AIR CONDITIONING SYSTEMS

Models: C1VI - 18 / C1VO - 18 C1VI - 24 / C1VO - 24

Service Manual



Your-conditions

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Summary and Features

Indoor Unit

C1VI-18 C1VI-24



Outdoor Unit

C1VI18

C1VI-24





Remote Controller

YB1FA



1.Safety Precautions

Installing, starting up, and servicing air conditioner can be hazardous due to system pressure, electrical components, and equipment location, etc.

Only trained, qualified installers and service personnel are allowed to install, start-up, and service this equipment.

Untrained personnel can perform basic maintenance functions such as cleaning coils. All other operations should be performed by trained service personnel.

When handling the equipment, observe precautions in the manual and on tags, stickers, and labels attached to the equipment. Follow all safety codes. Wear safety glasses and

work gloves. Keep quenching cloth and fire extinguisher nearby when brazing.

Read the instructions thoroughly and follow all warnings or cautions in literature and attached to the unit. Consult local building codes and current editions of national as well as local electrical codes.

Recognize the following safety information:

Warning

Incorrect handling could result in personal injury or death.

Caution

Incorrect handling may result in minor injury, or damage to product or property.

- Make sure the outdoor unit is installed on a stable, level surface with no accumulation of snow, leaves, or trash beside.
- Make sure the ceiling wall is strong enough to bear the weight of the unit.
- Make sure the noise of the outdoor unit does not disturb neighbors.
- Follow all the installation instructions to minimize the risk of damage from earthquakes, typhoons or strong winds.
- Avoid contact between refrigerant and fire as it generates poisonous gas.
- Apply specified refrigerant only. Never have it mixed with any other refrigerant. Never have air remain in the refrigerant line as it may lead to rupture and other hazards.
- Make sure no refrigerant gas is leaking out when installation is completed.
- Should there be refrigerant leakage, the density of refrigerant in the air shall in no way exceed its limited value, or it may lead to explosion .
- Keep your fingers and clothing away from any moving parts.
- Clear the site after installation. Make sure no foreign objects are left in the unit.
- Always ensure effective grounding for the unit.

Marning

All electric work must be performed by a licensed technician according to local regulations and the instructions given in this manual.

- Before installing, modifying, or servicing system, main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.
- Never supply power to the unit unless all wiring and tubing are completed, reconnected and checked.
- This system adopts highly dangerous electrical voltage. Incorrect connection or inadequate grounding can cause personal injury or death. Stick to the wiring diagram and all the instructions when wiring.
- Have the unit adequately grounded in accordance with local electrical codes.
- Have all wiring connected tightly. Loose connection may lead to overheating and a possible fire hazard.

All installation or repair work shall be performed by your dealer or a specialized subcontractor as there is the risk of fire, electric shock, explosion or injury.

Caution

- Never install the unit in a place where a combustible gas might leak, or it may lead to fire or explosion.
- Make a proper provision against noise when the unit is installed at a telecommunication center or hospital.
- Provide an electric leak breaker when it is installed in a watery place.
- Never wash the unit with water.
- Handle unit transportation with care. The unit should not be carried by only one person if it is more than 20kg.
- Never touch the heat exchanger fins with bare hands.
- Never touch the compressor or refrigerant piping without wearing glove.
- Do not have the unit operate without air filter.
- Should any emergency occur, stop the unit and disconnect the power immediately.
- Properly insulate any tubing running inside the room to prevent the water from damaging the wall.

