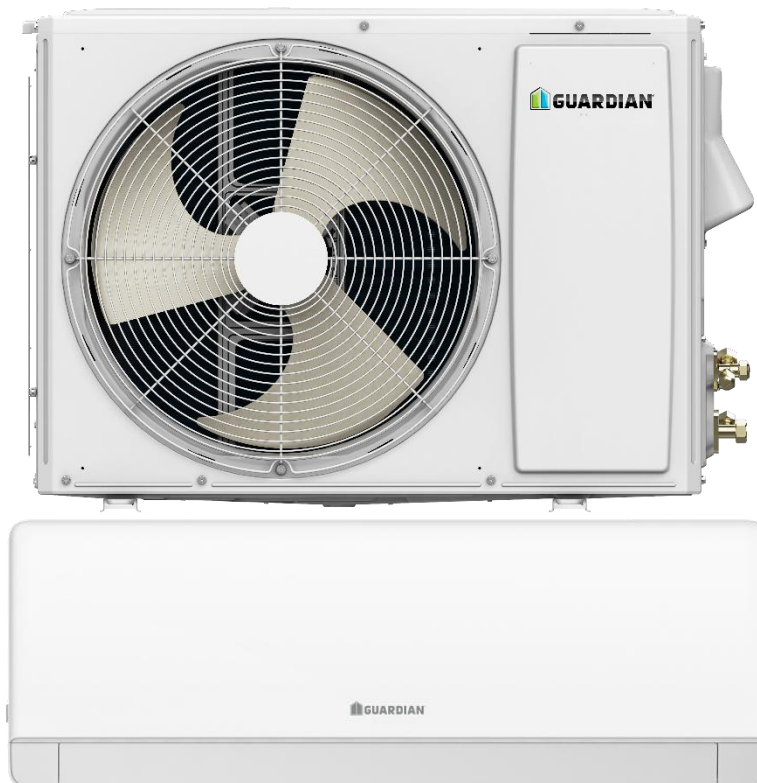




Technical & Service Manual



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Part 1 Safety Precautions

NOTE : FCC and IC related content only applies to models with WiFi function.

※ FCC WARNING

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

※ FCC STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

※ IC STATEMENT

This device complies with Industry Canada licence exempt RSS standard(s).

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

※ IC STATEMENT

This equipment complies with FCC's and IC's RF radiation exposure limits set forth for an uncontrolled environment. The antenna(s) used for this transmitter must be installed and operated to provide a separation distance of at least 7in(20cm) from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter. Installers must ensure that 7in(20cm) separation distance will be maintained between the device (excluding its handset) and users.

Cet appareil est conforme aux limites d'exposition au rayonnement RF stipulées par la FCC et l'IC pour une utilisation dans un environnement non contrôlé. Les antennes utilisées pour cet émetteur doivent être installées et doivent fonctionner à au moins 7in(20cm) de distance des utilisateurs et ne doivent pas être placées près d'autres antennes ou émetteurs ou fonctionner avec ceux-ci. Les installateurs doivent s'assurer qu'une distance de 7in(20cm) sépare l'appareil (à l'exception du combiné) des utilisateurs.

WARNING: This air conditioner uses R32 flammable refrigerant.

Notes: Air conditioner with R32 refrigerant, if roughly treated, may cause serious harm to the human body or surroundings.

*The room space and refrigerant maximum charge requirements are shown below:

Refrigerant Type	Allowable Refrigerant Charge Amount(oz)	Min.Floor Area For Installation(ft ²)
R32	<64.9	75.35
	64.9~82.54	96.88
	82.54~100.21	113.02
	100.21~117.85	134.55
	117.85~135.45	150.69
	135.45~153.09	193.75

* Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

*Do not pierce or burn air conditioner, and check the refrigerant pipeline for damage.

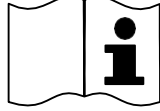
The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.)

Note that the refrigerant may be tasteless.

Storage of the air conditioner should be able to prevent mechanical damage caused by accident. Maintenance or repair of air conditioners using R32 refrigerant must be carried out after security check to minimize risk of incidents.

Air conditioner must be installed with stop valve cover.

Please read the instruction carefully before installing, using and maintaining.

Symbol	Note	Explanation
 A2L	Warning	This symbol shows that this appliance uses a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire. (Only for the AC with UL or ETL-MARKING.UL60335-2-40)
 A2L	Warning	This symbol shows that this appliance uses a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire. (Only for the AC with UL or ETL MARKING,UL60335-2-40)
	Caution	This symbol shows that the operation manual should be read carefully.
	Caution	This symbol shows that a qualified service technician should be handling this equipment with reference to the installation manual.
	Caution	This symbol shows that information is available such as the operating manual or installation manual.

Incorrect installation or operation by not following these instructions may cause harm or damage to people, properties, etc.

The seriousness is classified by the following indications:

WARNING

This symbol indicates the possibility of death or serious injury.

CAUTION

This symbol indicates the possibility of injury or damage to properties.

WARNING

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. (Except for the AC with CE-MARKING)

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. (Only for the AC with CE-MARKING)

1. **Do not** connect the earth wire to the gas pipeline, water pipeline, lightning rod, or telephone earth wire.
The air conditioner must be grounded. Incomplete grounding may result in electric shocks.
2. 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.
3. **Don't** pull the power cable. The damage of pulling power cord will cause serious electric shock.
4. Always switch off the device and cut the power supply when the unit is not in use for long periods of time remove as to ensure safety.
5. **Don't** turn off main power switch during operating or with wet hands. It may cause electric shock.
6. Should be on its own dedicated circuit.
7. Always switch off the device and turn off the power supply before performing any maintenance or cleaning.
Otherwise, it may cause electric shock or damage.

**WARNING**

8. **Don't** let the remote control and the indoor unit get wet. Otherwise, it may cause short circuit.
9. **Don't** use ducts connected to an appliance containing an ignition source.
10. **Don't** install air conditioner in a place where there is flammable gas or liquid. The distance between them should be above 1m. Otherwise, it may cause fire even explosion.
11. **Don't** use any chemicals or corrosive cleaners. Wipe off unit with damp cloth. Otherwise, it may cause electric shock or damage to the unit.
12. **Don't** attempt to repair the air conditioner by yourself.
Incorrect repairs may cause fire or explosion. Contact a qualified service technician for all service requirements.
13. **Don't** use the air conditioner during a lightning storm. Power supply should be turned off in time to prevent danger.
14. **Don't** put hands or any objects into the air inlets or outlets.
This may cause personal injury or damage to the unit.
15. Please ensure proper installation of stands. Improperly installed or damaged stands may lead to personal injury or equipment damage.
16. **Don't** block air inlet or air outlet.
Doing so could cause poor performance or damage to the equipment.
17. **Don't** let the air conditioner blow against a heater appliance.
Doing so could lead to incomplete combustion and improper ventilation of poisonous gases.
18. An earth leakage breaker with rated capacity must be installed to avoid possible electric shocks.
19. The appliance shall be installed in accordance with national and local wiring regulations.

**WARNING**

This product contains fluorinated greenhouse gases.

1. Refrigerant leaks contributes to climate change.
2. Refrigerant with lower global warming potential (GWP) would contribute less to global warming than a refrigerant with higher GWP, if leaked to the atmosphere. This appliance contains a refrigerant fluid with a GWP equal to [675]. This means that if 35.27oz(1kg) of this refrigerant fluid would be leaked to the atmosphere, the impact on global warming would be [675] times higher than 35.27oz(1kg) of CO₂, over a period of 100 years.
3. Never try to interfere with the refrigerant circuit yourself or disassemble the product yourself and always ask a professional.

Ensure no following objects are installed underneath the indoor unit:

1. microwaves, ovens and other hot objects.
2. computers and other high electrostatic appliances.
3. Outlets that are frequently used.

The joints between indoor and outdoor unit shall not be reused, unless after re-flaring the pipe.

The specifications of the fuse are printed on the circuit board, such as: 3.15A/250V AC, etc.

WEEE Warning

Disposal requirements:

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.

Contact the local government for information regarding the collection systems available.

If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.



 CAUTION

1. Don't open the windows and doors for long periods of time when the air conditioner is running. Otherwise, the cooling or heating capacity will be weakened
2. Don't stand on the top of the outdoor unit or place heavy things on it. This could cause personal injuries or damage the unit.
3. Don't use the air conditioner for other purposes, such as drying clothes, preserving foods, etc.
4. Don't apply the cold air to the body for a long time. It will deteriorate your physical conditions and cause health problems.
5. Set the suitable temperature. It is recommended that the temperature difference between indoor and outdoor temperature should not be too large.

Appropriate adjustments of the setting temperature can prevent the waste of electricity.

If your air conditioner is not fitted with a supply cord and a plug, an anti-explosion all-pole switch must be installed in the fixed wiring and the distance between contacts should be no less than 0.12in(3.0mm). Installation must comply with local applicable standards.

If your air conditioner is permanently connected to the fixed wiring, an anti-explosion residual current device (RCD) having rated residual operating current not exceeding 30mA should be installed in the fixed wiring.

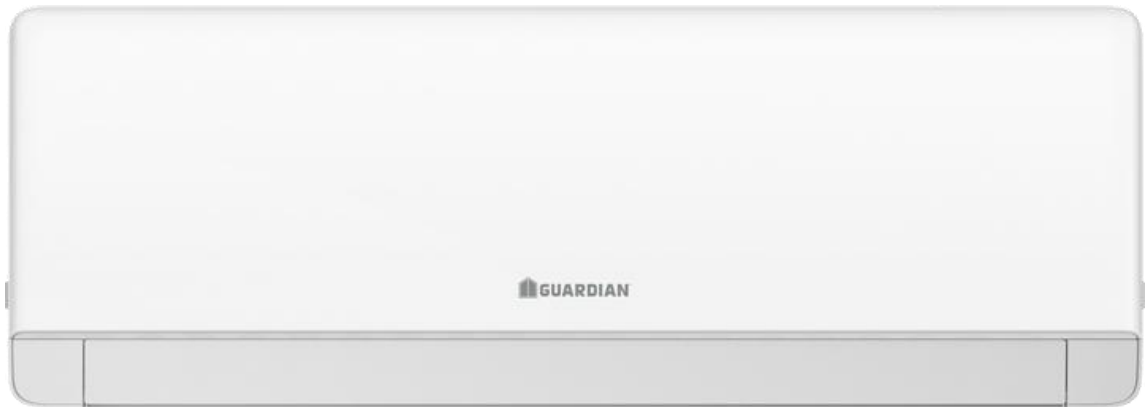
The power supply circuit should have leakage protector and air switch of which the capacity should be more than 1.5 times of the maximum current.

Regarding the installation of the air conditioners, please refer to the below paragraphs in this manual.

Part 2 General Information

Appearance

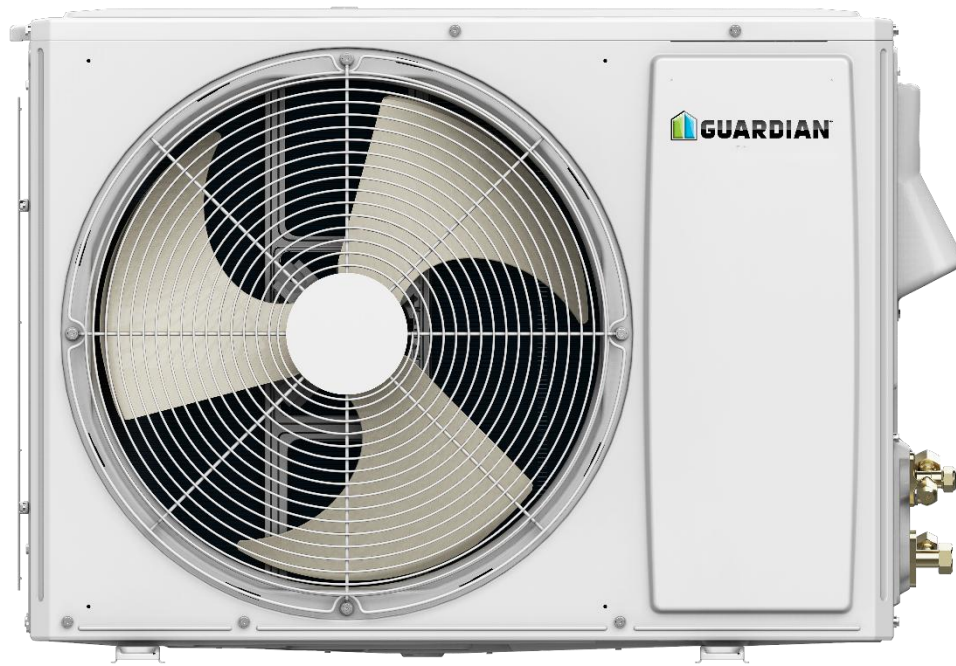
Indoor Unit



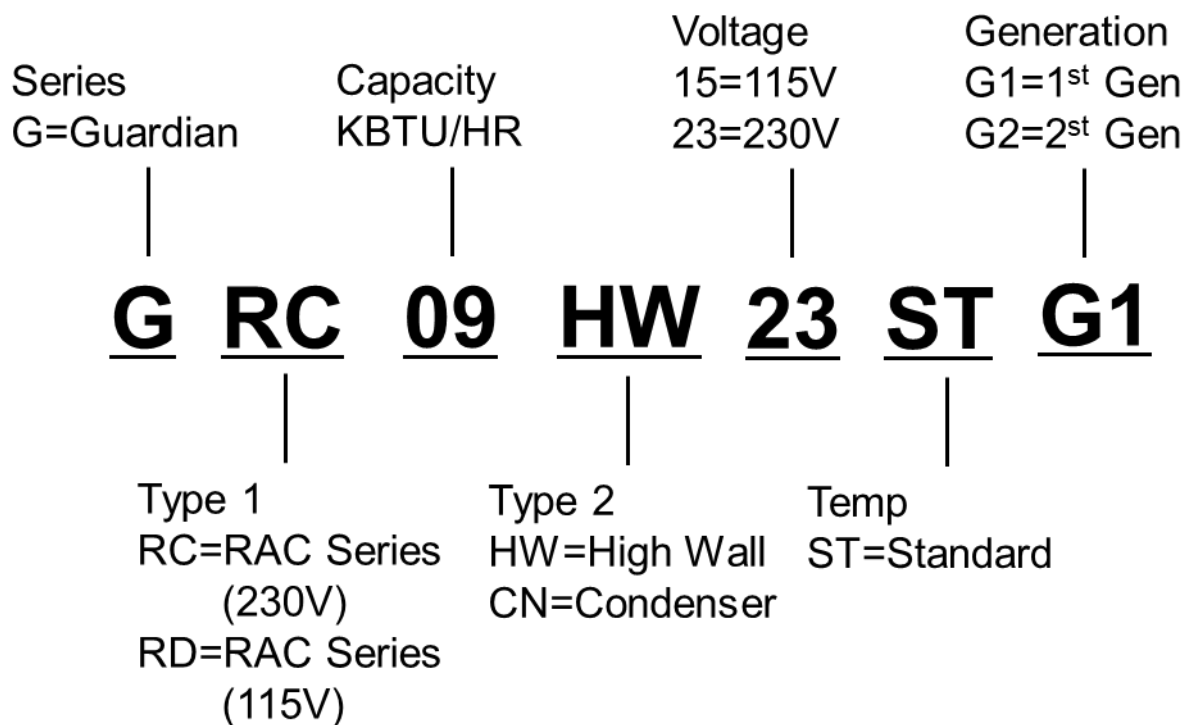
Remote



Outdoor Unit



Nomenclature



Remark:

*Capacity value under Nomenclature is an indication.

Please refer to Engineering and Physical Data for exact capacity value

Applicable Models List

Indoor Unit	Outdoor Unit	Power Supply
GRD09HW15STG1	GRD09CN15STG1	115V,1ph,60Hz
GRC09HW23STG1	GRC09CN23STG1	208/230V,1ph,60Hz
GRD12HW15STG1	GRD12CN15STG1	115V,1ph,60Hz
GRC12HW23STG1	GRC12CN23STG1	208/230V,1ph,60Hz
GRC18HW23STG1	GRC18CN23STG1	208/230V,1ph,60Hz
GRC24HW23STG1	GRC24CN23STG1	208/230V,1ph,60Hz
GRC36HW23STG1	GRC36CN23STG1	208/230V,1ph,60Hz

Part 3 Specifications

IDU Module					GRD09HW15STG1	GRC09HW23STG1
ODU Model					GRD09CN15STG1	GRC09CN23STG1
Basic Parameters	Cooling	Capacity(95°F Rated)		BTU/h	9100	9100
		Capacity Range		BTU/h	1700-12000	1700-12600
		Rated Power Input		W	800	758
		Dehumidifying		kg/h [lbs/h]	0.7 [1.5]	0.7 [1.5]
	Heating	Capacity(47°F Rated		BTU/h	9500	10000
		Capacity Range		BTU/h	1700-14000	1700-14000
		Rated Power Input		W	800	790
		Capacity(17°F Rated)		BTU/h	7600	5800
		Capacity(5°F Rated)		BTU/h	9000	9200
		Capacity(5°F Max)		BTU/h	9900	9900
	Efficiency	SEER2		BTU/h/W	19.0	19.0
		HSPF2(Region IV)		BTU/h/W	8.5	9.2
		HSPF2(Region V)		BTU/h/W	7.0	7.0
		EER2		BTU/h/W	11.4	12.0
		COP(5°F)		W/W	1.93	2.00
	Rated Running Current		Cooling	A	9.4	3.8
			Heating	A	8.7	4
	Electric Production		MCA	A	15	10
			MOCP	A	25	15
	Max. Input Power			W	1600	1600
	Max. Input Current			A	17	9
	Power Supply Source			V/Ph/Hz	115/60Hz	208-230V~/60Hz
	Refrigerant				R32	R32
	Refrigerant Charged			g [oz]	640 [22.6]	600 [21.2]
	Max. Discharge Pressure			Mpa	4.3	4.3
	Max. Suction Pressure			Mpa	2.5	2.5
	Operation Range	Cooling		°C[°F]	-15-52[5-125]	-15-52[5-125]
		Heating		°C[°F]	-25-24[-13-75]	-25-24[-13-75]
IDU	Evaporator	Rows		Row	2	2
		Tube Pitch		mm [in]	19.05 [0.75]	19.05 [0.75]
		Row Pich		mm [in]	23.2 [0.91]	23.2 [0.91]
		Tube	Type		Internally Threaded	Internally Threaded
			Length	mm [in]	562 [22.1]	562 [22.1]
			Diameter	mm [in]	5 [0.2]	5 [0.2]
		Fin	Material		Hydrophilic	Hydrophilic
			Fin Type		Louvered	Louvered
			Fin Spaceing	mm [in]	1.3 [0.05]	1.3 [0.05]
	Fan system	Air Flow Volume		m3/h[CFM]	600/530/480/430/300 [353/312/283/253/177]	600/530/480/430/300 [353/312/283/253/177]
		Fan	Type		Cross-flow	Cross-flow
			Material		AS+GF	AS+GF
			Diameter	mm [in]	Φ102 [4]	Φ102 [4]
			Length	mm [in]	560 [22]	560 [22]
		Fan Motor	Model	Pcs	D-13-10L	D-13-10L
			Insulation Grade		E	E

			Motor Speed	RPM	C/1180/1030/940/850/600 H/1180/1080/970/850	C/1180/1030/940/850/600 H/1180/1080/970/850
			Rated Current	A	0.06	0.06
			Rated Input Power	W	45	45
			Rated Output Power	W	13	13
	Noise Level			dB A	41/36/34/31/26	41/36/34/31/26
	IDU Net Weight			kg [lbs]	8 [17.6]	8 [17.6]
	Dimension	Net Dimension (WxDxH)		mm [in]	768*304*199 [30.2*12*7.9]	768*304*199 [30.2*12*7.9]
		Packing Dimension (WxDxH)		mm [in]	831*371*282 [32.7*14.6*11.1]	831*371*282 [32.7*14.6*11.1]
Drainage Pipe	Condensate Drainage Pipe O.D		mm [in]	16.9 [0.67]	16.9 [0.67]	
	Condensate Drainage Pipe L		mm [in]	2000 [78.7]	2000 [78.7]	
Connection	Connect Pipe		Length	m [ft]	/	/
			Liquid Tube Diameter	mm [in]	6.35 [1/4]	6.35 [1/4]
			Gas Tube Diameter	mm [in]	9.52 [3/8]	9.52 [3/8]
	Stop Valve		Liquid Valve		DG4	Dg4
			Gas Valve		DG8	Dg8
ODU	Compressor Model				KSN98D35UER31	KSN98D35UER31
	Compressor Parameter	Type			Rotary	Rotary
		Brand			GMCC	GMCC
		Capacity		W	3060	3060
		Input		W	807	807
		Rated Current Ria		A	10.5	10.5
		Thermal Protector			/	/
		Capacitor		uF	/	/
		Refrigerant Oil		ml [oz]	280 [9.5]	280 [9.5]
	Fan System	Fan	Type		Axial	Axial
			Vane Number		3	3
			Blade Material		AS	AS
			Diameter	mm [in]	Φ407 [13.8]	Φ407 [13.8]
		Outdoor Unit Configuration	Model		D-35-10L	D-35-10L
			Quantity		1	1
			Insulation Grade		E	E
			Motor Speed	RPM	920/700/540	920/700/540
			Rated Current	A	0.16	0.16
			Rated Input Power	W	59	59
			Rated Output Power	W	35	35
			Air Circulation		m3/h[CFM]	1800[1059]
	Condenser	Rows		Row	1	1
		Tube Pitch		mm [in]	22 [0.86]	22 [0.86]
		Row Pich		mm [in]	19.05 [0.75]	19.05 [0.75]
		Tube	Type		Internally Threaded	Internally Threaded
			Length	mm [in]	702 [27.6]	702 [27.6]
			Diameter	mm [in]	7 [0.28]	7 [0.28]

		Fin	Material		Hydrophilic	Hydrophilic
			Fin Type		Corrugated	Corrugated
			Fin Spaceing	mm [in]	1.3 [0.05]	1.3 [0.05]
	Interception Device	Interception Device Type			Capillary	Capillary
		Capillary	Capillary Specification	mm [in]	2.6*1.3*800 [0.1*0.05*31.5]	2.6*1.3*800 [0.1*0.05*31.5]
		EEV	EEV Module		/	/
	Noise Level			dB A	51	52
	ODU Net Weight			kg [lbs]	23.5 [51.8]	25 [55.1]
	Chassis Electric Heating			W	/	/
	Casing	Material			Galvanized Steel	Galvanized Steel
	Dimension	Net Dimension (WxDxH)		mm [in]	805*309*538 [31.7*12.2*21.2]	805*309x538 [31.7*12.2*21.2]
		Packing Dimension (WxDxH)		mm [in]	825*345*595 [32.5*13.6*23.4]	825*345*595 [32.5*13.6*23.4]

IDU Module					GRD12HW15STG1	GRC12HW23STG1
ODU Model					GRD12CN15STG1	GRC12CN23STG1
Basic Parameters	Cooling	Capacity(95°F Rated)		BTU/h	12000	12000
		Capacity Range		BTU/h	1700-13300	1700-13300
		Rated Power Input		W	1250	1212
		Dehumidifying		kg/h [lbs/h]	1 [2.2]	1 [2.2]
	Heating	Capacity(47°F Rated		BTU/h	12300	12300
		Capacity Range		BTU/h	1700-15000	1700-15000
		Rated Power Input		W	1050	1030
		Capacity(17°F Rated)		BTU/h	9000	7500
		Capacity(5°F Rated)		BTU/h	9200	9200
		Capacity(5°F Max)		BTU/h	10170	10170
	Efficiency	SEER2		BTU/h/W	19.0	19.0
		HSPF2(Region IV)		BTU/h/W	8.5	8.8
		HSPF2(Region V)		BTU/h/W	7.0	7.0
		EER2		BTU/h/W	9.6	9.9
		COP(5°F)		W/W	2.09	2.10
	Rated Running Current		Cooling	A	13.5	5.6
			Heating	A	11.0	4.9
	Electric Production		MCA	A	15	10
			MOCP	A	25	15
	Max. Input Power			W	1600	1600
	Max. Input Current			A	17	9.5
	Power Supply Source			V/Ph/Hz	208-230V~/60Hz	208-230V~/60Hz
	Refrigerant				R32	R32
	Refrigerant Charged			g [oz]	640 [22.6]	600 [21.2]
	Max. Discharge Pressure			Mpa	4.3	4.3
	Max. Suction Pressure			Mpa	2.5	2.5
	Operation Range	Cooling		°C[°F]	-15-52[5-125]	-15-52[5-125]
		Heating		°C[°F]	-25-24[-13-75]	-25-24[-13-75]
IDU	Evaporator	Rows		Row	2	2
		Tube Pitch		mm [in]	19.05 [0.75]	19.05 [0.75]
		Row Pich		mm [in]	23.2 [0.91]	23.2 [0.91]

		Tube	Type		Internally Threaded	Internally Threaded	
			Length	mm [in]	622 [24.5]	622 [24.5]	
			Diameter	mm [in]	5 [0.2]	5 [0.2]	
		Fin	Material		Hydrophilic	Hydrophilic	
			Fin Type		Louvered	Louvered	
			Fin Spacing	mm [in]	1.3 [0.05]	1.3 [0.05]	
		Fan system	Air Flow Volume		m3/h[CFM]	650/590/540/490/330 [383/347/318/288/194]	650/590/540/490/330 [383/347/318/288/194]
	Fan		Type		Cross-flow	Cross-flow	
			Material		AS+GF	AS+GF	
			Diameter	mm [in]	Φ106 [4.2]	Φ106 [4.2]	
			Length	mm [in]	620 [24.4]	620 [24.4]	
	Fan Motor		Model	Pcs	D-13-10L	D-13-10L	
			Insulation Grade		E	E	
			Motor Speed	RPM	C/1180/1030/940/850/600 H/1180/1080/970/850	C/1180/1030/940/850/600 H/1180/1080/970/850	
			Rated Current	A	0.06	0.06	
			Rated Input Power	W	45	45	
			Rated Output Power	W	13	13	
	Noise Level			dB A	43/40/36/33/27	43/40/36/33/27	
	IDU Net Weight			kg [lbs]	8.5 [18.7]	8.5 [18.7]	
	Dimension	Net Dimension (WxDxH)		mm [in]	827*304*199 [32.6*12*7.9]	827*304*199 [32.6*12*7.9]	
		Packing Dimension (WxDxH)		mm [in]	895*371*300 [35.2*14.6*11.8]	895*371*300 [35.2*14.6*11.8]	
	Drainage Pipe	Condensate Drainage Pipe O.D		mm [in]	16.9 [0.67]	16.9 [0.67]	
		Condensate Drainage Pipe L		mm [in]	2000 [78.7]	2000 [78.7]	

Connection	Connect Pipe	Length	m [ft]	/	/
		Liquid Tube Diameter	mm [in]	6.35 [1/4]	6.35 [1/4]
		Gas Tube Diameter	mm [in]	9.52 [3/8]	9.52 [3/8]
	Stop Valve	Liquid Valve		DG4	DG4
		Gas Valve		DG8	DG8

ODU	Compressor Model				KSN98D66UER3	KSN98D66UER3
	Compressor Parameter	Type		Rotary	Rotary	
		Brand		GMCC	GMCC	
		Capacity	W	3080	3080	
		Input	W	766	766	
		Rated Current R _{Ia}	A	6.6	6.6	
		Thermal Protector		/	/	
		Capacitor	uF	/	/	
		Refrigerant Oil	ml [oz]	300 [10.1]	300 [10.1]	
	Fan System	Fan	Type		Axial	Axial
			Vane Number		3	3
			Blade Material		AS	AS
			Diameter	mm [in]	Φ407 [13.8]	Φ407 [13.8]
		Outdoor Unit Configuration	Model		D-35-10L	D-35-10L
			Quantity		1	1

			Insulation Grade		E	E
			Motor Speed	RPM	920/700/540	920/700/540
			Rated Current	A	0.16	0.16
			Rated Input Power	W	59	59
			Rated Output Power	W	35	35
		Air Circulation		m3/h[CFM]	1800[1059]	1800[1059]
	Condenser	Rows		Row	1	1
		Tube Pitch		mm [in]	22 [0.86]	22 [0.86]
		Row Pich		mm [in]	19.05 [0.75]	19.05 [0.75]
		Tube	Type		Internally Threaded	Internally Threaded
			Length	mm [in]	702 [27.6]	702 [27.6]
			Diameter	mm [in]	7 [0.28]	7 [0.28]
		Fin	Material		Hydrophilic	Hydrophilic
			Fin Type		Corrugated	Corrugated
			Fin Spaceing	mm [in]	1.3 [0.05]	1.3 [0.05]
	Interception Device	Interception Device Type			Capillary	Capillary
		Capillary	Capillary Specification	mm [in]	2.6*1.3*800 [0.1*0.05*31.5]	2.6*1.3*800 [0.1*0.05*31.5]
		EEV	EEV Module		/	/
	Noise Level			dB A	52	52
	ODU Net Weight			kg [lbs]	23.5 [51.8]	25 [55.1]
	Chassis Electric Heating			W	/	/
	Casing	Material			Galvanized Steel	Galvanized Steel
	Dimension	Net Dimension (WxDxH)		mm [in]	805*309*538 [31.7*12.2*21.2]	805*309*538 [31.7*12.2*21.2]
		Packing Dimension (WxDxH)		mm [in]	825*345*595 [32.5*13.6*23.4]	825*345*595 [32.5*13.6*23.4]

IDU Module					GRC18HW23STG1	GRC24HW23STG1	GRC36HW23STG1
ODU Model					GRC18CN23STG1	GRC24CN23STG1	GRC36CN23STG1
Basic Parameters	Cooling	Capacity(95°F Rated)	BTU/h		18000	24000	33600
		Capacity Range	BTU/h		2900-20000	4300-25200	7500-35500
		Rated Power Input	W		1638	2050	3320
		Dehumidifying	kg/h [lbs/h]		1.6 [3.5]	2.6 [5.7]	3.6 [7.9]
	Heating	Capacity(47°F Rated	BTU/h		19100	24000	34000
		Capacity Range	BTU/h		4400-22600	5300-27300	8300-42000
		Rated Power Input	W		1695	2050	3000
		Capacity(17°F Rated)	BTU/h		14000	20800	23600
		Capacity(5°F Rated)	BTU/h		14200	20000	23800
		Capacity(5°F Max)	BTU/h		15770	21060	24750
	Efficiency	SEER2	BTU/h/W		18.0	18.0	18.0
		HSPF2(Region IV)	BTU/h/W		9.0	9.0	8.5
		HSPF2(Region V)	BTU/h/W		6.4	8.0	7.5
		EER2	BTU/h/W		11.0	11.9	10.1
		COP(5°F)	W/W		2.20	2.10	2.00
	Rated Running Current		Cooling	A	7.3	9.5	15
			Heating	A	7.6	9.5	13

	Electric Production		MCA	A	15	15	20
			MOCP	A	20	25	35
	Max. Input Power			W	2200	3300	3700
	Max. Input Current			A	12	18	18
	Power Supply Source			V/Ph/Hz	208-230V~/60Hz	208-230V/60Hz	208-230~60Hz
	Refrigerant				R32	R32	R32
	Refrigerant Charged			g [oz]	980 [34.6]	1250 [44.1]	2050 [72.3]
	Max. Discharge Pressure			Mpa	4.3	4.3	4.3
	Max. Suction Pressure			Mpa	2.5	2.5	2.5
	Operation Range	Cooling		°C[°F]	-15-52[5-125]	-15-52[5-125]	-15-52[5-125]
		Heating		°C[°F]	-25-24[-13-75]	-25-24[-13-75]	-25-24[-13-75]
IDU	Evaporator	Rows		Row	2	2	2
		Tube Pitch		mm [in]	19.05 [0.75]	20.5 [0.8]	20.5 [0.8]
		Row Pich		mm [in]	23.2 [0.91]	25.4 [1]	25.4 [1]
		Tube	Type		Internally Threaded	Internally Threaded	Internally Threaded
			Length	mm [in]	722 [28.4]	850 [33.5]	987 [38.9]
			Diameter	mm [in]	5 [0.2]	7 [0.28]	7 [0.28]
		Fin	Material		Hydrophilic	Hydrophilic	Hydrophilic
			Fin Type		Louvered	Louvered	Louvered
			Fin Spaceing	mm [in]	1.3 [0.05]	1.4 [0.06]	1.4 [0.06]
	Fan system	Air Flow Volume		m3/h[CFM]	1050/950/850/750/430 [618/559/500/441/253]	1250/1100/1000/850/560 [736/647/589/500/330]	1550/1380/1180/1060 [912/812/695/624]
		Fan	Type		Cross-flow	Cross-flow	Cross-flow
			Material		AS+GF	AS+GF	AS+GF
			Diameter	mm [in]	Φ106 [4.2]	Φ107.9 [4.2]	Φ107.9 [4.2]
			Length	mm [in]	715 [28.1]	839 [33]	978 [34.6]
		Fan Motor	Model	Pcs	D-310-30-10A	D-310-50-10	D-310-50-10L
			Insulation Grade		E	E	E
			Motor Speed	RPM	C/1330/1180/1040/900 H/1330/1230/1070/900	C/1330/1180/1040/900 H/1280/1180/1040/900	C/1330/1180/1050/900 H/1280/1130/1000/900
			Rated Current	A	0.25	0.24	0.24
			Rated Input Power	W	55	85	85
			Rated Output Power	W	30	50	50
		Noise Level		dB A	49/46/42/37/29	50/48/44/39/33	51/48/44/39/34
		IDU Net Weight		kg [lbs]	12 [26.5]	14[30.9]	16 [35.3]
	Dimension	Net Dimension (WxDxH)		mm [in]	997*324*221 [39.3*12.8*8.7]	1140*337*228 [44.9*13.3*9]	1250*359*253 [49.2*14.1*9.9]
		Packing Dimension (WxDxH)		mm [in]	1070*385*312 [42.1*15.2*12.3]	1210*400*327 [47.6*15.7*12.9]	1340*445*355 [52.8*17.5*14]
	Drainage Pipe	Condensate Drainage Pipe O.D		mm [in]	16.9 [0.67]	16.9 [0.67]	16.9 [0.67]
		Condensate Drainage Pipe L		mm [in]	2000 [78.7]	2000 [78.7]	2000 [78.7]
Connection	Connect Pipe		Length	m [ft]	/	/	/
			Liquid Tube Diameter	mm [in]	6.35 [1/4]	6.35 [1/4]	6.35 [1/4]
			Gas Tube Diameter	mm [in]	12.7 [1/2]	15.88 [5/8]	15.88 [5/8]
	Stop Valve		Liquid Valve		DG4	DG4	Dg4
			Gas Valve		DG10	Dg13	Dg13

ODU	Compressor Model				KSN140D36UFZM31	KTN210D61UFUC3	KTM240D43UKUA2
	Compressor Parameter	Type			Rotary	Rotary	Rotary
		Brand			GMCC	GMCC	GMCC
		Capacity		W	4345	6600	8780
		Input		W	1125	1825	3635
		Rated Current R _{la}		A	6.85	8.3	16.5
		Thermal Protector			/	Built-in	Built-in
		Capacitor		uF	/	/	/
		Refrigerant Oil		ml [oz]	435 [14.7]	450 [15.2]	620 [21]
	Fan System	Fan	Type		Axial	Axial	Axial
			Vane Number		3	3	3
			Blade Material		AS	AS	AS
			Diameter	mm [in]	Φ440 [14.9]	Φ553 [18.7]	Φ553 [18.7]
		Outdoor Unit Configuration	Model		D-40-10L	D-65-10L	D-65-10L
			Quantity		1	1	1
			Insulation Grade		E	E	E
			Motor Speed	RPM	850/700/500	820/750/500	820/750/500
			Rated Current	A	0.41	1.06	1.06
			Rated Input Power	W	89	126	126
			Rated Output Power	W	40	65	65
		Air Circulation		m3/h[CFM]	2600[1530]	3900[2295]	3900[2295]
	Condenser	Rows		Row	2	1.5	3
		Tube Pitch		mm [in]	22 [0.86]	22 [0.86]	20.5 [0.8]
		Row Pich		mm [in]	19.05 [0.75]	19.05 [0.75]	12.7 [0.5]
		Tube	Type		Internally Threaded	Internally Threaded	Internally Threaded
			Length	mm [in]	783 [30.8]	886 [34.8]	888 [34.9]
			Diameter	mm [in]	7 [0.28]	7 [0.28]	7 [0.28]
		Fin	Material		Hydrophilic	Hydrophilic	Hydrophilic
			Fin Type		Corrugated	Corrugated	Plain
			Fin Spaceing	mm [in]	1.4 [0.06]	1.3 [0.05]	1.4 [0.06]
	Interception Device	Interception Device Type			Capillary	Capillary	Capillary+EEV
		Capillary	Capillary Specification	mm [in]	2.6*1.3*350 [0.1*0.05*13.8]	3.0*1.6*500 [0.12*0.06*19.7]	3.5*2.0*300 [0.14*0.08*11.8]
		EEV	EEV Module		/	/	DZPZF18C-R72W
	Noise Level			dB A	53	58	59
	ODU Net Weight			kg [lbs]	30 [66.1]	44 [97]	48 [105.8]
	Chassis Electric Heating			W	/	/	96
	Casing	Material			Galvanized Steel	Galvanized Steel	Galvanized Steel
	Dimension	Net Dimension (WxDxH)		mm [in]	880*353*557 [30.9*13.9*21.9]	900*350*700 [34.6*13.9*27.6]	900*350*700 [35.4*13.8*27.6]
		Packing Dimension (WxDxH)		mm [in]	903*382*615 [35.6*15*24.2]	1015*425*762 [40*16.7*30]	1015*425*762 [40*16.7*30]

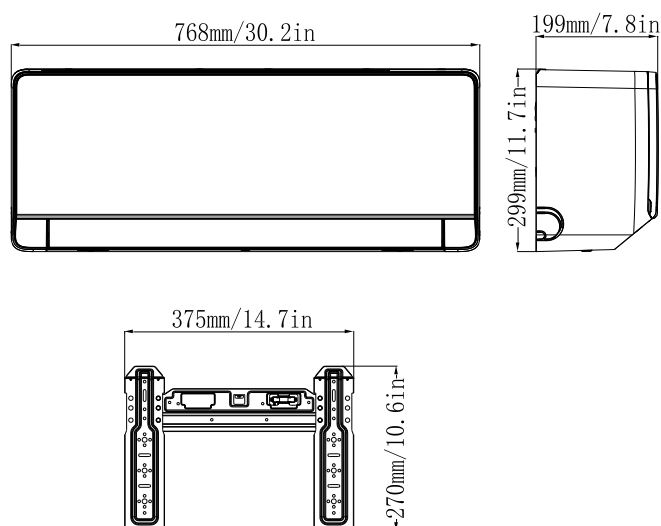
Piping Specs Model	Liquid	Gas	Max Pipe Length(Ft)	Max Vertical Difference (Ft)	Chargeless (Ft)
GRD09HW15STG1/ GRD09CN15STG1	1/4	3/8	65	50	25
GRD12HW15STG1/ GRD12CN15STG1	1/4	3/8	65	50	25
GRC09HW23STG1/ GRC09CN23STG1	1/4	3/8	65	50	25
GRC12HW23STG1/ GRC12CN23STG1	1/4	3/8	65	50	25
GRC18HW23STG1/ GRC18CN23STG1	1/4	1/2	100	65	25
GRC24HW23STG1/ GRC24CN23STG1	1/4	5/8	100	65	25
GRC36HW23STG1 / GRC36CN23STG1	1/4	5/8	100	65	25

Part 4 Outline Dimension Diagram

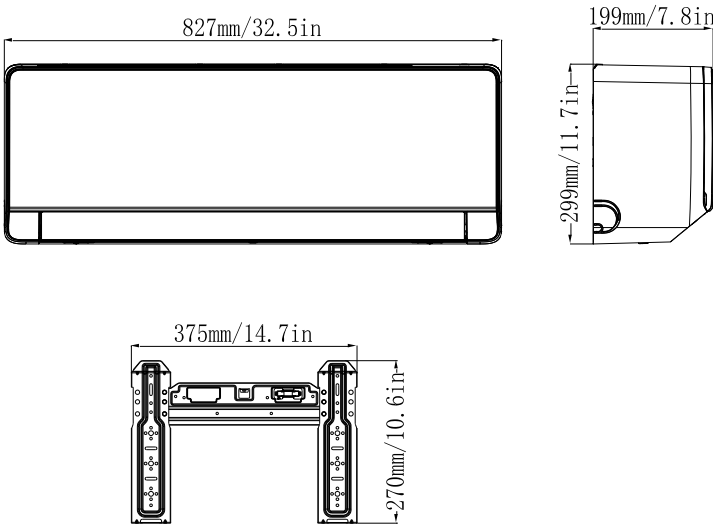
The following data is for reference only and the actual size may vary.

