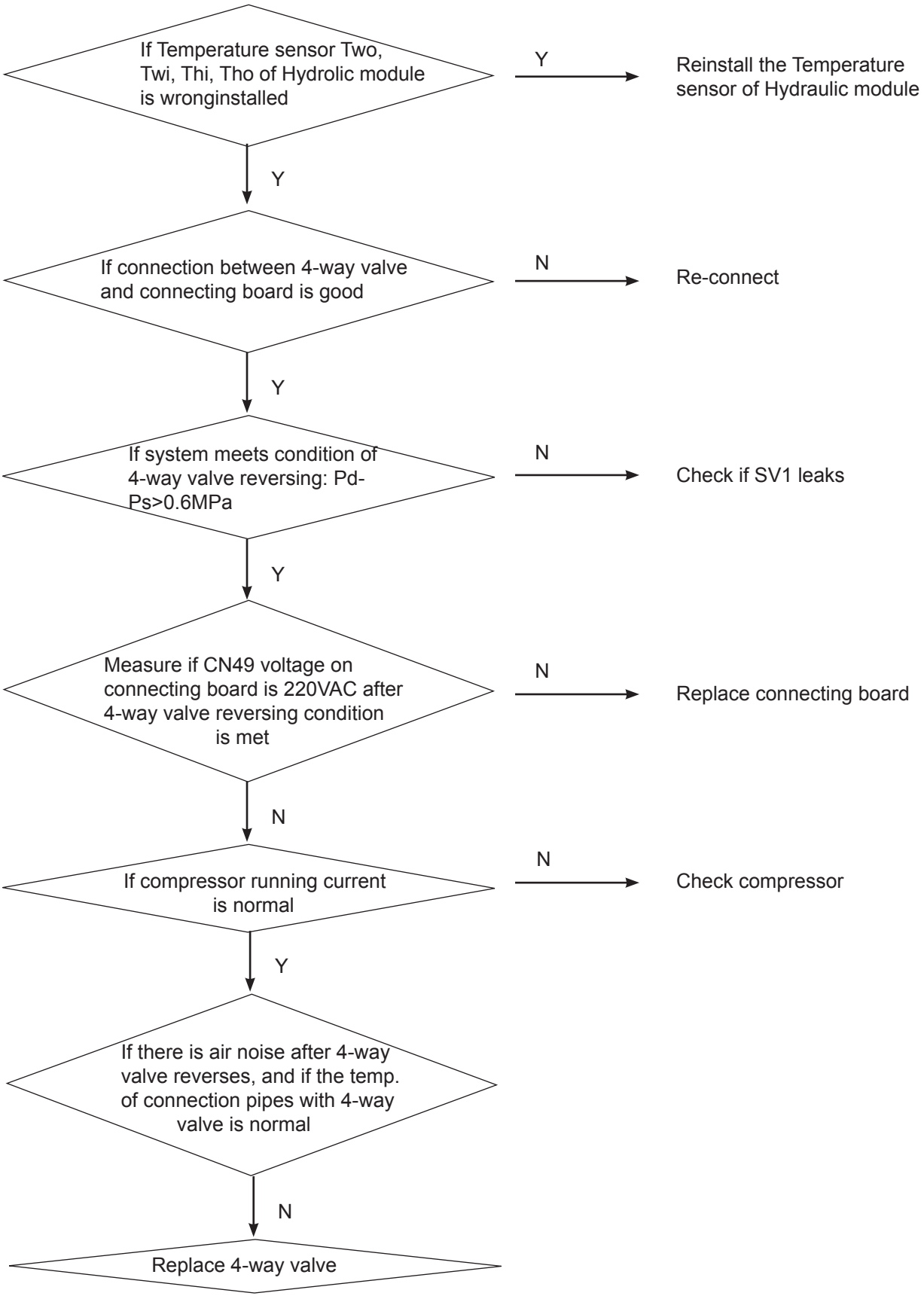
[33] Outdoor EEPROM failure



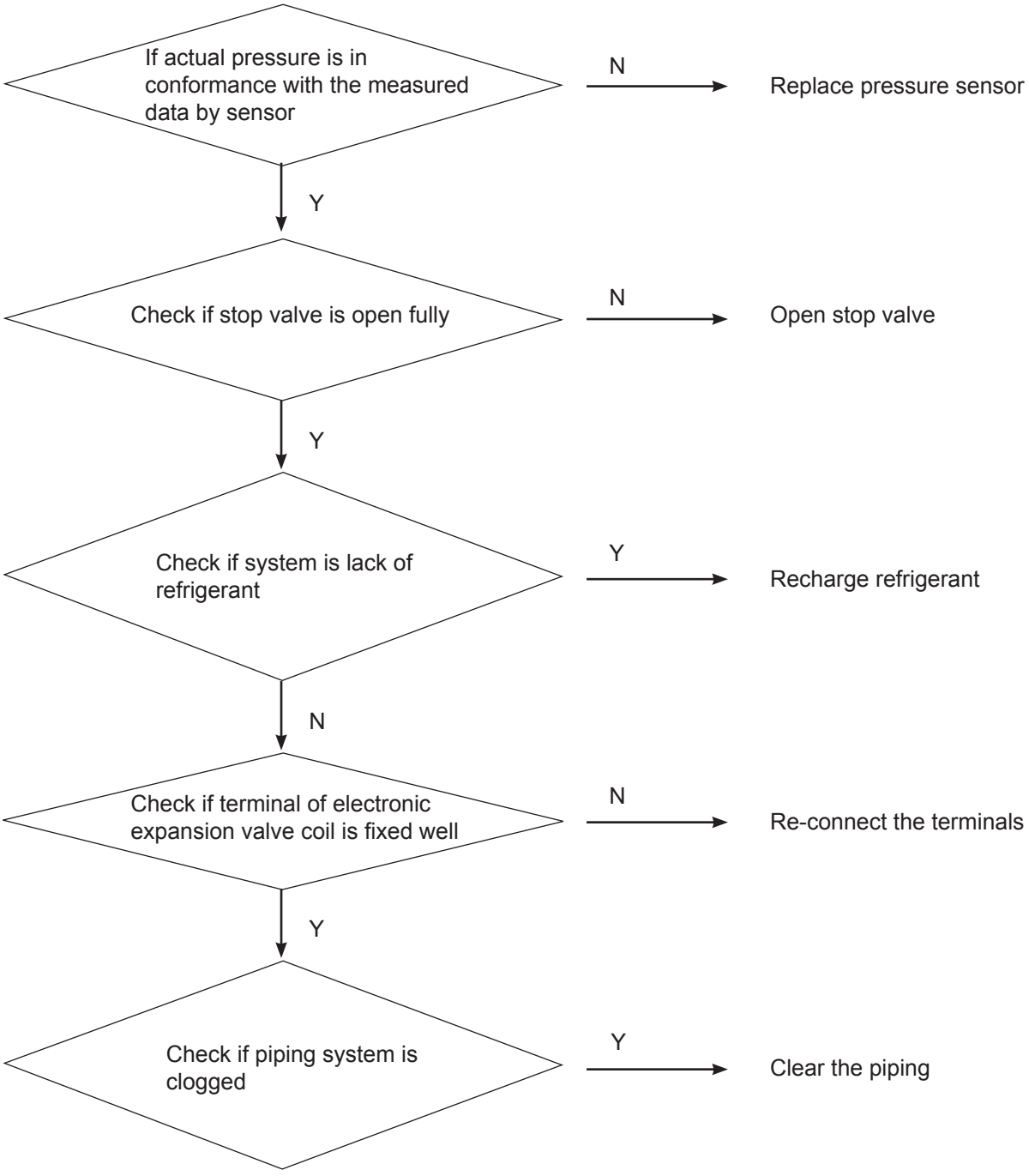
[34] Discharging temp too high protection (Td)



