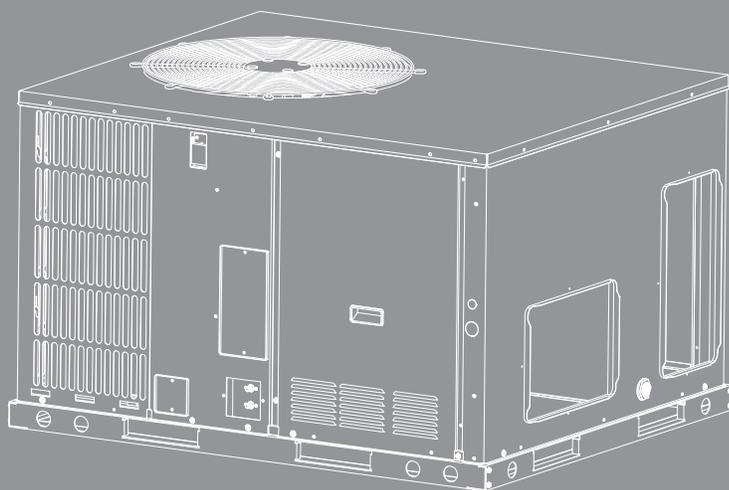


TECHNICAL & SERVICE MANUAL V 1.0

— INVERTER PACKAGED HEAT PUMP R32

Models

EPKH03625HA-18



Safety precautions

1. This air conditioner uses new refrigerant HFC (R32).
2. Since the max. working pressure is 580 psig (4.0MPa), some of the piping and installation and service tools are special.
3. This air conditioner uses power supply: 208/230V ~, 60Hz.
4. Be sure that servicing equipment and replacement components are applicable for R32 refrigerant.
5. Do not discharge R32 refrigerant into the air, and when recover it, the cylinder service pressure rating must be over 580 psig. R32 refrigerant systems should be charged with liquid refrigerant and the service pressure rating of the hoses used must be over 750 psig.
6. Leak detectors should be designed to detect HFC refrigerant.
7. R32 refrigerant is only compatible with POE oils, which could absorb moisture rapidly, so do not expose it to the air, in case that it damages certain plastics materials.
8. Replace all the filter driers after maintenance.

Please read these SAFETY PRECAUTIONS carefully to ensure correct installation.

- Be sure to use a dedicated power circuit, and do not put other loads on the power supply.
- Be sure to read these SAFETY PRECAUTIONS carefully before installation.
- Be sure to comply with SAFETY PRECAUTIONS of installation manual, because it contains important safety issues. Definitions for identifying hazard levels are provide below with their respective safety symbols.

 **DANGER** : The symbol refers to a hazard which can result in severe personal injury or death.

 **WARNING** : The symbol refers to a hazard or an unsafe practice which may result in severe personal injury or death.

 **CAUTION** : The symbol refers to a hazard or an unsafe practice which may result in personal injury, product or property damage.

NOTE : It refers to the remarks and instruction to the operation, maintenance, and service.



- Installation should be performed by a qualified personnel.
Improper installation may cause water leakage, electrical shock or fire.
- Install the air conditioner on a solid base that can support the unit weight.
An inadequate base or incomplete installation may cause injury if the unit falls off the base.
- Use the specified type of wire for electrical connections safely.
And firmly clamp the interconnecting wires so their terminals receive no external stresses.
- For wiring, use a cable long enough to cover the entire distance with no connection.
And do not connect multiple devices to the same AC power supply.
Otherwise, it may be due to bad contact, poor insulation, exceed the allowable current and cause a fire or electric shock.
- After all installation is completed, check to make sure that no refrigerant is leaking out.
If the refrigerant gas leakage to the interior, and the heater, stove flame touching it, will generate harmful substances.
- Perform the installation securely referring to the installation manual.
Incomplete installation could cause a personal injury due to fire, electric shock, the unit falling or leakage of water.
- In accordance with the installation instructions for electrical work, please be sure to use a dedicated line.
- If the power supply circuit capacity or electrical work is not in place, may cause a fire or electric shock.
- Attach the electrical cover and the service panel to the unit securely.
- If the electrical covers or the service panel of the unit are not attached securely, it could result in a fire or an electric shock due to dust water, etc.
- Please be sure to cut off the main power supply before the installation of electronic PCB or wiring.
Otherwise, it will cause electric shock.

Safety precautions

- The device should be in accordance with the state provisions for installation wiring.
- The outdoor machine installation location should pay attention to the protection, avoid people or other small animals contact with electrical components, please keep the unit of the surrounding environment clean and tidy.
- When installing or relocating the unit, make sure that no substance other than the specified refrigerant (R32) enters the refrigerant circuit.
Any presence of foreign substance such as air can cause abnormal pressure rise or an explosion.



- Perform grounding
Does not connect the earth wire to a gas pipe, water pipe, lightning rod or telephone earth wire. Defective grounding could cause an electric shock.
- Do not install the unit in a place where an inflammable gas leaks.
If gas leaks and accumulates in the area surrounding the unit, it could cause an explosion.
- Fasten a flare nut with a torque wrench as specified in this manual.
When fastened too tight, a flare nut may break after a long period and cause a leakage of refrigerant.
- Install an earth leakage breaker depending on the installation place (where it is humid).
If an earth leakage breaker is not installed, it could cause an electric shock.
- Perform the drainage/piping work securely according to the installation manual.
- If there is a defect in the drainage/piping work, water could drop from the unit and household goods could be wet and damaged.

Safety instructions

- Do not let air enter the refrigeration system or discharge refrigerant when moving the air conditioner.
- 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.
- 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.
- The appliance shall be installed in accordance with national wiring regulations.
- Servicing shall only be performed as recommended by the equipment manufacturer.
- Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
- Means for disconnection, such as circuit breaker, which can provide full disconnection in all poles, must be incorporated in the fixed wiring in accordance with the wiring rules.
It is necessary to allow the disconnection of the appliance from the supply after installation. Make sure the disconnection of the appliance from the supply when service and maintenance, a disconnection with a locking system in the isolated position shall be provided.
- The method of connection of the appliance to the electrical supply and interconnection of separate components, and the wiring diagram with a clear indication of the connections and wiring to external control devices and supply cord are detailed in below parts.
- Details of type and rating of circuit breakers / ELB is detailed in below parts.
- The information of dimensions of the space necessary for correct installation of the appliance including the minimum permissible distances to adjacent structures is detailed in below parts.
- This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.
- Instructions on additional charging of refrigerants are detailed below.

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Part II. Installation Manual

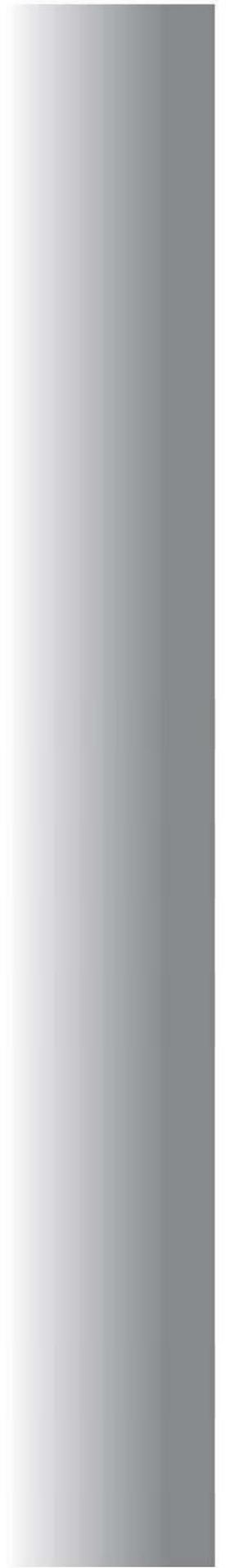
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Part I

Engineering Data



1. GENERAL

1.1 External Appearance



1.2 Power Supply

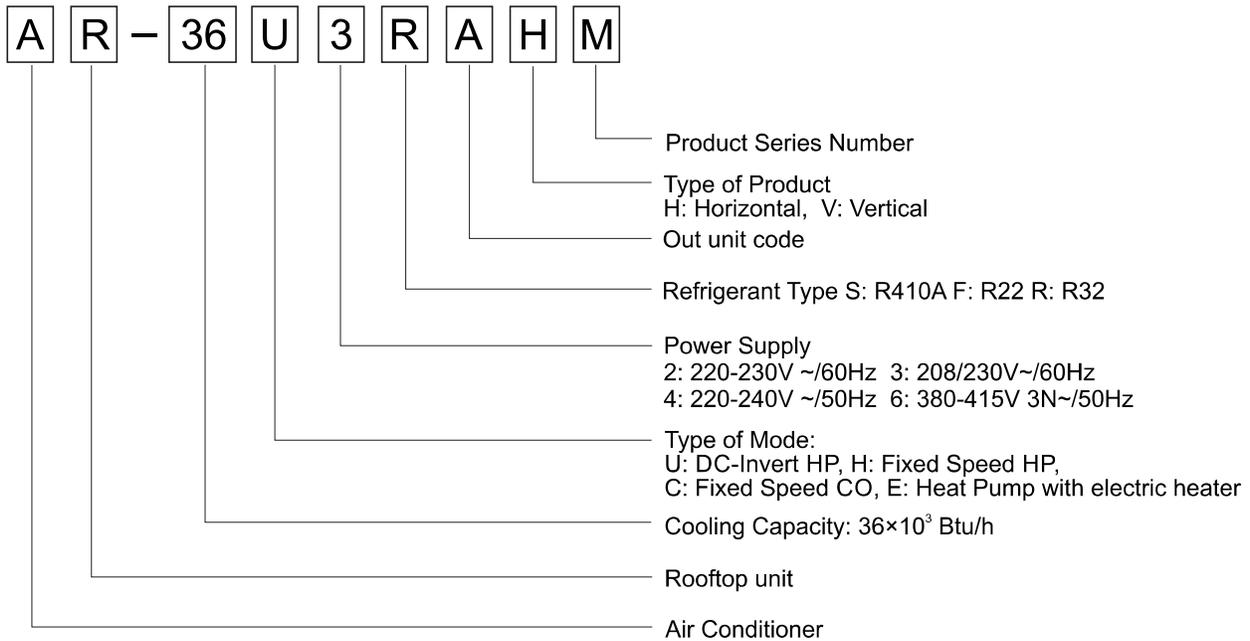
Outdoor unit	Power supply			Applicable voltage		ELB	
model	Voltage(V)	PH	Frequency (Hz)	Umin(V)	Umax(V)	Nominal Current(A)	Nominal Sensitive Current(mA)
36K	208/230	1	60	176	264	32	5

NOTE:

1. The above data is based on 100% capacity combination of indoor units at the rated operating frequency.
2. This data is based on the same conditions as the nominal cooling capacities.

1. GENERAL

1.3 Nomenclature



1.4 Operation Limits

Power supply

Working Voltage	176V~264V
Voltage Imbalance	Within a 3% deviation from each voltage at the main terminal of outdoor unit
Starting Voltage	Higher than 85% of the Rated Voltage

For more product information, please refer to the catalog and other technical files.

NOTE:

- This air conditioner is designed for the following temperatures. It should be operated within this range:

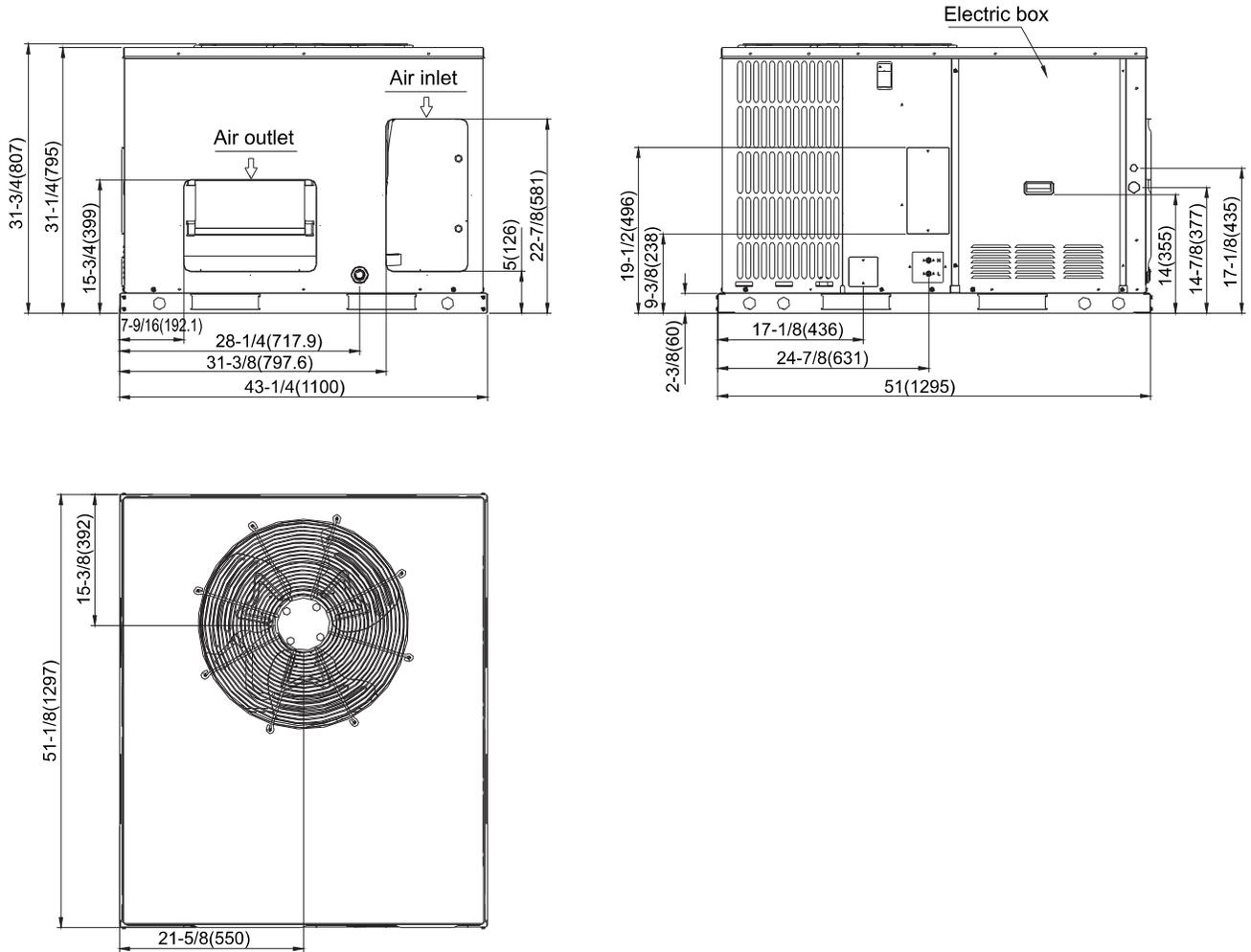
Model	Mode	Outdoor operation temperature range [°F (°C)]	
		Maximum	Minimum
36K	Cooling Operation	125 (52)	50 (10)
	Heating Operation	75 (24)	-4 (-20)

- Storage condition: Temperature -13~140°F (-25~60°C)
Humidity 30%~80%

2. OUTLINES AND DIMENSIONS

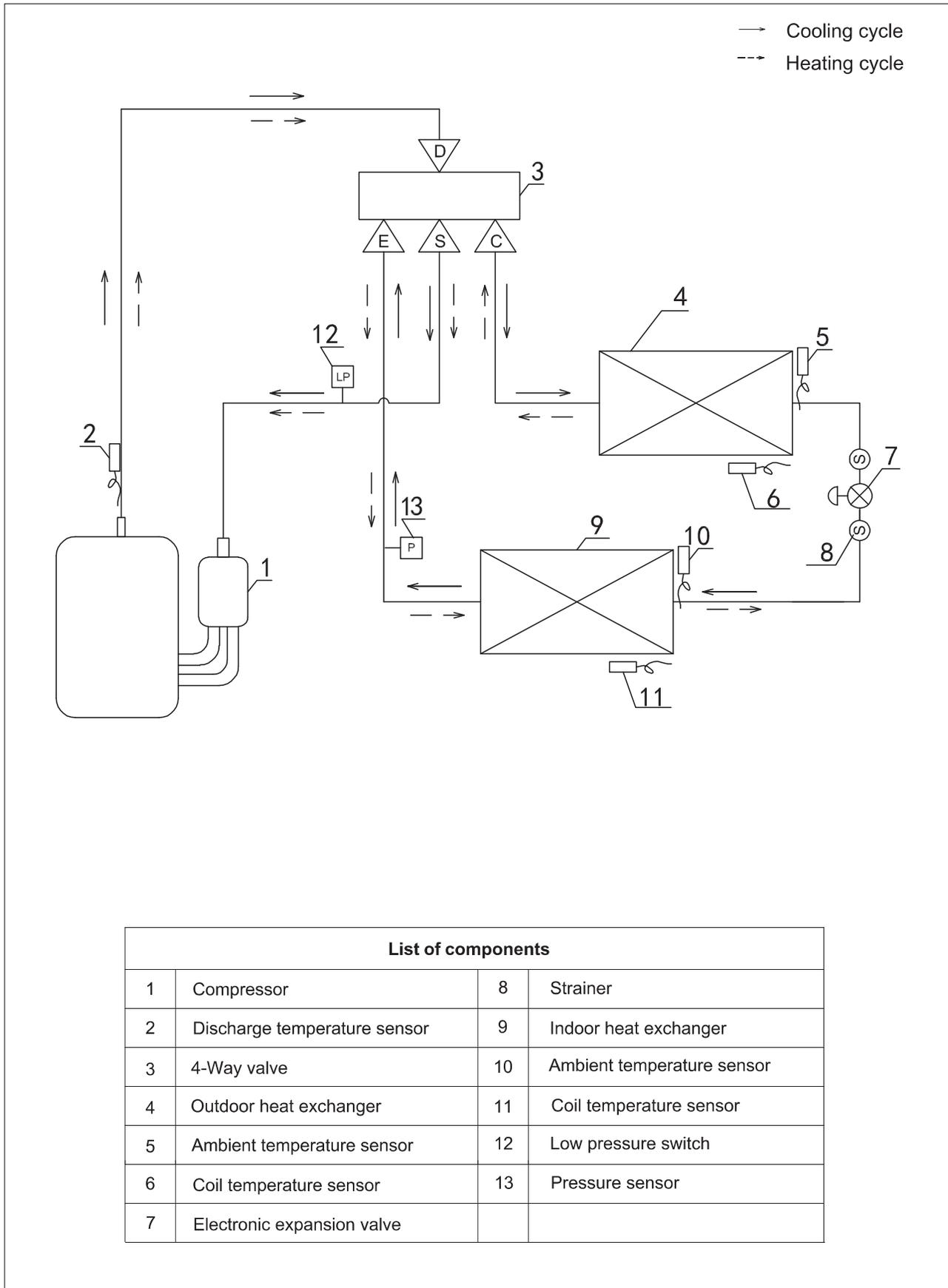
2. Outlines and Dimensions

Unit: [in.(mm)]



3. REFRIGERANT CYCLE DIAGRAM

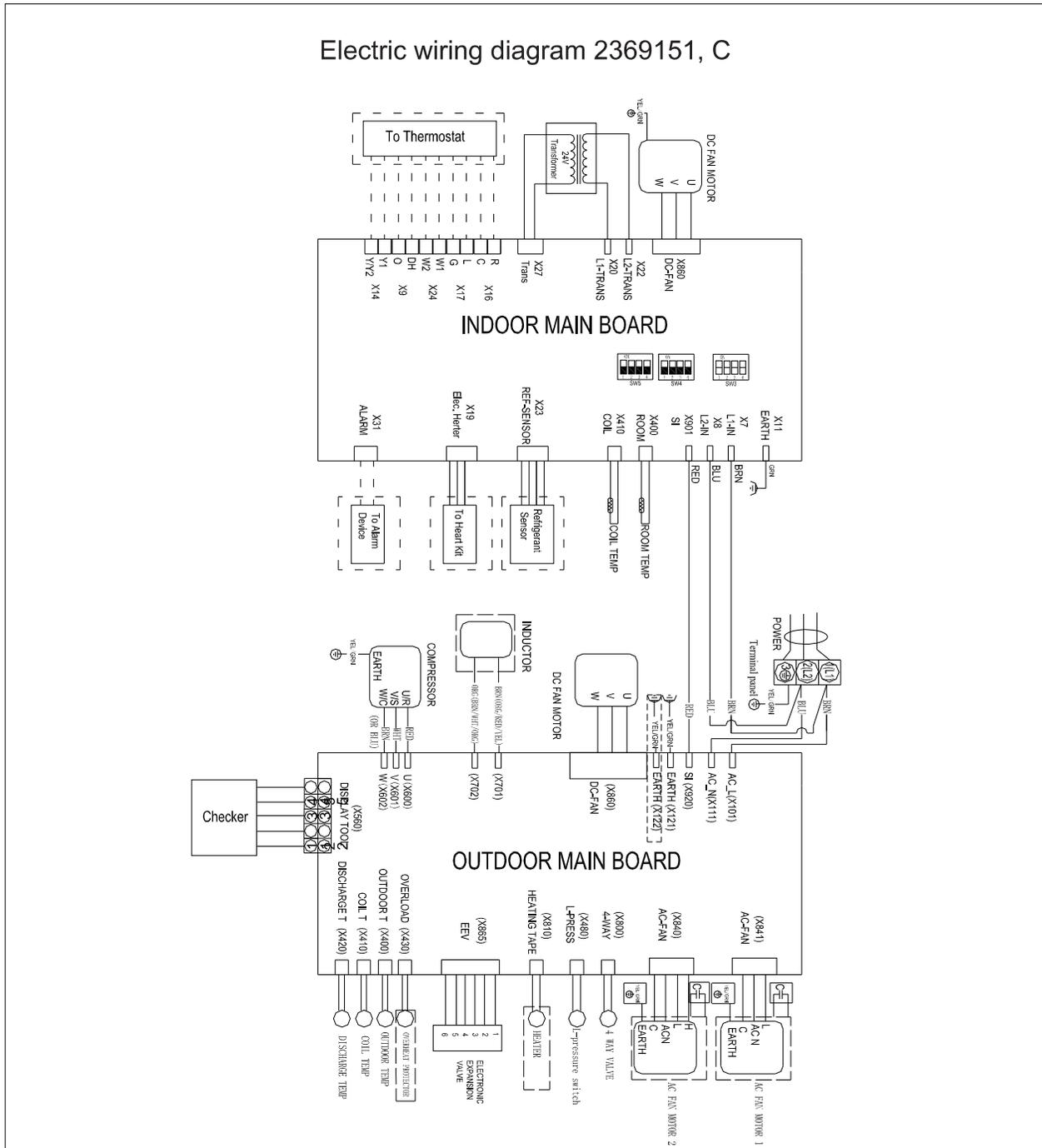
3. Refrigerant Cycle Diagram



4. WIRING DIAGRAM

4. Wiring Diagram

4.1 Electrical Wiring Diagrams



Remark:

Dashed parts are not available in some models.
 Details see the table below.

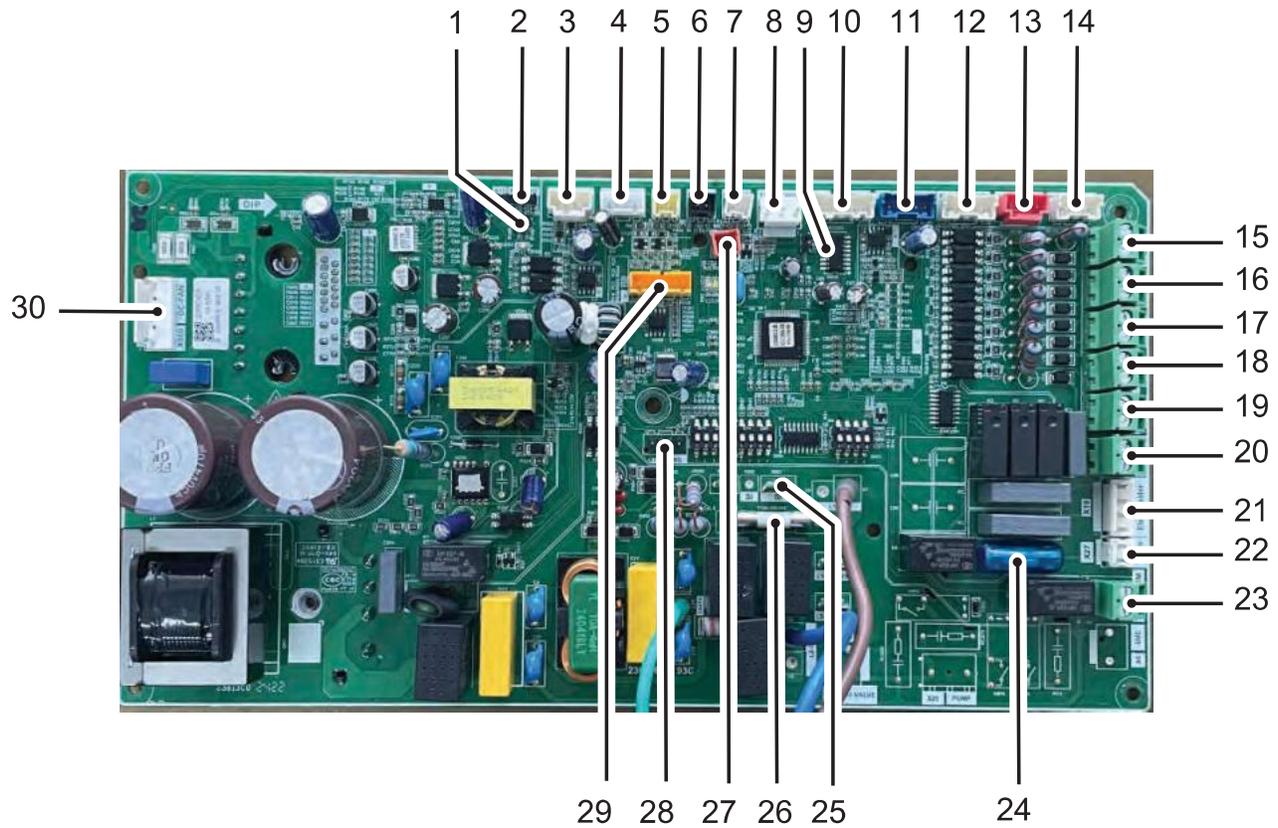
Thermostat	Alarm Device	Heat Kit	Refrigerant Sensor

● --available part

4. WIRING DIAGRAM

4.2 Control Board Picture

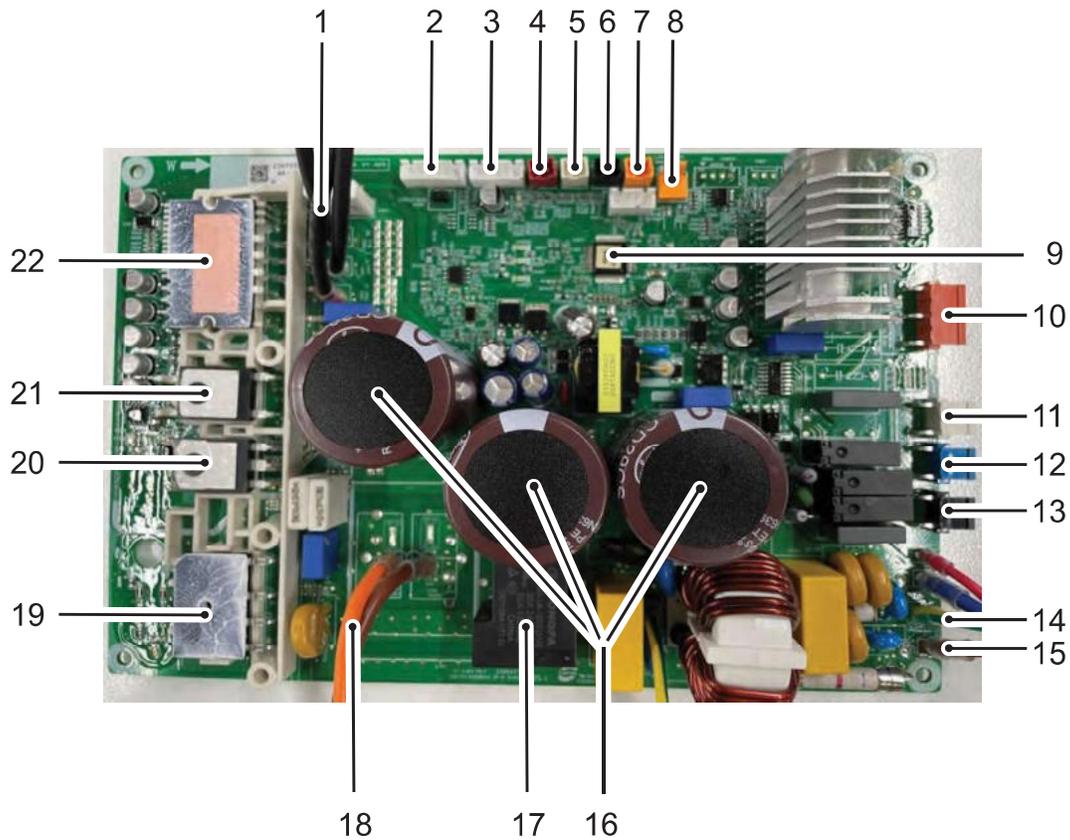
Indoor unit



NO.	Description	NO.	Description
1	Test(Fan Drive)	16	24V Communication: DH,O
2	Program Port(Drive Control)	17	24V Communication: W1,W2
3	WIFI Interface	18	24V Communication: L,G
4	Wired Controller	19	24V Communication: R,C
5	Room Temperature Sensor	20	AC 24V
6	Coil Temperature Sensor	21	Electric Heater
7	Water Switch	22	24V Transformer
8	Out Input	23	Alarm
9	Test	24	24V Fuse
10	Electronic Expansion Valve	25	SI
11	Refrigerant sensor	26	Main Fuse
12	Checker	27	Coil-YE
13	Humidity Sensor	28	Program Port(Master Control)
14	Room-Coil Temperature Sensor	29	EERROM
15	24V Communication: Y1,Y/Y2	30	DC Fan Motor

4. WIRING DIAGRAM

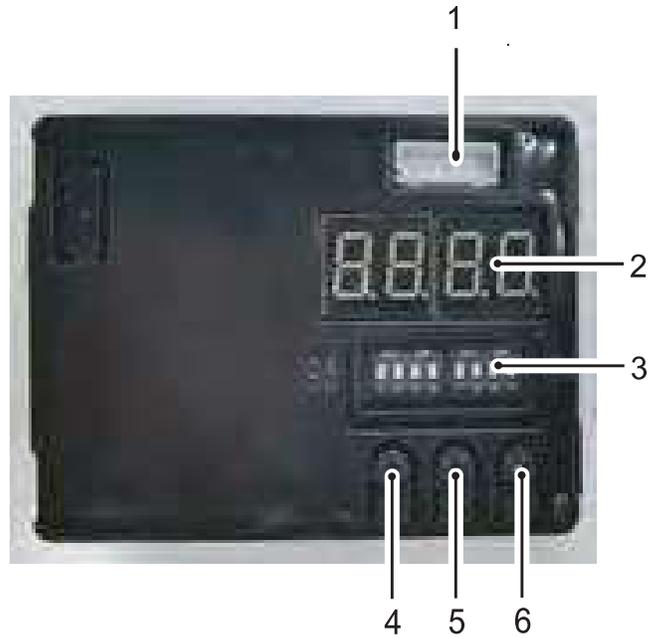
Outdoor unit



NO.	Description	NO.	Description
1	Compressor U,V,W Wire	12	Chassis Heating Interface
2	EEPROM Flashing	13	4-Way Valve
3	Display Tool	14	N-In Line
4	Compressor Overheat Protector	15	L-In Line
5	Discharge Temperature Sensor	16	Filter Electrolytic Capacitor
6	Coil Temperature Sensor	17	Main Relay
7	Ambient Temperature Sensor	18	Electric Reactor Wire
8	L-PRESS	19	Bridge Rectifier
9	EEPROM	20	IGBT
10	Dc Fan Motor IPM Module	21	Power Diode
11	Heating belt Interface	22	IPM Module

4. WIRING DIAGRAM

7 Segment display board (Checker board)



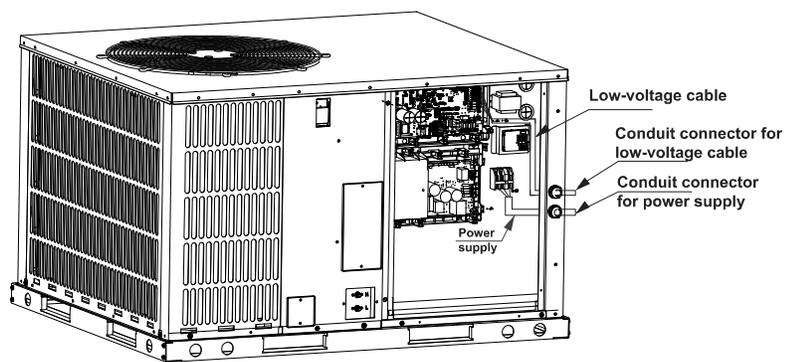
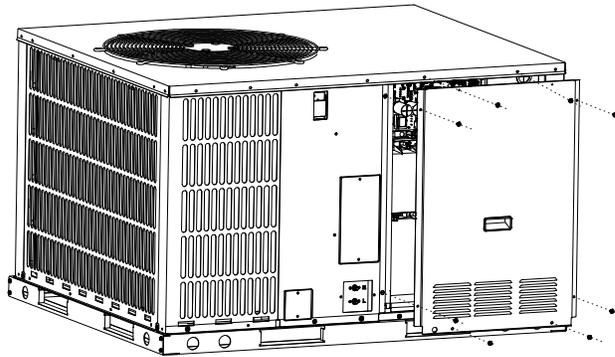
NO.	Description	NO.	Description
1	Computer/Checker to Outdoor Control Board	4	S1-Select Button
2	7-Segment Display	5	S2-Increase Button
3	DIP Switch	6	S3-Decrease Button

4. WIRING DIAGRAM

4.3 Common Wiring

Before electrical Wiring, you need to remove the electrical box cover.