Indoor Unit

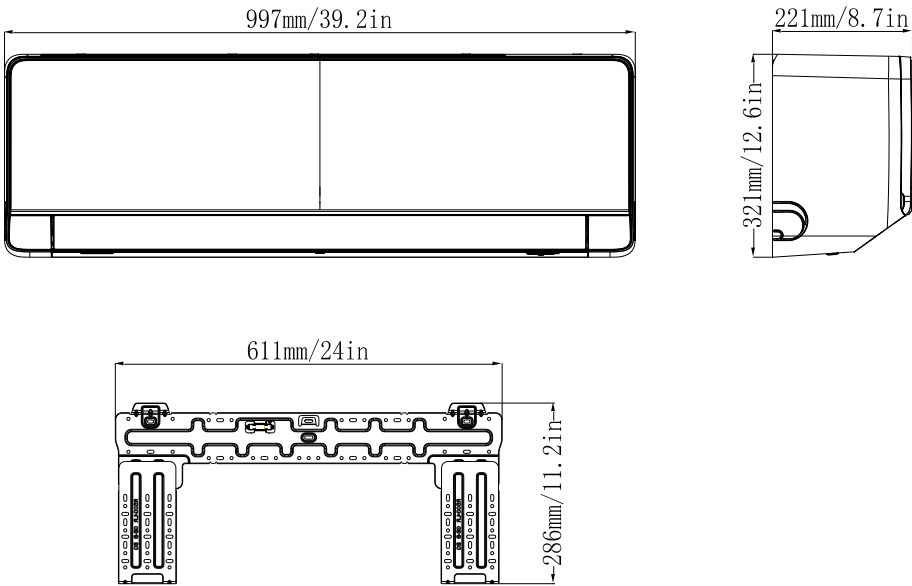
GRD09HW15STG1、GRC09HW23STG1



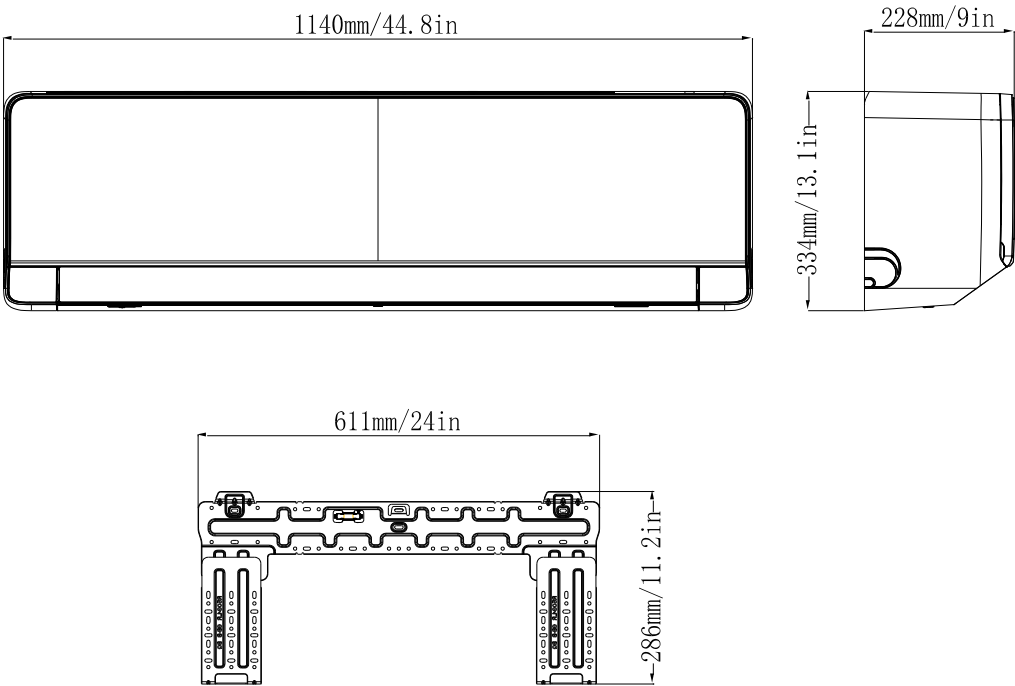
GRD12HW15STG1、GRC12HW23STG1



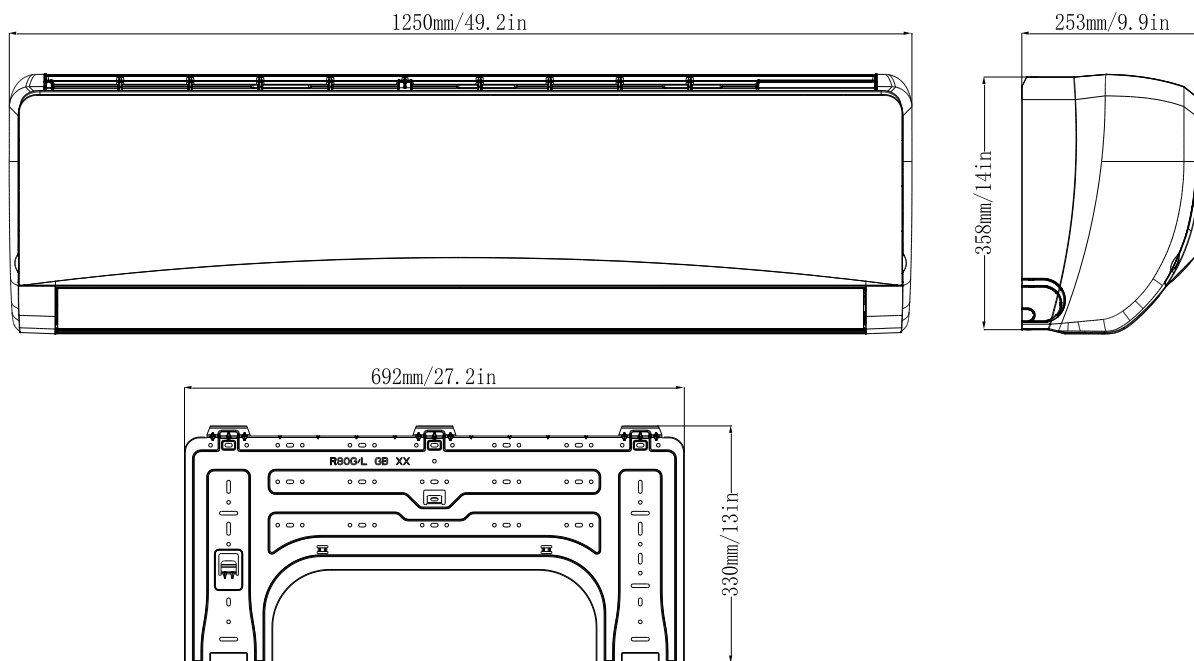
GRC18HW23STG1



GRC24HW23STG1

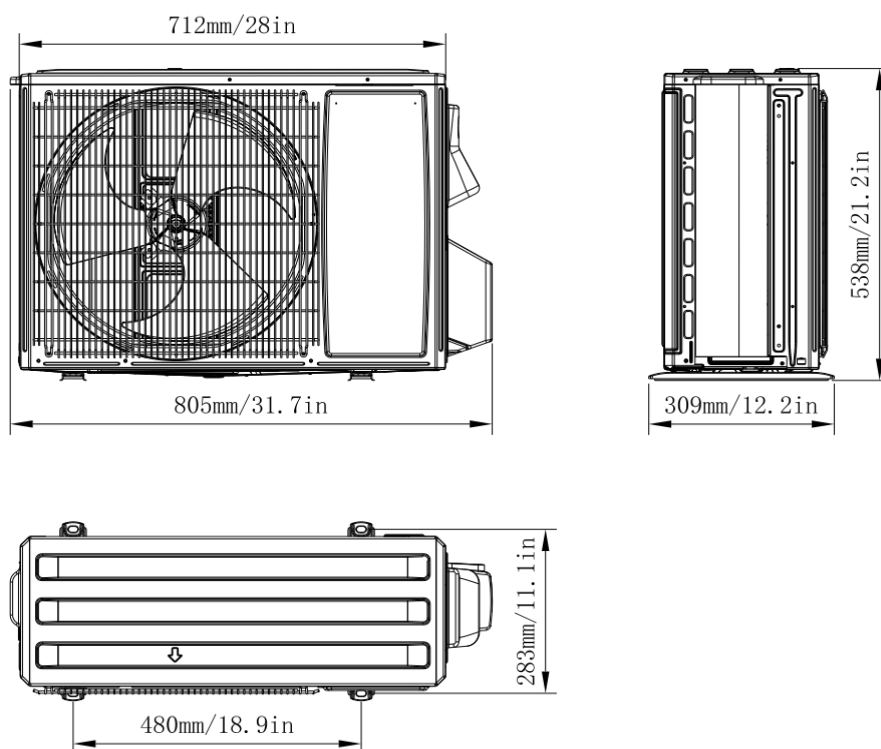


GRC36HW23STG1

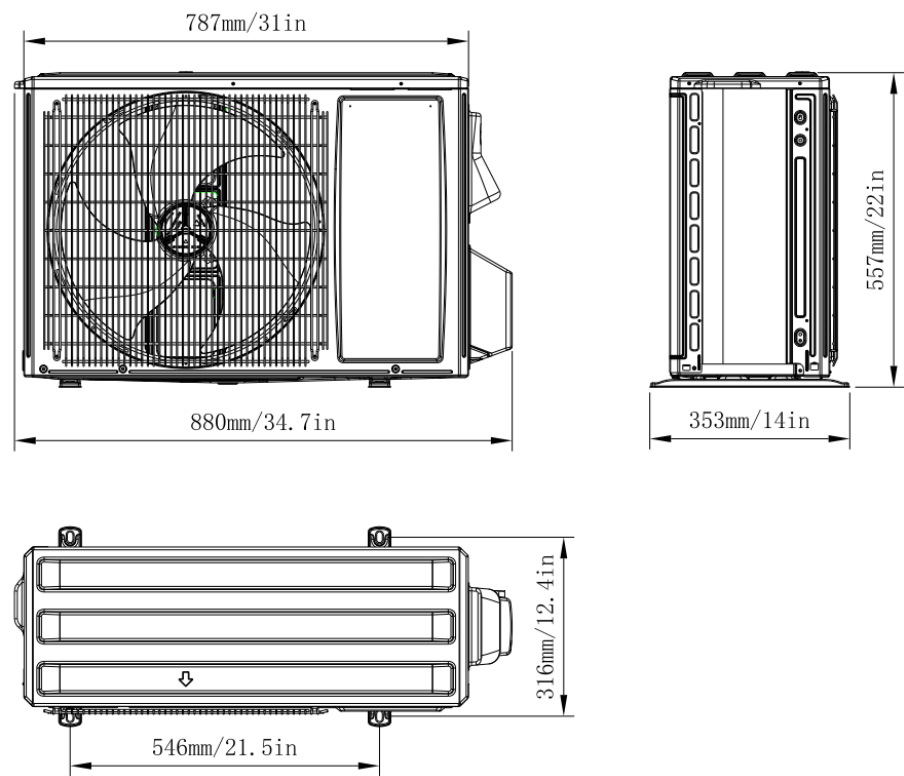


Outdoor Unit

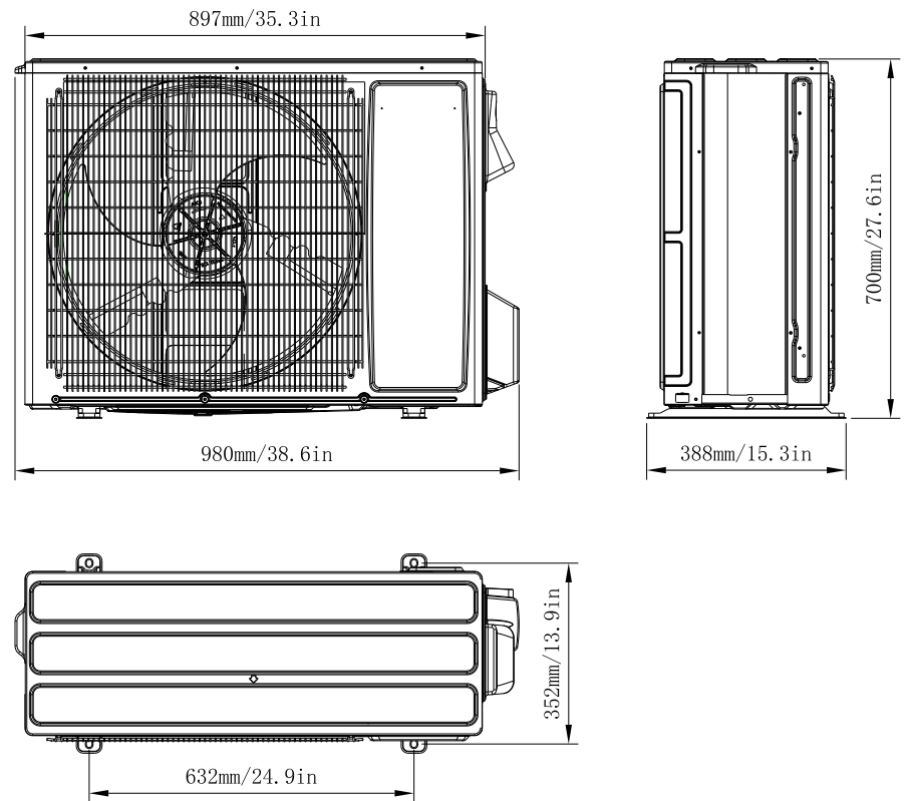
GRD09CN15STG1、GRC09CN23STG1、GRD12CN15STG1、GRC12CN23STG1



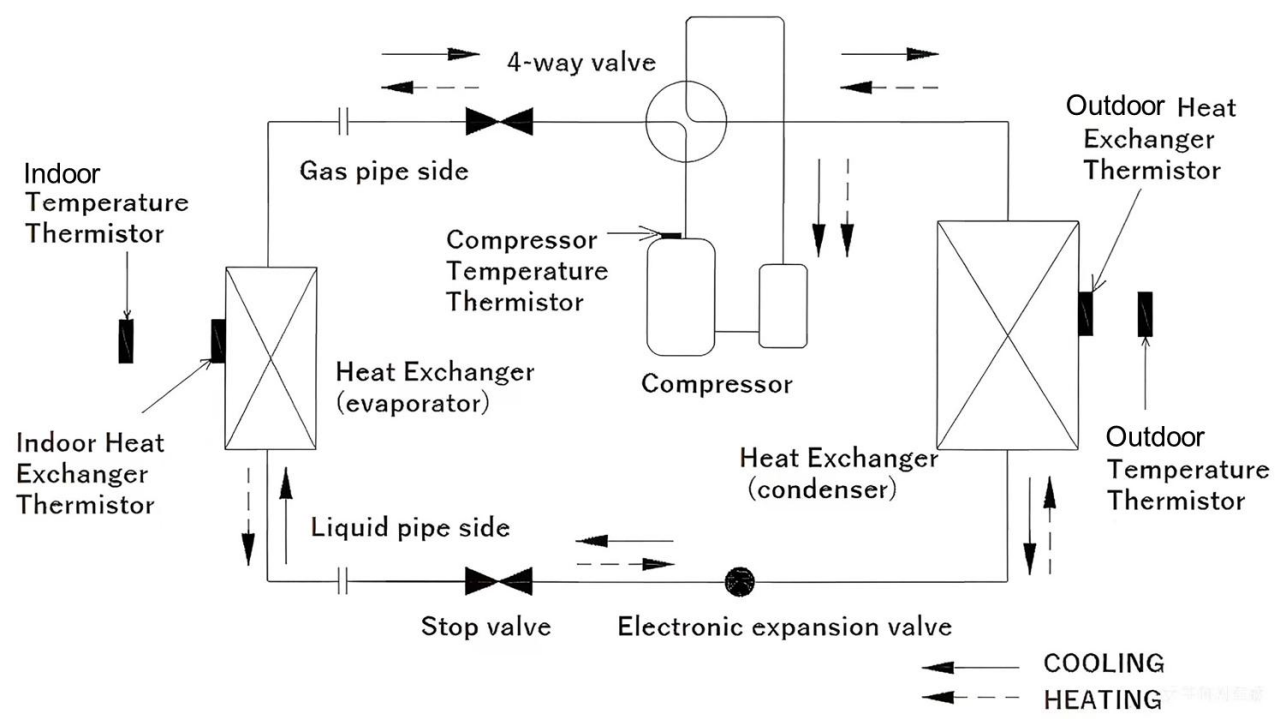
GRC18CN23STG1



GRC24CN23STG1、GRC36CN23STG1



Part 5 Refrigerant System Diagram



Part 6 Capacity Varies with Temperature

GRD09HW15STG1、GRC09HW23STG1

Cooling Capacity tables

INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB F(°C)	WB (F/°C)	5 (-15)				14 (-10)				23 (-5)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	6.25	5.50	0.88	0.31	6.53	5.75	0.88	0.32	6.81	5.93	0.87	0.32
	64 (17.8)	6.51	5.02	0.77	0.31	6.80	5.24	0.77	0.32	7.10	5.39	0.76	0.33
	67 (19.4)	6.79	4.27	0.63	0.32	7.09	4.47	0.63	0.32	7.39	4.58	0.62	0.33
75 (23.9)	61 (16.1)	6.27	6.21	0.99	0.31	6.55	6.49	0.99	0.32	6.83	6.69	0.98	0.32
	64 (17.8)	6.53	5.75	0.88	0.31	6.82	6.01	0.88	0.32	7.12	6.19	0.87	0.33
	67 (19.4)	6.81	5.04	0.74	0.32	7.11	5.26	0.74	0.32	7.41	5.41	0.73	0.33
	72 (22.2)	7.49	4.04	0.54	0.32	7.82	4.22	0.54	0.33	8.15	4.32	0.53	0.33
80 (26.7)	61 (16.1)	6.29	6.29	1.00	0.31	6.57	6.57	1.00	0.32	6.85	6.85	1.00	0.32
	64 (17.8)	6.55	6.42	0.98	0.31	6.84	6.71	0.98	0.32	7.13	6.92	0.97	0.33
	67 (19.4)	6.83	5.73	0.84	0.32	7.13	5.99	0.84	0.32	7.43	6.17	0.83	0.33
	72 (22.2)	7.51	4.80	0.64	0.32	7.84	5.02	0.64	0.33	8.17	5.15	0.63	0.33
85 (29.4)	61 (16.1)	6.31	6.31	1.00	0.31	6.59	6.59	1.00	0.32	6.87	6.87	1.00	0.32
	64 (17.8)	6.57	6.57	1.00	0.31	6.86	6.86	1.00	0.32	7.15	7.15	1.00	0.33
	67 (19.4)	6.85	6.57	0.96	0.32	7.15	6.86	0.96	0.32	7.45	7.08	0.95	0.33
	72 (22.2)	7.53	5.72	0.76	0.32	7.86	5.98	0.76	0.33	8.20	6.15	0.75	0.33
90 (32.2)	61 (16.1)	6.33	6.33	1.00	0.31	6.61	6.61	1.00	0.32	6.89	6.89	1.00	0.32
	64 (17.8)	6.59	6.59	1.00	0.31	6.88	6.88	1.00	0.32	7.17	7.17	1.00	0.33
	67 (19.4)	6.87	6.87	1.00	0.32	7.17	7.17	1.00	0.32	7.47	7.47	1.00	0.33
	72 (22.2)	7.55	6.49	0.86	0.32	7.89	6.78	0.86	0.33	8.22	6.99	0.85	0.33

INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB	WB	41 (5)				59 (15)				68 (20)			
°F (°C)	(°F/°C)	TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	7.37	6.34	0.86	0.34	7.93	6.74	0.85	0.35	9.72	7.58	0.78	0.55
	64 (17.8)	7.68	5.76	0.75	0.34	8.26	6.11	0.74	0.35	10.12	6.78	0.67	0.55
	67 (19.4)	8.00	4.88	0.61	0.34	8.61	5.16	0.60	0.36	10.55	5.59	0.53	0.56
75 (23.9)	61 (16.1)	7.39	7.17	0.97	0.34	7.95	7.63	0.96	0.35	9.74	8.67	0.89	0.55
	64 (17.8)	7.70	6.62	0.86	0.34	8.28	7.04	0.85	0.35	10.14	7.91	0.78	0.55
	67 (19.4)	8.02	5.77	0.72	0.34	8.63	6.12	0.71	0.36	10.57	6.76	0.64	0.56
	72 (22.2)	8.82	4.59	0.52	0.35	9.49	4.84	0.51	0.36	11.62	5.11	0.44	0.57
80 (26.7)	61 (16.1)	7.41	7.41	1.00	0.34	7.97	7.97	1.00	0.35	9.76	9.76	1.00	0.55
	64 (17.8)	7.72	7.41	0.96	0.34	8.30	7.88	0.95	0.35	10.16	8.94	0.88	0.55
	67 (19.4)	8.04	6.59	0.82	0.34	8.65	7.00	0.81	0.36	10.59	7.83	0.74	0.56
	72 (22.2)	8.84	5.48	0.62	0.35	9.51	5.80	0.61	0.36	11.65	6.29	0.54	0.57
85 (29.4)	61 (16.1)	7.43	7.43	1.00	0.34	7.99	7.99	1.00	0.35	9.78	9.78	1.00	0.55
	64 (17.8)	7.74	7.74	1.00	0.34	8.32	8.32	1.00	0.35	10.18	10.18	1.00	0.55
	67 (19.4)	8.06	7.57	0.94	0.34	8.67	8.06	0.93	0.36	10.61	9.12	0.86	0.56
	72 (22.2)	8.86	6.56	0.74	0.35	9.53	6.96	0.73	0.36	11.67	7.70	0.66	0.57
90 (32.2)	61 (16.1)	7.44	7.44	1.00	0.34	8.00	8.00	1.00	0.35	9.79	9.79	1.00	0.55
	64 (17.8)	7.76	7.76	1.00	0.34	8.34	8.34	1.00	0.35	10.20	10.20	1.00	0.55
	67 (19.4)	8.08	8.08	1.00	0.34	8.69	8.69	1.00	0.36	10.63	10.20	0.96	0.56
	72 (22.2)	8.89	7.46	0.84	0.35	9.55	7.93	0.83	0.36	11.69	8.88	0.76	0.57

INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB	WB	77 (25)				82 (27.8)				86 (30)			
F(°C)	(F/°C)	TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	9.27	7.41	0.80	0.61	9.05	7.33	0.81	0.65	8.83	7.24	0.82	0.69
	64 (17.8)	9.65	6.66	0.69	0.62	9.43	6.60	0.70	0.66	9.20	6.53	0.71	0.70
	67 (19.4)	10.06	5.53	0.55	0.63	9.82	5.50	0.56	0.66	9.59	5.46	0.57	0.70
75 (23.9)	61 (16.1)	9.29	8.45	0.91	0.61	9.07	8.34	0.92	0.65	8.85	8.23	0.93	0.69
	64 (17.8)	9.67	7.74	0.80	0.62	9.44	7.65	0.81	0.66	9.22	7.56	0.82	0.70
	67 (19.4)	10.08	6.65	0.66	0.63	9.84	6.59	0.67	0.66	9.61	6.53	0.68	0.70
	72 (22.2)	11.08	5.10	0.46	0.63	10.82	5.09	0.47	0.67	10.57	5.07	0.48	0.71
80 (26.7)	61 (16.1)	9.30	9.30	1.00	0.61	9.09	9.09	1.00	0.65	8.87	8.87	1.00	0.69
	64 (17.8)	9.69	8.72	0.90	0.62	9.46	8.61	0.91	0.66	9.24	8.50	0.92	0.70
	67 (19.4)	10.10	7.67	0.76	0.63	9.86	7.59	0.77	0.66	9.63	7.51	0.78	0.70
	72 (22.2)	11.10	6.22	0.56	0.63	10.84	6.18	0.57	0.67	10.59	6.14	0.58	0.71
85 (29.4)	61 (16.1)	9.32	9.32	1.00	0.61	9.10	9.10	1.00	0.65	8.89	8.89	1.00	0.69
	64 (17.8)	9.71	9.71	1.00	0.62	9.48	9.48	1.00	0.66	9.26	9.26	1.00	0.70
	67 (19.4)	10.12	8.90	0.88	0.63	9.88	8.79	0.89	0.66	9.65	8.68	0.90	0.70
	72 (22.2)	11.13	7.57	0.68	0.63	10.87	7.50	0.69	0.67	10.61	7.43	0.70	0.71
90 (32.2)	61 (16.1)	9.34	9.34	1.00	0.61	9.12	9.12	1.00	0.65	8.91	8.91	1.00	0.69
	64 (17.8)	9.73	9.73	1.00	0.62	9.50	9.50	1.00	0.66	9.28	9.28	1.00	0.70
	67 (19.4)	10.14	9.93	0.98	0.63	9.90	9.80	0.99	0.66	9.67	9.67	1.00	0.70
	72 (22.2)	11.15	8.70	0.78	0.63	10.89	8.60	0.79	0.67	10.63	8.51	0.80	0.71

INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB T (°C)	WB (°F/°C)	95 (35)				104 (40)				109 (43)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	8.35	7.01	0.84	0.77	7.56	6.35	0.84	1.03	7.09	6.03	0.85	1.18
	64 (17.8)	8.70	6.35	0.73	0.78	7.88	5.75	0.73	1.04	7.39	5.47	0.74	1.19
	67 (19.4)	9.06	5.35	0.59	0.79	8.21	4.84	0.59	1.05	7.70	4.62	0.60	1.20
75 (23.9)	61 (16.1)	8.37	7.95	0.95	0.77	7.58	7.20	0.95	1.03	7.11	6.83	0.96	1.18
	64 (17.8)	8.72	7.32	0.84	0.78	7.90	6.63	0.84	1.04	7.41	6.30	0.85	1.19
	67 (19.4)	9.08	6.36	0.70	0.79	8.23	5.76	0.70	1.05	7.72	5.48	0.71	1.20
	72 (22.2)	9.99	4.99	0.50	0.80	9.05	4.52	0.50	1.06	8.49	4.33	0.51	1.21
80 (26.7)	61 (16.1)	8.39	8.39	1.00	0.77	7.60	7.60	1.00	1.03	7.13	7.13	1.00	1.18
	64 (17.8)	8.74	8.21	0.94	0.78	7.92	7.44	0.94	1.04	7.43	7.05	0.95	1.19
	67 (19.4)	9.1	7.28	0.80	0.79	8.25	6.60	0.80	1.05	7.74	6.27	0.81	1.20
	72 (22.2)	10.01	6.01	0.60	0.80	9.07	5.44	0.60	1.09	8.51	5.19	0.61	1.25
85 (29.4)	61 (16.1)	8.40	8.40	1.00	0.77	7.62	7.62	1.00	1.03	7.15	7.15	1.00	1.18
	64 (17.8)	8.76	8.76	1.00	0.78	7.94	7.94	1.00	1.04	7.44	7.44	1.00	1.19
	67 (19.4)	9.12	8.39	0.92	0.79	8.27	7.61	0.92	1.05	7.76	7.21	0.93	1.20
	72 (22.2)	10.03	7.22	0.72	0.80	9.09	6.55	0.72	1.06	8.53	6.23	0.73	1.21
90 (32.2)	61 (16.1)	8.42	8.42	1.00	0.77	7.64	7.64	1.00	1.03	7.17	7.17	1.00	1.18
	64 (17.8)	8.77	8.77	1.00	0.78	7.96	7.96	1.00	1.04	7.46	7.46	1.00	1.19
	67 (19.4)	9.14	9.14	1.00	0.79	8.29	8.29	1.00	1.05	7.78	7.78	1.00	1.20
	72 (22.2)	10.05	8.24	0.82	0.80	9.12	7.47	0.82	1.06	8.55	7.10	0.83	1.21

NOTE :

Heating Capacity tables

INDOOR	OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB	
DB T(°C)	47/43 (8.33/6.11)		50/46 (10/7.8)		59/55 (15/12.8)		68/63 (20/17.2)		75/70 (24/21)	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
60 (15.5)	15.00	1.25	15.50	1.27	16.90	1.33	18.30	1.39	19.50	1.44
70 (21.1)	14.40	1.30	14.90	1.32	16.30	1.38	17.60	1.45	18.70	1.50
80 (26.7)	13.80	1.35	14.30	1.38	15.60	1.44	17.00	1.51	18.00	1.56

DB: Dry-bulb temperature WB: Wet-bulb temperature
TC: Total capacity (kBtu/h) PI: Power input (kW)

GRD12HW15STG1、GRC12HW23STG1

Cooling Capacity tables

INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB °F (°C)	WB (°F/°C)	5 (-15)				14 (-10)				23 (-5)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	8.26	7.27	0.88	0.48	8.63	7.59	0.88	0.48	8.99	7.83	0.87	0.49
	64 (17.8)	8.60	6.62	0.77	0.49	8.99	6.92	0.77	0.49	9.37	7.12	0.76	0.49
	67 (19.4)	8.96	5.64	0.63	0.49	9.36	5.90	0.63	0.49	9.76	6.05	0.62	0.50
75 (23.9)	61 (16.1)	8.28	8.19	0.99	0.48	8.64	8.56	0.99	0.48	9.01	8.83	0.98	0.49
	64 (17.8)	8.62	7.59	0.88	0.49	9.00	7.92	0.88	0.49	9.39	8.17	0.87	0.49
	67 (19.4)	8.98	6.65	0.74	0.49	9.38	6.94	0.74	0.49	9.78	7.14	0.73	0.50
	72 (22.2)	9.88	5.33	0.54	0.50	10.32	5.57	0.54	0.50	10.76	5.70	0.53	0.50
80 (26.7)	61 (16.1)	8.29	8.29	1.00	0.48	8.66	8.66	1.00	0.48	9.03	9.03	1.00	0.49
	64 (17.8)	8.64	8.47	0.98	0.49	9.02	8.84	0.98	0.49	9.41	9.13	0.97	0.49
	67 (19.4)	9.00	7.56	0.84	0.49	9.40	7.90	0.84	0.49	9.80	8.13	0.83	0.50
	72 (22.2)	9.90	6.34	0.64	0.50	10.34	6.62	0.64	0.50	10.78	6.79	0.63	0.50
85 (29.4)	61 (16.1)	8.31	8.31	1.00	0.48	8.68	8.68	1.00	0.48	9.05	9.05	1.00	0.49
	64 (17.8)	8.66	8.66	1.00	0.49	9.04	9.04	1.00	0.49	9.43	9.43	1.00	0.49
	67 (19.4)	9.02	8.66	0.96	0.49	9.42	9.04	0.96	0.49	9.82	9.33	0.95	0.50
	72 (22.2)	9.92	7.54	0.76	0.50	10.36	7.88	0.76	0.50	10.80	8.10	0.75	0.50
90 (32.2)	61 (16.1)	8.33	8.33	1.00	0.48	8.70	8.70	1.00	0.48	9.07	9.07	1.00	0.49
	64 (17.8)	8.68	8.68	1.00	0.49	9.06	9.06	1.00	0.49	9.45	9.45	1.00	0.49
	67 (19.4)	9.04	9.04	1.00	0.49	9.44	9.44	1.00	0.49	9.84	9.84	1.00	0.50
	72 (22.2)	9.94	8.55	0.86	0.50	10.38	8.93	0.86	0.50	10.82	9.20	0.85	0.50

INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB °F (°C)	WB (°F/°C)	41 (5)				59 (15)				68 (20)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	9.73	8.37	0.86	0.49	10.47	8.90	0.85	0.49	12.83	10.01	0.78	0.85
	64 (17.8)	10.14	7.60	0.75	0.49	10.91	8.07	0.74	0.50	13.36	8.95	0.67	0.86
	67 (19.4)	10.56	6.44	0.61	0.50	11.36	6.82	0.60	0.50	13.92	7.38	0.53	0.87
75 (23.9)	61 (16.1)	9.75	9.46	0.97	0.49	10.49	10.07	0.96	0.49	12.85	11.43	0.89	0.85
	64 (17.8)	10.16	8.73	0.86	0.49	10.92	9.29	0.85	0.50	13.38	10.44	0.78	0.86
	67 (19.4)	10.58	7.62	0.72	0.50	11.38	8.08	0.71	0.50	13.94	8.92	0.64	0.87
	72 (22.2)	11.64	6.05	0.52	0.50	12.52	6.38	0.51	0.51	15.33	6.75	0.44	0.88
80 (26.7)	61 (16.1)	9.77	9.77	1.00	0.49	10.51	10.51	1.00	0.49	12.87	12.87	1.00	0.85
	64 (17.8)	10.18	9.77	0.96	0.49	10.94	10.40	0.95	0.50	13.40	11.79	0.88	0.86
	67 (19.4)	10.60	8.69	0.82	0.50	11.40	9.23	0.81	0.50	13.96	10.33	0.74	0.87
	72 (22.2)	11.66	7.23	0.62	0.50	12.54	7.65	0.61	0.51	15.36	8.29	0.54	0.88
85 (29.4)	61 (16.1)	9.79	9.79	1.00	0.49	10.52	10.52	1.00	0.49	12.88	12.88	1.00	0.85
	64 (17.8)	10.20	10.20	1.00	0.49	10.96	10.96	1.00	0.50	13.42	13.42	1.00	0.86
	67 (19.4)	10.62	9.98	0.94	0.50	11.42	10.62	0.93	0.50	13.98	12.02	0.86	0.87
	72 (22.2)	11.68	8.64	0.74	0.50	12.56	9.17	0.73	0.51	15.38	10.15	0.66	0.88
90 (32.2)	61 (16.1)	9.81	9.81	1.00	0.49	10.54	10.54	1.00	0.49	12.90	12.90	1.00	0.85
	64 (17.8)	10.21	10.21	1.00	0.49	10.98	10.98	1.00	0.50	13.44	13.44	1.00	0.86
	67 (19.4)	10.64	10.64	1.00	0.50	11.44	11.44	1.00	0.50	14.00	13.44	0.96	0.87
	72 (22.2)	11.70	9.83	0.84	0.50	12.58	10.44	0.83	0.51	15.40	11.70	0.76	0.88

INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB °F (°C)	WB (°F/°C)	77 (25)				82 (27.8)				86 (30)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	12.23	9.79	0.80	0.96	11.94	9.67	0.81	1.01	11.66	9.56	0.82	1.07
	64 (17.8)	12.74	8.79	0.69	0.97	12.44	8.71	0.70	1.02	12.15	8.63	0.71	1.08
	67 (19.4)	13.27	7.30	0.55	0.98	12.96	7.26	0.56	1.03	12.65	7.21	0.57	1.09
75 (23.9)	61 (16.1)	12.25	11.15	0.91	0.96	11.96	11.01	0.92	1.01	11.68	10.86	0.93	1.07
	64 (17.8)	12.76	10.21	0.80	0.97	12.46	10.09	0.81	1.02	12.17	9.98	0.82	1.08
	67 (19.4)	13.29	8.77	0.66	0.98	12.98	8.70	0.67	1.03	12.67	8.62	0.68	1.09
	72 (22.2)	14.62	6.73	0.46	0.99	14.28	6.71	0.47	1.04	13.94	6.69	0.48	1.10
80 (26.7)	61 (16.1)	12.27	12.27	1.00	0.96	11.98	11.98	1.00	1.01	11.70	11.70	1.00	1.07
	64 (17.8)	12.78	11.50	0.90	0.97	12.48	11.36	0.91	1.02	12.19	11.21	0.92	1.08
	67 (19.4)	13.31	10.12	0.76	0.98	13.00	10.01	0.77	1.03	12.69	9.90	0.78	1.09
	72 (22.2)	14.64	8.20	0.56	0.99	14.30	8.15	0.57	1.04	13.96	8.10	0.58	1.10
85 (29.4)	61 (16.1)	12.29	12.29	1.00	0.96	12.00	12.00	1.00	1.01	11.72	11.72	1.00	1.07
	64 (17.8)	12.80	12.80	1.00	0.97	12.50	12.50	1.00	1.02	12.21	12.21	1.00	1.08
	67 (19.4)	13.33	11.73	0.88	0.98	13.02	11.59	0.89	1.03	12.71	11.44	0.90	1.09
	72 (22.2)	14.67	9.97	0.68	0.99	14.32	9.88	0.69	1.04	13.99	9.79	0.70	1.10
90 (32.2)	61 (16.1)	12.31	12.31	1.00	0.96	12.02	12.02	1.00	1.01	11.74	11.74	1.00	1.07
	64 (17.8)	12.82	12.82	1.00	0.97	12.52	12.52	1.00	1.02	12.22	12.22	1.00	1.08
	67 (19.4)	13.35	13.09	0.98	0.98	13.04	12.91	0.99	1.03	12.73	12.73	1.00	1.09
	72 (22.2)	14.69	11.46	0.78	0.99	14.34	11.33	0.79	1.04	14.01	11.21	0.80	1.10

INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB T _F (°C)	WB (°F/°C)	95 (35)				104 (40)				109 (43)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	11.02	9.26	0.84	1.21	9.99	8.39	0.84	1.60	9.36	7.96	0.85	1.83
	64 (17.8)	11.48	8.38	0.73	1.22	10.40	7.59	0.73	1.61	9.75	7.22	0.74	1.85
	67 (19.4)	11.96	7.06	0.59	1.23	10.84	6.39	0.59	1.63	10.16	6.10	0.60	1.87
75 (23.9)	61 (16.1)	11.04	10.49	0.95	1.21	10.00	9.50	0.95	1.60	9.38	9.01	0.96	1.83
	64 (17.8)	11.50	9.66	0.84	1.22	10.42	8.75	0.84	1.61	9.77	8.31	0.85	1.85
	67 (19.4)	11.98	8.39	0.70	1.23	10.86	7.60	0.70	1.63	10.18	7.23	0.71	1.87
80 (26.7)	61 (16.1)	11.06	11.06	1.00	1.21	10.02	10.02	1.00	1.60	9.40	9.40	1.00	1.83
	64 (17.8)	11.52	10.83	0.94	1.22	10.44	9.81	0.94	1.61	9.79	9.30	0.95	1.85
	67 (19.4)	12	9.60	0.80	1.23	10.88	8.70	0.80	1.63	10.20	8.26	0.81	1.87
85 (29.4)	61 (16.1)	11.08	11.08	1.00	1.21	10.04	10.04	1.00	1.60	9.42	9.42	1.00	1.83
	64 (17.8)	11.54	11.54	1.00	1.22	10.46	10.46	1.00	1.61	9.81	9.81	1.00	1.85
	67 (19.4)	12.02	11.06	0.92	1.23	10.90	10.02	0.92	1.63	10.22	9.50	0.93	1.87
90 (32.2)	61 (16.1)	11.10	11.10	1.00	1.21	10.06	10.06	1.00	1.60	9.44	9.44	1.00	1.83
	64 (17.8)	11.56	11.56	1.00	1.22	10.48	10.48	1.00	1.61	9.83	9.83	1.00	1.85
	67 (19.4)	12.04	12.04	1.00	1.23	10.92	10.92	1.00	1.63	10.24	10.24	1.00	1.87
	72 (22.2)	13.24	10.86	0.82	1.24	12.01	9.85	0.82	1.65	11.26	9.35	0.83	1.89