2.Specifications

2.1 Unit Specifications

Model			C1VI-18 / C1VO-18
	Rated Voltage	V ~	220-240
Power	Rated Frequency	Hz	50
Supply	Phases		1
Power Supp	bly Mode	1	Outdoor
Cooling Cap	pacity	W	5275(1260~6600)
Heating Cap	pacity	W	5850(1120~6800)
Cooling Pov	ver Input	W	1600(380~2650)
Heating Pov	ver Input	W	1620(350~2650)
Cooling Pov	ver Current	A	7.25
Heating Pov	ver Current	A	7.34
Rated Input		W	2650
Rated Curre	ent	A	12.00
Air Flow Vol	ume(SH/H/M/L/SL)	m³/h	850/780/650/550/-
Dehumidifyi	ng Volume	L/h	2
EER		W/W	3.30
COP		W/W	3.61
SEER		W/W	/
HSPF		W/W	/
Application	Area	m ²	23-34
	Model of indoor unit		C1VI-18
	Fan Type		Cross-flow
	Diameter Length(DXL)	mm	Ф98X710
	Fan Motor Cooling Speed(SH/H/M/L/SL)	r/min	1350/1200/1050/900/-
	Fan Motor Heating Speed(SH/H/M/L/SL)	r/min	1420/1250/1150/1050/-
	Output of Fan Motor	W	20
	Fan Motor RLA	A	0.25
	Fan Motor Capacitor	μF	1.5
	Input of Heater	W	-
	Evaporator Form		Aluminum Fin-copper Tube
Indoor Uni	t Pipe Diameter	mm	Φ7
	Row-fin Gap	mm	2-1.4
	Coil Length (LXDXW)	mm	715X25.4X304.8
	Swing Motor Model		MP28VB
	Output of Swing Motor	W	3
	Fuse	A	PCB 3.15A
	Sound Pressure Level (SH/H/M/L/SL)	dB (A)	48/46/40/35/-
	Sound Power Level (SH/H/M/L/SL)	dB (A)	58/54/50/45/-
	Dimension (WXHXD)	mm	940X298X200
	Dimension of Carton Box (L/W/H)	mm	1010X285X380
	Dimension of Package(L/W/H)	mm	1013X383X300
	Net Weight	kg	12
	Gross Weight	kg	16

	Model of Outdoor Unit		C1VO-18					
	Compressor Manufacturer/Trademark		MITSUBISHI ELECTRIC (GUANGZHOU)COMP					
	Compressor Model		SNB130FGYMC					
	Compressor Oil		PV50S					
	Compressor Type		Rotary					
	L.R.A.	A	27.00					
	Compressor RLA	A	8.40					
	Compressor Power Input	W	1245					
	Overload Protector		1NT11L-6578					
	Throttling Method		Capillary					
	Operation Temp	°C	16~30					
	Ambient Temp (Cooling)	°C	18~45					
	Ambient Temp (Heating)	°C	-15~24					
	Condenser Form		Aluminum Fin-copper Tube					
	Pipe Diameter	mm	Φ7					
	Rows-fin Gap	mm	2-1.4					
	Coil Length (LXDXW)	mm	812X38.1X550					
	Fan Motor Speed	rpm	880					
	Output of Fan Motor	W	60					
Outdoor	Fan Motor RLA	А	0.62					
Unit	Fan Motor Capacitor	μF	3.5					
	Air Flow Volume of Outdoor Unit	m³/h	2400					
	Fan Type		Axial-flow					
	Fan Diameter	mm	Ф445					
	Defrosting Method		Automatic Defrosting					
	Climate Type		T1					
	Isolation		I					
	Moisture Protection		IP24					
	Permissible Excessive Operating Pressure	MPa	3.0					
	for the Discharge Side							
	Permissible Excessive Operating Pressure	MPa	0.9					
	for the Suction Side		E 4/ /					
	Sound Pressure Level (H/M/L)		54/-/-					
		ub (A)	04/-/-					
	Dimension (WAIAD)	mm	045¥417¥630					
		mm	04874327633					
	Net Weight	ka	38					
	Gross Weight	kg						
	Bofrigorant	ĸġ	43 P410A					
	Refrigerant Charge	ka	1 20					
	Length	ry m	5					
		a/m	30					
Connection		g/III mm						
Pine		mm	ψυ <u> </u> <u> </u>					
i ihe	Max Distance Height	m	10					
	Max Distance Length	m	20					
	wax Distance Length	1(1	30					

The above data is subject to change without notice. Please refer to the nameplate of the unit.

