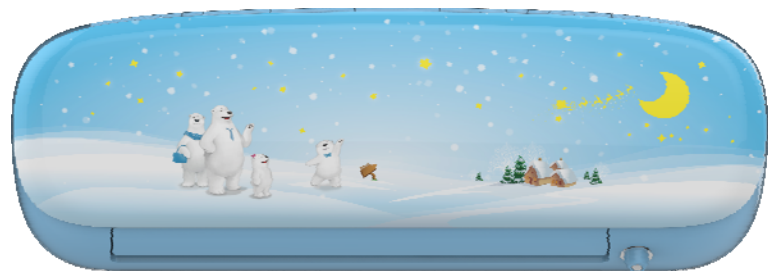




KIDS STAR Inverter Series

Service Manual 2016



MSEAAU-09HRFN1(SB) / MOA01-09HFN1
MSEABU-12HRFN1(SB) / MOB01-12HFN1

MSEAAU-09HRFN1(SP) / MOA01-09HFN1
MSEABU-12HRFN1(SP) / MOB01-12HFN1



CONTENTS

1. Precaution	3
1.1 Safety Precaution	3
1.2 Warning	3
2. Function	6
3. Specification	7
4. Dimension	9
4.1 Indoor Unit.....	9
4.2 Outdoor Unit.....	12
5. Capacity tables	15
6. Refrigerant Cycle Diagram	17
7. Installation Details	18
7.1 Wrench torque sheet for installation	18
7.2 Connecting the cables	18
7.3 Pipe length and the elevation	19
7.4 Installation for the first time.....	20
7.5 Adding the refrigerant after running the system for many years	21
7.6 Re-installation while the indoor unit need to be repaired	22
7.7 Re-installation while the outdoor unit need to be repaired	24
8. Wiring Diagram	26
8.1 Indoor Unit.....	26
8.2 Outdoor Unit.....	26
9. Operation Characteristics	27
10. Electronic function	28
10.1 Abbreviation	28
10.2 Display function	28
10.3 Main Protection	29
10.4 Operation Modes and Functions	30
11. Troubleshooting	35
11.1 Indoor Unit Error Display	36
11.2 Trouble shooting	37

1. Precaution

1.1 Safety Precaution

- To prevent injury to the user or other people and property damage, the following instructions must be followed.
- Incorrect operation due to ignoring instruction will cause harm or damage.
- Before service the unit, be sure to read this service manual at first.

1.2 Warning

➤ Installation

- Do not use a defective or underrated circuit breaker. Use this appliance on a dedicated circuit.

There is risk of fire or electric shock.

- For electrical work, contact the dealer, seller, a qualified electrician, or an authorized service center.

Do not disassemble or repair the product, there is risk of fire or electric shock.

- Always ground the product.

There is risk of fire or electric shock.

- Install the panel and the cover of control box securely.

There is risk of fire or electric shock.

- Always install a dedicated circuit and breaker.

Improper wiring or installation may cause fire or electric shock.

- Use the correctly rated breaker or fuse.

There is risk of fire or electric shock.

- Do not modify or extend the power cable.

There is risk of fire or electric shock.

- Do not install, remove, or reinstall the unit by yourself (customer).

There is risk of fire, electric shock, explosion, or injury.

- Be caution when unpacking and installing the product.

Sharp edges could cause injury, be especially careful of the case edges and the fins on the condenser and evaporator.

- For installation, always contact the dealer or an authorized service center.

- Do not install the product on a defective installation stand.

- Be sure the installation area does not deteriorate with age.

If the base collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.

- Do not let the air conditioner run for a long time when the humidity is very high and a door or a window is left open.

- Take care to ensure that power cable could not be pulled out or damaged during operation.

There is risk of fire or electric shock.

- Do not place anything on the power cable.

There is risk of fire or electric shock.

- Do not plug or unplug the power supply plug during operation.

There is risk of fire or electric shock.

- **Do not touch (operation) the product with wet hands.**
- **Do not place a heater or other appliance near the power cable.**

There is risk of fire and electric shock.

- **Do not allow water to run into electrical parts.**

It may cause fire, failure of the product, or electric shock.

- **Do not store or use flammable gas or combustible near the product.**

There is risk of fire or failure of product.

- **Do not use the product in a tightly closed space for a long time.**

Oxygen deficiency could occur.

- **When flammable gas leaks, turn off the gas and open a window for ventilation before turn the product on.**

- **If strange sounds or smoke comes from product, turn the breaker off or disconnect the power supply cable.**

There is risk of electric shock or fire.

- **Stop operation and close the window in storm or hurricane. If possible, remove the product from the window before the hurricane arrives.**

There is risk of property damage, failure of product, or electric shock.

- **Do not open the inlet grill of the product during operation. (Do not touch the electrostatic filter, if the unit is so equipped.)**

There is risk of physical injury, electric shock, or product failure.

- **When the product is soaked, contact an authorized service center.**

There is risk of fire or electric shock.

- **Be caution that water could not enter the product.**

There is risk of fire, electric shock, or product damage.

- **Ventilate the product from time to time when operating it together with a stove etc.**

There is risk of fire or electric shock.

- **Turn the main power off when cleaning or maintaining the product.**

There is risk of electric shock.

- **When the product is not be used for a long time, disconnect the power supply plug or turn off the breaker.**

There is risk of product damage or failure, or unintended operation.

- **Take care to ensure that nobody could step on or fall onto the outdoor unit.**

This could result in personal injury and product damage.

➤ CAUTION

- **Always check for gas (refrigerant) leakage after installation or repair of product.**

Low refrigerant levels may cause failure of product.

- **Install the drain hose to ensure that water is drained away properly.**

A bad connection may cause water leakage.

- **Keep level even when installing the product.**

It can avoid vibration of water leakage.

- **Do not install the product where the noise or hot air from the outdoor unit could damage the neighborhoods.**

It may cause a problem for your neighbors.

- **Use two or more people to lift and transport the product.**

- **Do not install the product where it will be exposed to sea wind (salt spray) directly.**

It may cause corrosion on the product. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient operation.

➤ **Operational**

- **Do not expose the skin directly to cool air for long time. (Do not sit in the draft).**
- **Do not use the product for special purposes, such as preserving foods, works of art etc.**

It is a consumer air conditioner, not a precision refrigerant system.

There is risk of damage or loss of property.

- **Do not block the inlet or outlet of air flow.**
- **Use a soft cloth to clean. Do not use harsh detergents, solvents, etc.**

There is risk of fire, electric shock, or damage to the plastic parts of the product.

■ **Do not touch the metal parts of the product when removing the air filter. They are very sharp.**

- **Do not step on or put anything on the product. (outdoor units)**

■ **Always insert the filter securely. Clean the filter every two weeks or more often if necessary.**

A dirty filter reduces the efficiency of the air conditioner and could cause product malfunction or damage.

■ **Do not insert hands or other objects through air inlet or outlet while the product is operated.**

- **Do not drink the water drained from the product.**
- **Use a firm stool or ladder when cleaning or maintaining the product.**

Be careful and avoid personal injury.

■ **Replace the all batteries in the remote control with new ones of the same type. Do not mix old and new batteries or different types of batteries.**

There is risk of fire or explosion.

- **Do not recharge or disassemble the batteries. Do not dispose of batteries in a fire.**

They may burn or explode.

■ **If the liquid from the batteries gets onto your skin or clothes, wash it well with clean water. Do not use the remote of the batteries have leaked.**

2. Function

Model Names of Indoor/Outdoor Units

	Capacity	Indoor units	Outdoor units
Inverter	9K	MSEAAU-09HRFN1(SB) MSEAAU-09HRFN1(SP)	MOA01-09HFN1
	12K	MSEABU-12HRFN1(SB) MSEABU-12HRFN1(SP)	MOB01-12HFN1

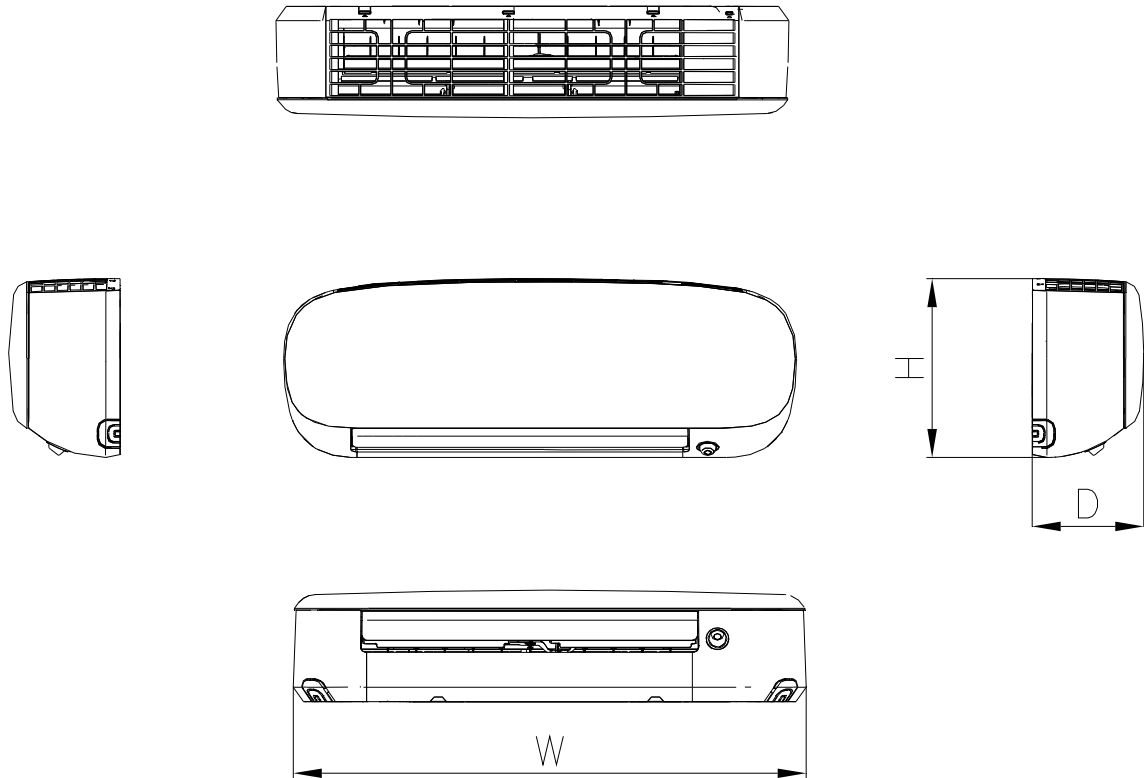
3. Specification

Indoor		MSEAAU-09HRFN1(SB)/(SP)	MSEABU-12HRFN1(SB)/(SP)	
Outdoor		MOA01-09HFN1	MOB01-12HFN1	
Power supply		Ph-V-Hz	220-240V~ 50Hz, 1Ph	220-240V~ 50Hz, 1Ph
Rated Cooling	Capacity	Btu/h	9000(4000-11300)	12000(4300-15200)
		kW	2.64 (1.17~3.31)	3.52 (1.26~4.45)
Cooling Power input		W	830(100-1290)	1120(107-1670)
Cooling Current		A	3.6 (0.4-5.5)	4.8 (0.4-7.5)
Rated Heating	Capacity	Btu/h	10000(2800-12700)	13000(3640-16600)
		kW	2.93 (0.82~3.72)	3.81 (1.07~4.87)
Heating Power input		W	850(150-1390)	1150(185-1900)
Heating Current		A	3.7 (0.6-5.8)	5.0 (0.8-7.9)
Seasonal Cooling	Pdesignc	kW	2.6	3.5
	SEER	W/W	7.1	6.8
	Energy Efficiency Class		A++	A++
Heating(Average)	Pdesignh	kW	2.6	3.5
	SCOP	W/W	4.0	4.0
	Energy Efficiency Class		A+	A+
	Tbiv	°C	-7	-7
Heating(Warmer)	Pdesignh	kW	/	/
	SCOP	W/W	/	/
	Energy Efficiency Class		/	/
	Tbiv	°C	/	/
Tol		°C	-15	-15
Max. input consumption		W	2780	3000
Max. current		A	13.0	14.0
Starting current		A	--	--
Compressor	Model		ASN98D22UFZ	ASN98D22UFZ
	Type		ROTARY	ROTARY
	Brand		GMCC	GMCC
	Capacity	Btu/h	10014	10014
	Input	W	748	748
	Rated current(RLA)	A	5,35	5,35
	Locked rotor Amp(LRA)	A	--	--
	Thermal protector		--	--
	Thermal protector position		INTERNAL	INTERNAL
	Capacitor	uF	--	--
	Refrigerant oil/oil charge	ml	ESTER OIL VG74/370	ESTER OIL VG74/370
Indoor fan motor	Model		ZKFP-13-8-3	ZKFP-13-8-3
	Output	W	13	13
	Capacitor	uF	--	--
	Speed(Hi/Mi/Lo)	r/min	650-1250	750-1330
Indoor coil	a.Number of rows		2	2

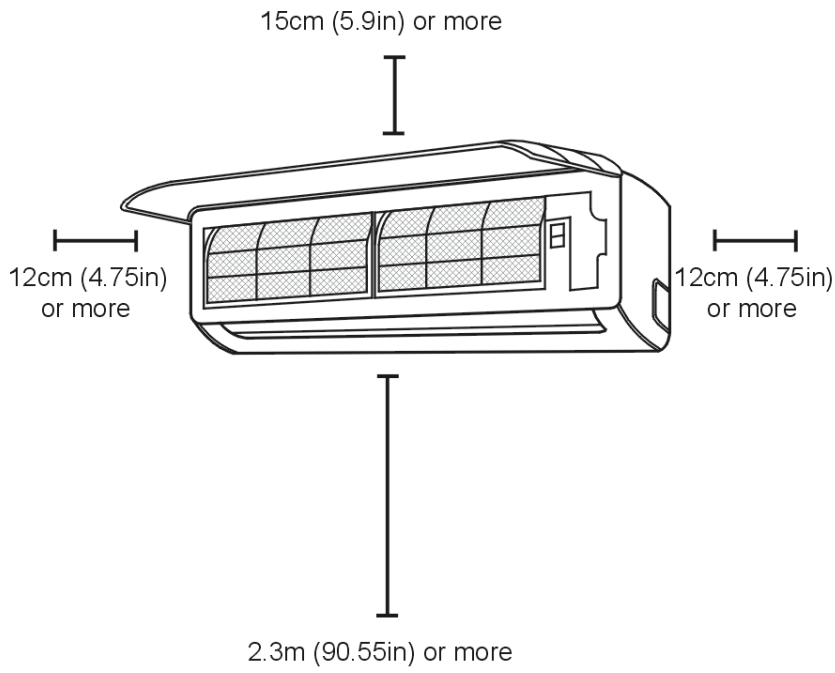
	b.Tube pitch(a)x row pitch(b)	mm	21x13.37	21x13.37
	c.Fin spacing	mm	1.3	1.3
	d.Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium
	e.Tube outside dia.and type	mm	Φ7,innergroove tube	Φ7,innergroove tube
	f.Coil length x height x width	mm	605x315x26.74	605x315x26.74
	g.Number of circuits		3	3
Indoor air flow (Hi/Mi/Lo)		m3/h	530	530
Indoor sound pressure level (Hi/Mi/Lo)		dB(A)	39/33/24	41/34/25
Indoor sound power level (Hi)		dB(A)	52	54
Indoor unit	Dimension(W*D*H)	mm	900×310×190	900×310×190
	Packing (W*D*H)	mm	1010×405×295	1010×405×295
	Net/Gross weight	Kg	10/12	10.5/12.5
Outdoor fan motor	Model		ZKFN-20-8-1	ZKFN-34-8-1
	Output	W	20	34
	Capacitor	uF	--	--
	Speed	r/min	800/650/600/550	850/750/650/600
Outdoor coil	a.Number of rows		1	1
	b.Tube pitch(a)x row pitch(b)	mm	21x13.37	25.4x22
	c.Fin spacing	mm	1.3	1.3
	d.Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium
	e.Tube outside dia.and type	mm	Φ7,innergroove tube	Φ9.52,innergroove tube
	f.Coil length x height x width	mm	740x504x13.37	870x504x13.37
	g.Number of circuits		2	2
Outdoor air flow		m3/h	2100	2100
Outdoor sound pressure level		dB(A)	45	49
Outdoor sound power level		dB(A)	60	62
Outdoor unit	Dimension(W*D*H)	mm	728x300x555	800x333x554
	Packing (W*D*H)	mm	840x385x610	920x390x615
	Net/Gross weight	Kg	26/28.5	29/31.5
Refrigerant	Type		R410A	R410A
	GWP		2088	2088
	Charged quantity	Kg	0.82	1,1
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm(inch)	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")
	Max. refrigerant pipe length	m	25	25
	Max. difference in level	m	10	10
Connection wiring			1.0(Optional)	1.0(Optional)
Plug type			3x1.5 / VDE	3x1.5 / VDE
Thermostat type			RN07A/E(-1)	RN07A/E(-1)
Operation temperature	Indoor(cooling/ heating)	°C	17~32/0~30	17~32/0~30
	Outdoor(cooling/heating)	°C	-15~50/-15~30	-15~50/-15~30
Application area		m2	12~18	16~23