INDOOR		OUTDOOR DB(T _F)				OUTDOOR DB			
DB T _F (°C)	WB (°F/°C)	118 (48)				126 (52)			
		TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	8.26	7.10	0.86	1.93	7.70	6.70	0.87	1.99
	64 (17.8)	8.60	6.45	0.75	1.95	8.03	6.10	0.76	2.01
	67 (19.4)	8.96	5.47	0.61	1.97	8.36	5.18	0.62	2.03
75 (23.9)	61 (16.1)	8.28	8.03	0.97	1.93	7.72	7.57	0.98	1.99
	64 (17.8)	8.62	7.41	0.86	1.95	8.04	7.00	0.87	2.01
	67 (19.4)	8.98	6.47	0.72	1.97	8.38	6.12	0.73	2.03
80 (26.7)	61 (16.1)	8.29	8.29	1.00	1.93	7.74	7.74	1.00	1.99
	64 (17.8)	8.64	8.29	0.96	1.95	8.06	7.82	0.97	2.01
	67 (19.4)	9.00	7.38	0.82	1.97	8.40	6.97	0.83	2.03
85 (29.4)	61 (16.1)	8.31	8.31	1.00	1.93	7.76	7.76	1.00	1.99
	64 (17.8)	8.66	8.66	1.00	1.95	8.08	8.08	1.00	2.01
	67 (19.4)	9.02	8.48	0.94	1.97	8.42	8.00	0.95	2.03
90 (32.2)	61 (16.1)	8.33	8.33	1.00	1.93	7.78	7.78	1.00	1.99
	64 (17.8)	8.68	8.68	1.00	1.95	8.10	8.10	1.00	2.01
	67 (19.4)	9.04	9.04	1.00	1.97	8.44	8.44	1.00	2.03
	72 (22.2)	9.94	8.35	0.84	1.99	9.28	7.89	0.85	2.05

NOTE :

DB: Dry-bulb temperature

WB: Wet-bulb temperature

TC: Total capacity (kBtu/h)

SC: Sensible cooling capacity (kBtu/h)

SHF :Sensible heat factor

PI: Power input (kW)

Heating Capacity tables

INDOOR	OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB	
DB T _F (°C)	-13/-15 (-25/-26.1)		-5/-7 (-20.6/-21.7)		5/3 (-15/-16)		17/15 (-8.33/-9.44)		23/21 (-5/-6)		35/33 (1.66/0.56)	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
60 (15.5)	9.19	1.68	9.54	1.34	10.17	1.20	11.40	1.14	11.79	1.15	13.48	1.18
70 (21.1)	8.80	1.75	9.10	1.59	9.26	1.28	10.50	1.19	11.64	1.20	12.12	1.23
80 (26.7)	8.42	1.82	9.00	1.47	9.16	1.33	9.70	1.24	10.50	1.25	11.77	1.28

INDOOR	OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB	
DB T _F (°C)	47/43 (8.33/6.11)		50/46 (10/7.8)		59/55 (15/12.8)		68/63 (20/17.2)		75/70 (24/21)	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
60 (15.5)	15.18	1.20	15.67	1.22	17.14	1.28	18.60	1.34	19.74	1.38
70 (21.1)	14.60	1.25	15.07	1.27	16.48	1.33	17.89	1.39	18.98	1.44
80 (26.7)	14.04	1.30	14.49	1.32	15.84	1.39	17.20	1.45	18.25	1.50

NOTE :

DB: Dry-bulb temperature

WB: Wet-bulb temperature

TC: Total capacity (kBtu/h)

PI: Power input (kW)

GRC18HW23STG1

Cooling Capacity tables

INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB °F (°C)	WB (°F/°C)	5 (-15)				14 (-10)				23 (-5)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	12.40	10.92	0.88	0.65	12.96	11.40	0.88	0.67	13.51	11.75	0.87	0.68
	64 (17.8)	12.92	9.95	0.77	0.66	13.50	10.39	0.77	0.68	14.07	10.70	0.76	0.69
	67 (19.4)	13.46	8.48	0.63	0.67	14.06	8.86	0.63	0.68	14.66	9.09	0.62	0.70
75 (23.9)	61 (16.1)	12.42	12.30	0.99	0.65	12.98	12.85	0.99	0.67	13.53	13.26	0.98	0.68
	64 (17.8)	12.94	11.39	0.88	0.66	13.52	11.89	0.88	0.68	14.09	12.26	0.87	0.69
	67 (19.4)	13.48	9.98	0.74	0.67	14.08	10.42	0.74	0.68	14.68	10.72	0.73	0.70
	72 (22.2)	14.83	8.01	0.54	0.67	15.49	8.36	0.54	0.69	16.15	8.56	0.53	0.70
80 (26.7)	61 (16.1)	12.44	12.44	1.00	0.65	12.99	12.99	1.00	0.67	13.55	13.55	1.00	0.68
	64 (17.8)	12.96	12.70	0.98	0.66	13.54	13.27	0.98	0.68	14.11	13.69	0.97	0.69
	67 (19.4)	13.50	11.34	0.84	0.67	14.10	11.84	0.84	0.68	14.70	12.20	0.83	0.70
	72 (22.2)	14.85	9.50	0.64	0.67	15.51	9.93	0.64	0.69	16.17	10.19	0.63	0.70
85 (29.4)	61 (16.1)	12.46	12.46	1.00	0.65	13.01	13.01	1.00	0.67	13.57	13.57	1.00	0.68
	64 (17.8)	12.98	12.98	1.00	0.66	13.56	13.56	1.00	0.68	14.13	14.13	1.00	0.69
	67 (19.4)	13.52	12.98	0.96	0.67	14.12	13.56	0.96	0.68	14.72	13.98	0.95	0.70
	72 (22.2)	14.87	11.30	0.76	0.67	15.53	11.80	0.76	0.69	16.19	12.14	0.75	0.70
90 (32.2)	61 (16.1)	12.48	12.48	1.00	0.65	13.03	13.03	1.00	0.67	13.58	13.58	1.00	0.68
	64 (17.8)	13.00	13.00	1.00	0.66	13.57	13.57	1.00	0.68	14.15	14.15	1.00	0.69
	67 (19.4)	13.54	13.54	1.00	0.67	14.14	14.14	1.00	0.68	14.74	14.74	1.00	0.70
	72 (22.2)	14.89	12.81	0.86	0.67	15.55	13.38	0.86	0.69	16.21	13.78	0.85	0.70

INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB °F (°C)	WB (°F/°C)	41 (5)				59 (15)				68 (20)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	14.62	12.57	0.86	0.71	15.72	13.36	0.85	0.74	19.26	15.02	0.78	1.16
	64 (17.8)	15.23	11.42	0.75	0.72	16.38	12.12	0.74	0.75	20.07	13.44	0.67	1.17
	67 (19.4)	15.86	9.67	0.61	0.73	17.06	10.24	0.60	0.75	20.90	11.08	0.53	1.18
75 (23.9)	61 (16.1)	14.64	14.20	0.97	0.71	15.74	15.11	0.96	0.74	19.28	17.16	0.89	1.16
	64 (17.8)	15.24	13.11	0.86	0.72	16.40	13.94	0.85	0.75	20.08	15.67	0.78	1.17
	67 (19.4)	15.88	11.43	0.72	0.73	17.08	12.13	0.71	0.75	20.92	13.39	0.64	1.18
	72 (22.2)	17.47	9.08	0.52	0.73	18.79	9.58	0.51	0.76	23.01	10.13	0.44	1.20
80 (26.7)	61 (16.1)	14.65	14.65	1.00	0.71	15.76	15.76	1.00	0.74	19.30	19.30	1.00	1.16
	64 (17.8)	15.26	14.65	0.96	0.72	16.42	15.60	0.95	0.75	20.10	17.69	0.88	1.17
	67 (19.4)	15.90	13.04	0.82	0.73	17.10	13.85	0.81	0.75	20.94	15.50	0.74	1.18
	72 (22.2)	17.49	10.84	0.62	0.73	18.81	11.47	0.61	0.76	23.04	12.44	0.54	1.20
85 (29.4)	61 (16.1)	14.67	14.67	1.00	0.71	15.78	15.78	1.00	0.74	19.32	19.32	1.00	1.16
	64 (17.8)	15.28	15.28	1.00	0.72	16.44	16.44	1.00	0.75	20.12	20.12	1.00	1.17
	67 (19.4)	15.92	14.96	0.94	0.73	17.12	15.92	0.93	0.75	20.96	18.03	0.86	1.18
	72 (22.2)	17.51	12.96	0.74	0.73	18.83	13.75	0.73	0.76	23.06	15.22	0.66	1.20
90 (32.2)	61 (16.1)	14.69	14.69	1.00	0.71	15.80	15.80	1.00	0.74	19.34	19.34	1.00	1.16
	64 (17.8)	15.30	15.30	1.00	0.72	16.45	16.45	1.00	0.75	20.14	20.14	1.00	1.17
	67 (19.4)	15.94	15.94	1.00	0.73	17.14	17.14	1.00	0.75	20.98	20.14	0.96	1.18
	72 (22.2)	17.53	14.73	0.84	0.73	18.85	15.65	0.83	0.76	23.08	17.54	0.76	1.20

INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB °F (°C)	WB (°F/°C)	77 (25)				82 (27.8)				86 (30)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	18.37	14.69	0.80	1.30	17.93	14.53	0.81	1.37	17.51	14.36	0.82	1.45
	64 (17.8)	19.13	13.20	0.69	1.31	18.68	13.08	0.70	1.39	18.24	12.95	0.71	1.47
	67 (19.4)	19.93	10.96	0.55	1.33	19.46	10.90	0.56	1.40	19.00	10.83	0.57	1.48
75 (23.9)	61 (16.1)	18.38	16.73	0.91	1.30	17.95	16.52	0.92	1.37	17.53	16.30	0.93	1.45
	64 (17.8)	19.15	15.32	0.80	1.31	18.70	15.15	0.81	1.39	18.26	14.97	0.82	1.47
	67 (19.4)	19.95	13.17	0.66	1.33	19.48	13.05	0.67	1.40	19.02	12.93	0.68	1.48
	72 (22.2)	21.94	10.09	0.46	1.34	21.43	10.07	0.47	1.42	20.92	10.04	0.48	1.50
80 (26.7)	61 (16.1)	18.40	18.40	1.00	1.30	17.97	17.97	1.00	1.37	17.55	17.55	1.00	1.45
	64 (17.8)	19.17	17.25	0.90	1.31	18.72	17.03	0.91	1.39	18.28	16.82	0.92	1.47
	67 (19.4)	19.97	15.18	0.76	1.33	19.50	15.01	0.77	1.40	19.04	14.85	0.78	1.48
	72 (22.2)	21.97	12.30	0.56	1.34	21.45	12.23	0.57	1.42	20.95	12.15	0.58	1.50
85 (29.4)	61 (16.1)	18.42	18.42	1.00	1.30	17.99	17.99	1.00	1.37	17.57	17.57	1.00	1.45
	64 (17.8)	19.19	19.19	1.00	1.31	18.74	18.74	1.00	1.39	18.30	18.30	1.00	1.47
	67 (19.4)	19.99	17.59	0.88	1.33	19.52	17.37	0.89	1.40	19.06	17.16	0.90	1.48
	72 (22.2)	21.99	14.95	0.68	1.34	21.47	14.82	0.69	1.42	20.97	14.68	0.70	1.50
90 (32.2)	61 (16.1)	18.44	18.44	1.00	1.30	18.01	18.01	1.00	1.37	17.59	17.59	1.00	1.45
	64 (17.8)	19.21	19.21	1.00	1.31	18.76	18.76	1.00	1.39	18.32	18.32	1.00	1.47
	67 (19.4)	20.01	19.61	0.98	1.33	19.54	19.34	0.99	1.40	19.08	19.08	1.00	1.48
	72 (22.2)	22.01	17.17	0.78	1.34	21.49	16.98	0.79	1.42	20.99	16.79	0.80	1.50

INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB T _F (°C)	WB (°F/°C)	95 (35)				104 (40)				109 (43)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	16.55	13.90	0.84	1.64	15.00	12.60	0.84	2.17	14.06	11.95	0.85	2.49
	64 (17.8)	17.24	12.59	0.73	1.65	15.62	11.40	0.73	2.19	14.65	10.84	0.74	2.51
	67 (19.4)	17.96	10.60	0.59	1.67	16.27	9.60	0.59	2.21	15.26	9.16	0.60	2.54
75 (23.9)	61 (16.1)	16.57	15.74	0.95	1.64	15.02	14.26	0.95	2.17	14.08	13.52	0.96	2.49
	64 (17.8)	17.26	14.50	0.84	1.65	15.64	13.14	0.84	2.19	14.67	12.47	0.85	2.51
	67 (19.4)	17.98	12.59	0.70	1.67	16.29	11.40	0.70	2.21	15.28	10.85	0.71	2.54
80 (26.7)	61 (16.1)	16.59	16.59	1.00	1.64	15.03	15.03	1.00	2.17	14.10	14.10	1.00	2.49
	64 (17.8)	17.28	16.24	0.94	1.65	15.66	14.72	0.94	2.19	14.69	13.95	0.95	2.51
	67 (19.4)	18	14.40	0.80	1.67	16.31	13.05	0.80	2.21	15.30	12.39	0.81	2.54
85 (29.4)	61 (16.1)	16.61	16.61	1.00	1.64	15.05	15.05	1.00	2.17	14.12	14.12	1.00	2.49
	64 (17.8)	17.30	17.30	1.00	1.65	15.68	15.68	1.00	2.19	14.71	14.71	1.00	2.51
	67 (19.4)	18.02	16.58	0.92	1.67	16.33	15.03	0.92	2.21	15.32	14.25	0.93	2.54
90 (32.2)	61 (16.1)	16.63	16.63	1.00	1.64	15.07	15.07	1.00	2.17	14.14	14.14	1.00	2.49
	64 (17.8)	17.32	17.32	1.00	1.65	15.70	15.70	1.00	2.19	14.73	14.73	1.00	2.51
	67 (19.4)	18.04	18.04	1.00	1.67	16.35	16.35	1.00	2.21	15.34	15.34	1.00	2.54
	72 (22.2)	19.84	16.27	0.82	1.69	17.99	14.75	0.82	2.23	16.87	14.01	0.83	2.56

INDOOR		OUTDOOR DB(T _F)				OUTDOOR DB			
DB T _F (°C)	WB (°F/°C)	118 (48)				126 (52)			
		TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	12.40	10.67	0.86	2.62	11.58	10.07	0.87	2.70
	64 (17.8)	12.92	9.69	0.75	2.65	12.06	9.16	0.76	2.72
	67 (19.4)	13.46	8.21	0.61	2.67	12.56	7.79	0.62	2.75
75 (23.9)	61 (16.1)	12.42	12.05	0.97	2.62	11.59	11.36	0.98	2.70
	64 (17.8)	12.94	11.13	0.86	2.65	12.08	10.51	0.87	2.72
	67 (19.4)	13.48	9.71	0.72	2.67	12.58	9.18	0.73	2.75
80 (26.7)	61 (16.1)	12.44	12.44	1.00	2.62	11.61	11.61	1.00	2.70
	64 (17.8)	12.96	12.44	0.96	2.65	12.10	11.73	0.97	2.72
	67 (19.4)	13.50	11.07	0.82	2.67	12.60	10.46	0.83	2.75
85 (29.4)	61 (16.1)	12.46	12.46	1.00	2.62	11.63	11.63	1.00	2.70
	64 (17.8)	12.98	12.98	1.00	2.65	12.12	12.12	1.00	2.72
	67 (19.4)	13.52	12.71	0.94	2.67	12.62	11.99	0.95	2.75
90 (32.2)	61 (16.1)	12.48	12.48	1.00	2.62	11.65	11.65	1.00	2.70
	64 (17.8)	13.00	13.00	1.00	2.65	12.13	12.13	1.00	2.72
	67 (19.4)	13.54	13.54	1.00	2.67	12.64	12.64	1.00	2.75
	72 (22.2)	14.89	12.51	0.84	2.70	13.90	11.82	0.85	2.78

NOTE :

DB: Dry-bulb temperature

WB: Wet-bulb temperature

TC: Total capacity (kBtu/h)

SC: Sensible cooling capacity (kBtu/h)

SHF :Sensible heat factor

PI: Power input (kW)

Heating Capacity tables

INDOOR DB T _F (°C)	OUTDOOR DB/WB -13/-15 (-25/-26.1)		OUTDOOR DB/WB -5/-7 (-20.6/-21.7)		OUTDOOR DB/WB 5/3 (-15/-16)		OUTDOOR DB/WB 17/15 (-8.33/-9.44)		OUTDOOR DB/WB 23/21 (-5/-6)		OUTDOOR DB/WB 35/33 (1.66/0.56)	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
60 (15.5)	13.23	2.53	14.56	1.99	15.77	1.78	17.46	1.89	17.57	1.87	19.81	1.84
70 (21.1)	12.72	2.63	14.00	1.76	14.20	1.89	15.00	1.97	16.36	1.95	18.28	1.92
80 (26.7)	11.23	2.74	12.62	2.18	13.65	1.97	14.35	2.05	15.15	2.03	17.77	2.00

INDOOR DB T _F (°C)	OUTDOOR DB/WB 47/43 (8.33/6.11)		OUTDOOR DB/WB 50/46 (10/7.8)		OUTDOOR DB/WB 59/55 (15/12.8)		OUTDOOR DB/WB 68/63 (20/17.2)		OUTDOOR DB/WB 75/70 (24/21)	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
60 (15.5)	22.05	1.80	22.76	1.83	24.88	1.92	27.01	2.01	28.66	2.08
70 (21.1)	21.20	1.88	21.88	1.91	23.93	2.00	25.97	2.09	27.56	2.16
80 (26.7)	20.38	1.96	21.04	1.99	23.01	2.08	24.97	2.18	26.50	2.25

NOTE :

DB: Dry-bulb temperature

WB: Wet-bulb temperature

TC: Total capacity (kBtu/h)

PI: Power input (kW)

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Cooling Capacity tables

INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB T _F (°C)	WB (°F/°C)	5 (-15)				14 (-10)				23 (-5)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	16.55	14.57	0.88	0.83	17.29	15.21	0.88	0.85	18.03	15.68	0.87	0.87
	64 (17.8)	17.24	13.28	0.77	0.84	18.01	13.87	0.77	0.86	18.78	14.27	0.76	0.88
	67 (19.4)	17.96	11.31	0.63	0.85	18.76	11.82	0.63	0.87	19.56	12.13	0.62	0.88
75 (23.9)	61 (16.1)	16.57	16.40	0.99	0.83	17.31	17.13	0.99	0.85	18.04	17.68	0.98	0.87
	64 (17.8)	17.26	15.19	0.88	0.84	18.03	15.87	0.88	0.86	18.80	16.35	0.87	0.88
	67 (19.4)	17.98	13.31	0.74	0.85	18.78	13.90	0.74	0.87	19.58	14.29	0.73	0.88
	72 (22.2)	19.78	10.68	0.54	0.86	20.66	11.16	0.54	0.88	21.54	11.42	0.53	0.89
80 (26.7)	61 (16.1)	16.59	16.59	1.00	0.83	17.33	17.33	1.00	0.85	18.06	18.06	1.00	0.87
	64 (17.8)	17.28	16.93	0.98	0.84	18.05	17.69	0.98	0.86	18.82	18.25	0.97	0.88
	67 (19.4)	18.00	15.12	0.84	0.85	18.80	15.79	0.84	0.87	19.60	16.27	0.83	0.88
	72 (22.2)	19.80	12.67	0.64	0.86	20.68	13.24	0.64	0.88	21.56	13.58	0.63	0.89
85 (29.4)	61 (16.1)	16.61	16.61	1.00	0.83	17.34	17.34	1.00	0.85	18.08	18.08	1.00	0.87
	64 (17.8)	17.30	17.30	1.00	0.84	18.07	18.07	1.00	0.86	18.84	18.84	1.00	0.88
	67 (19.4)	18.02	17.30	0.96	0.85	18.82	18.07	0.96	0.87	19.62	18.64	0.95	0.88
	72 (22.2)	19.82	15.06	0.76	0.86	20.70	15.73	0.76	0.88	21.58	16.19	0.75	0.89
90 (32.2)	61 (16.1)	16.63	16.63	1.00	0.83	17.36	17.36	1.00	0.85	18.10	18.10	1.00	0.87
	64 (17.8)	17.32	17.32	1.00	0.84	18.09	18.09	1.00	0.86	18.85	18.85	1.00	0.88
	67 (19.4)	18.04	18.04	1.00	0.85	18.84	18.84	1.00	0.87	19.64	19.64	1.00	0.88
	72 (22.2)	19.84	17.07	0.86	0.86	20.72	17.82	0.86	0.88	21.60	18.36	0.85	0.89
INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB T _F (°C)	WB (°F/°C)	41 (5)				59 (15)				68 (20)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	19.50	16.77	0.86	0.90	20.98	17.83	0.85	0.94	25.70	20.04	0.78	1.47
	64 (17.8)	20.31	15.24	0.75	0.91	21.85	16.17	0.74	0.95	26.77	17.93	0.67	1.49
	67 (19.4)	21.16	12.91	0.61	0.92	22.76	13.66	0.60	0.96	27.88	14.78	0.53	1.50
75 (23.9)	61 (16.1)	19.52	18.93	0.97	0.90	20.99	20.15	0.96	0.94	25.71	22.89	0.89	1.47
	64 (17.8)	20.33	17.49	0.86	0.91	21.87	18.59	0.85	0.95	26.79	20.89	0.78	1.49
	67 (19.4)	21.18	15.25	0.72	0.92	22.78	16.17	0.71	0.96	27.90	17.86	0.64	1.50
	72 (22.2)	23.30	12.11	0.52	0.93	25.06	12.78	0.51	0.97	30.69	13.50	0.44	1.52
80 (26.7)	61 (16.1)	19.54	19.54	1.00	0.90	21.01	21.01	1.00	0.94	25.73	25.73	1.00	1.47
	64 (17.8)	20.35	19.54	0.96	0.91	21.89	20.79	0.95	0.95	26.80	23.59	0.88	1.49
	67 (19.4)	21.20	17.38	0.82	0.92	22.80	18.47	0.81	0.96	27.92	20.66	0.74	1.50
	72 (22.2)	23.32	14.46	0.62	0.93	25.08	15.30	0.61	0.97	30.71	16.59	0.54	1.52
85 (29.4)	61 (16.1)	19.56	19.56	1.00	0.90	21.03	21.03	1.00	0.94	25.75	25.75	1.00	1.47
	64 (17.8)	20.37	20.37	1.00	0.91	21.91	21.91	1.00	0.95	26.82	26.82	1.00	1.49
	67 (19.4)	21.22	19.95	0.94	0.92	22.82	21.22	0.93	0.96	27.94	24.03	0.86	1.50
	72 (22.2)	23.34	17.27	0.74	0.93	25.10	18.32	0.73	0.97	30.74	20.29	0.66	1.52
90 (32.2)	61 (16.1)	19.57	19.57	1.00	0.90	21.05	21.05	1.00	0.94	25.77	25.77	1.00	1.47
	64 (17.8)	20.39	20.39	1.00	0.91	21.93	21.93	1.00	0.95	26.84	26.84	1.00	1.49
	67 (19.4)	21.24	21.24	1.00	0.92	22.84	22.84	1.00	0.96	27.96	26.84	0.96	1.50
	72 (22.2)	23.36	19.63	0.84	0.93	25.12	20.85	0.83	0.97	30.76	23.38	0.76	1.52
INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB T _F (°C)	WB (°F/°C)	77 (25)				82 (27.8)				86 (30)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	24.50	19.60	0.80	1.65	23.92	19.38	0.81	1.75	23.36	19.16	0.82	1.85
	64 (17.8)	25.52	17.61	0.69	1.67	24.92	17.44	0.70	1.76	24.33	17.28	0.71	1.87
	67 (19.4)	26.58	14.62	0.55	1.68	25.96	14.54	0.56	1.78	25.35	14.45	0.57	1.88
75 (23.9)	61 (16.1)	24.52	22.31	0.91	1.65	23.94	22.03	0.92	1.75	23.38	21.74	0.93	1.85
	64 (17.8)	25.54	20.43	0.80	1.67	24.94	20.20	0.81	1.76	24.35	19.97	0.82	1.87
	67 (19.4)	26.60	17.56	0.66	1.68	25.98	17.41	0.67	1.78	25.37	17.25	0.68	1.88
	72 (22.2)	29.27	13.46	0.46	1.70	28.58	13.43	0.47	1.80	27.91	13.39	0.48	1.90
80 (26.7)	61 (16.1)	24.54	24.54	1.00	1.65	23.96	23.96	1.00	1.75	23.40	23.40	1.00	1.85
	64 (17.8)	25.56	23.00	0.90	1.67	24.96	22.71	0.91	1.76	24.37	22.42	0.92	1.87
	67 (19.4)	26.62	20.23	0.76	1.68	26.00	20.02	0.77	1.78	25.39	19.80	0.78	1.88
	72 (22.2)	29.29	16.40	0.56	1.70	28.60	16.30	0.57	1.80	27.93	16.20	0.58	1.90
85 (29.4)	61 (16.1)	24.56	24.56	1.00	1.65	23.98	23.98	1.00	1.75	23.42	23.42	1.00	1.85
	64 (17.8)	25.58	25.58	1.00	1.67	24.98	24.98	1.00	1.76	24.39	24.39	1.00	1.87
	67 (19.4)	26.64	23.45	0.88	1.68	26.02	23.16	0.89	1.78	25.41	22.87	0.90	1.88
	72 (22.2)	29.31	19.93	0.68	1.70	28.62	19.75	0.69	1.80	27.95	19.56	0.70	1.90
90 (32.2)	61 (16.1)	24.57	24.57	1.00	1.65	24.00	24.00	1.00	1.75	23.43	23.43	1.00	1.85
	64 (17.8)	25.60	25.60	1.00	1.67	25.00	25.00	1.00	1.76	24.41	24.41	1.00	1.87
	67 (19.4)	26.66	26.13	0.98	1.68	26.04	25.78	0.99	1.78	25.43	25.43	1.00	1.88
	72 (22.2)	29.33	22.88	0.78	1.70	28.64	22.63	0.79	1.80	27.97	22.38	0.80	1.90

INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB T _F (°C)	WB (°F/°C)	95 (35)				104 (40)				109 (43)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	22.08	18.55	0.84	2.08	20.01	16.81	0.84	2.75	18.76	15.95	0.85	3.16
	64 (17.8)	23.00	16.79	0.73	2.10	20.84	15.21	0.73	2.78	19.55	14.46	0.74	3.19
	67 (19.4)	23.96	14.14	0.59	2.12	21.71	12.81	0.59	2.81	20.36	12.22	0.60	3.22
75 (23.9)	61 (16.1)	22.10	20.99	0.95	2.08	20.03	19.03	0.95	2.75	18.78	18.03	0.96	3.16
	64 (17.8)	23.02	19.34	0.84	2.10	20.86	17.52	0.84	2.78	19.56	16.63	0.85	3.19
	67 (19.4)	23.98	16.79	0.70	2.12	21.73	15.21	0.70	2.81	20.38	14.47	0.71	3.22
80 (26.7)	61 (16.1)	22.12	22.12	1.00	2.08	20.04	20.04	1.00	2.75	18.80	18.80	1.00	3.16
	64 (17.8)	23.04	21.66	0.94	2.10	20.88	19.63	0.94	2.78	19.58	18.60	0.95	3.19
	67 (19.4)	24	19.20	0.80	2.12	21.75	17.40	0.80	2.81	20.40	16.52	0.81	3.22
85 (29.4)	61 (16.1)	22.14	22.14	1.00	2.08	20.06	20.06	1.00	2.75	18.82	18.82	1.00	3.16
	64 (17.8)	23.06	23.06	1.00	2.10	20.90	20.90	1.00	2.78	19.60	19.60	1.00	3.19
	67 (19.4)	24.02	22.10	0.92	2.12	21.77	20.03	0.92	2.81	20.42	18.99	0.93	3.22
90 (32.2)	61 (16.1)	22.16	22.16	1.00	2.08	20.08	20.08	1.00	2.75	18.84	18.84	1.00	3.16
	64 (17.8)	23.08	23.08	1.00	2.10	20.92	20.92	1.00	2.78	19.62	19.62	1.00	3.19
	67 (19.4)	24.04	24.04	1.00	2.12	21.79	21.79	1.00	2.81	20.44	20.44	1.00	3.22
	72 (22.2)	26.44	21.68	0.82	2.14	23.97	19.65	0.82	2.84	22.48	18.66	0.83	3.25

INDOOR		OUTDOOR DB(T _F)				OUTDOOR DB			
DB T _F (°C)	WB (°F/°C)	118 (48)				126 (52)			
		TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	16.55	14.23	0.86	3.32	15.45	13.44	0.87	3.42
	64 (17.8)	17.24	12.93	0.75	3.36	16.09	12.23	0.76	3.46
	67 (19.4)	17.96	10.96	0.61	3.39	16.76	10.39	0.62	3.49
75 (23.9)	61 (16.1)	16.57	16.07	0.97	3.32	15.46	15.16	0.98	3.42
	64 (17.8)	17.26	14.84	0.86	3.36	16.11	14.01	0.87	3.46
	67 (19.4)	17.98	12.95	0.72	3.39	16.78	12.25	0.73	3.49
80 (26.7)	61 (16.1)	16.59	16.59	1.00	3.32	15.48	15.48	1.00	3.42
	64 (17.8)	17.28	16.59	0.96	3.36	16.13	15.64	0.97	3.46
	67 (19.4)	18.00	14.76	0.82	3.39	16.80	13.94	0.83	3.49
85 (29.4)	61 (16.1)	16.61	16.61	1.00	3.32	15.50	15.50	1.00	3.42
	64 (17.8)	17.30	17.30	1.00	3.36	16.15	16.15	1.00	3.46
	67 (19.4)	18.02	16.94	0.94	3.39	16.82	15.98	0.95	3.49
90 (32.2)	61 (16.1)	16.63	16.63	1.00	3.32	15.52	15.52	1.00	3.42
	64 (17.8)	17.32	17.32	1.00	3.36	16.17	16.17	1.00	3.46
	67 (19.4)	18.04	18.04	1.00	3.39	16.84	16.84	1.00	3.49
	72 (22.2)	19.84	16.67	0.84	3.43	18.52	15.75	0.85	3.53

NOTE :

DB: Dry-bulb temperature

WB: Wet-bulb temperature

TC: Total capacity (kBtu/h)

SC: Sensible cooling capacity (kBtu/h)

SHF :Sensible heat factor

PI: Power input (kW)

Heating Capacity tables

INDOOR DB T _F (°C)	OUTDOOR DB/WB -13/-15 (-25/-26.1)		OUTDOOR DB/WB -5/-7 (-20.6/-21.7)		OUTDOOR DB/WB 5/3 (-15/-16)		OUTDOOR DB/WB 17/15 (-8.33/-9.44)		OUTDOOR DB/WB 23/21 (-5/-6)		OUTDOOR DB/WB 35/33 (1.66/0.56)	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
60 (15.5)	16.85	3.63	17.42	2.90	21.06	2.62	21.63	2.59	22.92	2.59	25.50	2.59
70 (21.1)	16.00	3.78	16.70	2.65	20.00	2.79	21.10	2.70	22.04	2.70	24.52	2.70
80 (26.7)	14.58	3.94	16.11	3.18	19.47	2.91	20.00	2.81	21.19	2.81	23.58	2.81

INDOOR DB T _F (°C)	OUTDOOR DB/WB 47/43 (8.33/6.11)		OUTDOOR DB/WB 50/46 (10/7.8)		OUTDOOR DB/WB 59/55 (15/12.8)		OUTDOOR DB/WB 68/63 (20/17.2)		OUTDOOR DB/WB 75/70 (24/21)	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
60 (15.5)	28.08	2.59	28.98	2.63	31.69	2.76	34.40	2.88	36.50	2.98
70 (21.1)	27.00	2.70	27.87	2.74	30.47	2.87	33.08	3.00	35.10	3.11
80 (26.7)	25.96	2.81	26.80	2.86	29.30	2.99	31.80	3.13	33.75	3.23

NOTE :

DB: Dry-bulb temperature

WB: Wet-bulb temperature

TC: Total capacity (kBtu/h)

PI: Power input (kW)

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Cooling Capacity tables

INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB °F (°C)	WB (°F/°C)	5 (-15)				14 (-10)				23 (-5)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	23.19	20.40	0.88	1.32	24.22	21.31	0.88	1.35	25.25	21.97	0.87	1.37
	64 (17.8)	24.15	18.60	0.77	1.33	25.23	19.43	0.77	1.36	26.30	19.99	0.76	1.39
	67 (19.4)	25.16	15.85	0.63	1.34	26.28	16.56	0.63	1.37	27.40	16.99	0.62	1.40
75 (23.9)	61 (16.1)	23.21	22.97	0.99	1.32	24.24	24.00	0.99	1.35	25.27	24.76	0.98	1.37
	64 (17.8)	24.17	21.27	0.88	1.33	25.25	22.22	0.88	1.36	26.32	22.90	0.87	1.39
	67 (19.4)	25.18	18.63	0.74	1.34	26.30	19.46	0.74	1.37	27.42	20.02	0.73	1.40
	72 (22.2)	27.70	14.96	0.54	1.36	28.93	15.62	0.54	1.39	30.16	15.99	0.53	1.42
80 (26.7)	61 (16.1)	23.22	23.22	1.00	1.32	24.26	24.26	1.00	1.35	25.29	25.29	1.00	1.37
	64 (17.8)	24.19	23.71	0.98	1.33	25.27	24.76	0.98	1.36	26.34	25.55	0.97	1.39
	67 (19.4)	25.20	21.17	0.84	1.34	26.32	22.11	0.84	1.37	27.44	22.78	0.83	1.40
	72 (22.2)	27.72	17.74	0.64	1.36	28.95	18.53	0.64	1.39	30.18	19.02	0.63	1.42
85 (29.4)	61 (16.1)	23.24	23.24	1.00	1.32	24.27	24.27	1.00	1.35	25.31	25.31	1.00	1.37
	64 (17.8)	24.21	24.21	1.00	1.33	25.29	25.29	1.00	1.36	26.36	26.36	1.00	1.39
	67 (19.4)	25.22	24.21	0.96	1.34	26.34	25.29	0.96	1.37	27.46	26.09	0.95	1.40
	72 (22.2)	27.74	21.08	0.76	1.36	28.97	22.02	0.76	1.39	30.21	22.65	0.75	1.42
90 (32.2)	61 (16.1)	23.26	23.26	1.00	1.32	24.29	24.29	1.00	1.35	25.33	25.33	1.00	1.37
	64 (17.8)	24.23	24.23	1.00	1.33	25.31	25.31	1.00	1.36	26.38	26.38	1.00	1.39
	67 (19.4)	25.24	25.24	1.00	1.34	26.36	26.36	1.00	1.37	27.48	27.48	1.00	1.40
	72 (22.2)	27.76	23.88	0.86	1.36	29.00	24.94	0.86	1.39	30.23	25.69	0.85	1.42
INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB °F (°C)	WB (°F/°C)	41 (5)				59 (15)				68 (20)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	27.32	23.49	0.86	1.43	29.38	24.97	0.85	1.49	35.99	28.07	0.78	2.33
	64 (17.8)	28.45	21.34	0.75	1.45	30.60	22.65	0.74	1.50	37.49	25.12	0.67	2.36
	67 (19.4)	29.64	18.08	0.61	1.46	31.88	19.13	0.60	1.52	39.05	20.70	0.53	2.38
75 (23.9)	61 (16.1)	27.33	26.51	0.97	1.43	29.40	28.22	0.96	1.49	36.01	32.05	0.89	2.33
	64 (17.8)	28.47	24.49	0.86	1.45	30.62	26.03	0.85	1.50	37.51	29.26	0.78	2.36
	67 (19.4)	29.66	21.36	0.72	1.46	31.90	22.65	0.71	1.52	39.07	25.00	0.64	2.38
	72 (22.2)	32.63	16.97	0.52	1.48	35.09	17.90	0.51	1.53	42.98	18.91	0.44	2.41
80 (26.7)	61 (16.1)	27.35	27.35	1.00	1.43	29.42	29.42	1.00	1.49	36.03	36.03	1.00	2.33
	64 (17.8)	28.49	27.35	0.96	1.45	30.64	29.11	0.95	1.50	37.53	33.02	0.88	2.36
	67 (19.4)	29.68	24.34	0.82	1.46	31.92	25.86	0.81	1.52	39.09	28.93	0.74	2.38
	72 (22.2)	32.65	20.24	0.62	1.48	35.11	21.42	0.61	1.53	43.00	23.22	0.54	2.41
85 (29.4)	61 (16.1)	27.37	27.37	1.00	1.43	29.44	29.44	1.00	1.49	36.04	36.04	1.00	2.33
	64 (17.8)	28.51	28.51	1.00	1.45	30.66	30.66	1.00	1.50	37.55	37.55	1.00	2.36
	67 (19.4)	29.70	27.92	0.94	1.46	31.94	29.70	0.93	1.52	39.11	33.63	0.86	2.38
	72 (22.2)	32.67	24.18	0.74	1.48	35.13	25.65	0.73	1.53	43.02	28.39	0.66	2.41
90 (32.2)	61 (16.1)	27.39	27.39	1.00	1.43	29.45	29.45	1.00	1.49	36.06	36.06	1.00	2.33
	64 (17.8)	28.53	28.53	1.00	1.45	30.68	30.68	1.00	1.50	37.56	37.56	1.00	2.36
	67 (19.4)	29.72	29.72	1.00	1.46	31.96	31.96	1.00	1.52	39.13	37.56	0.96	2.38
	72 (22.2)	32.69	27.46	0.84	1.48	35.16	29.18	0.83	1.53	43.04	32.71	0.76	2.41
INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB °F (°C)	WB (°F/°C)	77 (25)				82 (27.8)				86 (30)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	34.32	27.45	0.80	2.61	33.51	27.14	0.81	2.77	32.72	26.83	0.82	2.93
	64 (17.8)	35.75	24.66	0.69	2.64	34.90	24.43	0.70	2.79	34.08	24.20	0.71	2.96
	67 (19.4)	37.23	20.48	0.55	2.67	36.36	20.36	0.56	2.82	35.50	20.24	0.57	2.99
75 (23.9)	61 (16.1)	34.33	31.24	0.91	2.61	33.53	30.84	0.92	2.77	32.74	30.45	0.93	2.93
	64 (17.8)	35.76	28.61	0.80	2.64	34.92	28.29	0.81	2.79	34.10	27.96	0.82	2.96
	67 (19.4)	37.25	24.59	0.66	2.67	36.38	24.37	0.67	2.82	35.52	24.16	0.68	2.99
	72 (22.2)	40.98	18.85	0.46	2.69	40.02	18.81	0.47	2.85	39.08	18.76	0.48	3.02
80 (26.7)	61 (16.1)	34.35	34.35	1.00	2.61	33.55	33.55	1.00	2.77	32.76	32.76	1.00	2.93
	64 (17.8)	35.78	32.21	0.90	2.64	34.94	31.80	0.91	2.79	34.12	31.39	0.92	2.96
	67 (19.4)	37.27	28.33	0.76	2.67	36.40	28.03	0.77	2.82	35.54	27.72	0.78	2.99
	72 (22.2)	41.00	22.96	0.56	2.69	40.04	22.82	0.57	2.85	39.10	22.68	0.58	3.02
85 (29.4)	61 (16.1)	34.37	34.37	1.00	2.61	33.56	33.56	1.00	2.77	32.78	32.78	1.00	2.93
	64 (17.8)	35.80	35.80	1.00	2.64	34.96	34.96	1.00	2.79	34.14	34.14	1.00	2.96
	67 (19.4)	37.29	32.82	0.88	2.67	36.42	32.41	0.89	2.82	35.56	32.01	0.90	2.99
	72 (22.2)	41.02	27.90	0.68	2.69	40.06	27.64	0.69	2.85	39.12	27.38	0.70	3.02
90 (32.2)	61 (16.1)	34.39	34.39	1.00	2.61	33.58	33.58	1.00	2.77	32.79	32.79	1.00	2.93
	64 (17.8)	35.82	35.82	1.00	2.64	34.98	34.98	1.00	2.79	34.16	34.16	1.00	2.96
	67 (19.4)	37.31	36.57	0.98	2.67	36.44	36.07	0.99	2.82	35.58	35.58	1.00	2.99
	72 (22.2)	41.05	32.02	0.78	2.69	40.08	31.67	0.79	2.85	39.14	31.31	0.80	3.02