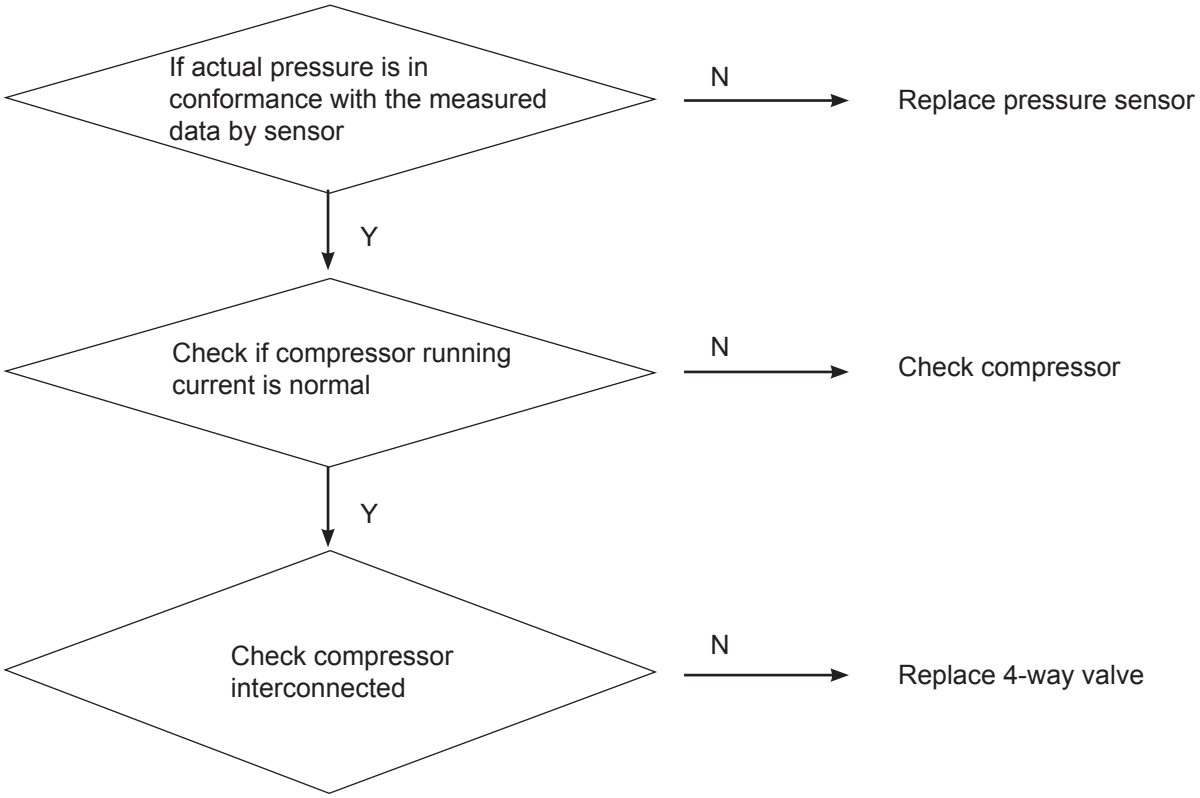
[35] 4-way valve reversing failure



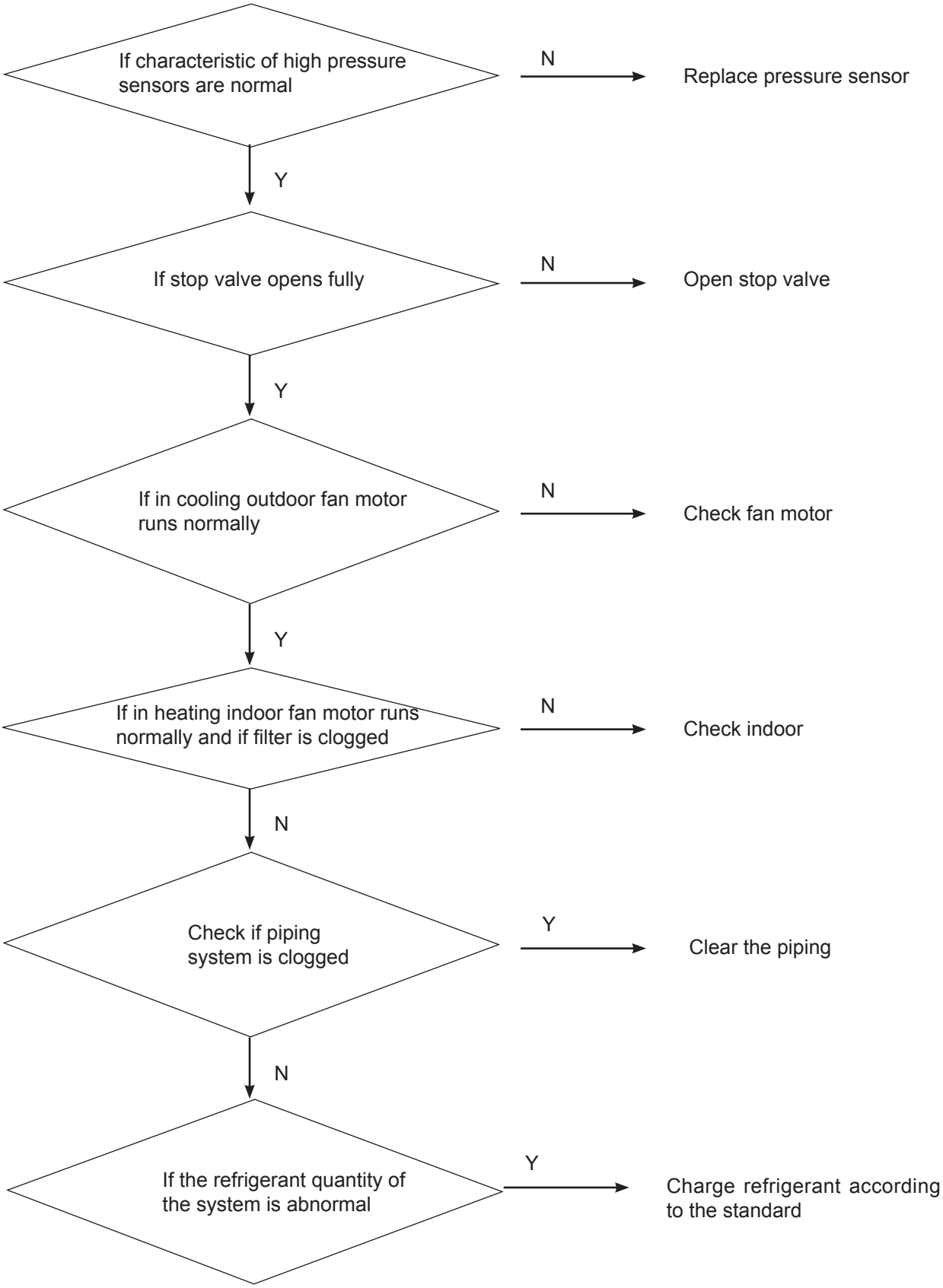
[39-0, 39-1] Low pressure too low(Ps)/compression ratio too high



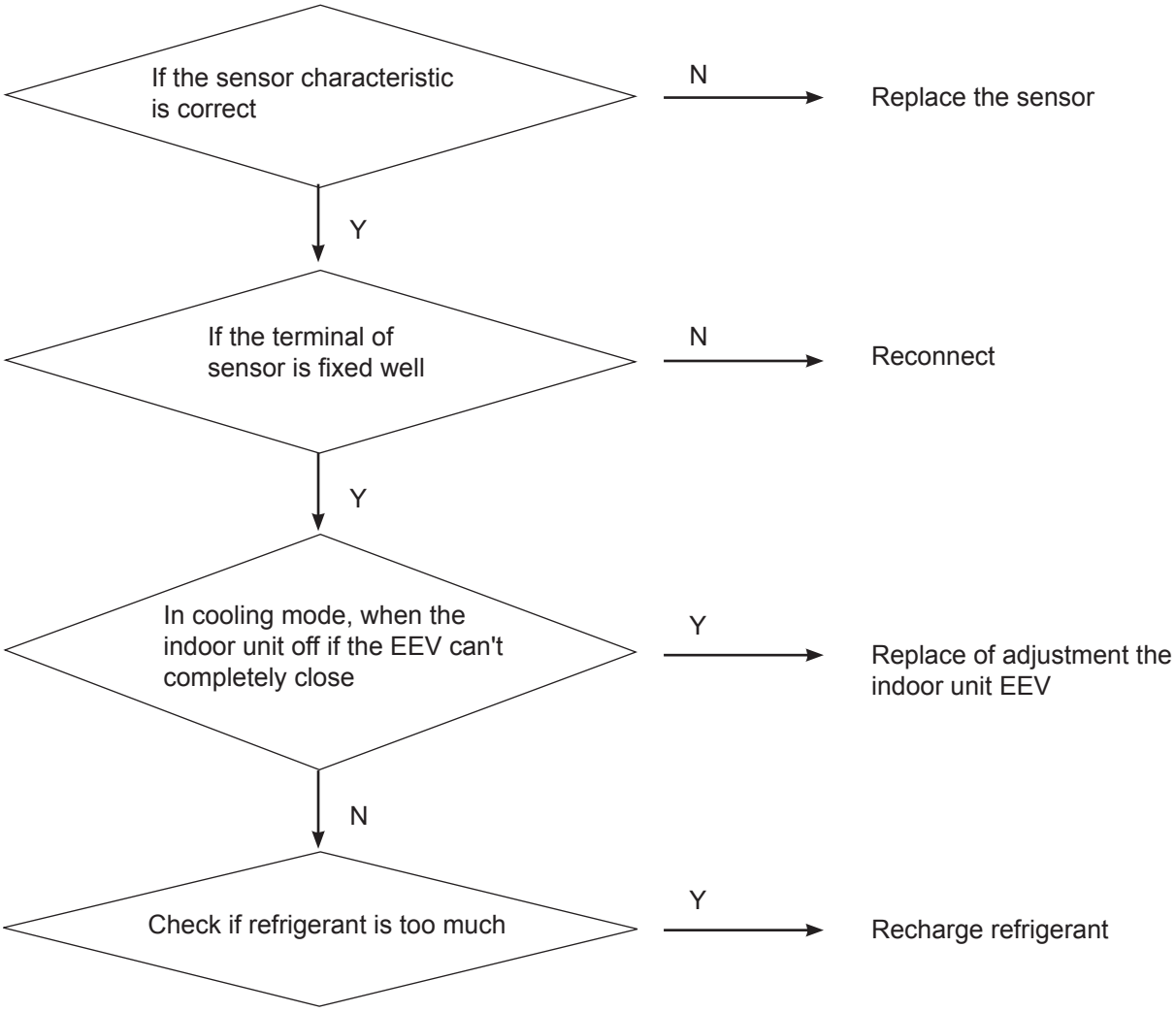
[39-2] Compression ratio too low



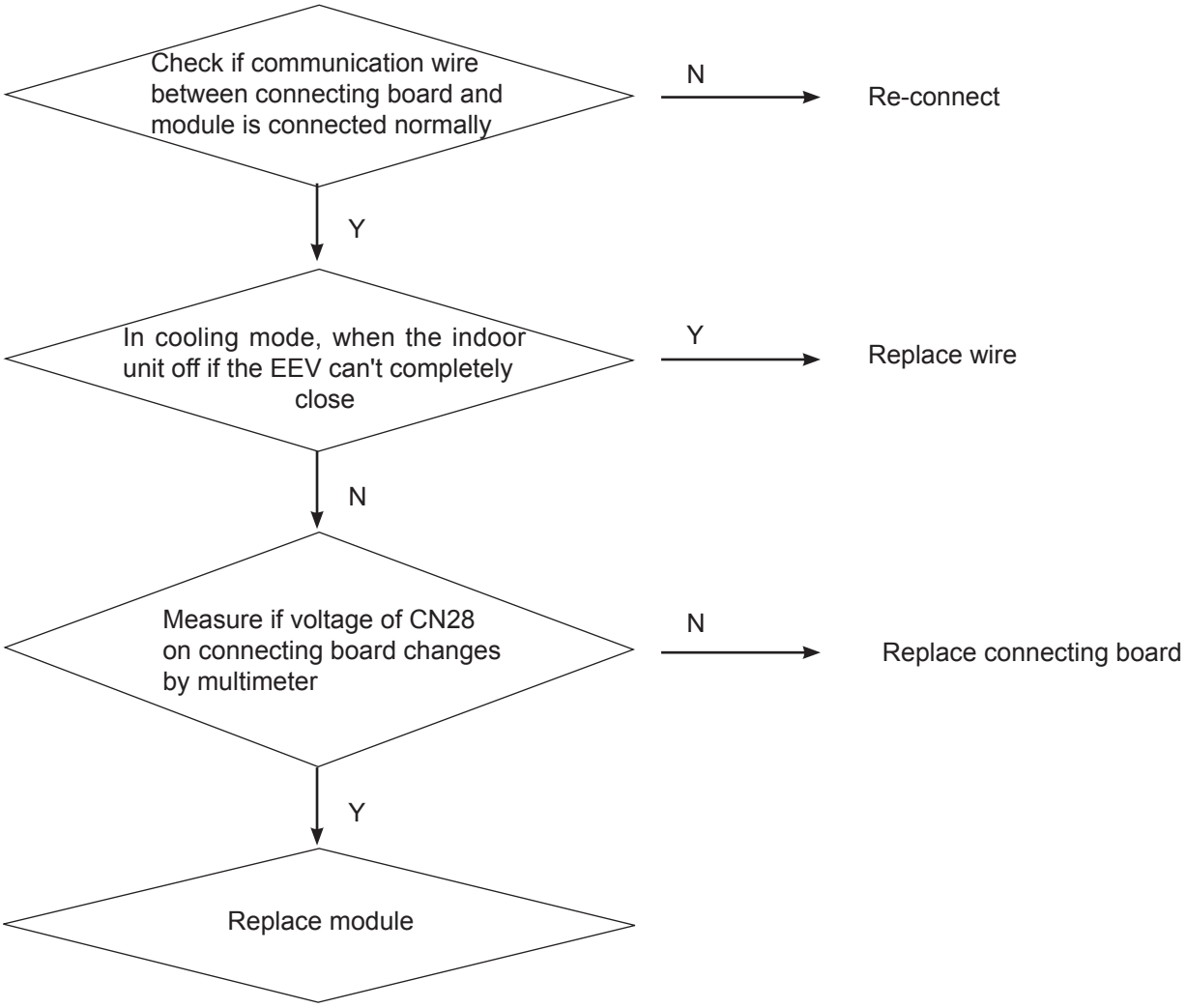
[38,40] High pressure too high/low protection(Pd)