4. Dimension

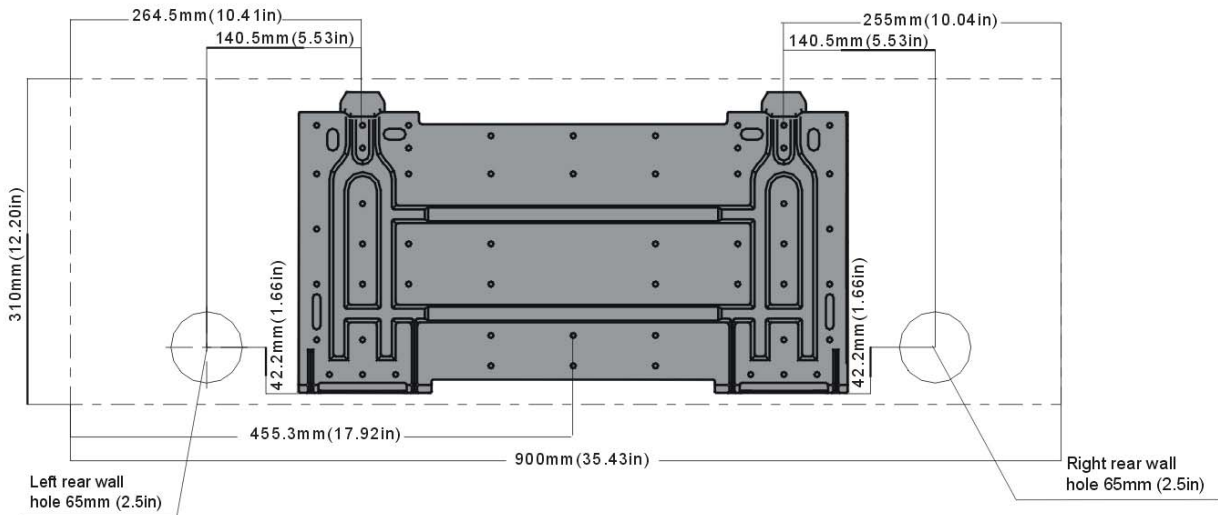
4.1 Indoor Unit

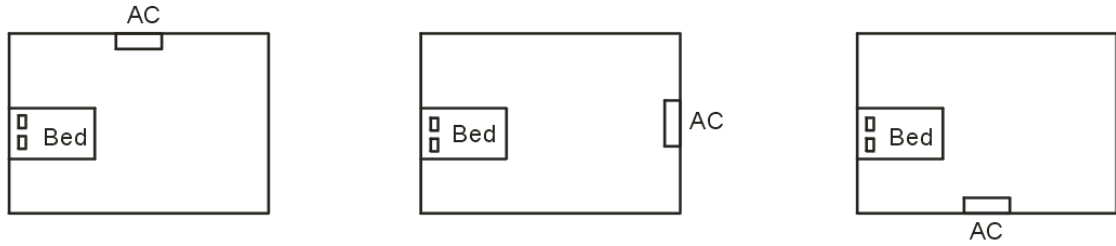


Model	W	D	H
MSEAAU-09HRFN1(SB)/(SP)	900	190	310
MSEABU-12HRFN1(SB)/(SP)			



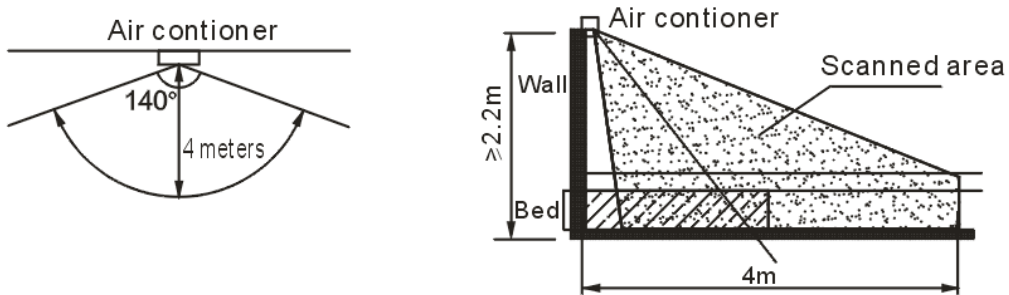
For MSEAAU-09HRFN1(SB), MSEABU-12HRFN1(SB),



Suggested installation positions: (AC=air conditioner)**Not recommended installation positions: (AC=air conditioner)**

Effective Detection range of intelligent eye:

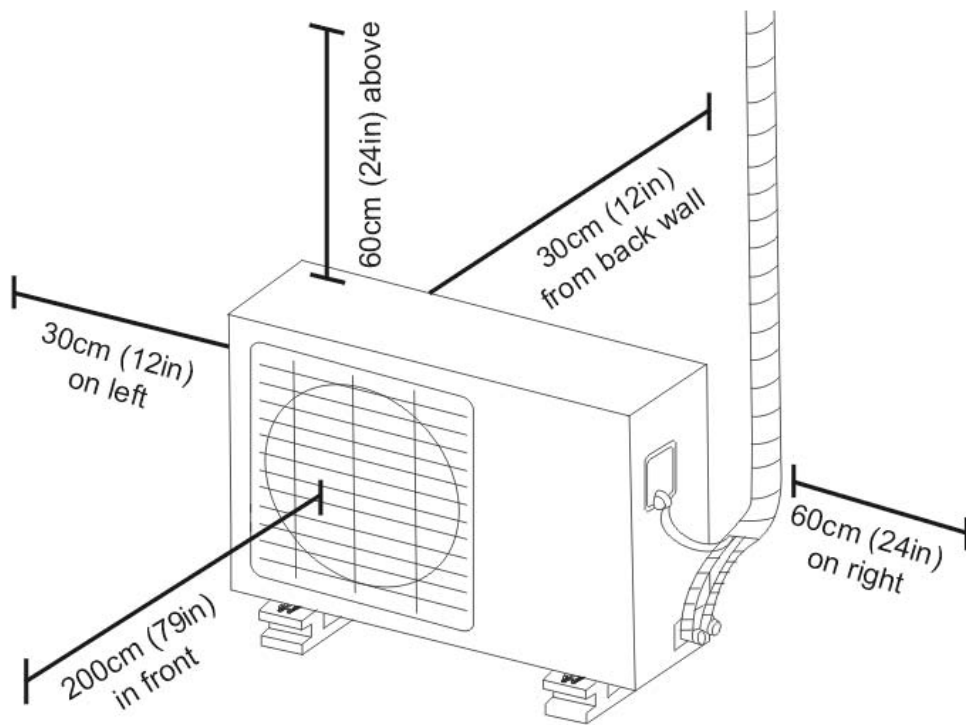
- cover a level angle of 140 degrees, a fan-shaped area with a radius of 4 meters;
- the detection radius is determined by the air conditioner installation position. It is recommended to install the unit at 220mm~250mm from the floor.
- The lower the unit installs, the smaller distance the Intelligent Eye detects.



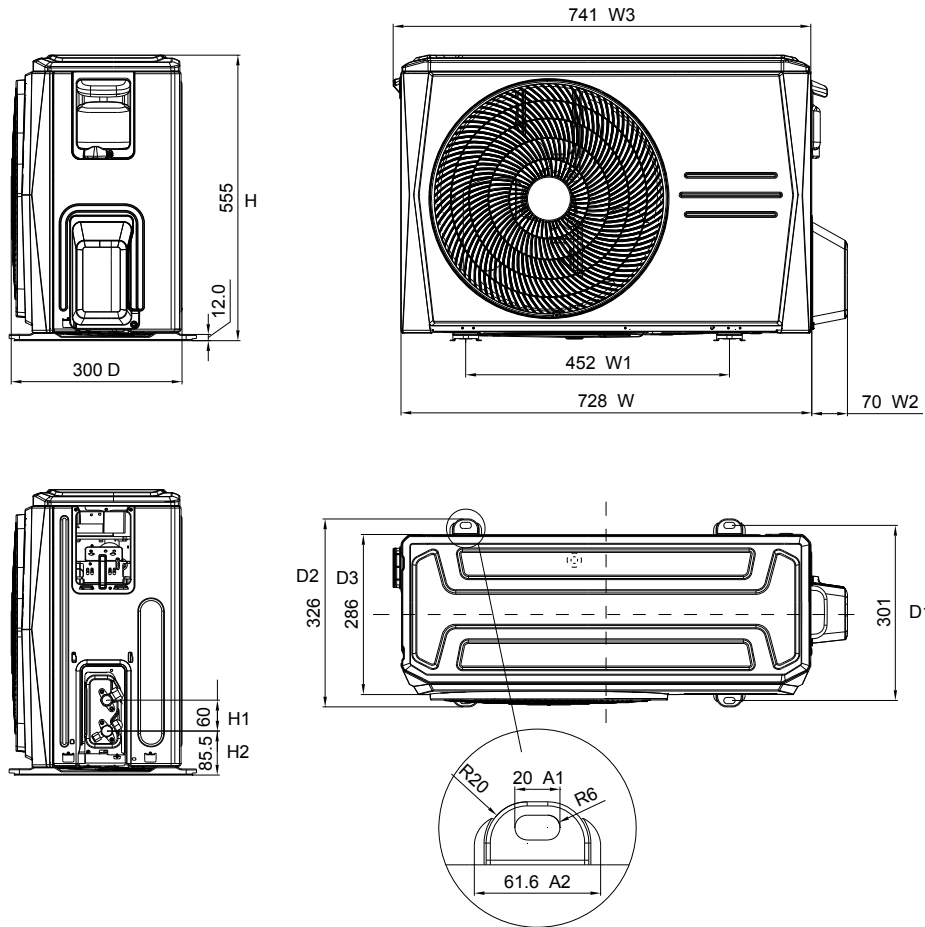
The following situations may affect the detection result of the Intelligent Eye:

- size of the room, thickness of the mosquito net, position of bed, double layer bed.
- the children is less than one meter high.
- obstacles between Intelligent Eye and bed.
- a heating appliance in the conditioned space.

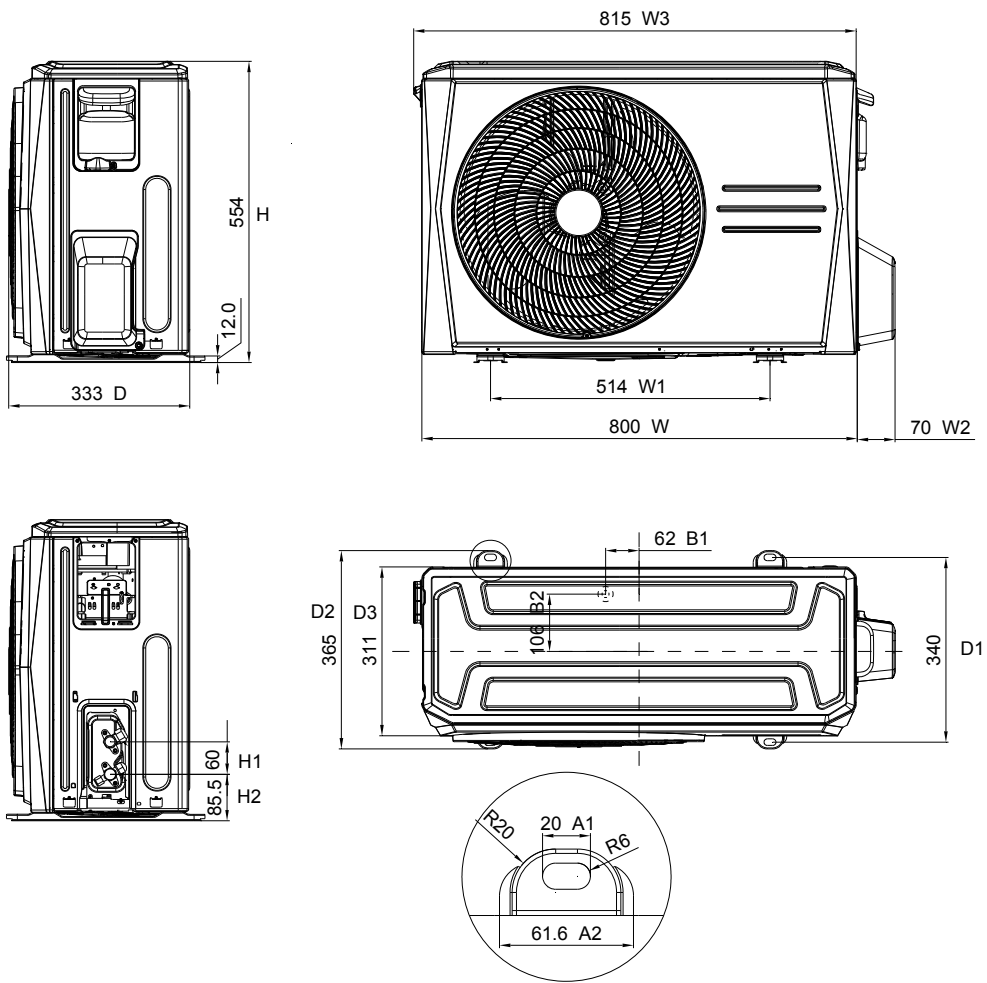
4.2 Outdoor Unit



For MOA01-09HFN1,



For MOB01-12HFN1,



5. Capacity tables

MSEAAU-09HRFN1(SB)/(SP) / MOA01-09HFN1

Cooling

COOLING		OUTDOOR TEMPERATURE DRY													
Indoor Conditions		-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C	Total capacity kW	2,17	2,19	2,21	2,24	2,26	2,28	2,30	2,33	2,48	2,50	2,41	2,07	1,96	1,91
	D Sensitive capacity kW	1,74	1,75	1,77	1,79	1,81	1,82	1,84	1,86	1,99	2,00	1,93	1,65	1,57	1,53
15°C	W Input kW.	0,60	0,60	0,61	0,61	0,61	0,61	0,62	0,62	0,67	0,73	0,80	0,81	0,82	0,85
	EER	3,62	3,64	3,65	3,67	3,69	3,71	3,73	3,75	3,70	3,43	3,02	2,56	2,38	2,23
24°C	Total capacity kW	2,23	2,26	2,28	2,30	2,33	2,35	2,37	2,40	2,56	2,58	2,48	2,13	2,02	1,97
	D Sensitive capacity kW	1,79	1,80	1,82	1,84	1,86	1,88	1,90	1,92	2,04	2,06	1,99	1,70	1,62	1,57
17°C	W Input kW.	0,61	0,61	0,61	0,61	0,62	0,62	0,62	0,63	0,68	0,74	0,81	0,82	0,83	0,86
	EER	3,69	3,71	3,73	3,75	3,77	3,78	3,80	3,82	3,78	3,50	3,08	2,61	2,43	2,28
27°C	Total capacity kW	2,38	2,40	2,42	2,45	2,47	2,50	2,52	2,55	2,72	2,74	2,64	2,27	2,15	2,09
	D Sensitive capacity kW	1,90	1,92	1,94	1,96	1,98	2,00	2,02	2,04	2,17	2,19	2,11	1,81	1,72	1,67
19°C	W Input kW.	0,62	0,63	0,63	0,63	0,64	0,64	0,64	0,65	0,70	0,76	0,83	0,84	0,86	0,89
	EER	3,81	3,83	3,85	3,87	3,89	3,91	3,93	3,95	3,90	3,61	3,18	2,69	2,51	2,35
32°C	Total capacity kW	2,73	2,76	2,79	2,82	2,84	2,87	2,90	2,93	3,13	3,15	3,04	2,61	2,47	2,41
	D Sensitive capacity kW	2,19	2,21	2,23	2,25	2,28	2,30	2,32	2,35	2,50	2,52	2,43	2,08	1,98	1,92
23°C	W Input kW.	0,71	0,71	0,72	0,72	0,73	0,73	0,73	0,74	0,79	0,87	0,95	0,96	0,98	1,01
	EER	3,85	3,86	3,88	3,90	3,92	3,94	3,96	3,98	3,94	3,65	3,21	2,72	2,53	2,37