Model			C1VI-24 / C1VO-24
	Rated Voltage	V ~	220-240
Power	Rated Frequency	Hz	50
Supply	Phases		1
Power Supp	bly Mode		Outdoor
Cooling Cap	pacity	W	6450(1400~7000)
Heating Car	pacity	W	7000(1200~8200)
Cooling Pov	ver Input	W	1985(350~2500)
Heating Pov	ver Input	W	1930(350~2700)
Cooling Pov	ver Current	A	8.80
Heating Pov	ver Current	A	8.56
Rated Input		W	2700
Rated Curre	ent	A	12.40
Air Flow Vol	ume(SH/H/M/L/SL)	m³/h	900/800/700/550/-
Dehumidifyi	ng Volume	L/h	2
EER		W/W	3.25
СОР		W/W	3.62
SEER		W/W	/
HSPF		W/W	/
Application	Area	m ²	27-42
	Model of indoor unit		C1VI-24
	Fan Type		Cross-flow
	Diameter Length(DXL)	mm	Φ98X765
	Fan Motor Cooling Speed(SH/H/M/L/	r/min	1250/1100/950/800/-
	Fan Motor Heating Speed(SH/H/ML/	r/min	1300/1100/1000/850/-
	Output of Fan Motor	W	35
	Fan Motor RLA	A	0.30
	Fan Motor Capacitor	uF	2.5
	Input of Heater	W	-
	Evaporator Form		Aluminum Fin-copper Tube
Indoor Uni	t Pipe Diameter	mm	φ7
	Row-fin Gap	mm	2-1.5
	Coil Length (LXDXW)	mm	765X25.4X342.9
	Swing Motor Model		MP35XX
	Output of Swing Motor	W	3
	Fuse	A	PCB 3.15A
	Sound Pressure Level (SH/H/M/L/SL)	dB (A)	51/47/42/39/-
	Sound Power Level (SH/H/M/L/SL)	dB (A)	61/57/52/49/-
	Dimension (WXHXD)	mm	1007X315X219
	Dimension of Carton Box (L/W/H)	mm	1073X395X313
	Dimension of Package(L/W/H)	mm	1076X398X328
	Net Weight	ka	14
	Gross Weight	ka	10
		l và	13

	Model of Outdoor Unit		C1VO-24					
	Compressor Manufacturer/Trademark		MITSUBISHI ELECTRIC (GUANGZHOU)COMP					
	Compressor Model		SNB130FGYMC					
	Compressor Oil		PV50S					
	Compressor Type		Rotary					
	L.R.A.	А	27.00					
	Compressor RLA	А	8.40					
	Compressor Power Input	W	1245					
	Overload Protector		1NT11L-6578					
	Throttling Method		Capillary					
	Operation Temp	°C	16~30					
	Ambient Temp (Cooling)	°C	18~45					
	Ambient Temp (Heating)	°C	-15~24					
	Condenser Form		Aluminum Fin-copper Tube					
	Pipe Diameter	mm	Φ7					
	Rows-fin Gap	mm	2-1.4					
	Coil Length (LXDXW)	mm	837X38.1X660					
	Fan Motor Speed	rpm	690/500					
	Output of Fan Motor	W	60					
Outdoor	Fan Motor RLA	А	0.62					
Unit	Fan Motor Capacitor	μF	3.5					
	Air Flow Volume of Outdoor Unit	m³/h	3200					
	Fan Type		Axial-flow					
	Fan Diameter	mm	Ф520					
	Defrosting Method		Automatic Defrosting					
	Climate Type		T1					
	Isolation		I					
	Moisture Protection		IP24					
	Permissible Excessive Operating	MPa	3.0					
	Pressure for the Discharge Side							
	Permissible Excessive Operating	MPa	0.9					
	Pressure for the Suction Side		54//					
	Sound Pressure Level (H/M/L)		64/ /					
		ub (A)	04/-/-					
	Dimension of Carton Box (LAN/H)	mm	102674557225					
	Dimension of Packago(L/W/H)	mm	102074597750					
	Not Woight	ka	102374367730					
	Gross Weight	kg	40					
	Befrigerant	ĸġ	B410A					
	Refrigerant Charge	ka	1 25					
	Length	ry m	5					
	Gas Additional Charge	a/m	30					
Connection		g/iii mm	<u>ა</u> ს ტი					
Dina		mm	Ψ0 Φ12					
Fibe	Max Distance Height		412					
	Max Distance Reigni	 	10					
	iviax Distance Length	m	30					

The above data is subject to change without notice. Please refer to the nameplate of the unit.