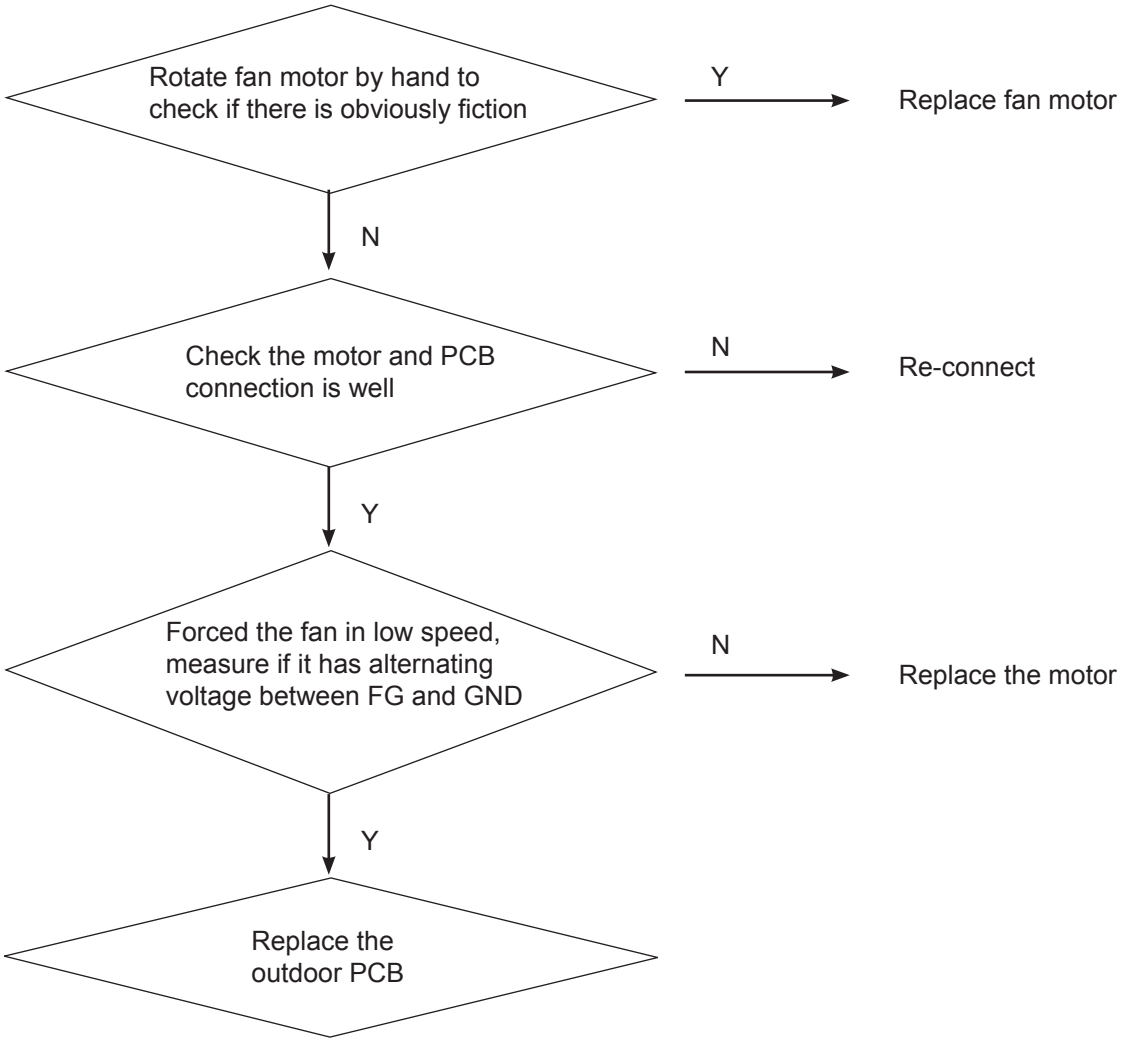
[43] Discharging temp too low protection (Td)



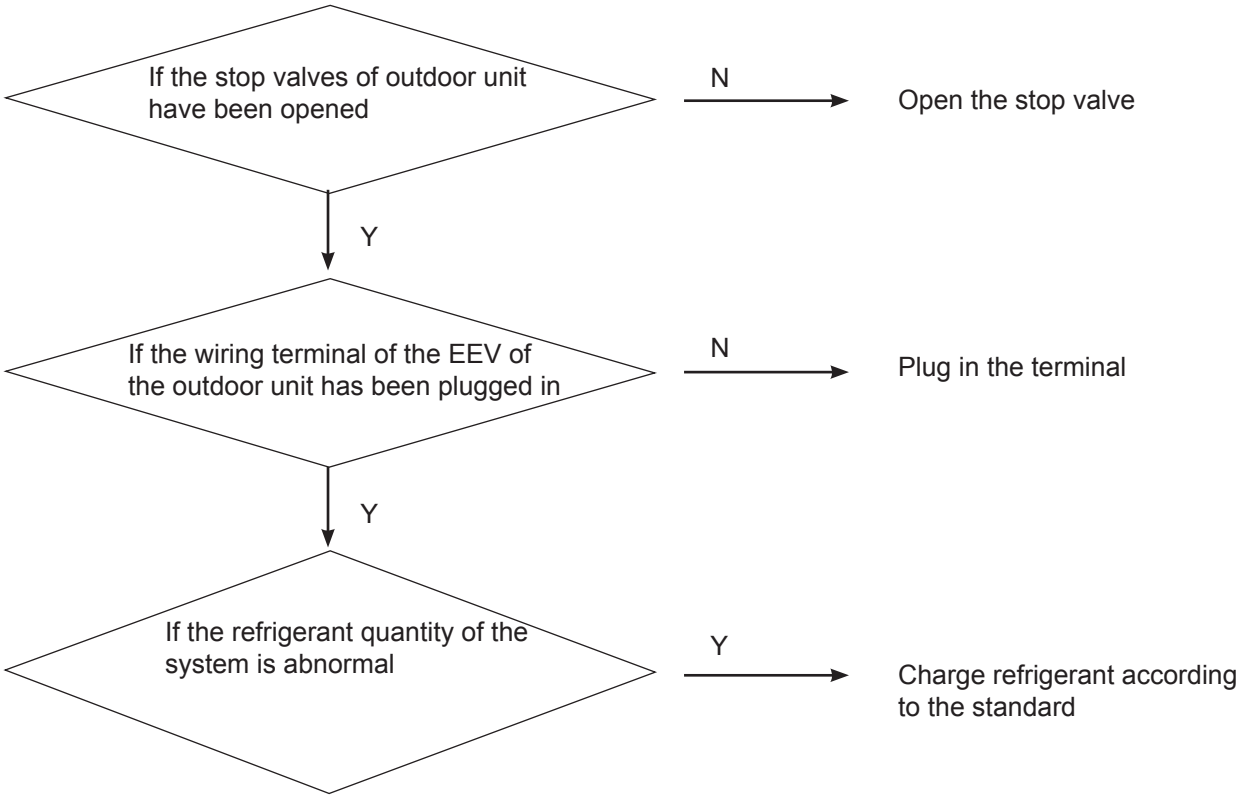
[46] Discharging communication fault with IGBT Power Moudule