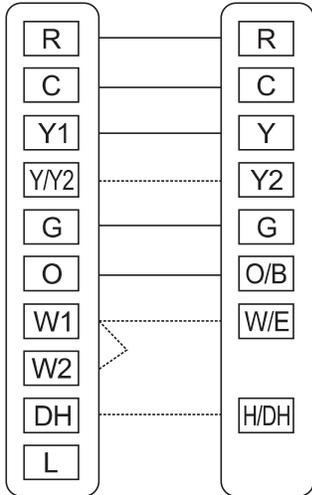
1. Unscrew the 8 screws on the side panel of the electrical box;
2. Remove the side panel of the electrical box;
3. Use a tool to knock out the two knockout holes on the side, the upper small hole is for the low voltage cable and the lower large hole is for the power supply cable;
4. Install the conduit connector at the knockout holes, and pass the cable through the conduit connector; it is necessary to ensure that the cable is sealed reliably in contact with the conduit connector;
5. After completing the cable connecting, use the screws to refasten the side panels on the electrical box;



4. WIRING DIAGRAM

Electrical Wiring Diagram

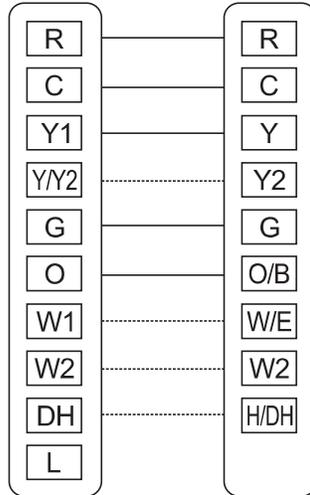
Support 3H and 2C thermostat



unit control board
terminal strip

thermostat

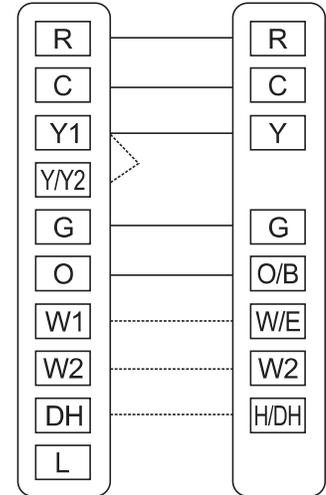
Support 4H and 2C thermostat



unit control board
terminal strip

thermostat

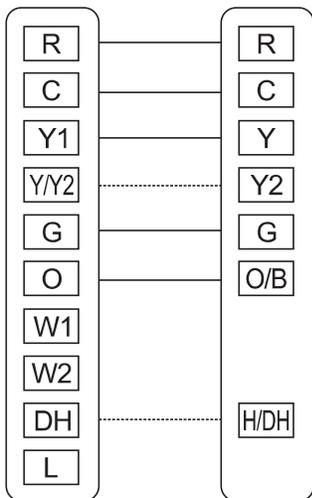
Support 3H and 1C thermostat



unit control board
terminal strip

thermostat

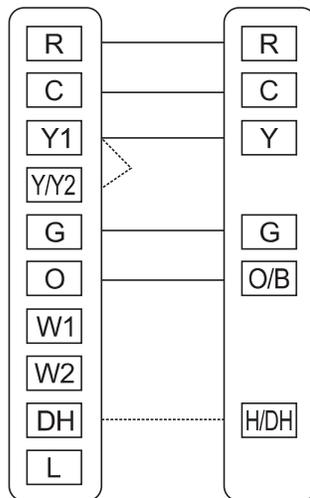
Support 2H and 2C thermostat



unit control board
terminal strip

thermostat

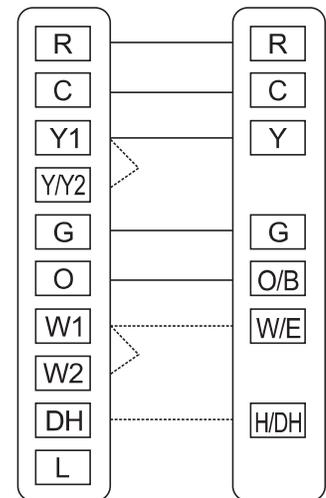
Support 1H and 1C thermostat



unit control board
terminal strip

thermostat

Support 2H and 1C thermostat



unit control board
terminal strip

thermostat

Note:

1. The "L" port displays fault information. If the thermostat has a port with function corresponding to "L", it needs to be connected to the "L" port of the unit.
2. When the machine does not have auxiliary electric heating, the machine only supports 2H2C and 1H1C working modes.

4. WIRING DIAGRAM

Recommend Wire Size

Model (Capacity)	Power Supply	ELB		Power Source Cable Size	Circuit Breaker (A)
		Rated Current (A)	Nominal Sensitive Current (mA)		
36K	208/230V ~/60Hz	40	5	3×12AWG	40

Max. Running Current(A): REFERTO NAMEPLATE

Note:

- (1) Follow local codes and regulations when select field wires ,and all the above are the minimum wire size.
- (2) 18AWG. color-coded low voltage wire should be used for lengths less than 100ft.(30m). For wire lengths than 100ft.(30m), 16AWG. wire should be used. When transmitting cable length is longer than 262ft. (80m), a larger wire size should be selected.
- (3) Install main switch and ELB for each system separately. Select the high response type ELB that is acted within 0.1second. Recommended capacity to see outdoor machine switch capacity.

5. CAPACITY TABLES

5. Capacity Tables

5.1 Capacity Characteristic Charts

The following charts show the characteristics of outdoor unit capacity, which corresponds with the operating ambient temperature of outdoor unit.

The data are based on the following conditions:

- ① Pipe length / height difference : 5m / 0m
- ② Compressor at rated inverter frequency
- ③ Indoor fan speed at high fan speed
- ④ Capacity loss due to white frost and defrost operation is not included.

Performance data (Cooling operation at rated frequency)

Airflow (CMF)	Outdoor DB	IWB (°F)	59				63				67				71			
		IDB (°F)	70	75	80	85	70	75	80	85	70	75	80	85	70	75	80	85
1000	50	TC	18.4	18.6	19.0	19.2	19.0	19.2	19.4	19.6	20.3	20.5	20.7	20.8	24.7	24.9	25.1	18.4
		S/T	0.99	1.00	1.00	1.00	0.61	0.83	1.00	1.00	0.39	0.57	0.73	0.90	0.39	0.53	0.67	0.99
		kW	0.88	0.89	0.89	0.89	0.89	0.91	0.91	0.92	0.92	0.93	0.94	0.95	1.16	1.17	1.19	0.88
	65	TC	30.7	31.0	31.6	32.0	31.6	32.0	32.3	32.7	33.8	34.1	34.4	34.6	41.2	41.5	41.8	30.7
		S/T	0.99	1.00	1.00	1.00	0.61	0.83	1.00	1.00	0.39	0.57	0.73	0.90	0.39	0.53	0.67	0.99
		kW	1.83	1.85	1.86	1.86	1.86	1.89	1.90	1.92	1.92	1.93	1.96	1.98	2.42	2.45	2.48	1.83
	75	TC	30.7	31.1	31.7	32.0	31.7	32.0	32.5	32.8	33.9	34.2	34.5	34.7	40.8	41.1	41.4	30.7
		S/T	1.00	1.00	0.99	1.00	0.62	0.83	1.00	1.00	0.39	0.56	0.73	0.90	0.39	0.53	0.67	1.00
		kW	2.03	2.05	2.08	2.08	2.08	2.10	2.12	2.14	2.12	2.16	2.18	2.21	2.67	2.69	2.72	2.03
	85	TC	30.3	30.6	31.2	31.6	31.2	31.6	31.9	32.2	33.4	33.7	34.0	34.2	40.1	40.4	40.6	30.3
		S/T	1.00	1.00	1.00	1.00	0.62	0.84	1.00	1.00	0.39	0.57	0.74	0.91	0.39	0.53	0.67	1.00
		kW	2.29	2.31	2.34	2.34	2.34	2.36	2.39	2.41	2.41	2.43	2.46	2.48	3.03	3.06	3.09	2.29
	95	TC	29.7	30.1	30.7	31.1	30.7	31.1	31.4	31.7	32.9	33.2	33.4	33.7	39.1	39.4	39.7	29.7
		S/T	1.00	1.00	1.00	1.00	0.62	0.84	1.00	1.00	0.39	0.57	0.74	0.92	0.39	0.53	0.68	1.00
		kW	2.75	2.78	2.81	2.81	2.81	2.84	2.87	2.90	2.91	2.93	2.96	2.99	3.61	3.63	3.67	2.75
	105	TC	29.1	29.5	30.2	30.5	30.2	30.5	30.8	31.1	32.2	32.6	32.8	33.0	37.8	37.9	38.1	29.1
		S/T	0.99	1.00	1.00	1.00	0.62	0.84	1.00	1.00	0.39	0.57	0.75	0.93	0.39	0.54	0.69	0.99
		kW	3.28	3.31	3.35	3.35	3.35	3.38	3.42	3.45	3.45	3.49	3.51	3.55	4.18	4.19	4.20	3.28
	115	TC	26.1	26.4	27.0	27.2	27.0	27.2	27.5	27.9	29.0	29.2	29.3	29.5	31.4	31.6	31.7	26.1
		S/T	1.00	1.00	1.00	1.00	0.62	0.85	1.00	1.00	0.40	0.60	0.79	0.99	0.39	0.58	0.76	1.00
		kW	3.34	3.37	3.41	3.41	3.41	3.45	3.49	3.53	3.55	3.57	3.60	3.61	3.72	3.74	3.75	3.34
	125	TC	22.2	22.4	23.0	23.1	23.0	23.1	23.4	23.7	24.7	24.8	24.9	25.1	26.7	26.9	27.0	22.2
		S/T	1.00	1.00	1.00	1.00	0.62	0.85	1.00	1.00	0.40	0.60	0.79	0.99	0.39	0.58	0.76	1.00
		kW	3.44	3.47	3.51	3.51	3.51	3.56	3.59	3.63	3.66	3.68	3.70	3.72	3.83	3.85	3.86	3.44
1200	50	TC	19.8	20.0	20.5	20.7	20.5	20.7	20.9	21.1	21.9	22.0	22.2	22.4	26.4	26.6	26.8	19.8
		S/T	0.99	1.00	1.00	1.00	0.61	0.83	1.00	1.00	0.39	0.57	0.73	0.90	0.39	0.53	0.67	0.99
		kW	1.03	1.04	1.05	1.05	1.05	1.06	1.07	1.08	1.08	1.09	1.11	1.12	1.33	1.35	1.36	1.03
	65	TC	33.0	33.3	34.1	34.4	34.1	34.4	34.9	35.2	36.5	36.7	37.0	37.4	44.0	44.3	44.7	33.0
		S/T	0.99	1.00	1.00	1.00	0.63	0.86	1.00	1.00	0.39	0.58	0.76	0.94	0.39	0.54	0.69	0.99
		kW	2.14	2.16	2.18	2.18	2.18	2.21	2.23	2.26	2.24	2.28	2.30	2.33	2.78	2.81	2.84	2.14
	75	TC	33.0	33.4	34.1	34.4	34.1	34.4	34.9	35.3	36.5	36.8	37.0	37.4	43.7	44.0	44.3	33.0
		S/T	1.00	1.00	1.00	1.00	0.62	0.85	1.00	1.00	0.39	0.58	0.76	0.94	0.39	0.54	0.69	1.00
		kW	2.34	2.36	2.39	2.39	2.39	2.41	2.43	2.46	2.46	2.48	2.52	2.54	2.92	2.96	2.98	2.34
	85	TC	32.5	32.8	33.5	33.9	33.5	33.9	34.2	34.6	35.9	36.2	36.4	36.7	42.6	42.9	43.2	32.5
		S/T	1.00	1.00	1.00	1.00	0.63	0.86	1.00	1.00	0.39	0.58	0.76	0.95	0.39	0.54	0.70	1.00
		kW	2.58	2.60	2.64	2.64	2.64	2.66	2.68	2.72	2.72	2.74	2.77	2.80	3.37	3.39	3.43	2.58
	95	TC	32.0	32.5	33.2	33.5	33.2	33.5	33.8	34.2	35.2	35.7	36.0	36.2	41.5	41.7	41.9	32.0
		S/T	1.00	1.00	0.99	1.00	0.63	0.87	1.00	1.00	0.39	0.58	0.76	1.00	0.39	0.55	0.71	1.00
		kW	3.06	3.10	3.13	3.13	3.13	3.16	3.19	3.23	3.24	3.26	3.30	3.32	3.96	4.00	4.02	3.06
	105	TC	31.2	31.6	32.3	32.7	32.3	32.7	33.0	33.4	34.4	34.9	35.1	35.4	38.5	38.5	38.7	31.2
		S/T	0.99	1.00	0.99	1.00	0.63	0.87	1.00	1.00	0.39	0.59	0.78	1.00	0.39	0.57	0.74	0.99
		kW	3.62	3.66	3.69	3.69	3.69	3.74	3.77	3.81	3.82	3.86	3.89	3.92	4.29	4.26	4.29	3.62
	115	TC	25.9	26.2	26.7	27.0	26.7	27.0	27.3	27.7	29.4	29.5	29.1	29.2	30.4	30.5	30.6	25.9
		S/T	1.00	1.00	1.00	1.00	0.64	0.88	1.00	1.00	0.40	0.62	0.86	1.00	0.40	0.62	0.84	1.00
		kW	3.39	3.43	3.47	3.47	3.47	3.50	3.54	3.57	3.63	3.66	3.64	3.67	3.70	3.72	3.73	3.39
	125	TC	22.0	22.3	22.7	23.0	22.7	23.0	23.2	23.5	25.0	25.1	24.7	24.8	25.8	25.9	26.0	22.0
		S/T	1.00	1.00	1.00	1.00	0.62	0.85	1.00	1.00	0.40	0.60	0.79	0.99	0.39	0.58	0.76	1.00
		kW	3.50	3.53	3.57	3.57	3.57	3.61	3.64	3.68	3.74	3.77	3.75	3.78	3.81	3.83	3.84	3.50

5. CAPACITY TABLES

1400	50	TC	21.0	21.3	21.7	22.0	21.7	22.0	22.2	22.5	23.3	23.5	23.6	23.8	27.9	28.0	28.5	21.0	
		S/T	0.99	1.00	1.00	1.00	0.61	0.83	1.00	1.00	1.00	0.39	0.57	0.73	0.90	0.39	0.53	0.67	0.99
		kW	1.20	1.21	1.23	1.23	1.23	1.24	1.25	1.26	1.26	1.26	1.28	1.29	1.30	1.53	1.54	1.46	1.20
	65	TC	35.1	35.5	36.2	36.6	36.2	36.6	37.0	37.5	38.8	39.1	39.3	39.7	46.4	46.7	47.5	35.1	
		S/T	0.99	1.00	1.00	1.00	0.64	0.88	1.00	1.00	0.39	0.59	0.78	0.99	0.38	0.55	0.71	0.99	
		kW	2.50	2.53	2.55	2.55	2.55	2.59	2.61	2.64	2.64	2.66	2.69	2.72	3.18	3.21	3.04	2.50	
	75	TC	35.2	35.6	36.4	36.7	36.4	36.7	37.1	37.6	39.0	39.2	39.5	39.9	47.6	47.8	47.9	35.2	
		S/T	0.99	1.00	1.00	1.00	0.63	0.88	1.00	1.00	0.39	0.59	0.78	1.00	0.38	0.55	0.71	0.99	
		kW	2.58	2.60	2.64	2.64	2.64	2.66	2.68	2.72	2.72	2.74	2.77	2.80	3.50	3.51	3.51	2.58	
	85	TC	34.4	34.9	35.6	36.0	35.6	36.0	36.3	36.7	38.2	38.4	38.7	38.9	44.9	45.1	45.4	34.4	
		S/T	0.99	1.00	1.00	1.00	0.64	0.89	1.00	1.00	0.39	0.59	0.79	1.00	0.39	0.56	0.73	0.99	
		kW	2.91	2.93	2.97	2.97	2.97	3.00	3.03	3.06	3.07	3.10	3.12	3.15	3.74	3.77	3.80	2.91	
	95	TC	33.6	33.9	34.6	35.1	34.6	35.1	35.5	35.8	37.3	37.5	37.7	38.0	42.7	42.9	42.9	33.6	
		S/T	1.00	1.00	1.00	1.00	0.64	0.90	1.00	1.00	0.39	0.60	0.80	1.00	0.39	0.57	0.75	1.00	
		kW	3.42	3.45	3.49	3.49	3.49	3.53	3.56	3.60	3.62	3.64	3.67	3.69	4.23	4.24	4.24	3.42	
	105	TC	32.7	33.0	33.7	34.1	33.7	34.1	34.4	34.9	36.2	36.4	36.6	36.9	39.0	39.2	39.0	32.7	
		S/T	1.00	1.00	1.00	1.00	0.65	0.90	1.00	1.00	0.39	0.60	0.81	1.00	0.39	0.59	0.79	1.00	
		kW	3.99	4.02	4.07	4.07	4.07	4.12	4.15	4.20	4.23	4.26	4.29	4.32	4.44	4.46	4.39	3.99	
	115	TC	26.1	26.3	26.9	27.2	26.9	27.2	27.5	27.8	29.0	29.1	29.2	29.4	31.1	31.2	31.3	26.1	
		S/T	1.00	1.00	1.00	1.00	0.66	1.00	1.00	1.00	0.40	0.66	0.93	1.00	0.40	0.65	0.90	1.00	
		kW	3.53	3.56	3.61	3.61	3.61	3.64	3.68	3.72	3.76	3.77	3.80	3.81	3.93	3.94	3.95	3.53	
	125	TC	22.2	22.4	22.9	23.1	22.9	23.1	23.4	23.6	24.7	24.7	24.8	25.0	26.4	26.5	26.6	22.2	
		S/T	1.00	1.00	1.00	1.00	0.62	0.85	1.00	1.00	0.40	0.60	0.79	0.99	0.39	0.58	0.76	1.00	
		kW	3.63	3.67	3.72	3.72	3.72	3.75	3.79	3.83	3.88	3.89	3.91	3.92	4.05	4.06	4.07	3.63	

Heating Capacity

Airflow (CFM)	ID []	OD []	75	65	55	47	35	25	15	5	-4
1000	60	TC	42.4	42.4	42.3	40.7	34.6	32.2	27.0	25.0	21.8
		kW	2.46	2.63	3.09	3.36	3.12	3.34	3.10	2.99	2.84
	70	TC	32.8	32.6	32.7	32.3	32.3	31.6	26.5	24.6	21.4
		kW	1.84	1.94	2.28	2.66	3.19	3.63	3.30	3.21	3.03
	75	TC	27.6	27.5	27.5	27.5	27.1	27.1	25.0	23.1	19.6
		kW	1.53	1.65	1.92	2.27	2.64	3.09	3.45	3.35	3.16
80	TC	22.7	22.7	22.7	22.6	22.4	22.2	22.2	22.2	19.2	
	kW	1.27	1.35	1.59	1.85	2.20	2.48	3.11	3.39	3.29	
1200	60	TC	47.4	47.4	46.0	41.2	35.1	32.7	27.5	25.6	22.2
		kW	2.91	3.08	3.42	3.29	3.09	3.32	3.07	2.99	2.85
	70	TC	36.7	36.5	36.2	36.0	34.2	32.0	26.9	24.9	21.7
		kW	2.12	2.27	2.61	3.00	3.37	3.59	3.30	3.21	3.06
	75	TC	30.9	30.8	30.8	30.3	30.4	30.4	25.4	23.4	19.9
		kW	1.78	1.89	2.22	2.53	3.02	3.55	3.44	3.34	3.17
80	TC	25.3	25.3	25.3	25.2	24.9	24.8	24.9	23.1	19.6	
	kW	1.47	1.56	1.82	2.10	2.45	2.84	3.56	3.48	3.29	
1400	60	TC	52.8	51.9	46.9	41.9	35.6	33.2	27.9	26.0	22.7
		kW	3.42	3.50	3.39	3.29	3.11	3.34	3.12	3.05	2.92
	70	TC	40.6	40.4	40.4	40.3	34.8	32.5	27.4	25.4	22.1
		kW	2.44	2.59	3.05	3.54	3.38	3.61	3.35	3.27	3.12
	75	TC	34.6	34.4	34.0	33.9	33.9	32.1	25.9	23.8	20.4
		kW	2.08	2.20	2.50	2.93	3.48	3.77	3.48	3.39	3.24
80	TC	28.4	28.3	28.3	28.2	27.8	27.8	25.6	23.5	20.0	
	kW	1.73	1.83	2.10	2.45	2.83	3.28	3.62	3.53	3.35	

Remarks:

Q: Total Heating / Cooling Capacity (Gross) kW

INPUT: Power Input (including the compressor, evap. fan motor & cond. W

DB: Dry Bulb Temperature

WB: Wet Bulb Temperature

SHC: Sensible Heat Capacity

SHF: Sensible Heat Factor

5. CAPACITY TABLES

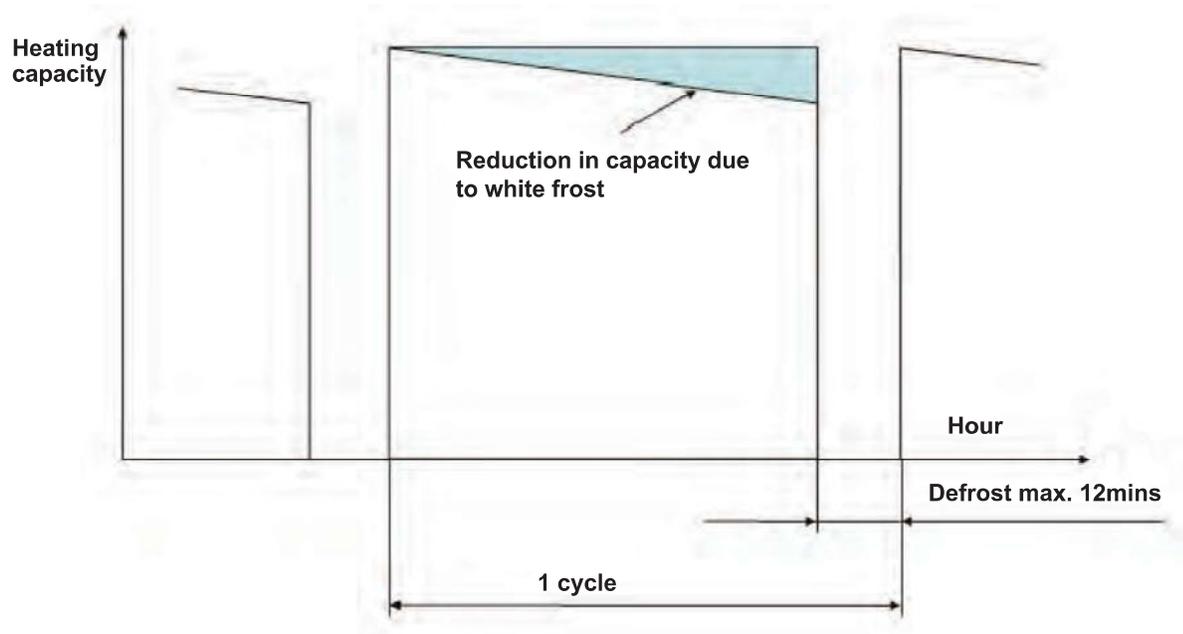
5.2 Correction Factors According to Defrosting Operation

The heating capacity in the previous part, excludes the condition of defrosting operation period. In consideration of defrosting operation, the heating capacity is corrected by the equation below.

Corrected heating capacity = Defrost correction factor × unit capacity

Outdoor temperature [°F(°C)DB]	5(-15)	14(-10)	23(-5)	32(0)	44.6(7)	50(10)	59(15)
Correction factor (humidity rate 85% RH)	0.95	0.95	0.93	0.85	1.0	1.0	1.0

Correction Factor

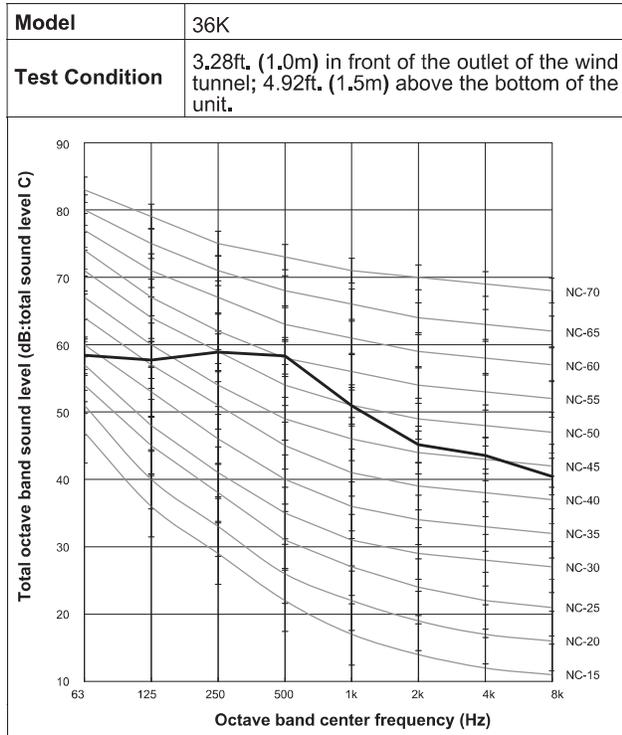


NOTE:

The correction factor is not valid for special conditions such as snowfall or operation in a transitional period.

6. SOUND LEVEL

6. Sound Levels (Reference)



7. BLOWER DATA

7. Blower Data

Airflow performance data is based on cooling performance with a coil and no filter in place. Check the performance table for appropriate unit size selection. External static pressure should stay within the minimum and maximum limits shown in the table below in order to ensure proper cooling, heating.

Air Flow Table

Model Number	Motor Speed		SCFM						
			External Static Pressure-Inches W.C.[kPa]						
			0.1[.02]	0.2[.05]	0.3[.07]	0.4[.10]	0.6[.145]	0.7[.170]	0.8[.20]
36K	Tap (1)	SCFM	1056	1022	943	940	938	934	941
		Watts	189	217	241	275	315	344	385
	Tap (2)	SCFM	1135	1117	1077	1046	1047	1051	1058
		Watts	213	244	288	326	362	398	440
	Tap (3)	SCFM	1213	1194	1204	1192	1188	1192	1189
		Watts	244	277	327	386	440	481	532
	Tap (4)	SCFM	1267	1260	1267	1271	1260	1258	1261
		Watts	260	296	346	415	483	529	585
	Tap (5)	SCFM	1342	1353	1370	1398	1419	1350	1449
		Watts	336	342	387	458	551	677	704

[!] Required 340-450CFM/ton range.