INDOOR		OUTDOOR DB				OUTDOOR DB				OUTDOOR DB			
DB T ^o (°C)	WB (°F/°C)	95 (35)				104 (40)				109 (43)			
		TC	SC	SHF	PI	TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	30.93	25.98	0.84	3.29	28.03	23.54	0.84	4.36	26.28	22.34	0.85	5.01
	64 (17.8)	32.22	23.52	0.73	3.33	29.19	21.31	0.73	4.41	27.38	20.26	0.74	5.06
	67 (19.4)	33.56	19.80	0.59	3.36	30.41	17.94	0.59	4.45	28.52	17.11	0.60	5.11
75 (23.9)	61 (16.1)	30.95	29.40	0.95	3.29	28.04	26.64	0.95	4.36	26.30	25.25	0.96	5.01
	64 (17.8)	32.24	27.08	0.84	3.33	29.21	24.54	0.84	4.41	27.40	23.29	0.85	5.06
	67 (19.4)	33.58	23.51	0.70	3.36	30.43	21.30	0.70	4.45	28.54	20.26	0.71	5.11
80 (26.7)	61 (16.1)	30.97	30.97	1.00	3.29	28.06	28.06	1.00	4.36	26.32	26.32	1.00	5.01
	64 (17.8)	32.26	30.32	0.94	3.33	29.23	27.48	0.94	4.41	27.42	26.05	0.95	5.06
	67 (19.4)	33.6	26.88	0.80	3.36	30.45	24.36	0.80	4.45	28.56	23.13	0.81	5.11
85 (29.4)	61 (16.1)	30.98	30.98	1.00	3.29	28.08	28.08	1.00	4.36	26.34	26.34	1.00	5.01
	64 (17.8)	32.28	32.28	1.00	3.33	29.25	29.25	1.00	4.41	27.44	27.44	1.00	5.06
	67 (19.4)	33.62	30.93	0.92	3.36	30.47	28.03	0.92	4.45	28.58	26.58	0.93	5.11
90 (32.2)	61 (16.1)	31.00	31.00	1.00	3.29	28.10	28.10	1.00	4.36	26.36	26.36	1.00	5.01
	64 (17.8)	32.29	32.29	1.00	3.33	29.27	29.27	1.00	4.41	27.46	27.46	1.00	5.06
	67 (19.4)	33.64	33.64	1.00	3.36	30.49	30.49	1.00	4.45	28.60	28.60	1.00	5.11
	72 (22.2)	37.00	30.34	0.82	3.39	33.54	27.50	0.82	4.50	31.46	26.11	0.83	5.16

INDOOR		OUTDOOR DB(T ^o)				OUTDOOR DB			
DB T ^o (°C)	WB (°F/°C)	118 (48)				126 (52)			
		TC	SC	SHF	PI	TC	SC	SHF	PI
70 (21.1)	61 (16.1)	23.19	19.94	0.86	5.27	21.64	18.83	0.87	5.43
	64 (17.8)	24.15	18.12	0.75	5.32	22.54	17.13	0.76	5.48
	67 (19.4)	25.16	15.35	0.61	5.38	23.48	14.56	0.62	5.54
75 (23.9)	61 (16.1)	23.21	22.51	0.97	5.27	21.66	21.22	0.98	5.43
	64 (17.8)	24.17	20.79	0.86	5.32	22.56	19.63	0.87	5.48
	67 (19.4)	25.18	18.13	0.72	5.38	23.50	17.16	0.73	5.54
80 (26.7)	61 (16.1)	23.22	23.22	1.00	5.27	21.68	21.68	1.00	5.43
	64 (17.8)	24.19	23.22	0.96	5.32	22.58	21.90	0.97	5.48
	67 (19.4)	25.20	20.66	0.82	5.38	23.52	19.52	0.83	5.54
85 (29.4)	61 (16.1)	23.24	23.24	1.00	5.27	21.69	21.69	1.00	5.43
	64 (17.8)	24.21	24.21	1.00	5.32	22.60	22.60	1.00	5.48
	67 (19.4)	25.22	23.71	0.94	5.38	23.54	22.36	0.95	5.54
90 (32.2)	61 (16.1)	23.26	23.26	1.00	5.27	21.71	21.71	1.00	5.43
	64 (17.8)	24.23	24.23	1.00	5.32	22.62	22.62	1.00	5.48
	67 (19.4)	25.24	25.24	1.00	5.38	23.56	23.56	1.00	5.54
	72 (22.2)	27.76	23.32	0.84	5.43	25.92	22.03	0.85	5.59

NOTE :

DB: Dry-bulb temperature

WB: Wet-bulb temperature

TC: Total capacity (kBtu/h)

SC: Sensible cooling capacity (kBtu/h)

SHF :Sensible heat factor

PI: Power input (kW)

Heating Capacity tables

INDOOR	OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB	
DB T ^o (°C)	-13/-15 (-25/-26.1)		-5/-7 (-20.6/-21.7)		5/3 (-15/-16)		17/15 (-8.33/-9.44)		23/21 (-5/-6)		35/33 (1.66/0.56)	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
60 (15.5)	21.22	5.38	22.82	3.90	24.75	3.25	24.54	2.93	26.71	3.11	31.03	3.48
70 (21.1)	19.80	5.60	21.80	3.05	23.80	3.46	24.00	3.05	25.68	3.24	29.84	3.62
80 (26.7)	19.01	5.83	20.25	4.28	22.88	3.60	23.69	3.18	24.69	3.38	28.69	3.77

INDOOR	OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB		OUTDOOR DB/WB	
DB T ^o (°C)	47/43 (8.33/6.11)		50/46 (10/7.8)		59/55 (15/12.8)		68/63 (20/17.2)		75/70 (24/21)	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
60 (15.5)	35.36	3.84	36.50	3.90	39.91	4.09	43.32	4.27	45.97	4.42
70 (21.1)	34.00	4.00	35.09	4.06	38.37	4.26	41.65	4.45	44.20	4.60
80 (26.7)	32.69	4.17	33.74	4.23	36.90	4.43	40.05	4.64	42.50	4.79

NOTE :

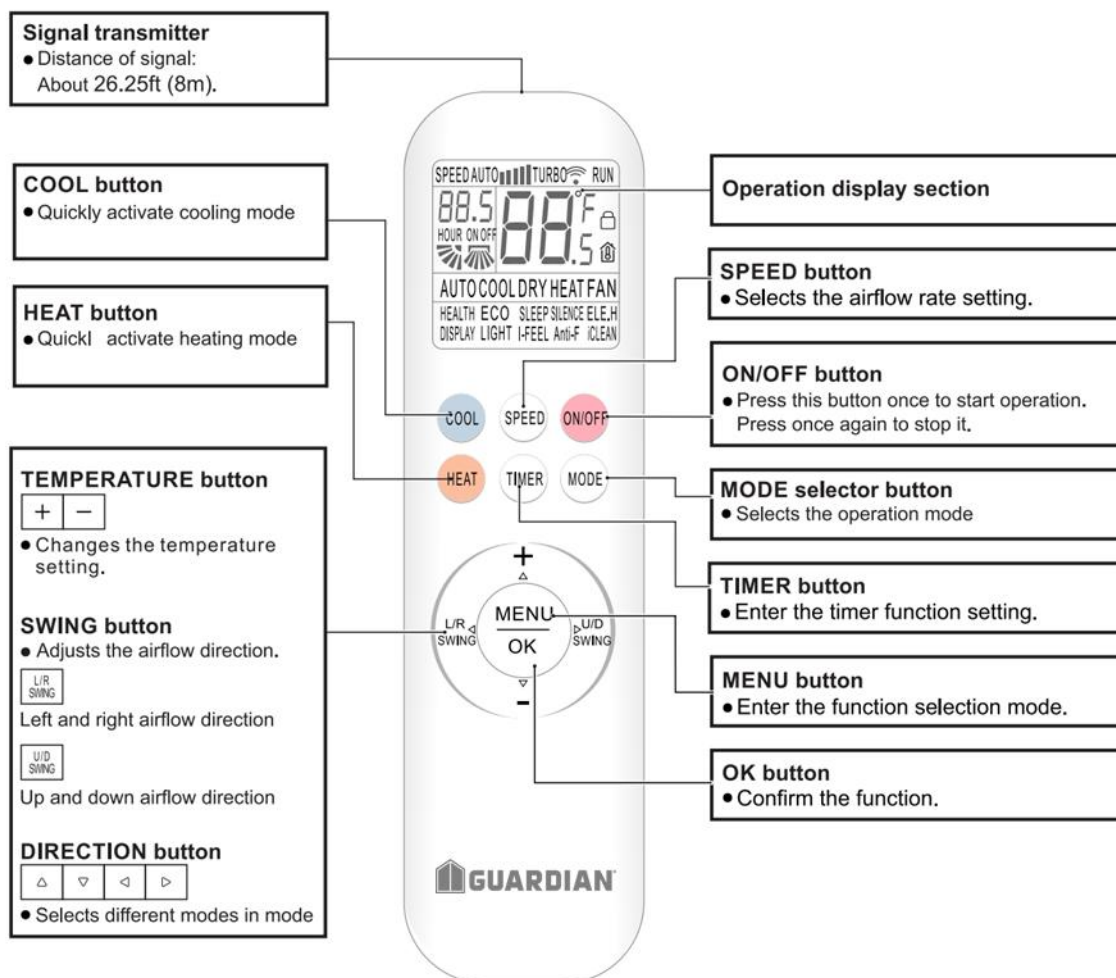
DB: Dry-bulb temperature

WB: Wet-bulb temperature

TC: Total capacity (kBtu/h)

PI: Power input (kW)

Part 7 Remote Controller



Part 8 Functions and Control

Abbreviation and Meaning

TA: Indoor ambient temperature (compensated indoor ambient temperature (rounded))

T: Indoor ambient temperature (uncompensated indoor ambient temperature (rounded))

TE: Indoor evaporator temperature

TS: Set temperature (after sleep compensation and strong compensation)

Cooling mode

1. The temperature control range is 60.8°F-89.6°F (16°C~32°C), and the swing air operates according to the set state.
2. Wind speed range: strong wind, high-speed wind, medium speed wind, low-speed wind, silent wind, automatic wind.

Heating mode

1. The temperature control range is 60.8°F-89.6°F (16°C~32°C), and the swing air operates according to the set state.
2. Wind speed range: strong wind, high-speed wind, medium speed wind, low-speed wind, silent wind, automatic wind.

Dehumidification mode

1. The temperature control range is 60.8°F-89.6°F (16°C~32°C), and the swing air operates according to the set state, swinging in the same cooling mode.
2. The wind speed is forced to blow low. Some users of certain models can choose the wind speed range below low wind (i.e. silent mode), regardless of whether the compressor is running.

Ventilation mode

1. After the ventilation mode is turned on, power is supplied to the outdoor unit; The internal fan operates at the set wind speed, and the swing air operates at the set state, displaying the current ambient temperature. The temperature setting on the remote control is not adjustable.
2. Wind speed in four levels: high-speed wind, medium speed wind, low-speed wind, and silent wind;

Automatic mode

After the air conditioner enters automatic mode, according to TA's judgment, the operating mode will continue to display the remote control set temperature after turning on. Within 20 seconds, it will be forced to blow low air in ventilation mode, and then the air conditioner will run in the selected mode. After selecting the mode, it will not change with changes in indoor temperature. After turning off, the operating mode will be re selected when turning on. The rules for determining the operating mode are as follows:

1. When $T_A \geq 75.2^{\circ}\text{F}$ (24°C), operate in refrigeration mode, set the temperature to 75.2°F (24°C), and the wind speed is set by the remote control.
2. When $T_A < 75.2^{\circ}\text{F}$ (24°C), operate in heating mode (for single cooling models, operate in air supply mode), set the temperature to 75.2°F (24°C), and the wind speed is set by the remote control.

Temperature compensation function

1. Conditions for using temperature compensation:

The temperature obtained through the temperature sensor of the indoor unit needs to be compensated for its indoor temperature (T-return air) for control and related display.

There is no temperature compensation when the remote control's sense of touch function is turned on.

2. Temperature compensation mode:

When displaying and controlling indoor temperature, the target is the compensated indoor temperature T_A .

T_A (after compensation) = $T + A$ (compensation value).

The compensation value A varies with the mode and operating phase. Specifically, as follows:

- 1) In refrigeration and dehumidification operation modes: $A = 32^{\circ}\text{F}$ (0°C).
- 2) In heating operation mode: $A = -37.4^{\circ}\text{F}$ (3°C).
- 3) In ventilation mode: $A = 32^{\circ}\text{F}$ (0°C).

Anti cold air control mode

When starting the heating system, stopping the machine at the temperature point to resume heating, and defrosting, when the compressor starts running, blow low-speed air for a maximum of 3 minutes and 30 seconds to prevent blowing cold air and affecting user comfort. When preventing cold air, the air guide door stops at the minimum heating angle.

Blowing waste heat control mode

Stop heating at the temperature point, stop heating, and stop the compressor. After the compressor stops running, the internal fan can blow low or weak air for a maximum of 30 seconds. After that, the internal fan stops running, allowing excess heat in the air conditioner to be blown out to prevent safety issues. When blowing waste heat, the air guide valve stops at the minimum heating angle.

Intelligent defrosting control mode

After the heating enters defrosting, the electric heating is immediately turned off. After about 1 minute, when the compressor stops, the internal fan stops, and the "electric heating" or "heating" light flashes to enter defrosting control mode.

After exiting the defrosting process, the internal display screen returns to normal and the function is executed according to the normal heating function.

Sleep function

1. Sleep function can be set during automatic, cooling, dehumidification, and heating operation.
2. After entering the sleep function, the air conditioner automatically adjusts the operating temperature and wind speed, and turns off the lights. After exiting sleep, run in normal mode.

Timing function

When turned on, the timer can be set to turn off, and when turned off, the timer can be set to turn on. After the scheduled time, it will automatically shut down or turn on. Set the timing interval based on the remote control.

Up and down swing function

1. Power on, operate the air guide door in the closed direction, and control the air guide door to close.
2. Turn on the machine and open the air guide door.
 - a) When heating, the air guide door first runs to the minimum position, and stops at the default position when exiting the anti cold air. When the heating compressor stops, the air guide valve runs to the minimum position.
 - b) In other operating modes, the air guide door runs to the memory position or is set to a positioning or default position.
 - c) When opening the up and down swing wind, the air guide door swings between the corresponding minimum and maximum positions.
 - d) When setting the grid position, the heating mode will run directly to the grid position after exiting the anti cold air mode; After booting up in other modes, it runs directly to the fixed position.
 - e) During the first 20 seconds of automatic mode, the air guide door stops at the minimum heating position.
3. Turn off, run the air guide door in the closed direction, and control the air guide door to close.

Left and right swing function

Power on, after the internal fan runs, the left and right air guide doors first run to the limit position, and then run to the minimum gap position.

When setting the left and right swing of the remote control, the left and right air guide doors swing back and forth between the leftmost and rightmost positions.

When the remote control stops swinging, the left and right air guide doors stop at the current position.

After shutting down, the left and right air guide doors stop in the neutral position.

Power failure memory control function

1. Method for setting the power-off memory function: After the controller is powered on, use the remote control to face the controller. If the time interval between the two buttons is not more than 2 seconds, press the sleep button continuously for 10 times. If the power-off memory function is successfully set, the buzzer can be heard to beep continuously for 4 times. If you want to cancel the power-off memory function, also use the remote control to face the controller. If the time interval between the two buttons is not more than 2 seconds, press the sleep button continuously for 10 times. If the power-off memory function is successfully canceled, you can hear the buzzer beeping twice in a row. Otherwise, there is no beeping sound.
2. The contents remembered in power failure memory include operating mode, set wind speed, set temperature, health function, idle state, and on/off state.
3. The power-off memory function has been successfully set. After power-off, the compressor may need to wait for 3 minutes before being allowed to start when it runs in the state before power-off.

Fluorine collection control mode

1. Enter fluorine collection mode:

- 1) In the shutdown state, press and hold the emergency switch button for 5 seconds until you hear the buzzer beep twice, and then the air conditioning will operate in the fluorine collection control mode;
- 2) Load action: The wind speed is at the highest wind level; The air guide door is set to a fixed angle according to the test mode, and the signal for setting the air guide door is invalid.

2. Exit fluorine collection mode:

Exit condition: After entering the fluorine collection mode, mode switching, turning on/off, or internal machine power-off will exit the fluorine collection mode, and other commands will not exit.

Automatic cleaning function

Press the remote cleaning button in the shutdown state to enter the cleaning mode of the entire machine.

1. Refrigeration, heating, and ventilation operate sequentially (single cooling models only operate with refrigeration and ventilation), and the internal unit displays "CL". The air guide doors are all stopped at the minimum heating position, and the internal fan runs continuously with weak or low wind.
2. Electric heating is not allowed to be put into operation during cleaning operation.
3. If the user uses the remote control to perform power on or off operations during the cleaning process, immediately exit the cleaning.
4. After receiving the instruction to clean the external machine, the internal machine exits the cleaning mode.

ECO function

1. This function is currently only valid for the cooling mode setting. After setting this function, the ambient temperature compensation will be canceled.
2. After setting this function, the display board displays the "ECO" symbol.
3. Automatically cancel after running this function for 8 hours;
4. Turn off or switch to non cooling mode to exit the ECO function.

I FEEL function

1. When the controller receives the remote control's I FEEL function, it enters the I FEEL function and processes the temperature of the sensor on the remote control as TA.
2. Exit method for the sense of touch function.
 - 1) Received signal to cancel the sense of presence function.
 - 2) The controller did not receive a remote control signal within 10 minutes;
3. When the carry on function is enabled, the main control board only synchronizes the ambient temperature and does not perform any other control when automatic code sending occurs every 3 minutes.
4. When the portable button signal on the remote control is first received, the buzzer will sound once. When receiving the self sensing signal automatically emitted by the remote control, the set temperature does not flash and the buzzer does not sound.

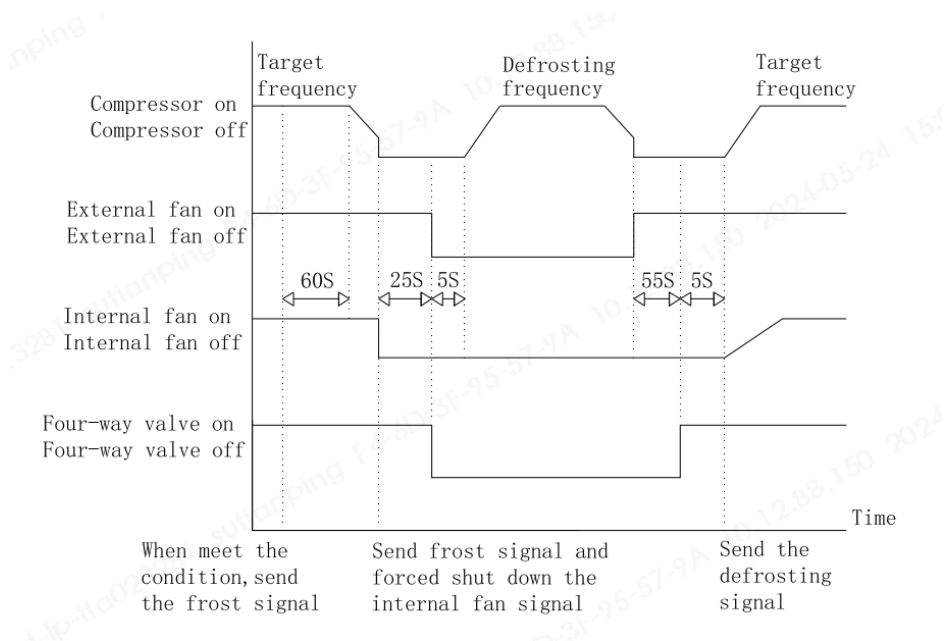
Emergency switch function

1. When turned on, press the emergency switch button briefly, beep once, and the air conditioning will shut down.
2. In the shutdown state, short press the emergency switch button and a beep will sound.

The air conditioner operates in automatic mode when turned on, with a default temperature of 75.2°F (24°C) and a set wind speed of automatic wind. The up and down wind and left and right wind are fixed and do not swing.

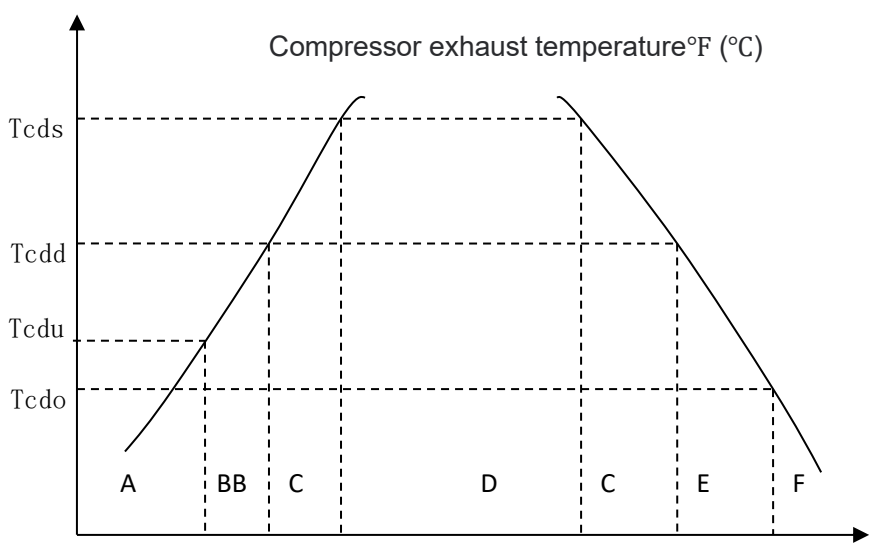
3. If the forced switch is held down for more than 20 seconds, it is considered that the button is invalid.

Defrosting action sequence diagram



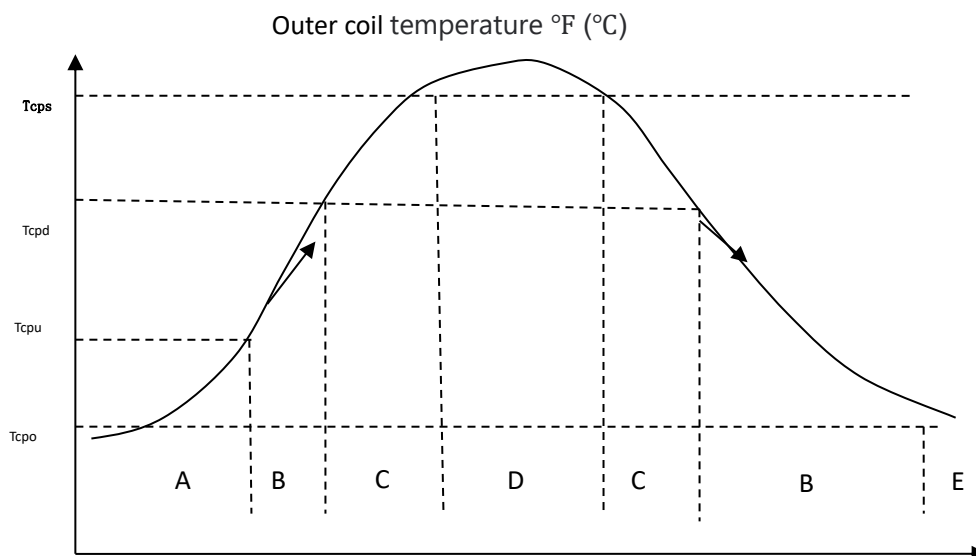
Protection Function

Exhaust temperature protection



- When the exhaust temperature is in the A and F zone, the compressor frequency is automatically controller.
- When the exhaust temperature is in area B and E, do not increase the compressor frequency, and the compressor runs at the current frequency.
- When the exhaust temperature is in the C zone, reduce the frequency to protect the compressor.
- When the exhaust temperature is in area D, and the compressor runs continuously for more than 1 minute immediately stop the compressor.
- When the exhaust temperature is in the F zone, remove the protection.

Refrigeration outdoor overload protection



A zone: No restrictions

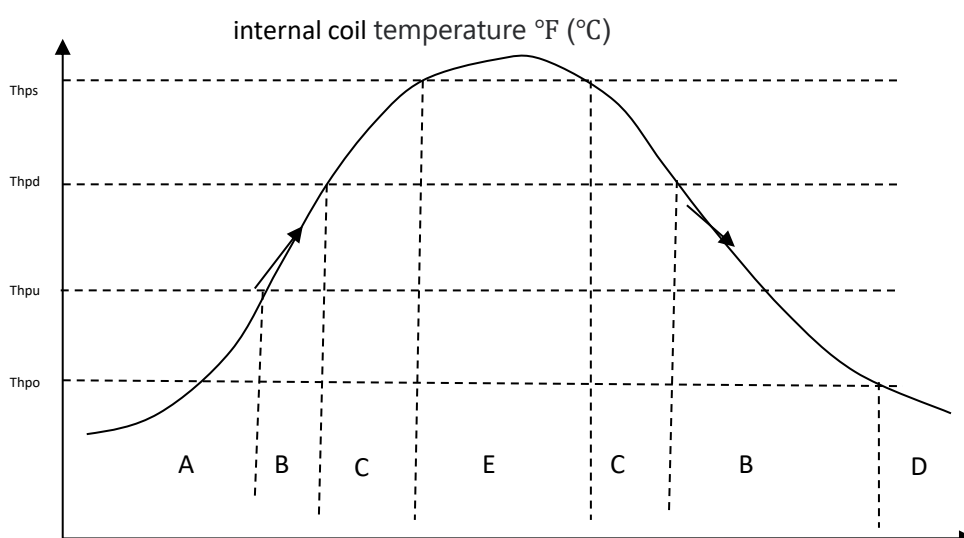
B zone: When the temperature of the outdoor heat exchanger rises by greater than or equal to T_{cpu} , the compressor frequency cannot rise.

C zone: When the temperature of the outdoor heat exchanger rises by greater than or equal to T_{cpd} , reduce the frequency to protect the compressor.

D zone: When the temperature of the outdoor heat exchanger rises by greater than or equal to T_{cps} , and the compressor is shut down immediately after continuous operation for a period of time, Compressor frequency reduction and shutdown.

E zone: Exit the protected program.

Refrigeration room overheat protection



A zone: No restrictions.

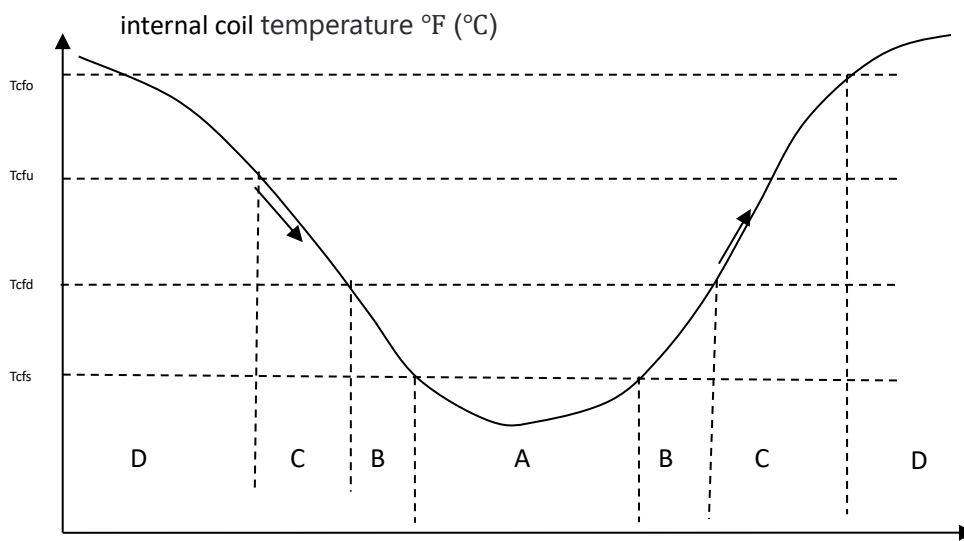
B zone: When the temperature of the indoor heat exchanger rises by greater than or equal to $Thpu$, the compressor frequency cannot rise.

C zone: When the temperature of the indoor heat exchanger rises by greater than or equal to $Thpd$, reduce the frequency to protect the compressor.

When the heat exchanger temperature is below $Thpo$, remove the protection.

When the compressor runs continuously for a period of time, and the temperature of the indoor heat exchanger rises by greater than or equal to $Thps$, the compressor is immediately shutdown.

Indoor coil anti-freezing protection



A zone: When the compressor runs continuously for a period of time and the temperature of the indoor heat exchanger is less than $Tcfs$, shut down the compressor to anti-freeze.

Anti-freeze shutdown procedure: the compressor stops, the outdoor fan stops, and the indoor fan runs as usual.

B zone: When the indoor heat exchanger temperature is less than $Tcfd$, reduce the frequency to protect the compressor.

C zone: When the indoor heat exchanger temperature is less than $Tcfd$, the compressor frequency cannot rise.

When the indoor heat exchanger temperature is greater than $Tcfo$, exit the protected program.

Part 9 Troubleshooting

Error Codes and Description

Error Codes	Description
E1	Room temperature sensor failure
E2	Outdoor coil sensor failure
E3	Indoor coil sensor failure
E4	PG motor or DC fan failure
E5	Internal and external communication failure
F0	Outdoor fan failure
F1	Module protection failure
F2	PFC protection failure
F3	Compressor startup failure or out-of-step operation
F4	Outdoor exhaust sensor failure
F5	Compressor top cover protector failure
F6	Outdoor environmental temperature sensor failure
F7	Over & Under Voltage Safeguard
F8	Outdoor main control board & communicating module failure
F9	Outdoor E-side failure
P3	Liquid deficiency protection
L0	DC over voltage and under voltage failure
L1	Compressor phase current over current protection
L2	Compressor Out-of-step Failure
L3	Compressor Phase Loss Failure
L4	Compressor Driver Module IPM Failure
L5	PFC Over-Current Hardware Protection
L6	PFC Over-Current Software Protection
L7	Current Detection AD Abnormal Protection
L9	IPM Temperature Sensor Failure
LA	Compressor Start-up Failure
LC	PFC Current Detection AD Abnormal Protection
Ld	DC Fan Current Sense AD Abnormal Protection
LE	DC Fan Phase Loss Protection
LF	DC Fan out-of-step Protection
LH	DC Fan IPM Protection

Troubleshooting Guide

Many error codes may appear on this air conditioner, and this troubleshooting guide is prepared for the maintenance personnel to detect the error position and the parts to be replaced during the troubleshooting process. In this Guide, the Troubleshooting Method is guided by the Error Name, and the Reference Code under the General Index is the error code of the internal unit of the mainstream model supplied by the Company.

Example: “internal coil sensor error” is coded as E3 in the error code of the internal unit, but appears as flash-out via the trouble light of the external machine. However, their troubleshooting method is the same, and use the same table as well.

(1) E1 internal temperature sensor error

Explanation of error	Cause: The detection of short circuit or open circuit of internal temperature sensor during the inspection of main control panel in the internal machine, indicated by “internal temperature sensor error”. Inspection path: Sensor→Sensor wire→Connectors→Main internal control panel
Tools required for inspection	Multimeter, 15KΩ standard sensor (77°F (25°C))
Frequent problematic part	Internal temperature sensor, main internal control panel
Inspection procedure and key points	1. Check whether there's resistance problem, short circuit or open circuit in the sensor; the resistance value shall be within a reasonable range (15KΩ under the temperature of 77°F (25°C) for frequency conversion machine) 2. Check whether the sensor wire is broken. 3. Check whether the terminal connectors are well fixed; check whether the weld between the terminal and the main control panel is loose, and pull the terminal slightly for inspection if necessary. 4. Check whether the sensor is demeged from moisture. 5. In case no standard sensor is available at present, replace the internal temperature sensor by other sensor asides, and then check whether the error still exists; if the error disappears, replace the sensor; if the error still exists, check the main internal control panel and change if necessary.

Special attention	Most internal temperature sensors of the frequency conversion machine have a resistance value of 15KΩ. Do not use improper sensor during repairing and maintenance, or it may led to the wrong temperature sensing of the machine, the start error or shutdown error. You can switch the air conditioner to the “Blowing” mode, and judge the accuracy of sensor though environmental temperature displayed on the screen. In case a sensor with the resistance value over 15KΩ is used, the detected temperature will be much lower than the actual temperature, which may lead to the shutdown error under heating mode, or the startup error under cooling mode. In case a sensor with the resistance value below 15KΩ is used, the detected temperature will be much higher than the actual temperature, which may lead to the startup error under heating mode, or the shutdown error under cooling mode.
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(2) E2 external coil sensor error

Explanation of error	Cause: The detection of short circuit or open circuit of external coil sensor during the inspection of main external control panel, indicated by “external coil sensor error”. Inspection path: Sensor→Sensor wire→Connectors→Main external control
Tools required for inspection	Multimeter, 20KΩ standard sensor (77°F (25°C))
Frequent problematic part	External coil sensor, main external control panel

(3) E3 internal coil sensor error

Explanation of error	Cause: The detection of short circuit or open circuit of internal coil sensor during the inspection of main internal control panel, indicated by “internal coil sensor error”. Inspection path: Sensor→Sensor wire→Connectors→Main internal control panel
Tools required for inspection	Multimeter, 5KΩ or 20KΩ standard sensoe (77°F (25°C))
Frequent problematic part	Internal temperature sensor, main internal control panel

Inspection procedure and key points	1. Check whether there's resistance problem, short circuit or open circuit in the sensor; the resistance value shall with a reasonable range (about 20KΩ for frequency conversion machine) 2. Check whether the sensor wire is broken. 3. Check whether the terminal connectors are well fixed; check whether the weld between the terminal and the main control panel is loose., and pull the terminal slightly for inspection if necessary. 4. Check whether the sensor is damaged by moisture. The coil sensor is quite easy to be affected with damp in case the lead of coil sensor is above the copper pipe. 5. In case no standard sensor is available at present, replace the temperature sensor of internal coil by other sensor asides, and then check whether the error still exists; if the error disappears, replace the sensor; if the error still exists, check the main internal control panel and change if necessary.
Special attention	Most internal temperature sensors of the frequency conversion machine have a resistance value of 20KΩ. Do not use improper sensor during repairing and maintenance, or it may led to the start of anti-frosting or overheat protection mode due to wrong temperature sensing of the machine. In case a sensor with the resistance value over 20KΩ is used, the detected temperature will be much lower than the actual temperature, which may lead to the high pressure of cold-blast protection system during the heating process, or the frequent start of anti-freezing protection during the cooling process.

(4) E4 Internal fan error of wall mounted air conditioner (DC motor)

Explanation of error	Cause: The internal fan of some highly energy efficient models is DC motor using a green plug through which the main internal control panel can drive the motor and sense the current rotational speed feedback. When the main internal control panel cannot receive the rotational speed feedback signal of the motor, it will indicate “DC motor error”. Disappearance of the rotational speed feedback signal may be caused by: 1 The motor is stuck and cannot work; 2 The speed feedback element inside the fan is destroyed; 3 There's something wrong with the speed feedback signal receiving circuit of the main internal control panel. Inspection path: Is DC motor stuck by foreign matter →motor destroyed→Motor terminal connectors→Main internal control panel
Tools required for inspection	Multimeter, a DC motor in normal working condition
Frequent problematic part	Mechanical jam of internal fan, internal DC motor, main internal control panel

Inspection procedure and key points	1. Check whether the fan accelerates to extremely high speed before the error occurs. If it can work for a period, the reason of mechanical jam can be excluded. 2. Plug and unplug the terminal of the DC motor again to exclude any fan error due to connector loosening, and pull the terminal slightly for inspection if necessary. 3. Replace the motor in the faulted air conditioner with other DC motor to plug in the main internal control panel (do not fix it with the fan for the time being), if the main control panel still indicates “DC motor error”, then replace the main internal control panel; if the error disappears, replace the DC motor. 4.Multimeter can be used to distinguish whether it is main control panel problem or motor problem by: connect the motor with the main control panel and pay attention to the second (yellow) and fourth (black) wire from the outermost side among four lines of the terminal of the DC motor. After the air conditioner powers on in the cooling mode for a while, the voltage between the yellow and black wires should rise gradually and the motor should accelerates slowly, if the DC motor still won’t rotate, then the DC motor is destroyed.																																										
Special attention	<table><tr><th colspan="6">Five lead wires division</th></tr><tr><th>Terminal Position</th><th>Wire Color</th><th>Function Description</th><th>Operating Voltage Range (Normal State)</th><th colspan="2">Notes & Precautions</th></tr><tr><td>1</td><td>Blue</td><td>Speed Feedback Line</td><td>0.5V - 5V (when fan is running)</td><td colspan="2">Requires measurement during rotation</td></tr><tr><td>2</td><td>Yellow</td><td>Motor Drive Line</td><td>2.0V - 7.5V (when fan is running)</td><td colspan="2">Voltage varies with load</td></tr><tr><td>3</td><td>White</td><td>15V Power Supply Line</td><td>15V (stable)</td><td colspan="2">Main reference voltage</td></tr><tr><td>4</td><td>Black</td><td>0V DC Ground</td><td>0V</td><td colspan="2">Reference point for all measurements</td></tr><tr><td>5</td><td>Red</td><td>310V High-Voltage Line</td><td>310V (stable)</td><td colspan="2">DANGER! High-voltage risk. Always de-energize before testing</td></tr></table>	Five lead wires division						Terminal Position	Wire Color	Function Description	Operating Voltage Range (Normal State)	Notes & Precautions		1	Blue	Speed Feedback Line	0.5V - 5V (when fan is running)	Requires measurement during rotation		2	Yellow	Motor Drive Line	2.0V - 7.5V (when fan is running)	Voltage varies with load		3	White	15V Power Supply Line	15V (stable)	Main reference voltage		4	Black	0V DC Ground	0V	Reference point for all measurements		5	Red	310V High-Voltage Line	310V (stable)	DANGER! High-voltage risk. Always de-energize before testing	
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(5) E5(5E) Internal and external communication error

Explanation of error	Cause: The frequency converter needs internal and external communication. When the communication cannot be reached, the internal and external units will indicate “internal and external communication error”. Only “main internal control panel, connecting cable and main external control panel” are related to communication; but sometimes the communication error will be indicated when the external unit has no power and the internal unit cannot connect with the external unit due to other errors, then such situation shall be distinguished from “pure communication error” and treated in a different way. Inspection path: Check if the external unit can power on and work (normally, the indicator light will turn off after lighting for several seconds, relay picks up, and PTC won’t heat seriously) 1. Can power on and work: Are the internal unit and external unit matched→is the phase sequence of connecting wires of internal and external units correct (the live wire of the internal unit connects with that of the external unit, the null wire of the internal unit connects with that of the external unit)→Connecting wires touched well→Main internal control panel replacement→Main external control panel replacement 2. Cannot power on and work: Can AC 220V be delivered to the terminal block of the external unit→Can the bridge rectifier and module panel generate DC 310V→Can the main external control panel generate a low voltage power supply of DC 5V→Does the main external control panel show the status of periodical reset.
Tools required for inspection	Multimeter, main internal control panel in normal condition
Frequent problematic part	Connecting wire phase sequence and contact, main internal control panel, main external control panel, module panel

Inspection procedure and key points	1 Cause: The frequency converter needs internal and external communication. When the communication cannot be reached, the internal and external units will indicate “internal and external communication error”. Only “main internal control panel, connecting cable and main external control panel” are related to communication; but sometimes the communication error will be indicated when the external unit has no power and the internal unit cannot connect with the external unit due to other errors, then such situation shall be distinguished from “pure communication error” and treated in a different way. Inspection path: Check if the external unit can power on and work (normally, the indicator light will turn off after lighting for several seconds, relay picks up, and PTC won’t heat seriously) 1. Can power on and work: Are the internal unit and external unit matched→is the order of connecting wires of internal and external units correct (the live wire of the internal unit connects with that of the external unit, the null wire of the internal unit connects with that of the external unit)→Connecting wires touched well→Main internal control panel replacement→Main external control panel replacement 2. Cannot power on and work: Can AC 220V be delivered to the terminal block of the external unit→Can the bridge rectifier and module panel generate DC 310V→Can the main external control panel generate a low voltage power supply of DC 5V→Does the main external control panel show the status of periodical reset.
Special attention	When the external unit not power on: If the internal terminal board does not transmit 220V power, replace the main internal control panel; if the external terminal board has 220V power, first check if (fuse, reactor and bridge rectifier) are normal. There is still something wrong, replace the whole set of external control unit; for the control unit composed of several function boards, try disconnecting the weak-current data wires among several control boards and then power the external unit on, if the main control panel can be powered on and initialized successfully, then it’s the module panel problems; if the main external control panel still cannot be powered on and initialized, replace the main external control panel.