Heating

HEATING		OUTDOOR CONDITIONS									
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	2°C D	0°C D	-5°C D	-7°C D	-15°C D	-20°C D
		18°C W	11°C W	6°C W	3°C W	1°C W	-1°C W	-6°C W	-8°C W	-16°C W	-21°C W
15°C	Capacity kW	4,03	3,87	3,40	2,96	2,71	2,47	2,11	1,96	1,86	1,61
	Input kW.	1,01	0,99	0,98	0,93	0,91	0,89	0,86	0,84	0,83	0,82
	COP	4,00	3,90	3,47	3,16	2,97	2,77	2,47	2,34	2,25	1,98
18°C	Capacity kW	3,82	3,67	3,22	2,80	2,57	2,34	2,00	1,86	1,76	1,53
	Input kW.	0,96	0,94	0,93	0,89	0,87	0,85	0,81	0,80	0,79	0,78
	COP	3,99	3,88	3,46	3,15	2,96	2,76	2,46	2,33	2,24	1,97
20°C	Capacity kW	3,47	3,33	2,93	2,55	2,34	2,13	1,82	1,69	1,60	1,39
	Input kW.	0,87	0,86	0,85	0,81	0,79	0,78	0,74	0,73	0,72	0,71
	COP	3,97	3,86	3,45	3,14	2,95	2,75	2,45	2,32	2,23	1,96
22°C	Capacity kW	3,26	3,13	2,75	2,40	2,20	2,00	1,71	1,59	1,50	1,31
	Input kW.	0,87	0,86	0,84	0,81	0,79	0,77	0,74	0,72	0,71	0,70
	COP	3,76	3,66	3,26	2,97	2,79	2,60	2,32	2,20	2,11	1,86
27°C	Capacity kW	2,95	2,83	2,49	2,17	1,99	1,81	1,55	1,43	1,36	1,18
	Input kW.	0,80	0,79	0,77	0,74	0,72	0,71	0,68	0,66	0,65	0,65
	COP	3,71	3,61	3,22	2,93	2,75	2,57	2,29	2,17	2,08	1,83

MSEABU-12HRFN1(SB)/(SP) / MOB01-12HFN1

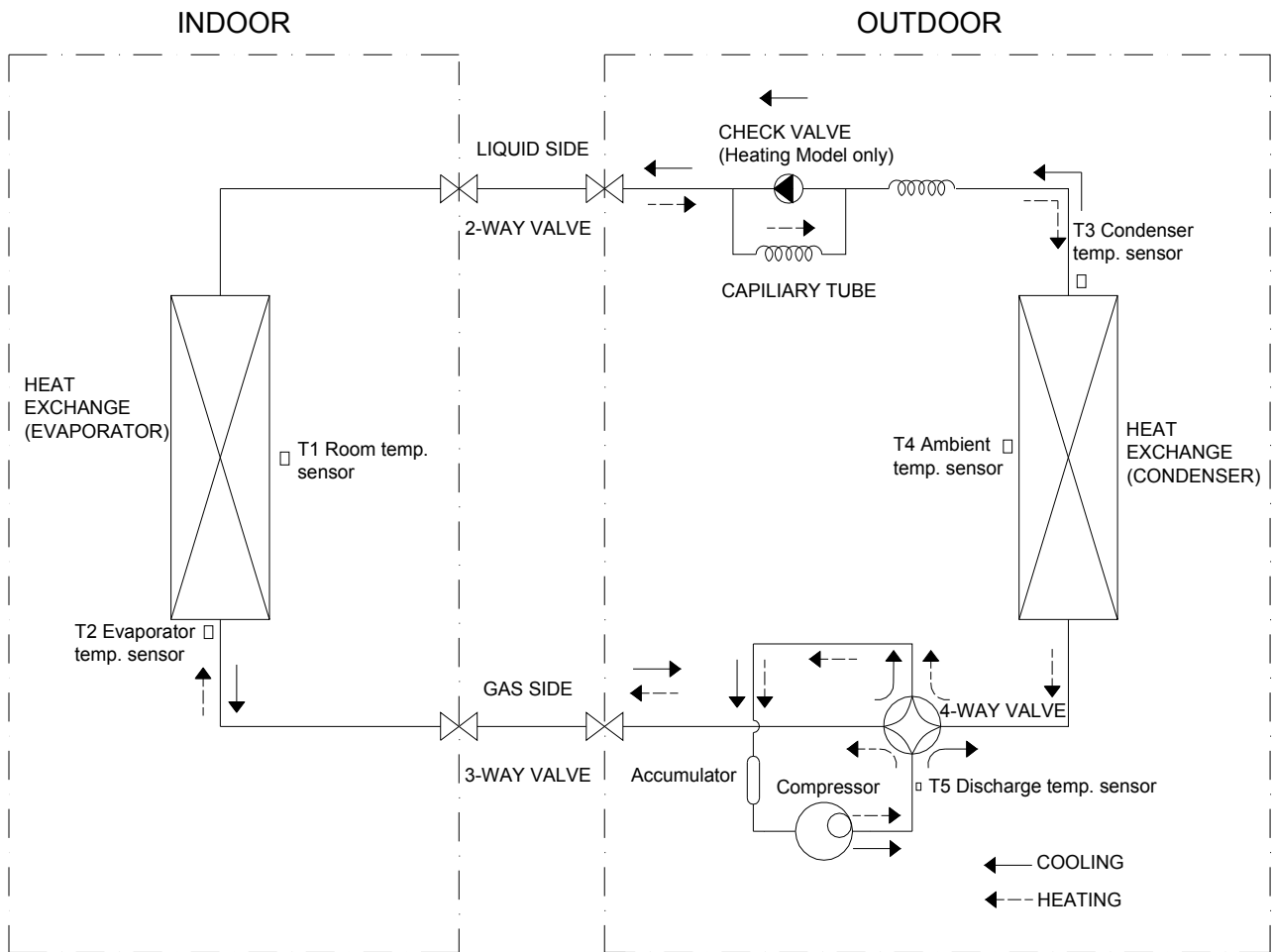
Cooling

COOLING		OUTDOOR TEMPERATURE DRY													
Indoor Conditions		-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	21°C	25°C	30°C	35°C	40°C	45°C	50°C
21°C	Total capacity kW	2,89	2,92	2,95	2,98	3,01	3,04	3,07	3,10	3,31	3,34	3,21	2,76	2,61	2,55
	D Sensitive capacity kW	2,31	2,34	2,36	2,38	2,41	2,43	2,46	2,48	2,65	2,67	2,57	2,21	2,09	2,04
15°C	W Input kW.	0,81	0,81	0,82	0,82	0,83	0,83	0,83	0,84	0,90	0,99	1,08	1,09	1,11	1,15
	EER	3,58	3,59	3,61	3,63	3,65	3,67	3,68	3,70	3,66	3,39	2,99	2,53	2,35	2,21
24°C	Total capacity kW	2,98	3,01	3,04	3,07	3,10	3,13	3,16	3,20	3,41	3,44	3,31	2,84	2,69	2,62
	D Sensitive capacity kW	2,38	2,41	2,43	2,46	2,48	2,51	2,53	2,56	2,73	2,75	2,65	2,27	2,15	2,10
17°C	W Input kW.	0,82	0,82	0,82	0,83	0,83	0,84	0,84	0,85	0,91	0,99	1,09	1,10	1,12	1,16
	EER	3,65	3,67	3,68	3,70	3,72	3,74	3,76	3,78	3,73	3,46	3,05	2,58	2,40	2,25
27°C	Total capacity kW	3,17	3,20	3,23	3,27	3,30	3,33	3,37	3,40	3,62	3,66	3,52	3,02	2,86	2,79
	D Sensitive capacity kW	2,53	2,56	2,59	2,61	2,64	2,67	2,69	2,72	2,90	2,93	2,82	2,42	2,29	2,23
19°C	W Input kW.	0,84	0,85	0,85	0,85	0,86	0,86	0,87	0,87	0,94	1,03	1,12	1,14	1,16	1,20
	EER	3,76	3,78	3,80	3,82	3,84	3,86	3,88	3,90	3,85	3,57	3,14	2,66	2,48	2,32
32°C	Total capacity kW	3,64	3,68	3,72	3,75	3,79	3,83	3,87	3,91	4,17	4,21	4,05	3,47	3,29	3,21
	D Sensitive capacity kW	2,91	2,94	2,97	3,00	3,03	3,06	3,10	3,13	3,33	3,36	3,24	2,78	2,63	2,57
23°C	W Input kW.	0,96	0,96	0,97	0,97	0,98	0,98	0,99	0,99	1,07	1,17	1,28	1,29	1,32	1,37
	EER	3,80	3,82	3,84	3,86	3,88	3,90	3,92	3,94	3,89	3,60	3,17	2,68	2,50	2,35

Heating

HEATING		OUTDOOR CONDITIONS									
Indoor Conditions		24°C D	12°C D	7°C D	4°C D	2°C D	0°C D	-5°C D	-7°C D	-15°C D	-20°C D
		18°C W	11°C W	6°C W	3°C W	1°C W	-1°C W	-6°C W	-8°C W	-16°C W	-21°C W
15°C	Capacity kW	5,24	5,03	4,42	3,85	3,53	3,21	2,74	2,55	2,41	2,10
	Input kW.	1,36	1,34	1,32	1,26	1,24	1,21	1,16	1,13	1,12	1,11
	COP	3,85	3,74	3,34	3,04	2,86	2,66	2,37	2,25	2,16	1,90
18°C	Capacity kW	4,97	4,77	4,19	3,65	3,35	3,05	2,60	2,41	2,29	1,99
	Input kW.	1,30	1,28	1,26	1,20	1,18	1,15	1,10	1,08	1,06	1,05
	COP	3,83	3,73	3,33	3,03	2,85	2,65	2,36	2,24	2,15	1,89
20°C	Capacity kW	4,51	4,34	3,81	3,31	3,04	2,77	2,37	2,19	2,08	1,81
	Input kW.	1,18	1,17	1,15	1,10	1,07	1,05	1,01	0,98	0,97	0,96
	COP	3,82	3,71	3,31	3,02	2,83	2,64	2,35	2,23	2,14	1,88
22°C	Capacity kW	4,24	4,08	3,58	3,12	2,86	2,60	2,22	2,06	1,96	1,70
	Input kW.	1,17	1,16	1,14	1,09	1,07	1,04	1,00	0,98	0,96	0,95
	COP	3,62	3,52	3,14	2,86	2,68	2,50	2,23	2,11	2,03	1,78
27°C	Capacity kW	3,84	3,69	3,24	2,82	2,59	2,35	2,01	1,87	1,77	1,54
	Input kW.	1,08	1,06	1,05	1,00	0,98	0,95	0,92	0,89	0,88	0,87
	COP	3,57	3,47	3,09	2,82	2,65	2,47	2,20	2,08	2,00	1,76

6. Refrigerant Cycle Diagram



7. Installation Details

7.1 Wrench torque sheet for installation

Outside diameter		Torque	Additional tightening torque
mm	inch	N.cm	N.cm
Φ6.35	1/4	1500(153kgf.cm)	1600(163kgf.cm)
Φ9.52	3/8	2500(255kgf.cm)	2600(265kgf.cm)
Φ12.7	1/2	3500(357kgf.cm)	3600(367kgf.cm)
Φ15.9	5/8	4500(459kgf.cm)	4700(479kgf.cm)
Φ19	3/4	6500(663kgf.cm)	6700(683kgf.cm)

7.2 Connecting the cables

The power cord of connect should be selected according to the following specifications sheet.

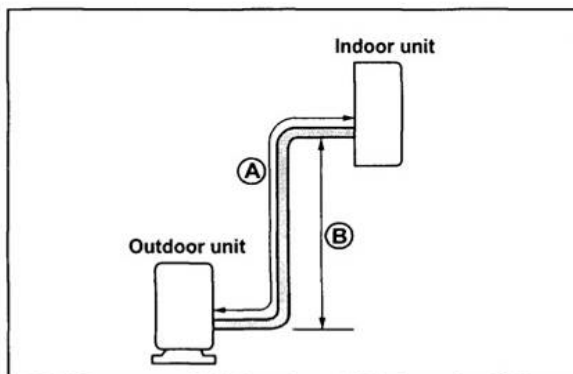
Rated current of appliance	Nominal cross-sectional area (mm ²)
>3 and ≤6	0.75
>6 and ≤10	1
>10 and ≤16	1.5
>16 and ≤25	2.5

The cable size and the current of the fuse or switch are determined by the maximum current indicated on the nameplate which located on the side panel of the unit. Please refer to the nameplate before selecting the cable, fuse and switch.

7.3 Pipe length and the elevation

The pipe length and refrigerant amount:

Model	Pipe size		Standard length (m)	Max. Elevation B (m)	Max. Length A (m)	Additional refrigerant (g/m)
	Gas	Liquid				
MSEAAU-09HRFN1(SB) + MOA01-09HFN1	3/8" (Φ9.52)	1/4" (Φ6.35)	5	10	25	15
MSEABU-12HRFN1(SB) + MOB01-12HFN1						



Caution:

The capacity test is based on the standard length and the maximum permissible length is based on the system reliability.

7.4 Installation for the first time

Air and moisture in the refrigerant system have undesirable effects as below:

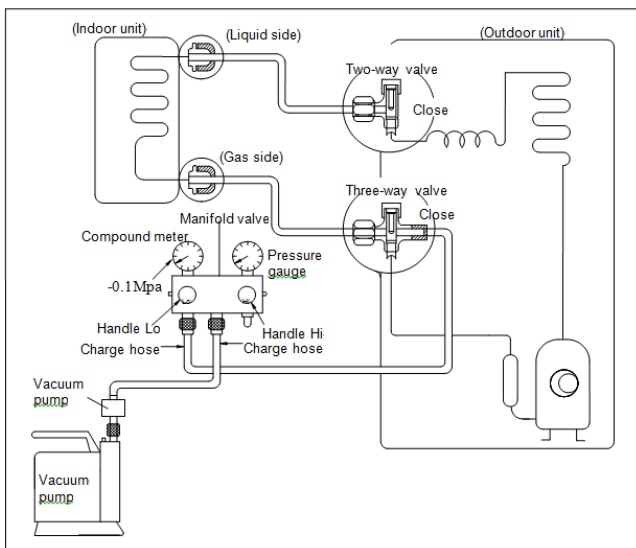
- Pressure in the system rises.
- Operating current rises.
- Cooling or heating efficiency drops.
- Moisture in the refrigerant circuit may freeze and block capillary tubing.
- Water may lead to corrosion of parts in the refrigerant system.

Therefore, the indoor units and the pipes between indoor and outdoor units must be leak tested and evacuated to remove gas and moisture from the system.

Gas leak check (Soap water method):

Apply soap water or a liquid neutral detergent on the indoor unit connections or outdoor unit connections by a soft brush to check for leakage of the connecting points of the piping. If bubbles come out, the pipes have leakage.

1. Air purging with vacuum pump



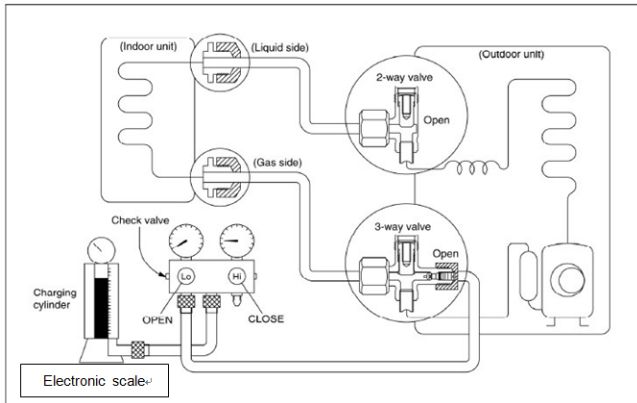
- 1) Completely tighten the flare nuts of the indoor and outdoor units, confirm that both the 2-way and 3-way valves are set to the closed position.
- 2) Connect the charge hose with the push pin of handle lo to the 3-way valves gas service port.
- 3) Connect the charge hose of handle hi connection to the vacuum pump.
- 4) Fully open the handle Lo of the manifold valve.
- 5) Operate the vacuum pump to evacuate.
- 6) Make evacuation for 30 minutes and check whether the compound meter indicates -0.1Mpa. If the meter does not indicate -0.1Mpa after pumping 30 minutes, it should be pumped 20 minutes more. If the pressure can't achieve -0.1Mpa after pumping 50 minutes, please check if there are some leakage points.