[!] Airflow based upon the Unit operates at 230V with no electric heater kit and no filter. Airflow at 208V is approximately the same as 230V.

[!] CFM means Standard Cubic Foot per Hour.

Part II

Installation manual



1. UNIT INSTALLATION

Inverter Packaged Heat Pump

Installation Manual

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NOTE:

- This air conditioner has been designed for the following temperatures.
Operate the heat pump air-conditioner within this range.

Mode	Outdoor operation temperature range [°F (°C)]	
	Maximum	Minimum
Cooling operation	125 (52)	50 (10)
Heating operation	75 (24)	-4 (-20)

- Storage condition: Temperature -13~140°F (-25~60°C)
Humidity 30%~80%

Safety precautions

1. This air conditioner uses new refrigerant HFC (R32).
2. Since the max. working pressure is 580 psig (4.0MPa), some of the piping and installation and service tools are special.
3. This air conditioner uses power supply: 208/230V ~, 60Hz.
4. Be sure that servicing equipment and replacement components are applicable for R32 refrigerant.
5. Do not discharge R32 refrigerant into the air, and when recover it, the cylinder service pressure rating must be over 580 psig. R32 refrigerant systems should be charged with liquid refrigerant and the service pressure rating of the hoses used must be over 750 psig.
6. Leak detectors should be designed to detect HFC refrigerant.
7. R32 refrigerant is only compatible with POE oils, which could absorb moisture rapidly, so do not expose it to the air, in case that it damages certain plastics materials.
8. Replace all the filter driers after maintenance.

Please read these SAFETY PRECAUTIONS carefully to ensure correct installation.

- Be sure to use a dedicated power circuit, and do not put other loads on the power supply.
- Be sure to read these SAFETY PRECAUTIONS carefully before installation.
- Be sure to comply with SAFETY PRECAUTIONS of installation manual, because it contains important safety issues. Definitions for identifying hazard levels are provide below with their respective safety symbols.

 **DANGER** : The symbol refers to a hazard which can result in severe personal injury or death.

 **WARNING** : The symbol refers to a hazard or an unsafe practice which may result in severe personal injury or death.

 **CAUTION** : The symbol refers to a hazard or an unsafe practice which may result in personal injury, product or property damage.

NOTE : It refers to the remarks and instruction to the operation, maintenance, and service.



- Installation should be performed by a qualified personnel.
Improper installation may cause water leakage, electrical shock or fire.
- Install the air conditioner on a solid base that can support the unit weight.
An inadequate base or incomplete installation may cause injury if the unit falls off the base.
- Use the specified type of wire for electrical connections safely.
And firmly clamp the interconnecting wires so their terminals receive no external stresses.
- For wiring, use a cable long enough to cover the entire distance with no connection.
And do not connect multiple devices to the same AC power supply.
Otherwise, it may be due to bad contact, poor insulation, exceed the allowable current and cause a fire or electric shock.
- After all installation is completed, check to make sure that no refrigerant is leaking out.
If the refrigerant gas leakage to the interior, and the heater, stove flame touching it, will generate harmful substances.
- Perform the installation securely referring to the installation manual.
Incomplete installation could cause a personal injury due to fire, electric shock, the unit falling or leakage of water.
- In accordance with the installation instructions for electrical work, please be sure to use a dedicated line.
- If the power supply circuit capacity or electrical work is not in place, may cause a fire or electric shock.
- Attach the electrical cover and the service panel to the unit securely.
- If the electrical covers or the service panel of the unit are not attached securely, it could result in a fire or an electric shock due to dust water, etc.
- Please be sure to cut off the main power supply before the installation of electronic PCB or wiring.
Otherwise, it will cause electric shock.

1. UNIT INSTALLATION

Safety precautions

- The device should be in accordance with the state provisions for installation wiring.
- The outdoor machine installation location should pay attention to the protection, avoid people or other small animals contact with electrical components, please keep the unit of the surrounding environment clean and tidy.
- When installing or relocating the unit, make sure that no substance other than the specified refrigerant (R32) enters the refrigerant circuit.
Any presence of foreign substance such as air can cause abnormal pressure rise or an explosion.



- Perform grounding
Does not connect the earth wire to a gas pipe, water pipe, lightning rod or telephone earth wire.
Defective grounding could cause an electric shock.
- Do not install the unit in a place where an inflammable gas leaks.
If gas leaks and accumulates in the area surrounding the unit, it could cause an explosion.
- Fasten a flare nut with a torque wrench as specified in this manual.
When fastened too tight, a flare nut may break after a long period and cause a leakage of refrigerant.
- Install an earth leakage breaker depending on the installation place (where it is humid).
If an earth leakage breaker is not installed, it could cause an electric shock.
- Perform the drainage/piping work securely according to the installation manual.
- If there is a defect in the drainage/piping work, water could drop from the unit and household goods could be wet and damaged.

Safety instructions

- Do not let air enter the refrigeration system or discharge refrigerant when moving the air conditioner.
- 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.
- 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.
- The appliance shall be installed in accordance with national wiring regulations.
- Servicing shall only be performed as recommended by the equipment manufacturer.
- Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
- Means for disconnection, such as circuit breaker, which can provide full disconnection in all poles, must be incorporated in the fixed wiring in accordance with the wiring rules.
It is necessary to allow the disconnection of the appliance from the supply after installation.
Make sure the disconnection of the appliance from the supply when service and maintenance, a disconnection with a locking system in the isolated position shall be provided.
- The method of connection of the appliance to the electrical supply and interconnection of separate components, and the wiring diagram with a clear indication of the connections and wiring to external control devices and supply cord are detailed in below parts.
- Details of type and rating of circuit breakers / ELB is detailed in below parts.
- The information of dimensions of the space necessary for correct installation of the appliance including the minimum permissible distances to adjacent structures is detailed in below parts.
- This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.
- Instructions on additional charging of refrigerants are detailed below.

1. UNIT INSTALLATION

Safety Precautions

Precautions for using R32 refrigerant

The basic installation work procedures are the same as the conventional refrigerant (R22 or R410A). However, pay attention to the following points:

WARNING

1. Transport of equipment containing flammable refrigerants.

Attention is drawn to the fact that additional transportation regulations may exist with respect to equipment containing flammable gas. The maximum number of pieces of equipment or the configuration of the equipment, permitted to be transported together will be determined by the applicable transport regulations.

2. Marking of equipment using signs

Signs for similar appliances (containing flammable refrigerants) used in a work area generally are addressed by local regulations and give the minimum requirements for the provision of safety and/or health signs for a work location. All required signs are to be maintained and employers should ensure that employees receive suitable and sufficient instruction and training on the meaning of appropriate safety signs and the actions that need to be taken in connection with these signs. The effectiveness of signs should not be diminished by too many signs being placed together. Any pictograms used should be as simple as possible and contain only essential details.

3. Disposal of equipment using flammable refrigerants

Compliance with national regulations

4. Storage of equipment/appliances

The storage of equipment should be in accordance with the manufacturer's instructions.

5. Storage of packed (unsold) equipment

- Storage package protection should be constructed such that mechanical damage to the equipment inside the package will not cause a leak of the refrigerant charge.
- The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.

6. Information on servicing

6-1 Checks to the area

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, the following precautions should be complied with prior to conducting work on the system.

6-2 Work procedure

Work shall be undertaken under a controlled procedure so as to minimise the risk of flammable gas or vapour being present while the work is being performed.

6-3 General work area

- All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
- The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.

6-4 Checking for presence of refrigerant

- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.
- Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

6-5 Presence of fire extinguisher

- If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand.
- Have a dry powder or CO₂ fire extinguisher adjacent to the charging area.

6-6 No ignition sources

- No person carrying out work in relation to a refrigeration system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.
- All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which flammable refrigerant can possibly be released to the surrounding space.
- Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

6-7 Ventilated area

- Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.
- A degree of ventilation shall continue during the period that the work is carried out.
- The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

6-8 Checks to the refrigeration equipment

- Where electrical components are being changed, they shall be fit for the purpose and to the correct specification.
- At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt consult the manufacturer's technical department for assistance.

Safety Precautions

WARNING

- The following checks shall be applied to installations using flammable refrigerants:
 - The charge size is in accordance with the room size within which the refrigerant containing parts are installed;
 - The ventilation machinery and outlets are operating adequately and are not obstructed;
 - If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;
 - Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
 - Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

6-9 Checks to electrical devices

- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.
- If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.
- If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used.
- This shall be reported to the owner of the equipment so all parties are advised.
- Initial safety checks shall include:
 - That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
 - That there no live electrical components and wiring are exposed while charging, recovering or purging the system;
 - That there is continuity of earth bonding.

7. Repairs of sealed components

Sealed electrical components shall be replaced.

8. Repairs of intrinsically safe components

Intrinsically safe components must be replaced.

9. Cabling

- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.
- The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

10. Detection of flammable refrigerants

- Under no circumstances shall potential sources of ignition be used in the searching or detection of refrigerant leaks.
- A halide torch (or any other detector using a naked flame) shall not be used.

11. Leak detection methods

The following leak detection methods are deemed acceptable for systems containing flammable refrigerants:

- Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
- Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (maximum 25%) is confirmed.
- Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
- If a leak is suspected, all naked flames shall be removed/ extinguished.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.
- Removal of refrigerant shall be according to the manual.

Safety Precautions

WARNING

12. Removal and evacuation

- When breaking into the refrigerant circuit to make repairs – or for any other purpose –conventional procedures shall be used.
- However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration.
- The following procedure shall be adhered to:
 - Safely remove refrigerant following local and national regulations;
 - Evacuate;
 - Purge the circuit with inert gas (optional for A2L);
 - Evacuate (optional for A2L);
 - Continuously flush or purge with inert gas when using flame to open circuit;
 - Open the circuit.
- The refrigerant charge shall be recovered into the correct recovery cylinders.
- The system shall be “flushed” with OFN to render the unit safe.
- This process may need to be repeated for several times.
- Compressed air or oxygen shall not be used for this task.
- Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.
- This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable working.
- This operation is absolutely vital if brazing operations on the pipe-work are to take place.
- Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

13. Charging procedures

- In addition to conventional charging procedures, the following requirements shall be followed:
 - Ensure that contamination of different refrigerants does not occur when using charging equipment.
 - Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
 - Cylinders shall be kept upright.
 - Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
 - Label the system when charging is complete (if not already).
 - Extreme care shall be taken not to overfill the refrigeration system.
 - Prior to recharging the system pressure shall be tested with OFN.
- The system shall be leak tested on completion of charging but prior to commissioning.
- A follow up leak test shall be carried out prior to leaving the site.

14. Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail.

It is recommended that all refrigerants are recovered safely.

Prior to the task, an oil and refrigerant sample shall be taken in case that an analysis is required prior to the re-use of recovered refrigerant. It is essential that electrical power is available before the task.

- a) Become familiar with the equipment and its operation.
- b) Isolate system electrically.
- c) Before attempting the procedure ensure that:
 - Mechanical handling equipment is available, if required, for handling refrigerant cylinders;
 - All personal protective equipment is available and being used correctly;
 - The recovery process is supervised at all times by a competent person;
 - Recovery equipment and cylinders conform to the appropriate standards.
- d) Pump down refrigerant system, if possible.
- e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- f) Make sure that cylinder is situated on the scales before recovery.
- g) Start the recovery machine and operate in accordance with manufacturer's instructions.
- h) Do not overfill cylinders. (No more than 80 % volume liquid charge).
- i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
- j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
- k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

Safety Precautions

WARNING

15. Labelling

Equipment shall be labelled stating that it has been de-commissioned and empty of refrigerant. The label shall be dated and signed.

For appliances containing FLAMMABLE REFRIGERANTS, ensure that there are labels on the equipment stating the equipment contains FLAMMABLE REFRIGERANTS.

16. Recovery

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended that all refrigerant is removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.
- Ensure that the correct number of cylinders for holding the total system charge is available.
- All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).
- Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order.
- Empty recovery cylinders are evacuated and, if possible, cooled before recovery.
- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants.
- In addition, a set of calibrated weighing scales shall be available and in good working order.
- Hoses shall be complete with leak-free disconnect couplings and in good condition.
- Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release.
- Consult manufacturer if in doubt.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged.
- Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant.
- The evacuation process shall be carried out prior to returning the compressor to the suppliers.
- Only electric heating to the compressor body shall be employed to accelerate this process.
- When oil is drained from a system, it shall be carried out safely.

17. Competence of service personnel

Information and training

The training should include the substance of the following:

Information about the explosion potential of flammable refrigerants to show that flammables may be dangerous when handled without care.

Information about potential ignition sources, especially those that are not obvious, such as lighters, light switches, vacuum cleaners, electric heaters.

Information about the concept of sealed components and sealed enclosures according to UL 60335.

Information about the correct working procedures:

a) Commissioning

- Ensure that the floor area is sufficient for the refrigerant charge or that the ventilation duct is assembled in a correct manner.
- Connect the pipes and carry out a leak test before charging with refrigerant.
- Check safety equipment before putting into service.

b) Maintenance

- Portable equipment shall be repaired outside or in a workshop specially equipped for servicing units with flammable refrigerants.
- Ensure sufficient ventilation at the repair place.
- Be aware that malfunction of the equipment may be caused by refrigerant loss and a refrigerant leak is possible.
- Discharge capacitors in a way that won't cause any spark. The standard procedure to short circuit the capacitor terminals usually creates sparks.
- Reassemble sealed enclosures accurately. If seals are worn, replace them.
- Check safety equipment before putting into service.

c) Repair

- Portable equipment shall be repaired outside or in a workshop specially equipped for servicing units with flammable refrigerants.

1. UNIT INSTALLATION

Safety Precautions

WARNING

- Ensure sufficient ventilation at the repair place.
 - Be aware that of the equipment may be caused by refrigerant loss and a refrigerant leak is possible.
 - Discharge capacitors in a way that won't cause any spark.
 - When brazing is required the following procedures shall be carried out in the right order.
 - Remove the refrigerant. If the refrigerant is not required by national regulations, drain the refrigerant to the outside. Take care that the drained refrigerant will not cause any danger. In doubt, one person should guard the outlet. Take special care that drained refrigerant will not float back into the building.
 - Evacuate the refrigerant circuit.
 - Purge the refrigerant circuit with nitrogen for 5 min.
 - Evacuate again (not required for A2L refrigerants)
 - Remove parts to be replaced by cutting, not by flame.
 - Purge the braze point with nitrogen during the brazing procedure.
 - Carry out a leak test before charging with refrigerant.
 - Reassemble sealed enclosures accurately. If seals are worn, replace them.
 - Check safety equipment before putting into service.
 - d) Decommissioning
 - If the safety is affected when the equipment is putted out of service. the refrigerant charge shall be removed before decommissioning.
 - Ensure sufficient ventilation at the equipment location.
 - Be aware that malfunction of the equipment may be caused by refrigerant loss and a leak is possible.
 - Discharge capacitors in a way that won't cause any spark.
 - Remove the If the recovery is not required by national regulations, drain the refrigerant to the outside. Take care that the drained refrigerant will not cause any danger. In doubt, one person should guard the outlet .Take special care that drained refrigerant will not float back into the building.
 - e) Disposal
 - Ensure sufficient ventilation at the working place.
 - Remove the refrigerant. If the recovery is not required by national regulations, drain the refrigerant to the outside. Take care that the drained refrigerant will not cause any danger. In doubt, one person should guard the outlet. Take special care that drained refrigerant will not float back into the building.
 - Evacuate the refrigerant circuit
 - Purge the refrigerant circuit with nitrogen for 5 min.
 - Evacuate again.
 - Cut out the compressor and drain the oil.
-
- The pipe-work shall be complianced with national gas regulations.
 - Appliance shall be installed, operated and stored in a room with a floor area larger than Y (Y see below).
 - The installation of pipe-work shall be kept to a a room with a floor area larger than Y (Y see below).
 - When moving or relocating the air conditioner, consult experienced service technicians for disconnection and reinstallation of the unit.
 - Do not place any other electrical products or household belongings under indoor unit or outdoor unit. Condensation dripping from the unit might get them wet, and may cause damage or malfunction of your property.
 - Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
 - 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).
 - Do not pierce or burn.
 - Be aware that refrigerants may not contain an odour.
 - To keep ventilation openings clear of obstruction.
 - The appliance shall be stored in a well-ventilated area where the room size meets requirements as specified for operation.
 - The appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) and ignition sources (for example an operating electric heater).
 - Any person involved with a refrigerant circuit should hold a valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with required specification.
 - Service shall only be performed as recommended by the equipment manufacturer.
 - Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
 - The appliance shall be installed and stored so as to prevent mechanical damage.
 - Mechanical connectors used indoors shall comply with ISO 14903. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be re-fabricated.

1. UNIT INSTALLATION

Safety Precautions

WARNING

- The installation of pipe-work shall be kept to a minimum.
- Mechanical connections shall be accessible for maintenance purposes.
 - That pipe-work including piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed;
 - That after completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements;
 - The minimum test pressure for the low side: 1.65MPa
 - The minimum test pressure for the high side: 4.14MPa
 - Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected. The joints must be welded or brazed.
 - The appliances are equipped a REFRIGERANT DETECTION SYSTEM.
 - The indoor unit must be powered except for service.
 - And the selected controller shall be connected to this symbol wire and can display the caution information if the REFRIGERANT leakage is detected.
 - When REFRIGERANT leakage is detected, the fan shall work. And the compressor shall stop.
 - You must contact qualified personnel to repair.
 - REFRIGERANT DETECTION SYSTEM include a means for self-testing to determine if a REFRIGERANT SENSOR or SENSING ELEMENT malfunction has occurred. If occurs, the fan shall work, and the compressor shall stop. The controller displays the caution information.
 - You must contact qualified personnel to repair.
 - REFRIGERANT DETECTION SYSTEM shall only be replaced by the appliance manufacture

Note:

- The indoor unit shall be installed in the room whose area Y bigger than the below requirements;
 - Or installed in a room, naturally ventilated to outdoors;
 - Or installed in a room without continuously operating open flames (e.g. an operating gas appliance) or other POTENTIAL IGNITION SOURCES (for e.g. an operating electric heater, hot surfaces).
 - A flame-producing device may be installed in the same space if the device is provided with an effective flame arrest.
- If the duct system meet the below requirement, the minimum room area of conditioned space (equal to Y) can be calculated by all the rooms.
 - 1) The appliances shall be connected via an air duct system to one or more rooms, the supply and return air shall be directly ducted to the space.
 - 2) If no refrigerant detection system is provided, then, spaces where the airflow may be limited by zoning dampers shall not be included in the determination of Y. Y shall not less than below requirement.
- If the duct system doesn't meet the below requirement, any one room shall meet below minimum room area. And any duct outlet(the supply and return air) shall be 7.2ft.(2.2m) high.

Required minimum room area Y [ft.²(m²)]

Refrigerant charge X[oz.(g)]	Ceiling-mounted unit		Wall-mounted unit		Floor-standing unit	
	Return air outlet height [ft.(m)]	Y[ft. ² (m ²)]	Return air outlet height [ft.(m)]	Y[ft. ² (m ²)]	Return air outlet height [ft.(m)]	Y[ft. ² (m ²)]
77.6(2200)	7.2(2.2)	73(6.8)	5.9(1.8)	89(8,3)	2(0.6)	485(45.1)

1. UNIT INSTALLATION

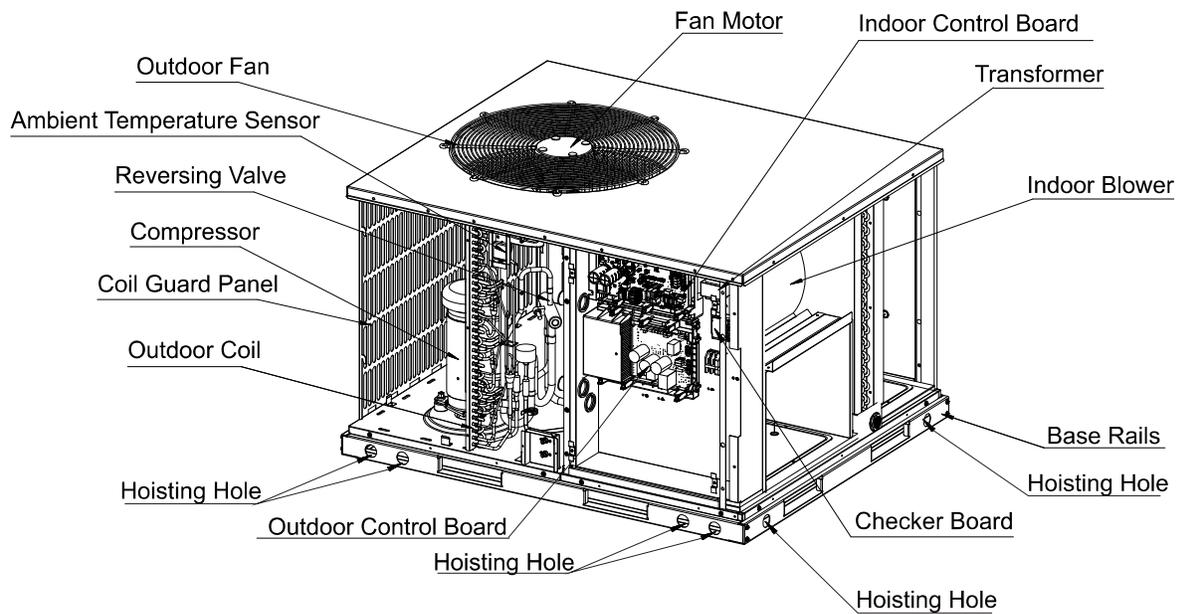
Safety Precautions

Explanation of symbols displayed on the indoor unit or outdoor unit.

  	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.
	CAUTION	This symbol shows that the operation manual should be read carefully.
	CAUTION	This symbol shows that a service personnel 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.

Component Location

Component Location



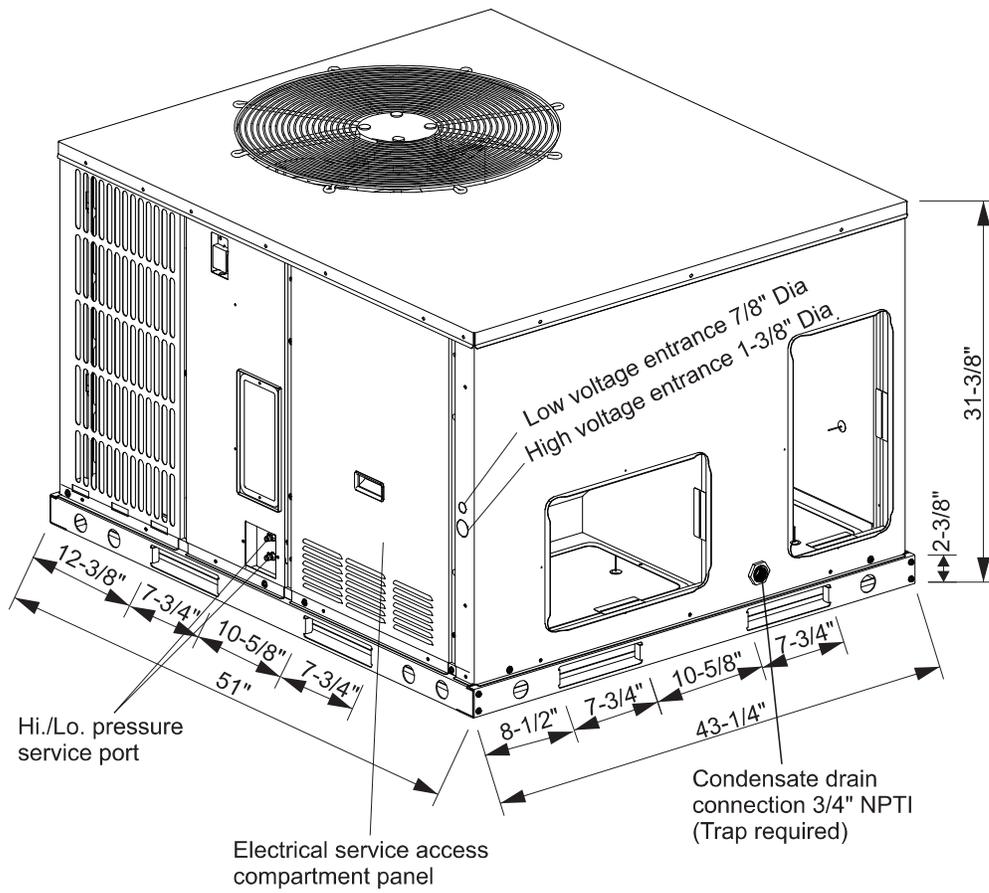
NOTE: The figures are based on the external views of the standard model.
Consequently, the shape may differ for the air conditioner model you have selected.

1. UNIT INSTALLATION

Dimensions

Dimensions- Unit dimensions

Unit: in.

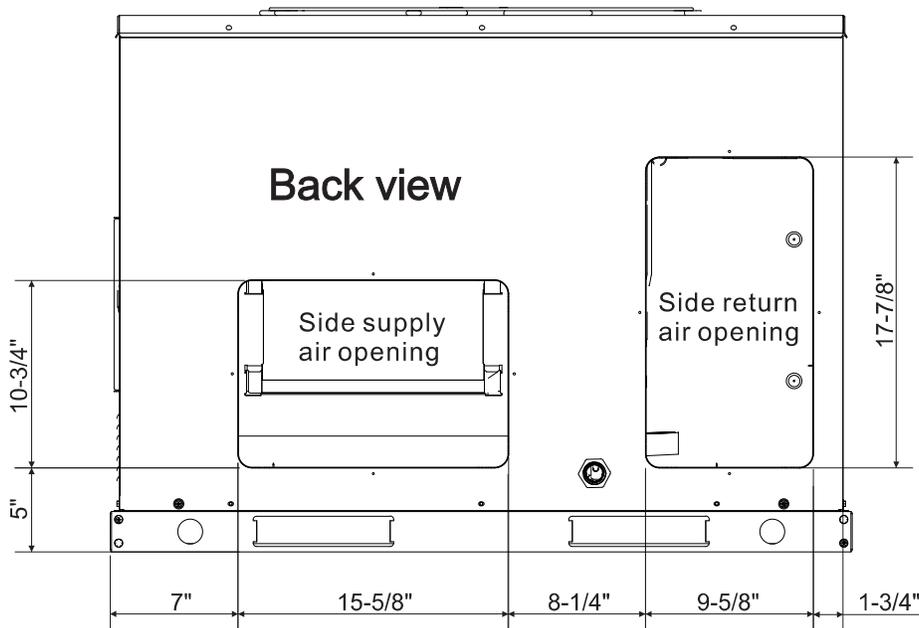
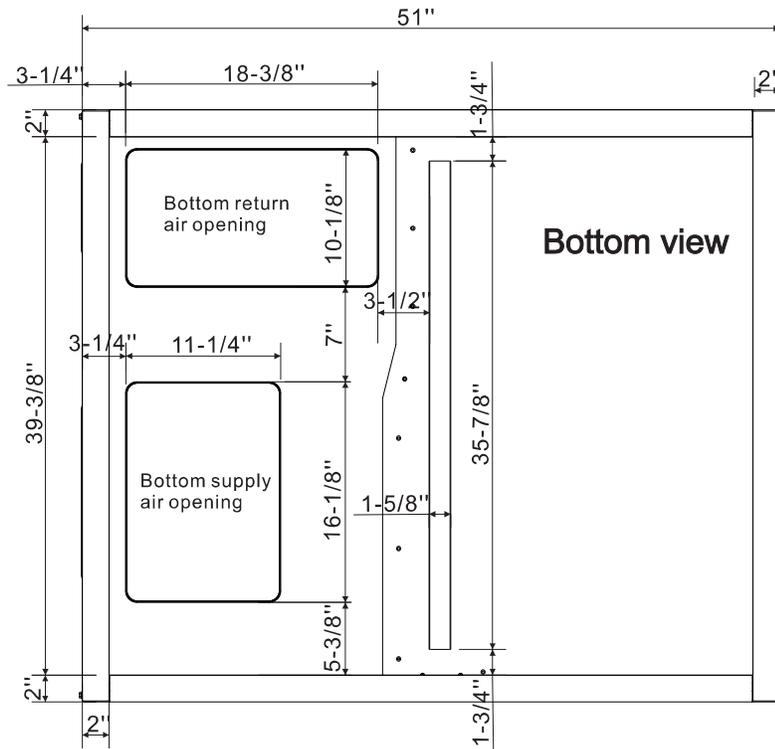


1. UNIT INSTALLATION

Dimensions

Dimensions- Back and Bottom

Unit: in.

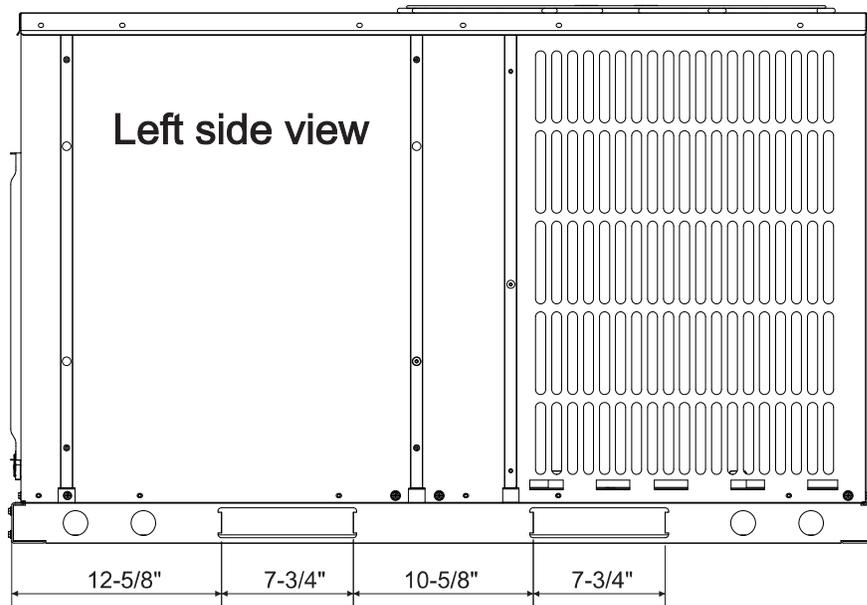
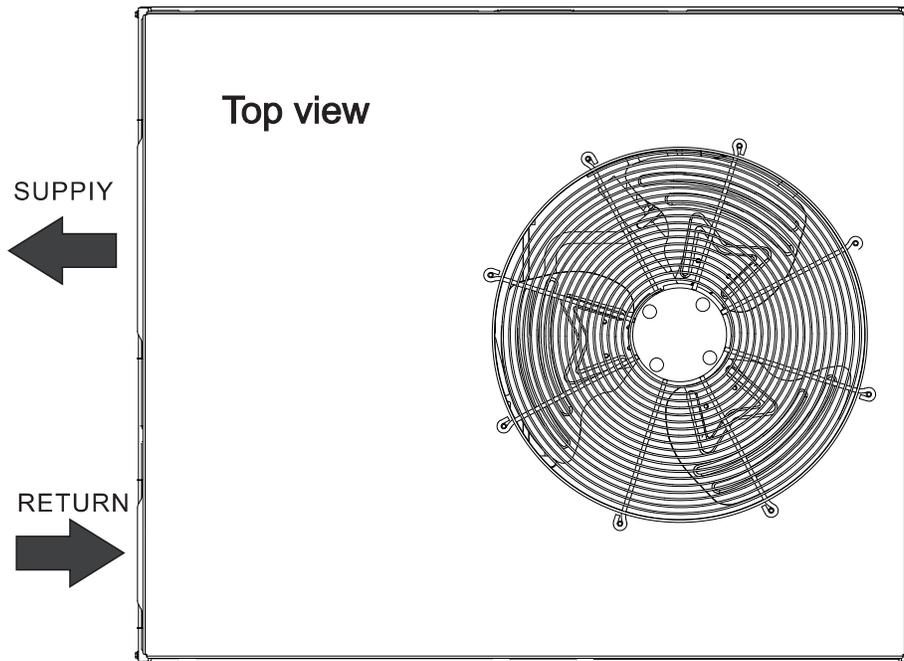


1. UNIT INSTALLATION

Dimensions

Dimensions- Left and Top

Unit: in.