(6) F0 External DC fan error (3-core terminal motor)

Explanation of error	Cause: The main control panel will indicate “external DC fan error” when it detects imbalanced current on the three lead wires of the driving motor. Inspection path: Is the DC fan stuck by foreign matters→Motor terminal connectors→Main external control panel→Motor
Tools required for inspection	Main external control panel in normal condition
Frequent problematic part	Mechanical jam of external fan, main external control panel, external DC motor
Inspection procedure and key points	1. First exclude the possibility of mechanical jam of external fan blades. . 2. Observe if the terminal of the fan is not connected firmly or the order of lead wires is correct. If the external fan of the newly installed air conditioner rotates reversely, first observe if the color order of the three lead wires is correct, or change the order of any two of the three lead wires of the motor to see if the fan can rotate in the forward direction. 3. The DC motor of this scheme is relatively simple and reliable, so the problem is more likely to be caused by the drive part of the fan of the main external control panel. The maintenance personnel may as well prepare matched main external control panel before maintenance. If the fan returns to normal after replacing the main control panel, then it's the main control panel problem; if it still indicates external DC motor error, then replace the external DC motor.
Special attention	Unlike the 5-core internal DC motor, there will be a process of fan blade position locking before the 3-core DC motor with external drive starts to rotate. The fan blades will shake mechanically for 3-5 seconds and then rotate slowly, which is normal phenomenon.

(7) F1 Module protection error

Explanation of error	Cause: The power module is the part to directly drive the compressor to work. It can protect the machine in time when overcurrent, overvoltage or overheat occurs and stops the compressor from working. It will, at the same time, send “shutdown request” to the module panel. The error triggered by the “shutdown request” is called “module protection error”. Inspection path: Supply voltage→Compressor wire, reactor wire→System blocked→Module panel damaged→Main external control panel destroyed→Compressor destroyed
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Tools required for inspection	Multimeter, pressure gauge, megameter, module panel in normal condition
Frequent problematic part	Supply voltage, compressor wire, reactor, system pressure, module panel, main external control panel, compressor
Inspection procedure and key points	1. Is the order of compressor wires not correct, which makes the compressor rotate reversely? Try exchanging the compressor wires on U-V phase to see if the problem can be solved? 2. Check if the supply voltage is unstable and highly volatile, and test if the system pressure is normal. High system pressure will cause rotating problems to the compressor. 3. Is the module panel fixed to the heat sink firmly? Will it cause poor cooling? Is the internal and external heat exchanger dirty, which lead to poor heat transfer and high system pressure? 4. If “module protection error” will be indicated immediately after starting up, it is almost certain that it’s substantial error, having nothing to do with supply voltage and system pressure, it is suggested to observe if there is any component destroyed by strike arc near the module panel; use the multimeter to test if the resistances between any two compressor wires are the same. The resistances between any two compressor wires in normal condition are tiny resistances at ohm level and are basically equal; then use the megameter to measure if the resistance insulation of the three compressor wires against the earth wire is good (normally at MΩ level), and check if the reactor wire is well connected or the reactor is destroyed. 5. Test if the 15V and 5V (3.3V) power supply on the module panel is stable and exclude the module panel error caused by power supply of the main external control panel. 6. Methods for judging whether the power module is damaged: use the “diode position” of the multimeter to measure the features of P of the module panel against U-V-W three phases respectively. Measure the power module P-U, P-V and P-W, there is always infinite resistance at one side and fixed on-state voltage at the other side (generally 0.5V); measure the features between N-U, N-V and N-W in the same way, if short circuit occurs during any measurement, then the module is destroyed. 7. Replace with the module panel in normal condition for test. If the test is normal after

	changing the module panel, then the original module panel is destroyed. 8. After excluding problems of module, connecting wires, system and power supply, distinguish by ear. If there is only electromagnetic sound and the compressor does not work; or the sound of irregular running appears after the compressor works for a while and then it shuts down and indicates error; chances are that the compressor is blocked or destroyed, consider replacing the compressor.
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(8) F2 PFC protection error

Explanation of error	Cause: PFC board is a component of the inverter air conditioner for power factor correction and voltage boosting. When the PFC board cannot perform power calibration as normal because of overcurrent and overvoltage, it will indicate "PFC protection error" and its function may also be integrated with the module panel or main control panel. Inspection path: Supply voltage→AC and DC power path→PFC board data wire→PFC board→Main control panel
Tools required for inspection	Multimeter, PFC board in normal condition
Frequent problematic part	Supply voltage, reactor, PFC board, module panel, main external control panel
Inspection procedure and key points	1. Check if the supply voltage is unstable and highly volatile or the voltage is too low (below AC 135V) 2. The reactor is one of core parts of PFC. Check if the reactor itself is destroyed and the reactor connecting wire is in poor connection, which makes PFC functions not performed. Do not remove the reactor and replace with short circuit remove "by no means" 3. If "PFC protection error" will be indicated immediately after starting up, it is almost certain that it's substantial error, having nothing to do with supply voltage, it is suggested to observe if there is any component destroyed by strike arc near the module panel 4. Test if the 15V and 5V (3.3V) power supply on the PFC board is stable and exclude the PFC board error caused by power supply of the main external control panel. 5. Replace with the PFC board in normal condition for test. If the test is normal after changing the PFC board, then the original PFC board is destroyed. 6. The possibility that there is something wrong with 15V or 5V power of the module panel that causes the control power supply problem of the PFC board is not excluded. 7. Some module panels integrate PFC function and compressor drive function in one, so just replace with an integrated module panel.

	8. For single-panel single-chip main control panels, if PFC protection error appears, and there is no problem in supply voltage, reactor connection or reactor, just replace the controller of the external unit.
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(9) F3 Compressor out-of-step error

Explanation of error	Cause: The module panel will constantly test the current of lead wires of the compressor and calculate the position of the rotator of the compressor when driving the compressor to work. When the compressor deviates far from the normal operating status , it will indicate “compressor out-of-step error” because the current of the compressor wires is too high or it cannot detect the position of the rotator. This error always follows “module protection error”, so they have similar inspection methods. Inspection path:supply voltage→Compressor wire, reactor wire→System blocked→Module panel damaged→Main external control panel destroyed→Compressor destroyed
Tools required for inspection	Multimeter, pressure gauge, module panel in normal condition
Frequent problematic part	Supply voltage, compressor wire, reactor, system pressure, module panel, main external control panel, compressor
Inspection procedure and key points	1. Is the order of compressor wires not correct, which makes the compressor rotate reversely? Try exchanging the compressor wires on U-V phase to see if the problem can be solved? 2. Check if the supply voltage is unstable and highly volatile, and test if the system pressure is normal. High system pressure will cause rotating problems to the compressor. 3. Is the module panel fixed to the heat sink firmly? Will it cause poor cooling? Is the internal and external heat exchanger dirty, which lead to poor heat transfer and high system pressure? 4. If “compressor out-of-step error” will be indicated immediately after starting up, it is almost certain that it's substantial error, having nothing to do with supply voltage and system pressure, it is suggested to observe if there is any component destroyed by strike arc near the module panel; use the multimeter to test if the resistances between any two compressor wires are the same. The resistances between any two compressor wires in normal condition are tiny resistances at ohm level and are basically equal; then use the

	megameter to measure if the resistance insulation of the three compressor wires against the earth wire is good (normally at MΩ level), and check if the reactor wire is well connected or the reactor is destroyed. Check if the DC voltage between P-N is too high (above 200V). 5. Test if the 15V and 5V (3.3V) power supply on the module panel is stable and exclude the module panel error caused by power supply of the main external control panel. 6. Replace with the module panel in normal condition for test. If the test is normal after changing the module panel, then the original module panel is destroyed. 7. After excluding problems of module, connecting wires, system and power supply, distinguish by ear. If there is only electromagnetic sound and the compressor does not work; or the sound of irregular running appears after the compressor works for a while and then it shuts down and indicates error; chances are that the compressor is blocked or destroyed, consider replacing the compressor.
Special attention	For the “compressor out-of-step error” and “module protection error”, the former is calculated by the main chip of the module panel and the latter is detected by the power module itself. They are abnormal operating phenomenon of the compressor essentially. If there is uncertainty about either error, analyze both together with similar method. For inverter air conditioners that are in poor electrical environment or are old, occasional occurrence of such errors is a normal protection.

(10) F4 Exhaust sensor error

Explanation of error	Cause: The main external control panel will indicate “exhaust sensor error” and send it to the main internal control panel when it detects short circuit or open circuit of the exhaust sensor. Inspection path: Exhaust sensor→Sensor wire→Connectors→Main external control panel
Tools required for inspection	Multimeter, 50KΩ standard exhaust sensor (77°F (25°C))
Frequent problematic part	Exhaust sensor, main external control panel
Inspection procedure and key points	1. Check if there is any evident resistance problem in the sensor. Whether in short circuit or open circuit, the resistance should maintain in a reasonable range (about 50KΩ when the compressor is not working and between 3 KΩ and 30 KΩ after the compressor works for a while, the corresponding exhaust temperature should be (212°F-100.4°F

	(100°C-38°C)). 2. Check if the sensor wire or the sensor connecting wire is damaged. 3. Check if the connecting terminal is connected firmly, the weld between the terminal and the main control panel is loose; pull the terminal slightly for inspection if necessary. 4. Check whether the sensor is damaged from moisture. The coil sensor is quite easy to be affected with damp in case the lead wire of coil sensor is above the copper pipe. 5. If there is no standard sensor at hand, exchange the exhaust sensor with the one beside it to see if the error changes. If yes, there is something wrong with the sensor and it should be replaced; if it still indicates “external coil sensor error”, replace the main external control panel
Special attention	Most exhaust sensors have a standard resistance of 50KΩ (77°F (25°C)). Do not use improper sensor during maintenance, or the machine will sense the exhaust temperature mistakenly and enters the protection state frequently. For example, in the case where replace the 20KΩ coil sensor for the exhaust sensor by mistake, the exhaust temperature that the main external control panel senses will be higher than the actual exhaust temperature, which will make normal air conditioners enter the high exhaust temperature protection state frequently, and the compressor frequency threshold will rise and lead to shutdown of the compressor.

(11) F5 Compressor top head sensor error

Explanation of error	Cause: The compressor top head sensor is a compressor top head temperature protection switch most of the time. It keeps closed (short circuit) when the compressor temperature is normal and switches off (open circuit) when the temperature is too high. The main external control panel will indicate “compressor top head sensor error” when it senses disconnection of the compressor top head protection switch. Inspection path: Compressor top head sensor (temperature protection switch)→Sensor wire→Connectors→Main external control panel
Tools required for inspection	Pressure gauge, multimeter
Frequent problematic part	System pressure, refrigerant deficiency, compressor top head sensor (temperature protection switch), main external control panel
Inspection procedure and key points	1. First check if the compressor top head temperature is too high (above 230°F (110°C)) and causes action of the compressor top head sensor (temperature protection switch);

	reasons why the compressor top head temperature is too high may be: the system is deficient in refrigerant and the compressor idles; the system is blocked and the pressure of the compressor is too high. 2. After excluding the possibility of the system problem, please note that the temperature protection switch is closed normally. Test if the terminals of the sensor are in the short-circuit condition with the multimeter. In the case of open circuit, then there is something wrong with the sensor or lead wires. 3. Check if the sensor wire or the sensor connecting wire is damaged. 4. Check if the connecting terminal is connected firmly, the weld between the terminal and the main control panel is loose; pull the terminal slightly for inspection if necessary. 5. Disconnect the power supply and short circuit a metal with the compressor top head terminal of the main external control panel. If the compressor top head sensor error disappears after start up, then replace the sensor; if the error still occurs, it's probably the main control panel problem, replace the main external control panel
Special attention	The compressor top head sensor is just a temperature switch which is highly reliable and is less likely to go wrong generally. Pay more attention to the system pressure and the compressor temperature.

(12)F6 external temperature sensor error

Explanation of error	Cause: The detection of short circuit or open circuit of external temperature sensor during the inspection of main external control panel, indicated by "external temperature sensor error". Inspection path: Sensor→Sensor wire→Connectors→Main external control panel
Tools required for inspection	Multimeter, 15KΩ standard sensor (77°F (25°C))
Frequent problematic part	External temperature sensor, main external control panel.
Inspection procedure and key points	1. Check whether there's resistance problem, short circuit or open circuit in the sensor; the resistance value shall be within a reasonable range (15KΩ under the temperature of 77°F (25°C)). 2. Check whether the sensor wire is broken. 3. Check whether the terminal connectors are well fixed; check whether the weld between the terminal and the main control panel is loose., and pull the terminal slightly for inspection if necessary. 4. Check whether the sensor is damaged by moisture. 5. In case no standard sensor is available at present, replace the external temperature sensor with the other sensor asides, and then check whether the error still exists; if the error disappears, replace the sensor; if the error still exists, it's possible that the main

	control panel is faulted, change the main external control panel.
Special attention	Most of the standard resistance values of the external temperature sensors are 15KΩ (When temperature is at 77°F (25°C)), and the higher the temperature is, the lower the resistance value is, and the lower the temperature is, the higher the resistance value is. Do not use improper sensor during repairing and maintenance, or it may lead to the wrong temperature sensing of the machine.

(13)F7 OVP or UVP error

Explanation of error	Cause: All the inverter air conditioners are equipped with voltage inspection circuits, but different models of machines have different locations for the voltage inspection (on the module panel or main external control panel). When the supply voltage is lower than 135V or higher than 275V, the inspection circuit would detect over or under voltage protection signal and send it to the main external control panel and the main external control panel would raise the alarm "OVP or UVP error" and indicate it through the internal motor. Inspection path: supply voltage → internal direct current voltage → reactor wiring → module panel → main external control panel.
Tools required for inspection	Multimeter.
Frequent problematic part	Supply voltage, reactor, module panel and main external control panel.
Inspection procedure and key points	1. First, check the supply voltage of the user, especially shall check when the compressor of the air conditioner has been running for a while. The normal supply voltage shall be between 198V and 242V and the minimum work assurance range of the air conditioner shall be within 165V and 265V and it shall be especially noted that the voltage value shall not be decreased significantly after running of the compressor (voltage decreasing by over 25V), because if the supply voltage is decreased by a lot, it means the supply line capacity is insufficient and the user is usually suggested to replace the circuit or install a specialized air conditioner supply voltage stabilizer. 2. For the external machines with PFC panels (without separate rectifier bridges), the operator shall ensure if the PFC function is on with the direct current voltage grade of the multimeter. When the compressor is running, voltage between P and N ends detected on the test module panel or main external control panel shall be over 200V and if the voltage is below that range, it is possible that the reactor is faulted or the PFC is broken.

	3. When the air conditioner is switched on, if the compressor is not running but there is a alarm of "OVP or UVP error" and the power voltage detected with the multimeter is not below 150V, it's probably the voltage inspection circuit is faulted. The operator shall check and confirm the voltage inspection circuit is on which control panel first and then replace it. The regular replacement: for the external machine of single panel single chip, replace the external controller directly; and for the machine of two panels, replace the module panel.
Special attention	For some models, OVP or UVP error signal is delivered through the connector wires between the module panel and the main external control panel, thus it is possible the voltage signal is not delivered when the communication between the module panel and the main external control panel is not good. It is possible that the error is false raised but after some minutes that the error is finally confirmed as "Main external control panel and module panel communication error", which shall be specially noted.

(14)F9 outdoor EE error

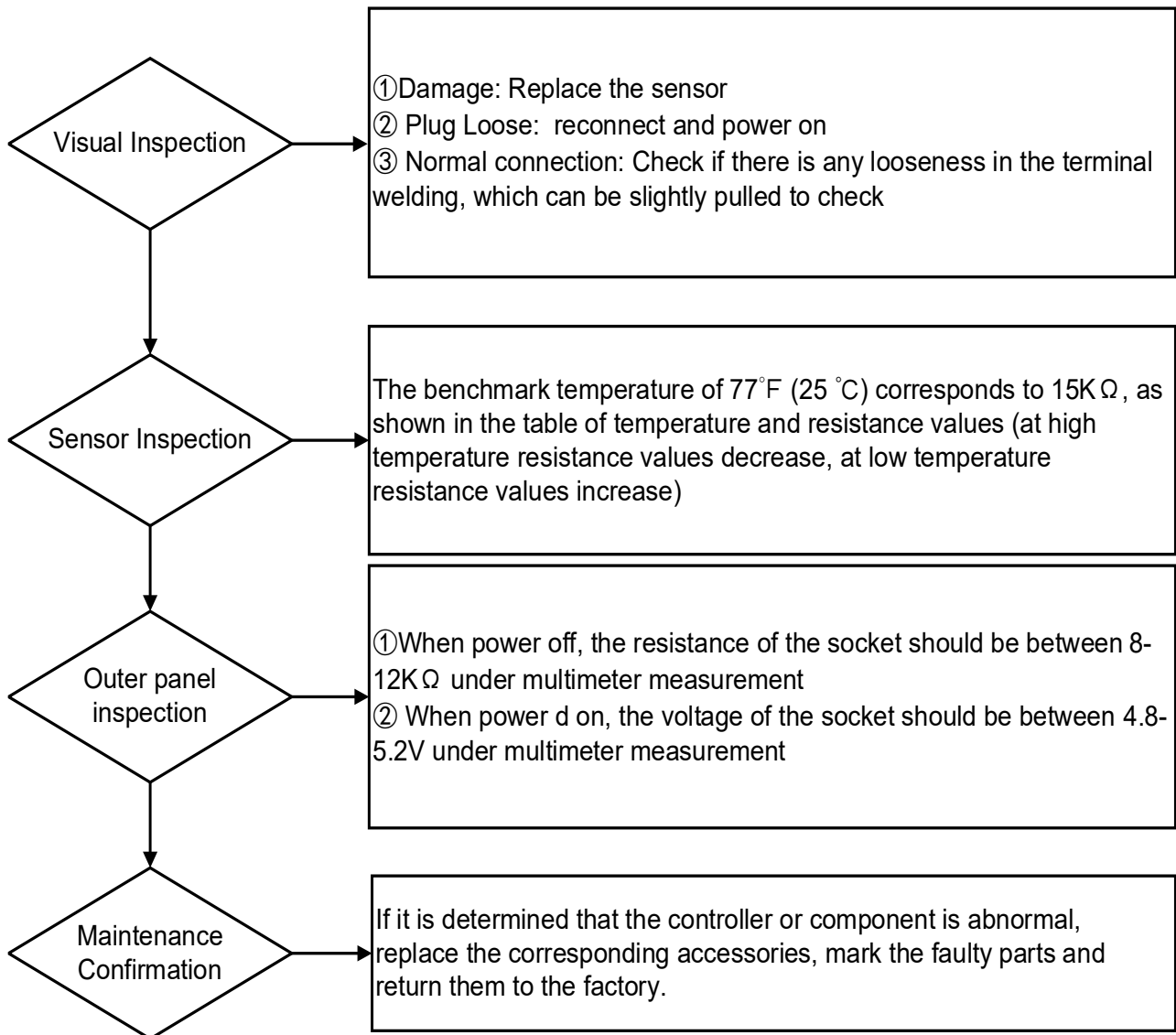
Explanation of error	Cause: Many parameters need to be preset for the running of the external unit of the air conditioner and such parameters are placed in a data storage 8-foot chip, which is called "EEPROM" or "EE" for short. The motor on the main external control panel can only work after reading the data stored in EE and if not read, the alarm "outdoor EE error" would be reported and raised in the internal machine. Reasons for data not being read are as follows: 1. wrong EE chip data format; 2. EE chip is broken; 3. bad contact of EE or fault of EE reading circuit; 4. backward installation of EE chip. Inspection path: main external control panel.
Tools required for inspection	None
Frequent problematic part	Bad contact of EE, main external control panel.
Inspection procedure and key points	Replace the main external control panel directly.

(15)Function protection prompt of frequency conversion external machine

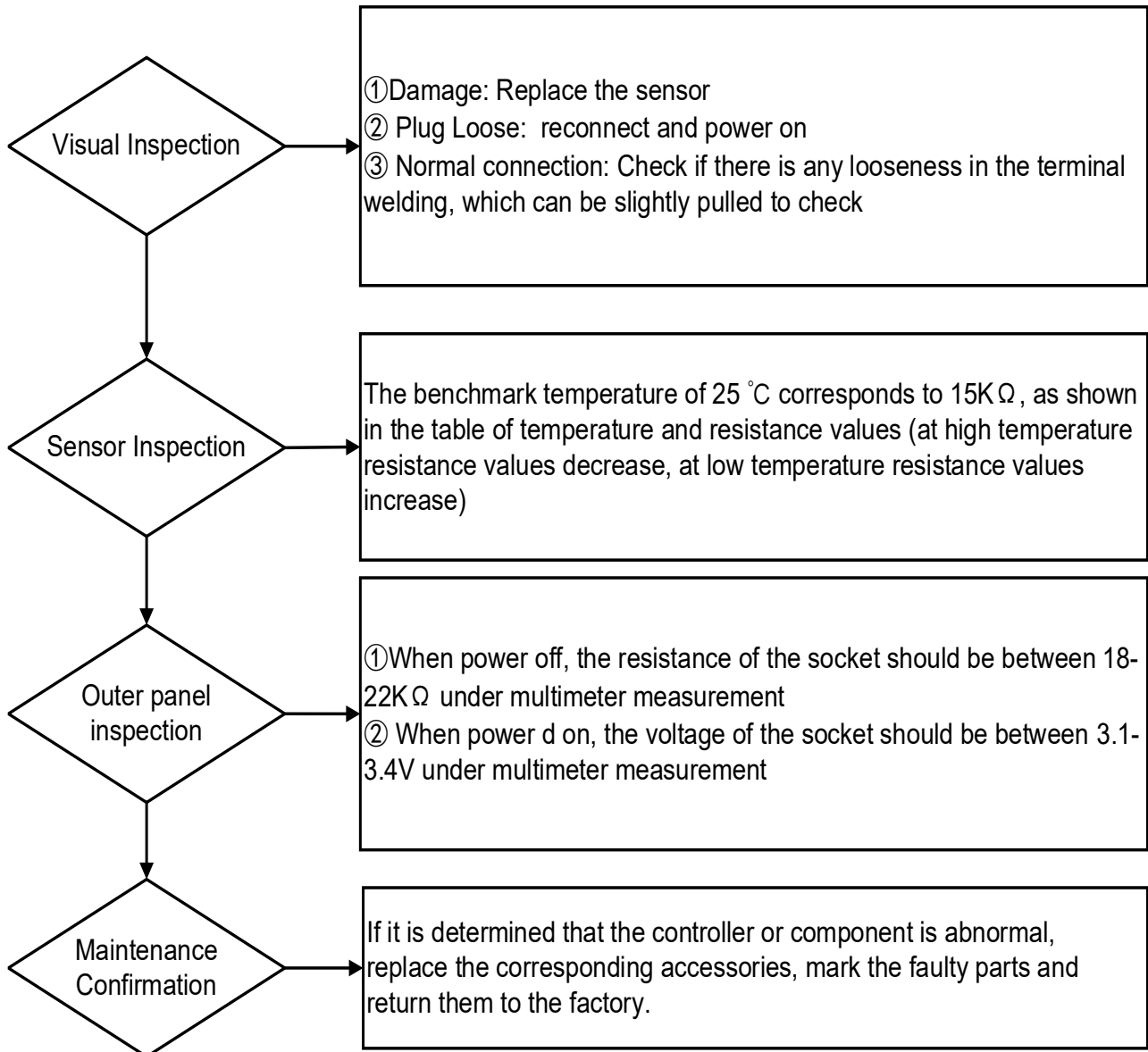
Explanation of error	Cause: In the regular running of the air conditioner, for some nonfaulted status, it may need the compressor to shut down or limit or lower the frequency so as to protect the normal operating of the entire cooling system (eg. defrosting, slight undercooling, over pressure, overcurrent, etc.). These problems are not considered as errors and would not be reflected in the internal machine, however as to make sure the maintenance personnel is familiar with the running status of the air conditioner, three indicator lights are used on the main external control panel for reference of the maintenance personnel. Including: over current protection, cooling overload protection, indoor heating high temperature protection, indoor cooling freezing protection, over pressure and under pressure protection.
Tools required for inspection	Multimeter.
Frequent problematic part	Regular protection, system blockage, power supply not as usual, resistance value of sensor drifts or is used wrong.
Inspection procedure and key points	1. Defrosting: with a defrosting signal, meaning the air conditioner is under defrosting procedure and it is normal, but if there is frequent defrosting, it shall be specifically noted if heat exchange of the external unit is faulted, if the fan revolving speed is low and if the resistance value of the coil sensor is drifted or the temperature is inaccurately measured or it is damaged. 2. Over current protection: it is more possible to appear under high temperature cooling status and the over current of compressor is usually reflected by very high load of the compressor. It is normal if such protection appears under a very high temperature cooling status but not under low temperature low load status. 3. Cooling overload protection: it is more possible when the frequency conversion machine is under a high temperature cooling status. When the outdoor coil sensor senses the temperature is too high, as to prevent the compressor from overload, it would positively lower the frequency and it is normal for the protection under the high temperature cooling status. 4. Indoor high temperature heating protection: it is more possible when the frequency conversion machine is under a high temperature heating status. When the indoor coil sensor senses the temperature is too high, as to prevent the compressor from overload,

	it would positively lower the frequency and it is normal for the protection in a warm room. 5. Indoor cooling freezing protection: it is more possible to appear under a low temperature cooling status. When the indoor coil sensor senses the temperature is too low, as to prevent the heat exchanger of the internal machine from frosting, it would positively lower the frequency and it is normal for the protection in a low temperature room. 6. Over or under voltage protection: this protection is a pilot protection for the "over or under pressure error". When the voltage is too high or too low but not so high or so low to reach limit for shutting down (within 165V-265V), it would limit and lower the frequency first to reduce the air conditioner's needs for the power to keep the air conditioner running. This protection is for the adjustment to a unstable power environment and when there is such protection prompt, it usually means it is possible for "OVP and UVP error" and the maintenance personnel shall especially note. 7. Cooling overload protection, indoor high temperature heating protection and indoor coolign freezing protection are also possible related to the drift of the resistance value of the sensor.
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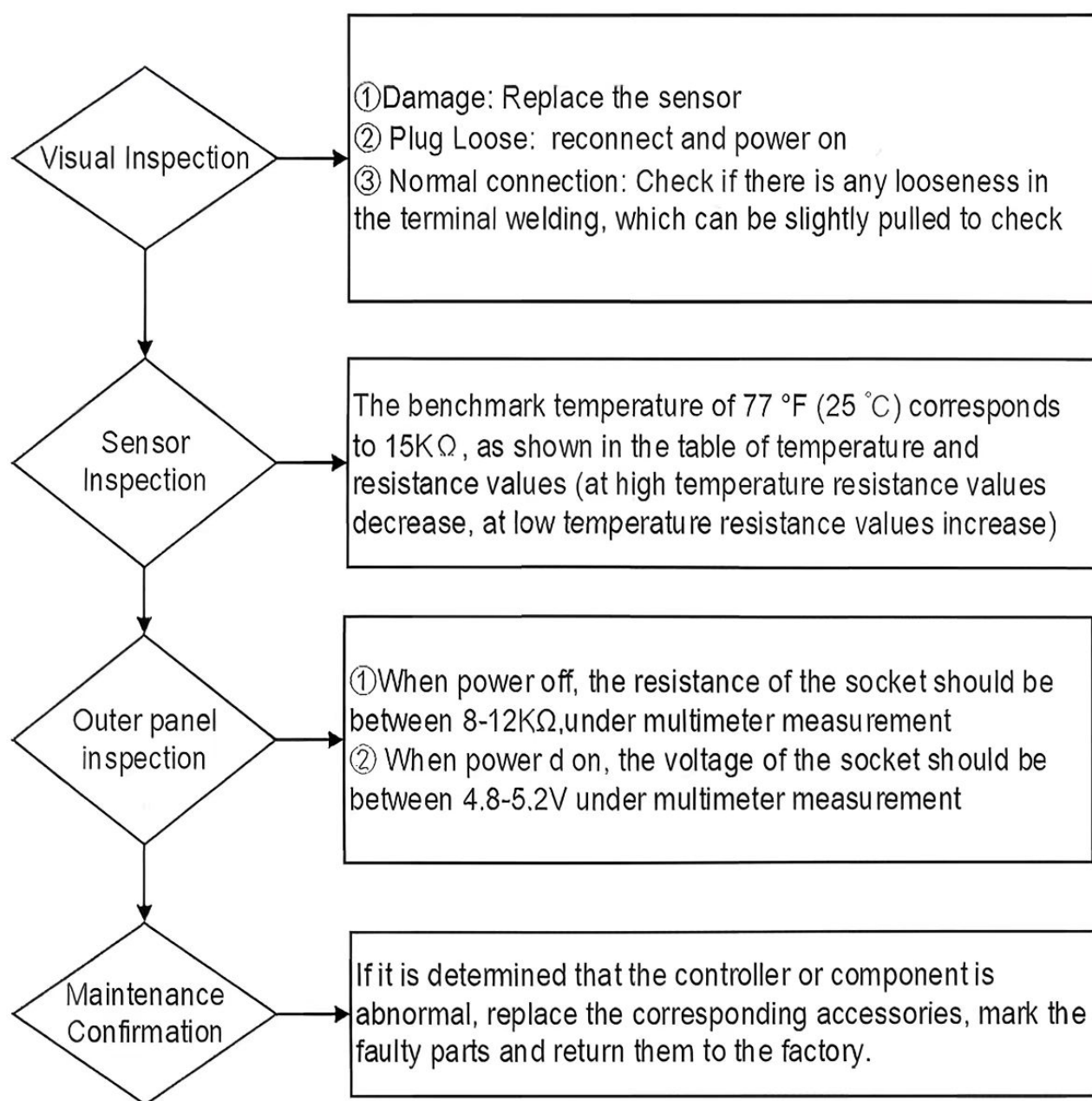
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E2

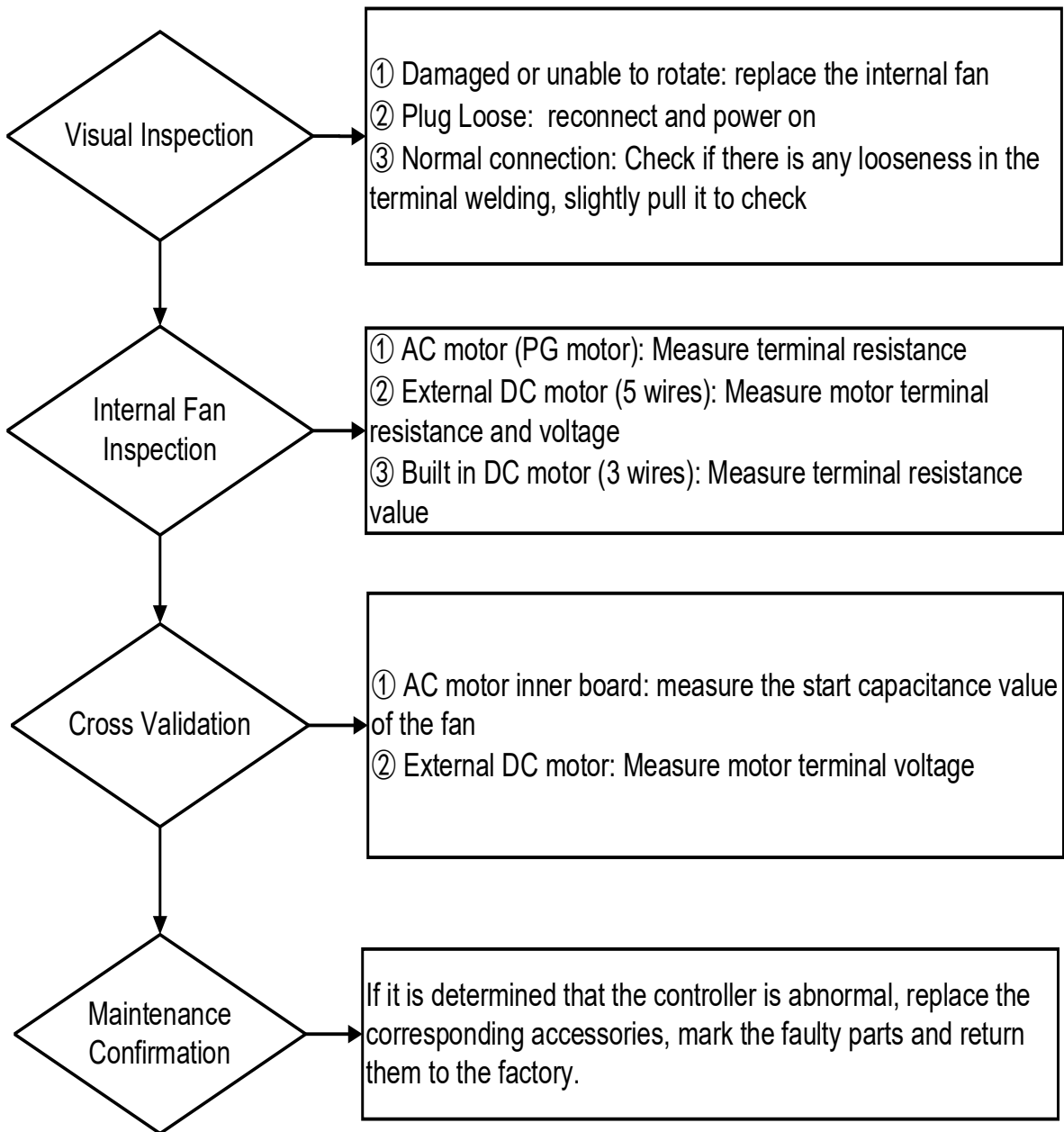


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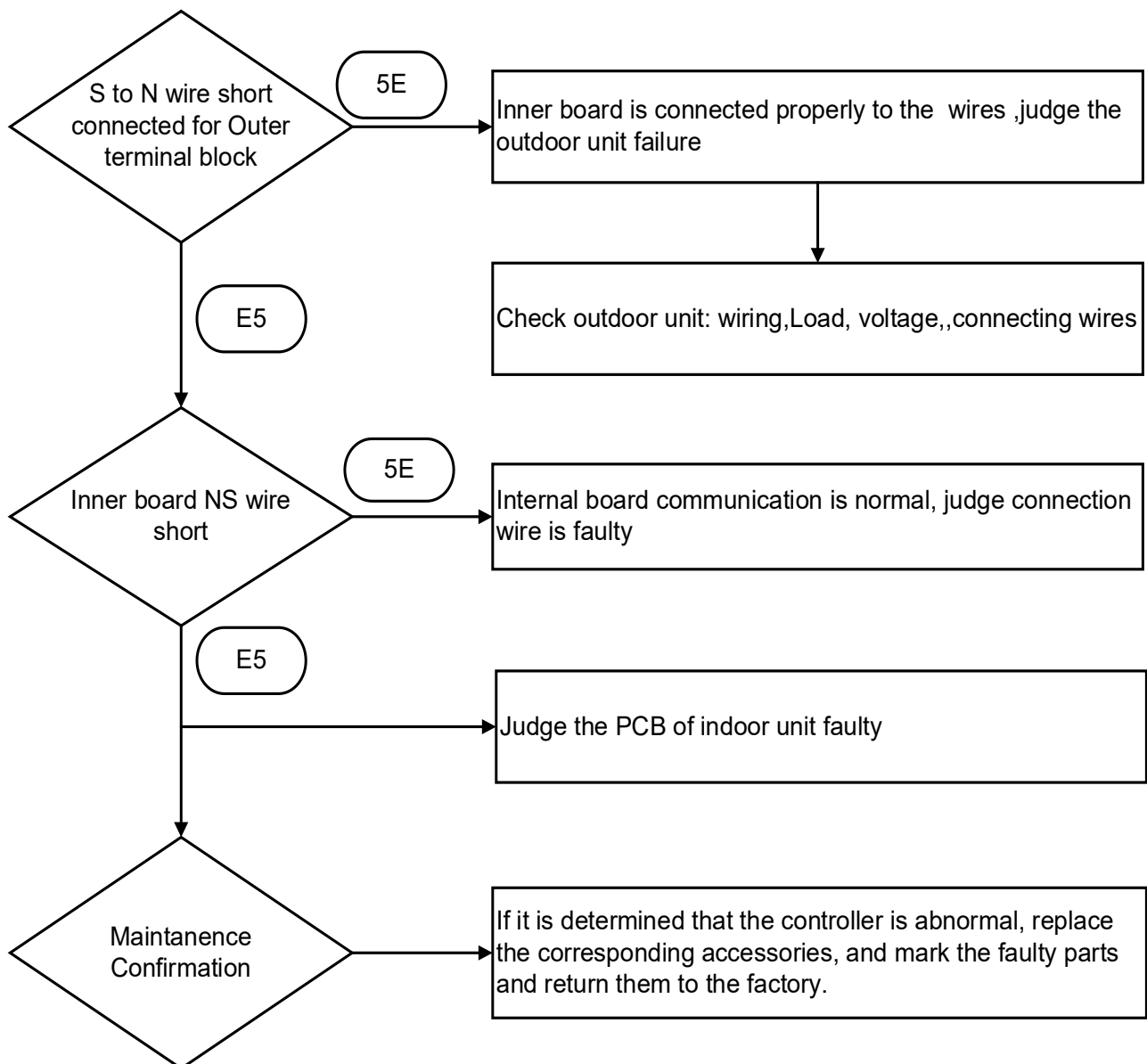


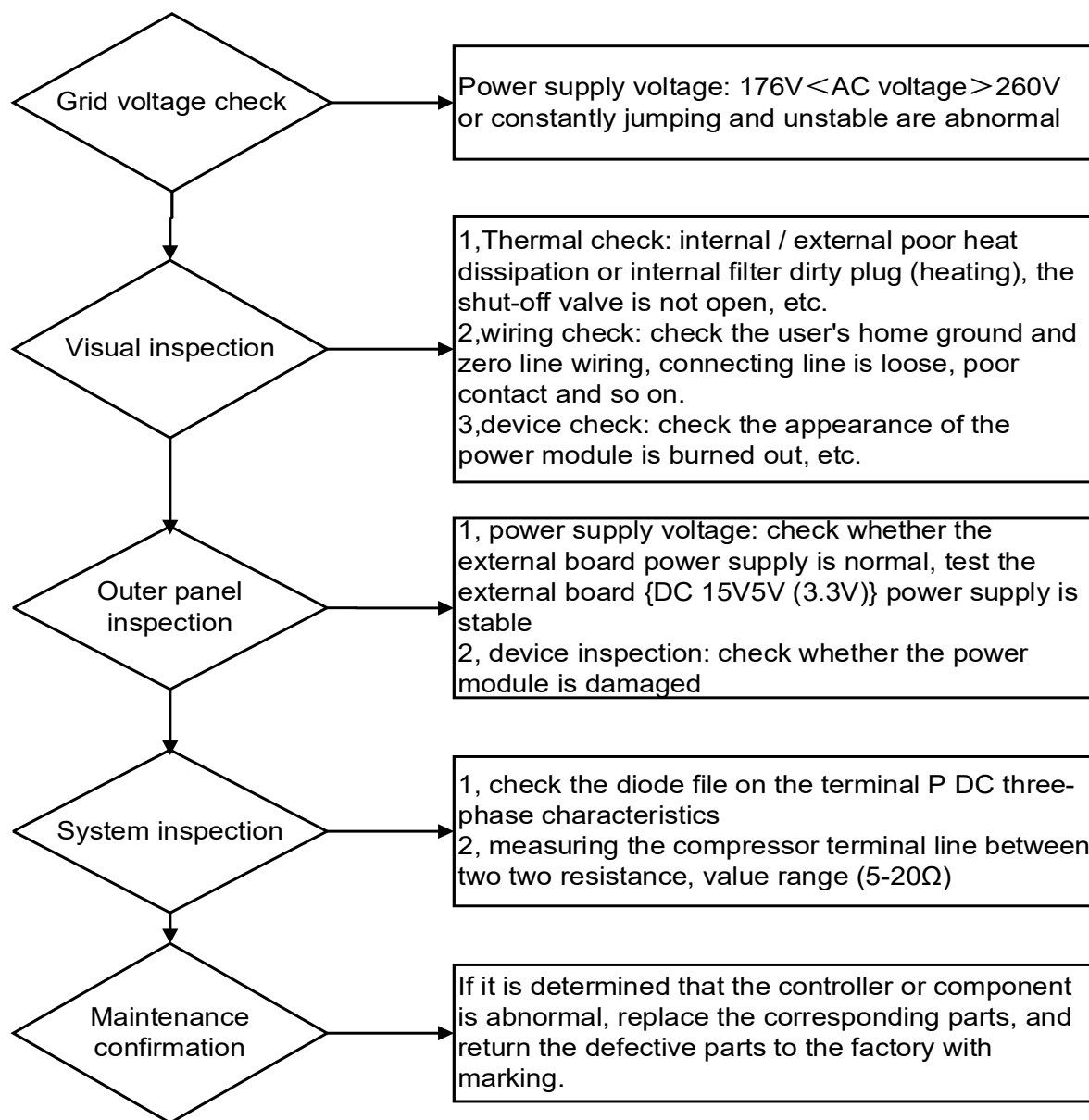
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E4