Fully close the handle Lo valve of the manifold valve and stop the operation of the vacuum pump. Confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).

- 7) Turn the flare nut of the 3-way valves about 45° counterclockwise for 6 or 7seconds after the gas coming out, then tighten the flare nut again. Make sure the pressure display in the pressure indicator is a little higher than the atmosphere pressure. Then remove the charge hose from the 3 way valve.

8) Fully open the 2 way valve and 3 way valve and securely tighten the cap of the 3 way valve.

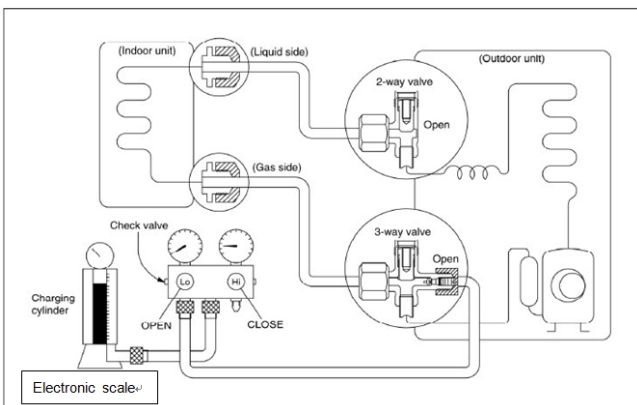
2. Adding the refrigerant if the pipe length >5m



Procedure:

- 1). Connect the charge hose to the charging cylinder, open the 2-way valve and the 3-way valve. Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder. If the refrigerant is R410A, make the cylinder bottom up to ensure the liquid charge.
- 2). Purge the air from the charge hose.
Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).
- 3) Put the charging cylinder onto the electronic scale and record the weight.
- 4) Operate the air conditioner at the cooling mode.
- 5) Open the valves (Low side) on the charge set and charge the system with liquid refrigerant.
- 6).When the electronic scale displays the proper weight (refer to the table), disconnect the charge hose from the 3-way valve's service port immediately and turn off the air conditioner before disconnecting the hose.
- 7). Mount the valve stem caps and the service port
Use torque wrench to tighten the service port cap to a torque of 18N.m.
Be sure to check for gas leakage.

7.5 Adding the refrigerant after running the system for many years



Procedure:

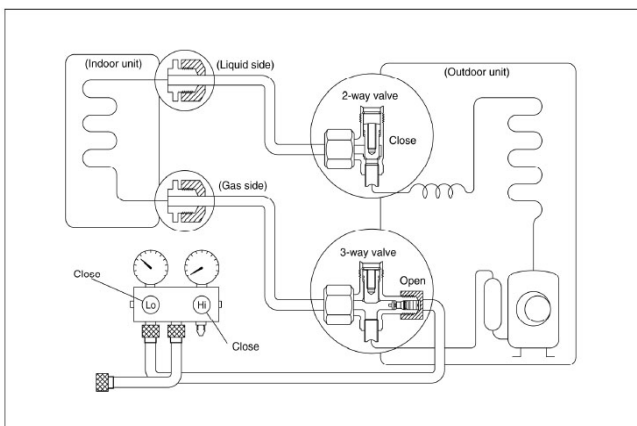
- 1). Connect the charge hose to the 3-way service port, open the 2-way valve and the 3-way valve. Connect the charge hose to the valve at the bottom of the cylinder. If the refrigerant is R410A, make the cylinder bottom up to ensure liquid charge.
- 2). Purge the air from the charge hose.
Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the

air (be careful of the liquid refrigerant).

- 3) Put the charging cylinder onto the electronic scale and record the weight.
 - 4) Operate the air conditioner at the cooling mode.
 - 5) Open the valves (Low side) on the charge set and charge the system with liquid refrigerant.
 - 6).When the electronic scale displays the proper weight (refer to the gauge and the pressure of the low side), disconnect the charge hose from the 3-way valve's service port immediately and turn off the air conditioner before disconnecting the hose.
 - 7). Mount the valve stem caps and the service port
- Use torque wrench to tighten the service port cap to a torque of 18N.m.
Be sure to check for gas leakage.

7.6 Re-installation while the indoor unit need to be repaired

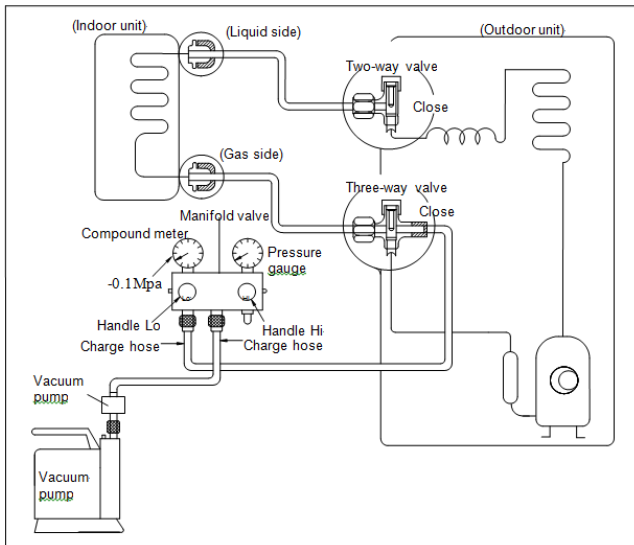
1. Collecting the refrigerant into the outdoor unit



Procedure

- 1). Confirm that both the 2-way and 3-way valves are set to the opened position
Remove the valve stem caps and confirm that the valve stems are in the opened position.
Be sure to use a hexagonal wrench to operate the valve stems.
- 2). Connect the charge hose with the push pin of handle lo to the 3-way valves gas service port.
- 3). Air purging of the charge hose.
Open the handle Lo valve of the manifold valve slightly to purge air from the charge hose for 5 seconds and then close it quickly.
- 4). Set the 2-way valve to the close position.
- 5). Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 0.1MPa.
- 6). Set the 3-way valve to the closed position immediately
Do this quickly so that the gauge ends up indicating 0.3 to 0.5Mpa.
Disconnect the charge set, and tighten the 2-way and 3-way valve's stem nuts.
Use a torque wrench to tighten the 3-way valves service port cap to a torque of 18N.m.
Be sure to check for gas leakage.

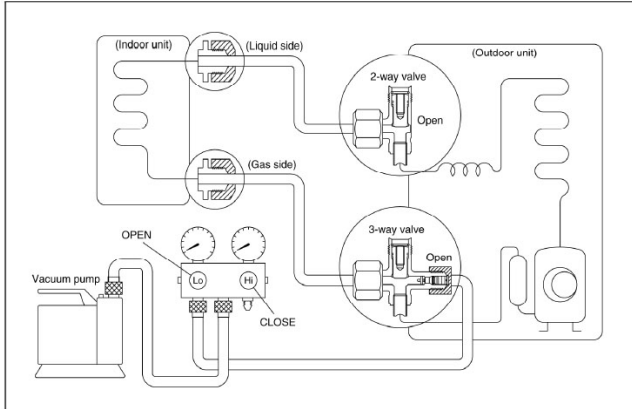
2. Air purging with vacuum pump



- 9) Completely tighten the flare nuts of the indoor and outdoor units, confirm that both the 2-way and 3-way valves are set to the closed position.
 - 10) Connect the charge hose with the push pin of handle lo to the 3-way valves gas service port.
 - 11) Connect the charge hose of handle hi connection to the vacuum pump.
 - 12) Fully open the handle Lo of the manifold valve.
 - 13) Operate the vacuum pump to evacuate.
 - 14) Make evacuation for 30 minutes and check whether the compound meter indicates -0.1Mpa. If the meter does not indicate -0.1Mpa after pumping 30 minutes, it should be pumped 20 minutes more. If the pressure can't achieve -0.1Mpa after pumping 50 minutes, please check if there are some leakage points.
- Fully close the handle Lo valve of the manifold valve and stop the operation of the vacuum pump. Confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).
- 15) Turn the flare nut of the 3-way valves about 45° counterclockwise for 6 or 7seconds after the gas coming out, then tighten the flare nut again. Make sure the pressure display in the pressure indicator is a little higher than the atmosphere pressure. Then remove the charge hose from the 3 way valve.
 - 16) Fully open the 2 way valve and 3 way valve and securely tighten the cap of the 3 way valve.

7.7 Re-installation while the outdoor unit need to be repaired

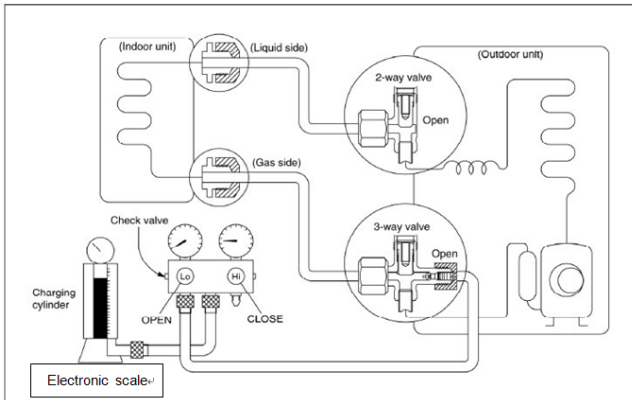
1. Evacuation for the whole system



Procedure:

- 1). Confirm that both the 2-way and 3-way valves are set to the opened position.
- 2). Connect the vacuum pump to 3-way valve's service port.
- 3). Evacuation for approximately one hour. Confirm that the compound meter indicates -0.1Mpa.
- 4). Close the valve (Low side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).
- 5). Disconnect the charge hose from the vacuum pump.

2. Refrigerant charging



Procedure:

- 1). Connect the charge hose to the charging cylinder, open the 2-way valve and the 3-way valve. Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder. If the refrigerant is R410A, make the cylinder bottom up to ensure liquid charge.
- 2). Purge the air from the charge hose. Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).
- 3). Put the charging cylinder onto the electronic scale and record the weight.
- 4). Open the valves (Low side) on the charge set and charge the system with liquid refrigerant. If the system cannot be charge with the specified amount of refrigerant, or can be charged with a little at a time (approximately 150g each time), operating the air conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure.
- 5). When the electronic scale displays the proper weight, disconnect the charge hose from the 3-way

valve's service port immediately

If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.

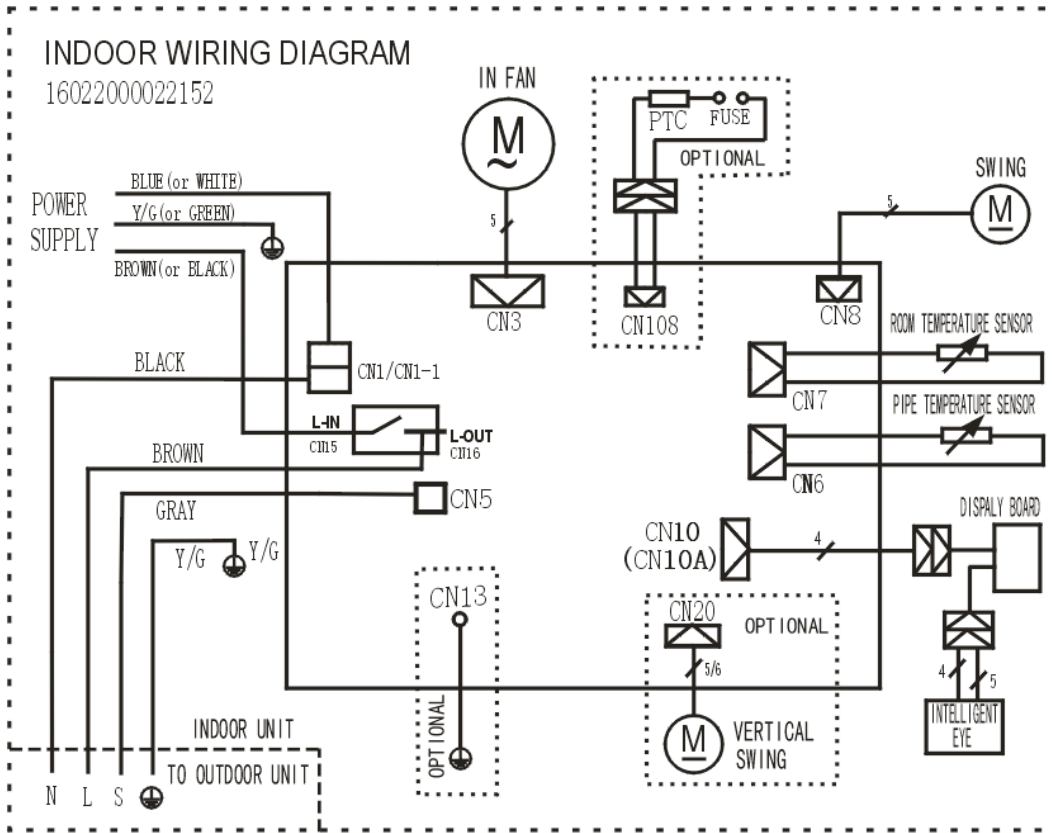
6). Mounted the valve stem caps and the service port

Use torque wrench to tighten the service port cap to a torque of 18N.m.

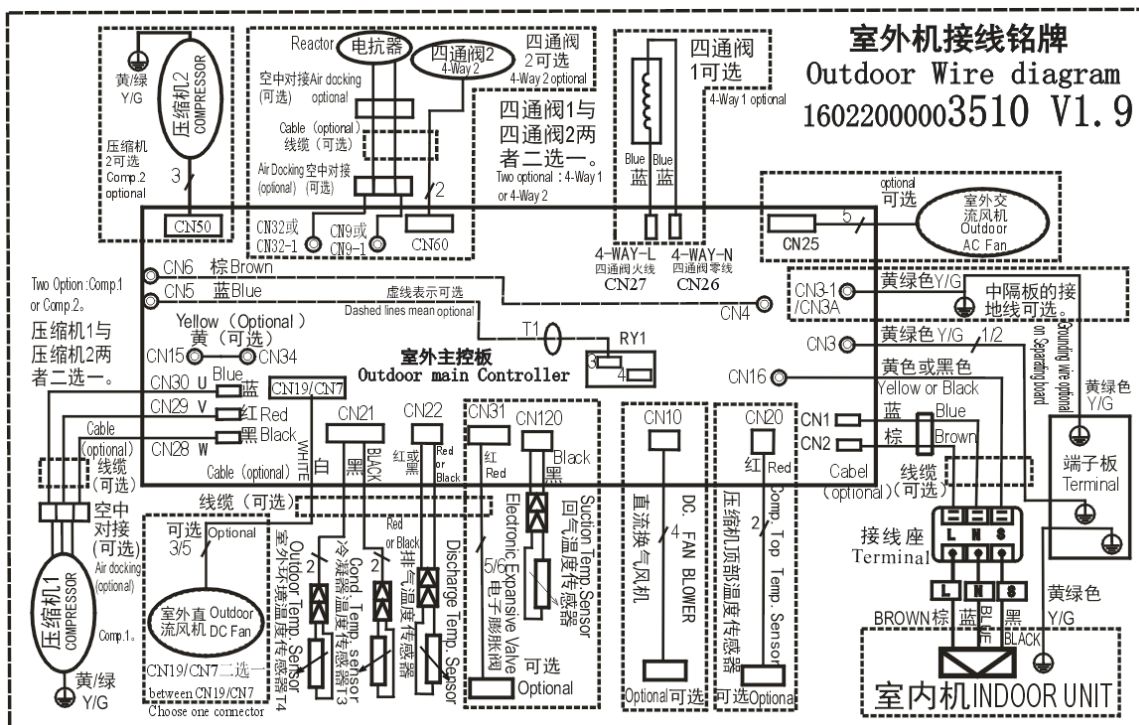
Be sure to check for gas leakage.

8. Wiring Diagram

8.1 Indoor Unit



8.2 Outdoor Unit



9. Operation Characteristics

Mode	Cooling operation	Heating operation	Drying operation
Temperature			
Room temperature	17°C~32	0°C~30°C	10°C~32°C
Outdoor temperature	0°C~50°C	-15°C~30°C	0°C~50°C
	-15°C~50°C (For the models with low temperature cooling system)		

CAUTION:

1. If the air conditioner is used beyond the above conditions, certain safety protection features may come into operation and cause the unit to operate abnormally.
2. The room relative humidity should be less than 80%. If the air conditioner operates beyond this figure, the surface of the air conditioner may attract condensation. Please set the vertical air flow louver to its maximum angle (vertically to the floor), and set HIGH fan mode.
3. The optimum performance will be achieved during this operating temperature zone.