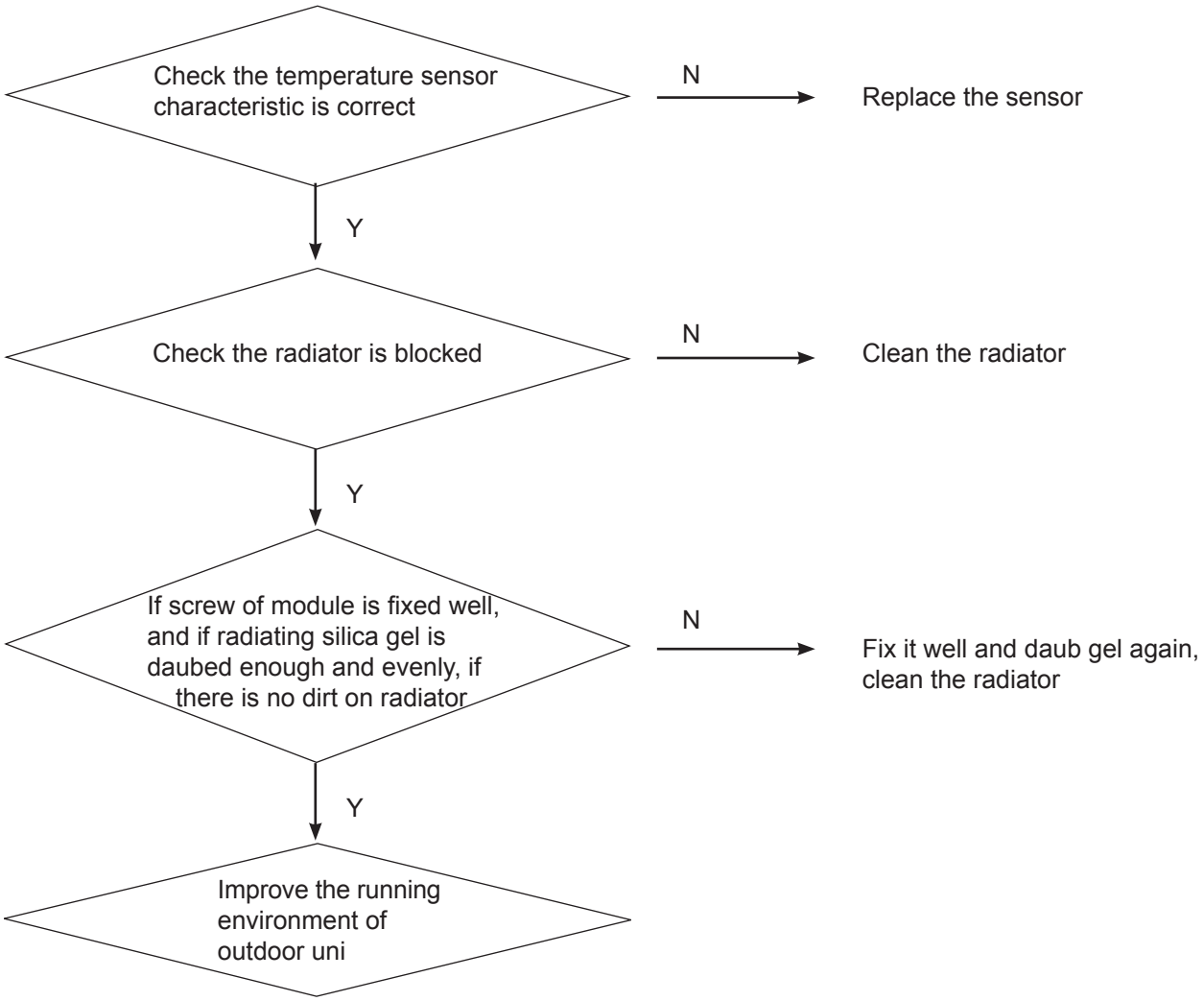
[71] DC FAN failure



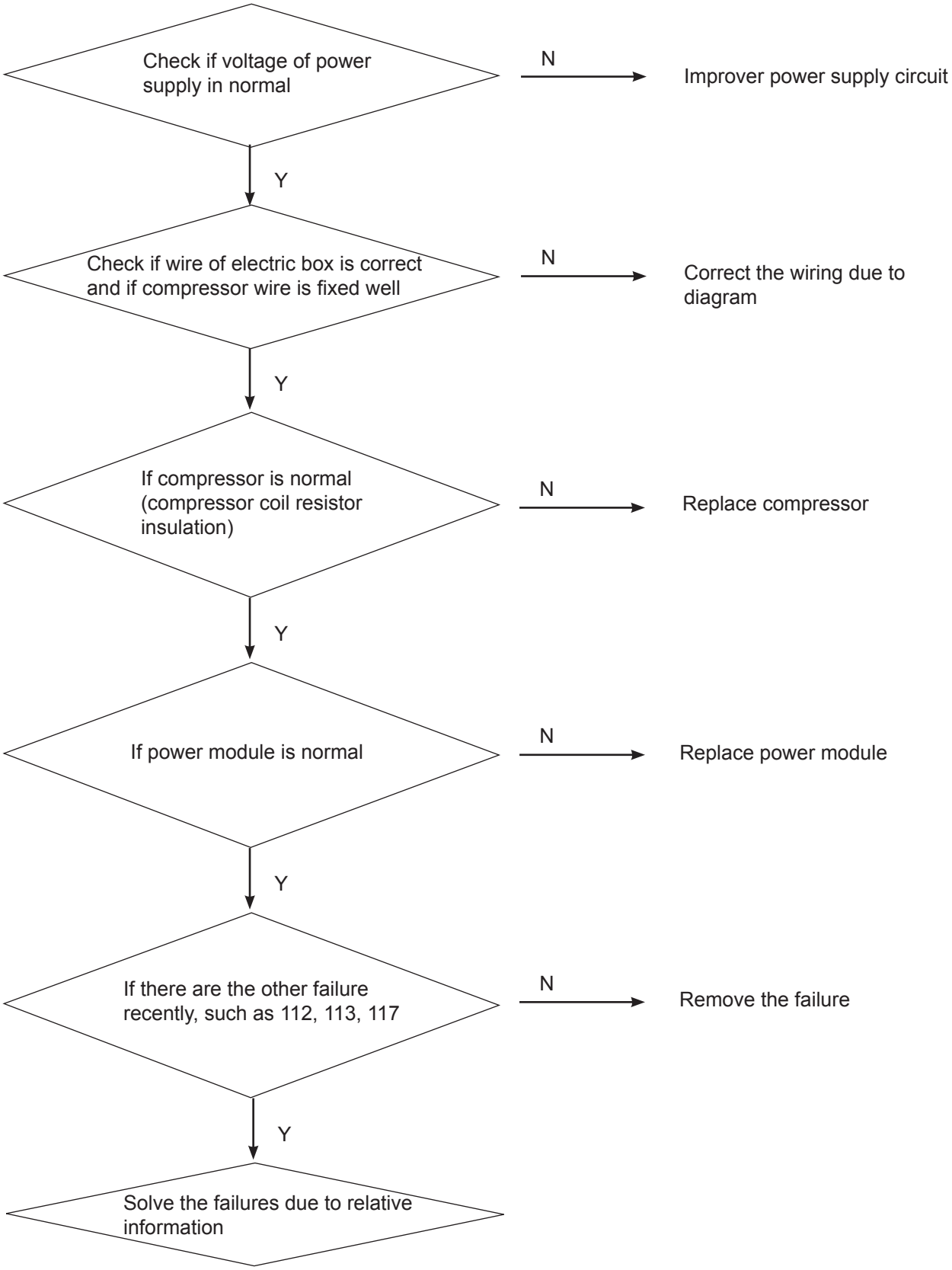
[78] Lack of refrigerant



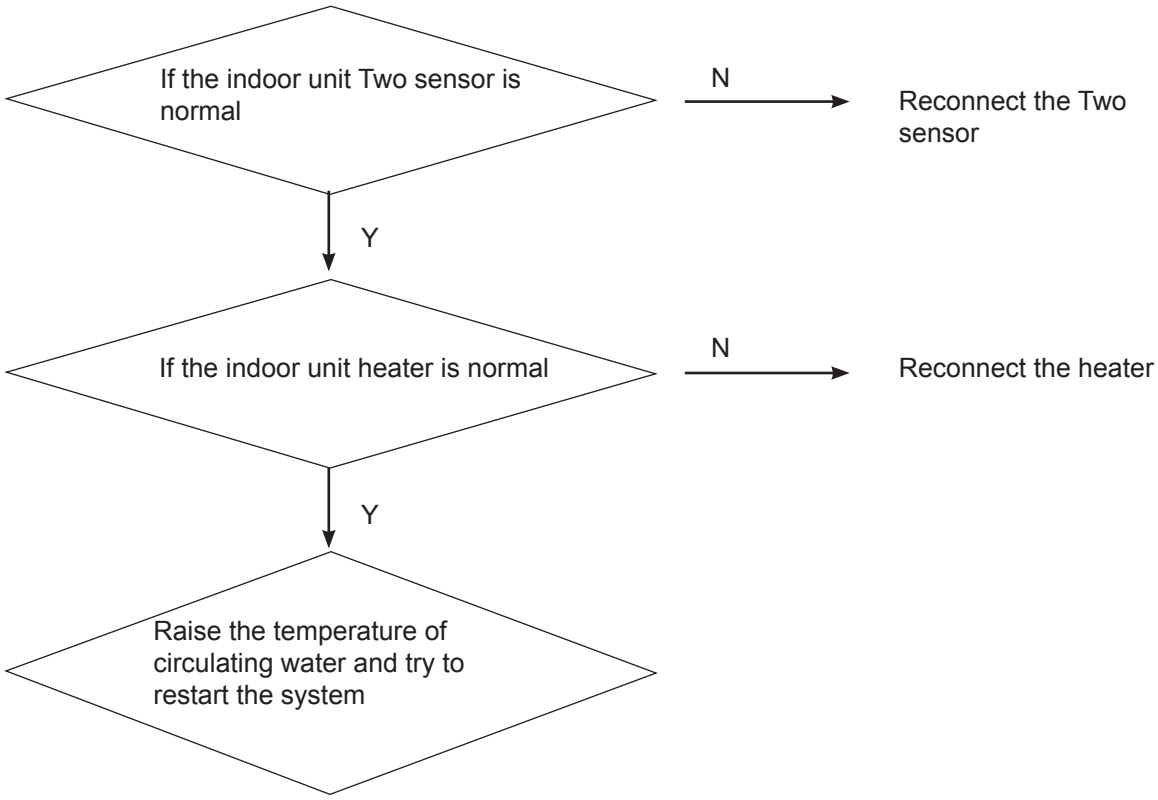
[81] IPM module temp. too high;
[112] Radiator temp. of transducer too high



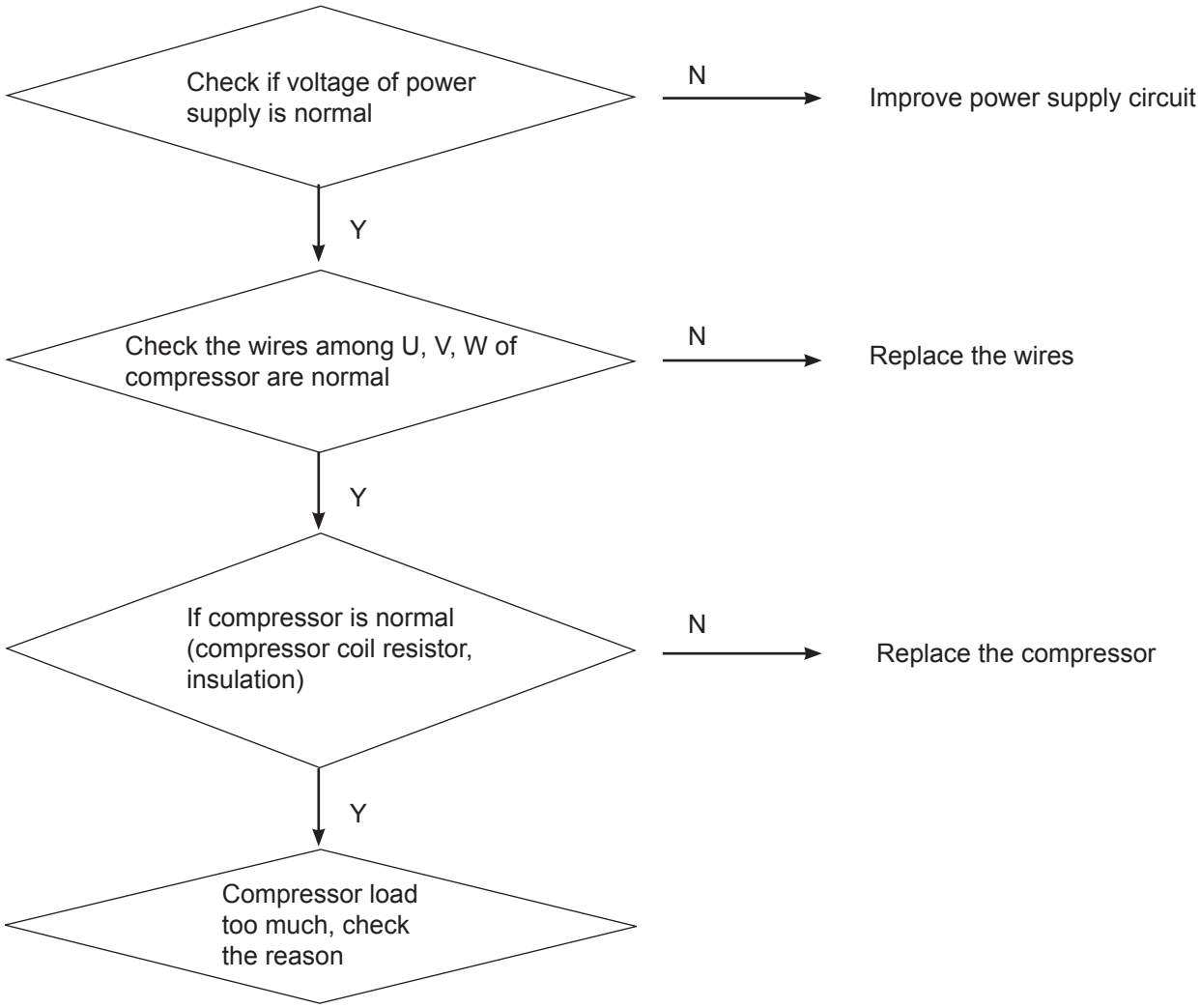
[82] Compressor current protection
[110] IPM module hardware over current



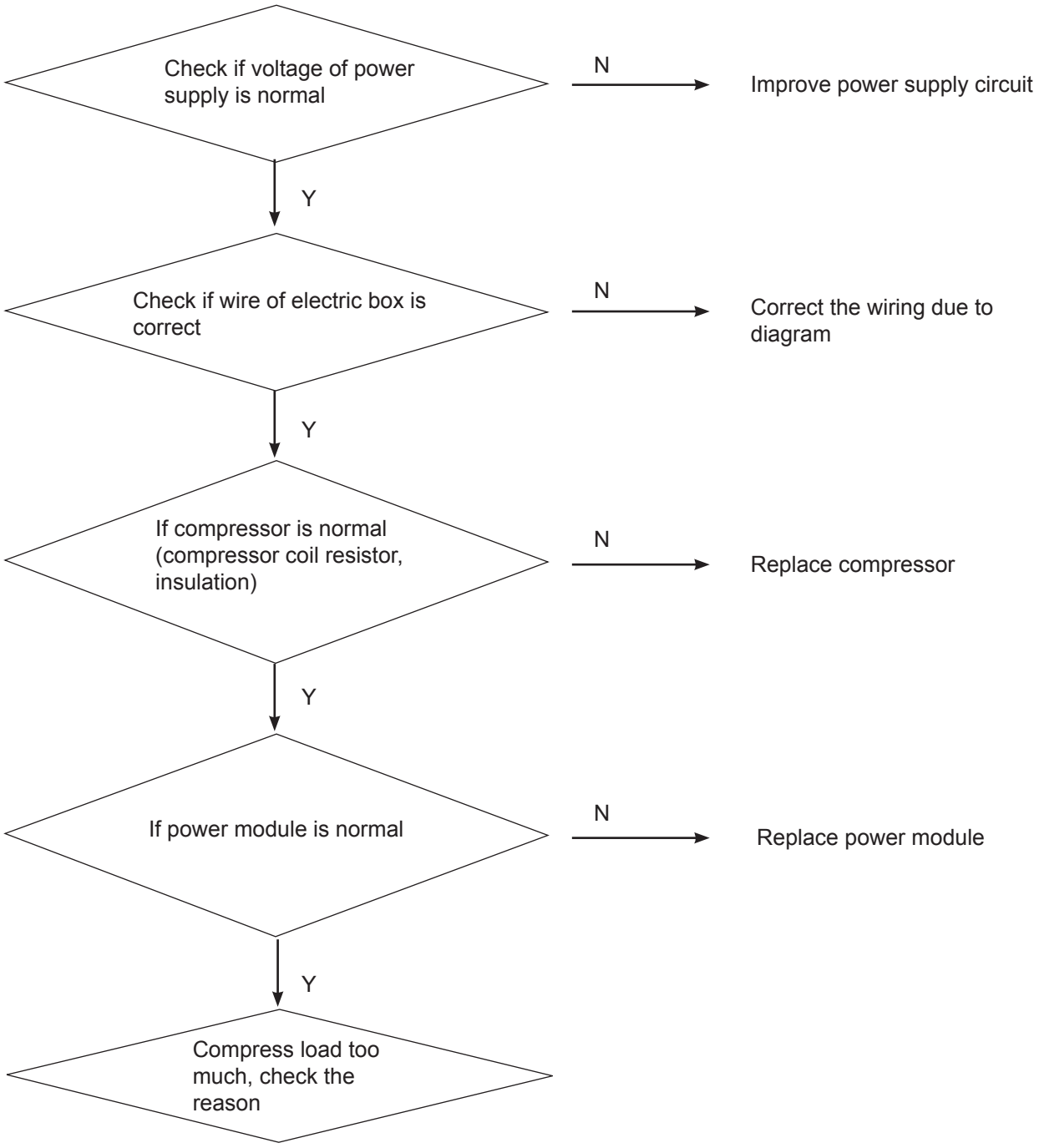
[87] Defrosting with too low water temperature