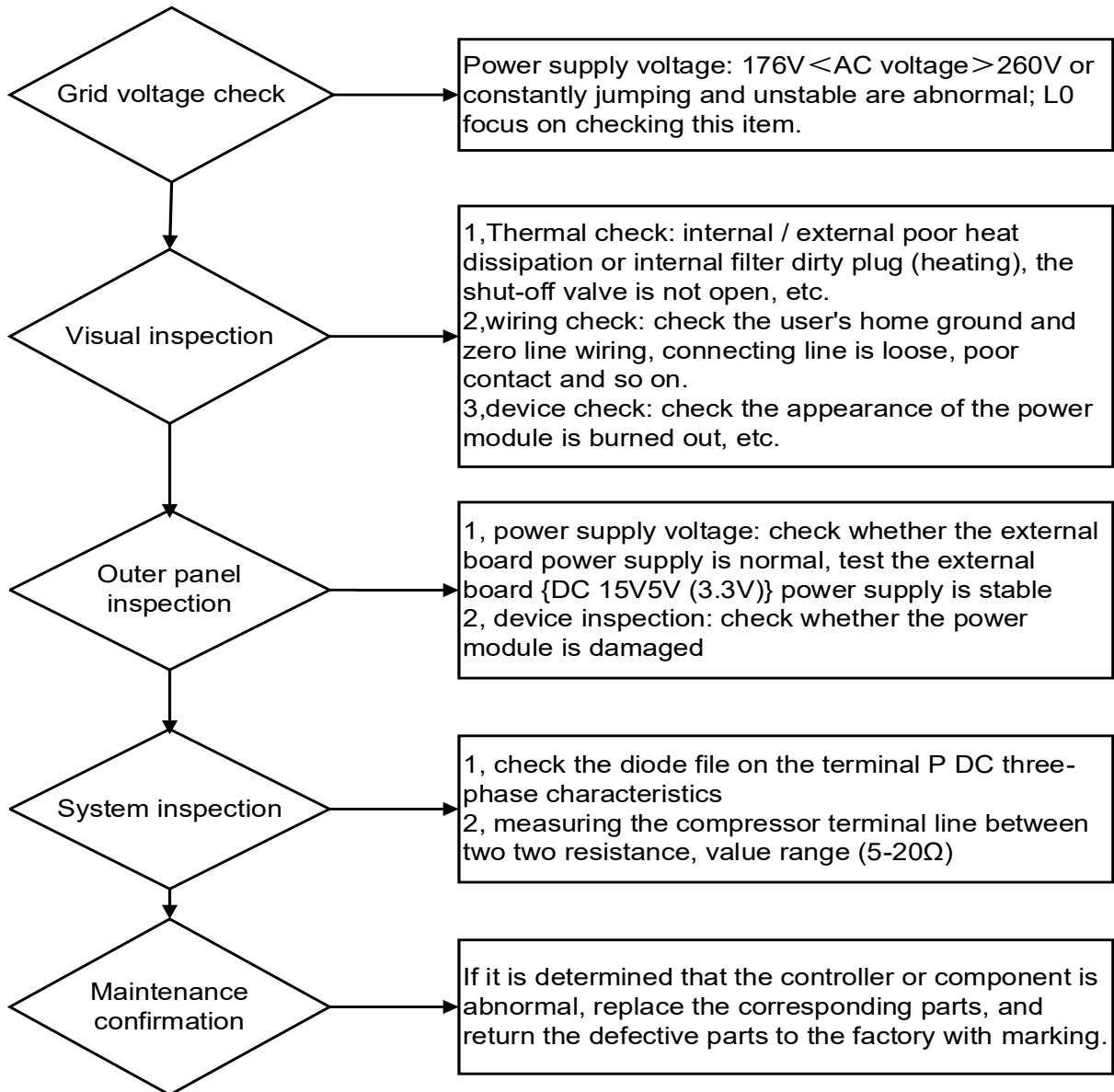


E5



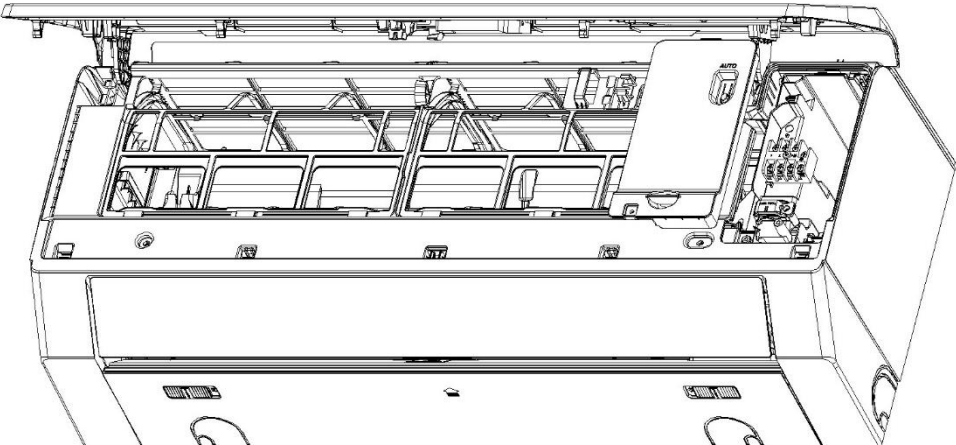
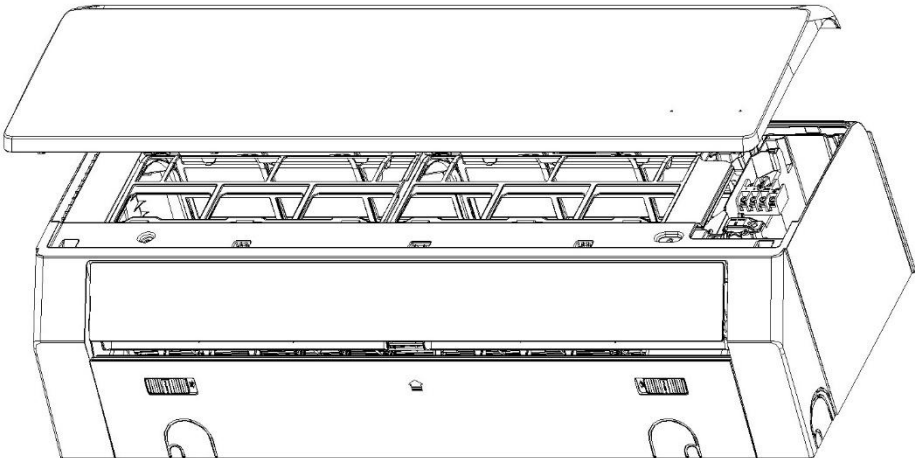
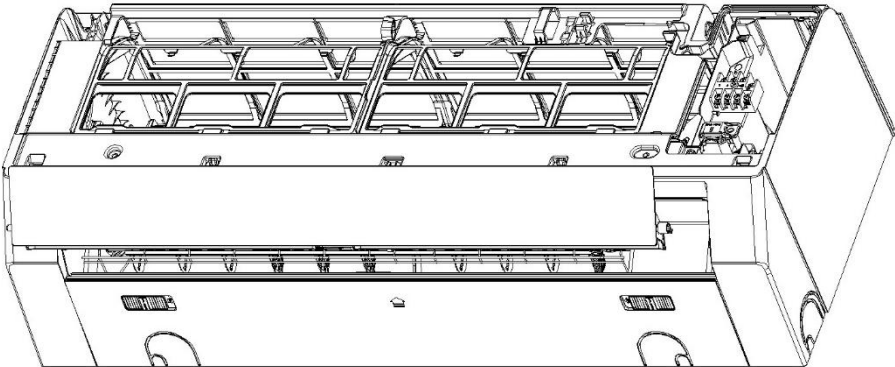


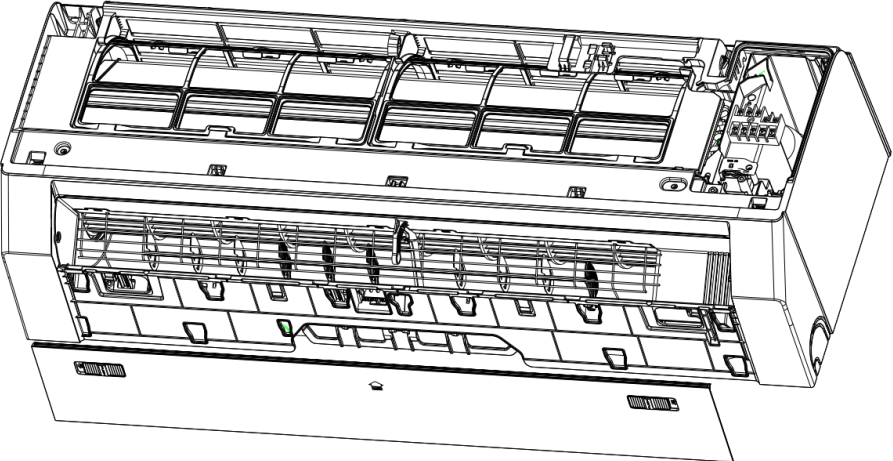
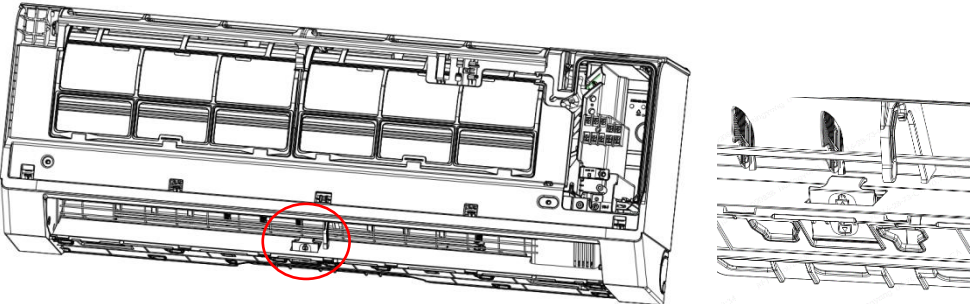
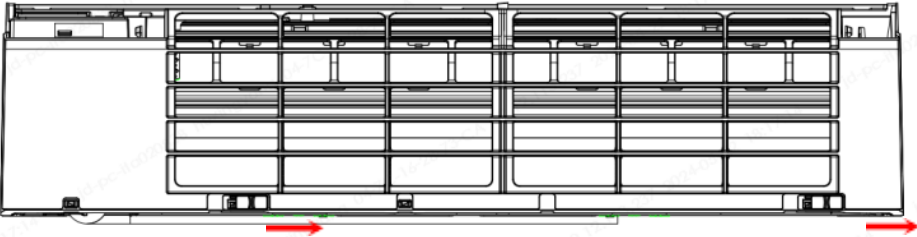
L1-LH

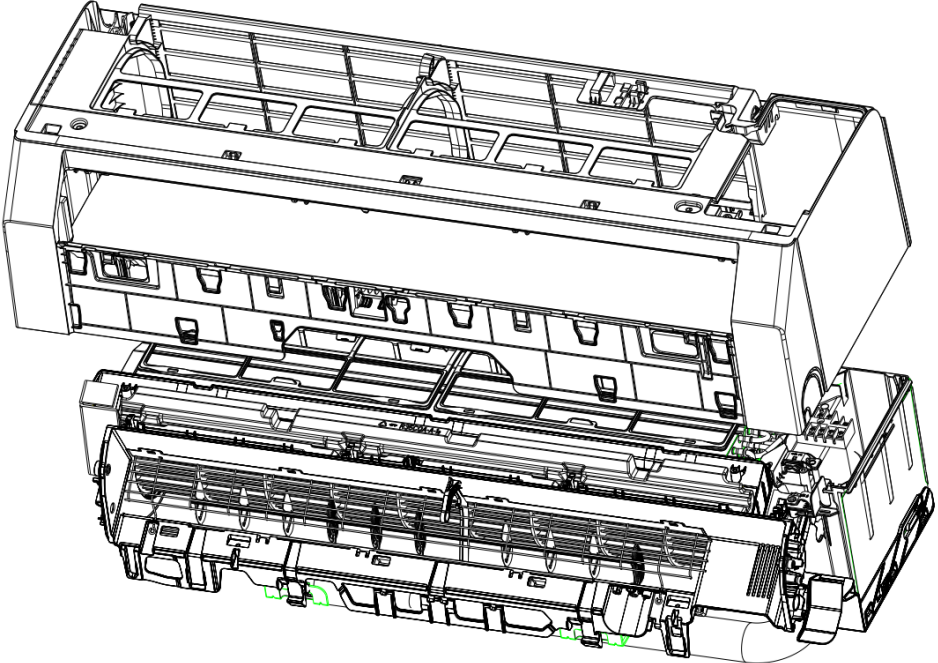
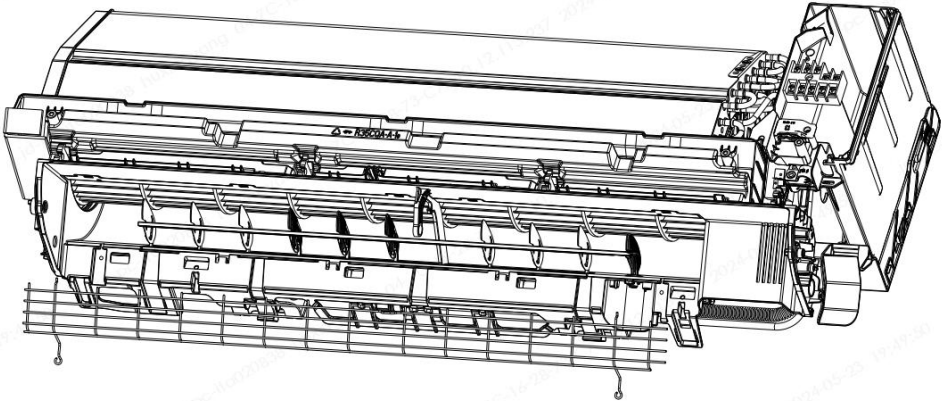
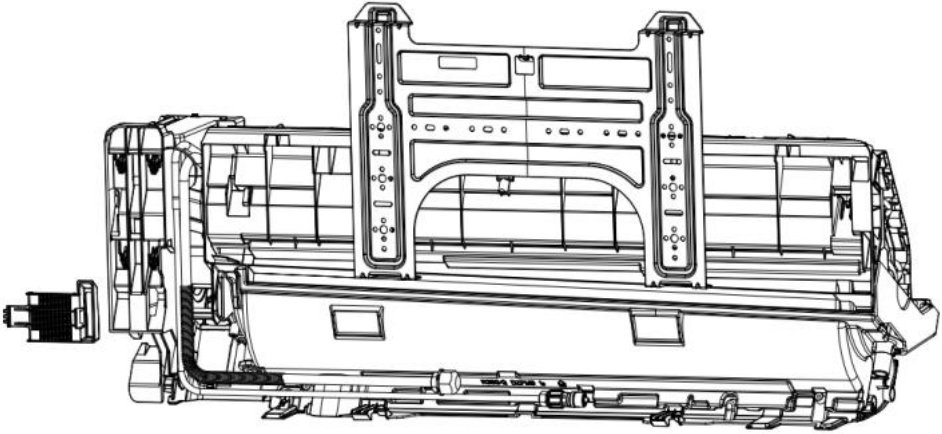


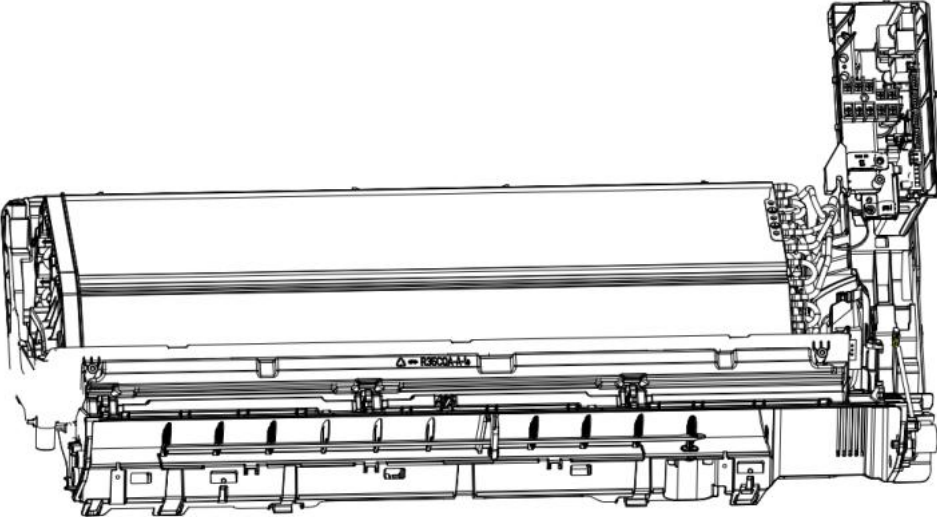
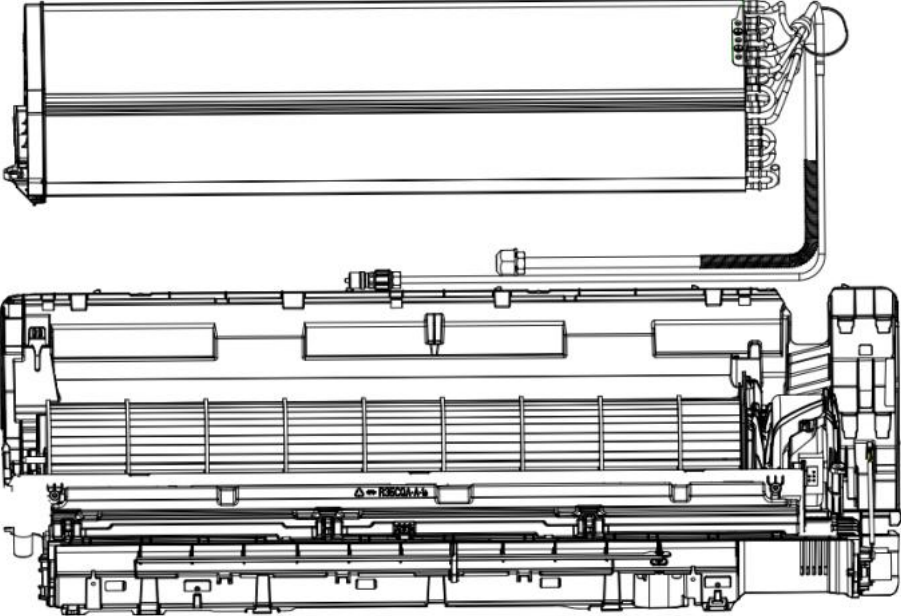
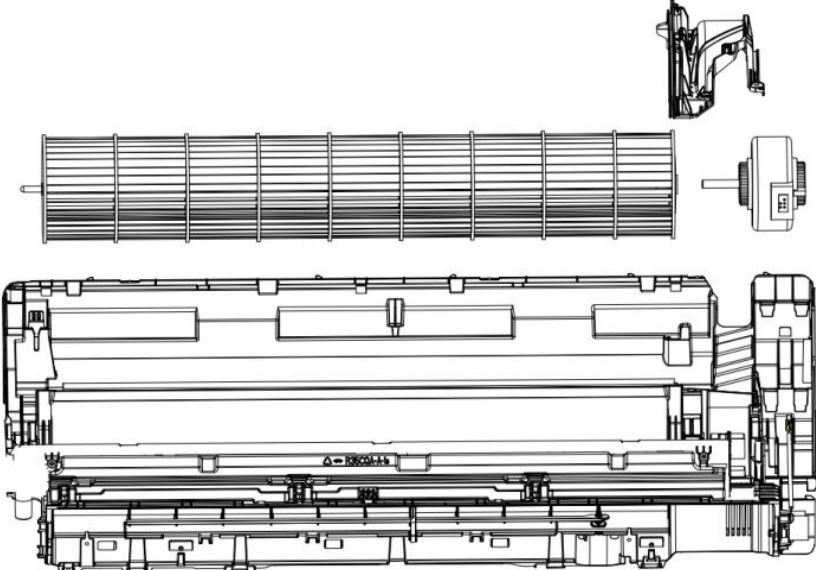
Part 10 Removal Procedure

Indoor Unit Removal

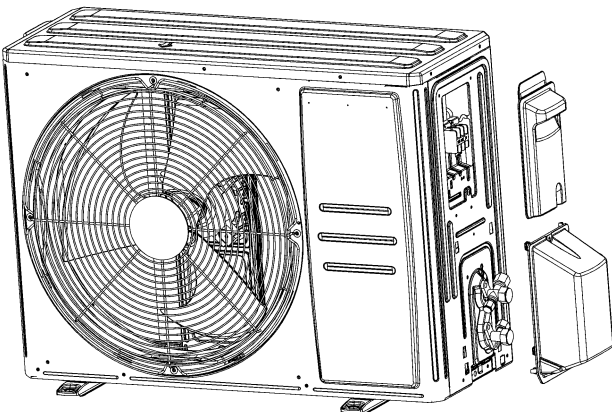
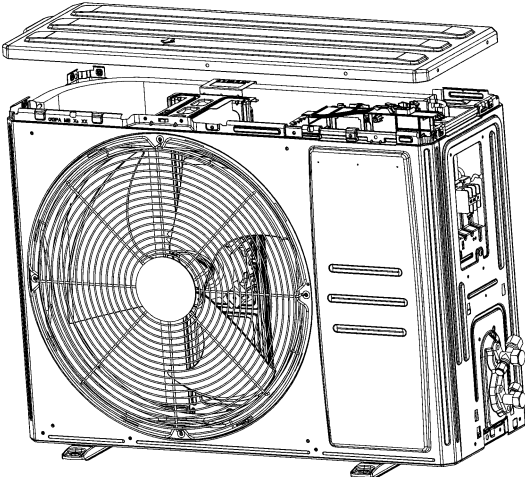
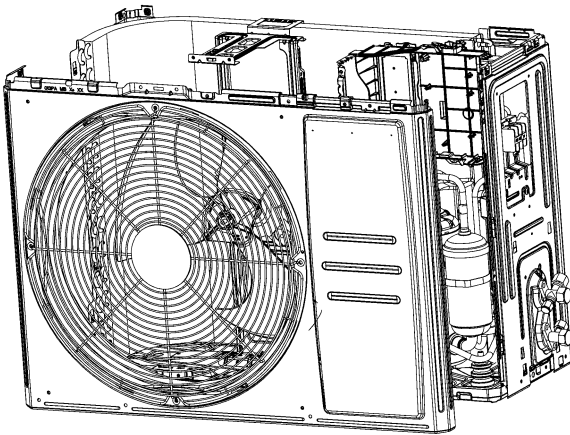
Steps	Procedure	Diagram
1	1.Turn off the power 2.Open the front Panel 3.Remove the electric box cover	
2	Remove the front Panel	
3	Remove the horizontal vane	

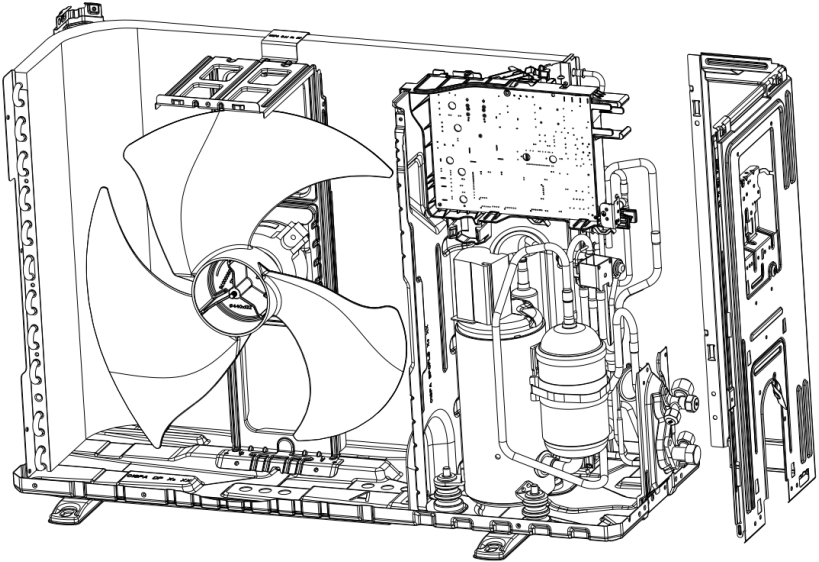
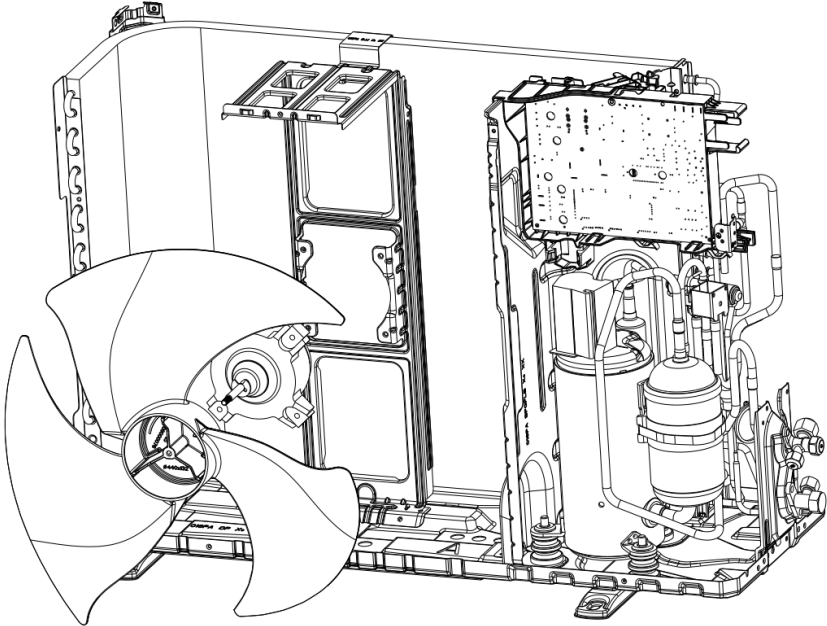
4	Remove the decorative plate	
5	Open the front buckle	
6	Open the slip buckle	

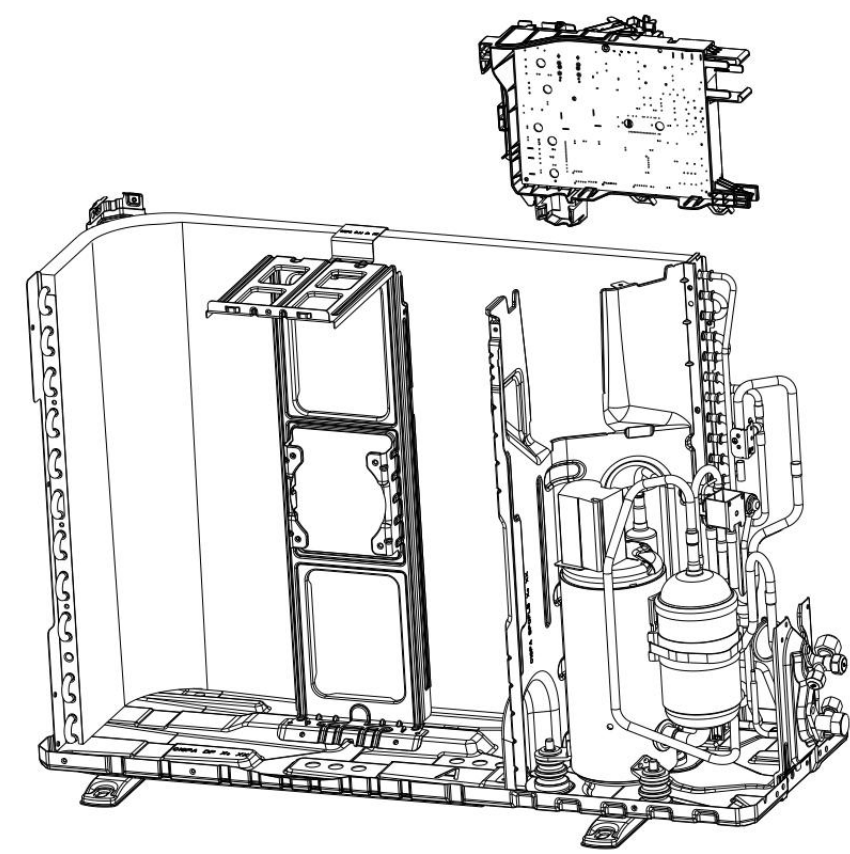
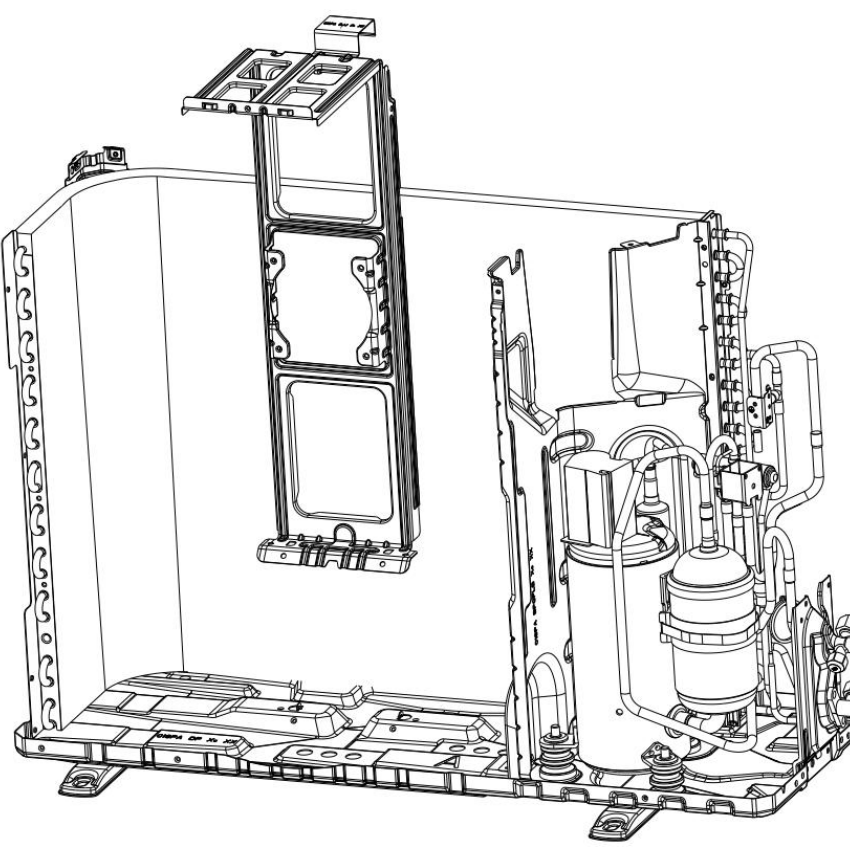
7	Remove the front Panel Assy	
8	Remove the steel grille	
9	Remove the installation plate and connecting pipe clamp	

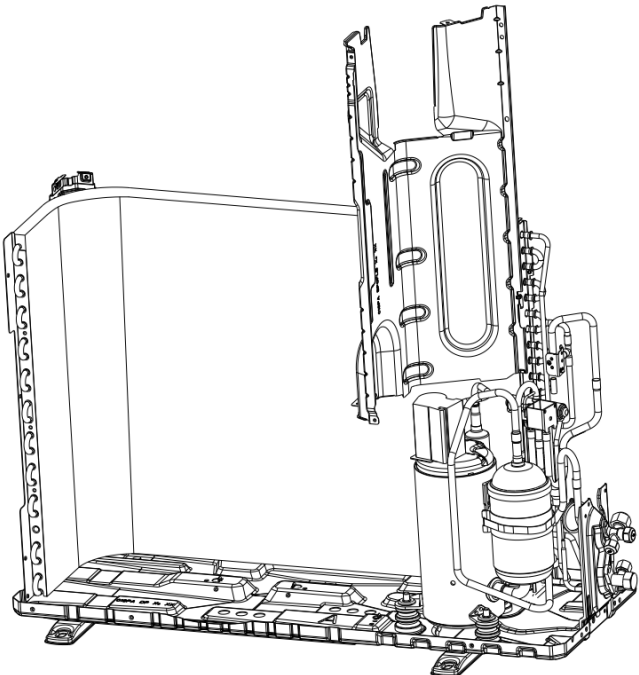
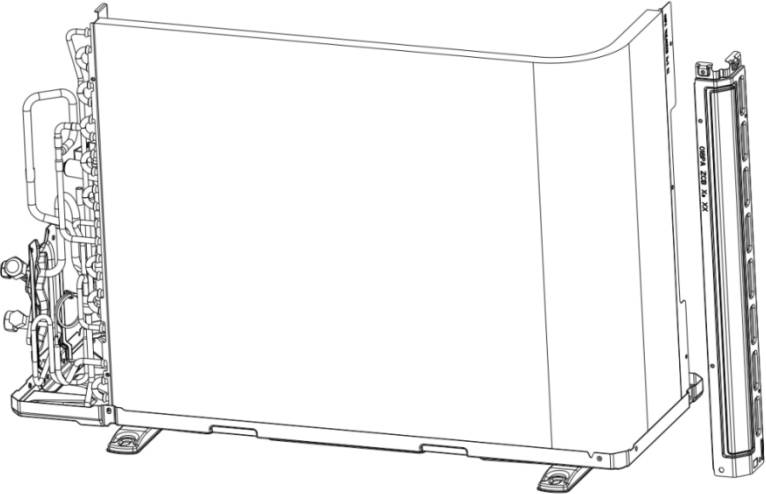
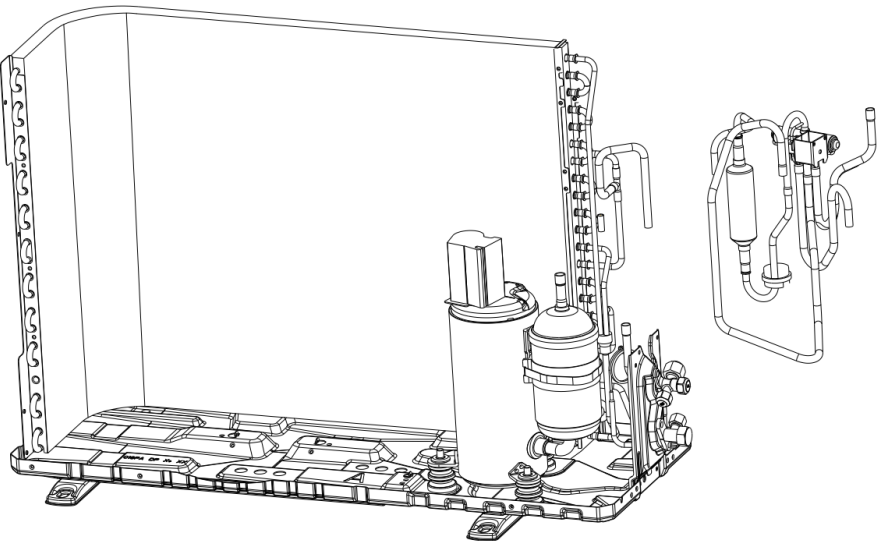
10	Remove the electrical box	
11	Remove the indoor evaporator	
12	Remove the Motor press plate、Fan motor and Cross flow fan	

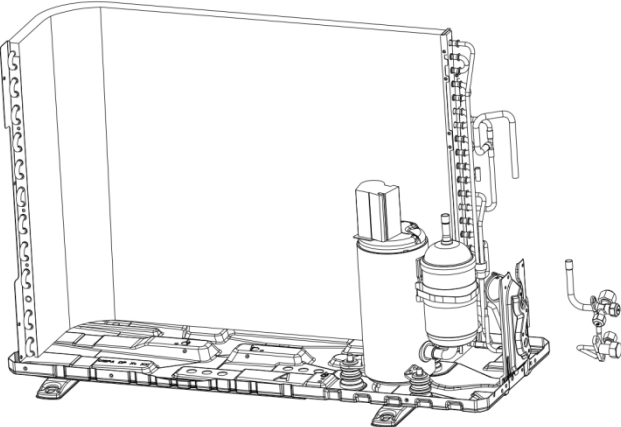
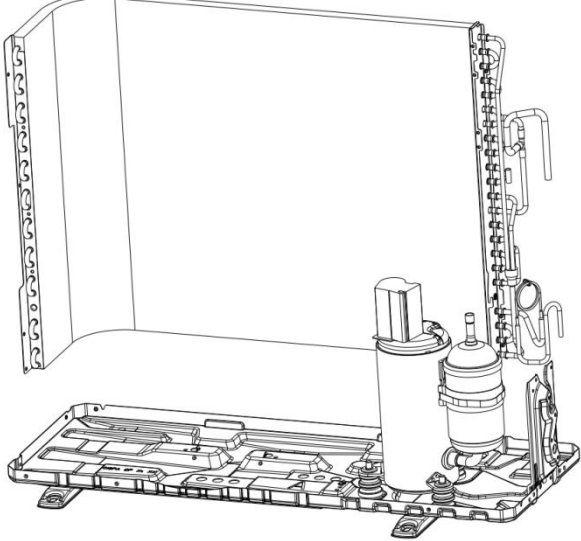
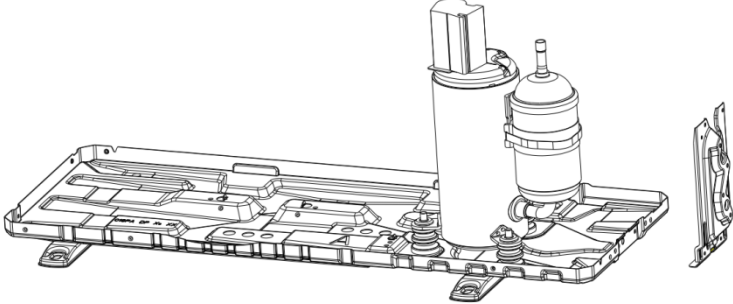
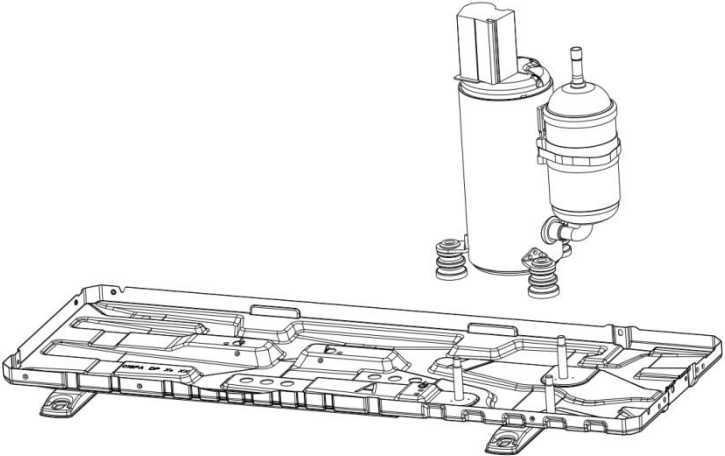
Outdoor Unit Removal

Steps	Procedure	Diagram
1	Remove E-part cover and stop valve cover	
2	Remove top cover	
3	Remove front panel and panel grille	

4	Remove right side panel	 A technical line drawing of an engine compartment. The right side panel is shown detached and positioned to the right of the main engine assembly. The panel has a rectangular shape with a handle and some internal components visible. The engine assembly, including the fan and various mechanical parts, remains in place within the housing.
5	Remove axial flow blade and outer motor	 A technical line drawing of the engine compartment, similar to the previous one. In this step, the axial flow blade and the outer motor assembly are shown detached and positioned to the left of the main engine assembly. The blade is a large, curved, three-bladed propeller. The outer motor is a cylindrical component. The internal components of the engine, including the main motor and various pipes, are still visible within the housing.