10. Electronic function

10.1 Abbreviation

T1: Indoor room temperature

T2: Coil temperature of evaporator

T3: Coil temperature of condenser

T4: Outdoor ambient temperature

TP: Compressor discharge temperature

10.2 Display function

10.2.1 Icon explanation on indoor display board.



Digital display:

Displays the temperature settings when the air conditioner is operational.

Displays the room temperature in FAN mode.

Displays the self-diagnostic codes.

Displays '❄️', under Cooling operation.

Displays '☀️', under Heating operation.

Displays '🌀', under Electrical Heating operation.

Displays '🔒', when Lock function is turned on.

Displays '👁️', when intelligent eye function is turned on.

Displays '📶', when WIFI function is turned on.

NOTE:

A guide on using the infrared remote is not included in this literature package.

10.3 Main Protection

10.3.1 Three minutes delay at restart for compressor

Less than 1 minute delay for the 1st time start-up and 3 minutes delay for others.

10.3.2 Temperature protection of compressor top

The unit will stop working when the compressor top temp. protector cut off, and will restart after the compressor top temp. protector restart.

10.3.3 Temperature protection of compressor discharge

Compressor discharge temp. $TP > 115^{\circ}\text{C}$ for 9s, compressor stops.

10.3.4 Fan speed is out of control

When indoor fan speed keeps too low (300RPM) or too high (1500RPM) for certain time, the unit will stop and the LED will display the failure

10.3.5 Inverter module protection

The Inverter module has a protection function about current, voltage and temperature. If these protections happen, the corresponding code will display on indoor unit and the unit will stop working.

10.3.6 Indoor fan delayed open function

When the unit starts up, the louver will be active immediately and the indoor fan will open later. If the unit runs in heating mode, the indoor fan will be also controlled by anti-cold wind function.

10.3.7 Compressor preheating functions

Preheating permitting condition:

When $T_4(\text{outdoor ambient temperature}) < 3^{\circ}\text{C}$, the preheating function will be activated.

10.3.8 Sensor protection at open circuit and breaking disconnection.

When there's only one temperature sensor in malfunction, the air conditioner will keep working but show the error code, in case of any emergency use.

When there's more than one temperature sensor in malfunction, the air conditioner will stop working.

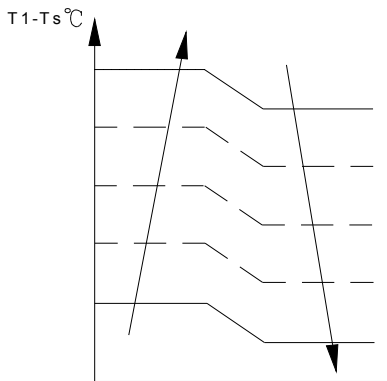
10.3.9 Refrigerant leakage detection

It can better prevent the compressor being damaged by refrigerant leakage or compressor overload.

10.4 Operation Modes and Functions

10.4.1 Fan mode

- (1) Outdoor fan and compressor stop.
- (2) Temperature setting function is disabled, and no setting temperature is displayed.
- (3) Indoor fan can be set to Au, 20, 40,60,80 or F.
- (4) The louver operates same as in cooling mode.
- (5) Auto fan:



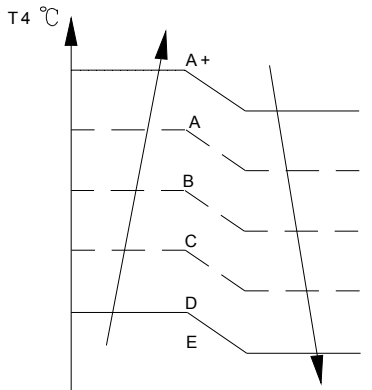
10.4.2 Cooling Mode

10.4.2.1 Compressor running rules

When $T1 - Ts < \Delta T - 2^\circ\text{C}$, the compressor will stop,
 when $T1 - Ts > \Delta T - 0.5^\circ\text{C}$, the compressor will be activated.
 ΔT is the programmed parameter of temperature compensation.
 When the AC run in mute mode, the compressor will run with low frequency.

10.4.2.2 Outdoor fan running rules

The outdoor unit will be run at different fan speed according to $T4$.
 For different outdoor units, the fan speeds are different.

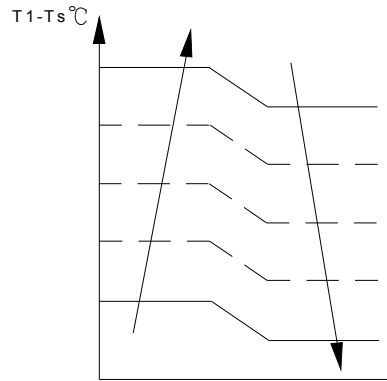


10.4.2.3 Indoor fan running rules

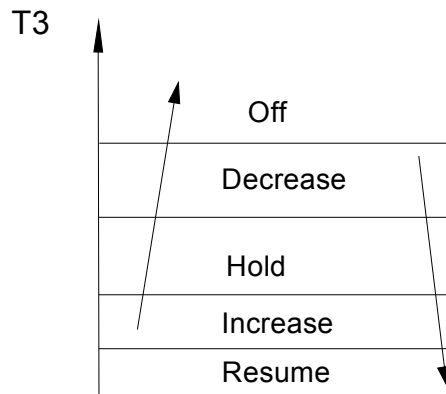
In cooling mode, indoor fan runs all the time and the speed can be selected Au, 20, 40,60,80 or F.

When the setting temp. is reached, if the compressor stop running, indoor fan motor will run at setting speed.

The auto fan acts as below rules:



10.4.2.4 Condenser temperature protection



When condenser temperature temp. is more than setting value, the compressor will stop.

10.4.2.5 Evaporator temperature protection

When Evaporator temperature temp. is less than setting value, the compressor will stop.

10.4.3 Heating Mode

10.4.3.1 Compressor running rules

When $T1 - T_s > -\Delta T$, the compressor will stop,

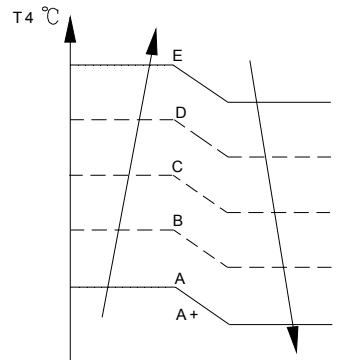
when $T1 - T_s < \Delta T - 1.5$, the compressor will be on.

ΔT is the programmed parameter of temperature compensation.

When the AC run in mute mode, the compressor will run with low frequency.

10.4.3.2 Outdoor fan running rules

The outdoor unit will be run at different fan speed according to T4.
For different outdoor units, the fan speeds are different



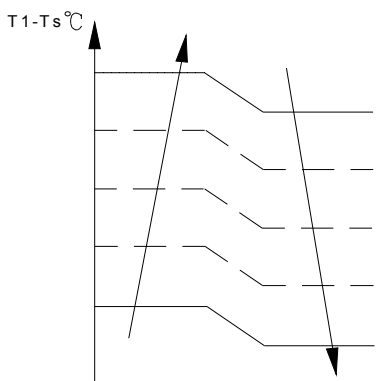
10.4.3.3 Indoor fan running rules

When the compressor is on, the indoor fan can be set to Au, 20,40,60,80 or F.

When indoor unit coil temp. is low, the anti-cold air function will start and indoor fan motor will run at low speed, the speed can't be changed, when the temp. is lower than setting value, the indoor fan motor will stop.

When the indoor temp reaches the setting temp., the compressor will stop, the indoor fan motor will run at setting speed. (The anti-cold air function is valid).

Auto fan action in heating mode:



10.4.3.4 Defrosting mode

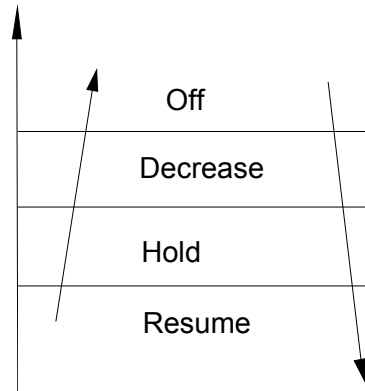
AC will enter the defrosting mode according to the value of temp. of T3 and the value range of temp. change of T3 and also the compressor running time.

During the defrosting mode, the compressor keep running, indoor and outdoor motor will stop, ' HS ' will be displayed.

If any one of the following items is satisfied, the defrosting will finish and the machine will turn to normal heating mode.

- T3 rises to be higher than TCDE1°C.
- T3 keeps to be higher than TCDE2°C for 80 seconds.
- The machine has run for 15 minutes in defrosting mode.

10.4.3.5 Evaporator coil temperature protection

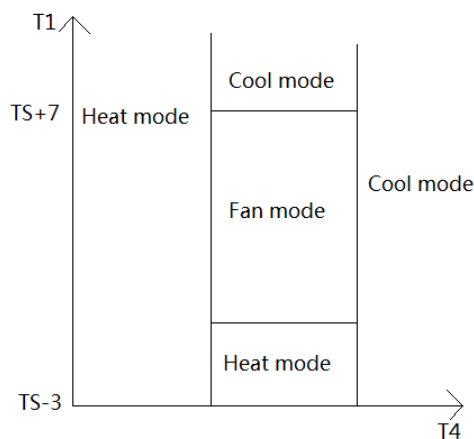


When evaporator temperature temp. is more than the setting protection value, the compressor will stop.

10.4.4 Auto-mode

This mode can be chosen with remote controller and the setting temperature can be changed between 17°C~30°C

In auto mode, the machine will choose cooling, heating or fan-only mode according to T1, TS and T4.



Indoor fan will run at auto fan of the relevant mode.

The louver operates same as in relevant mode.

If the machine switches mode between heating and cooling, the compressor will keep stopping for certain time and then choose mode according to T1, TS and T4.

If the setting temperature is modified, the machine will choose running function again.

10.4.5 Forced operation function

Forced cooling mode:

The compressor and outdoor fan keep running and the indoor fan runs at rated cooling fan speed. After running for 30 minutes, AC will turn to auto mode with 24°C setting temperature.

Forced auto mode:

The action of forced auto mode is the same as normal auto mode with 24°C setting temperature.

When AC receives signals, such as switch on, switch off, mode setting, fan speed setting, Temp. setting, it will quit the forced operation.

10.4.6 Refrigerant Leakage Detection

With this new technology, the display area will show “PL” when the unit detects refrigerant leakage.

10.4.7 Light sensitive function

The brightness of display screen of air conditioner will change according to the lights of room. If the lights of room fades, the brightness of the display screen gets weaker. When the light becomes bright, the brightness of the display screen returns. If the room light turns off, after a few seconds, the display screen becomes dark. And the voice of air conditioner buzzer reduces , fan speed shifts to low. when the room light turns on again, the display screen gets brighter.

10.4.8 ECO function

The ECO function can only be activated via WIFI control under cooling operation. The indoor display screen displays ‘ECO’ .It will hold on for 8 hours, then the unit will revert back to the previous cooling operation.

10.4.9 Intelligent eye function

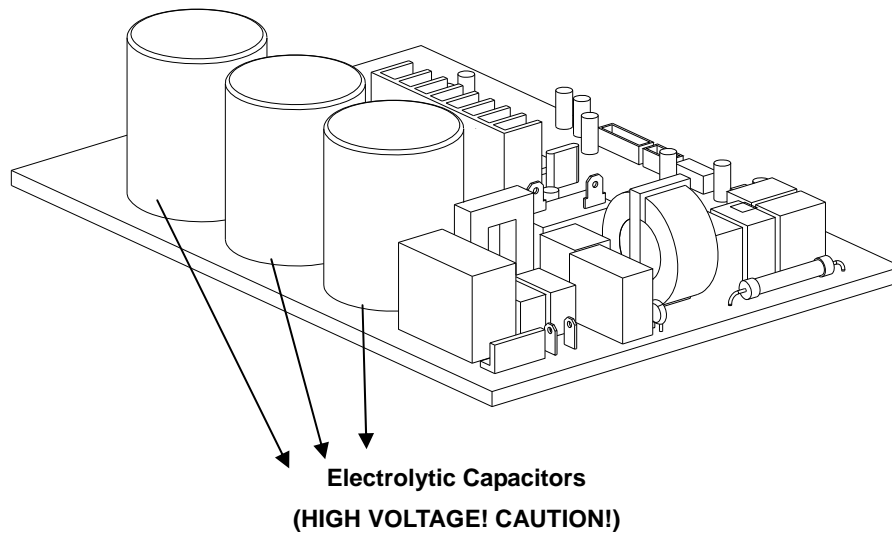
The system is controlled intelligently under EYE mode. First it goes into sleeping operation by default, the set temperature and fan speed are automatically controlled.

After 20~30 minutes later, the system begins to sense the sleeping state of the children and goes into sleeping detection mode. If it detects the children kicking the blankets and most part of the body exposing, the system will automatically adjust the set temperature, fan speed and the airflow direction to protect the children.

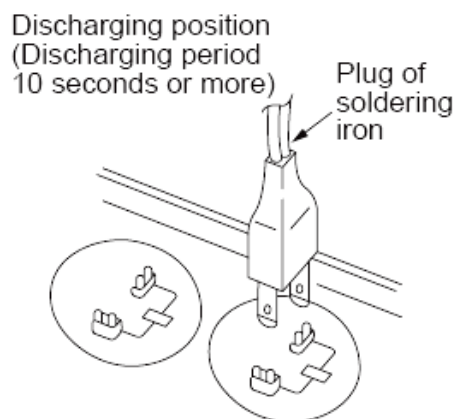
11. Troubleshooting

Safety

Electricity power is still kept in capacitors even the power supply is shut off. Do not forget to discharge the electricity power in capacitor.



For other models, please connect discharge resistance (approx.100Ω 40W) or soldering iron (plug) between +, - terminals of the electrolytic capacitor on the contrary side of the outdoor PCB.



Note: The picture above is only for reference. The plug of your side may be different.

11.1 Indoor Unit Error Display

Display	LED STATUS
E0	Indoor unit EEPROM parameter error
E1	Indoor / outdoor units communication error
E3	Indoor fan speed has been out of control
E60	Indoor room temperature sensor T1 open circuit or short circuit
E61	Evaporator coil temperature sensor T2 open circuit or short circuit
PL	Refrigerant leakage detection
E53	Outdoor ambient temperature sensor T4 open circuit or short circuit
E52	Condenser coil temperature sensor T3 open circuit or short circuit
E54	Compressor discharge temperature sensor TP open circuit or short circuit
E51	Outdoor unit EEPROM parameter error
E7	Outdoor fan speed has been out of control
EA	Reading Indoor unit EEPROM parameter error
Eb	Indoor PCB /Display board communication error
EF	Intelligent eye malfunction
P0	IPM malfunction or IGBT over-strong current protection
P1	Over voltage or over low voltage protection
P2	High temperature protection of IPM module or compressor top
P4	Inverter compressor drive error

11.2 Trouble shooting

11.2.1 EEPROM parameter error diagnosis and solution(E0/ EA/ E51)

Error Code	E0/ EA/ E51
Malfunction decision conditions	Indoor or outdoor PCB main chip does not receive feedback from EEPROM chip.
Supposed causes	<ul style="list-style-type: none"> ● Installation mistake ● PCB faulty

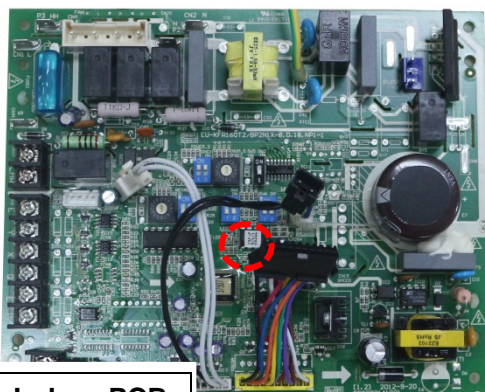
Trouble shooting:

Power off, then restart the unit 2 minutes later.

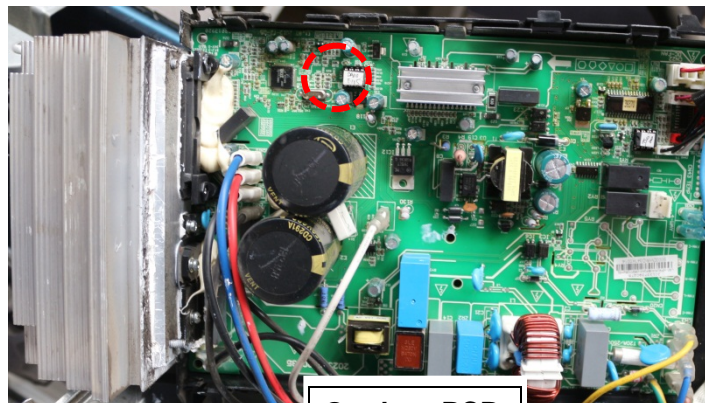
Yes

Replace the indoor/outdoor main PCB.