2.2 Operation Characteristic Curve

18K



Heating



24K

Cooling



Heating



2.3 Capacity Variation Ratio According to Temperature



2.4 Operation Data

Cooling

Temperature condition (°C) Model			Standard pressure	Heat excha ten	anger pipe np.	Indoor fan	Outdoor fan	Compressor Frequency
Indoor	Outdoor	name	P (MPa)	T1 (°C)	T2 (°C)	mode	mode	(Hz)
		18K	0.9 to 1.1	12 to 14	70 to 42	High	High	62
26.7/19.4	35/–	24K	0.8 to 1.0	10 to 12	70 to 40	High	High	78

Heating

Temperature (°C	e condition C)	Model	Standard pressure	Heat excha ten	anger pipe np.	Indoor fan	Outdoor fan	Compressor Frequency	
Indoor	Outdoor	name	P (MPa)	T1 (°C) T2 (°C)		mode	mode	(Hz)	
		18K	2.2 to 2.4	70 to 37	2 to 4	High	High	62	
21.1/-	8/6.11	24K	2.5 to 2.7	70 to 37	0 to 3	High	High	80	

NOTES :

(1) T1: Inlet and outlet pipe temperature of evaporator

T2: Inlet and outlet pipe temperature of condenser

P: Pressure of air pipe connecting indoor and outdoor units(on the side of gas pipe)

(2) Measure surface temperature of heat exchanger pipe around center of heat exchanger path U bent. (Thermistor themometer)

(3) Connecting piping condition : 5 m

2.5 Noise Criteria Curve Tables for Both Models



Outdoor side noise



3. Construction Views

3.1 Indoor Unit



Model	W	Н	D	
18K	940	298	200	
24K	1007	315	219	Unit:mm

3.2 Outdoor Unit







340

396



24K







4. Refrigerant System Diagram



Refrigerant pipe diameter Liquid :1/4" (6 mm) Gas : 1/2" (12mm)

5. Schematic Diagram

5.1 Electrical Data

Symbol	Color symbol	Symbol	Color symbol
BU	BLUE	BK	BLACK
YE	YELLOW	YEGN	YELLOW GREEN
RD	RED	WH	WHITE
VT	VIOLET		
OG	ORANGE	Symbol	Parts name
BN	BROWN	Ð	PROTECTIVE EARTH

5.2 Electrical Wiring

• Indoor unit



• Outdoor unit

C1VO-18



C1VO-24



5.3 Printed Circuit Board

- Indoor unit
- TOP VIEW



1	Copper pin terminal of neutral wire	2	Auxiliary heating relay K1, K2	3	Fan capacitor	4	Protective tube	5	Health relay K3	6	PG motor terminal
7	Piezoresistor	8	Jumper cap	9	Up&down swing terminal	10	PG feedback terminal	11	Terminal of ambient temperature sensor	12	Terminal of tube temperature sensor
13	Connect display board DISP1,DISP2 terminals	14	High-frequency transformer T1	15	Rectifier DB1	16	Strainer SF2022A-05220	17	Connect copper terminal of communication line for indoor fan	18	Supply power for control relay K4 of outdoor fan

• BOTTOM VIEW



Outdoor unit(18k)

• TOP VIEW



• BOTTOM VIEW



- Outdoor unit(24k)
- TOP VIEW



• BOTTOM VIEW



6. Function and Control

6.1 Remote Control Operations



1 ON/OFF

2 MODE

Press it to start or stop operation.

Press it to select operation mode (AUTO/COOL/DRY/FAN/HEAT).

3 +
Press it to increase temperature setting.
4 -

Press it to decrease temperature setting.

5 FAN

Press it to set fan speed.

6 🔰

Press it to set swing angle.

7 TIMER ON

Press it to set auto-on timer.

8 TIMER OFF

Press it to set auto-off timer.

OLOCK

Press it to set clock.

10 X-FAN (X-FAN is the alternative expression of BLOW for the purpose of understanding.)

11 TEMP

- 12 TURBO
- 13 SLEEP
- 14 LIGHT

Press it to turn on/off the light.



15 MODE icon:

If MODE button is pressed, current operation mode icon 🛆 (AUTO), 🏶 (COOL), 🔥 (DRY), 💲 (FAN) or 🂢 (HEAT is only for heat pump models) will show.