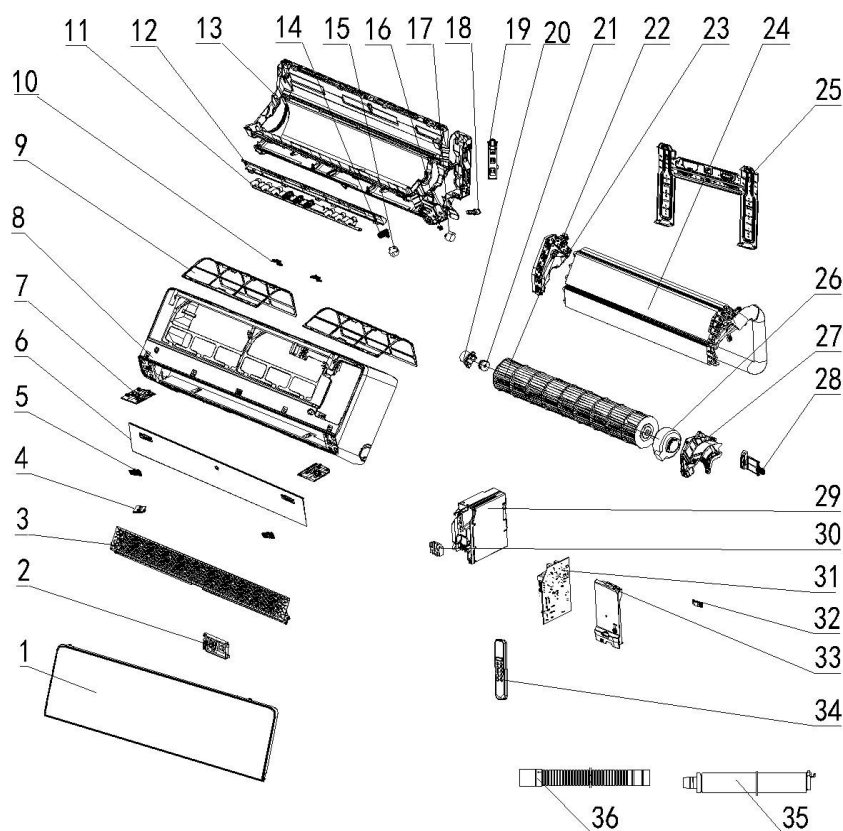
6	Remove electric box assembly	 This diagram illustrates the removal of the electric box assembly. The assembly, which includes a control panel with various switches and a terminal block, is shown being lifted away from the chassis. The chassis itself features a large cylindrical component, likely a motor or pump, and various associated hoses and wiring. The electric box is positioned at the top of the chassis, and its removal is indicated by the upward arrow and the separate drawing of the assembly.
7	Remove motor support	 This diagram illustrates the removal of the motor support structure. The support structure, which is a vertical frame that holds the motor in place, is shown being lifted away from the chassis. The chassis features a large cylindrical component, likely a motor or pump, and various associated hoses and wiring. The motor support structure is positioned in the center of the chassis, and its removal is indicated by the upward arrow and the separate drawing of the structure.

8	Remove partition board	 A line drawing of a mechanical unit with its top cover removed. A vertical partition board is shown being lifted away from the main body of the unit, which contains various internal components like pipes and a tank.
9	Remove left side support plate	 A line drawing of the same mechanical unit. The left side support plate is shown detached from the unit and is positioned to the right of the main body.
10	Remove pipeline assembly	 A line drawing of the mechanical unit with its internal components visible. A separate diagram to the right shows a detailed view of the pipeline assembly, including a tank, pipes, and valves, which is being removed from the unit.

11	Remove stop valve assembly	
12	Remove condenser	
13	Remove valve plate	
14	Remove compressor	

Part 11 Exploded Views and Parts List

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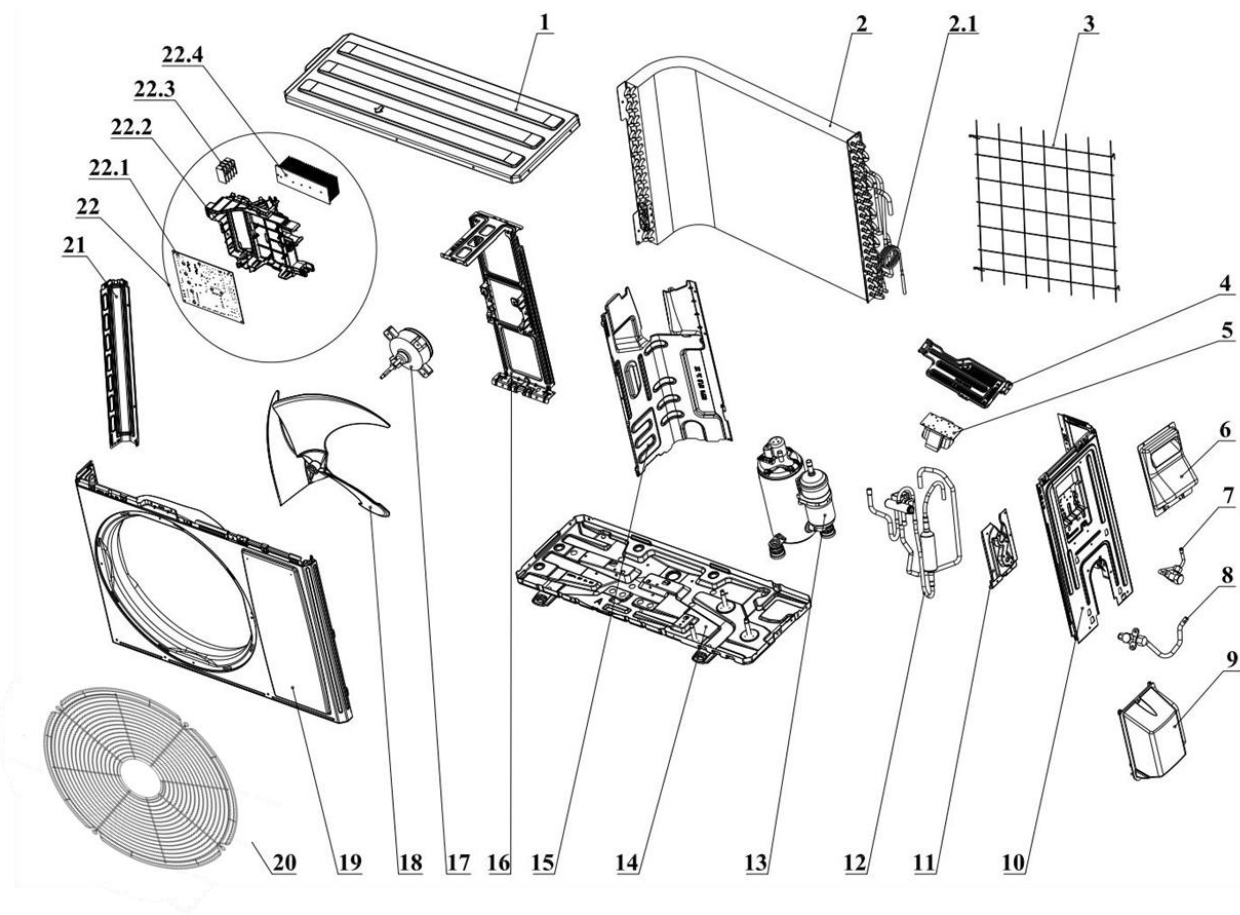


The component picture is only for reference please refer to the actual product.

No.	Description
1	FRONT PANEL
2	DISPLAY BOARD ASSY
3	HORIZONTAL VANE
4	SCREW CAP
5	SLIP BUCKLE OF DECORATIVE PLATE
6	DECORATIVE PLATE
7	CENTER FRAME TRIM BOARD
8	CENTER FRAME TRIM BOARD
9	FRONT PANEL ASSY
10	AIR FILTER
11	SLIP BUCKLE
12	LEFT-RIGHT SWING BLADE

No.	Description
13	BOTTOM FRAME ASSY
14	MAIN AIR BLADE
15	VANE MOTOR(VERTICAL)
16	VANE MOTOR SHAFT SLEEVE
17	VANE MOTOR(HORIZONTAL)
18	RUBBER PLUG
19	CHASSIS SUPPORT PLATE
20	BEARING FIXED CHASSIS
21	RING OF BEARING
22	CROSS FLOW FAN
23	EVAPORATOR SUPPORT
24	INDOOR HEAT EXCHANGER

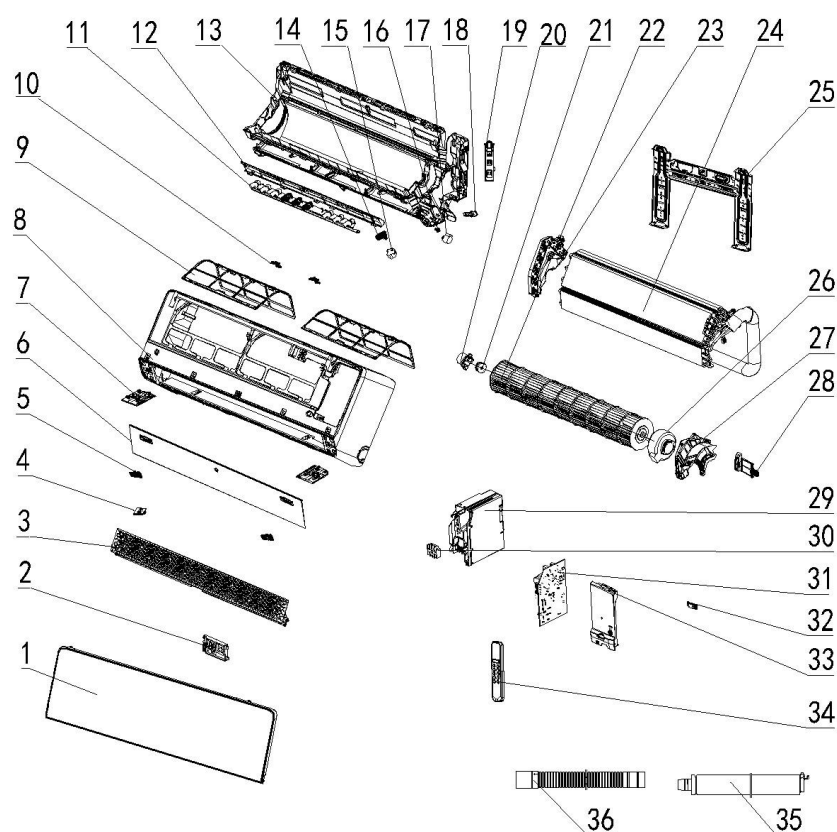
No.	Description
25	INSTALLATION PLATE
26	INDOOR FAN MOTOR
27	MOTOR PRESS PLATE
28	CONNECTING PIPE CLAMP
29	ELECTRICAL BOX
30	TERMINAL BOARD
31	MAIN BOARD
32	CABLE CLAMP
33	ELECTRIC BOX COVER
34	REMOTE CONTROLLER
35	DRAIN HOSE ASSY
36	DRAIN HOSE



The component picture is only for reference please refer to the actual product.

No.	Description
1	TOP PLATE ASSY
2	OUTDOOR HEAT EXCHANGER
2.1	CAPILLARY SUB-ASSY
3	PROTECTION NET
4	HOLDER
5	REACTOR
6	COVER OF PASS WIRE
7	LIQUID STOP VALVE
8	GAS STOP VALVE
9	STOP VALVE COVER
10	RIGHT SIDE PLATE
11	VALVE SUPPORT
12	4-WAY VALVE ASSY
13	COMPRESSOR AND FITTINGS

No.	Description
14	CHASSIS ASSY
15	CLAPBOARD
16	MOTOR SUPPORT
17	OUTDOOR FAN MOTOR
18	PROPELLER FAN
19	FRONT PANEL
20	FRONT PLATE GRILLE
21	LEFT SIDE PLATE
22	ELECTRIC BOX ASSY
22.1	MAIN BOARD
22.2	ELECTRICAL BOX
22.3	TERMINAL BOARD
22.4	RADIATOR

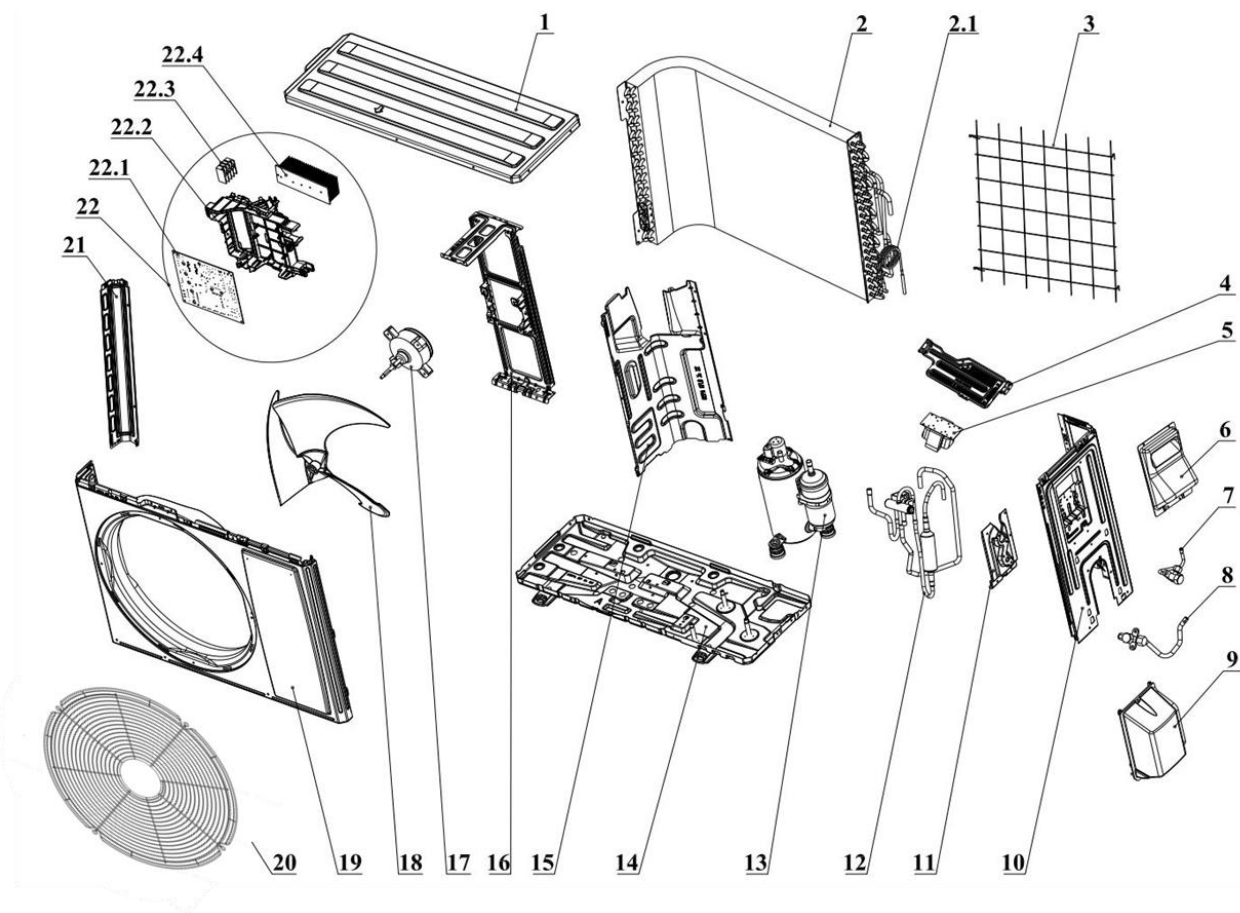


The component picture is only for reference please refer to the actual product.

No.	Description
1	FRONT PANEL
2	DISPLAY BOARD ASSY
3	HORIZONTAL VANE
4	SCREW CAP
5	SLIP BUCKLE OF DECORATIVE PLATE
6	DECORATIVE PLATE
7	CENTER FRAME TRIM BOARD
8	CENTER FRAME TRIM BOARD
9	FRONT PANEL ASSY
10	AIR FILTER
11	SLIP BUCKLE
12	LEFT-RIGHT SWING BLADE

No.	Description
13	BOTTOM FRAME ASSY
14	MAIN AIR BLADE
15	VANE MOTOR(VERTICAL)
16	VANE MOTOR SHAFT SLEEVE
17	VANE MOTOR(HORIZONTAL)
18	RUBBER PLUG
19	CHASSIS SUPPORT PLATE
20	BEARING FIXED CHASSIS
21	RING OF BEARING
22	CROSS FLOW FAN
23	EVAPORATOR SUPPORT
24	INDOOR HEAT EXCHANGER

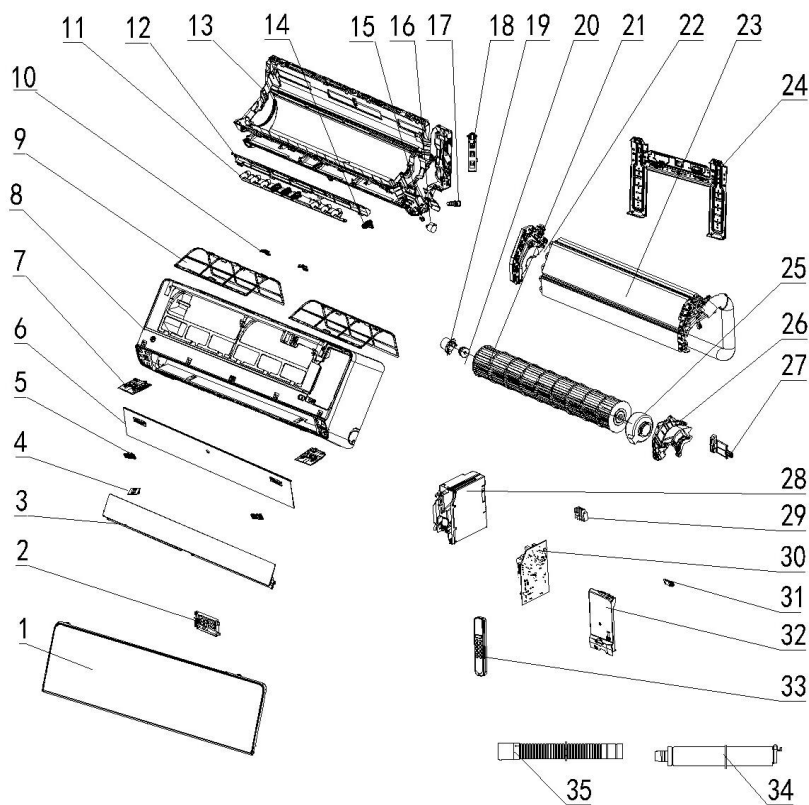
No.	Description
25	INSTALLATION PLATE
26	INDOOR FAN MOTOR
27	MOTOR PRESS PLATE
28	CONNECTING PIPE CLAMP
29	ELECTRICAL BOX
30	TERMINAL BOARD
31	MAIN BOARD
32	CABLE CLAMP
33	ELECTRIC BOX COVER
34	REMOTE CONTROLLER
35	DRAIN HOSE ASSY
36	DRAIN HOSE



The component picture is only for reference please refer to the actual product.

No.	Description
1	TOP PLATE ASSY
2	OUTDOOR HEAT EXCHANGER
2.1	CAPILLARY SUB-ASSY
3	PROTECTION NET
4	HOLDER
5	REACTOR
6	COVER OF PASS WIRE
7	LIQUID STOP VALVE
8	GAS STOP VALVE
9	STOP VALVE COVER
10	RIGHT SIDE PLATE
11	VALVE SUPPORT
12	4-WAY VALVE ASSY
13	COMPRESSOR AND FITTINGS

No.	Description
14	CHASSIS ASSY
15	CLAPBOARD
16	MOTOR SUPPORT
17	OUTDOOR FAN MOTOR
18	PROPELLER FAN
19	FRONT PANEL
20	FRONT PLATE GRILLE
21	LEFT SIDE PLATE
22	ELECTRIC BOX ASSY
22.1	MAIN BOARD
22.2	ELECTRICAL BOX
22.3	TERMINAL BOARD
22.4	RADIATOR

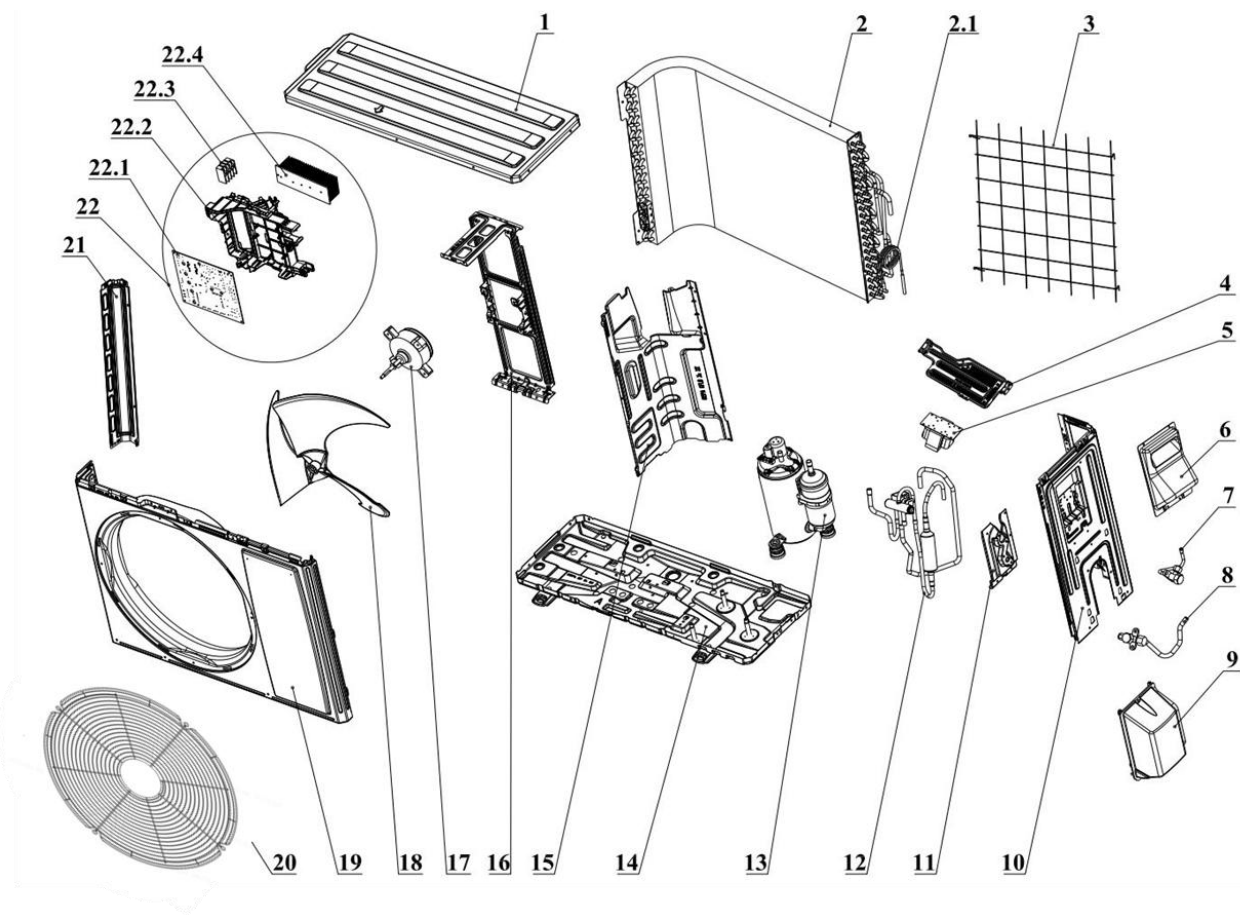


The component picture is only for reference please refer to the actual product.

No.	Description
1	FRONT PANEL
2	DISPLAY BOARD ASSY
3	HORIZONTAL VANE
4	SCREW CAP
5	SLIP BUCKLE OF DECORATIVE PLATE
6	DECORATIVE PLATE
7	CENTER FRAME TRIM BOARD
8	CENTER FRAME TRIM BOARD
9	FRONT PANEL ASSY
10	AIR FILTER
11	SLIP BUCKLE
12	SWING BLAND

No.	Description
13	BOTTOM FRAME ASSY
14	MAIN AIR BLADE
15	VANE MOTOR SHAFT SLEEVE
16	VANE MOTOR(HORIZONTAL)
17	RUBBER PLUG
18	CHASSIS SUPPORT PLATE
19	BEARING FIXED CHASSIS
20	RING OF BEARING
21	CROSS FLOW FAN
22	EVAPORATOR SUPPORT
23	INDOOR HEAT EXCHANGER
24	INSTALLATION PLATE

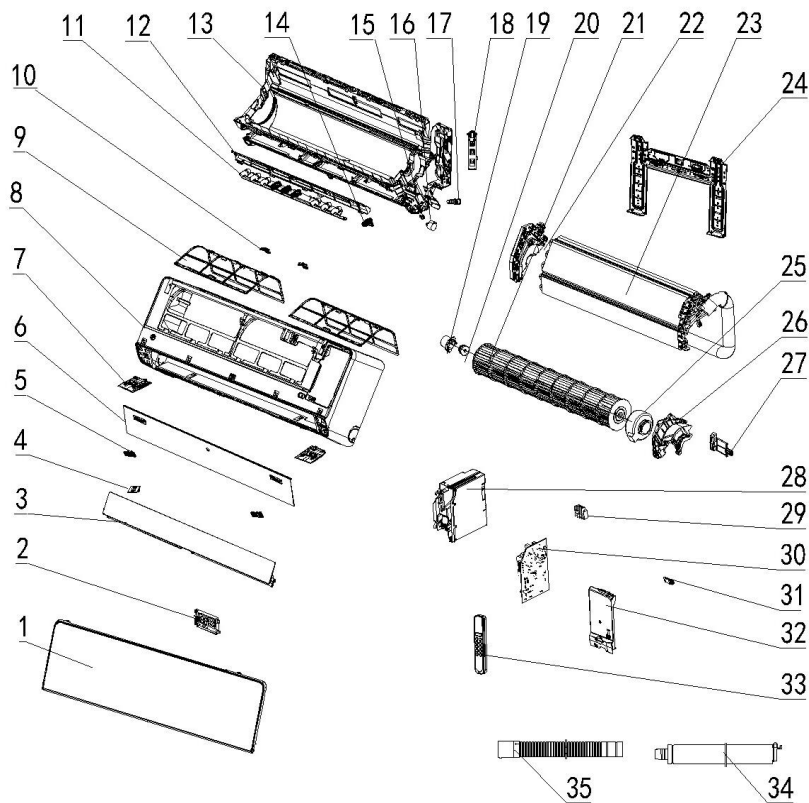
No.	Description
25	INDOOR FAN MOTOR
26	MOTOR PRESS PLATE
27	CONNECTING PIPE CLAMP
28	ELECTRICAL BOX
29	TERMINAL BOARD
30	MAIN BOARD
31	CABLE CLAMP
32	ELECTRIC BOX COVER
33	REMOTE CONTROLLER
34	DRAIN HOSE ASSY
35	DRAIN HOSE



The component picture is only for reference please refer to the actual product.

No.	Description
1	TOP PLATE ASSY
2	OUTDOOR HEAT EXCHANGER
2.1	CAPILLARY SUB-ASSY
3	PROTECTION NET
4	HOLDER
5	REACTOR
6	COVER OF PASS WIRE
7	LIQUID STOP VALVE
8	GAS STOP VALVE
9	STOP VALVE COVER
10	RIGHT SIDE PLATE
11	VALVE SUPPORT
12	4-WAY VALVE ASSY
13	COMPRESSOR AND FITTINGS

No.	Description
14	CHASSIS ASSY
15	CLAPBOARD
16	MOTOR SUPPORT
17	OUTDOOR FAN MOTOR
18	PROPELLER FAN
19	FRONT PANEL
20	FRONT PLATE GRILLE
21	LEFT SIDE PLATE
22	ELECTRIC BOX ASSY
22.1	MAIN BOARD
22.2	ELECTRICAL BOX
22.3	TERMINAL BOARD
22.4	RADIATOR

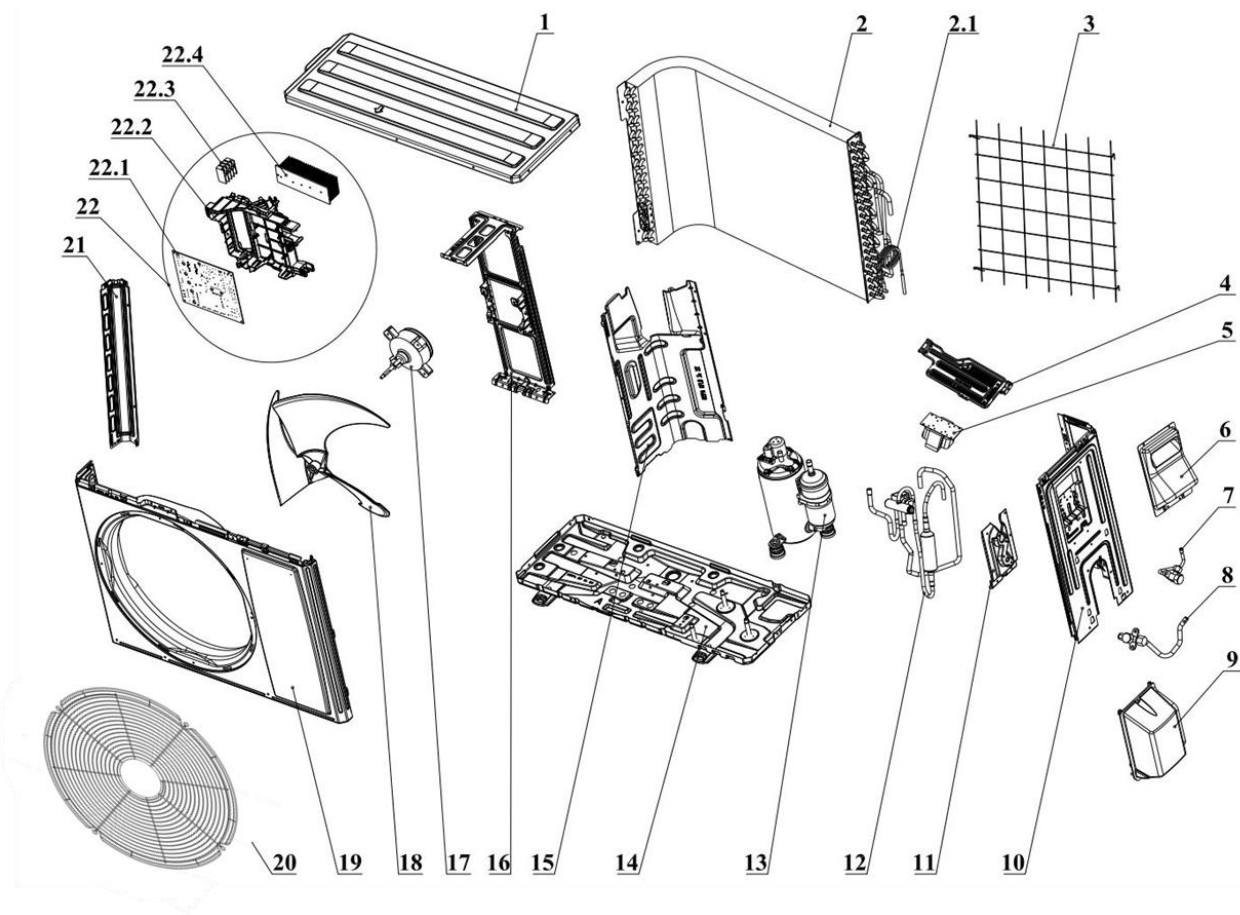


The component picture is only for reference please refer to the actual product.

No.	Description
1	FRONT PANEL
2	DISPLAY BOARD ASSY
3	HORIZONTAL VANE
4	SCREW CAP
5	SLIP BUCKLE OF DECORATIVE PLATE
6	DECORATIVE PLATE
7	CENTER FRAME TRIM BOARD
8	CENTER FRAME TRIM BOARD
9	FRONT PANEL ASSY
10	AIR FILTER
11	SLIP BUCKLE
12	SWING BLAND

No.	Description
13	BOTTOM FRAME ASSY
14	MAIN AIR BLADE
15	VANE MOTOR SHAFT SLEEVE
16	VANE MOTOR(HORIZONTAL)
17	RUBBER PLUG
18	CHASSIS SUPPORT PLATE
19	BEARING FIXED CHASSIS
20	RING OF BEARING
21	CROSS FLOW FAN
22	EVAPORATOR SUPPORT
23	INDOOR HEAT EXCHANGER
24	INSTALLATION PLATE

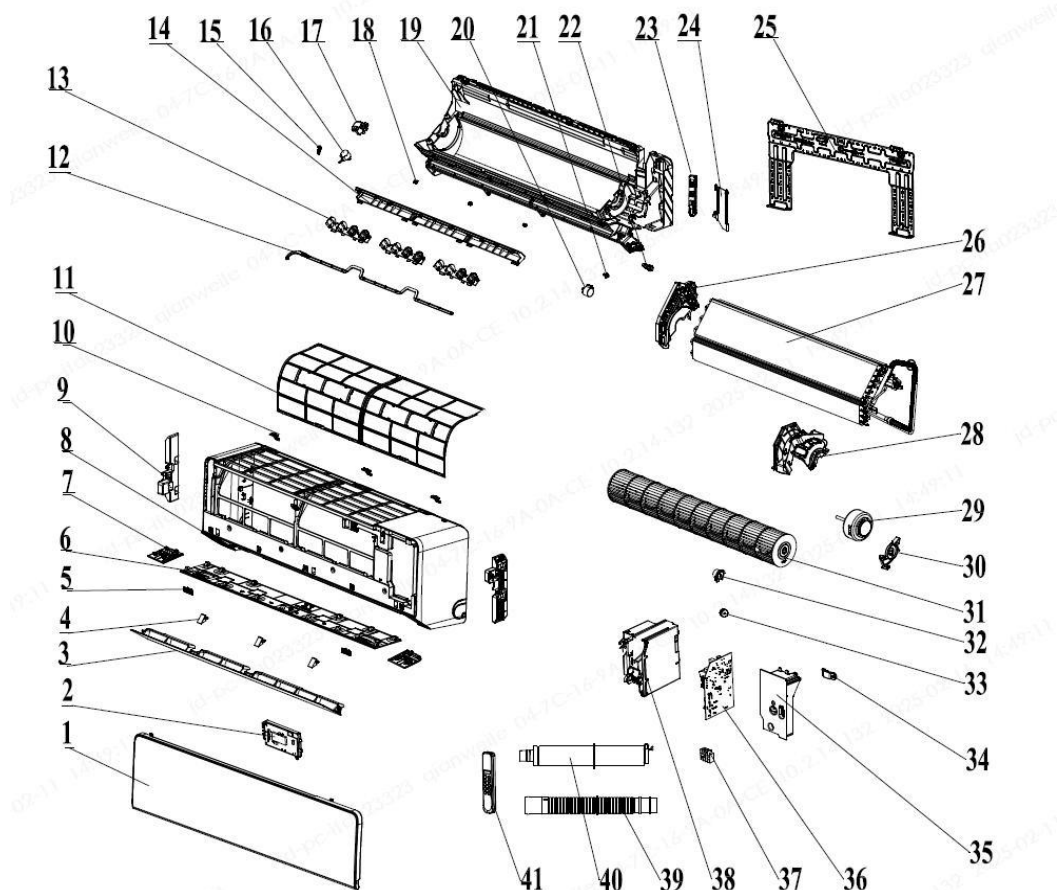
No.	Description
25	INDOOR FAN MOTOR
26	MOTOR PRESS PLATE
27	CONNECTING PIPE CLAMP
28	ELECTRICAL BOX
29	TERMINAL BOARD
30	MAIN BOARD
31	CABLE CLAMP
32	ELECTRIC BOX COVER
33	REMOTE CONTROLLER
34	DRAIN HOSE ASSY
35	DRAIN HOSE



The component picture is only for reference please refer to the actual product.

No.	Description
1	TOP PLATE ASSY
2	OUTDOOR HEAT EXCHANGER
2.1	CAPILLARY SUB-ASSY
3	PROTECTION NET
4	HOLDER
5	REACTOR
6	COVER OF PASS WIRE
7	LIQUID STOP VALVE
8	GAS STOP VALVE
9	STOP VALVE COVER
10	RIGHT SIDE PLATE
11	VALVE SUPPORT
12	4-WAY VALVE ASSY
13	COMPRESSOR AND FITTINGS

No.	Description
14	CHASSIS ASSY
15	CLAPBOARD
16	MOTOR SUPPORT
17	OUTDOOR FAN MOTOR
18	PROPELLER FAN
19	FRONT PANEL
20	FRONT PLATE GRILLE
21	LEFT SIDE PLATE
22	ELECTRIC BOX ASSY
22.1	MAIN BOARD
22.2	ELECTRICAL BOX
22.3	TERMINAL BOARD
22.4	RADIATOR

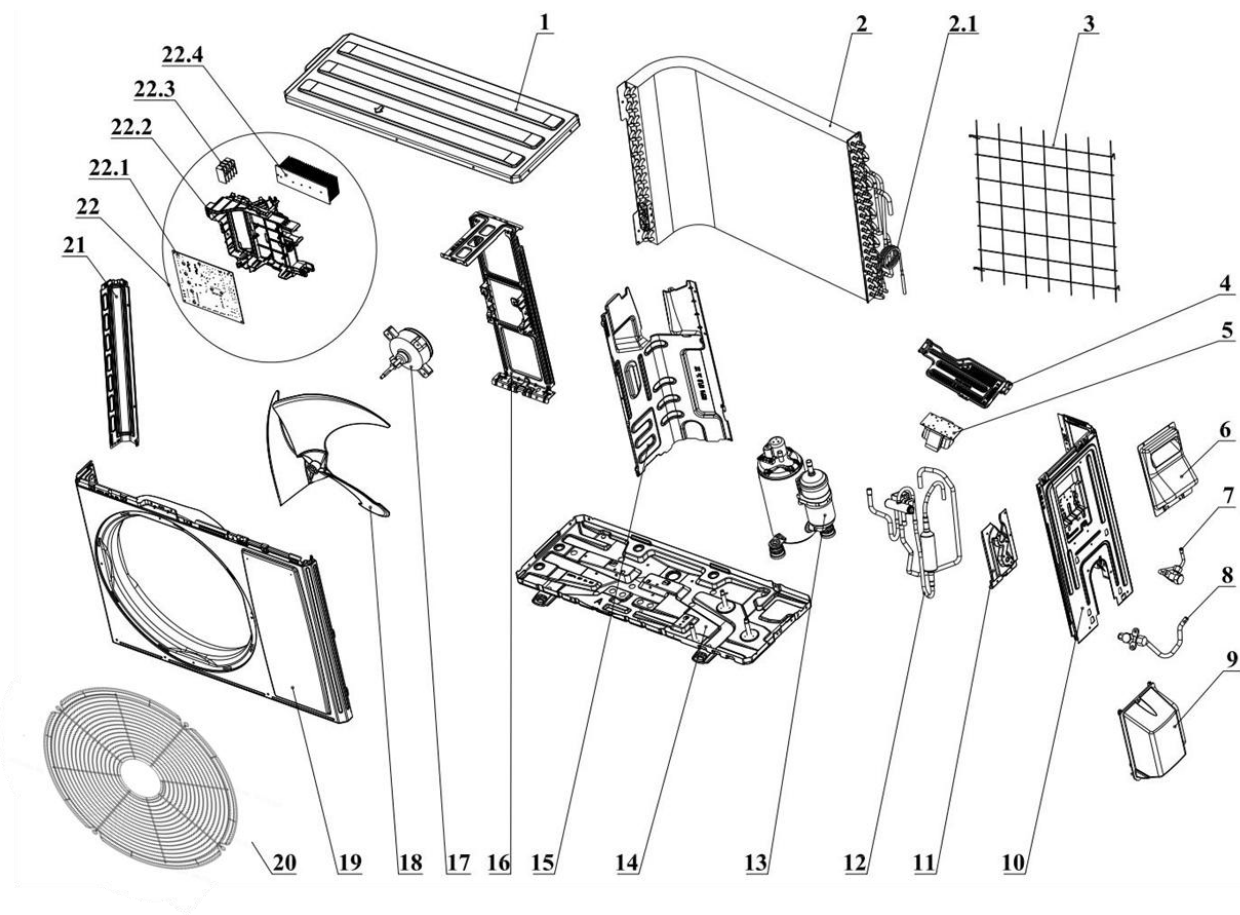


The component picture is only for reference please refer to the actual product.