EEPROM: a read-only memory whose contents can be erased and reprogrammed using a pulsed voltage. For the location of EEPROM chip, please refer to the below photos.



Indoor PCB



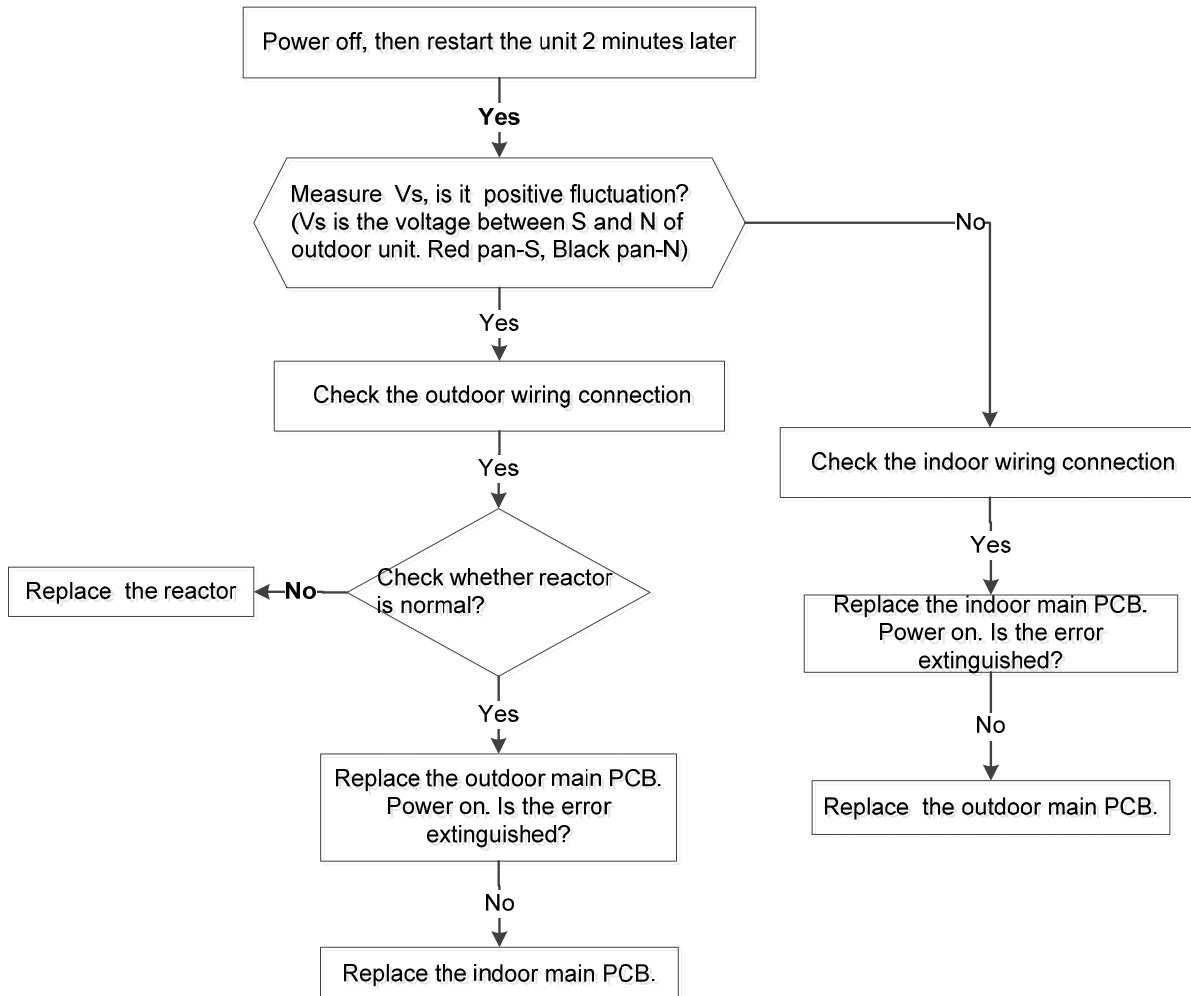
Outdoor PCB

Note: The two photos above are only for reference, it's may be not same totally with the ones on your side.

11.2.2 Indoor / outdoor unit’s communication diagnosis and solution(E1)

Error Code	E1
Malfunction decision conditions	Indoor unit does not receive the feedback from outdoor unit during 120 seconds and this condition happens three times continuously.
Supposed causes	<ul style="list-style-type: none"> ● Wiring mistake ● Indoor or outdoor PCB faulty

Trouble shooting:



**Remark:**

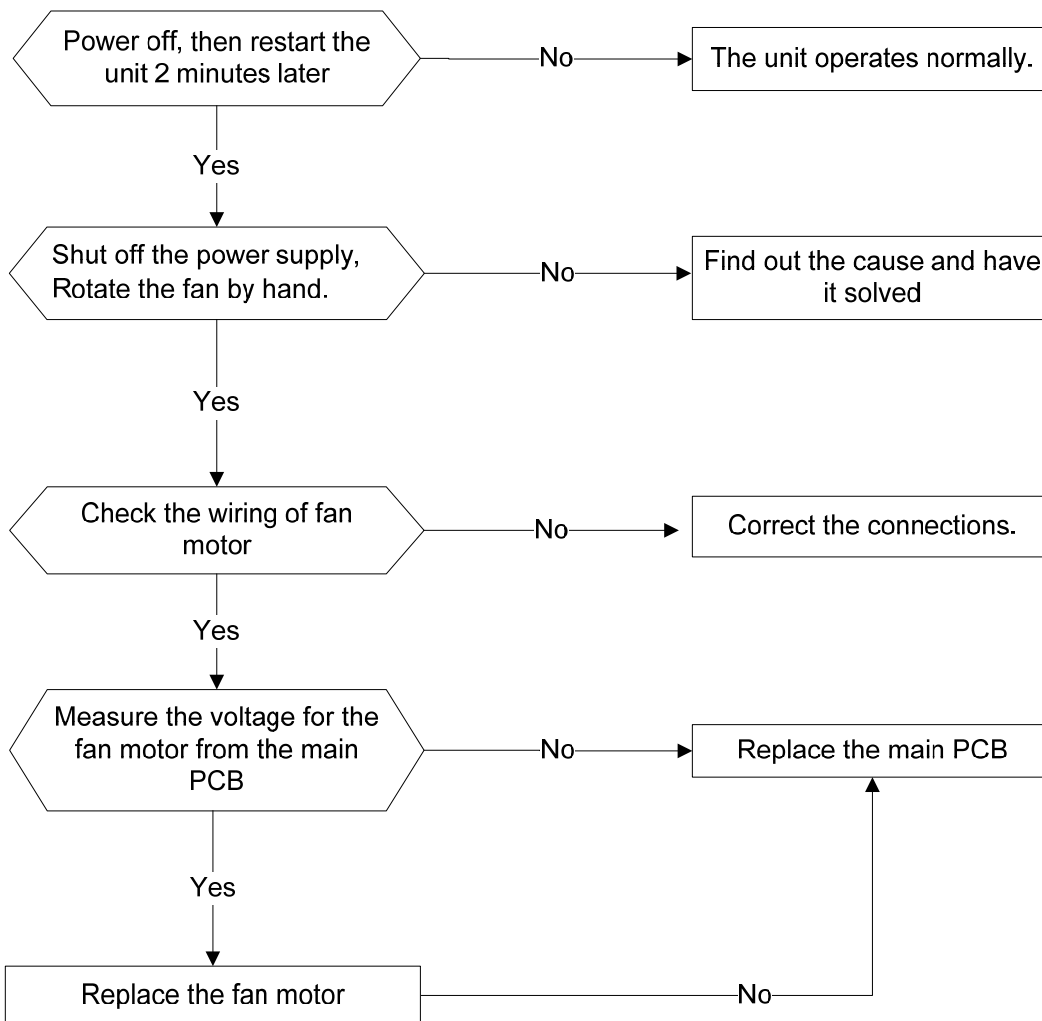
Use a multi meter to test the resistance of the reactor which does not connect with capacitor.

The normal value should be around zero ohm. Otherwise, the reactor must have malfunction and need to be replaced.

11.2.3 Fan speed has been out of control diagnosis and solution(E3)

Error Code	E3/E7
Malfunction decision conditions	When indoor fan speed keeps too low (300RPM) or too high(1500RPM) for certain time, the unit will stop and the LED will display the failure.
Supposed causes	<ul style="list-style-type: none"> ● Wiring mistake ● Fan ass'y faulty ● Fan motor faulty ● PCB faulty

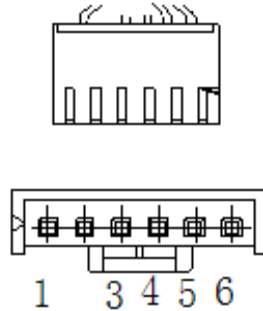
Trouble shooting:



Index1:

1:Indoor or Outdoor DC Fan Motor(control chip is in fan motor)

Power on and when the unit is in standby, measure the voltage of pin1-pin3, pin4-pin3 in fan motor connector. If the value of the voltage is not in the range showing in below table, the PCB must has problems and need to be replaced.



DC motor voltage input and output

NO.	Color	Signal	Voltage
1	Red	Vs/Vm	280V~380V
2	---	---	---
3	Black	GND	0V
4	White	Vcc	14-17.5V
5	Yellow	Vsp	0~5.6V
6	Blue	FG	14-17.5V

2. Outdoor DC Fan Motor (control chip is in outdoor PCB)

Power on ,and check if the fan can run normally, if the fan can run normally, the PCB must has problems and need to be replaced, If the fan can't run normally, measure the resistance of each two pins. If the resistance is not equal to each other, the fan motor must have problems and need to be replaced, otherwise the PCB must has problems and need to be replaced.

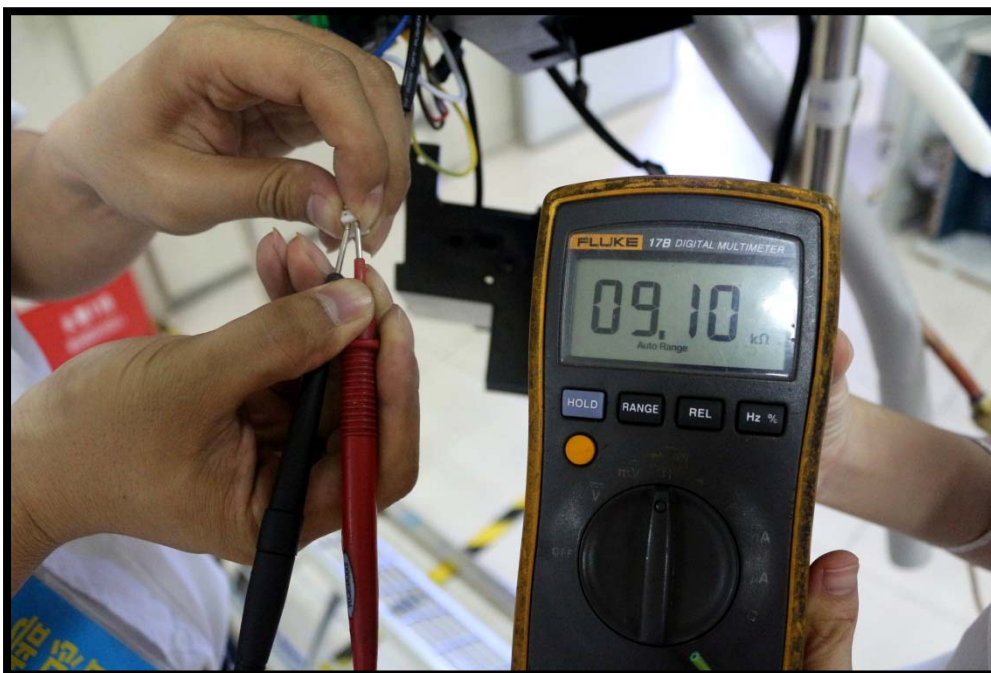
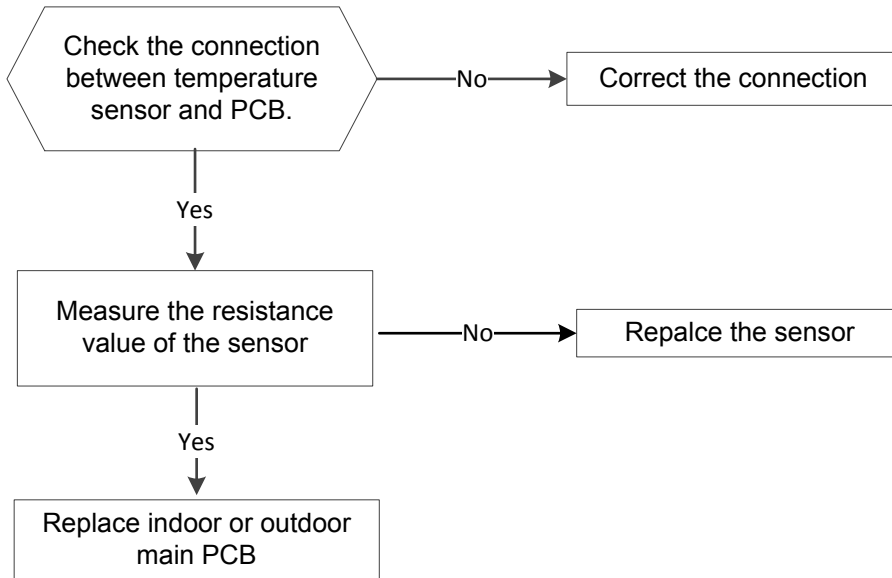
3. Indoor AC Fan Motor

Power on and set the unit running in fan mode at high fan speed. After running for 15 seconds, measure the voltage of pin1 and pin2. If the value of the voltage is less than 100V(208~240V power supply)or 50V(115V power supply), the PCB must has problems and need to be replaced.

11.2.4 Open circuit or short circuit of temperature sensor diagnosis and solution(E5)

Error Code	E60/E61/E53/E52/E54
Malfunction decision conditions	If the sampling voltage is lower than 0.06V or higher than 4.94V, the LED will display the failure.
Supposed causes	<ul style="list-style-type: none"> ● Wiring mistake ● Sensor faulty ● PCB faulty

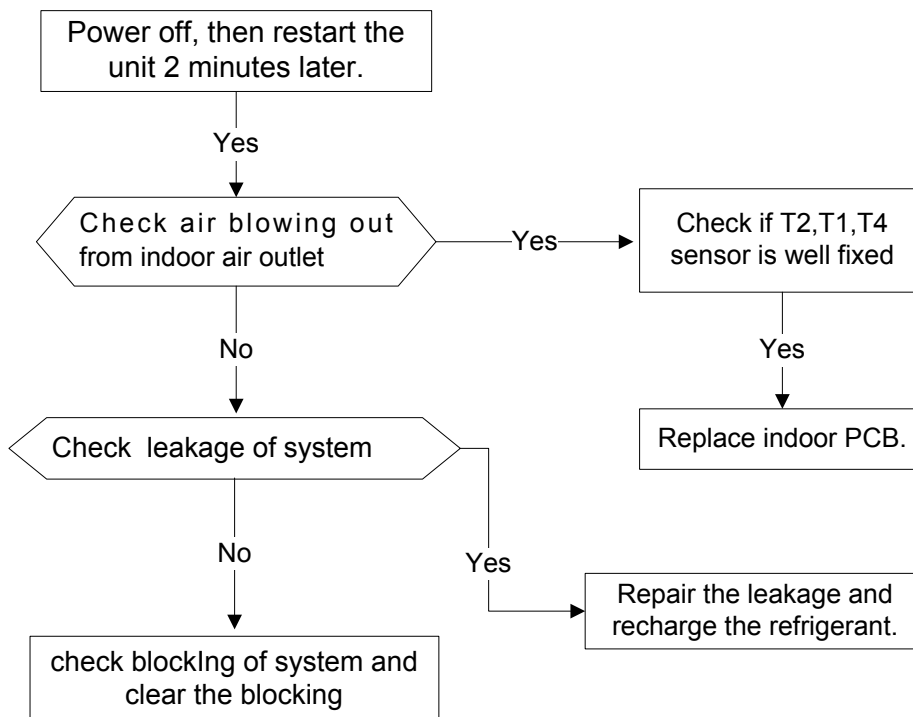
Trouble shooting:



11.2.5 Refrigerant Leakage Detection diagnosis and solution (PL)

Error Code	PL
Malfunction decision conditions	<ul style="list-style-type: none"> ● Cooling mode: $25^{\circ}\text{C} < T4 \leq 50^{\circ}\text{C}$ $\text{ucT1Average} - \text{ucT2Average} < \text{coolantT0}$ $\text{ucT2AveCompOpen} - \text{ucT2Average} < \text{coolantT2}$ $\text{ucT1AveCompOpen} - T1_Average < 3^{\circ}\text{C}$ ● Heating mode: $T4 \geq 0^{\circ}\text{C}$ $\text{T2Average_heat} - T1_Average < \text{heatantT0}$ $\text{ucT2AveCompOpen} - T2Average < \text{heatantT2}$ $\text{ucT1AveCompOpen} - T1_Average < 3^{\circ}\text{C}$
Supposed causes	<ul style="list-style-type: none"> ● T2,T4,T1 sensor faulty ● Indoor PCB faulty ● System problems, such as leakage or blocking.