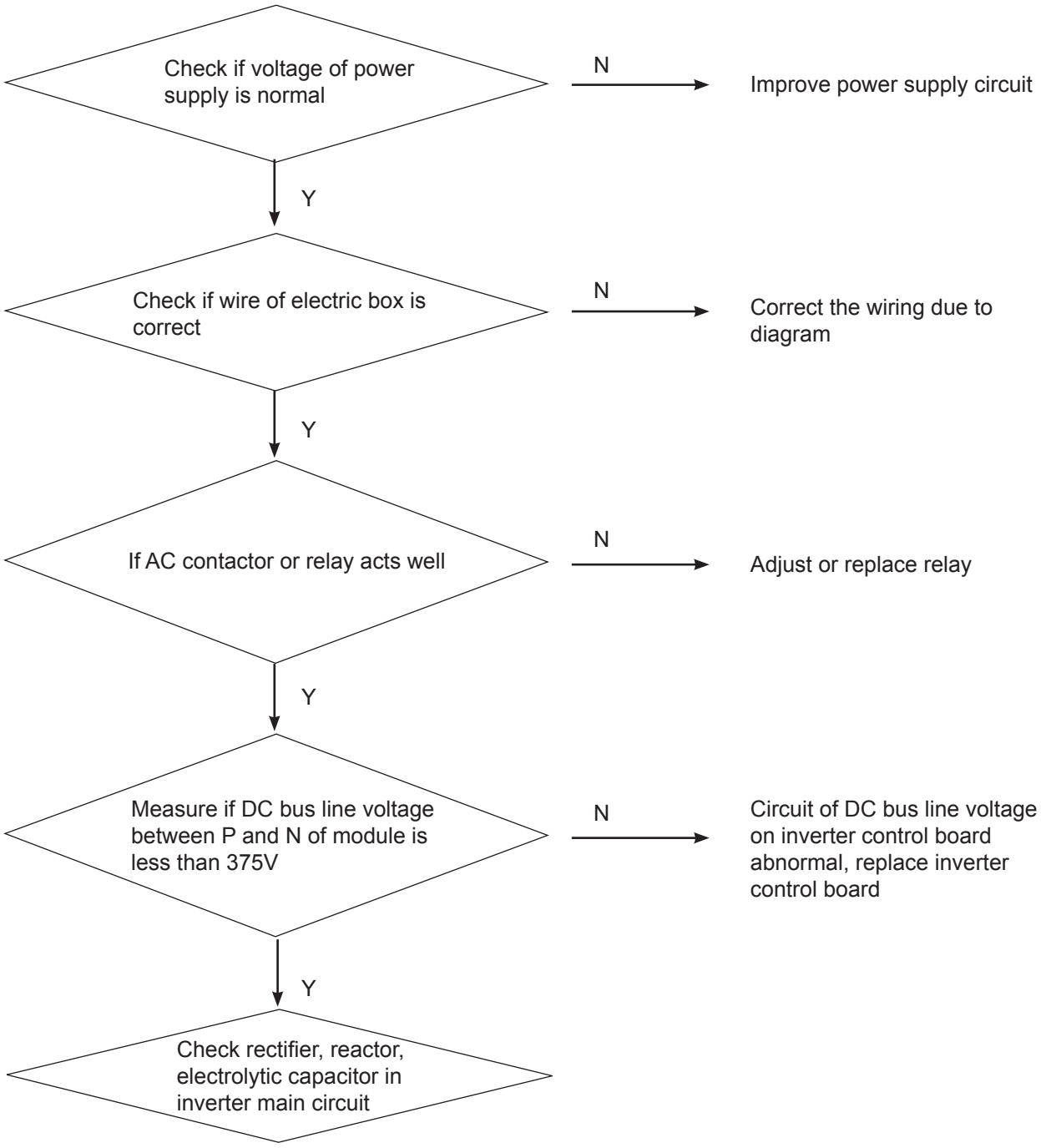
[111] Compressor out of control
[118] The compressor startup failure