16 SLEEP icon :

: is displayed by pressing the SLEEP button. Press this button again to clear the display.

17 TEMP icon:

Pressing TEMP button, $\widehat{\Box}$ (set temperature), $\widehat{\Box}$ (indoor ambient temperature), $\widehat{\Box}^{1}$ (outdoor ambient temperature) and blank is displayed circularly.

18 Up & down swing icon:

is displayed when pressing the up & down swing button. Press this button again to clear the display.

19 LIGHT icon:

 $\widehat{\mathbb{P}}$ is displayed by pressing the LIGHT button.Press LIGHT button again to clear the display.

20 LOCK icon:

is displayed by pressing "+" and "-" buttons simultaneously. Press them again to clear the display.

21 SET TIME display:

After pressing TIMER button, ON or OFF will blink. This area will show the set time.

22 TURBO icon:

(9) is displayed when pressing theTURBO button. Press this button again to clear the display.

23 DIGITAL display:

This area will show the set temperature. In SAVE mode, "SE" will be displayed. During defrosting operation, "H1" will be displayed. 24 X-FAN icon:

🛠 is displayed when pressing the X-FAN button. Press this button again to clear the display.

25 FAN SPEED display:

Press FAN button to select the desired fan speed setting(AUTO Low-Med-High). Your selection will be displayed in the LCD windows, except the AUTO fan speed.

Remote Controller Description

1 ON/OFF:

Press this button to turn on the unit. Press this button again to turn off the unit.

2 MODE:

Each time you press this button, a mode is selected in a sequence that goes from AUTO, COOL, DRY, FAN, and HEAT *, as the following:

AUTO ►COOL ► DRY►FAN ► HEAT*

*Note: Only for models with heating function.

After energization, AUTO mode is defaulted. In AUTO mode, the set temperature will not be displayed on the LCD, and the unit will automatically select the suitable operation mode in accordance with the room temperature to make indoor room comfortable.

3 + :

Press this button to increase set temperature. Hold it down for above 2 seconds to rapidly increase set temperature. In AUTO mode, set temperature is not adjustable.

4 -:

Press this button to decrease set temperature. Hold it down for above . 2 seconds to rapidly decrease set temperature. In AUTO mode, set temperature is not adjustable.

5 FAN :



Low speed A Medium speed High speed

6 🗦

Press this button to set up & down swing angle, which circularly changes as below:

This remote controller is universal. If any command 🖄 , 🗦 or 🚽 is sent out, the unit will carry out the command as 🔋

indicates the guide louver swings as:

7 TIMER ON:

Press this button to initiate the auto-ON timer. To cancel the auto-timer program, simply press this button again. After pressing this button, (2) disappears and "ON" blinks . 0 0:00 is displayed for ON time setting. Within 5 seconds, press + or - button to adjust the time value. Every press of either button changes the time setting by 1 minute. Holding down either button rapidly changes the time setting by 1 minute and then 10 minutes. Within 5 seconds after setting, press TIMER ON button to confirm.

8 TIMER OFF:

Press this button to initiate the auto-off timer. To cancel the auto-timer program, simply press the button again.TIMER OFF setting is the same as TIMER ON.

9 CLOCK :

Pressing CLOCK button, () blinks. Within 5 seconds, pressing + or - button adjusts the present time. Holding down either button above 2 seconds increases or decreases the time by 1 minute every 0.5 second and then by 10 minutes every 0.5 second. During blinking after setting, press CLOCK button again to confirm the setting, and then () will be constantly displayed.

10 X-FAN:

Pressing X -FAN button in COOL or DRY mode, the icon $\frac{1}{8}$ is displayed and the indoor fan will continue operation for 10 minutes in order to dry the indoor unit even though you have turned off the unit.

After energization, X-FAN OFF is defaulted. X-FAN is not available in AUTO, FAN or HEAT mode.

11 TEMP:

Press this button, could select displaying the indoor setting temperature or indoor ambient temperature. When the indoor unit firstly power on it will display the setting temperature, if the temperature's displaying status is changed from other status to" ⁽¹⁾ ", displays the ambient temperature, 5s later or within 5s, it receives other remote control signal that will return to display the setting temperature. if the users haven't set up the temperature displaying status, that will display the setting temperature.