1. UNIT INSTALLATION

Installation instructions

Safety Notice

WARNING

- Read and follow the local safety regulations, including but not limited to ANSI/NFPA No. 70.
- Installation should be performed by a qualified personnel. (Improper installation may cause water leakage, electrical shock or fire.)
- Install the unit according to the instructions given in this manual. (Incomplete installation may cause water leakage, electrical shock or fire).
- Be sure to use the supplied or specified installation parts. (Use of other parts may cause the unit to get loosened, water leakage, electrical shock or fire).
- For installation of the rooftop unit, ensure that the supports are strong enough to bear the weight of the unit.
- Prevent the air inlet and outlet of the condenser from being blocked in the installation area of the rooftop unit.
- Perform the sealing and insulation at the connection between the rooftop unit's outlet and the user's air duct.
- Electrical work should be carried out in accordance with the installation manual and the local national electrical wiring rules or code of practice. (Insufficient capacity or incomplete electrical work may cause electrical shock or fire).
- Be sure to use a dedicated power circuit. (Never use a power supply shared by another appliance).
- For wiring, use a cable long enough to cover the entire distance. Do not use an extension cord.
- Do not put other loads on the power supply, use a dedicated power circuit.
- Use the specified types of wires for electrical connections. (Firmly clamp the connecting wires so its terminals receive no external stresses).
- Incomplete connections or clamping may cause terminal overheating or fire.
- After connecting all the wires be sure to fix the cables so that they do not put undue force on the electrical covers or panels. (Install covers over the wires, incomplete cover installation may cause terminal overheating, electrical shock or fire).
- When installing or relocating the system, be sure to keep the refrigerant circuit free from air (Air in the refrigerant circuit may causes an abnormal pressure rise or rupture, resulting in injury).
- After all installation is completed, check to make sure that no refrigerant is leaking out. (The refrigerant produces a toxic gas if exposed to flames).
- When carrying out piping connection, take care not to let air substances other than the specified refrigerant get into refrigeration cycle. (Otherwise, it will cause lower performance, abnormal high pressure in the refrigeration cycle, explosion and injury).
- Make sure that the installation is properly grounded. Do not ground the unit to a utility pipe, lightning arrester, or telephone grounding. Incomplete grounding may cause electrical shock. (A high surge current from lightning or other sources may cause damage to the air conditioner).
- An earth leakage circuit breaker may be required depending on the site condition to prevent electrical shock.
- Disconnect the power supply before wiring, piping, or checking the unit.

1. UNIT INSTALLATION

Installation instructions

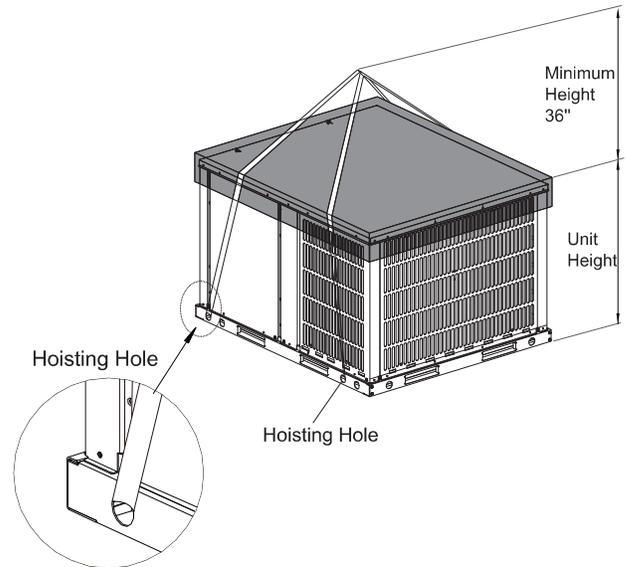
Transportation and handling before installation

Transport the product as close to the installation location as practical before unpacking.

Before hoisting, carefully check the hoisting equipment. During handling, ensure the balance and safety of the unit. Do not remove the packaging of the unit before it reaches the installation site.

• Handling Method

- (1) Put the sling through the hoisting hole at the bottom of the roof, as shown in the figure.
- (2) Ensure the clearance between the top of the sling connection point and that of the unit above 36 in.
- (3) When hoisting, keep the weight of the unit evenly distributed on the sling for stable hoisting.



Installation locations selection

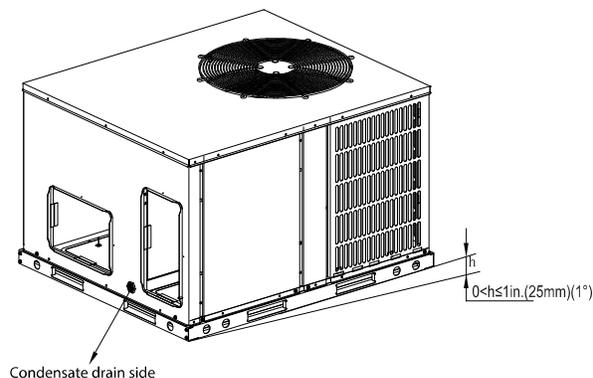
Before choosing the installation site, obtain user's approval.

- Where airflow is good and clean.
- Where it is without a strong breeze.
- Keep the distance from the air inlet and outlet of the condenser to the user's window above 25 in to reduce the impact of outdoor fan noise on users.
- Where rigid wall or support is available to prevent the increase of operation sound or vibration.
- Where there is no risk of combustible gas leakage.
- Where it is at least 3m away from the antenna of TV set or radio. An amplifier may be required for the affected device.
- Do not install the unit in a place with running water or falling ice from high places or roofs.
- Ensure the place with enough space for good ventilation, electronic control wiring, and subsequent maintenance of the unit.

⚠ CAUTION:

In areas subject to heavy snow accumulation or constant temperature below freezing temperature, take special considerations as follows:

- (1) Install the unit at a location 3–12 in. (76-304 mm) above the ground or roof and a location available for the defrost water discharged from the holes at the bottom of the outdoor condenser.
- (2) Mount the unit at an inclined angle to keep the evaporator drain at a low point, as shown in the figure [diagram of drain inclined 1 in. (25 mm)].
- (3) Do not install the unit in areas prone to snow accumulation. If unavoidable, install an anti-snow barrier around the unit to prevent snow accumulation at the air inlet of the condenser.



1. UNIT INSTALLATION

Installation instructions

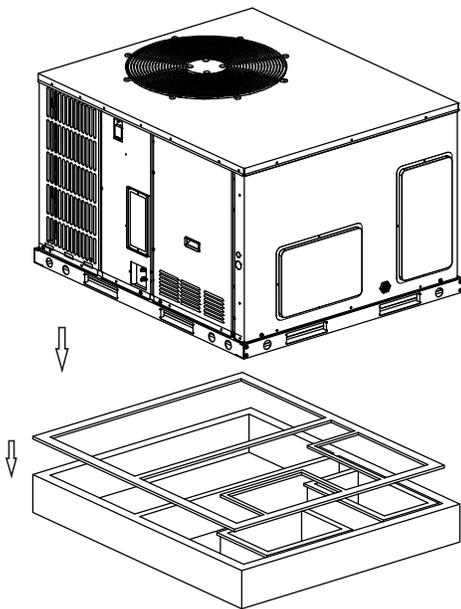
Rooftop Installation- Curb Mounting

The unit is installed at the mode of side return and outlet by default. If the mode of lower return and outlet is required, the roof curbs must be used. (The roof curbs are not attached, they must be field supplied.)

When converting, place the unit above the roof curb, and closely fit the lower air outlet of the unit to the air inlet and outlet of the curb (as shown in the figure) for converting to the mode of lower return and outlet.

Additionally, please note the following matters:

1. Put the unit on the ground, disassemble the air return and outlet sealing plate at the bottom of the unit, and install it on the side air outlet.
2. Paste the thermal insulation foam around the conversion part, and install the unit on the curb, with the contact position kept sealed.



Air duct

Field duct work must comply with the National Fire Protection Association NFPA 90/NFPA 90B and any applicable local ordinance.

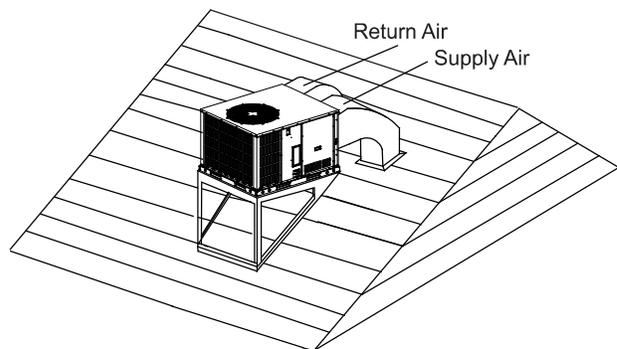
▲ WARNING

Do not, under any circumstances, connect return duct work to any other heat producing device such as fireplace insert, stove, etc. Unauthorized use of such devices may result in fire, carbon monoxide poisoning, explosion, personal injury or property damage.

Sheet metal duct work run in unconditioned spaces must be insulated and covered with a vapor barrier. Fibrous duct work may be used if constructed and installed in accordance with SMACNA Construction Standard on Fibrous Glass Ducts. Duct work must comply with National Fire Protection Association as tested by U/L Standard 181 for Class I Air Ducts. Check local codes for requirements on duct work and insulation.

Duct system must be designed within the range of external static pressure the unit is designed to operate against. It is important that the system airflow be adequate. Make sure supply and return duct work, grills, special filters, accessories, etc, are accounted for in total resistance.

- Sideflow installation.
For the sideflow designed with a flange, fix the air duct system and its fasteners on the flange, and seal the connection between the air duct and the unit with thermal insulation foam as required to prevent air leakage, as shown in the figure.

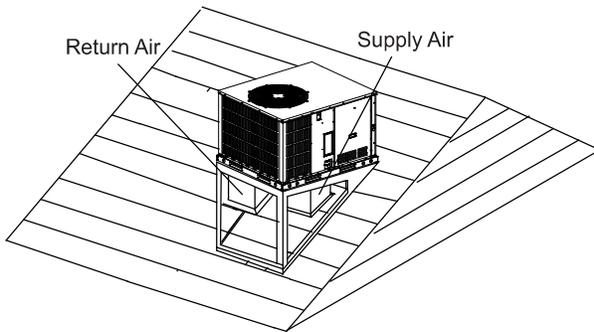
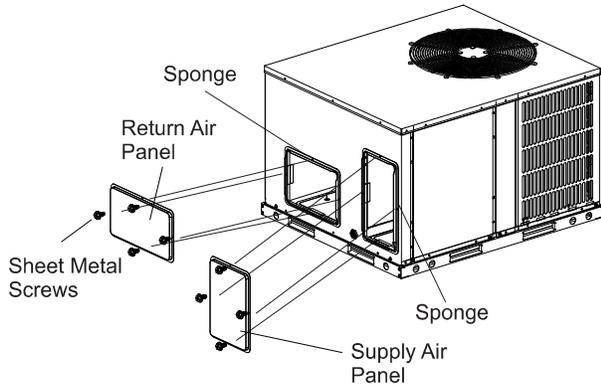


1. UNIT INSTALLATION

Installation instructions

- Downflow installation.

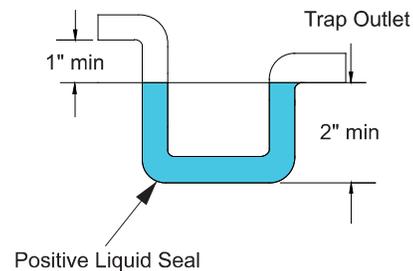
First, stick the sponge in the attachment to the side air outlet and return air outlet, and then connect the air duct system with the conversion part first, and then place the unit on the conversion part, as shown in the figure.



Condensate Drain Connection

The evaporator drain is 3/4 female thread, which is connected to the 3/4 male thread drain pipe. Where permitted, discharge the condensate directly to the outside of the roof or the sand gravel pavement. Keep the unit drain at least 1 in above the pipeline drain and the pipeline drain at least 2 in above the ground. Tilt the drain pipe towards the pipeline drain to ensure smooth drainage.

Perform the sealing and insulation on the surface of the drain pipe as necessary to prevent condensation on the pipe surface or aging damage to the pipe.



Air Filter (Not Factory-Installed)

The unit is not equipped with an air filter when it leaves the factory, and it is provided on-site. During the air duct system design, the size, type, and pressure drop of the air filter shall be fully considered. The air volume varies with different types and installations of air filters, which has an impact on the performance of cooling and heating.

The flow rate of installing an external filter or other filter must be appropriate. The recommended flow rate is 300 feet/min to 390 feet/min.

It is very important to avoid air volume reduction while installing a HEPA filter or electronic air filtration system, so we recommend you contact a professional installer for proper installation.

After installation, the air filter shall be checked regularly and kept clean. However, an air filter full of dirt will increase the air resistance and reduce the air volume, lower the operating efficiency, and increase the operating cost and wear of the unit.

1. UNIT INSTALLATION

Installation instructions

System Charge Adjustment

Factory refrigerant precharge

Model(Capacity)	Factory refrigerant precharge [oz.(kg)]
36K	77.6(2.2)

Note:

- 1.If refrigerant needs to be charged, it is recommended to use the Weigh-In Method.
- 2.The maximum refrigerant charge amount is as shown in the table above.

Adjust Refrigerant Level

Using service equipment, add or recover refrigerant according to the refrigerant calculation. Allow system to stabilize for 20 minutes after adjusting charge level.

MEASURE SUBCOOLING TO VERIFY PROPER CHARGE

If you want to adjust charging by checking "Subcooling", please follow below.

NOTE: Charging equipment must use dedicated VG74 oil gauges and hoses.

- (1) Purge gauge lines.
- (2) Connect service gauge manifold to liquid base valve service ports.
- (3) Convert the liquid pressure to temperature using a temperature/pressure chart.
- (4) Temporarily install a thermometer on the connecting pipe of the electronic expansion valve and condenser. Ensure the thermometer makes adequate contact and is insulated for best possible readings.
- (5) Subtract the liquid line temperature from the converted liquid pressure to determine subcooling.
- (6) Before starting the subcooling adjustment, make sure the outdoor ambient temperature is in a below range and the unit is operating at 100% capacity(TEST MODE, indoor and outdoor should all be same tons, for example, 36K Hisense indoor and 36K Hisense outdoor. Press S1 to make V1 display P. Press S2 and S3 to adjust to P.40, the digital tube V2 will display 0, and then adjust 0 to 1. Press S2 and S3 to adjust to P.41, the digital tube V2 will display 0, and then adjust 0 to 1. Press S2 and S3 to adjust to P.42, the digital tube V2 will display 28, which means 28°C frequency lock.)
- (7) If the unit is operating at 100% capacity which is ready for charge by subcooling as last page.
- (8) If the system subcooling is not within the range as shown in the following table, adjust subcooling according to the following procedure.
 - a. If subcooling is low, add charge to adjust the subcooling as specified in the following table.
 - b. If subcooling is high, remove charge to lower the subcooling to below charging table value.

$$\text{SUBCOOLING} = (\text{SAT. LIQUID TEMP.}) - (\text{LIQUID LINE TEMP.})$$

OD Ambient Temp (degF)	<65°F	65°F to 105°F	>105°F
		HP(Heat pump)	
Subcooling (degF)	Weigh in Charge	36K 6±1°F	Weigh in Charge

1. UNIT INSTALLATION

Installation instructions

Saturated liquid pressure temperature chart		Saturated liquid pressure temperature chart	
Liquid pressure (PSIG)	R32 (°F)	Liquid pressure (PSIG)	R32 (°F)
225	76	400	115
230	77	410	117
240	80	420	118
250	82	430	120
260	85	440	122
270	87	450	124
280	90	460	125
290	92	470	127
300	94	480	129
310	97	490	130
320	99	500	132
330	101	510	133
340	103	520	135
350	105	530	136
360	107	540	138
370	109	555	140
380	111	570	142
390	113	590	145

Note:

- Subcooling information is valid only while the unit is entering test mode.
- Not more than 3/8 lb. (6 oz.) of refrigerant be added to the system at a time to achieve the target subcooling. It is recommended adding 1 oz. refrigerant each time, then wait 10 minutes to stabilize the system.
- Check the schrader ports for leaks and tighten valve cores, if necessary, install caps finger.
- Do not adjust the charge based on suction pressure.

Air tight test

- Do use Nitrogen.

Connect the gauge manifold using charging hoses with a nitrogen cylinder to the service valves marked "H" and "L".

Perform the air-tight test.

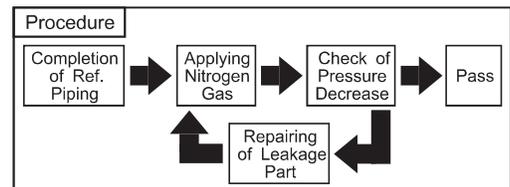
Don't open the gas line stop valves.

Apply nitrogen gas pressure of 550 psig (3.8 MPa).

Check for any gas leakage at the flare nut connections, or brazed parts by gas leak detector or foaming agent.

Gas pressure doesn't decrease is OK.

After the air tight test, release nitrogen gas.



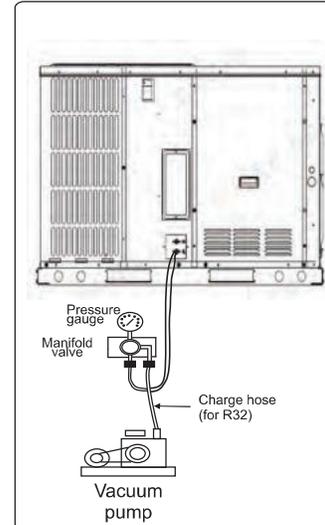
Air tight procedure

1. UNIT INSTALLATION

Installation instructions

Vacuum pumping and charge refrigerant

- Vacuum pumping
 - (1) Remove the service port cap of the service valve of the unit.
 - (2) Connect the manifold gauge and vacuum pump to the service port of the service valve of the unit.
 - (3) Run the vacuum pump. (Work for more than 15 minutes.)
 - (4) Check the vacuum with the gauge manifold valve, then close the gauge manifold valve and stop the vacuum pump.
 - (5) Leave it as is for one or two minutes. Make sure the pointer of the manifold gauge remains in the same position. Confirm that the pressure gauge shows -14.7 psig (-0.101 MPa or -760 mmHg).
 - (6) Remove the manifold gauge quickly from the service port of the service valve.
 - (7) Connect the refrigerant pipe to the low-pressure side service valve and and evacuate.
 - (8) Open adjusted valve to add refrigerant (must be refrigerant is liquid).
 - (9) Tighten the cap to the service port.
 - (10) Re-tighten the cap.
 - (11) Leak test foam with halogen leak detector to check the flare nut and brazing Carolina Department leaks. Use foam that not generate ammonia (NH_3) in the reaction.



CAUTION

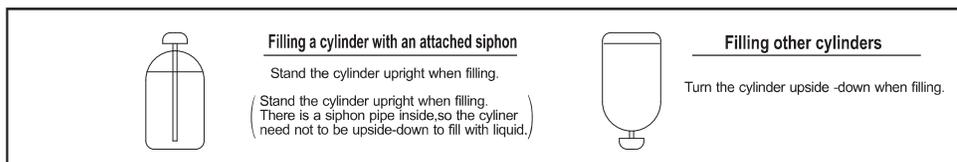
- An excess or a shortage of refrigerant is the main cause of trouble to the unit. Charge the correct refrigerant quantity according to the description of label at the inside of the manual.
- Check for refrigerant leakage in detail. If a large refrigerant leakage occurs, it will cause difficulty with breathing or harmful gases would occur if a fire was being used in the room.
- Additional refrigerant charge

The unit has been filled with refrigerant.

Please according "Piping Requirement" to calculate additional charge.

After vacuum pump procedure has been finished, first exhaust air from charge hose, then open valves, charge refrigerant as "liquid" type through Low pressure service valve.

At the end, please close valves and record the refrigerant charging quantity.



2. UNIT INSTALLATION

Installation instructions

Electrical Wiring



WARNING

- Turn OFF the main power switch to the indoor unit and the outdoor unit and wait for more than 3 minutes before electrical wiring work or a periodical check is performed.
- Check to ensure that the indoor fan and the outdoor fan have stopped before electrical wiring work or a periodical check is performed.
- Protect the wires, electrical parts, etc. from rats or other small animals. If not protected, rats may gnaw at unprotected parts and at the worst, a fire will occur.
- Avoid the wirings from touching the refrigerant pipes, plate edges and electrical parts inside the unit. If not do, the wires will be damaged and at the worst, a fire will occur.
- Install an ELB (Electric Leakage Break) in the power source. If ELB is not used, it will cause electric shock or fire at the worst.
- This unit uses an inverter, which means that it must be used an earth leak detector capable handling harmonics in order to prevent malfunctioning of the earth leak detector itself.
- Do not use intermediate connection wires, stranded wires (see **<Attentions when Connect the power supply wiring>**), extension cables or control line connection, because the use of these wires may cause fever, electric shock or fire.
- The tightening torque of each screw shall be as follows.
 - M4: 0.7 to 1.0 lbf·ft. (1.0 to 1.3 N·m)
 - M5: 1.5 to 1.8 lbf·ft. (2.0 to 2.5 N·m)
 - M6: 3.0 to 3.7 lbf·ft. (4.0 to 5.0 N·m)
 - M8: 6.6 to 8.1 lbf·ft. (9.0 to 11.0 N·m)
 - M10: 13.3 to 21.7 lbf·ft. (18.0 to 23.0 N·m)Keep the above tightening torque when wiring work.



CAUTION

- With tape material along the wire wrapped, sealed wiring holes, prevent the condensed water and insects.
- Tightly secure the power source wiring using the cord clamp inside the unit.
Note: Fix the rubber bushes with adhesive when conduit tubes to the outdoor unit are not used.

General check

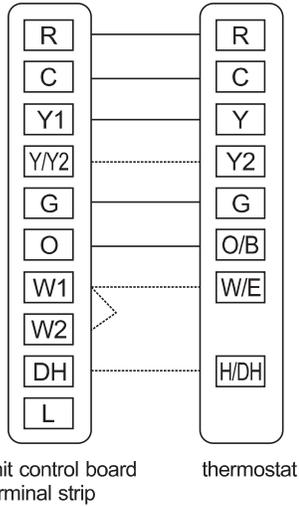
- (1) Make sure that the field-selected electrical components (main power switches, circuit breakers, wires, conduit connectors and wire terminals) have been properly selected according to the electrical data.
Make sure that the components comply with National Electrical Code (NEC).
- (2) Check to ensure that the voltage of power supply is within +10% of nominal voltage and earth phase is contained in the power supply wires. If not, electrical parts will be damaged.
- (3) Check to ensure that the capacity of power supply is enough.
If not, the compressor will be not able to operate cause of voltage drop abnormally at starting.
- (4) Check to ensure that the earth wire is connected.
- (5) Install a main switch, multi-pole main switch with a space of 0.14 in. (3.5mm) or more, single phase main switch with a space of 0.12 in. (3.0mm) or more between each phase.
- (6) Check to ensure that the electrical resistance is more than 2 MΩ, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired.

2. UNIT INSTALLATION

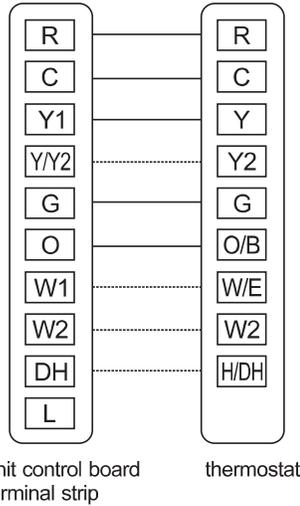
Installation instructions

Electrical wiring diagram

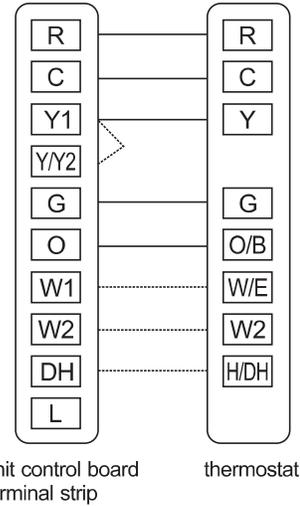
Support 3H and 2C thermostat



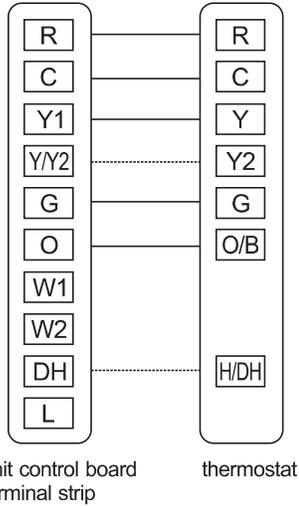
Support 4H and 2C thermostat



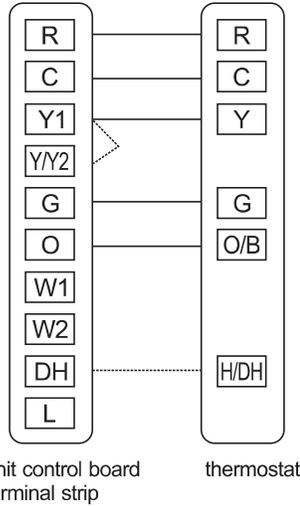
Support 3H and 1C thermostat



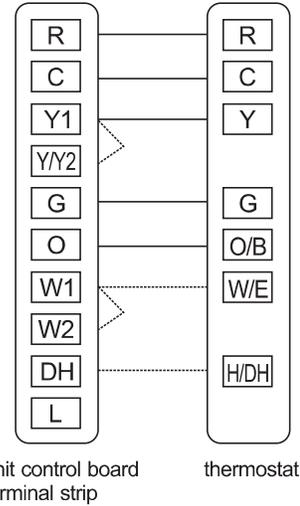
Support 2H and 2C thermostat



Support 1H and 1C thermostat



Support 2H and 1C thermostat



Note:

1. The "L" port displays fault information. If the thermostat has a port with function corresponding to "L", it needs to be connected to the "L" port of the unit.
2. When the machine does not have auxiliary electric heating, the machine only supports 2H2C and 1H1C working modes.

Installation instructions

Electrical Data

Model (Capacity)	Power Supply	ELB		Power Source Cable Size	Circuit Breaker (A)
		Rated Current (A)	Nominal Sensitive Current (mA)		
36K	208/230V ~/60Hz	40	5	3×12AWG	40

Max. Running Current (A): REFER TO NAMEPLATE

Note:

- (1) Follow local codes and regulations when select field wires ,and all the above are the minimum wire size.
- (2) 18AWG. color-coded low voltage wire should be used for lengths less than 100ft.(30m). For wire lengths than 100ft.(30m), 16AWG. wire should be used. When transmitting cable length is longer than 262ft. (80m), a larger wire size should be selected.
- (3) Install main switch and ELB for each system separately. Select the high response type ELB that is acted within 0.1second. Recommended capacity to see outdoor machine switch capacity.

<Attentions when Connect the power supply wiring>

1. When connecting the terminal block using stranded wire, make sure to use the round crimp-style terminal for connection to the power supply terminal block. Place the round crimp-style terminals on the wires up to the covered part and secure in place.
2. When connecting the terminal block using a single core wire, be sure to perform curing.

Installation instructions

DIP Switch Setting

SW5 DIP Switch Setting	SW4 DIP Switch Setting	SW3 DIP Switch Setting				
Factory Setting: Q3 Wind Gear 	Factory Setting 	36K 				
Q1 Wind Gear 	Refrigerant Leak Recovery 					
Q2 Wind Gear 	DIP Switch Setting of Indoor Main Board 1. Mark of "■" indicates the position of DIP switches. 2. SW3: capacity select DIP switch . 3. SW4-4 : When refrigerant leakage occurs on the machine, you need to flip the dip switch. When the DIP switch status changes, the machine will be unlocked . 4. SW5-1、SW5-2、SW5-3 : Wind shift dip switches. 5. SW5-4: Constant air volume control DIP switch .					
Q4 Wind Gear 						
Q5 Wind Gear 						
Air Volume Settingre <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>Automatic</td> <td>Manual</td> </tr> <tr> <td></td> <td></td> </tr> </table>			Automatic	Manual		
Automatic			Manual			
						

The indoor unit has 5 wind levels, and the DIP switch settings for each wind level are shown in Table 1.

Note:

- SW5-4: Constant air volume ON/OFF control.

DIP switch ON: The indoor unit runs in manual constant air volume control mode (regulated by professionals according to the static pressure setting instructions in the wire controller document).

DIP switch OFF: The indoor unit runs in automatic constant air volume control mode. After selecting the wind level according to Table 1, the indoor unit automatically matches the static pressure of air ducts, and please refer to the technical service manual for airflow performance.