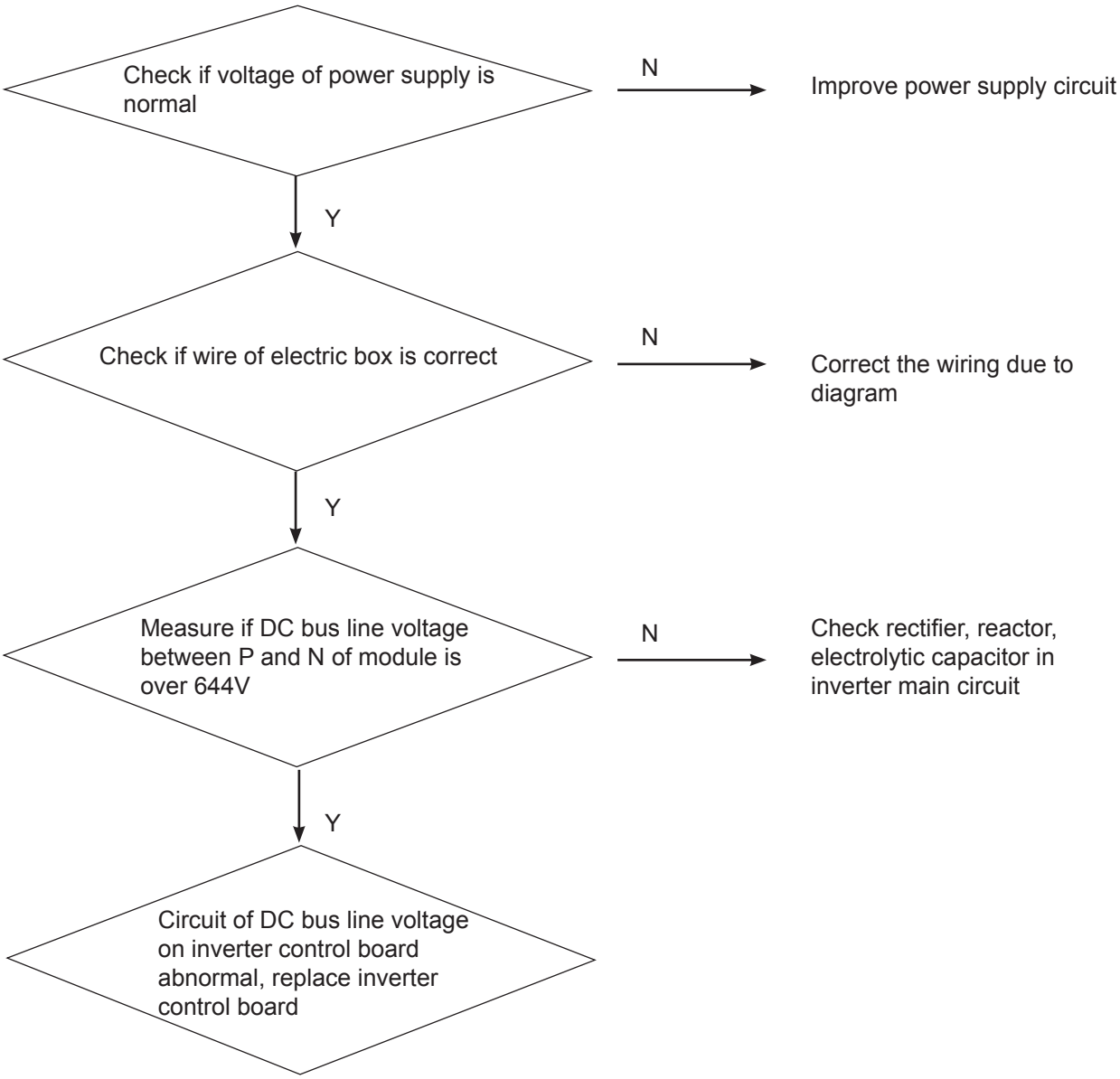
[113] Transducer overload



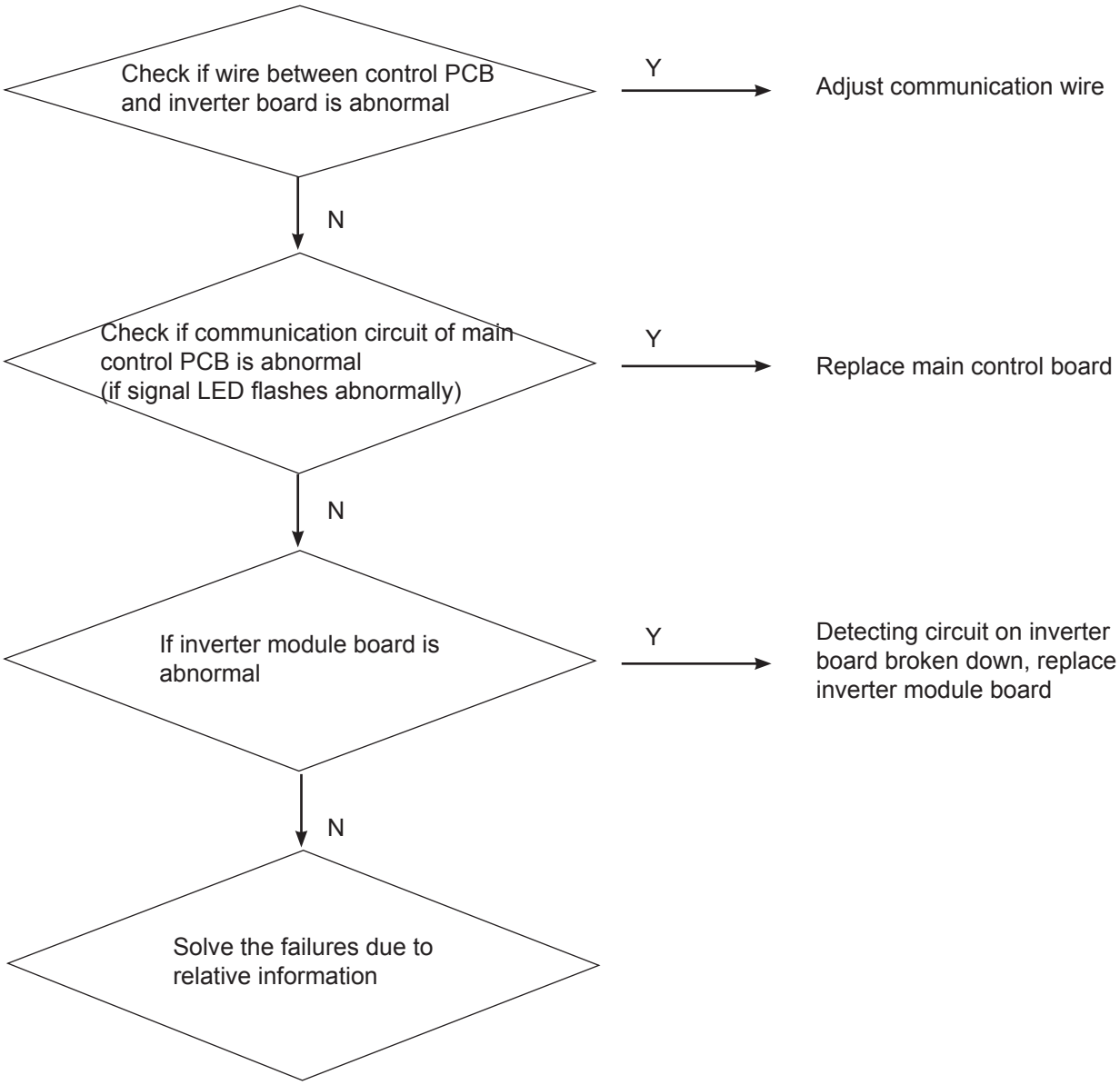
[114] Voltage too low of DC bus line



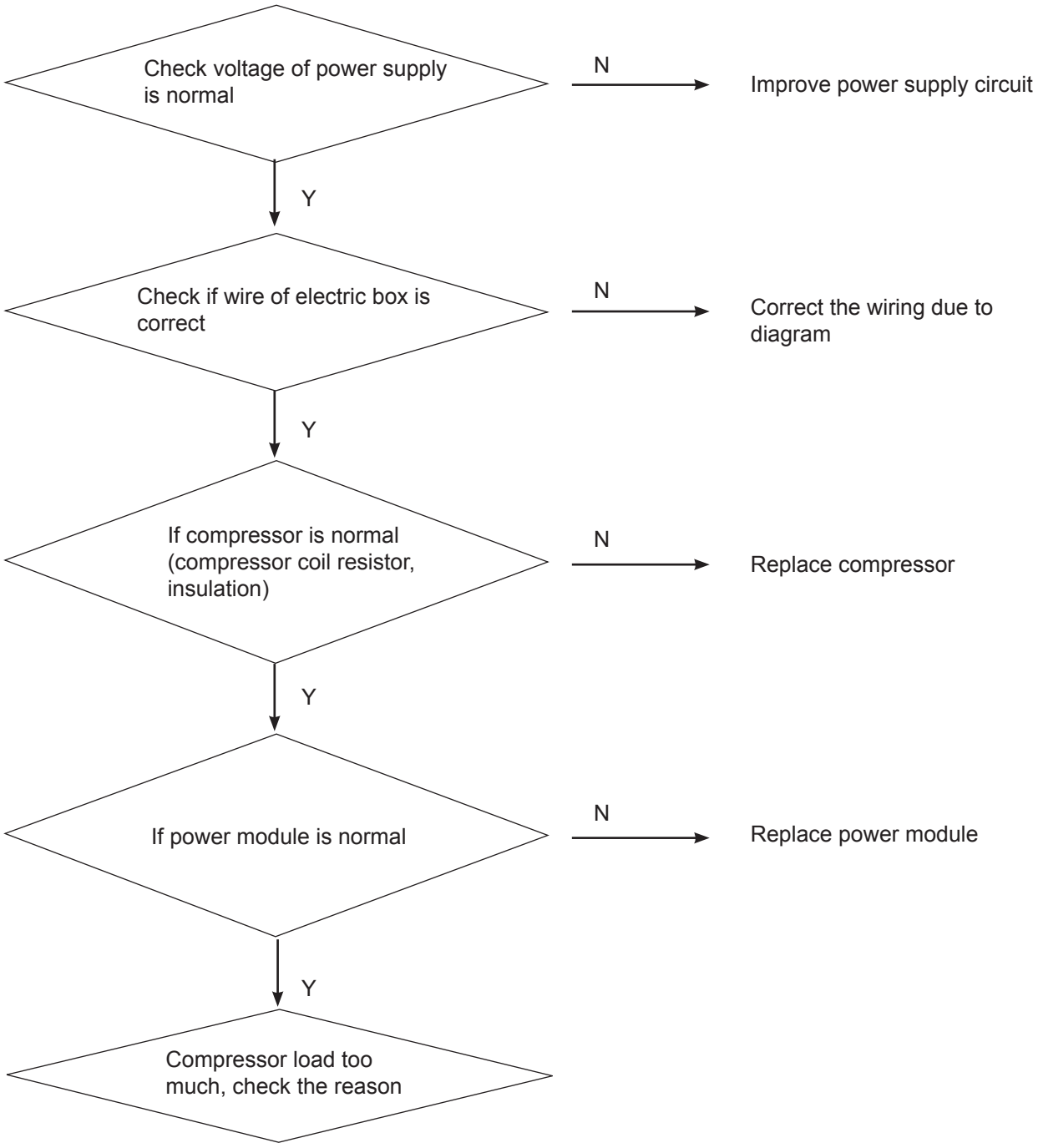
[115] Voltage too high of DC bus line



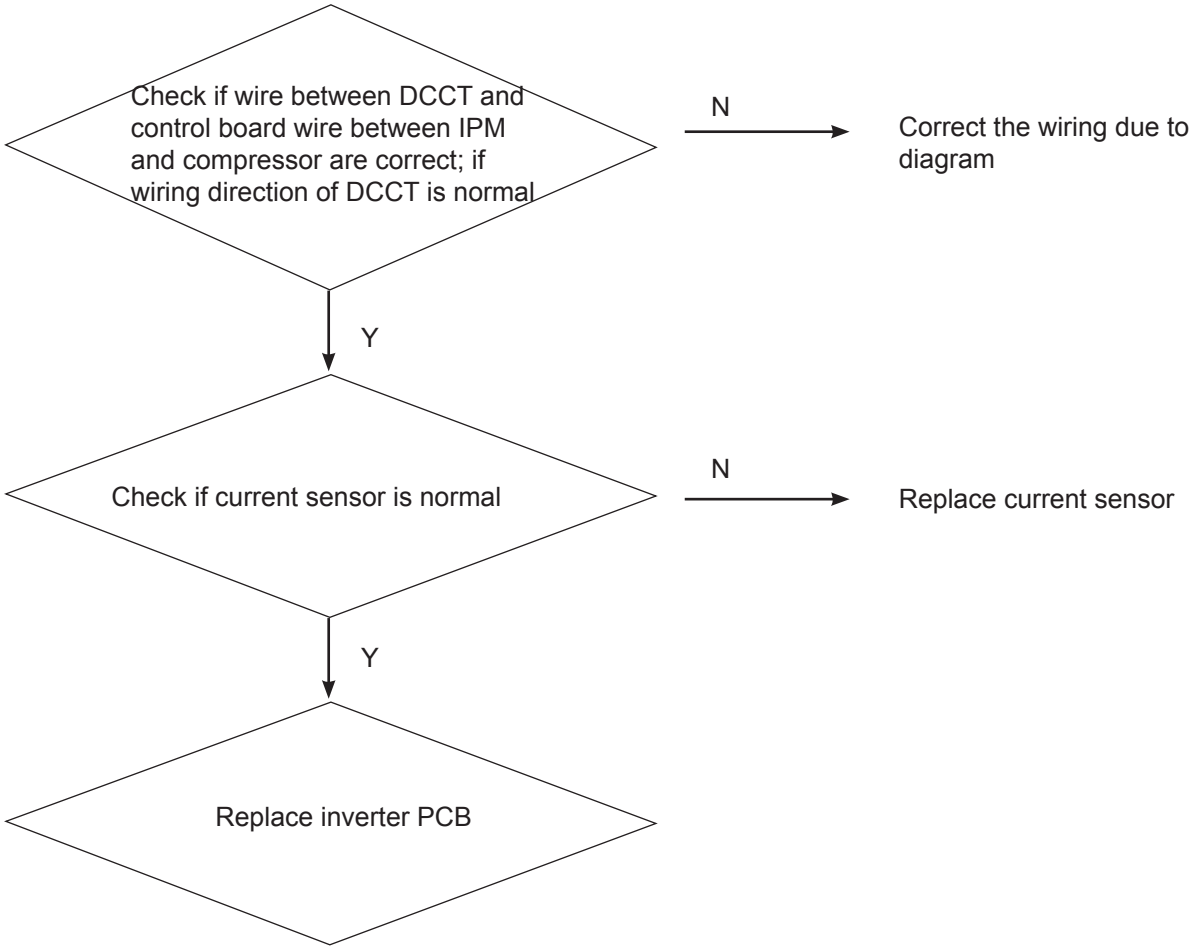
[116] Communication abnormal between transducer (inverter module board) and control PCB



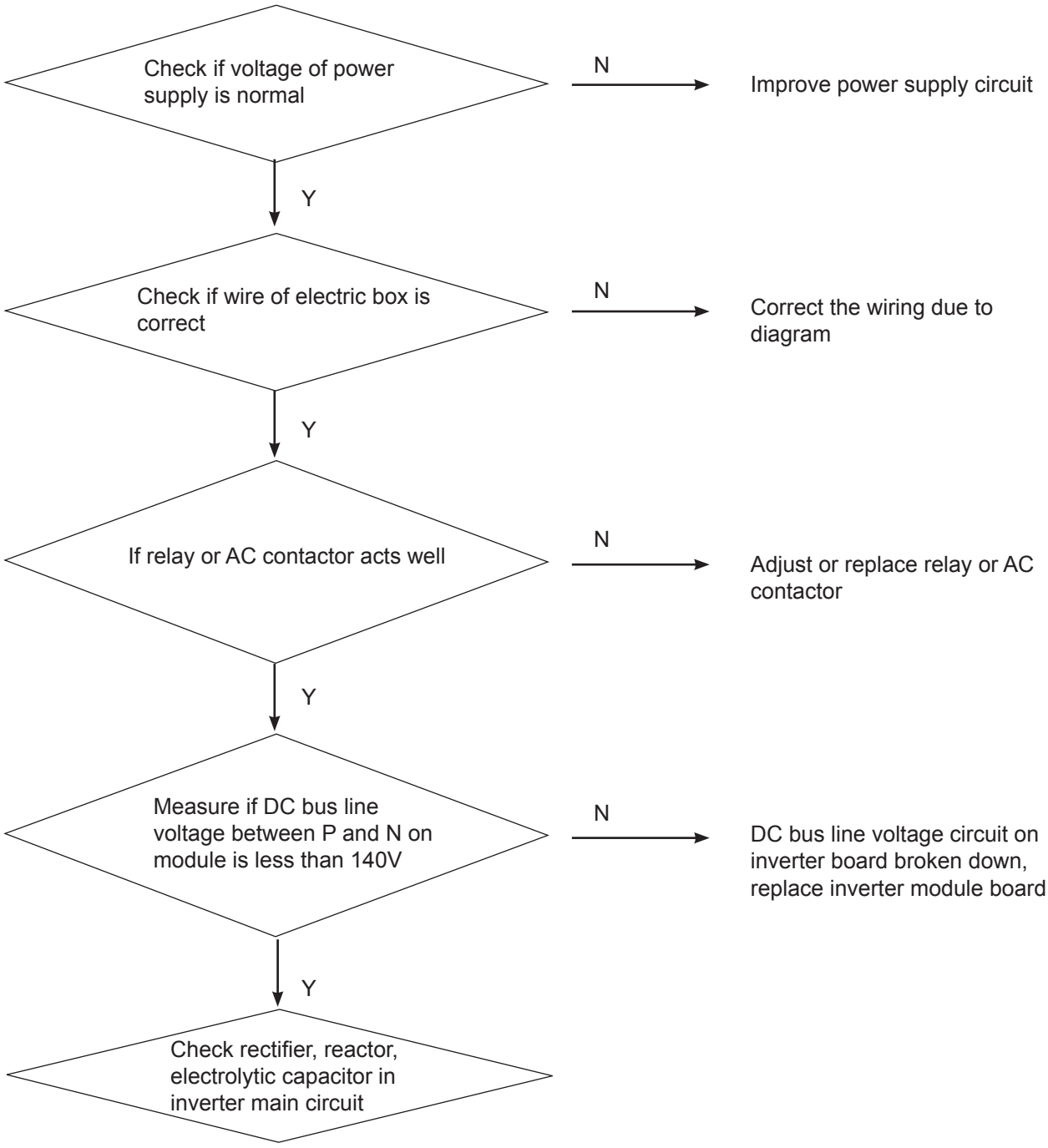
[117] Transducer over current (software protection)