12 TURBO:

Press this button to activate / deactivate the Turbo function which enables the unit to reach the preset temperature in the shortest time. In COOL mode, the unit will blow strong cooling air at super high fan speed. In HEAT mode, the unit will blow strong heating air at super high fan speed.

13 SLEEP:

Press this button to go into the SLEEP operation mode. Press it again to cancel this function. This function is available in COOL, HEAT (Only for models with heating function) or DRY mode to maintain the most comfortable temperature for you.

14 LIGHT:

Press LIGHT button to turn on the display's light and press this button again to turn off the display's light. If the light is turned on , $\widehat{\mathbb{Q}}$ is displayed. If the light is turned off, $\widehat{\mathbb{Q}}$ disappears.

15 Combination of "+" and "-" buttons: About lock

Press "+ " and "-" buttons simultaneously to lock or unlock the keypad. If the remote controller is locked, is displayed. In this case, pressing any button, is blinks three times.

16 Combination of "MODE" and "-" buttons: About switch between Fahrenheit and Centigrade At unit OFF, press "MODE" and "- " buttons simultaneously to switch between C and F.

Replacement of Batteries

1.Remove the battery cover plate from the rear of the remote controller.

(As shown in the figure)

2. Take out the old batteries.

3.Insert two new AAA1.5V dry batteries, and pay attention to the polarity.

4. Reinstall the battery cover plate.

★Notes:

•When replacing the batteries, do not use old or different types of batteries. Otherwise, it may cause malfunction.

•If the remote controller will not be used for a long time,

please remove batteries to prevent batteries from leaking.

- •The operation should be performed in its receiving range.
- •It should be kept 1m away from the TV set or stereo sound sets.

• If the remote controller does not operate normally, please take the batteries out and reinsert them after 30 seconds. If it still can't operate properly, replace the batteries.



6.2 Description of Each Control Operation

6.2.1 Functions of Indoor Unit

1.Basic function of system

(1)Cooling mode

1.Under this mode, fan motor, swing will work under setting status, the temp. range is 16-30 $^\circ$ C (61-86 Fahrenheit scale)

2.Outdoor unit malfunction or unit stop running, indoor unit will keep original running status, malfunction displayed.

3.When 0 (Tset-Tamb.), if indoor fan motor is high speed, that the fan motorist running in middle speed, the middle speed or low speed will be maintained;(this condition should be executed when compressor start up);the super high speed will not rotate; When (Tamb-Tset) $\geq 1^{\circ}$ C, the fan will return to the setting fan speed.

(2)Dehumidifying mode

1.Under this mode, fan motor will run at low speed, swing will work at setting status, setting temp. range is $16-30^{\circ}$ C (61-86 Fahrenheit scale)

2.Outdoor unit malfunction or protection, unit will stopdoor unit will keep original running status, malfunction displayed.

(3)Fan mode

Under this mode, indoor fan motor could be setted at high speed, middle speed, low or auto speed, compressor, outdoor unit and four-way valve will stop to run.

Under this mode, temp. range should be 16-30 °C (61-86 Fahrenheit scale)

(4)Heating mode

1.Under this mode, temp. range should be 16-30 $^\circ C$ (61-86 Fahrenheit scale)

2.Working condition and procedure of heating mode: When unit turn on and enter into Heating mode, indoor unit enter into anti-cool wind mode, when unit is stop running, and indoor fan motor turns on, blowing heat will act.

3.Protection function, under heating mode, compressor will stop to run due to malfunction happened, indoor fan motor will blow surplus heat.

4.Defrosting control: When receiving the defrosting signal from outdoor unit, displayer will display H1, 10s later, indoor fan motor will stop to run.

5.Anti-coold wind function

6.Blow heat air function

a.If heating temp. meets the compressor stop running condition, compressors, outdoor fan motor will stop to run, the upper and lower guide louver will rotate to horizontal position L, indoor fan motor at setting fan speed for 60s, then the indoor fan motor will stop to run.

b.Due to PG motor block running, the air guide board will keep the position when it stopping. (under each mode), other malfunction unit will stop to run, the upper and lower air guide louver will rotate to horizontal position L, indoor fan unit will run at setting fan speed and run for 60s, indoor fan unit will stop to run.