Table 1 Dip switch setting

	SW5-1	SW5-2	SW5-3
Q1	OFF	OFF	ON
Q2	OFF	ON	OFF
Q3	OFF	OFF	OFF
Q4	OFF	ON	ON
Q5	ON	OFF	OFF

Installation instructions

Test run

Test run should be performed after refrigerant piping, drain, wiring, etc. have been finished.



The heat pump air conditioner is provided with a crankcase heater, check to ensure that the switch on the main power source has been ON for more than 6 hours ahead of power on preheating, otherwise it might damage the compressor!

Do not operate the system until all the check points have been cleared.

(A) Check to ensure that the stop valves of the outdoor unit are fully opened.

(B) Check to ensure that the electric wires have been fully connected.

(C) Check to ensure that the electrical resistance is more than $2M\Omega$, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired.

Test run function identification

Operate the thermostat to turn ON the appliance, and then proceed test run.

Pay attention to the following items while the system is running.

Do not touch any of the parts by hand at the discharge gas side, since the compressor chamber and the pipes at the discharge side are heated higher than 194°F (90°C).

● Turn off the power after test run is finished.

Installation of the appliance is generally finished after the above operations are done. If you still have any trouble, please contact local technical service center of our company for further information.

Part III
Service manual



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1.1 Main Function

1.1.1 Indoor unit mode control

1. Cooling wind prevention mode

In the heating-run, to prevent the indoor fan from blowing cold air, the indoor fan will stop or run slowly until the coil is warm.

2. Blowing waste heating and waste cooling function

In the heating mode, when the air conditioner is turned off, the indoor heat exchanger temperature is still higher, so the air conditioner will continue to run the waste heat operation. In cooling and dehumidification mode, after the compressor stops, indoor unit will continue to set the speed of operation for a period of time.

3. Fault code

The fault code can be shown by LED lamps.

1. FUNCTION AND CONTROL

1.1.2 Outdoor unit mode control

Control function

1. Cooling anti-freeze protection

The indoor coil sensor functions as real time temperature detector of evaporator. It prevents the indoor unit evaporator temperature becoming too low. If the indoor coil temperature is too low, the compressor will automatically start the protection mode.

2. Overload protection

To prevent system overload caused by excessive pressure, the machine will implement real-time detection when outdoor coil temperature is too high during cooling mode or indoor coil temperature is too high during heating mode.

3. Exhaust temperature protection

To prevent deterioration due to high exhaust temperature of compressor, the machine will realize the real-time detection of the exhaust gas temperature. If the temperature is too high, the compressor will come to automatic protection mode.

4. Oil-return control

When the compressor runs at low frequency for a long time, the control system will start the oil-return mechanism. The oil in the system returns to the compressor.

5. Operation mode

Air conditioning mode is the operation mode set by users through wired controller, four modes are available: cooling, heating (Only valid for heat pump type), dehumidification, and fan mode.

6. Start-up protection

To prevent compressor from restarting frequently when the system pressure has not been completely balanced, and it cannot be restarted within 3 minutes.

7. Pressure protection

When the pressure decreases to the preset value, the pressure switch will automatically protect the unit. The compressor will stop and report the fault code protection.

8. Anti-snow function

When the outdoor unit is in standby state, the outdoor ambient temperature $\leq 27^{\circ}\text{F}(-3^{\circ}\text{C})$ lasts for 20 min, it enters the anti-snow control function. After entering the anti-snow control, the outdoor fan runs in 16-level air speed for 60s every 30 min. When the outdoor unit is in non-standby state or the outside ambient temperature $\geq 36^{\circ}\text{F}(2^{\circ}\text{C})$, it exits the anti-snow control function.

Note: This function is disabled by factory default. If you want to enable it, you need to change the EE function selection and update the equipment EE data.

1.2 Control Logic Description

1.2.1 Sensors in HVAC Systems

- (1) Discharge temperature sensor
- (2) Outdoor coil temperature sensor
- (3) Outdoor ambient temperature sensor
- (4) Indoor coil temperature sensor
- (5) Indoor ambient temperature sensor

1.2.2 Compressor Frequency Control

- (1) Compressor frequency calculation
- (2) Compressor frequency range determination
- (3) Compressor frequency protection limit
- (4) Compressor frequency output

1.2.3 Electronic Expansion Valve Control

- (1) Opening control during powering on
- (2) Opening control at the start-up phase
- (3) Opening control at stable operation phase
- (4) Opening control during powering off

1.2.4 Indoor/Outdoor Fan Speed Control

- (1) Speed control in cooling mode
- (2) Speed control in heating mode

1.2.5 Defrost Control

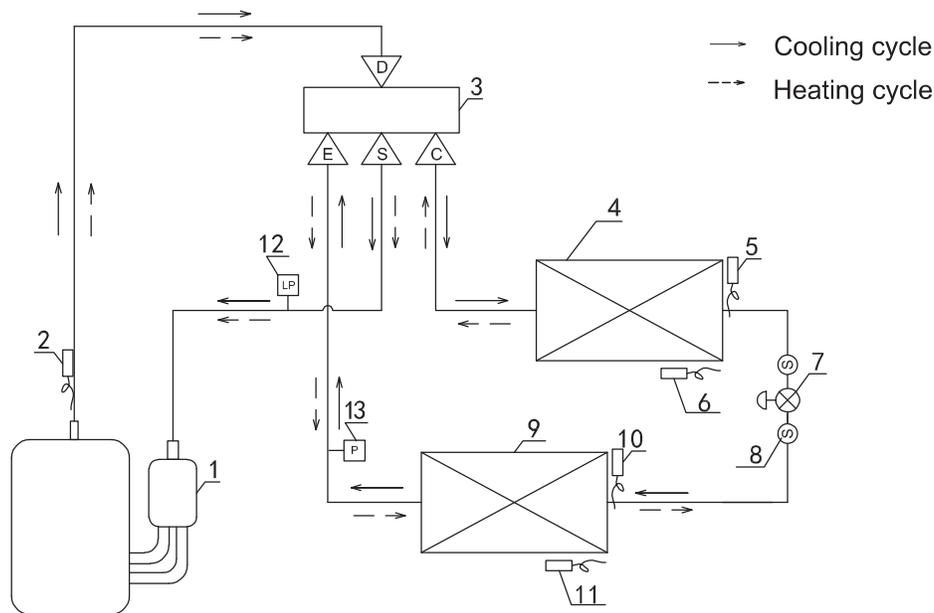
- (1) Defrost entry conditions
- (2) Defrost cycle
- (3) Defrost exit conditions

1.2.6 System Protection

- (1) High temperature protection
- (2) Low temperature protection
- (3) Cold air prevention in heating

1. FUNCTION AND CONTROL

1.2.1 Sensors in HVAC Systems



List of components			
1	Compressor	8	Strainer
2	Discharge temperature sensor	9	Indoor heat exchanger
3	4-Way valve	10	Ambient temperature sensor
4	Outdoor heat exchanger	11	Coil temperature sensor
5	Ambient temperature sensor	12	Low pressure switch
6	Coil temperature sensor	13	Pressure sensor
7	Electronic expansion valve		

(1) Discharge temperature sensor

It is designed to detect and control the temperature at the compressor discharge port. When the discharge temperature is too high [$>219^{\circ}\text{F}$ (104°C)], the compressor will run at low frequency or shut down.

(2) Outdoor coil temperature sensor

It is designed to detect the temperature in the middle of the outdoor heat exchanger. In cooling mode. When the temperature is too high [$>147^{\circ}\text{F}$ (64°C)], the compressor will run at low frequency or shut down. Additionally, it is used to:

- 1) In cooling mode, detect the coil temperature and control the opening of the electronic expansion valve.
- 2) In cooling mode, execute the system overload control.
- 3) In heating mode, activate the system defrost control.

(3) Outdoor ambient temperature sensor

It is designed to detect the outdoor ambient temperature for compressor frequency control and outdoor fan speed control.

(4) Indoor coil temperature sensor

It is designed to detect the temperature in the middle of the indoor heat exchanger. In heating mode, When the temperature is too high [$>147^{\circ}\text{F}$ (64°C)], the compressor will run at low frequency or shut down. Additionally, it is used to:

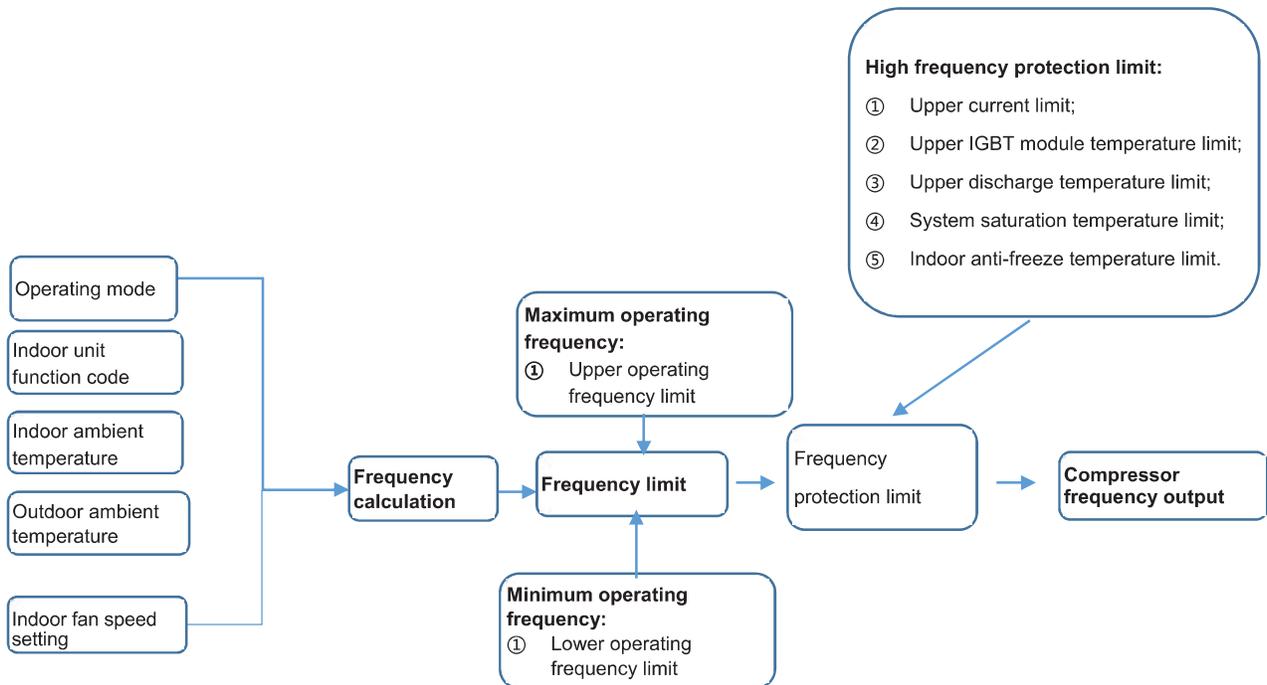
1. FUNCTION AND CONTROL

- 1) In heating mode, detect the coil temperature and control the opening of the electronic expansion valve.
- 2) In heating mode, execute the system overload control.
- 3) In heating mode, perform the indoor cold air prevention control.
- 4) In cooling mode, activate the system low temperature protection.

(5) Indoor ambient temperature sensor

It is designed to detect the indoor ambient temperature for compressor frequency control.

1.2.2 Compressor Frequency Control



The final frequency output of the compressor is calculated as follows.

(1) Compressor frequency calculation

The compressor frequency is calculated based on the following parameters.

1) HVAC operating mode coefficient K1

Each operating mode such as cooling, heating, Auto has a specific frequency demand coefficient.

2) Indoor unit capacity code K2

Indoor units with different function codes have different capacity codes, which are generally the same as the nominal cooling capacity/100 on the nameplate.

Function code	36K
Capacity code	105

1. FUNCTION AND CONTROL

3) Indoor ambient temperature coefficient K3

It refers to the temperature detected by the indoor ambient temperature sensor.

4) Outdoor ambient temperature coefficient K4

It refers to the temperature detected by the outdoor ambient temperature sensor.

5) Indoor setting speed coefficient K5

Each indoor setting speed adapts to high speed and medium speed according to the compressor frequency, and the coefficient is as follows.

Indoor setting speed	High	Medium
Compressor frequency control coefficient	1.0	0.9

$$\text{Compressor frequency} = K1 \times K2 \times K3 \times K4 \times K5$$

(2) Compressor frequency range determination

1) Maximum operating frequency

The maximum operating frequency of the compressor is set to protect the reliability of HVACs while providing a strong cooling/heating performance, keeping the operating pressure, temperature, current of electrical devices, and heating of electrical devices within a proper range, and ensuring a longer service life of HVACs.

2) Minimum operating frequency

The minimum operating frequency of the compressor is set based on the requirements of four-way valve switching, cold air prevention in heating, and anti-freeze in cooling while providing energy-saving performance.

(3) Compressor frequency protection limit

The frequency protection conditions for compressors are mainly limited by the following 5 factors:

1) Upper current limit

Excessive current will lead to the temperature rise of electrical devices in the outdoor control board and reduce the service life of electrical devices, so it is necessary to set a reasonable current value. When this value is reached, the operating frequency of the compressor will be reduced to protect the HVAC.

2) Upper IGBT module temperature limit

Excessive temperature of the IGBT module poses a risk of damage to the control board chip, so it is necessary to set a reasonable temperature value. When this value is reached, the operating frequency of the compressor will be reduced to protect the HVAC.

3) Upper discharge temperature limit

The discharge temperature represents the internal temperature of the compressor, and the excessive temperature [$>248^{\circ}\text{F}(120^{\circ}\text{C})$] poses a risk of melting internal insulated components, causing damage to the compressor. Therefore, it is necessary to set a reasonable temperature value

[generally $208^{\circ}\text{F}(98^{\circ}\text{C})$]. When the discharge temperature exceeds this value, the operating frequency of the compressor will be reduced.

4) System saturation temperature limit

The HVAC system has a maximum design pressure, and the saturation temperature at the corresponding pressure is detected for small HVACs, which is generally the temperature of the coil on the condensing side. Generally, the maximum design pressure of the R32 system is 624 psi (4.3 MPa) [saturation temperature is $149^{\circ}\text{F}(65^{\circ}\text{C})$], and the system overpressure limit is set to 580 psi (4.0 MPa) (saturation temperature is [$149^{\circ}\text{F}(62^{\circ}\text{C})$]). When this value is reached, the operating frequency of the compressor will be reduced.

5) Indoor anti-freeze temperature limit

When the indoor coil temperature is lower than $32^{\circ}\text{F}(0^{\circ}\text{C})$, the indoor unit heat exchanger has the risk of freezing, resulting in abnormal operation of HVACs, so it is necessary to set a reasonable temperature value. Generally, it is set to $36^{\circ}\text{F}(2^{\circ}\text{C})$, and when the indoor coil temperature in cooling mode is lower than this value, the operating frequency of the compressor will be reduced.

(4) Compressor frequency output

After the above correction, the control module outputs a compressor frequency, which is the actual operating frequency of the compressor.

1.2.3 Electronic Expansion Valve Control

(1) Opening control during powering on

When the HVAC is powered on, the electronic expansion valve is at an initial opening, which is usually 200 steps. This opening helps to balance the pressure of the indoor and outdoor units before the HVAC is started.

1. FUNCTION AND CONTROL

(2) Opening control at the start-up phase

The first 5 minutes during compressor start-up is generally called the start-up phase, and the opening of the electronic expansion valve in this phase only depends on the compressor frequency. Typical initial openings are as follows:

Compressor frequency (Hz)		20	30	40	50	60	70	80	90
Initial opening (step)	Cooling	112	138	164	190	216	242	268	294
	Heating	84	106	128	150	172	194	216	238

(3) Opening control at stable operation phase

After 5 minutes of the compressor start-up, the HVAC is controlled by the discharge superheat (DSH). DSH= discharge temperature – condenser coil temperature (20<DSH<50).

Note:

In cooling mode, the condenser coil temperature is the outdoor unit coil temperature.

In heating mode, the condenser coil temperature is the indoor unit coil temperature.

The control module calculates a target DSH according to the compressor frequency and outdoor ambient temperature, detects the actual DSH every 60s, and outputs the opening adjustment command of the electronic expansion valve every 60s according to the setting parameters.

$$\delta\text{DSH} = \text{target DSH} - \text{actual DSH}$$

$$\delta\text{DSH}_{dv} = \text{DSH}_n - \text{DSH}_{n-1}$$

In which, DSH_n is the DSH value of HVAC systems detected in the current cycle, DSH_{n-1} is the DSH value of HVAC systems detected in the previous cycle, and δDSH_{dv} is the difference between the DSH values of two adjacent cycles, which is available for determining the change trend of the DSH value.

- 1) When the target DSH is <actual DSH, the electronic expansion valve is opened.
- 2) When the target DSH is \geq actual DSH, the electronic expansion valve is closed.

Please refer to the following table for specific adjustments.

δDSH_{dv}	-5	-3	-1	0	1	3	5
10	-20	-15	-10	-7	-5	-3	0
7	-15	-10	-7	-5	-3	0	3
4	-10	-7	-5	-3	0	3	5
1	3	-1	0	0	0	1	3
0	-3	-1	0	0	0	1	3
-1	-3	-1	0	0	0	1	3
-4	5	-3	0	3	5	7	10
-7	-3	0	3	5	7	10	15
-10	0	3	5	7	10	15	20

1. FUNCTION AND CONTROL

(4) Opening control during powering off

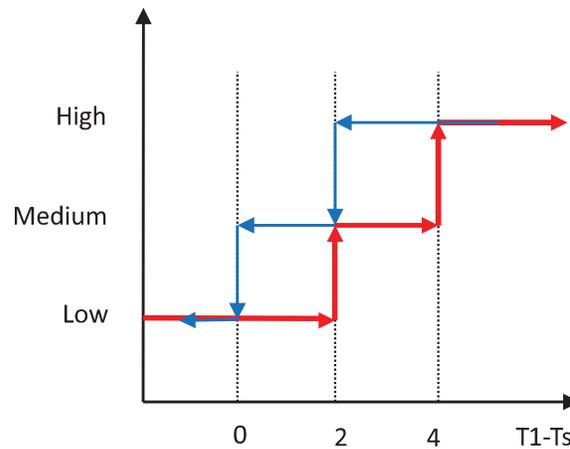
After the HVAC receives the power-off command, the electronic expansion valve opening is maintained at 200 steps after the compressor shuts down. This opening helps to balance the pressure of the indoor and outdoor units before the HVAC is started.

1.2.4 Indoor/Outdoor Fan Speed Control

(1) Speed control in cooling mode

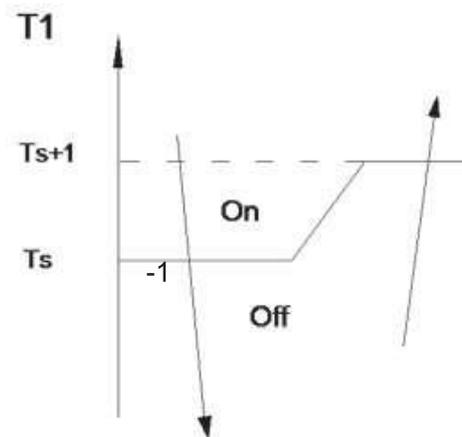
Indoor fan running rules:

In cooling mode, indoor fan runs all the time and the speed can be selected as high and medium, The unit automatically selects according to the compressor operating parameters.



outdoor fan running rules:

Once the compressor starts up, it will follow the below rules: When indoor room temp. T_1 is lower than T_s , the compressor and outdoor fan will shut off. When T_1 is higher than T_{s+1} , the compressor and outdoor fan will start up.



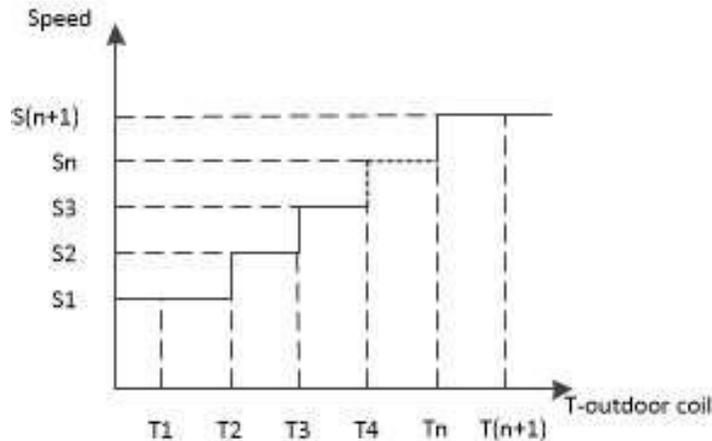
1. FUNCTION AND CONTROL

Outdoor fan running rules:

Once the outdoor fan start up, it will follow the below rules:

Single outdoor fan: First, it will run in an invariable speed for a short time; Then it will regulate the speed by the outdoor-coil temperature.

Double outdoor fan: If it has two outdoor fans, the upper fan regulates the speed by the rules, and the downer fan speed lower than the upper fan speed for 30rpm~60rpm.



(2) Speed control in heating mode

In heating mode, indoor fan runs all the time and the speed can be selected as high and medium.

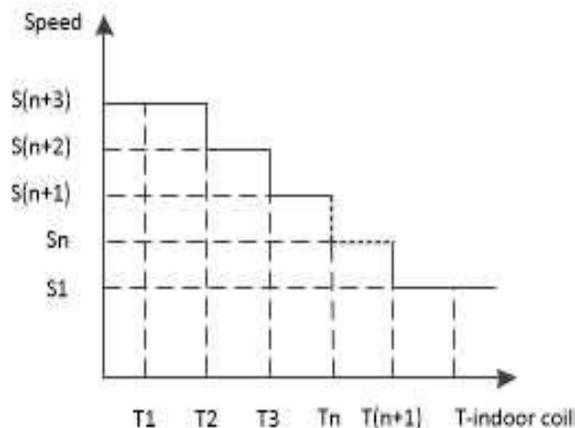
DC-Inverter outdoor unit:

Outdoor fan running rules:

Once the outdoor fan start up, it will follow the below rules:

Single outdoor fan: First, it will run in an invariable speed for a short time; Then it will regulate the speed by the indoor-coil temperature.

Double outdoor fan: If it has two outdoor fans, the upper fan regulates the speed by the rules, and the downer fan speed lower than the upper fan speed for 30rpm~60rpm.



1. FUNCTION AND CONTROL

1.2.5 Defrost Control

(1) Defrost entry conditions

- 1) After the compressor runs for about 40 min, the outdoor ambient temperature and the outdoor coil temperature are detected.
- 2) The target defrost temperature is the outdoor ambient temperature $\times 1 - 41^{\circ}\text{F}(5^{\circ}\text{C})$, IF the outdoor coil temperature arrived at the target defrosting temperature, which is kept for 2 min, and then defrosting is enabled.

Target defrost temperature °F(°C)				
Outdoor ambient temperature	41(5)	32(0)	23(-5)	14(-10)
Target defrost temperature	32(0)	23(-5)	14(-10)	5(-15)

(2) Defrost cycle

- 1) The compressor stops for 1 min and then starts, rises to the defrost frequency, and starts defrosting.
- 2) The defrost cycle ranges from 3 min (minimum) to 10 min (maximum). Additionally, the indoor fan/outdoor fan stops during defrosting.

(3) Defrost exit conditions

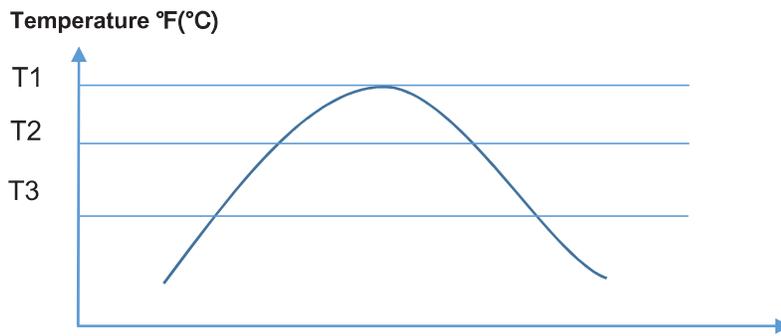
- 1) When the defrost time reaches the maximum, the defrost mode automatically exits.
- 2) When the outdoor coil temperature reaches the defrost exit temperature (10°C), the defrost mode keeps for 8s and then exits.

1.3.3.6 System Protection

(1) High temperature protection

There are three types of high temperature protection, namely high discharge temperature protection, cooling overload protection, and heating overload protection, and the control logic of the three is the same, as shown in the following diagram.

1. FUNCTION AND CONTROL



T1: Temperature for compressor shutdown

T2: Temperature for compressor frequency reduction

T3: Temperature for preventing the compressor from frequency increase When the temperature is too high, the control module outputs a signal as below:

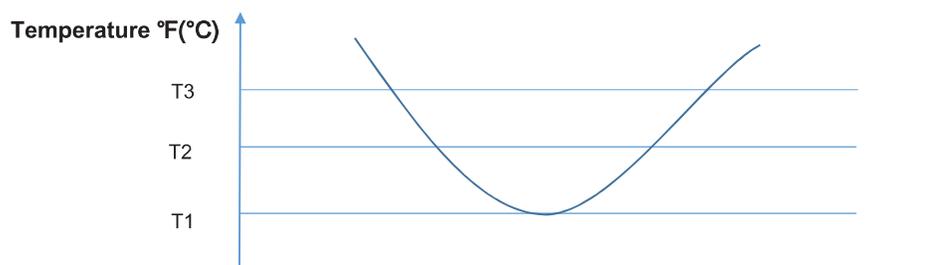
- 1) When $T \geq T1$, the compressor shuts down, and the HVAC stops.
- 2) When $T1 > T \geq T2$, the compressor frequency is reduced.
- 3) When $T2 > T \geq T3$, the compressor is prohibited from increasing the frequency.
- 4) When $T < T3$, the HVAC operates properly.

Please refer to the following table for the three types of high temperature protection.

High temperature protection °F(°C)			
Name	Shutdown	Frequency reduction	Frequency increase prohibited
High discharge temperature protection (discharge temperature sensor)	226(108)	219(104)	212(100)
Cooling overload protection (outdoor coil temperature sensor)	151(66)	144(62)	138(59)
Heating overload protection (indoor coil temperature sensor)	149(65)	138(59)	133(56)

(2) Low temperature protection

- 1) The low temperature protection mainly refers to the anti-freeze protection of the indoor unit for correcting the operating frequency of the compressor as follows:



1. FUNCTION AND CONTROL

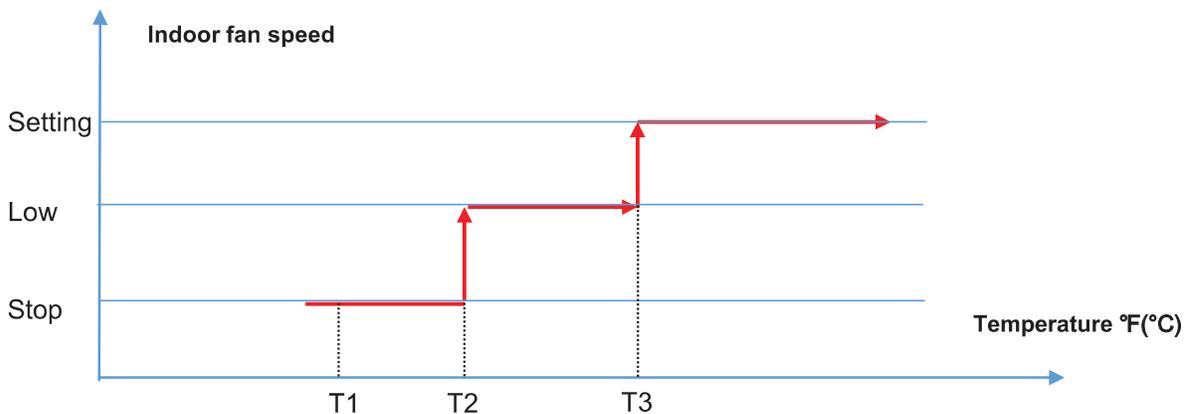
When the indoor coil temperature is too low, the control module outputs a signal as below:

- 1) When $T \geq T3$, the HVAC operates properly.
- 2) When $T3 > T \geq T2$, the compressor frequency is reduced.
- 3) When $T2 > T \geq T1$, the compressor is prohibited from increasing the frequency.
- 4) When $T < T1$, the compressor shuts down, and the HVAC stops.

Please refer to the following table for low temperature protection.

Low temperature protection			
Name	Shutdown	Frequency reduction	Frequency increase prohibited
Anti-freeze in cooling (discharge temperature sensor)	28.4(-2)	35.6(2)	39.2(4)

(3) Cold air prevention in heating



When the indoor coil temperature is too low in heating mode, the control module outputs a signal as below:

- 1) When $T < T2$, the indoor fan does not start.
- 2) When $T3 > T \geq T2$, the indoor fan runs at low speed.
- 3) When $T \geq T3$, the indoor fan runs at setting speed.

Please refer to the following table for the temperature for cold air prevention in heating.

Temperature for cold air prevention in heating			
Name	T1	T2	T3
Cold air prevention in heating (indoor coil temperature sensor)	68(20)	77(25)	100(38)

2. FIELD SETTING

2.1 Field Setting

2.1.1 Unit DIP switch

SW5 DIP Switch Setting		SW4 DIP Switch Setting		SW3 DIP Switch Setting		
Factory Setting: Q3 Wind Gear		Factory Setting		36K		
Q1 Wind Gear		Refrigerant Leak Recovery				
Q2 Wind Gear		<p>DIP Switch Setting of Indoor Main Board</p> <ol style="list-style-type: none"> 1. Mark of "■" indicates the position of DIP switches. 2. SW3: capacity select DIP switch . 3. SW4-4 : When refrigerant leakage occurs on the machine, you need to flip the dip switch. When the DIP switch status changes, the machine will be unlocked . 4. SW5-1、 SW5-2、 SW5-3 : Wind shift dip switches. 5. SW5-4: Constant air volume control DIP switch . 				
Q4 Wind Gear						
Q5 Wind Gear						
Air Volume Settingre	Automatic					Manual

The indoor unit has 5 wind levels, and the DIP switch settings for each wind level are shown in Table 1.

Note:

1. SW5-4: Constant air volume ON/OFF control.

DIP switch ON: The indoor unit runs in manual constant air volume control mode (regulated by professionals according to the static pressure setting instructions in the wire controller document).