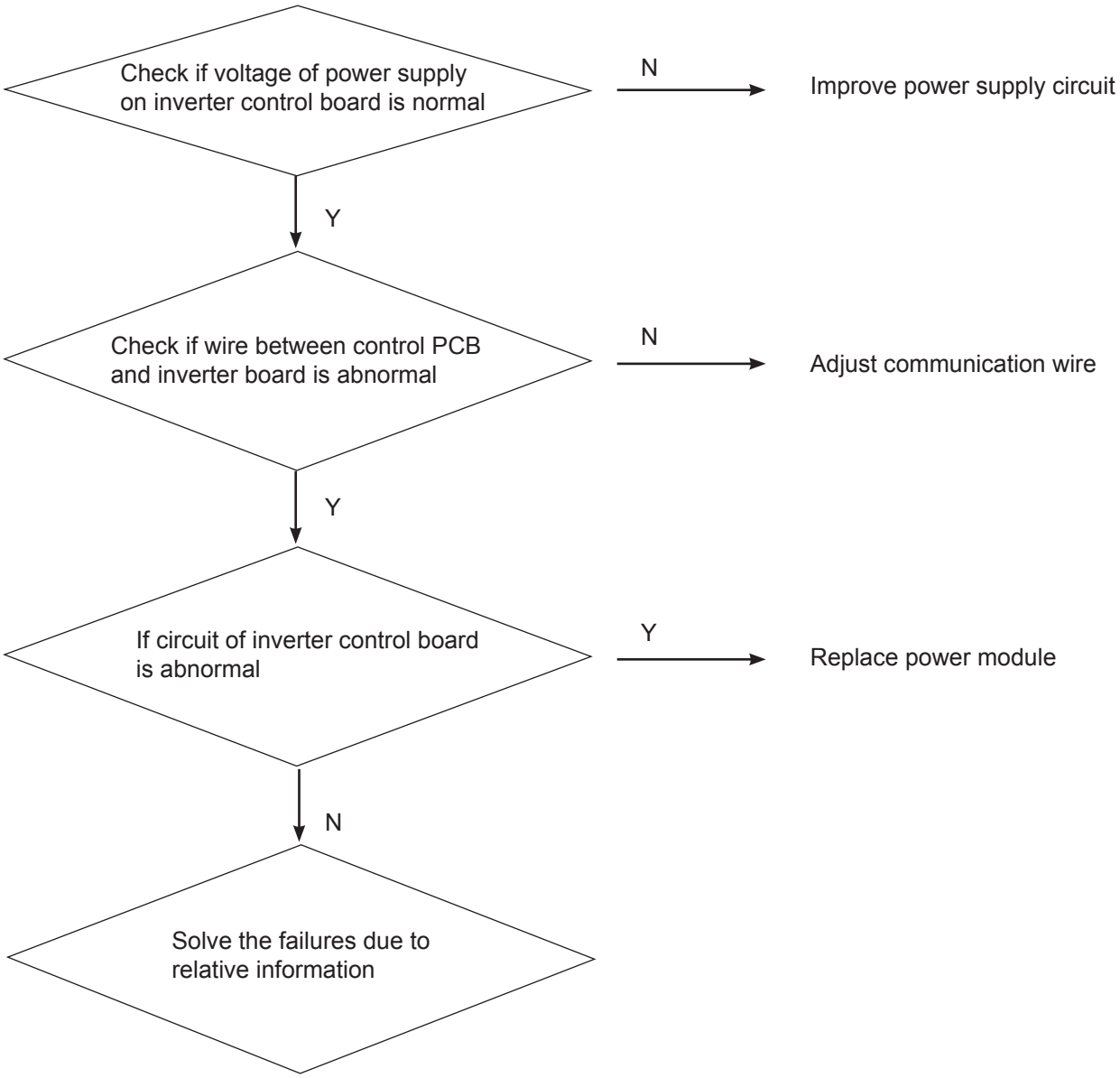
[119] Current detection circuit of transducer is abnormal



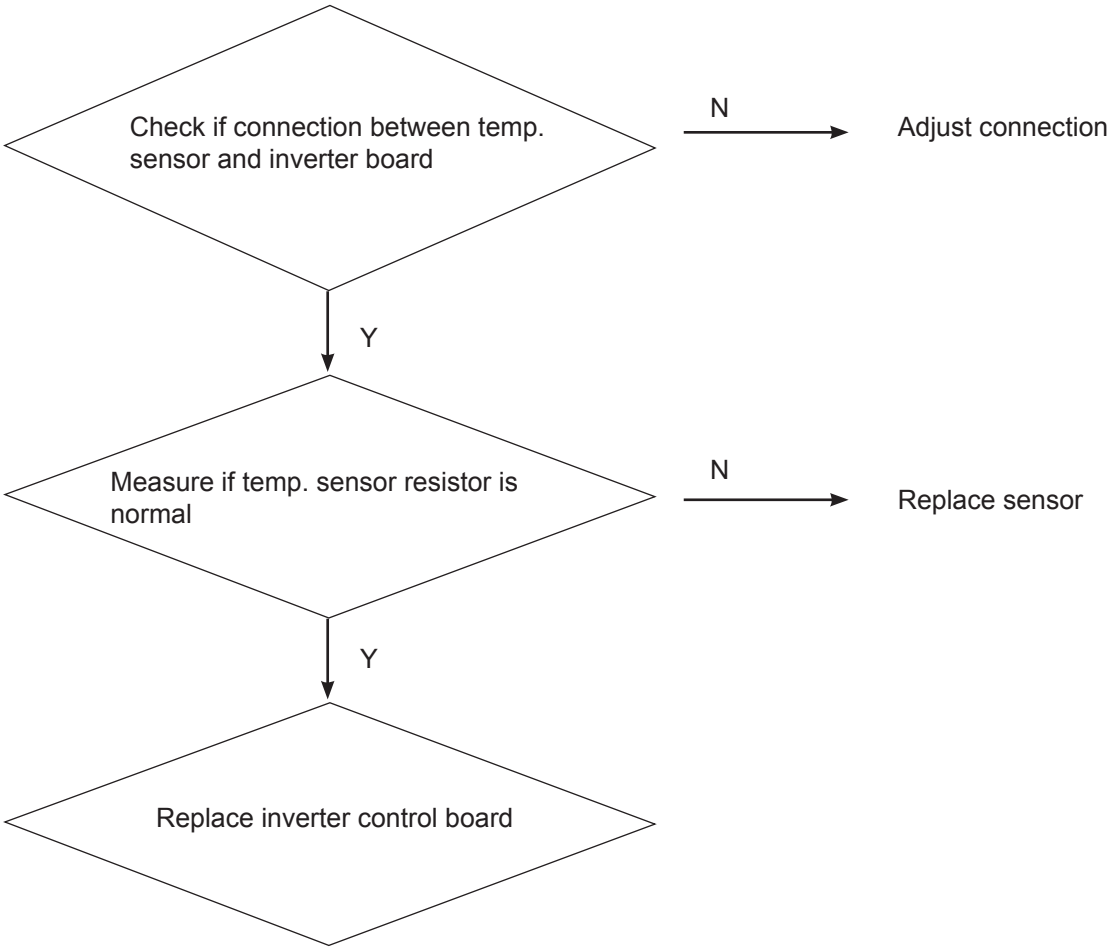
[120] Module power supply abnormal



[121] Power supply of inverter board is abnormal



[122] Radiator temp. sensor of transducer abnormal



21. Sensor Resistance Table

NO.	Model	Part code	Name	Characteristic
1	AW042SSCHA AW062SSCHA AW082SNCHA AW102SNCHA	0150405521	Tao ambient temp. sensor	R25=10KΩ
2		0150405523	Te defrosting temp. sensor	R25=10KΩ
3		0150405525	Td compressor discharge temp. sensor	R80=50KΩ
4		0150405526	Ts compressor suction temp. sensor	R25=10KΩ
5	HU062WAMNA HU102WAMNA	0150405631	Thi in refrigerant temp. sensor	R25=10KΩ
6			Tho out refrigerant temp. sensor	R25=10KΩ
7		0150405565	Twi in water temp. sensor	R25=10KΩ
8			Two out water temp. sensor	R25=10KΩ

Haier

R80=50kΩ±3% B25/80=4450K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
0	1749.014	1921.993	2094.972	9	9
1	1651.431	1813.265	1975.099	8.93	8.93
2	1560.165	1711.646	1863.127	8.85	8.85
3	1474.737	1616.593	1758.449	8.78	8.78
4	1394.709	1527.611	1660.513	8.7	8.7
5	1319.683	1444.25	1568.817	8.63	8.63
6	1249.295	1366.096	1482.897	8.55	8.55
7	1183.21	1292.773	1402.336	8.48	8.48
8	1121.124	1223.935	1326.746	8.4	8.4
9	1062.756	1159.265	1255.774	8.33	8.33
10	1007.85	1098.474	1189.098	8.25	8.25
11	956.167	1041.293	1126.419	8.18	8.18
12	907.491	987.477	1067.463	8.1	8.1
13	861.621	936.799	1011.977	8.03	8.03
14	818.372	889.052	959.732	7.95	7.95
15	777.574	844.042	910.51	7.88	7.88
16	739.066	801.59	864.114	7.8	7.8
17	702.705	761.533	820.361	7.73	7.73
18	668.353	723.717	779.081	7.65	7.65
19	635.885	688.001	740.117	7.58	7.58
20	605.185	654.254	703.323	7.5	7.5
21	576.145	622.355	668.565	7.43	7.43
22	548.663	592.189	635.715	7.35	7.35
23	522.645	563.651	604.657	7.28	7.28
24	498.006	536.644	575.282	7.2	7.2
25	474.662	511.076	547.49	7.13	7.13
26	452.538	486.862	521.186	7.05	7.05
27	431.563	463.922	496.281	6.98	6.98
28	411.671	442.182	472.693	6.9	6.9
29	392.8	421.572	450.344	6.83	6.83
30	374.891	402.028	429.165	6.75	6.75
31	357.891	383.489	409.087	6.68	6.68
32	341.749	365.898	390.047	6.6	6.6
33	326.416	349.201	371.986	6.53	6.53
34	311.848	333.349	354.85	6.45	6.45
35	298.004	318.295	338.586	6.38	6.38
36	284.843	303.995	323.147	6.3	6.3

R80=50kΩ±3% B25/80=4450K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
37	272.329	290.407	308.485	6.23	6.23
38	260.427	277.493	294.559	6.15	6.15
39	249.104	265.216	281.328	6.08	6.08
40	238.329	253.541	268.753	6	6
41	228.073	242.437	256.801	5.93	5.93
42	218.308	231.873	245.438	5.85	5.85
43	209.01	221.82	234.63	5.78	5.78
44	200.154	212.252	224.35	5.7	5.7
45	191.715	203.142	214.569	5.63	5.63
46	183.674	194.467	205.26	5.55	5.55
47	176.009	186.204	196.399	5.48	5.48
48	168.703	178.333	187.963	5.4	5.4
49	161.735	170.832	179.929	5.33	5.33
50	155.089	163.682	172.275	5.25	5.25
51	148.748	156.866	164.984	5.18	5.18
52	142.698	150.367	158.036	5.1	5.1
53	136.924	144.168	151.412	5.03	5.03
54	131.411	138.255	145.099	4.95	4.95
55	126.148	132.613	139.078	4.88	4.88
56	121.122	127.229	133.336	4.8	4.8
57	116.32	122.089	127.858	4.73	4.73
58	111.732	117.181	122.63	4.65	4.65
59	107.347	112.494	117.641	4.58	4.58
60	103.157	108.018	112.879	4.5	4.5
61	99.15	103.741	108.332	4.43	4.43
62	95.319	99.654	103.989	4.35	4.35
63	91.655	95.748	99.841	4.28	4.28
64	88.149	92.014	95.879	4.2	4.2
65	84.795	88.443	92.091	4.13	4.13
66	81.584	85.028	88.472	4.05	4.05
67	78.511	81.761	85.011	3.98	3.98
68	75.569	78.636	81.703	3.9	3.9
69	72.752	75.645	78.538	3.83	3.83
70	70.052	72.781	75.51	3.75	3.75
71	67.466	70.04	72.614	3.68	3.68