(5)Auto mode:

1.When Tarh≤26°C, select the cooling mode, at this time, the setting temp. is 25°C.(77 Fahrenheit scale)

2.Cooling and heating units: Tamb ≤22°C,will runat heating mode, at this time, the setting temp. is 20 °C (68Fahrenheit scale)

3. Cooling only unit: When Tamb ≤22°C, it will run at Fan mode, the setting temp. is 25 °C (77 Fahrenheit scale)

4.When 23°C ≤ Tindoor amb. ≤ 25 °C , firstly enter into auto mode and run at auto fan speed, other modes will run at auto mode, will keep the previous running mode. (W hen entering into Dehumidifying mode, it will run at auto fan speed)

(6) Auto fan speed control mode

2. Display state of indoor indicators

(1) State of indoor display board

1. When the unit is powered on, all patterns will be displayed and then only power indicator is on. When the unit is turned on with a remote controller, the operating indicator is on and operation mode which is set currently is displayed.

2. In defrosting mode, "H1" is displayed on "Double 8".

3. Set temperature is displayed on "Double 8".

> Display of operation patterns and mode patterns

When the unit is powered on, all patterns will be displayed and the standby operation indicator will become red. When the unit is turned on through a remote controller, the operation indicator is light. At the same time, operating mode patterns (mode indicators include cooling, heating and dehumidification modes) set currently are displayed, and dynamic display patterns of wind speed are displayed. If the light button is switched off, all display will be turned off.

> Temperature display control mode of separated air conditioner

1. When user sets the remote controller at set temperature display, currently set temperature will be displayed.

2. Only when remote signals are converted from other display states into indoor ambient temperature display state, the remote controller will display indoor ambient temperature for 5 seconds and then return to set temperature display.

3. Only when remote signals are converted from other display states into outdoor ambient temperature display state, the remote controller will display outdoor ambient temperature for 5 seconds and then return to set temperature display.

4. If the controller is lack of outdoor display functions, as the signal is received, set temperature will be displayed.

5. When the unit is turned off, temperature display will be compulsively set at given temperature by the controller. When the unit is turned on, patterns as set by remote signals will be displayed.

6. If user does not set up temperature display state, given temperature will be displayed.

(2) Failure display of indoor unit

1. Requirements for failure display

When multiple failures appear at the same time, failure protection codes shall be displayed alternatively.

(1) Hardware failures shall be displayed immediately, referring to requirements in "Failure State Display Table";

(2) Operation states shall be displayed immediately, referring to requirements in "Failure State Display Table";

(3) Other failures shall be displayed 200s after the compressor stops, referring to requirements in "Failure State Display Table". (Note: in the case that the unit is switched off with the remote controller, or the compressor is switched on again, failure display waiting time (200s) shall be cleared.)

(4) Frequency limitation and reduction states shall be displayed by means of remote calling.

3. Failure display control

Indicator failure display shall be kept synchronous with Double 8 failure display, that is, during indicator blinking, failure code corresponding to such indicator shall be displayed on Double 8.

4. Method of remote calling of failure display

Entering the failure remote calling mode: push the light button four times within 3s to call out relevant failure protection code; Quit the failure remote calling mode: push the light button four times within 3s or call out failure display to enter it for 5 minutes and then quit.

3. Other control targets

(1) Up and down wind blow functions: model of stepping motor is MP28EA.

When the unit is powered on, the up and down wind blow motor will turn a wind deflector anti-clockwise to Position 0 to shut down the air outlet. When the unit is switched on and wind blow function is not preset, under the heating mode, up and down wind blades will turn clockwise to position D; and under other modes, the up and down wind blades will turn clockwise to position L. If wind blow function is set at the same time as the unit is switched on, the wind blades will swing between position L and D. The wind blades can be kept in seven states: position L, position A, position B, position C, position D, swing between position L and D, stop at one position from L to D. When the unit is turned off, the wind deflector will be closed up to position 0. Wind blow action is effective only when wind blow commands are set and the indoor unit is running.

Note: When the wind blades are set at position L to B, position A to C, or position B to D through remote setting, the wind deflector will swing between position L and D. L—A—B—C—D.