DIP switch OFF: The indoor unit runs in automatic constant air volume control mode. After selecting the wind level according to Table 1, the indoor unit automatically matches the static pressure of air ducts, and please refer to the technical service manual for airflow performance.

Table 1 Dip switch setting

	SW5-1	SW5-2	SW5-3
Q1	OFF	OFF	ON
Q2	OFF	ON	OFF
Q3	OFF	OFF	OFF
Q4	OFF	ON	ON
Q5	ON	OFF	OFF

2. FIELD SETTING

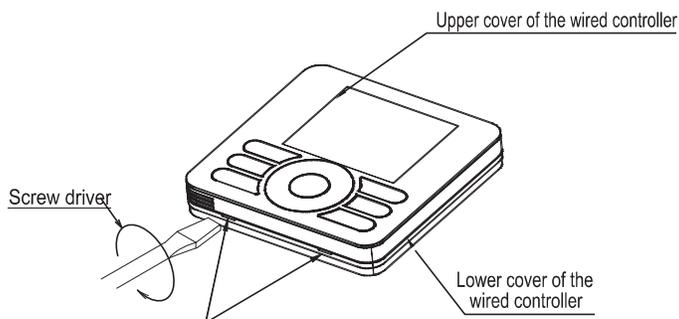
2.1.2 Indoor unit parameter revision (It is only suitable for our professional service and can only be operated with our wired controller.)

Internal control parameter adjustment can be performed using wired controller.

C-Series wired controller

1) Connecting wired controller with the indoor unit

Step 1: Remove the upper cover of the wired controller



Insert a normal screw driver into the position, and gently rotate it. In this way, the upper cover can be easily removed.

NOTE:

Control board of the remote controller is placed on upper cover. Please protect it from being scratched during removal and installation!

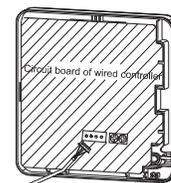
Step 2: Connect the wired controller with the indoor unit



Indoor unit control board



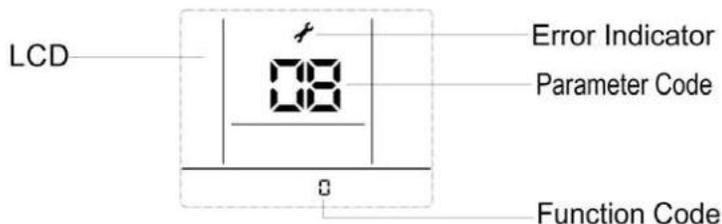
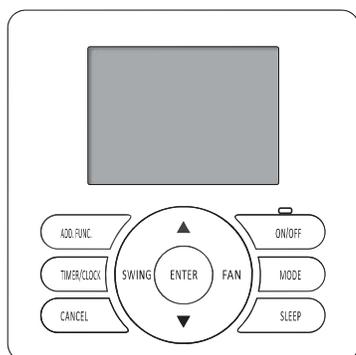
Marked with: wired



Connection cord of wired controller (to indoor unit)

Wired remote controller

2) Changing system parameter



OPERATION:

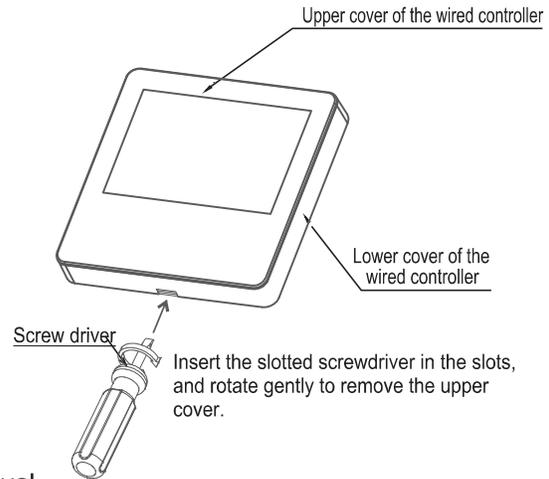
- ① Hold down both "MODE" button and "ADD.FUNC." button for 3 seconds, symbol  and parameter number blink at the same time.
- ② Press "▲" "▼" button to adjust parameter number until "17" is displayed. And press "ENTER" button to enter system parameter adaption state and symbol  stops blinking, parameter number blinks.
- ③ Select desired parameter code by pressing "▲" / "▼" button following the table below, and press "ENTER" button to confirm.
- ④ Select desired function code by pressing "▲" / "▼" button, and press "ENTER" button to confirm.

2. FIELD SETTING

E-Series wired controller

1) Connecting wired controller with the indoor unit

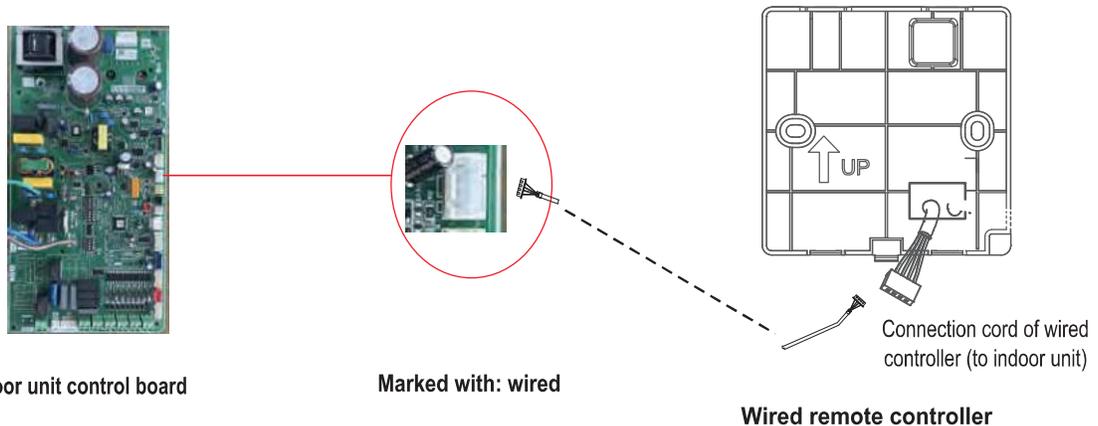
Step 1: Remove the upper cover of the wired controller



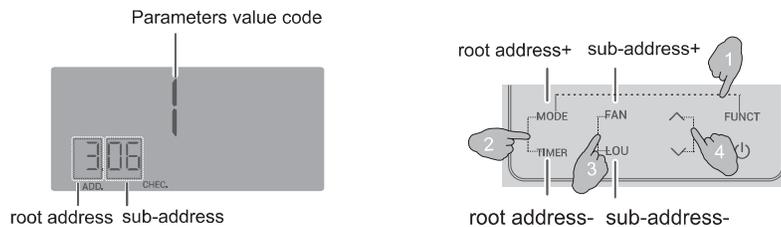
NOTE:

Control board of the remote controller is placed on upper cover. Please protect it from being scratched during removal and installation!

Step 2: Connect the wired controller with the indoor unit



2) Changing system parameter



OPERATION:

1. Press and hold the “FUNCT” and “MODE” button for 3s at the same time to enter the parameter self-setting state, Then the “CHECK.” and “ADD.” icon will be always on.
2. Press the “MODE” / “TIMER” button to increase or decrease the root address as 3.
3. Press the “FAN” / “LOU” button to increase or decrease the sub-address, and select the desired sub-address value.
4. Press the “^” / “v” button to set parameters, and press “FUNCT” button to confirm.
5. Press the “⏻” button to exit without settings.

2. FIELD SETTING

PARAMETER CODE	PARAMETER DESCRIPTION	PARAMETER VALUE&REPRESENTATION		NOTE
		DATA TYPE	REPRESENTATION (FUNCTION CODE)	
1	Self Recovery of Power Break	Integer	0: Cancel Self Recovery of Power Break function; 1: Self Recovery of Power Break; others: invalid	
2	Temperature Type	Integer	0: Centigrade Temperature; 1: Fahrenheit Temperature; others: invalid	
3	Temperature Display Type	Integer	0: Default display set temperature; 1: Default display room temperature; others: invalid	
4	Ratio of ambient temperature sensed by indoor temperature sensor(cooling mode)	Integer	0~10valid, more than 10 default is10 0: 0%; 1: 10%; ...; 10: 100%	0-entirely use. temperature.sensed by wired.remote controller;.10-entirely use.temperature.sensed by indoor.unit
5	Filter Clean Indication	Integer	0: Cancel Filter Clean prompt function; 1: Set Filter Clean prompt function; others: invalid	
6	Filter Clean Time Set	Integer	0~32, more than 32 default is 32*1000h	
7	Installation Height Compensation	Integer	0~10m, more than 10m default is 10. =0,1,2 :no fan speed compensation; =3: increase fan speed; =4~10: increase more fan speed.	
8	Cooling Temperature Compensation (indoor unit temperature sensor)	Integer	0 :0°C ; 1 :-0.5°C ; 2 :-1°C ; 3 :-1.5°C ; 4 :-2°C ; 5 :-2.5°C ; 6 :-3°C ; 7 :-3.5°C ; 8 :-4°C ;9 :-4.5°C ; 10 :-5°C.(the wired controller displays integer with the symbol)	
9	Heating Temperature Compensation (indoor unit temperature sensor)	Integer	0 :0°C ; 1 :-0.5°C ; 2 :-1°C ; 3 :-1.5°C ; 4 :-2°C ; 5 :-2.5°C ; 6 :-3°C ; 7 :-3.5°C ; 8 :-4°C ;9 :-4.5°C ; 10 :-5°C.(the wired controller displays integer with the symbol)	
10	Static Pressure Set	Integer	1~240, function code=static pressure more than the limit static pressure default the limit static pressure, Default is 0(default static pressure, related to models)	Duct type (DC motor)
12	Ratio of temperature sensed by indoor temperature sensor(Heating mode)	Integer	0~10valid, more than 10 default is10 0: 0%; 1: 10%; ...; 10: 100%	0-entirely use. temperature.sensed by wired.remote controller;.10-entirely use.temperature.sensed by indoor.unit
13	Temperature Adjustment-Cooling	Character	-10~10°C (Single Character with symbol)	Temperature displayed on wired controller
14	Temperature Adjustment-Heating	Character	-10~10°C (Single Character with symbol)	Temperature displayed on wired controller

2. FIELD SETTING

PARAMETER CODE	PARAMETER DESCRIPTION	PARAMETER VALUE&REPRESENTATION		NOTE
		DATA TYPE	REPRESENTATION (FUNCTION CODE)	
25	Access control, fire protection, ON/OFF function set	Integer	=0, Access control, fire protection functions are all invalid; =1, Access control1 function is valid; =2, fire protection function is valid; =3, Access control1, fire protection are all valid; =4, ON/OFF1 function is valid; =5, ON/OFF2 function is valid; =6, Access control2, fire protection are all valid; =7, Access control3, fire protection are all valid;	
26	Constant air volume	Integer	0: Constant air volume function is invalide; 1: Constant air volume function is valid.	
27	Hi-NANO function	Integer	0: Hi-NANO function is valid; 1: Hi-NANO function is invalid.	
28	Deep cool mode	Integer	0: Deep cool mode is invalid; 1: Deep cool mode is valid.	

2. FIELD SETTING

2.1.3 Running Parameter Check

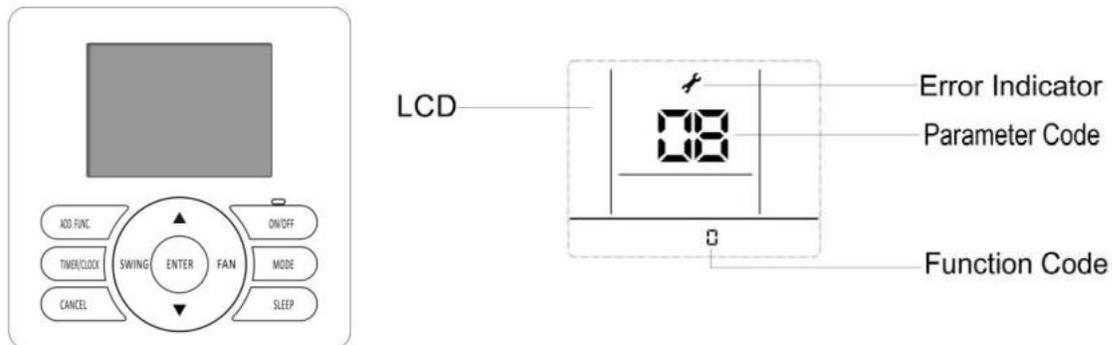
Running parameter can be referred to by 7 segment display or specified wired remote controller.

Check by wired controller (It is only suitable for our professional service and can only be operated with our wired controller.)

Operation:

1. Connect wired controller with indoor unit (same method with Indoor unit parameter revision)
2. Change the system parameter

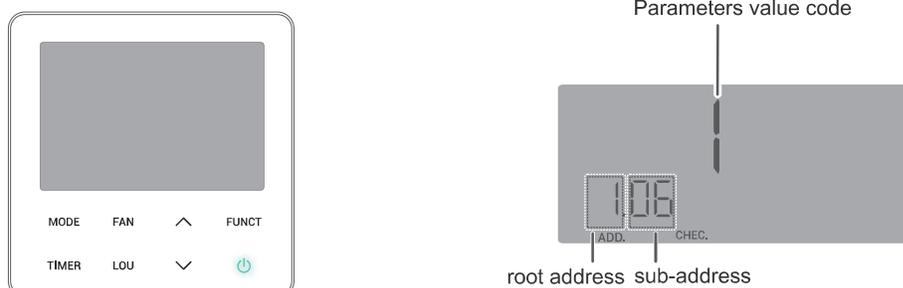
MODEL:YXE-C01U1(E)



OPERATION:

- (1) Hold down both "MODE" button and "ADD.FUNC." button for 3 seconds, symbol  and parameter number blinks at the same time.
- (2) Press "▲" "▼" button to select parameter number as you need, parameter value will be displayed on the LCD.

MODEL: YXE-E01U(E)



OPERATION:

- (1) Hold down both "MODE" button and "FUNCT" button for 3 seconds, then the "CHEC." and "ADD." icon will be always on.
- (2) Press "MODE" / "TIMER" button to increase/decrease the root address as 2.
- (3) Press "FAN" / "LOU" button to increase/decrease the sub-address, and select the desired sub-address value.

2. FIELD SETTING

Parameter Code	Parameter Description
06	Indoor unit air inlet temperature
07	Indoor unit coil sensor temperature
08	Outdoor unit ambient sensor temperature
09	Discharge temperature
10	Suction temperature
11	Outdoor coil temperature
12	Discharge pressure
13	Suction pressure
14	Outdoor EEV opening
15	AC current input
16	AC voltage
24	Error code
25	Drive error code
26	Indoor unit air outlet temperature
28	Compressor current
29	Indoor unit room temperature
30	Indoor unit coil inlet temperature
31	Indoor unit coil outlet temperature
32	Outdoor unit condenser inlet temperature
33	Outdoor unit condenser outlet temperature
43	Outdoor unit defrost temperature
57	Outdoor fan 1 speed
58	Outdoor fan 2 speed
60	Indoor fan speed

2.2 Test Run

2.2.1 Preparation before test run and precautions

Please turn off all power supplies and confirm with a testing instrument whether all power supplies have been turned off.

Before running, please proceed the following steps to inspect the installation status:

(1) Structural damage inspect

Confirm whether there is no damage on the surface and interior of the equipment.

(2) Outdoor fan inspect

Confirm whether the impeller of the fan is located in the middle of the air outlet. Do not touch the air outlet.

(3) Fastening screw inspect

Check whether the screw parts become loose due to vibration during transportation. In addition, confirm whether the screws are tightened during installation.

Especially, be sure to inspect the screws of electrical wiring more carefully.

(4) Refrigerant leakage inspect

Vibration during transportation may cause loosening of the fastening (flaring part) position of the pipe. Check for refrigerant leakage.

Be sure to carry out this inspection carefully.

(5) Dial switch setting inspect

Confirm whether the dial switch is in the set position at the time of delivery (see: Dial setting of the outdoor unit).

(6) Insulation resistance inspect

Measure whether the resistance between the electrical component terminals and the ground reaches 2 M Ω or above with a 500 V megameter. When the resistance is below 2 M Ω , it indicates poor insulation at the electrical connection position, and the equipment cannot be operated at this time.

In addition, do not apply power to the communication line terminal block (otherwise it will cause damage to the printed circuit board).

(7) Power supply phase inspect

Do not operate when the phase sequence is incorrect or missing.

(8) Confirmation of indoor and outdoor ambient temperature

The indoor ambient temperature during refrigeration operation shall not be lower than 60.8°F(16°C), and the outdoor ambient temperature during heating operation shall not exceed 86°F(30°C).

2. FIELD SETTING



The machine can be started only after all checkpoints are checked without problems.

- (a) Check to ensure that the ground resistance of the wiring terminals exceeds 2 MΩ. Otherwise, find out and rep the leaking part before starting the system.
- (b) It is recommended to power on for at least 6 hours to ensure sufficient lubrication of the compressor and extend service life.

7.2 Identification of test run functions

Turn on the remote control and perform a test run.

Test whether the function and display of the air conditioning unit are normal and whether the temperature control is in good state during the test run.

When the system is operating, the following conditions shall be noticed.

- (a) Do not touch any parts at the exhaust end to avoid scald. This is because the temperature of the compressor and pipes at the exhaust end is heated to above 90°C.
- (b) Do not press the AC contactor button, otherwise a serious accident may occur.

After the test run is completed, turn off the power. Do not touch any electrical components within 10 min after switching off the main power supply.

After completing the above operations, the installation of the equipment is usually completed. If you still have any questions, please contact our local technical service center for more information.

3. TROUBLESHOOTING

3. Troubleshooting

3.1 Trouble guide Troubleshooting for Normal Malfunction

Troubleshooting	Possible Reasons of Abnormality	How to Deal With
Air conditioner can not start up	<ol style="list-style-type: none"> 1. Power supply failure; 2. Trip of breaker or blow of fuse; 3. Power voltage is too low; 4. Improper setting of remote controller; 5. Remote controller is short of power. 	<ol style="list-style-type: none"> 1. Check power supply circuit; 2. Measure insulation resistance to ground to see if there is any leakage; 3. Check if there is a defective contact or leak current in the power supply circuit; 4. Check and set remote controller again; 5. Change batteries.
The compressor starts or stops frequently	The airinlet and outlet have been blocked.	Remove obstacles.
Poor cooling/heating	<ol style="list-style-type: none"> 1. The outdoor heat exchanger is dirty, such as condenser; 2. There are heating devices indoors; 3. The airtightness is not enough, and people come in and out too frequently; 4. Block of outdoor heate xchanger; 5. Improper setting of temperature. 	<ol style="list-style-type: none"> 1. Clean the heat exchanger of the outdoor unit, such as condenser; 2. Remove heating devices; 3. Keep certain air tightness indoors; 4. Remove block obstacles; 5. Check and try to set temperature again.
Sound from deforming parts	During system starting or stopping, a sound might be heard.However, this is due to the normal deformation of plastic parts.	It is not abnormal, and the sound will disappear soon.
Waterleakage	<ol style="list-style-type: none"> 1. Drainage pipe is blocked or broken; 2. Wrap of refrigerant pipe joint is not closed completely. 	<ol style="list-style-type: none"> 1. Change drainage pipe; 2. Re-wrap and make it tight.

3. TROUBLESHOOTING

Troubleshooting according to fault codes

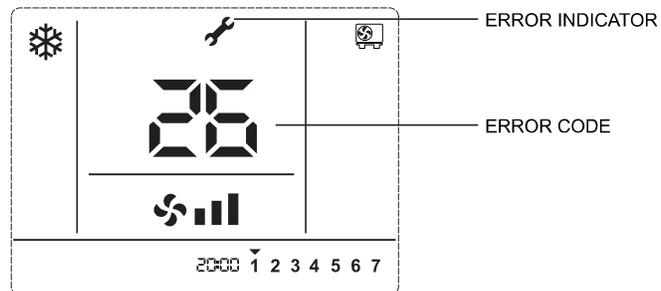
When the air conditioner failure occurs, the fault code will display on control board or wired controller .

How to check fault codes

Indoor unit

(1) Fault codes indicated by wired controller (It is only suitable for our professional service and can only be operated with our wired controller.)

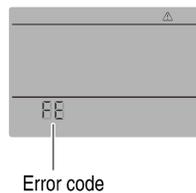
MODEL:YXE-C01U1(E)



When the air conditioner malfunctions,  will be displayed on the LCD, and error codes will appear and blink.

Fault code displays on wired controller

MODEL: YXE-E01U(E)



When the air conditioner malfunctions,  will be displayed on the LCD, indicating that error is occurring, please consult your local dealer or after-sales service.

Fault code displays on wired controller

3. TROUBLESHOOTING

Outdoor unit (Fault code displayed by LED lamps on outdoor main control board.)

DC-Inverter unitary (Main control board upside-down)

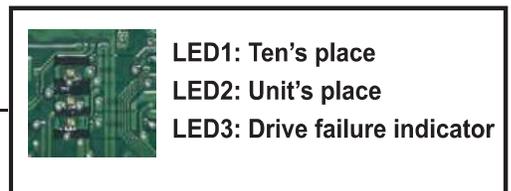
Fault code displayed by LED lamps on outdoor main control board.

There are 3 LED lamps on control board, LED1, LED2 and LED3.

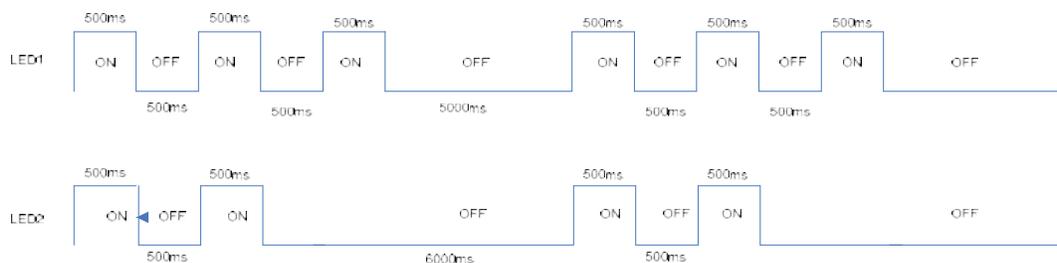
LED1 indicates fault code represented by 2-digit number, LED2 indicates fault code represented by single digit number and LED3 indicates outdoor drive control fault. When LED3 is off, LED1 and LED 2 indicate main control fault code.

When LED3 is on, LED1 and LED 2 indicate drive control fault code.

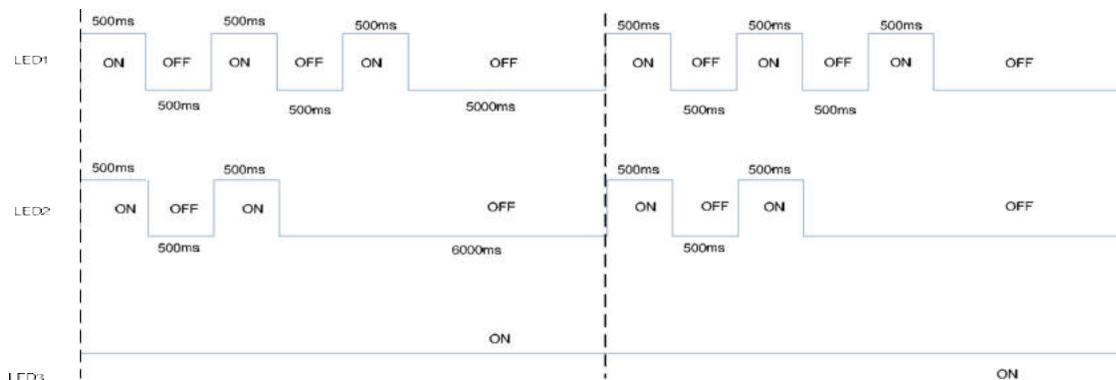
When LED3 is flickering and LED1, LED 2 are all off, indicate compressor is preheating. Failures display with 5s interval. It means LED will be off for 5s to report next fault code. System protection codes display method is the same with main control fault code. LED lamps will be off when there is no failure, protection or preheating.



For example, outdoor main control fault 32:



For example, outdoor drive fault 32:



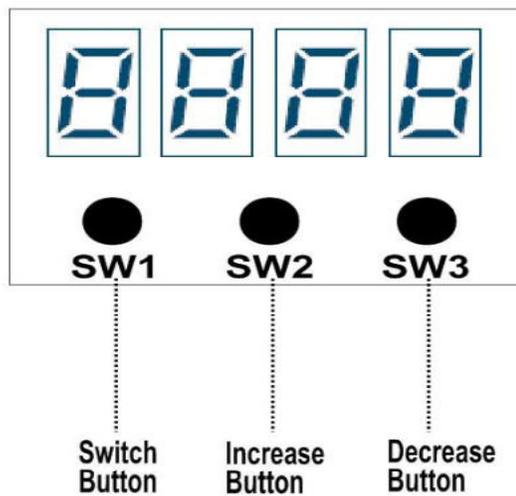
Running parameter query

Query by 7 segment display



7 segment display Introduction

It can be used to check outdoor running parameters.



3. TROUBLESHOOTING

There are 3 buttons on the digital display board :

- 1) SWITCH button : Indoor parameters and outdoor parameters can be selected in turn by pressing it.
“P.”-outdoor unit parameter , “A.”-indoor unit parameter ;
- 2) INCREASE button : Each time it is pressed, the number rises by 1,hold down it, the number will be rapidly increase;
- 3) DECREASE button : Each time it is pressed, the number lowers by 1,hold down it, the number will rapidly decreased.
- 4) The parameters will be displayed after 3s when the checking numbers are selected.

Parameters can be checked as following table below.

Parameter Code	Descriptions	Parameter Code	Descriptions
P.0	Fault codes	P.16	DC bus voltage
P.1	Compressor actual frequency	P.17	Compressor phase current
P.2	Compressor driving frequency	P.18	Frequency limit code
P.4	Compressor target frequency	P.19	Outdoor unit DC motor set speed
P.5	Compressor exhaust temperature	P.21	Target exhaust overheatingt
P.7	Outdoor ambient temperature	P.23	Actual exhaust overheating (heating)
P.8	Outdoor coil temperature	P.30	The set opening of the outdoor expansion valve
P.10	IPM module temperature	A.1	Unit A fault codes
P.11	Outdoor capacity requirement	A.6	Unit A coil temperature
P.12	IPM fault codes	A.7	Unit A ambient temperature
P.13	Outdoor DC Motor 1 target speed	A.8	Unit A set temperature
P.14	AC input current	A.10	Unit A set fan speed
P.15	AC input voltage		

3. TROUBLESHOOTING

3.2 Fault Codes

Table 1 Outdoor fault code

Fault code	Fault description	Possible reasons for abnormality	How to deal with
1	Outdoor ambient temperature sensor fault	<ol style="list-style-type: none"> 1. Disconnection or contact failure of connectors on the outdoor controller circuit board 2. Defective thermistor. 3. Defective outdoor controller circuit board. 	<ol style="list-style-type: none"> 1. Check connection of connector on the outdoor controller circuit board. 2. Check resistance value of thermistor or Replace the outdoor temperature sensor. 3. Replace outdoor controller circuit board.
2	Outdoor coil temperature sensor fault	<ol style="list-style-type: none"> 1. Disconnection or contact failure of connectors on the outdoor controller circuit board 2. Defective thermistor. 3. Defective outdoor controller circuit board. 	<ol style="list-style-type: none"> 1. Check connection of connector on the outdoor controller circuit board. 2. Check resistance value of thermistor or Replace the outdoor temperature sensor. 3. Replace outdoor controller circuit board.
3	The unit over-current turn off fault	<ol style="list-style-type: none"> 1. Control board current sampling circuit fails. 2. The current is over high because the supply voltage is too low. 3. The compressor is blocked. 4. Overload in cooling mode. 5. Overload in heating mode. 	<ol style="list-style-type: none"> 1. Replace the electrical control board components. 2. Normal protection. 3. Replace the compressor. 4. Please see NOTE 3. 5. Please see NOTE 4.
4	EEPROM Data error	<ol style="list-style-type: none"> 1. EE components fails. 2. EE components control circuit fails. 3. EE components are inserted incorrectly. 	<ol style="list-style-type: none"> 1. Replace the EE components. 2. Replace the outdoor control board components. 3. Reassemble the EE components.
5	Cooling freezing protection (the indoor coil temperature is too low) or heating overload (indoor coil temperature is too high)	<ol style="list-style-type: none"> 1. Short-circuited air. 2. Clogged air filter of the indoor unit. 3. Dust accumulation on the indoor heat exchanger. 4. Defective indoor heat exchanger thermistor. 5. Defective indoor unit PCB. 	<ol style="list-style-type: none"> 1. Provide sufficient air passage. 2. Clean the air filter. 3. Clean the indoor heat exchanger. 4. Replace the indoor heat exchanger thermistor. 5. Replace the indoor unit PCB (control PCB).
7	The communication fault between the indoor unit and outdoor unit	<ol style="list-style-type: none"> 1. The connection cable is connected improperly between the indoor unit and outdoor unit. 2. The communication cable is connected loosely. 3. The communication cable fails. 4. The indoor control board fails. 5. The outdoor control board fails. 6. The specification of communication cable is incorrect. 	<ol style="list-style-type: none"> 1. Reconnect the connection cable referring to the wiring diagram. 2. Reconnect the communication cable. 3. Replace the communication cable. 4. Replace the indoor control board. 5. Replace the outdoor control board. 6. Choose suitable communication cable referring to the user manual.