No.	Description
1	FRONT PANEL
2	DISPLAY BOARD ASSY
3	HORIZONTAL VANE
4	SCREW CAP
5	SLIP BUCKLE OF DECORATIVE PLATE
6	DECORATIVE PLATE
7	FRONT PANEL ASSY
8	MEDIAL PLATE
9	SLIP BUCKLE
10	AIR FILTER
11	CONNECTING BAR
12	LEFT-RIGHT SWING BLADE
13	HELICOID TONGUE
14	CRANK

No.	Description
15	VANE MOTOR(VERTICAL)
16	VANE MOTOR BASE
17	RING OF BEARING
18	BOTTOM FRAME ASSY
19	VANE MOTOR(HORIZONTAL)
20	VANE MOTOR SHAFT SLEEVE
21	RUBBER PLUG
22	CONNECTING PIPE CLAMP
23	CHASSIS SUPPORT PLATE
24	INSTALLATION PLATE
25	EVAPORATOR SUPPORT
26	INDOOR HEAT EXCHANGER
27	MOTOR PRESS PLATE
28	INDOOR FAN MOTOR

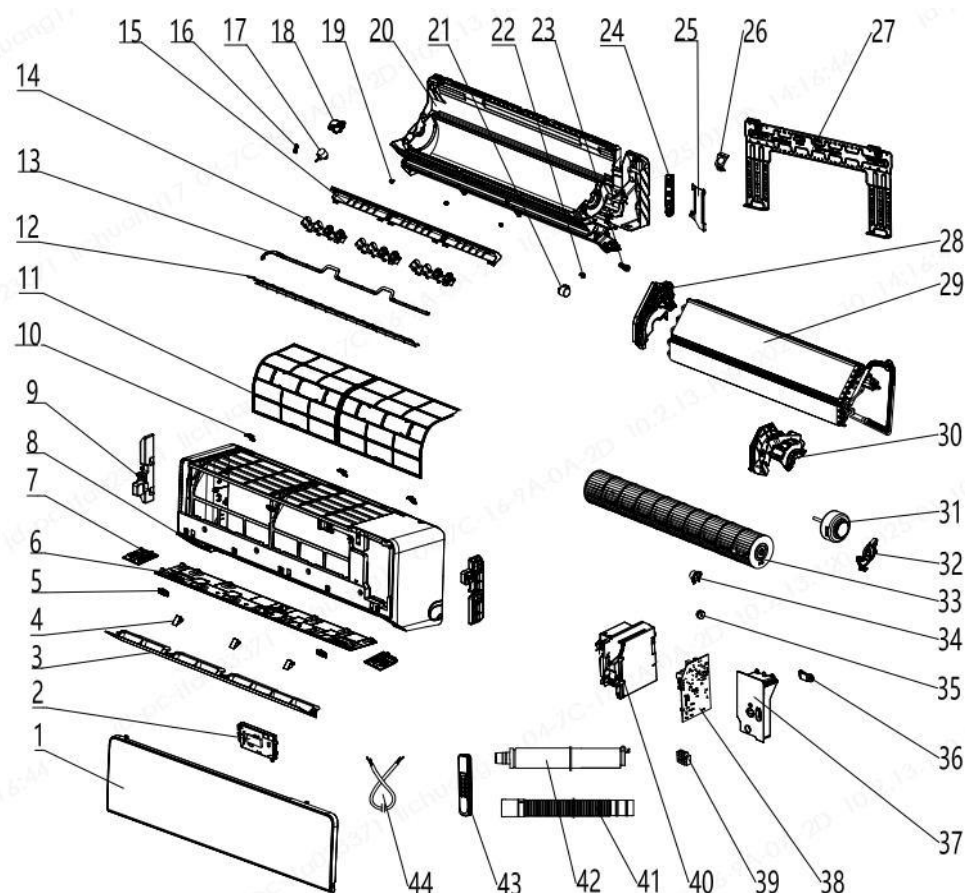
No.	Description
29	MOTOR BED
30	CROSS FLOW FAN
31	BEARING FIXED CHASSIS
32	RING OF BEARING
33	CABLE CLAMP
34	ELECTRIC BOX COVER
35	MAIN BOARD
36	TERMINAL BOARD
37	ELECTRICAL BOX
38	DRAIN HOSE
39	DRAIN HOSE ASSY
40	REMOTE CONTROLLER



The component picture is only for reference please refer to the actual product.

No.	Description
1	TOP PLATE ASSY
2	OUTDOOR HEAT EXCHANGER
2.1	CAPILLARY SUB-ASSY
3	PROTECTION NET
4	HOLDER
5	REACTOR
6	COVER OF PASS WIRE
7	LIQUID STOP VALVE
8	GAS STOP VALVE
9	STOP VALVE COVER
10	RIGHT SIDE PLATE
11	VALVE SUPPORT
12	4-WAY VALVE ASSY
13	COMPRESSOR AND FITTINGS

No.	Description
14	CHASSIS ASSY
15	CLAPBOARD
16	MOTOR SUPPORT
17	OUTDOOR FAN MOTOR
18	PROPELLER FAN
19	FRONT PANEL
20	FRONT PLATE GRILLE
21	LEFT SIDE PLATE
22	ELECTRIC BOX ASSY
22.1	MAIN BOARD
22.2	ELECTRICAL BOX
22.3	TERMINAL BOARD
22.4	RADIATOR

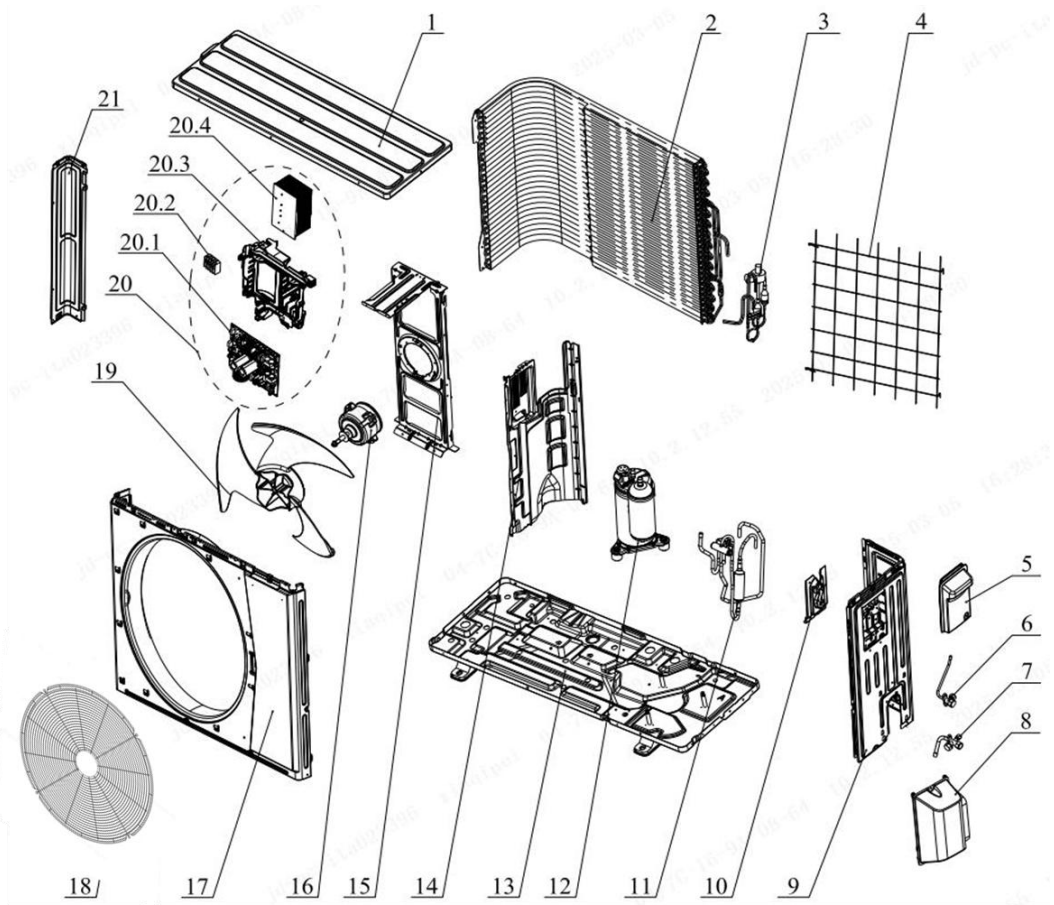


The component picture is only for reference please refer to the actual product.

No.	Description
1	FRONT PANEL
2	DISPLAY BOARD ASSY
3	HORIZONTAL VANE
4	SCREW CAP
5	SLIP BUCKLE OF DECORATIVE PLATE
6	DECORATIVE PLATE
7	CENTER FRAME TRIM BOARD
8	CENTER FRAME TRIM BOARD
9	FRONT PANEL ASSY
10	MEDIAL PLATE
11	SLIP BUCKLE
12	AIR FILTER
13	STEEL GRILLE
14	CONNECTING BAR
15	SWING BLAND

No.	Description
16	CRANK
17	VANE MOTOR(VERTICAL)
18	VANE MOTOR BASE
19	RING OF BEARING
20	BOTTOM FRAME ASSY
21	VANE MOTOR(HORIZONTAL)
22	VANE MOTOR SHAFT SLEEVE
23	RUBBER PLUG
24	CHASSIS SUPPORT PLATE
25	CONNECTING PIPE CLAMP
26	FIXED PLATE
27	INSTALLATION PLATE
28	EVAPORATOR SUPPORT
29	INDOOR HEAT EXCHANGER
30	MOTOR PRESS PLATE

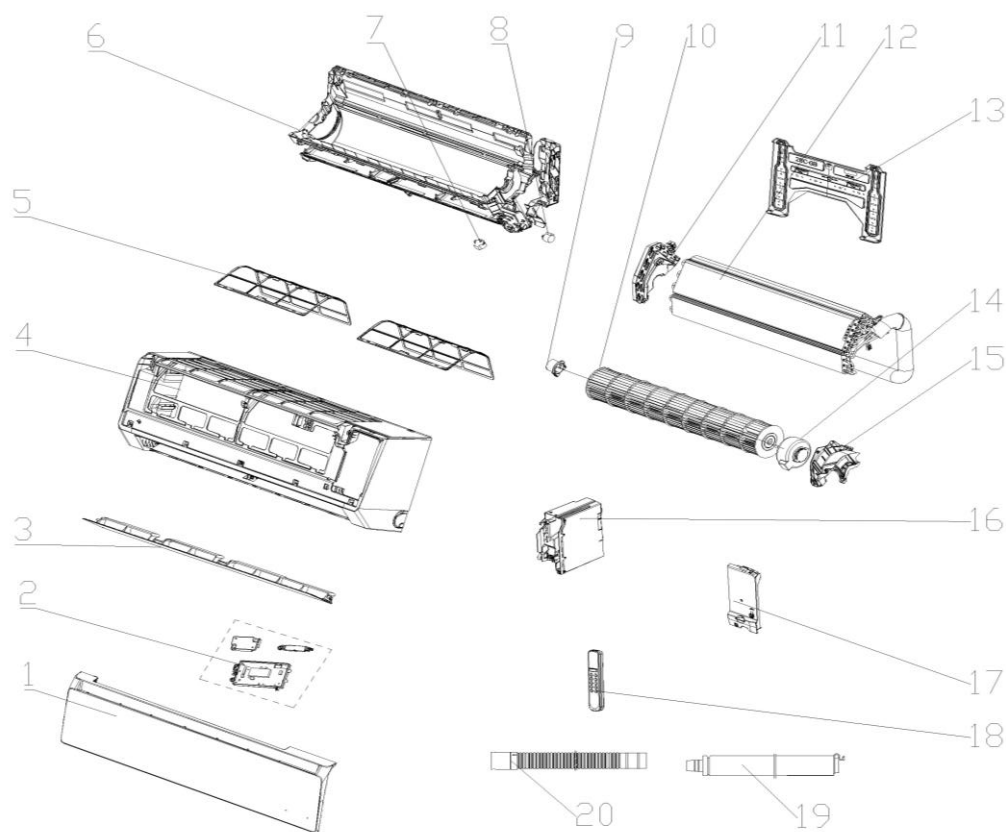
No.	Description
31	INDOOR FAN MOTOR
32	MOTOR BED
33	CROSS FLOW FAN
34	BEARING FIXED CHASSIS
35	RING OF BEARING
36	CABLE CLAMP
37	ELECTRIC BOX COVER
38	MAIN BOARD
39	TERMINAL BOARD
40	ELECTRICAL BOX
41	DRAIN HOSE
42	DRAIN HOSE ASSY
43	REMOTE CONTROLLER



The component picture is only for reference please refer to the actual product.

No.	Description
1	TOP PLATE ASSY
2	OUTDOOR HEAT EXCHANGER
3	CAPILLARY SUB-ASSY
4	PROTECTION NET
5	COVER OF PASS WIRE
6	LIQUID STOP VALVE
7	GAS STOP VALVE
8	STOP VALVE COVER
9	RIGHT SIDE PLATE
10	VALVE SUPPORT
11	Four-way valve pipeline assembly
12	COMPRESSOR AND FITTINGS
13	CHASSIS ASSY

No.	Description
14	CLAPBOARD
15	MOTOR SUPPORT
16	OUTDOOR FAN MOTOR
17	FRONT PANEL
18	FRONT PLATE GRILLE
19	PROPELLER FAN
20	ELECTRIC BOX ASSY
20.1	MAIN BOARD
20.2	TERMINAL BOARD
20.3	ELECTRICAL BOX
20.4	RADIATOR
21	LEFT SIDE PLATE

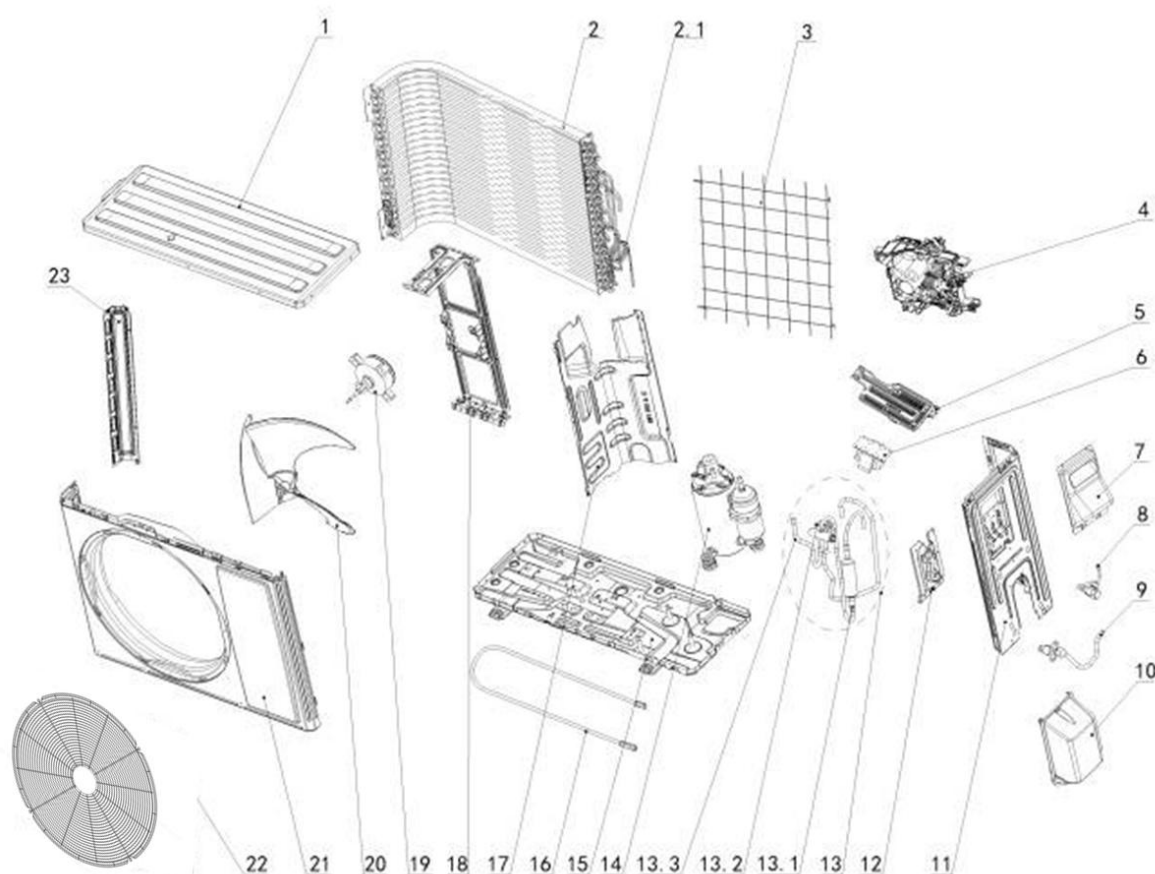


The component picture is only for reference please refer to the actual product.

No.	Description
1	FRONT PANEL
2	DISPLAY BOARD ASSY
3	HORIZONTAL VANE
4	MIDDLE FRAME ASSY
5	AIR FILTER
6	BOTTOM FRAME ASSY
7	VANE MOTOR(VERTICAL)

No.	Description
8	VANE MOTOR(HORIZONTAL)
9	BEARING ASSY
10	CROSS FLOW FAN
11	EVAPORATOR SUPPORT
12	INDOOR HEAT EXCHANGER
13	INSTALLATION PLATE
14	INDOOR FAN MOTOR

No.	Description
15	MOTOR BEARING COVER
16	MAIN CONTROL BOARD
17	ELECTRIC BOX COVER
18	REMOTE CONTROLLER
19	DRAIN HOSE ASSY WITH INSULATION
20	DRAIN HOSE



The component picture is only for reference please refer to the actual product.

No.	Description
1	TOP PLATE ASSY
2	OUTDOOR CONDENSER
3	BACK PANEL WIRE MESH COVER
4	MAIN CONTROL BOARD
5	REACTOR COVER PLATE
6	REACTOR
7	ELECTRICAL COVER PLATE
8	HIGH PRESSURE STOP VALVE
9	LOW PRESSURE STOP VALVE
10	VALVE PROTECTION
11	RIGHT SIDE PLATE
12	VALVE PLATE
13	FOUR WAY VALVE ASSY

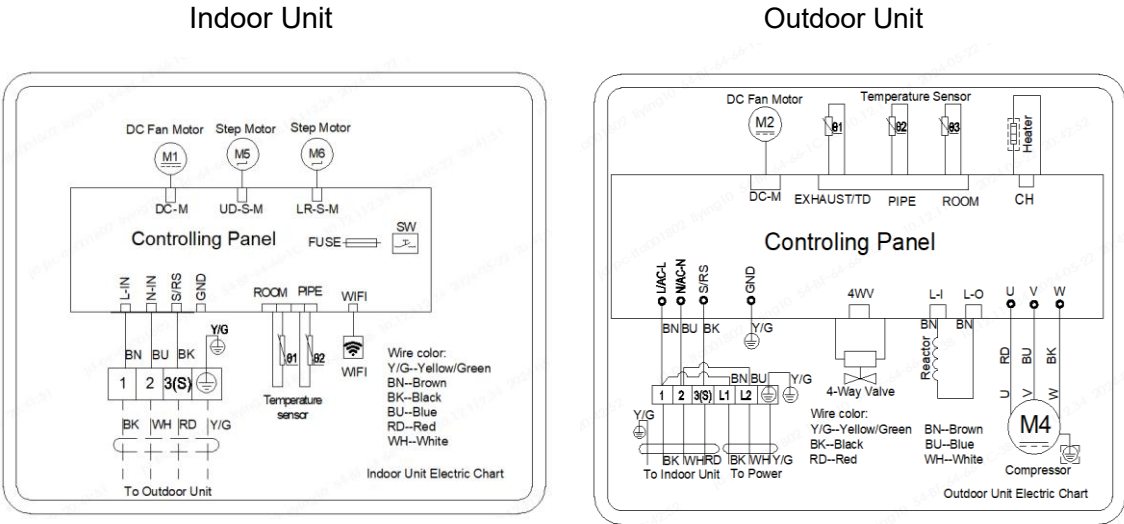
No.	Description
13.1	SILENCER
13.2	FOUR WAY VALVE
13.3	EXPANSION VALVE
14	COMPRESSOR
15	CHASSIS ASSY
16	DEFROST HEATER
17	AIR BAFFLE
18	MOTOR SUPPORT
19	OUTDOOR FAN MOTOR
20	AXIAL FLOW FAN BLADE
21	FRONT PLATE
22	FRONT PLATE GRILLE
23	LEFT SIDE PLATE

Part 12 Appendix

Wiring Diagrams

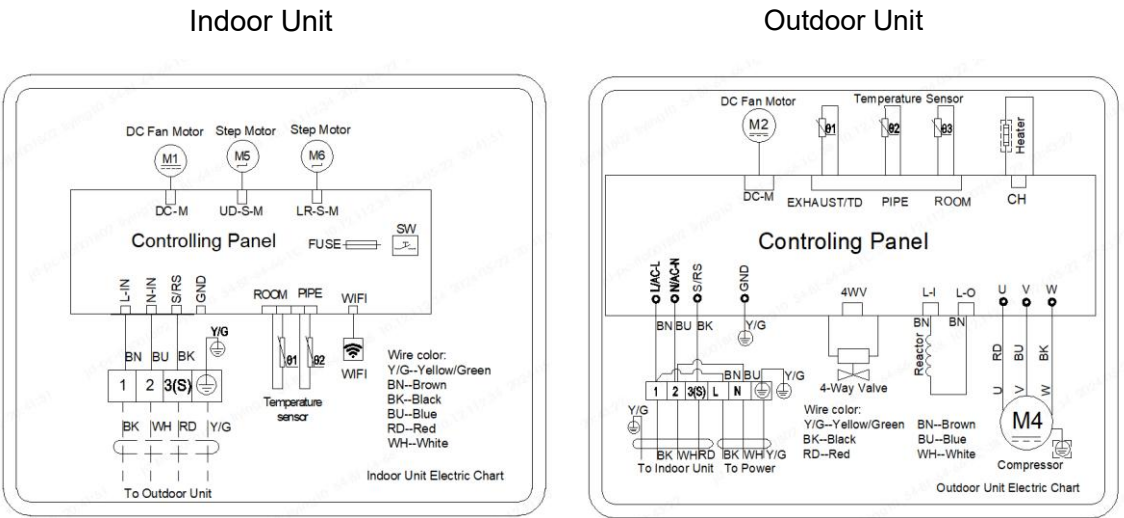
208/230V,1ph,60Hz

GRC09HW23STG1、GRC12HW23STG1、GRC18HW23STG1、GRC24HW23STG1、GRC36HW23STG1



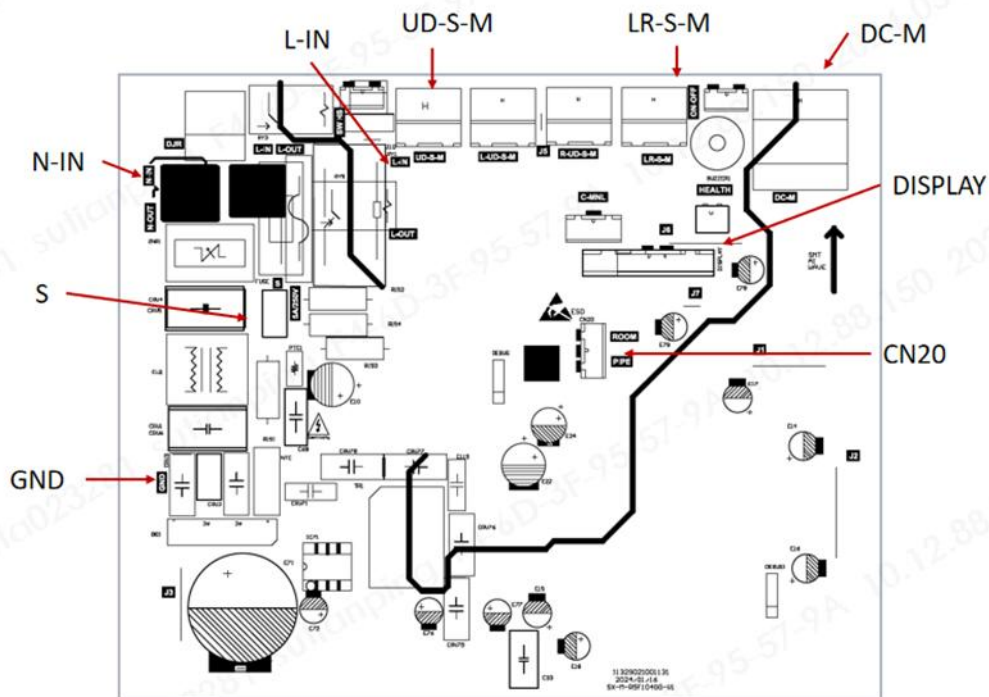
115V,1ph,60Hz

GRD09HW15STG1、GRC12HW23STG1

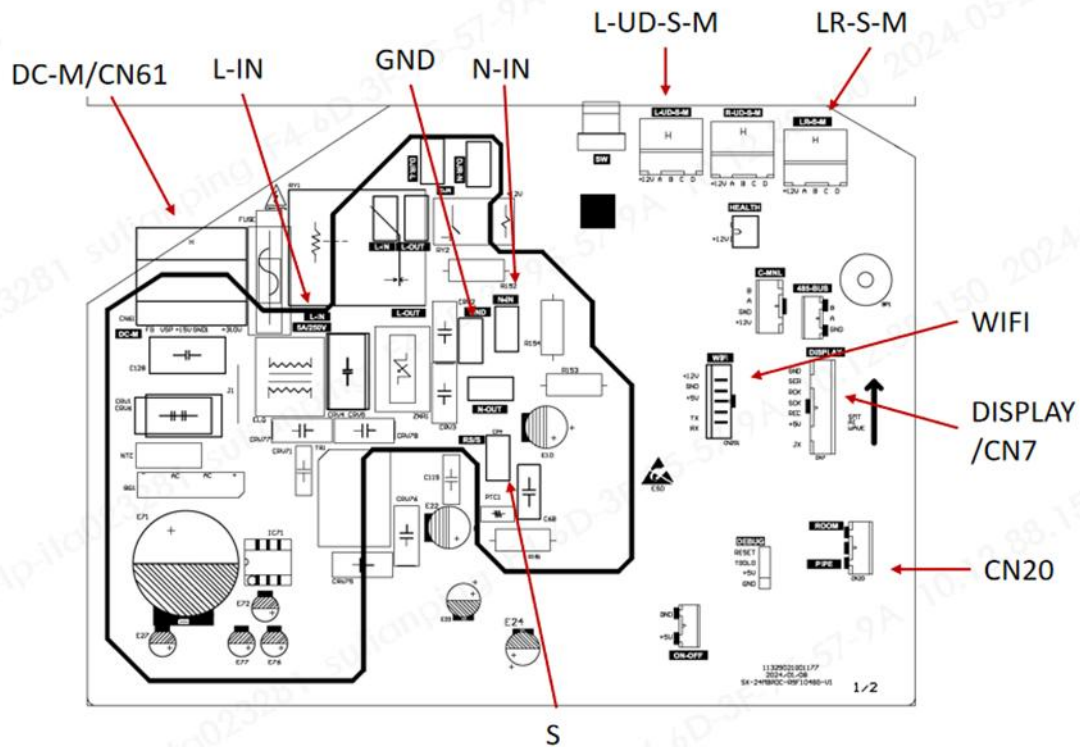


Printed Circuit Board Connector Wiring Diagram

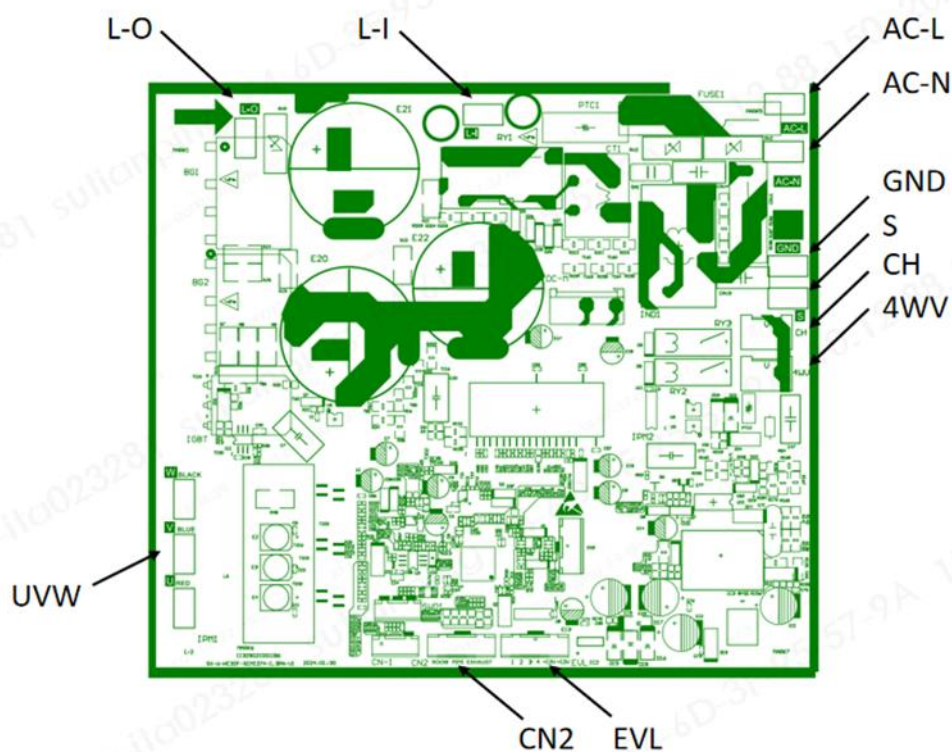
9-12k IDU



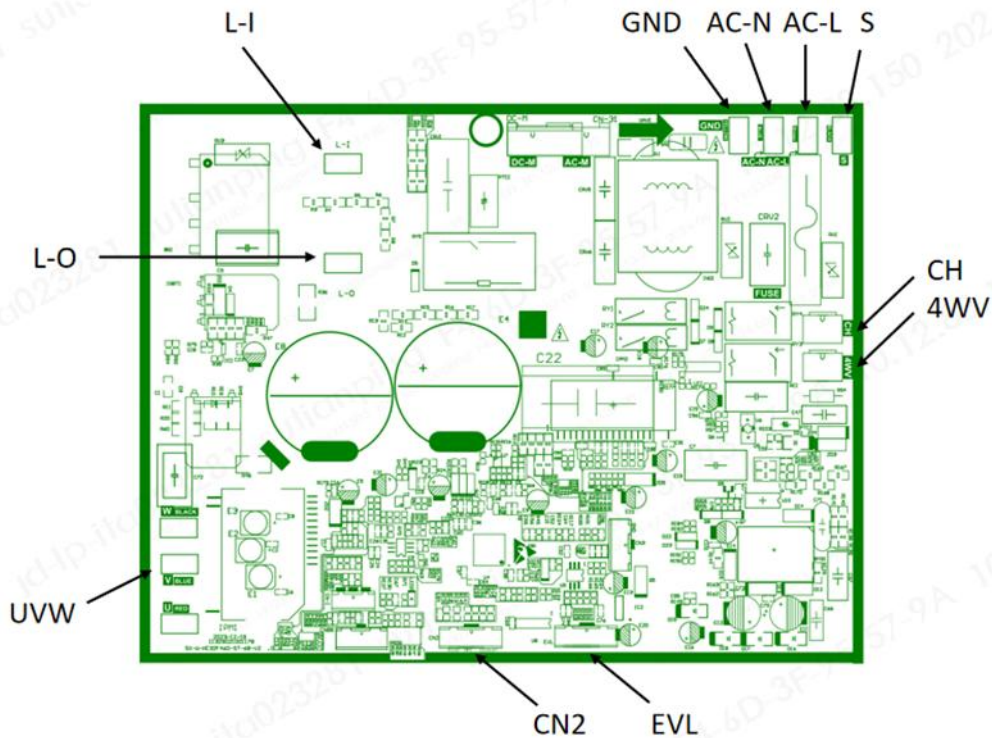
1. L-IN Connect the main control board to the live wire of terminal board
2. N-IN Connect the main control board to the null wire of terminal board
3. GND Connect the main control board to the ground wire of terminal board
4. S Connect the main control board to the signal wire of terminal board
5. CN20 Connect the temperature sensor wire
6. UD-S-M Connect the upper and lower oscillating wind stepper motors
7. LR-S-M Connect the left and right swing stepper motors
8. DISPLAY Connect the Display Light Board and WIFI
9. DC-M Connect the fan motor of indoor unit



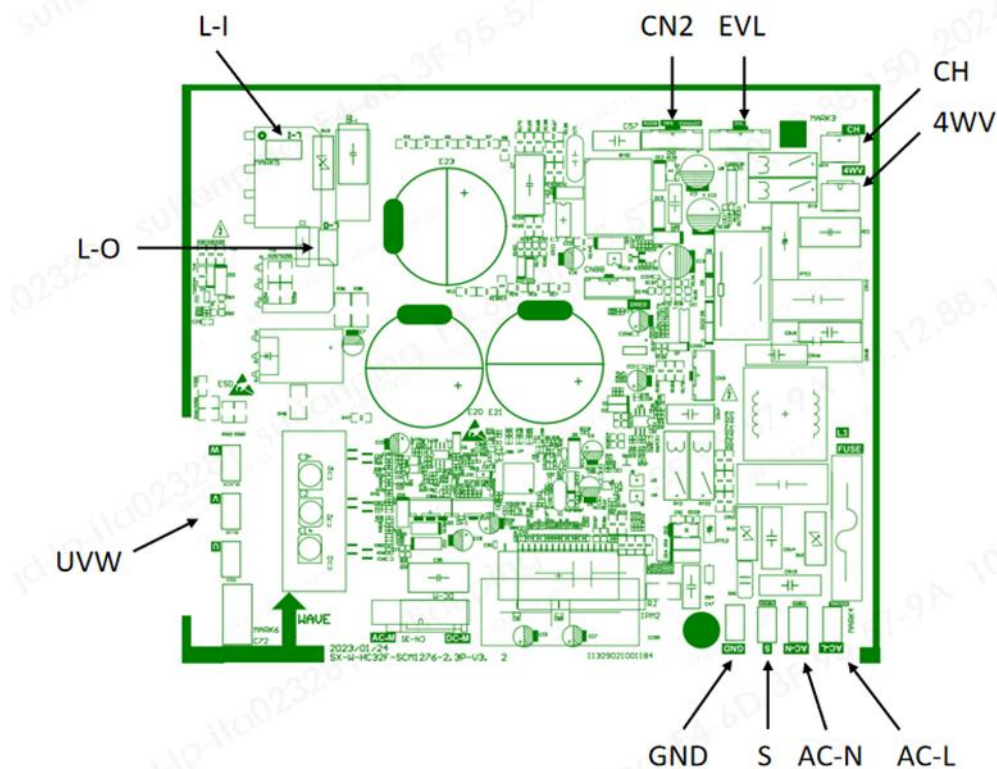
1. L-IN Connect the main control board to the live wire of terminal board
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3. GND Connect the main control board to the ground wire of terminal board
4. S Connect the main control board to the signal wire of terminal board
5. CN20 Connect the temperature sensor wire
6. UD-S-M Connect the upper and lower oscillating wind stepper motors
7. LR-S-M Connect the left and right swing stepper motors
8. DISPLAY Connect the Display Light Board and WIFI
9. DC-M Connect the fan motor of indoor unit



1. AC-L Connect the main control board to the live wire of terminal board
2. AC-N Connect the main control board to the null wire of terminal board
3. GND Connect the main control board to the ground wire of terminal board
4. S Connect the main control board to the signal wire of terminal board
5. CH Connect the chassis electric heating with loads
6. 4WV Connect the load of 4-way valve
7. EVL Connect the expansion valve load
8. CN2 Connect temperature sensor
9. UVW Connect the compressor load
10. L-O Connect Reactor
11. L-I Connect Reactor



1. AC-L Connect the main control board to the live wire of terminal board
2. AC-N Connect the main control board to the null wire of terminal board
3. GND Connect the main control board to the ground wire of terminal board
4. S Connect the main control board to the signal wire of terminal board
5. CH Connect the chassis electric heating with loads
6. 4WV Connect the load of 4-way valve
7. EVL Connect the expansion valve load
8. CN2 Connect temperature sensor
9. UVW Connect the compressor load
10. L-O Connect Reactor
11. L-I Connect Reactor



1. AC-L Connect the main control board to the live wire of terminal board
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5. CH Connect the chassis electric heating with loads
6. 4WV Connect the load of 4-way valve
7. EVL Connect the expansion valve load
8. CN2 Connect temperature sensor
9. UVW Connect the compressor load
10. L-O Connect Reactor
11. L-I Connect Reactor

Common Sensor R-T Analysis Table

Thermistor				R (77°F (25°C)) or (77°F)	
Indoor Unit		Room temperature thermistor			15kΩ
		Indoor heat exchanger thermistor			20kΩ
Outdoor Unit		Outdoor temperature thermistor			15kΩ
		Outdoor heat exchanger thermistor			20kΩ
		Discharge pipe thermistor			50kΩ
Thermistor temperature		Resistance(kΩ)			
°C	°F	thermistor type(15kΩ)	thermistor type(20kΩ)	thermistor type(50kΩ)	
-20	-4	147.7	192.0	486.2	
-15	5	110.7	144.9	364.8	
-10	14	83.74	110.3	276.5	
-5	23	63.95	84.6	211.5	
0	32	49.25	65.37	163.1	
5	41	38.25	50.88	126.9	
10	50	29.94	39.88	99.47	
15	59	23.61	31.47	78.55	
20	68	18.75	25.01	62.47	
25	77	15.00	20.00	50.00	
30	86	12.08	16.10	40.27	
35	95	9.78	13.04	32.63	
40	104	7.97	10.62	26.59	
45	113	6.53	8.70	21.78	
50	122	5.38	7.17	17.93	
55	131	4.45	5.94	14.83	
60	140	3.71	4.94	12.33	
65	149	3.1	4.14	10.29	
70	158	2.6	3.48	8.62	
75	167	2.2	2.94	7.26	
80	176	1.86	2.49	6.13	
85	185	1.59	2.12	5.20	
90	194	1.36	1.81	4.42	

Added or Reduced refrigerant

Length of connection pipe	Added or reduced refrigerant		Amount of refrigerant for the unit
< 9.8 ft (3 m)	CC ≤ 12,000 Btu	Reduce 0.705oz/ft	≤ 2.20 lb
	CC ≥ 18,000 Btu	Reduce 1.411 oz/ft	≤ 4.44 lb
9.8 - 16.4 ft (3 - 5 m)	Not needed		
16.4 - 49.2 ft (5 - 15 m)	CC ≤ 12,000 Btu	Add 0.564 oz/ft	≤ 2.20 lb
	CC ≥ 18,000 Btu	Add 0.847oz/ft	≤ 4.44 lb