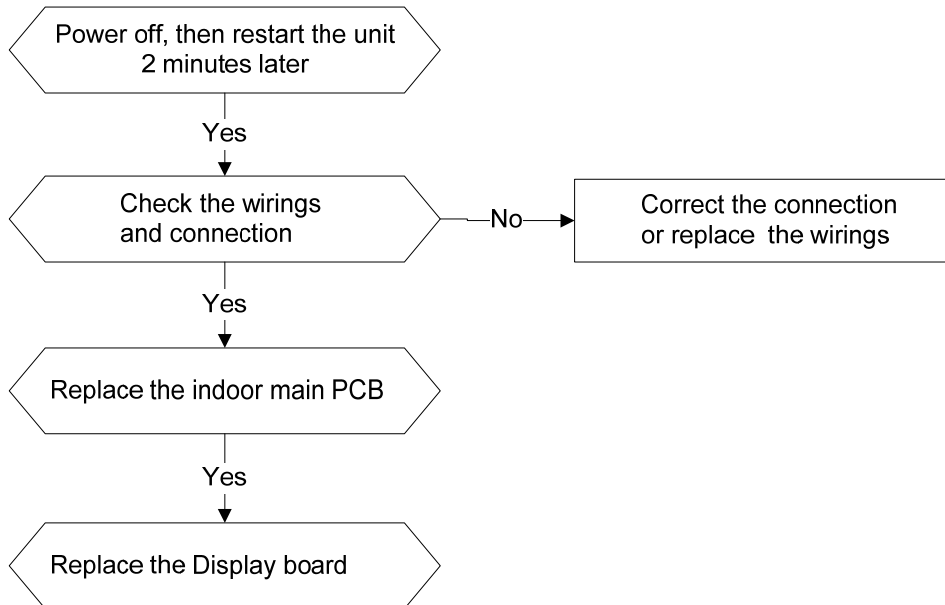
Trouble shooting:



11.2.6 Indoor PCB /Display board communication error (Eb)

Error Code	Eb
Malfunction decision conditions	Indoor PCB does not receive feedback from Display board.
Supposed causes	<ul style="list-style-type: none"> ● Wiring mistake ● PCB faulty ● Display board malfunction

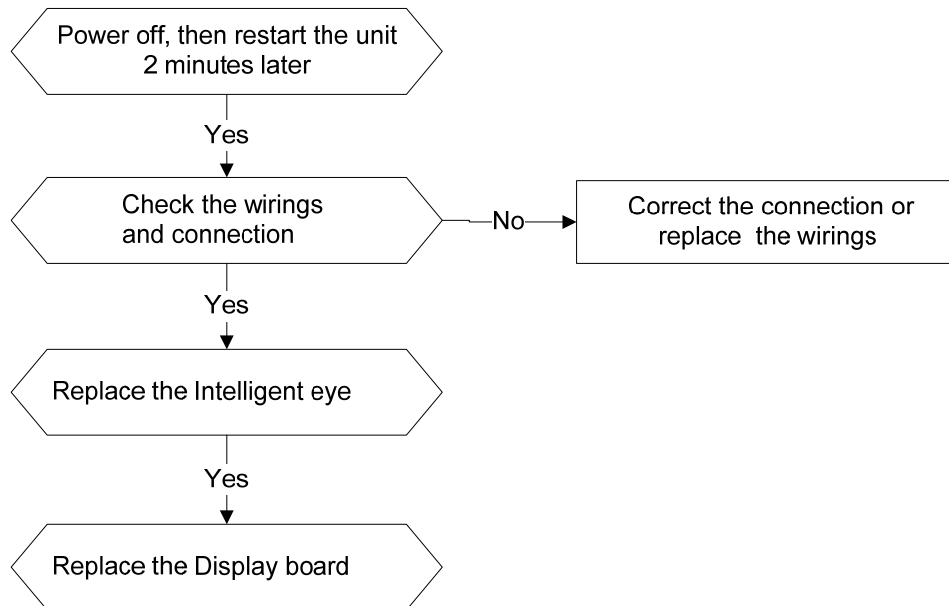
Trouble shooting:



11.2.7 Intelligent eye malfunction error (EF)

Error Code	EF
Malfunction decision conditions	The communication between Display board and Intelligent eye has malfunction.
Supposed causes	<ul style="list-style-type: none"> ● Wiring mistake ● Intelligent eye faulty ● Display board malfunction

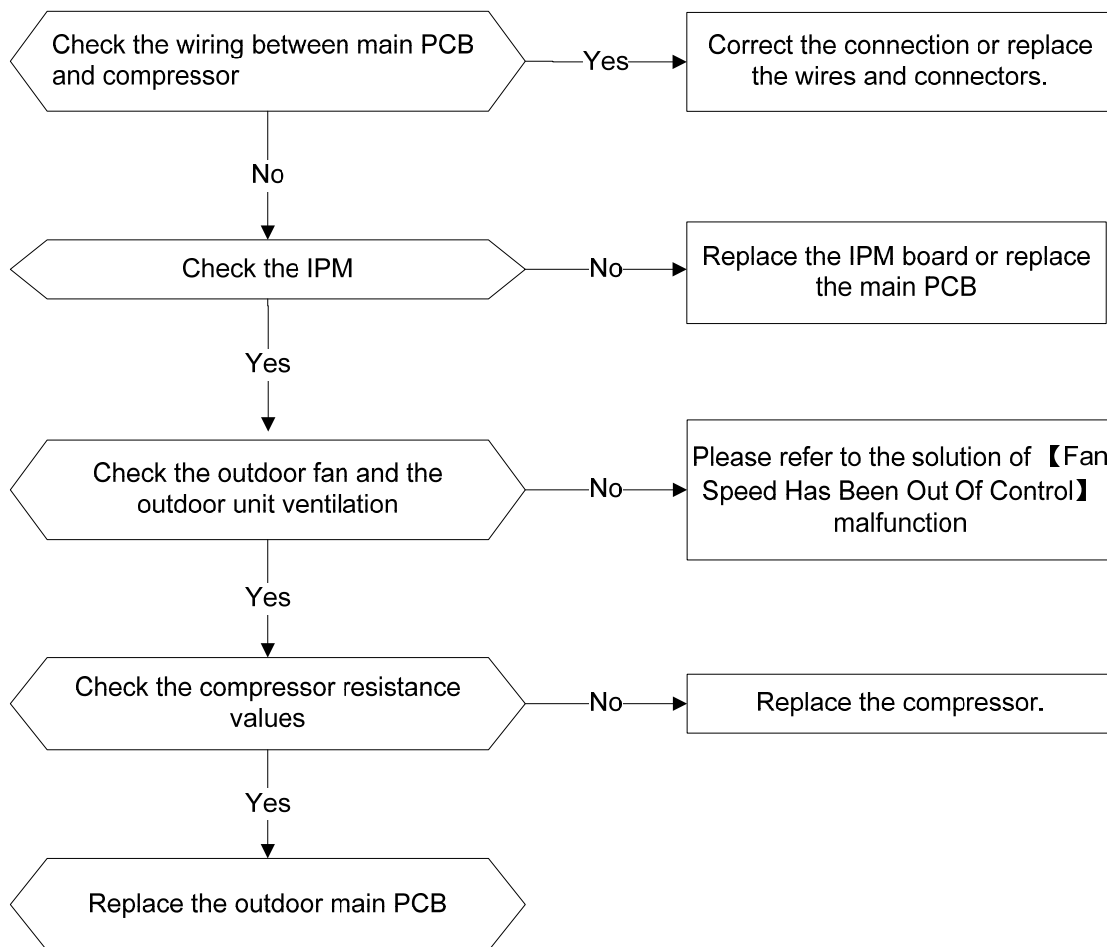
Trouble shooting:



11.2.8 IPM malfunction or IGBT over-strong current protection diagnosis and solution(P0)

Error Code	P0
Malfunction decision conditions	When the voltage signal that IPM send to compressor drive chip is abnormal, the display LED will show “P0” and AC will turn off.
Supposed causes	<ul style="list-style-type: none"> ● Wiring mistake ● IPM malfunction ● Outdoor fan ass’y faulty ● Compressor malfunction ● Outdoor PCB faulty

Trouble shooting:



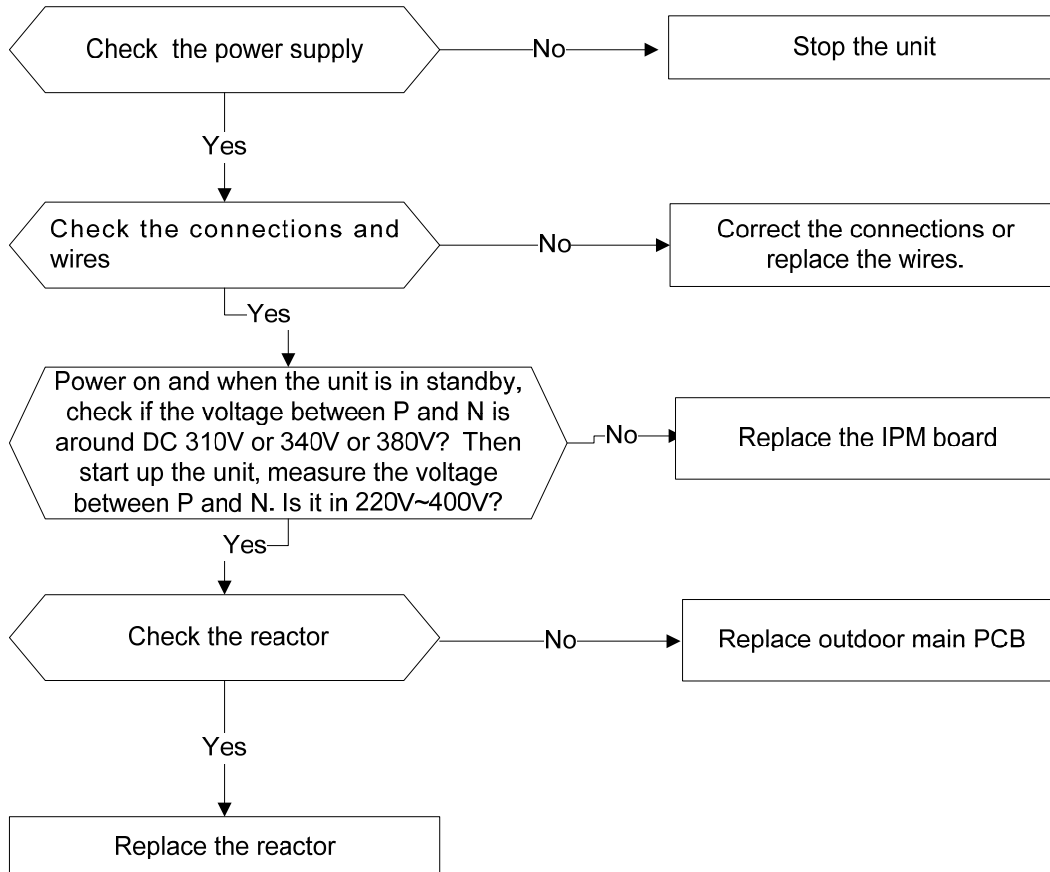
➤ **IPM continuity check**

Turn off the power, let the large capacity electrolytic capacitors discharge completely, and dismount the IPM. Use a digital tester to measure the resistance between P and UVWN; UVW and N.

Digital tester		Normal resistance value	Digital tester		Normal resistance value
(+)Red	(-)Black		(+)Red	(-)Black	
P	N	∞ (Several MΩ)	U	N	∞ (Several MΩ)
	U		V		
	V		W		
	W		(+)Red		

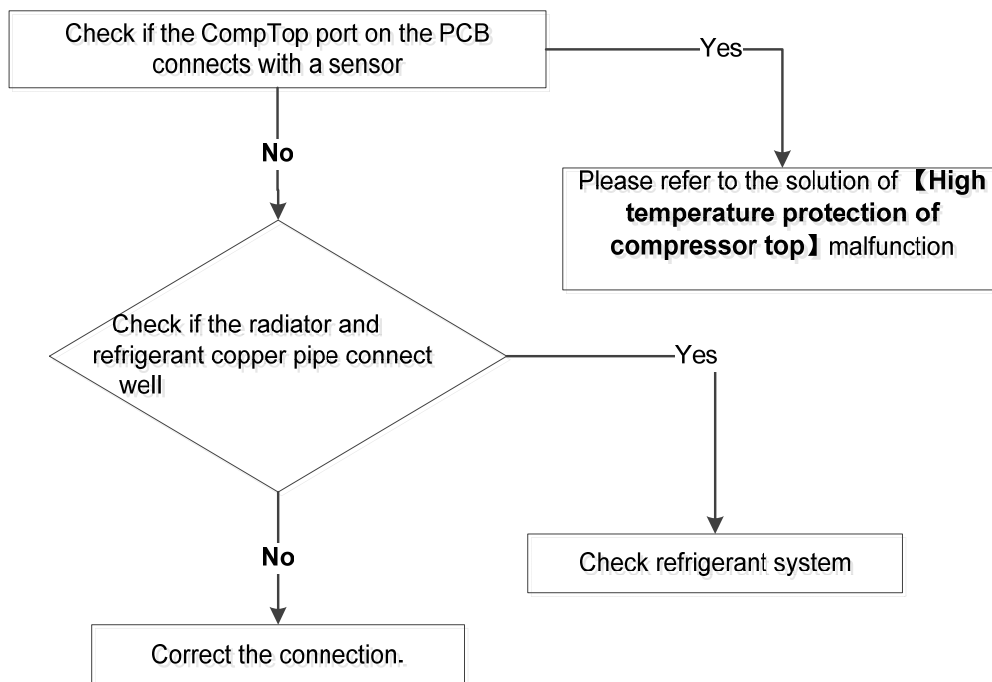
11.2.9 Over voltage or too low voltage protection diagnosis and solution(P1)

Error Code	P1
Malfunction decision conditions	An abnormal voltage rise or drop is detected by checking the specified voltage detection circuit.
Supposed causes	<ul style="list-style-type: none"> ● Power supply problems. ● System leakage or block ● PCB faulty