3. TROUBLESHOOTING

Fault code	Fault description	Possible reasons for abnormality	How to deal with	Remarks
12	Voltage absent phase	Three-phase power is abnormal; The outdoor wiring is connected improperly; The outdoor control board fails.	1. Normal protection 2. Check the wiring connection referring to the wiring diagram; 3. Replace the outdoor control board.	Application of three-phase power supply models
13	Compressor overheat protector device	1. The wiring of the overload protector is connected loosely. 2. The overload protector fails . 3. The refrigerant is not enough; 4. The installation pipe is much longer than the normal one, but extra refrigerant is not added ; 5. The expansion valve fails; 6. The outdoor control board fails.	1. Reconnect the wiring of the overload protector; 2. Replace the overload protector; 3. Check the welding point of the unit to confirm whether it is leakage, and then recharge the refrigerant; 4. Add the refrigerant; 5. Replace expansion valve; 6. Replace the outdoor control board.	
14	The high pressure switch operation or the unit is turned off for high pressure protection	1.The wiring of the high pressure protector is connected loosely; 2.The high pressure protector fails; 3.The outdoor control board is abnormal; 4. Overload in cooling; 5. Overload in heating.	1. Reconnect the wiring of the high pressure protector; 2. Replace the high pressure protector; 3. Replace the outdoor control board; 4. Please refer to the Note 3; 5. Please refer to the Note 4.	Applied to models with high pressure switch or pressure sensor
15	The low pressure switch protection or the unit is turned off for low pressure protection	1. The wiring of the low pressure switch is connected loosely; 2. The low pressure switch fails; 3. The refrigerant is not enough; 4. The expansion valve fails in heating mode; 5. The outdoor control board is abnormal.	1. Reconnect the wiring of the low pressure switch; 2. Replace the low pressure switch; 3. Check the welding point to confirm whether the unit leaks, and then add some refrigerant; 4. Replace the expansion valve; 5. Replace the outdoor control board.	Applied to models with low pressure switch or pressure sensor
16	Overload protection in cooling mode	System overload	Please refer to the Note 3.	
17	Discharge temperature sensor fault	1.The wiring of the discharge temperature sensor is connected loosely; 2.The discharge temperature sensor fails; 3.The sampling circuit is abnormal.	1.Reconnect the wiring of the discharge temperature sensor; 2. Replace the discharge temperature sensor; 3.Replace the outdoor control board.	
18	AC voltage is abnormal	1.The AC voltage>275V or <160V. 2.The AC voltage of sampling circuit on the driver board is abnormal.	1. Normal protection, please check the supply power; 2. Replace the driver board.	
19	Suction temperature sensor fault	1.The wiring of the suction temperature sensor is connected loosely; 2.The suction temperature sensor fails; 3.The sampling circuit is abnormal.	1.Reconnect the wiring of the suction temperature sensor; 2.Replace the suction temperature sensor; 3.Replace the outdoor control board.	
22	The defrosting sensor fault	1.The wiring of the defrosting sensor is connected loosely; 2.The defrosting sensor fails; 3.The sampling circuit is abnormal.	1. Reconnect the wiring of the defrosting sensor; 2. Replace the defrosting sensor; 3. Replace the outdoor control board.	
45	IPM fault	There are many reasons for this failure. You can check the driver board fault LED to further analyze the fault code of the drive board and to learn about what leads to the fault and how to operate it. Specific information can be seen in table 5, table 6.	See attached "analysis of the driving board fault".	

3. TROUBLESHOOTING

Fault code	Fault description	Possible reasons for abnormality	How to deal with	Remarks
46	IPM and control board communication fault	<ol style="list-style-type: none"> 1.The cable between the control board and the driver board is connected loosely; 2.The cable between the control board and the driver board fails; 3.The driver board fails ; 4.The control board fails. 	<ol style="list-style-type: none"> 1.Reconnect the cable between the control board and the driver board; 2.Replace the communication cable between the control board and the driver board; 3.Replace the driver board; 4.Replace the control board. 	
47	Too high discharge temperature fault	<ol style="list-style-type: none"> 1. The refrigerant of the unit is not enough; 2.The refrigerant of the unit is not enough due to that the installation pipe is longer. 3.Throttling service fails; 4.The outdoor ambient temperature is too high. 	<ol style="list-style-type: none"> 1.Check the welding point to confirm whether the unit has leakage point, and then add some refrigerant. 2.Add some refrigerant referring to the installation user manual; 3.Replace the throttling service (such as capillary, expansion valve) 4.Normally protection. 	
48	The outdoor DC fan motor fault (upper fan motor)	<ol style="list-style-type: none"> 1.The connecting wiring of the up DC fan motor is loose; 2.The cord of the upper DC fan motor fails; 3.The upper DC fan motor fails; 4.The drive circuit of the upper DC fan motor fails; 5.The outdoor fan has been blocked. 	<ol style="list-style-type: none"> 1.Reconnect the wiring of the up DC fan motor; 2.Replace the upper DC fan motor; 3.Replace the upper DC fan motor; 4.Replace the driver board of the fan motor; 5.Check the outdoor fan and ensure the outdoor fan can run normally. 	
49	The outdoor DC fan motor fault (down fan motor)	<ol style="list-style-type: none"> 1.The connecting wiring of the down DC fan motor is loose; 2.The cord of the down DC fan motor fails; 3. The down DC fan motor fails; 4. The drive circuit of the down DC fan motor fails; 5. The outdoor fan has been blocked. 	<ol style="list-style-type: none"> 1. Reconnect the wiring of the down DC fan motor; 2. Replace the down DC fan motor; 3. Replace the down DC fan motor; 4. Replace the driver board of the fan motor; 5. Check the outdoor fan and ensure the outdoor fan can run normally. 	
58	Refrigerant temp. sensor fault	<ol style="list-style-type: none"> 1. The wiring of the discharge temp. sensor is connected loosely; 2. The refrigerator temp. sensor fails; 3. The sampling circuit is abnormal. 	<ol style="list-style-type: none"> 1. Reconnect the wire; 2. Replace the sensor; 3. Replace the outdoor control board. 	
59	The unit turn off due to refrigerant cooling pipe condensation fault	<ol style="list-style-type: none"> 1. The humidity of outdoor environment is too high; 2. Throttle valve fails in cooling mode; 3. EEV fails in heating mode; 	<ol style="list-style-type: none"> 1. Normal protection, no need to deal with; 2. 3 Check whether throttling parts are normal, and if the coil fixed in place. 	
91	The unit turn off due to the IPM board over heating fault	<ol style="list-style-type: none"> 1.The outdoor ambient temp. is too high; 2.The speed of the out fan motor is too low if the fan motor is AC fan motor; 3.The outdoor unit is not installed in accordance with the standard; 4.The supply power is too low. 	<ol style="list-style-type: none"> 1. Normally protection; 2. Check the fan capacitor, and replace the fan capacitor if it is failure; 3. Reinstalled the outdoor unit refer to the installation user manual; 4.Normally protection. 	
96	Lacking of refrigerant	The refrigerant of the unit is not enough.	Discharge the refrigerant and charge the refrigerant referring to the rating label.	
97	4-way valve commutation failure fault	<ol style="list-style-type: none"> 1.The connecting wiring of the 4-way valve coil is loose; 2.The 4-way valve coil fails; 3.The 4-way valve fails; 4.The driver board of the 4-way valve fails. 	<ol style="list-style-type: none"> 1. Reconnect the wiring of the 4-way valve; 2. Replace the 4-way valve coil; 3. Replace the 4-way valve; 4.Replace the driver board of the 4-way valve. 	

3. TROUBLESHOOTING

The following is the fault code table of indoor unit.

Table 2 Indoor fault code

Fault code	Fault description	Possible reasons for abnormality	How to deal with
56	Refrigerant leakage	1. The refrigerant sensor of rooftop units detects that the concentration of refrigerant in the air exceeds the threshold.	Check and repair problematic pipes and add refrigerant.
57	Refrigerant sensor communication fault or refrigerant sensor fault	1. The refrigerant sensor fails to communicate with the indoor unit for a long time. 2. The refrigerant sensor reports the fault message such as life loss.	1. Replace the refrigerant sensor. 2. Reconnect the connection cable between the refrigerant sensor and the indoor unit board.
64	Communication between Indoor & Outdoor unit Fault	1. The indoor unit and the outdoor unit are not connected properly. 2. The communication cable is connected loosely. 3. The communication cable between the indoor unit and the outdoor unit fails or the cable between the indoor control board to terminal fails or the cable between the outdoor control board to the terminal fails. 4. The indoor control board fails. 5. The outdoor control board fails.	1. Reconnect the connection cable referring to the indoor and outdoor wiring diagram. 2. Reconnect the communication cable referring to the indoor and outdoor wiring diagram. 3. Replace the communication cable referring to the indoor and outdoor wiring diagram. 4. Replace the indoor control board; 5. Replace the outdoor control board.
72	Indoor fan motor fault	1. The cable of the indoor fan motor is connected loosely. 2. The cable of the indoor fan motor fails; 3. The indoor fan motor fails; 4. The indoor control board fails; 5. The outdoor fan has been blocked.	1. Reconnect the cable of the fan motor. 2. Replace the cable of the fan motor. 3. Replace the fan motor. 4. Replace the indoor control board. 5. Check the indoor fan and ensure the indoor fan can run normally.
73	Indoor EEPROM Data fault	1. Indoor EE components fail. 2. The control circuit of the EE components fails. 3. The EE components has been inserted in opposite direction.	1. Replace the EE components. 2. Replace the indoor control board. 3. Reassemble the EE components of the indoor control board.
81	Indoor ambient Temperature Sensor Fault	1. Disconnection or contact failure of connectors on the outdoor controller circuit board 2. Defective thermistor. 3. Defective outdoor controller circuit board.	1. Check connection of connector on the indoor controller circuit board. 2. Check resistance value of thermistor or replace the outdoor temperature sensor. 3. Replace outdoor controller circuit board.

3. TROUBLESHOOTING

Fault code	Fault description	Possible reasons for abnormality	How to deal with
83	Evaporator Middle Temperature Sensor Fault	<ol style="list-style-type: none"> 1. The cable of the coil temperature sensor of the evaporator fails. 2. The coil temperature sensor of the evaporator fails. 3. The sampling circuit is abnormal. 	<ol style="list-style-type: none"> 1. Reconnect the wiring between the wired controller to the indoor control board. 2. Replace the wiring between the wired controller to the indoor control board.
FE	Communication between main control board & Wired controller Fault (display on wired controller)	<ol style="list-style-type: none"> 1. The wired controller and the indoor control board are connected loosely. 2. The sequence of the wiring between the wired controller to the indoor control board is wrong. 3. The wiring between the wired controller to the indoor control board fails. 4. The wired controller fails. 5. The indoor control board is abnormal. 	<ol style="list-style-type: none"> 1. Reconnect the wiring between the wired controller to the indoor control board. 2. Replace the wiring between the wired controller to the indoor control board. 3. Replace the wiring between the wired controller to the indoor control board. 4. Replace the wired controller. 5. Replace the indoor control board.
ER	Communication between main control board & display board Fault (displays on display board)	<ol style="list-style-type: none"> 1. The wiring between the display board to the indoor control board is connected loosely. 2. The sequence of the wiring between the display board to the indoor control board is wrong. 3. The wiring between the display board to the indoor control board fails. 4. The display board fails. 5. The indoor control board fails. 	<ol style="list-style-type: none"> 1. Reconnect the wiring between the display board to the indoor control board. 2. Replace the wiring between the display board to the indoor control board. 3. Replace the wiring between the display board to the indoor control board. 4. Replace the display board. 5. Replace the indoor control board.

3. TROUBLESHOOTING

NOTE 1:

If the indoor unit can not start or the indoor unit stops itself after 30s, at the same time the unit do not display the fault code, please check the fire and the socket of the control board.

NOTE 2:

If the indoor unit displays the 75,76,77,78 fault code after you turn on the unit, please check the TEST seat of the indoor control board or the TEST detection circuit to see whether short circuit occurs.

NOTE 3: Overload in cooling mode

Overload in cooling mode		
sr.	The root cause	Corrective measure
1	The refrigerant is excessive.	Discharge the refrigerant, and recharge the refrigerant referring to the rating label.
2	The outdoor ambient temperature is too high.	Please use it within allowable temperature range
3	Short-circuit occurs in the air outlet and air inlet of the outdoor unit.	Adjust the installation of the outdoor unit referring to the user manual.
4	The outdoor heat exchanger is dirty, such as condenser.	Clean the heat exchanger of the outdoor unit, such as condenser.
5	The speed of the outdoor fan motor is too low.	Check the outdoor fan motor and fan capacitor.
6	The outdoor fan is broken or the outdoor fan is blocked.	Check the outdoor fan.
7	The air inlet and outlet have been blocked.	Remove the obstacles.
8	The expansion valve or the capillary fails.	Replace the expansion valve or the capillary.

NOTE 4: Over load in heating mode

Overload in heating mode		
sr.	The root cause	Corrective measure
1	The refrigerant is excessive.	Discharge the refrigerant, and recharge the refrigerant referring to the rating label.
2	The indoor ambient temperature is too high.	Please use within allowable temperature range.
3	Short-circuit occurs in the air outlet and air inlet of the indoor unit.	Adjust the installation of the indoor unit referring to the user manual.
4	The indoor filter is dirty.	Clean the indoor filter.
5	The speed of the indoor fan motor is too low.	Check the indoor fan motor and fan capacitor.
6	The indoor fan is broken or the outdoor fan is blocked.	Check the indoor fan.
7	The air inlet and outlet have been blocked.	Remove the obstacles.
8	The expansion valve or the capillary fails.	Replace the expansion valve or the capillary.

3. TROUBLESHOOTING

Table 3 Analysis of the drive fault

Fault code	Fault description	Possible reasons for abnormality	How to deal with
1	Inverter DC voltage overload fault	1. Power supply input is too high or too low; 2. Driver board fault.	1. Check the power supply; 2. Change the driver board.
2	Inverter DC low voltage fault		
3	Inverter AC current overload fault		
4	Out-of-step detection	1. Compressor phase lost; 2. Bad driver board components; 3. The compressor insulation fault.	1. Check the compressor wire connection; 2. Change the driver board; 3. Change the compressor.
5	Loss phase detection fault (speed pulsation)		
6	Loss phase detection fault (current imbalance)		
7	Inverter IPM fault (edge)	1. System overload or current overload; 2. Driver board fault; 3. Compressor oil shortage, serious wear of crankshaft ; 4. The compressor insulation fault.	1. Check the system; 2. Change the driver board; 3. Change the compressor; 4. Change the compressor.
8	Inverter IPM fault (level)		
9	PFC_IPM IPM fault (edge)		
10	PFC_IPM IPM fault (level)		
11	PFC power detection of failure	1. The power supply is not stable; 2. Instantaneous power failure; 3. Driver board failure.	1. Check the power supply; 2. No need to deal with; 3. Change the driver board.
12	PFC overload current detection of failure.	1. System overloads, and the current is too high; 2. Driver board fails; 3. PFC fails.	1. Check the system; 2. Change the driver board; 3. Change the PFC.
13	DC voltage detected abnormal .	1. Input voltage is too high or too low; 2. Driver board fails.	1. Check the power supply; 2. Change the driver board.
14	PFC LOW voltage detected failure.		
15	AD offset abnormal detected failure.	Driver board fails.	Change the driver board.
16	Inverter PWM logic set fault.		
17	Inverter PWM initialization failure		
18	PFC_PWM logic set fault.		
19	PFC_PWM initialization fault.		
20	Temperature abnormal.		
21	Shunt resistance unbalance adjustment fault		
22	Communication failure.	1. Communication wire connection is not proper; 2. Driver board fails; 3. Control board fails.	1. Check the wiring; 2. Change the driver board; 3. Change the control board.
23	Motor parameters setting of failure	Initialization is abnormal.	Reset the power supply.
25	EE data abnormal	Driver board EEPROM is abnormal.	1. Change EEPROM; 2. Change the driver board.
26	DC voltage mutation error	1. Power input changes suddenly; 2. Driver board fails.	1. Check the power supply, to provide stable power supply; 2. Change the driver board.
27	D axis current control error	1. System overload, phase current is too high; 2. Driver board fails.	1. Check if the system is normal; 2. Check if the stop valve is open; 3. Change the driver board.
28	Q axis current control error	1. System overload, phase current is too high; 2. Driver board fails.	1. Check if the system is normal; 2. Check if the stop valve is open; 3. Change the driver board.
29	Saturation error of D axis current control integral	1. System overloads suddenly; 2. Compressor parameter is not suitable; 3. Driver board fails.	1. Check if the system is normal; 2. Check if the stop valve is open; 3. Change the driver board.
30	Saturation error of Q axis current control integral	1. System overloads suddenly; 2. Compressor parameter is not suitable; 3. Driver board fails.	1. Check if the system is normal; 2. Check if the stop valve is open; 3. Change the driver board.

3. TROUBLESHOOTING

Fault code	Fault description	Possible reasons for abnormality	How to deal with
50	Inverter software over-current	1. The fan motor system overloads; 2. The drive board fails; 3. The fan motor is not insulated well;	1. Change the fan motor; 2. Change the drive board; 3. Change the fan motor.
51	Out-of-step detection	1.The wire is not connected well; 2.Bad drive board components; 3.The fan motor starting overloads; 4. The fan motor is demagnetized; 5. The fan motor is not insulated well.	1.Check the fan motor wire connection; 2.Change the drive board; 3.Change the fan motor. 4. Change the fan motor. 5. Change the fan motor.
52	Abnormal speed control	1.Bad driver board components; 2.The fan motor shaft clamping; 3.The fan motor insulation fails.	1.Change the drive board; 2. Change the fan motor. 3.Change the fan motor.
53	Out of phase detection fault	1. Phase loss of the fan motor; 2. Bad drive board components.	1. Change the drive board; 2. Change the fan motor; 3. Change the fan motor
54	IPM-FO hardware over-current (edge)	1.The fan motor overloads or over-current; 2.The drive board fails; 3.The fan motor insulation fails.	1. Change the fan motor; 2. Change the drive board; 3. Change the fan motor
55	IPM-FO hardware over-current (level)	1.The fan motor overloads or over-current; 2.The drive board fails; 3.The fan motor insulation fails.	1. Change the fan motor; 2. Change the drive board; 3. Change the fan motor
56	The fan motor -AD Offset abnormal detection fault	The drive board circuit fails.	Change the drive board.
57	The fan motor speed control integral saturation	1. The fan motor overload mutation; 2. Parameters are inappropriate; 3. The drive board fault.	1. Change the fan motor system; 2. Change the fan motor; 3. Change the drive board.
58	The fan motor D,Q axis current control error	1. The fan motor overloads, the phase current is large; 2. The drive board fault.	1. Check the fan motor system; 2. Change the drive board.
59	The fan motor D,Q axis current control integral saturation	1. The fan motor overload mutation; 2. Parameters are inappropriate; 3. The drive board fault.	1. Change the fan motor system; 2. Change the fan motor; 3. Change the drive board.
60	The fan motor reverse	1. Bad drive board components; 2. Wiring problems	1. Change the drive board; 2. Check the wiring.
61	IPM-PWM initialization fault	1. EE logics error; 2. The drive board fails.	1. Change the drive board; 2. Change the drive board.
70	Compressor effective valve over-current	1. Driver board fails. 2. Abnormal AC input voltage. 3. Compressor fails.	1. Change the driver board. 2. Check AC input voltage. 3. Change the Compressor.
71	Start failure of compressor	1. Compressor fails. 2. Driver board fails.	1. Change the Compressor. 2. Change the driver board.

3. TROUBLESHOOTING

Fault code	Fault description	Possible reasons for abnormality	How to deal with
72	Temperature of IPM module is too high.	1. Driver board fails. 2. Poor heat dissipation.	1. Change the driver board. 2. Check for fan blockage.
73	Chip protection	Driver board fails.	Change the driver board.
74	Compressor initial speed error	1. Compressor fails. 2. Driver board fails.	1. Change the Compressor. 2. Change the driver board.
75	Overpower protection	1. Over-load protection due to equipment load is out of range. 2. Compressor fails.	1. Check the whole system. 2. Change the compressor.
76	Compressor speed is too high.	1. Compressor fails. 2. Driver board fails.	1. Change the Compressor. 2. Change the driver board.
80	Fan motor effective valve over-current	1. Fan motor fails. 2. Fan motor over-load.	1. Change fan motor. 2. Check the fan system.
81	Start failure of fan	1. Fan motor fails. 2. Fan motor over-load.	1. Change the fan motor. 2. Check the fan system.
82	Temperature of fan motor IPM module is too high.	1. Driver board fails. 2. Poor heat dissipation.	1. Change the driver board. 2. Check if fan blockage exists.
83	Fan motor initial speed detection error	1. Fan motor fails. 2. Driver board fails.	1. Change the fan motor. 2. Check the fan system.
84	Fan speed is too high.	1. Fan motor fails. 2. Driver board fails.	1. Change the fan motor. 2. Change the driver board.

3. TROUBLESHOOTING

Table 6 Limitation Code

Code	Definitions	Descriptions
101	When over-current occurs, stop the frequency from increasing.	Current control
102	When overcurrent occurs, reduce the frequency.	Current control
103	When the temperature of IPM module is too high, stop the frequency from increasing.	Frequency control to keep appropriate temperature of IPM module.
104	When the temperature of IPM module is too high, reduce the frequency.	Frequency control to keep appropriate temperature of IPM module.
105	When the discharge temperature is too high, stop the frequency from increasing.	Frequency control to keep appropriate discharge temperature.
106	When the discharge temperature is too high, reduce the frequency.	Frequency control to keep appropriate discharge temperature.
107	In cooling mode, when the temperature of the outdoor unit coil is too high, stop the frequency from increasing.	Frequency control to keep appropriate temperature of the outdoor unit coil in cooling mode.
108	In cooling mode, when the temperature of the outdoor unit coil is too high, reduce the frequency.	Frequency control to keep appropriate temperature of the outdoor unit coil in cooling mode.
113	To prevent the indoor unit from being frozen or high temperature, stop the frequency from increasing.	Frequency control to keep appropriate temperature of the indoor unit coil.
114	To prevent the indoor unit from being frozen or high temperature, reduce the frequency.	Frequency control to keep appropriate temperature of the indoor unit coil.
119	When DSH exceeds the target value, the valve opening gets wider to adjust the flow.	Control on expansion valve based on DSH.
120	When DSH exceeds the target value, the valve opening gets narrower to adjust the flow.	Control on expansion valve based on DSH.
121	When DSH exceeds the target value, stop the valve opening from getting narrower.	Control on expansion valve based on DSH.
122	When DSH exceeds the target value, stop the valve opening from getting wider.	Control on expansion valve based on DSH.
131	When the temperature of IPM module is too high, stop the frequency from increasing.	Frequency control to keep appropriate temperature of IPM module.
132	When the temperature of IPM module is too high, reduce the frequency.	Frequency control to keep appropriate temperature of IPM module.
134	When the discharge temperature is too high, stop the valve opening getting narrower.	Control on discharge temperature expansion valve.
140	The compressor overloads.	Control on the compressor output.
141	The compressor current overloads.	Control on the output torque of the compressor.

※ DSH: Discharge Super Heat

These codes appearing in the operation process indicate some kind of normal operation state, instead of faults, so they do not need to be dealt with.

4. CHECKING COMPONENTS

4. Checking Components

4.1 Check Refrigerant System

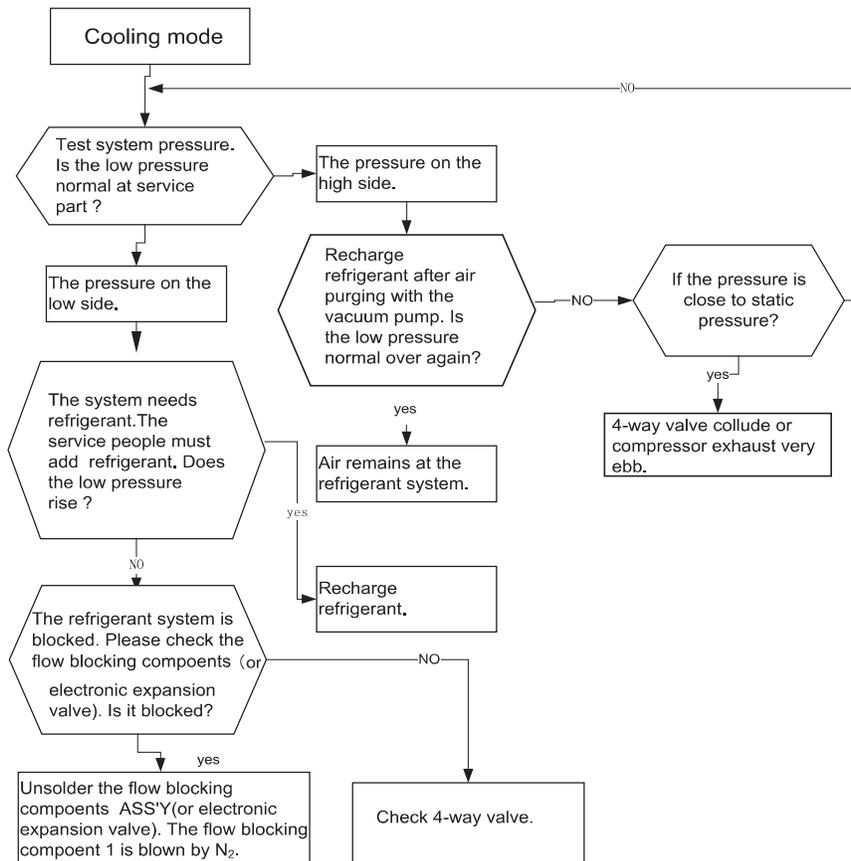
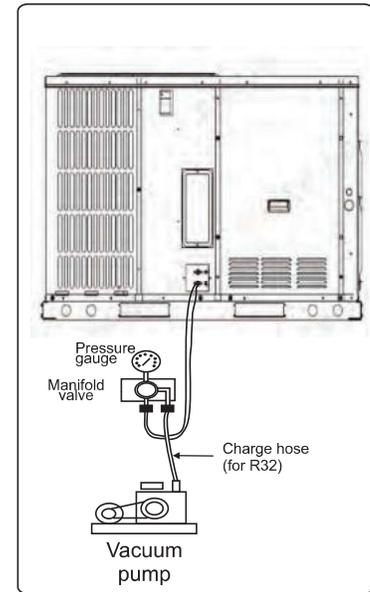
Test system flow

- Conditions: ① Compressor is running.
 ② The air condition should be installed in good ventilation.

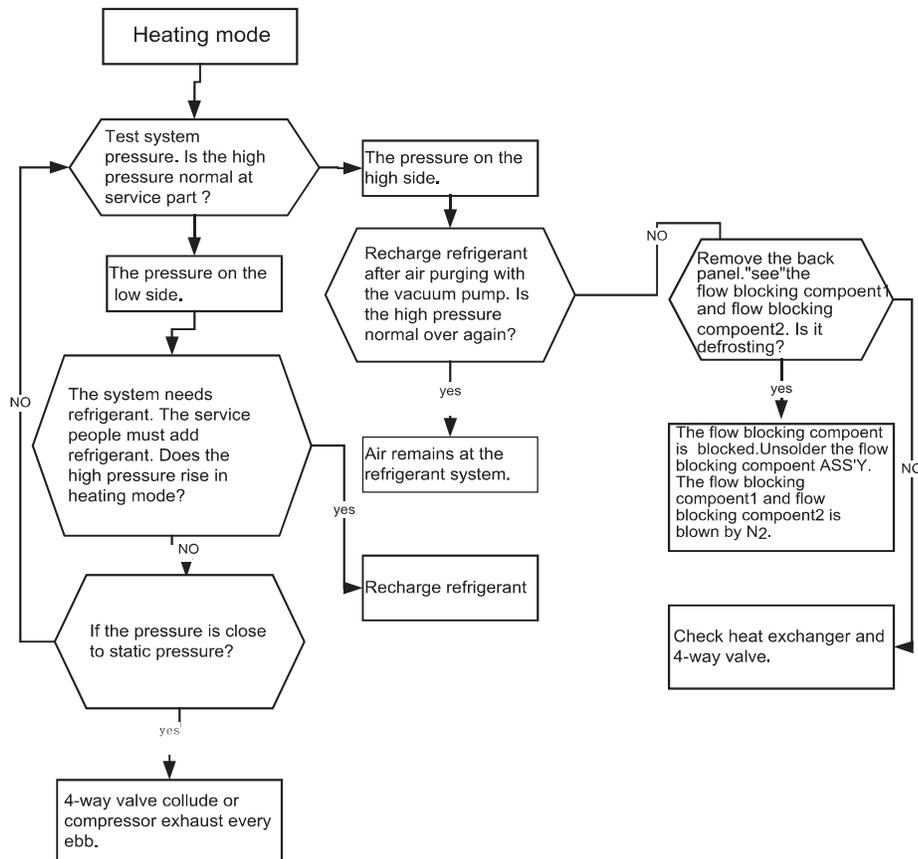
Tool: Pressure Gauge

Technique: ① see ② feel ③ test

- See ----- Tube defrost.
 Feel ----- The difference between tube's temperature.
 Test ----- Test pressure.



4. CHECKING COMPONENTS



4.2 Check Parts Unit

Key components

SN	Key components
1	DC Motor (Indoor unit)
2	DC Motor(Outdoor unit)
3	Compressor
4	EEV Coil
5	4-way Valve Coil
6	Pressure Switch
7	Inductance
8	Fuse

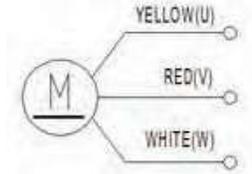
4. CHECKING COMPONENTS

1. DC Motor (Indoor unit)

a. External drive

Use the multimeter to test resistance between two terminals.

Model	Test condition (Ambient temperature)	Normal test results	Deviation range
36K	68°F(20°C)	U-V: 4.13Ω U-W: 4.13Ω V-W: 4.13Ω	±7%

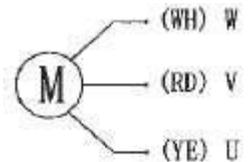


2. DC Motor (Outdoor unit)

External drive type

Use the multimeter to test resistance between two terminals .

Model	Test condition (Ambient temperature)	Normal test results	Deviation range
36K	68°F(20°C)	U-V: 7.1Ω U-W: 7.1Ω V-W: 7.1Ω	±7%



3. Compressor

Test in resistance.

TOOL: Multi-meter.

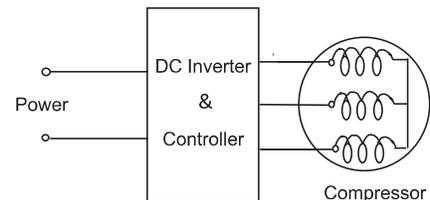
Test the resistance of the winding. The compressor fails if the resistance of winding is 0 (short circuit) or ∞ (open circuit).

Familiar error:

- 1) Compressor motor lock.
- 2) Discharge pressure value approaches static pressure value.
- 3) Compressor motor winding abnormality.

Notes:

- 1) Don't put a compressor on its side or turn over.
- 2) Please assemble the compressor in your air conditioner rapidly after removing the plugs. Don't place the comp. in air for a long time.
- 3) Avoid compressor running in reverse caused by connecting electrical wire incorrectly.
- 4) Warning! In case AC voltage is impressed to compressor, the compressor performance will decrease because of its rotor magnetic force decreasing.