R80=50kΩ±3% B25/80=4450K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
72	64.988	67.415	69.842	3.6	3.6
73	62.613	64.901	67.189	3.53	3.53
74	60.337	62.493	64.649	3.45	3.45
75	58.154	60.185	62.216	3.38	3.38
76	56.06	57.973	59.886	3.3	3.3
77	54.051	55.852	57.653	3.23	3.23
78	52.125	53.82	55.515	3.15	3.15
79	50.275	51.87	53.465	3.08	3.08
80	48.5	50	51.5	3	3
81	46.728	48.206	49.684	3.07	3.07
82	45.028	46.484	47.94	3.13	3.13
83	43.397	44.832	46.267	3.2	3.2
84	41.833	43.246	44.659	3.27	3.27
85	40.332	41.723	43.114	3.33	3.33
86	38.891	40.26	41.629	3.4	3.4
87	37.509	38.856	40.203	3.47	3.47
88	36.181	37.506	38.831	3.53	3.53
89	34.905	36.209	37.513	3.6	3.6
90	33.68	34.962	36.244	3.67	3.67
91	32.503	33.764	35.025	3.73	3.73
92	31.373	32.612	33.851	3.8	3.8
93	30.286	31.504	32.722	3.87	3.87
94	29.242	30.439	31.636	3.93	3.93
95	28.236	29.413	30.59	4	4
96	27.271	28.427	29.583	4.07	4.07
97	26.342	27.478	28.614	4.13	4.13
98	25.448	26.564	27.68	4.2	4.2
99	24.589	25.685	26.781	4.27	4.27
100	23.762	24.838	25.914	4.33	4.33
101	22.966	24.023	25.08	4.4	4.4
102	22.199	23.237	24.275	4.47	4.47
103	21.462	22.481	23.5	4.53	4.53
104	20.751	21.752	22.753	4.6	4.6

R80=50kΩ±3% B25/80=4450K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
105	20.067	21.049	22.031	4.67	4.67
106	19.408	20.372	21.336	4.73	4.73
107	18.773	19.72	20.667	4.8	4.8
108	18.162	19.091	20.02	4.87	4.87
109	17.573	18.485	19.397	4.93	4.93
110	17.005	17.9	18.795	5	5
111	16.459	17.337	18.215	5.07	5.07
112	15.931	16.793	17.655	5.13	5.13
113	15.422	16.268	17.114	5.2	5.2
114	14.933	15.763	16.593	5.27	5.27
115	14.46	15.275	16.09	5.33	5.33
116	14.005	14.804	15.603	5.4	5.4
117	13.565	14.349	15.133	5.47	5.47
118	13.141	13.911	14.681	5.53	5.53
119	12.733	13.488	14.243	5.6	5.6
120	12.339	13.08	13.821	5.67	5.67
121	11.958	12.685	13.412	5.73	5.73
122	11.591	12.305	13.019	5.8	5.8
123	11.238	11.938	12.638	5.87	5.87
124	10.897	11.584	12.271	5.93	5.93
125	10.567	11.242	11.917	6	6
126	10.249	10.911	11.573	6.07	6.07
127	9.943	10.593	11.243	6.13	6.13
128	9.647	10.285	10.923	6.2	6.2
129	9.362	9.988	10.614	6.27	6.27
130	9.087	9.701	10.315	6.33	6.33
131	8.822	9.425	10.028	6.4	6.4
132	8.566	9.158	9.75	6.47	6.47
133	8.319	8.9	9.481	6.53	6.53
134	8.08	8.651	9.222	6.6	6.6
135	7.85	8.411	8.972	6.67	6.67
136	7.629	8.18	8.731	6.73	6.73
137	7.416	7.957	8.498	6.8	6.8
138	7.209	7.741	8.273	6.87	6.87
139	7.011	7.533	8.055	6.93	6.93
140	6.82	7.333	7.846	7	7

Haier

R25=10kΩ±3% B25/50=3700K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
-30	145.819	135.018	124.217	7	7
-29	138.071	129.126	120.181	6.93	6.93
-28	131.793	123.339	114.885	6.85	6.85
-27	125.665	117.684	109.703	6.78	6.78
-26	119.706	112.18	104.654	6.71	6.71
-25	113.933	106.843	99.753	6.64	6.64
-24	108.361	101.687	95.013	6.56	6.56
-23	102.997	96.719	90.441	6.49	6.49
-22	97.847	91.946	86.045	6.42	6.42
-21	92.915	87.371	81.827	6.35	6.35
-20	88.2	82.994	77.788	6.27	6.27
-19	83.702	78.815	73.928	6.2	6.2
-18	79.417	74.832	70.247	6.13	6.13
-17	75.342	71.041	66.74	6.05	6.05
-16	71.471	67.437	63.403	5.98	5.98
-15	67.798	64.015	60.232	5.91	5.91
-14	64.316	60.769	57.222	5.84	5.84
-13	61.017	57.692	54.367	5.76	5.76
-12	57.895	54.778	51.661	5.69	5.69
-11	54.942	52.019	49.096	5.62	5.62
-10	52.149	49.409	46.669	5.55	5.55
-9	49.51	46.941	44.372	5.47	5.47
-8	47.016	44.607	42.198	5.4	5.4
-7	44.659	42.4	40.141	5.33	5.33
-6	42.433	40.315	38.197	5.25	5.25
-5	40.332	38.345	36.358	5.18	5.18
-4	38.346	36.482	34.618	5.11	5.11
-3	36.472	34.723	32.974	5.04	5.04
-2	34.7	33.059	31.418	4.96	4.96
-1	33.027	31.487	29.947	4.89	4.89
0	31.445	30	28.555	4.82	4.82
1	29.951	28.594	27.237	4.75	4.75
2	28.538	27.264	25.99	4.67	4.67
3	27.202	26.006	24.81	4.6	4.6
4	25.938	24.815	23.692	4.53	4.53

R25=10kΩ±3% B25/50=3700K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
5	24.742	23.687	22.632	4.45	4.45
6	23.61	22.619	21.628	4.38	4.38
7	22.538	21.607	20.676	4.31	4.31
8	21.522	20.647	19.772	4.24	4.24
9	20.559	19.737	18.915	4.16	4.16
10	19.646	18.874	18.102	4.09	4.09
11	18.779	18.054	17.329	4.02	4.02
12	17.958	17.276	16.594	3.95	3.95
13	17.177	16.537	15.897	3.87	3.87
14	16.436	15.834	15.232	3.8	3.8
15	15.731	15.166	14.601	3.73	3.73
16	15.061	14.53	13.999	3.65	3.65
17	14.424	13.925	13.426	3.58	3.58
18	13.817	13.349	12.881	3.51	3.51
19	13.24	12.8	12.36	3.44	3.44
20	12.69	12.277	11.864	3.36	3.36
21	12.166	11.778	11.39	3.29	3.29
22	11.666	11.302	10.938	3.22	3.22
23	11.189	10.848	10.507	3.15	3.15
24	10.734	10.414	10.094	3.07	3.07
25	10.3	10	9.7	3	3
26	9.898	9.604	9.31	3.06	3.06
27	9.514	9.226	8.938	3.13	3.13
28	9.147	8.864	8.581	3.19	3.19
29	8.796	8.519	8.242	3.25	3.25
30	8.459	8.188	7.917	3.31	3.31
31	8.137	7.871	7.605	3.38	3.38
32	7.828	7.568	7.308	3.44	3.44
33	7.532	7.277	7.022	3.5	3.5
34	7.248	6.999	6.75	3.56	3.56
35	6.977	6.733	6.489	3.63	3.63
36	6.716	6.477	6.238	3.69	3.69
37	6.466	6.232	5.998	3.75	3.75
38	6.227	5.998	5.769	3.81	3.81
39	5.997	5.773	5.549	3.88	3.88
40	5.776	5.557	5.338	3.94	3.94
41	5.564	5.35	5.136	4	4

Haier

R25=10kΩ±3% B25/50=3700K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
42	5.36	5.151	4.942	4.06	4.06
43	5.166	4.961	4.756	4.13	4.13
44	4.978	4.778	4.578	4.19	4.19
45	4.799	4.603	4.407	4.25	4.25
46	4.625	4.434	4.243	4.31	4.31
47	4.46	4.273	4.086	4.38	4.38
48	4.301	4.118	3.935	4.44	4.44
49	4.148	3.969	3.79	4.5	4.5
50	4.001	3.826	3.651	4.56	4.56
51	3.86	3.689	3.518	4.63	4.63
52	3.724	3.557	3.39	4.69	4.69
53	3.594	3.431	3.268	4.75	4.75
54	3.468	3.309	3.15	4.81	4.81
55	3.349	3.193	3.037	4.88	4.88
56	3.233	3.081	2.929	4.94	4.94
57	3.123	2.974	2.825	5	5
58	3.015	2.87	2.725	5.06	5.06
59	2.913	2.771	2.629	5.13	5.13
60	2.815	2.676	2.537	5.19	5.19
61	2.721	2.585	2.449	5.25	5.25
62	2.63	2.497	2.364	5.31	5.31
63	2.543	2.413	2.283	5.38	5.38
64	2.459	2.332	2.205	5.44	5.44
65	2.379	2.255	2.131	5.5	5.5
66	2.301	2.18	2.059	5.56	5.56
67	2.228	2.109	1.99	5.63	5.63
68	2.156	2.04	1.924	5.69	5.69
69	2.088	1.974	1.86	5.75	5.75
70	2.021	1.91	1.799	5.81	5.81
71	1.958	1.849	1.74	5.88	5.88
72	1.897	1.791	1.685	5.94	5.94
73	1.839	1.735	1.631	6	6
74	1.782	1.68	1.578	6.06	6.06
75	1.728	1.628	1.528	6.13	6.13

R25=10kΩ±3% B25/50=3700K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
76	1.676	1.578	1.48	6.19	6.19
77	1.626	1.53	1.434	6.25	6.25
78	1.578	1.484	1.39	6.31	6.31
79	1.531	1.439	1.347	6.38	6.38
80	1.486	1.396	1.306	6.44	6.44
81	1.443	1.355	1.267	6.5	6.5
82	1.401	1.315	1.229	6.56	6.56
83	1.362	1.277	1.192	6.63	6.63
84	1.323	1.24	1.157	6.69	6.69
85	1.285	1.204	1.123	6.75	6.75
86	1.249	1.169	1.089	6.81	6.81
87	1.214	1.136	1.058	6.88	6.88
88	1.181	1.104	1.027	6.94	6.94
89	1.148	1.073	0.998	7	7
90	1.116	1.042	0.968	7.06	7.06
91	1.085	1.013	0.941	7.13	7.13
92	1.056	0.985	0.914	7.19	7.19
93	1.026	0.957	0.888	7.25	7.25
94	0.998	0.93	0.862	7.31	7.31
95	0.971	0.904	0.837	7.38	7.38
96	0.944	0.879	0.814	7.44	7.44
97	0.918	0.854	0.79	7.5	7.5
98	0.893	0.83	0.767	7.56	7.56
99	0.867	0.806	0.745	7.63	7.63
100	0.843	0.783	0.723	7.69	7.69
101	0.819	0.76	0.701	7.75	7.75
102	0.796	0.738	0.68	7.81	7.81
103	0.772	0.716	0.66	7.88	7.88
104	0.749	0.694	0.639	7.94	7.94
105	0.727	0.673	0.619	8	8

Haier

Haier Commercial Air Condition

ADDRESS: No.1 Haier Road, Hi-tech Zone,Qingdao 266101 P.R.China

Web: Http://www.haier.com