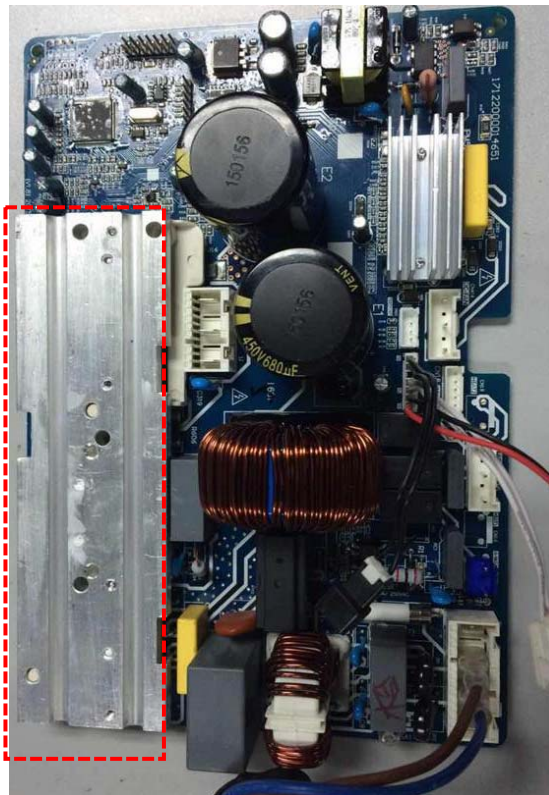
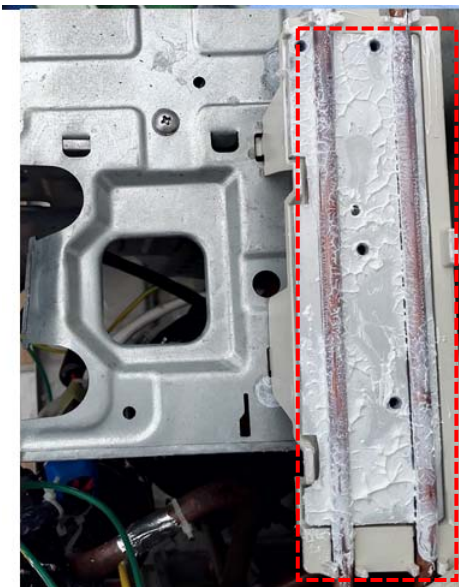
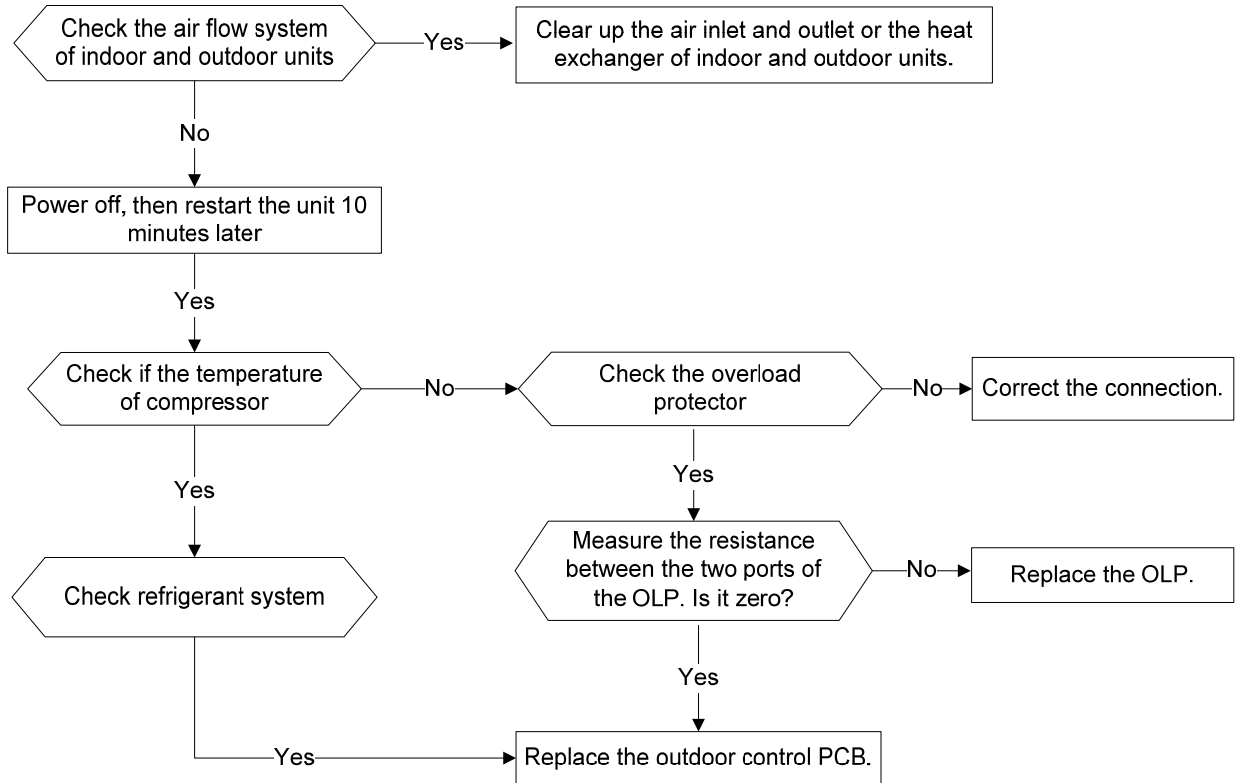


11.2.10 High temperature protection of IPM or compress top diagnosis and solution (P2)

Error Code	P2
Malfunction decision conditions	If the sampling voltage is not 5V, the LED will display the failure.
Supposed causes	<ul style="list-style-type: none"> ● Power supply problems. ● System leakage or block ● PCB faulty ● Connection problems

Trouble shooting:

High temperature protection of compressor top:

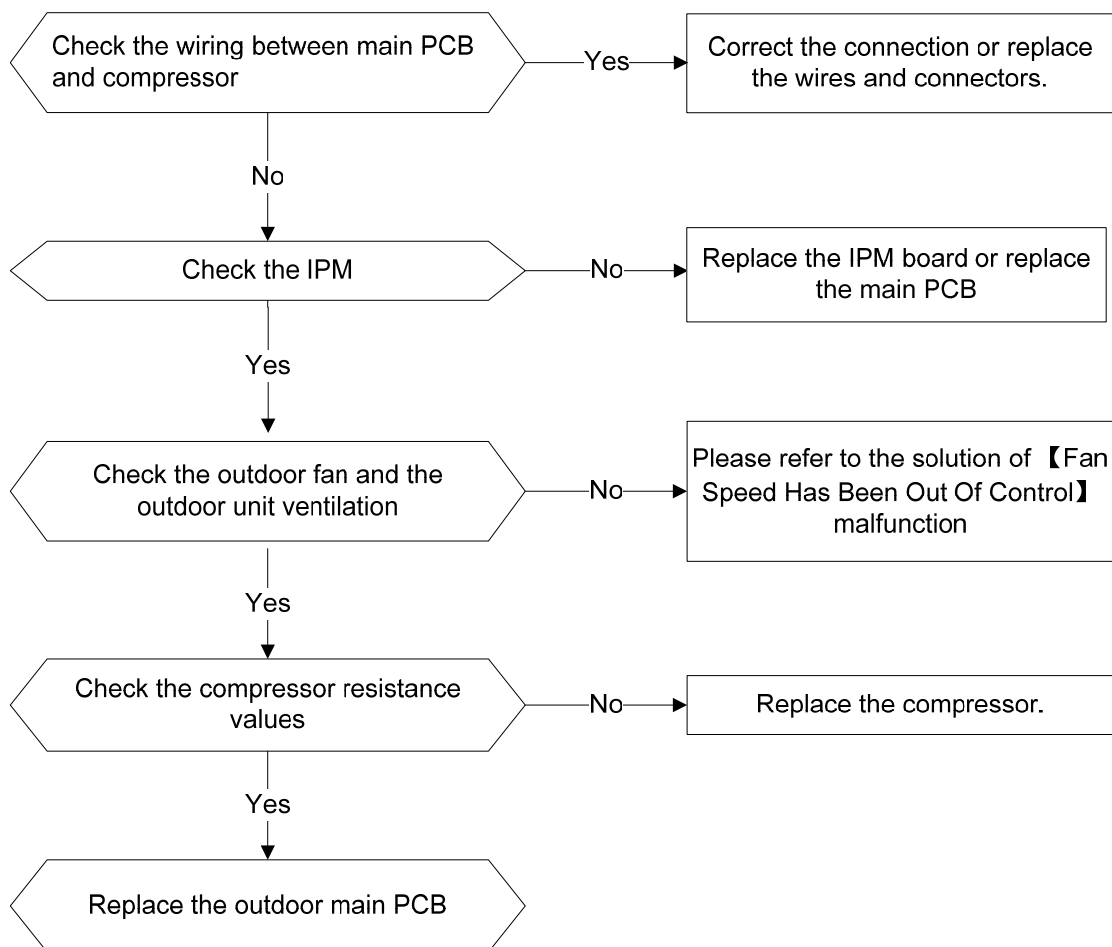


Radiator and refrigerant copper pipe

11.2.11 Inverter compressor drive error diagnosis and solution(P4)

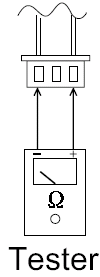
Error Code	P4
Malfunction decision conditions	An abnormal inverter compressor drive is detected by a special detection circuit, including communication signal detection, voltage detection, compressor rotation speed signal detection and so on.
Supposed causes	<ul style="list-style-type: none"> ● Wiring mistake ● IPM malfunction ● Outdoor fan ass'y faulty ● Compressor malfunction ● Outdoor PCB faulty

Trouble shooting:



Main parts check**1. Temperature sensor checking**

Disconnect the temperature sensor from PCB, measure the resistance value with a tester.



Tester

Temperature Sensors.

Room temp.(T1) sensor,

Indoor coil temp.(T2) sensor,

Outdoor coil temp.(T3) sensor,

Outdoor ambient temp.(T4) sensor,

Compressor discharge temp.(TP) sensor.

Measure the resistance value of each winding by using the multi-meter.

Appendix 1 Temperature Sensor Resistance Value Table for T1,T2,T3,T4 (°C--K)

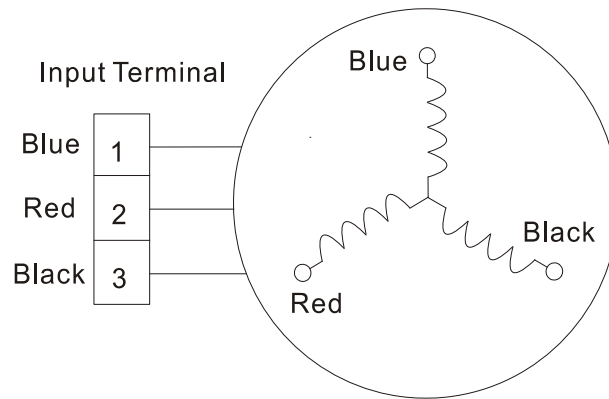
°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm
-20	-4	115.266	20	68	12.6431	60	140	2.35774	100	212	0.62973
-19	-2	108.146	21	70	12.0561	61	142	2.27249	101	214	0.61148
-18	0	101.517	22	72	11.5	62	144	2.19073	102	216	0.59386
-17	1	96.3423	23	73	10.9731	63	145	2.11241	103	217	0.57683
-16	3	89.5865	24	75	10.4736	64	147	2.03732	104	219	0.56038
-15	5	84.219	25	77	10	65	149	1.96532	105	221	0.54448
-14	7	79.311	26	79	9.55074	66	151	1.89627	106	223	0.52912
-13	9	74.536	27	81	9.12445	67	153	1.83003	107	225	0.51426
-12	10	70.1698	28	82	8.71983	68	154	1.76647	108	226	0.49989
-11	12	66.0898	29	84	8.33566	69	156	1.70547	109	228	0.486
-10	14	62.2756	30	86	7.97078	70	158	1.64691	110	230	0.47256
-9	16	58.7079	31	88	7.62411	71	160	1.59068	111	232	0.45957
-8	18	56.3694	32	90	7.29464	72	162	1.53668	112	234	0.44699
-7	19	52.2438	33	91	6.98142	73	163	1.48481	113	235	0.43482
-6	21	49.3161	34	93	6.68355	74	165	1.43498	114	237	0.42304
-5	23	46.5725	35	95	6.40021	75	167	1.38703	115	239	0.41164
-4	25	44	36	97	6.13059	76	169	1.34105	116	241	0.4006
-3	27	41.5878	37	99	5.87359	77	171	1.29078	117	243	0.38991
-2	28	39.8239	38	100	5.62961	78	172	1.25423	118	244	0.37956
-1	30	37.1988	39	102	5.39689	79	174	1.2133	119	246	0.36954
0	32	35.2024	40	104	5.17519	80	176	1.17393	120	248	0.35982
1	34	33.3269	41	106	4.96392	81	178	1.13604	121	250	0.35042
2	36	31.5635	42	108	4.76253	82	180	1.09958	122	252	0.3413
3	37	29.9058	43	109	4.5705	83	181	1.06448	123	253	0.33246
4	39	28.3459	44	111	4.38736	84	183	1.03069	124	255	0.3239
5	41	26.8778	45	113	4.21263	85	185	0.99815	125	257	0.31559
6	43	25.4954	46	115	4.04589	86	187	0.96681	126	259	0.30754
7	45	24.1932	47	117	3.88673	87	189	0.93662	127	261	0.29974
8	46	22.5662	48	118	3.73476	88	190	0.90753	128	262	0.29216
9	48	21.8094	49	120	3.58962	89	192	0.8795	129	264	0.28482
10	50	20.7184	50	122	3.45097	90	194	0.85248	130	266	0.2777
11	52	19.6891	51	124	3.31847	91	196	0.82643	131	268	0.27078
12	54	18.7177	52	126	3.19183	92	198	0.80132	132	270	0.26408
13	55	17.8005	53	127	3.07075	93	199	0.77709	133	271	0.25757
14	57	16.9341	54	129	2.95896	94	201	0.75373	134	273	0.25125
15	59	16.1156	55	131	2.84421	95	203	0.73119	135	275	0.24512
16	61	15.3418	56	133	2.73823	96	205	0.70944	136	277	0.23916
17	63	14.6181	57	135	2.63682	97	207	0.68844	137	279	0.23338
18	64	13.918	58	136	2.53973	98	208	0.66818	138	280	0.22776
19	66	13.2631	59	138	2.44677	99	210	0.64862	139	282	0.22231

Appendix 2 Temperature Sensor Resistance Value Table for TP (°C --K)

°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm
-20	-4	542.7	20	68	68.66	60	140	13.59	100	212	3.702
-19	-2	511.9	21	70	65.62	61	142	13.11	101	214	3.595
-18	0	483	22	72	62.73	62	144	12.65	102	216	3.492
-17	1	455.9	23	73	59.98	63	145	12.21	103	217	3.392
-16	3	430.5	24	75	57.37	64	147	11.79	104	219	3.296
-15	5	406.7	25	77	54.89	65	149	11.38	105	221	3.203
-14	7	384.3	26	79	52.53	66	151	10.99	106	223	3.113
-13	9	363.3	27	81	50.28	67	153	10.61	107	225	3.025
-12	10	343.6	28	82	48.14	68	154	10.25	108	226	2.941
-11	12	325.1	29	84	46.11	69	156	9.902	109	228	2.86
-10	14	307.7	30	86	44.17	70	158	9.569	110	230	2.781
-9	16	291.3	31	88	42.33	71	160	9.248	111	232	2.704
-8	18	275.9	32	90	40.57	72	162	8.94	112	234	2.63
-7	19	261.4	33	91	38.89	73	163	8.643	113	235	2.559
-6	21	247.8	34	93	37.3	74	165	8.358	114	237	2.489
-5	23	234.9	35	95	35.78	75	167	8.084	115	239	2.422
-4	25	222.8	36	97	34.32	76	169	7.82	116	241	2.357
-3	27	211.4	37	99	32.94	77	171	7.566	117	243	2.294
-2	28	200.7	38	100	31.62	78	172	7.321	118	244	2.233
-1	30	190.5	39	102	30.36	79	174	7.086	119	246	2.174
0	32	180.9	40	104	29.15	80	176	6.859	120	248	2.117
1	34	171.9	41	106	28	81	178	6.641	121	250	2.061
2	36	163.3	42	108	26.9	82	180	6.43	122	252	2.007
3	37	155.2	43	109	25.86	83	181	6.228	123	253	1.955
4	39	147.6	44	111	24.85	84	183	6.033	124	255	1.905
5	41	140.4	45	113	23.89	85	185	5.844	125	257	1.856
6	43	133.5	46	115	22.89	86	187	5.663	126	259	1.808
7	45	127.1	47	117	22.1	87	189	5.488	127	261	1.762
8	46	121	48	118	21.26	88	190	5.32	128	262	1.717
9	48	115.2	49	120	20.46	89	192	5.157	129	264	1.674
10	50	109.8	50	122	19.69	90	194	5	130	266	1.632
11	52	104.6	51	124	18.96	91	196	4.849			
12	54	99.69	52	126	18.26	92	198	4.703			
13	55	95.05	53	127	17.58	93	199	4.562			
14	57	90.66	54	129	16.94	94	201	4.426			
15	59	86.49	55	131	16.32	95	203	4.294			
16	61	82.54	56	133	15.73	96	205	4.167			
17	63	78.79	57	135	15.16	97	207	4.045			
18	64	75.24	58	136	14.62	98	208	3.927			
19	66	71.86	59	138	14.09	99	210	3.812			

2. Compressor checking

Measure the resistance value of each winding by using the tester.



Position	Resistance Value
	ASN98D22UFZ
Blue - Red	1.57Ω (20°C/68°F)
Blue - Black	
Red - Blue	