Use the multimeter to test resistance between two terminals at 68°F(20°C)

Test results:

Model	Part Number	Normal test results	Deviation range
36K	1987814	U-V: 0.65Ω U-W: 0.65Ω V-W: 0.65Ω	±7%

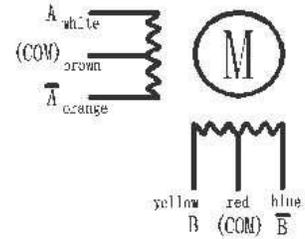
4. CHECKING COMPONENTS

4. EEV coil

Use the multimeter to test resistance between two terminals at 68°F(20°C)

Test results:

Model	Normal test results	
36K	Brown (com) -White Brown (com) -Orange Red (com) -Yellow Red (com) -Blue	46Ω±3.7Ω



5. 4-Way valve coil

Use the multimeter to test resistance between two terminals at 68°F(20°C)

Test results:

Model	Normal test results
36K	2085Ω±208Ω

6. Pressure switch

The pressure switch is divided into normally closed and normally open types (under atmospheric pressure), such as YK-0.05/0.15 is normally open.



Normally closed switch detection: With no pressure in the pipeline, you can turn a multimeter to the ohm range and connect the red and black probes with a pin (lead) respectively to detect whether the switch is in the "ON" state.

Normally open switch detection: With the pressure in the pipeline higher than the switching-on pressure, you can turn a multimeter to the ohm range and connect the red and black probes with a pin (lead) respectively to detect whether the switch is in the "ON" state

7. Inductance

Familiar error:

- 1) Sound abnormality
- 2) Insulation resistance disqualification.

Test results:

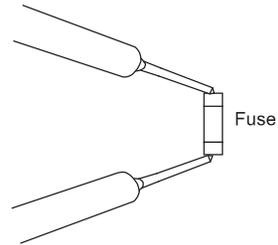
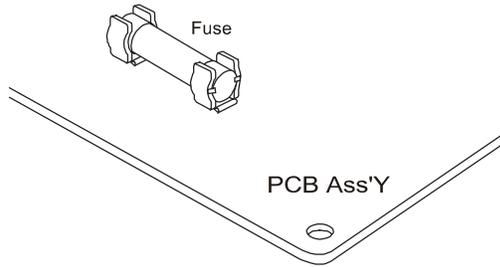
Model	Normal test results
36K	0.1Ω(Max)

4. CHECKING COMPONENTS

8. Fuse

Check for continuity of fuse on PCB ASS'Y.

Remove the PCB ASS'Y from the electrical component box. Then pull out the fuse from the PCB ASS'Y. Check for continuity by a multimeter as shown below.



4. CHECKING COMPONENTS

4.3 Sensor Parameter

1. THE PARAMETER OF OUTDOOR COMPRESSOR DISCHARGE TEMPERATURE SENSOR:

($R_0=187.25K\pm 6.3\%$; $R_{100}=3.77K\pm 2.5K$; $B0/100=3979K\pm 1\%$)

DR: Deviation Rate

$DR(MIN)\% = (R_{min} - R_{nom}) / R_{nom} * 100\%$

$DR(MAX)\% = (R_{max} - R_{nom}) / R_{nom} * 100\%$

T [°C]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR(MIN)%	DR(MAX)%
-30	908.2603	985.5274	1065.1210	-7.84	7.47
-29	855.3955	927.6043	1001.9150	-7.78	7.42
-28	805.9244	873.4324	924.8368	-7.73	5.56
-27	759.6097	822.7471	887.5944	-7.67	7.31
-26	716.2320	775.3041	835.9165	-7.62	7.25
-25	675.5881	730.8775	787.5529	-7.56	7.20
-24	637.4902	689.2583	742.2720	-7.51	7.14
-23	601.7645	650.2533	699.8601	-7.46	7.09
-22	568.2499	613.6835	660.1191	-7.40	7.03
-21	536.7970	579.3832	622.8658	-7.35	6.98
-20	507.2676	547.1989	587.9307	-7.30	6.93
-19	497.5332	516.9882	555.1565	-3.76	6.88
-18	453.4748	488.6192	524.3977	-7.19	6.82
-17	428.9819	461.9693	495.5191	-7.14	6.77
-16	405.9517	436.9251	486.3954	-7.09	10.17
-15	384.2888	413.3808	442.9105	-7.04	6.67
-14	363.9047	391.2386	418.9563	-6.99	6.62
-13	344.7169	370.4072	396.4325	-6.94	6.56
-12	326.6497	350.8019	375.2461	-6.88	6.51
-11	309.6286	332.3441	355.3104	-6.83	6.46
-10	293.5903	314.9620	336.5448	-6.79	6.41
-9	278.4719	298.5822	318.3744	-6.74	6.22
-8	264.2156	283.1464	302.2294	-6.69	6.31
-7	250.7678	268.5936	286.5448	-6.64	6.26
-6	238.0783	254.8686	271.7603	-6.59	6.22
-5	226.1003	241.9200	257.8193	-6.54	6.17
-4	214.7903	229.6997	244.6593	-6.49	6.11
-3	204.1073	218.1630	232.2612	-6.44	6.07
-2	194.0135	207.2681	220.5495	-6.39	6.02
-1	184.4732	196.9759	209.4913	-6.35	5.97
0	175.4533	187.2500	199.0468	-6.30	5.93
1	166.8952	178.0255	189.1529	-6.25	5.88
2	158.8023	169.3067	179.8058	-6.20	5.84
3	151.1467	161.0633	170.9724	-6.16	5.80
4	143.9026	153.2667	162.6216	-6.11	5.75
5	137.0455	145.8905	154.7246	-6.06	5.71
6	130.5528	138.9097	147.2544	-6.02	5.67
7	124.4033	132.3011	140.1856	-5.97	5.62
8	118.5769	126.0429	133.4946	-5.92	5.58
9	113.0550	120.1146	127.1591	-5.88	5.54
10	107.8202	114.4973	121.1586	-5.83	5.50
11	102.8560	109.1728	115.4734	-5.79	5.46
12	98.1470	104.1246	110.0855	-5.74	5.41
13	93.6787	99.3367	104.9778	-5.70	5.37
14	89.4378	94.7946	100.1342	-5.65	5.33
15	85.4114	90.4842	95.5398	-5.61	5.29
16	81.5875	86.3926	91.1805	-5.56	5.25
17	77.9551	82.5076	87.0430	-5.52	5.21
18	74.5034	78.8177	83.1150	-5.47	5.17

4. CHECKING COMPONENTS

T [°C]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR(MIN)%	DR(MAX)%
19	71.2227	75.3122	79.3848	-5.43	5.13
20	68.1036	71.9808	75.8414	-5.39	5.09
21	65.1373	68.8141	72.4746	-5.34	5.05
22	62.3155	65.8032	69.2746	-5.30	5.01
23	59.6306	62.9395	66.2324	-5.26	4.97
24	57.0752	60.2152	63.3395	-5.21	4.93
25	54.6424	57.6227	60.5877	-5.17	4.89
26	52.3258	55.1551	57.9695	-5.13	4.85
27	50.1192	52.8058	55.4778	-5.09	4.82
28	48.0168	50.5684	53.1058	-5.05	4.78
29	46.0133	48.4371	50.8472	-5.00	4.74
30	44.1034	46.4046	48.6960	-4.96	4.71
31	42.2825	44.4711	46.6466	-4.92	4.66
32	40.5458	42.6261	44.6937	-4.88	4.63
33	38.8891	40.8668	42.8323	-4.84	4.59
34	37.3084	39.1890	41.0576	-4.80	4.55
35	35.7998	37.5883	39.3653	-4.76	4.51
36	34.3596	36.0609	37.7511	-4.72	4.48
37	32.9844	34.6030	36.2109	-4.68	4.44
38	31.6710	33.2113	34.7412	-4.64	4.40
39	30.4164	31.8823	33.3383	-4.60	4.37
40	29.2176	30.6130	31.9988	-4.56	4.33
41	28.0718	29.4004	30.7197	-4.52	4.29
42	26.9765	28.2417	29.4979	-4.48	4.26
43	25.9293	27.1342	28.3306	-4.44	4.22
44	24.9277	26.0755	27.2150	-4.40	4.19
45	23.9697	25.0632	26.1488	-4.36	4.15
46	23.0530	24.0950	25.1293	-4.32	4.12
47	22.1757	23.1688	24.1545	-4.29	4.08
48	21.3360	22.2826	23.2221	-4.25	4.05
49	20.5321	21.4345	22.3301	-4.21	4.01
50	19.7623	20.6226	21.4766	-4.17	3.98
51	19.0261	19.8468	20.6612	-4.14	3.94
52	18.3211	19.1040	19.8808	-4.10	3.91
53	17.6458	18.3926	19.1338	-4.06	3.87
54	16.9986	17.7113	18.4185	-4.02	3.84
55	16.3784	17.0537	17.7335	-3.96	3.83
56	15.7839	16.4332	17.0774	-3.95	3.77
57	15.2139	15.8338	16.4488	-3.92	3.74
58	14.6673	15.2592	15.8464	-3.88	3.71
59	14.1430	14.7083	15.2690	-3.84	3.67
60	13.6400	14.1799	14.7154	-3.81	3.64
61	13.1573	13.6730	14.1846	-3.77	3.61
62	12.6941	13.1868	13.6756	-3.74	3.57
63	12.2494	12.7202	13.1872	-3.70	3.54
64	11.8224	12.2723	12.7186	-3.67	3.51
65	11.4124	11.8424	12.2690	-3.63	3.48
66	11.0185	11.4295	11.8373	-3.60	3.45
67	10.6401	11.0331	11.4230	-3.56	3.41
68	10.2765	10.6522	11.0251	-3.53	3.38
69	9.9271	10.2863	10.6429	-3.49	3.35
70	9.5912	9.9348	10.2756	-3.46	3.32
71	9.2682	9.5968	9.9231	-3.42	3.29
72	8.9576	9.2720	9.5841	-3.39	3.26
73	8.6589	8.9597	9.2583	-3.36	3.23
74	8.3716	8.6594	8.9451	-3.32	3.19

4. CHECKING COMPONENTS

T [°C]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR(MIN)%	DR(MAX)%
75	8.0951	8.3705	8.6440	-3.29	3.16
76	7.8290	8.0926	8.3544	-3.26	3.13
77	7.5730	7.8252	8.0758	-3.22	3.10
78	7.3264	7.5679	7.8078	-3.19	3.07
79	7.0891	7.3202	7.5499	-3.16	3.04
80	6.8605	7.0818	7.3018	-3.12	3.01
81	6.6403	6.8522	7.0629	-3.09	2.98
82	6.4282	6.6311	6.8329	-3.06	2.95
83	6.2239	6.4182	6.6115	-3.03	2.92
84	6.0269	6.2131	6.3982	-3.00	2.89
85	5.8371	6.0154	6.1928	-2.96	2.86
86	5.6542	5.8249	5.9949	-2.93	2.84
87	5.4777	5.6413	5.8042	-2.90	2.81
88	5.3076	5.4644	5.6205	-2.87	2.78
89	5.1435	5.2937	5.4433	-2.84	2.75
90	4.9853	5.1292	5.2726	-2.81	2.72
91	4.8326	4.9705	5.1079	-2.77	2.69
92	4.6852	4.8174	4.9492	-2.74	2.66
93	4.5430	4.6697	4.7960	-2.71	2.63
94	4.4058	4.5272	4.6483	-2.68	2.61
95	4.2733	4.3896	4.5058	-2.65	2.58
96	4.1453	4.2568	4.3683	-2.62	2.55
97	4.0218	4.1287	4.2355	-2.59	2.52
98	3.9024	4.0049	4.1074	-2.56	2.50
99	3.7872	3.8854	3.9837	-2.53	2.47
100	3.6758	3.7700	3.8643	-2.50	2.44
101	3.5661	3.6585	3.7512	-2.53	2.47
102	3.4601	3.5509	3.6419	-2.56	2.50
103	3.3577	3.4468	3.5362	-2.59	2.53
104	3.2588	3.3463	3.4341	-2.61	2.56
105	3.1632	3.2491	3.3353	-2.64	2.58
106	3.0708	3.1551	3.2398	-2.67	2.61
107	2.9816	3.0643	3.1475	-2.70	2.64
108	2.8953	2.9765	3.0582	-2.73	2.67
109	2.8118	2.8915	2.9717	-2.76	2.70
110	2.7311	2.8093	2.8881	-2.78	2.73
111	2.6531	2.7299	2.8072	-2.81	2.75
112	2.5776	2.6530	2.7289	-2.84	2.78
113	2.5046	2.5785	2.6531	-2.87	2.81
114	2.4340	2.5065	2.5798	-2.89	2.84
115	2.3656	2.4368	2.5087	-2.92	2.87
116	2.2995	2.3693	2.4400	-2.95	2.90
117	2.2354	2.3040	2.3733	-2.98	2.92
118	2.1734	2.2407	2.3088	-3.00	2.95
119	2.1134	2.1795	2.2463	-3.03	2.97
120	2.0553	2.1201	2.1858	-3.06	3.01
121	1.9991	2.0626	2.1271	-3.08	3.03
122	1.9446	2.0070	2.0702	-3.11	3.05
123	1.8918	1.9530	2.0151	-3.13	3.08
124	1.8406	1.9007	1.9617	-3.16	3.11
125	1.7911	1.8500	1.9099	-3.18	3.14
126	1.7430	1.8009	1.8597	-3.22	3.16
127	1.6965	1.7533	1.8110	-3.24	3.19
128	1.6514	1.7071	1.7638	-3.26	3.21
129	1.6076	1.6623	1.7180	-3.29	3.24
130	1.5652	1.6189	1.6736	-3.32	3.27

4. CHECKING COMPONENTS

2. THE PARAMETER OF THE OTHER SENSOR IN INDOOR AND OUTDOOR UNIT:

($R_0=15K\pm 2\%$; $B0/100=3450K\pm 2\%$)

T [°C]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR(MIN)%	DR(MAX)%
-30	60.78	64.77	68.99	-6.16	6.12
-29	57.75	61.36	65.16	-5.88	5.83
-28	54.89	58.15	61.58	-5.61	5.57
-27	52.19	55.14	58.23	-5.35	5.31
-26	49.63	52.30	55.08	-5.11	5.05
-25	47.21	49.62	52.13	-4.86	4.81
-24	44.92	47.10	49.37	-4.63	4.60
-23	42.76	44.73	46.78	-4.40	4.38
-22	40.71	42.49	44.34	-4.19	4.17
-21	38.77	40.38	42.05	-3.99	3.97
-20	36.93	38.39	39.90	-3.80	3.78
-19	35.18	36.51	37.87	-3.64	3.59
-18	33.53	34.74	35.97	-3.48	3.42
-17	31.96	33.06	34.17	-3.33	3.25
-16	30.48	31.47	32.49	-3.15	3.14
-15	29.07	29.97	30.89	-3.00	2.98
-14	27.73	28.56	29.39	-2.91	2.82
-13	26.46	27.22	27.98	-2.79	2.72
-12	25.26	25.95	26.64	-2.66	2.59
-11	24.11	24.75	25.38	-2.59	2.48
-10	23.03	23.61	24.19	-2.46	2.40
-9	21.99	22.53	23.06	-2.40	2.30
-8	21.01	21.51	22.00	-2.32	2.23
-7	20.08	20.54	20.99	-2.24	2.14
-6	19.19	19.62	20.04	-2.19	2.10
-5	18.35	18.74	19.14	-2.08	2.09
-4	17.55	17.92	18.29	-2.06	2.02
-3	16.78	17.13	17.48	-2.04	2.00
-2	16.06	16.38	16.71	-1.95	1.97
-1	15.36	15.67	15.98	-1.98	1.94
0	14.70	15.00	15.29	-2.00	1.90
1	14.08	14.36	14.64	-1.95	1.91
2	13.48	13.75	14.02	-1.96	1.93
3	12.91	13.17	13.43	-1.97	1.94
4	12.36	12.62	12.87	-2.06	1.94
5	11.85	12.09	12.34	-1.99	2.03
6	11.35	11.59	11.83	-2.07	2.03
7	10.88	11.11	11.35	-2.07	2.11
8	10.43	10.66	10.89	-2.16	2.11
9	9.999	10.230	10.450	-2.26	2.11
10	9.590	9.816	10.040	-2.30	2.23
11	9.199	9.422	9.647	-2.37	2.33
12	8.826	9.047	9.269	-2.44	2.40
13	8.470	8.689	8.910	-2.52	2.48
14	8.129	8.347	8.567	-2.61	2.57
15	7.804	8.021	8.240	-2.71	2.66
16	7.493	7.709	7.928	-2.80	2.76
17	7.196	7.412	7.630	-2.91	2.86
18	6.912	7.127	7.346	-3.02	2.98
19	6.640	6.855	7.074	-3.14	3.10
20	6.381	6.595	6.815	-3.24	3.23
21	6.132	6.347	6.567	-3.39	3.35
22	5.894	6.109	6.330	-3.52	3.49

4. CHECKING COMPONENTS

T [°C]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR(MIN)%	DR(MAX)%
23	5.667	5.882	6.103	-3.66	3.62
24	5.449	5.664	5.886	-3.80	3.77
25	5.240	5.456	5.678	-3.96	3.91
26	5.048	5.260	5.478	-4.03	3.98
27	4.864	5.072	5.286	-4.10	4.05
28	4.687	4.891	5.101	-4.17	4.12
29	4.517	4.717	4.924	-4.24	4.20
30	4.355	4.550	4.753	-4.29	4.27
31	4.198	4.390	4.589	-4.37	4.34
32	4.048	4.236	4.431	-4.44	4.40
33	3.904	4.089	4.280	-4.52	4.46
34	3.766	3.946	4.134	-4.56	4.55
35	3.663	3.810	3.994	-3.86	4.61
36	3.506	3.679	3.859	-4.70	4.66
37	3.383	3.552	3.729	-4.76	4.75
38	3.265	3.431	3.604	-4.84	4.80
39	3.152	3.314	3.484	-4.89	4.88
40	3.043	3.202	3.368	-4.97	4.93
41	2.938	3.094	3.257	-5.04	5.00
42	2.838	2.990	3.149	-5.08	5.05
43	2.741	2.890	3.046	-5.16	5.12
44	2.648	2.793	2.946	-5.19	5.19
45	2.558	2.701	2.850	-5.29	5.23
46	2.472	2.611	2.758	-5.32	5.33
47	2.389	2.525	2.669	-5.39	5.40
48	2.309	2.443	2.583	-5.49	5.42
49	2.232	2.363	2.500	-5.54	5.48
50	2.158	2.286	2.421	-5.60	5.58
51	2.087	2.212	2.344	-5.65	5.63
52	2.018	2.140	2.269	-5.70	5.69
53	1.952	2.072	2.198	-5.79	5.73
54	1.888	2.005	2.129	-5.84	5.82
55	1.827	1.941	2.062	-5.87	5.87
56	1.767	1.880	1.998	-6.01	5.91
57	1.710	1.820	1.936	-6.04	5.99
58	1.655	1.763	1.876	-6.13	6.02
59	1.602	1.707	1.818	-6.15	6.11
60	1.551	1.654	1.762	-6.23	6.13
61	1.502	1.602	1.709	-6.24	6.26
62	1.452	1.553	1.657	-6.50	6.28
63	1.409	1.505	1.606	-6.38	6.29
64	1.364	1.458	1.558	-6.45	6.42
65	1.322	1.413	1.511	-6.44	6.49
66	1.280	1.370	1.466	-6.57	6.55
67	1.241	1.328	1.422	-6.55	6.61
68	1.202	1.288	1.379	-6.68	6.60
69	1.165	1.249	1.339	-6.73	6.72
70	1.129	1.211	1.299	-6.77	6.77
71	1.095	1.175	1.261	-6.81	6.82
72	1.061	1.140	1.224	-6.93	6.86
73	1.029	1.106	1.188	-6.96	6.90
74	0.9977	1.073	1.153	-7.02	6.94
75	0.9676	1.041	1.120	-7.05	7.05
76	0.9385	1.011	1.088	-7.17	7.08
77	0.9104	0.9810	1.056	-7.20	7.10
78	0.8833	0.9523	1.026	-7.25	7.18

4. CHECKING COMPONENTS

T [°C]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR(MIN)%	DR(MAX)%
79	0.8570	0.9246	0.9971	-7.31	7.27
80	0.8316	0.8977	0.9687	-7.36	7.33
81	0.8071	0.8717	0.9412	-7.41	7.38
82	0.7834	0.8466	0.9146	-7.47	7.43
83	0.7604	0.8223	0.8888	-7.53	7.48
84	0.7382	0.7987	0.8639	-7.57	7.55
85	0.7167	0.7759	0.8397	-7.63	7.60
86	0.6958	0.7537	0.8161	-7.68	7.65
87	0.6755	0.7322	0.7933	-7.74	7.70
88	0.6560	0.7114	0.7712	-7.79	7.75
89	0.6371	0.6913	0.7498	-7.84	7.80
90	0.6188	0.6718	0.7291	-7.89	7.86
91	0.6011	0.6530	0.7051	-7.95	7.39
92	0.5840	0.6348	0.6897	-8.00	7.96
93	0.5674	0.6171	0.6709	-8.05	8.02
94	0.5514	0.6000	0.6527	-8.10	8.07
95	0.5359	0.5835	0.6350	-8.16	8.11
96	0.5209	0.5675	0.6179	-8.21	8.16
97	0.5064	0.5519	0.6014	-8.24	8.23
98	0.4923	0.5369	0.5853	-8.31	8.27
99	0.4787	0.5224	0.5698	-8.37	8.32
100	0.4655	0.5083	0.5547	-8.42	8.36
101	0.4528	0.4946	0.5401	-8.45	8.42
102	0.4404	0.4814	0.5259	-8.52	8.46
103	0.4284	0.4685	0.5121	-8.56	8.51
104	0.4168	0.4561	0.4988	-8.62	8.56
105	0.4056	0.4440	0.4859	-8.65	8.62
106	0.3947	0.4323	0.4733	-8.70	8.66
107	0.3841	0.4210	0.4611	-8.76	8.70
108	0.3739	0.4100	0.4493	-8.80	8.75
109	0.3640	0.3993	0.4379	-8.84	8.81
110	0.3544	0.3890	0.4267	-8.89	8.84
111	0.3450	0.3789	0.4159	-8.95	8.90
112	0.3360	0.3692	0.4055	-8.99	8.95
113	0.3272	0.3597	0.3953	-9.04	9.01
114	0.3187	0.3505	0.3854	-9.07	9.06
115	0.3104	0.3416	0.3758	-9.13	9.10
116	0.3024	0.3330	0.3665	-9.19	9.14
117	0.2947	0.3246	0.3574	-9.21	9.18
118	0.2871	0.3164	0.3468	-9.26	8.77
119	0.2798	0.3085	0.3401	-9.30	9.29
120	0.2727	0.3008	0.33	-9.34	9.34

4. CHECKING COMPONENTS

B25/50=3950K±3% R25=15KΩ±3%

Temp (°C)	Resistance (KΩ)		
	Rmax	R(t)Normal	Rmin
-30	250.952	230.189	209.426
-29	236.568	217.234	197.900
-28	223.091	205.085	187.078
-27	210.459	193.686	176.913
-26	198.614	182.987	167.360
-25	187.503	172.942	158.380
-24	177.077	163.506	149.935
-23	167.288	154.639	141.989
-22	158.095	146.303	134.511
-21	149.458	138.464	127.470
-20	141.341	131.090	120.839
-19	134.087	124.486	114.885
-18	127.219	118.227	109.235
-17	120.715	112.294	103.873
-16	114.556	106.671	98.786
-15	108.724	101.342	93.960
-14	103.202	96.291	89.380
-13	97.972	91.503	85.034
-12	93.020	86.965	80.910
-11	88.330	82.663	76.996
-10	83.889	78.585	73.281
-9	79.683	74.720	69.757
-8	75.698	71.055	66.412
-7	71.925	67.581	63.237
-6	68.349	64.286	60.223
-5	64.962	61.162	57.362
-4	61.754	58.200	54.646
-3	58.713	55.390	52.067
-2	55.833	52.726	49.619
-1	53.102	50.198	47.294
0	50.514	47.800	45.086
1	48.061	45.525	42.989
2	45.735	43.366	40.997
3	43.530	41.317	39.104
4	41.440	39.373	37.306
5	39.457	37.527	35.597
6	37.576	35.775	33.974
7	35.792	34.111	32.430
8	34.100	32.532	30.964
9	32.494	31.031	29.568
10	30.970	29.606	28.242
11	29.523	28.252	26.981
12	28.150	26.966	25.782
13	26.846	25.743	24.640
14	25.608	24.581	23.554

4. CHECKING COMPONENTS

Temp (°C)	Resistance (KΩ)		
	Rmax	R(t)Normal	Rmin
15	24.433	23.477	22.521
16	23.315	22.426	21.537
17	22.254	21.428	20.602
18	21.246	20.478	19.710
19	20.288	19.575	18.862
20	19.377	18.715	18.053
21	18.511	17.897	17.283
22	17.688	17.119	16.550
23	16.903	16.377	15.851
24	16.159	15.672	15.185
25	15.450	15.000	14.550
26	14.802	14.360	13.918
27	14.183	13.750	13.317
28	13.595	13.170	12.745
29	13.033	12.616	12.199
30	12.496	12.088	11.680
31	11.985	11.585	11.185
32	11.498	11.106	10.714
33	11.032	10.648	10.264
34	10.588	10.212	9.836
35	10.163	9.795	9.427
36	9.758	9.398	9.038
37	9.371	9.019	8.667
38	9.001	8.656	8.311
39	8.648	8.311	7.974
40	8.310	7.980	7.650
41	7.988	7.665	7.342
42	7.678	7.363	7.048
43	7.383	7.075	6.767
44	7.102	6.800	6.498
45	6.832	6.537	6.242
46	6.573	6.285	5.997
47	6.326	6.044	5.762
48	6.089	5.814	5.539
49	5.862	5.593	5.324
50	5.645	5.382	5.119
51	5.437	5.180	4.923
52	5.238	4.987	4.736
53	5.047	4.801	4.555
54	4.864	4.624	4.384
55	4.689	4.454	4.219
56	4.520	4.291	4.062
57	4.359	4.135	3.911
58	4.204	3.985	3.766
59	4.055	3.841	3.627
60	3.913	3.704	3.495
61	3.775	3.571	3.367
62	3.645	3.445	3.245

4. CHECKING COMPONENTS

Temp (°C)	Resistance (KΩ)		
	Rmax	R(t)Normal	Rmin
63	3.518	3.323	3.128
64	3.397	3.206	3.015
65	3.280	3.094	2.908
66	3.168	2.986	2.804
67	3.061	2.883	2.705
68	2.957	2.783	2.609
69	2.858	2.688	2.518
70	2.762	2.596	2.430
71	2.670	2.508	2.346
72	2.582	2.423	2.264
73	2.496	2.341	2.186
74	2.414	2.262	2.110
75	2.335	2.187	2.039
76	2.259	2.114	1.969
77	2.186	2.044	1.902
78	2.115	1.977	1.839
79	2.047	1.912	1.777
80	1.981	1.849	1.717
81	1.918	1.789	1.660
82	1.857	1.731	1.605
83	1.799	1.675	1.551
84	1.742	1.621	1.500
85	1.687	1.569	1.451
86	1.635	1.519	1.404
87	1.585	1.472	1.359
88	1.536	1.426	1.315
89	1.490	1.381	1.273
90	1.445	1.338	1.232
91	1.401	1.297	1.193
92	1.359	1.257	1.156
93	1.318	1.219	1.119
94	1.279	1.182	1.084
95	1.241	1.146	1.050
96	1.205	1.111	1.018
97	1.169	1.078	0.986
98	1.135	1.046	0.956
99	1.102	1.015	0.927
100	1.070	0.984	0.898
101	1.040	0.955	0.871
102	1.010	0.927	0.845
103	0.981	0.900	0.819
104	0.953	0.874	0.795
105	0.926	0.849	0.771

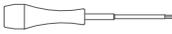
5. DISASSEMBLY PROCEDURE

5. Disassembly Procedure

5.1 Outdoor unit

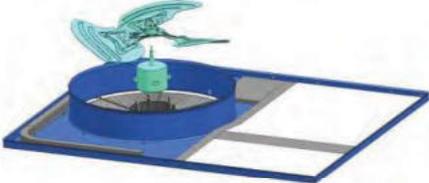
Disassembly and assembly for compressor and motor

The special tools for compressor & motor disassembly and assembly:

	Tool
1	Hexagon Screwdriver 
2	Hexagon Socket 

5. DISASSEMBLY PROCEDURE

Important: Before disassembly and assembly, make sure that the power to the system has been disconnected and verified as voltage free.

Step	Illustration	Handling Instruction
1.Remove electrical box side panel and fixed plate		<ol style="list-style-type: none"> 1. Remove electrical box side panel; 2.Remove outdoor motor terminal; 3. Remove the fixed plate.
2.Remove the roof component		<ol style="list-style-type: none"> 1. Remove the outdoor motor terminal; 2.Remove service plate; 3.Remove the rubber coil that run through the outdoor motor harness; 4.Remove the roof component.
3.Remove outdoor motor		<ol style="list-style-type: none"> 1. Remove outdoor fan; 2. Remove the outdoor motor fastening bolts; 3. Carefully remove the outdoor motor from fan guard.
4. Remove compressor		<ol style="list-style-type: none"> 1. Unsolder the 4 -way valve piping assy from compressor; 2. Remove the compressor mounting bolts; 3. Carefully remove the compressor from chassis.

5. DISASSEMBLY PROCEDURE

<p>5. Remove indoor fan</p>	 A 3D cutaway diagram of a blue outdoor unit. The top cover is partially removed, and a green indoor fan is shown floating above the unit's interior, indicating its removal. The internal components, including a control board, are visible.	<ol style="list-style-type: none">1. Remove indoor motor terminal;2. remove the indoor fan from fixed support.
<p>6. Assemble unit</p>	 A 3D perspective view of the fully assembled blue outdoor unit. The top cover is closed, and the unit is shown from a three-quarter angle, highlighting its compact and industrial design.	<p>Assemble the unit in the reverse order of disassembly.</p>



Product improvement, specifications and appearance in this manual are subject to change without prior notice.