(2) Buzzer

When the controller is powered on, signals from a remote controller are received, or the auto button is pushed, a buzzer will give out prompt tone.

(3) Auto button

When the button is pushed, the unit will operate in auto mode and the indoor fan will run in auto state. When the indoor fan is running, the wind blow motor will work. When the button is pushed again, the unit will be switched off. At the same time as the button is pushed, the whole unit will be powered on and enter into fast test mode; when the unit is powered on and detects for continuous 20s (such time shall not be fast tested) that the auto button is pushed, and if the unit is currently at fast test state, the unit will guit the fast test state.



(4) Sleep function

This mode is effective only in cooling and heating modes. Proper sleep curves shall be selected for operation according to preset temperature.

In cooling mode:

(1) When initial temperature is set at 16-23 $^{\circ}$ C, an increase of 1 $^{\circ}$ C will be gained every hour after the sleep function is activated. After 3 $^{\circ}$ C is raised, the temperature will be maintained. After operation for 7 hours, temperature will go down by 1 $^{\circ}$ C, afterwards, the unit will operate at such temperature.

(2) When initial temperature is set at 24-27 $^{\circ}$ C, an increase of 1 $^{\circ}$ C will be gained every hour after the sleep function is activated. After 2 $^{\circ}$ C is raised, the temperature will be maintained. After operation for 7 hours, temperature will go down by 1 $^{\circ}$ C, afterwards, the unit will operate at such temperature.

(3) When initial temperature is set at 28-29°C, an increase of 1°C will be gained every hour after the sleep function is activated. fter 1°C is raised, the temperature will be maintained. After operation for 7 hours, temperature will go down by 1 °C, afterwards, the unit will operate at such temperature.

In heating mode:

(1) When initial temperature is set at 16 $^\circ\!\!\!\mathrm{C}$, the unit will operate at such temperature.

(2) When initial temperature is set at 17-20 $^{\circ}$ C, a decrease of 1 $^{\circ}$ C will be gained every hour after the sleep function is activated. After 1 $^{\circ}$ C is reduced, the temperature will be maintained.

(3) When initial temperature is set at 21-27 $^{\circ}$ C, a decrease of 1 $^{\circ}$ C will be gained every hour after the sleep function is activated. After 2 $^{\circ}$ C is reduced, the temperature will be maintained.

(4) When initial temperature is set at 28-30 $^{\circ}$ C, a decrease of 1 $^{\circ}$ C will be gained every hour after the sleep function is activated. After 3 $^{\circ}$ C is reduced, the temperature will be maintained.

(5) Timing function

The main board integrates general timing and moment timing. Such two timing functions can be selected through a remote controller on which different functions are arranged.

1 General timing:

Timing start: timing start can be set when the unit is off. When preset time is reached, the controller will operate in a preset mode. Timing can be set at an interval of 0.5 hour in a scope of 0.5 - 24 hours.

Timing stop: timing stop can be set when the unit is on. When preset time is reached, the system will be turned off. Timing can be set at an interval of 0.5 hour in a scope of 0.5 - 24 hours.

2 Moment timing

Timing start: if timing start is set when the system is at operation state, the system will continue to operate; if timing start is set when the system is at stop, as the preset time is reached, the system will start to run in preset mode.

Timing stop: if timing stop is set when the system is at stop state, the system will keep standby; if timing stop is set when the system is in operation, as the preset time is reached, the system will stop running.

Timing change:

When the system is in timing mode, start and stop can be set through the On/Off button on the remote controller; or timing time can be reset and the system will operate according to the latest setting.

When the system is in operation and both timing start and stop are set, the system will stay at currently set operation state. When preset timing stop time is reached, the system will stop working.

When the system is at stop state and both timing start and stop are set, the system will keep at stop state. When preset timing start time is reached, the system will start operation.

From then on, the system will operate in preset mode at a preset start time and stop at a preset stop time everyday. If timing stop time is set as the same as timing start time, a stop command will be executed.

(6) Dry and mildew proof function

Dry and mildew proof function can be set in cooling and dehumidification modes.

(7) Control of indoor fan

Indoor fan can be set at four levels, super-high, high, middle and low, with a remote controller. When one level is set, the fan will thus operate at such level. The fan can also be set at auto state.

(8) Power off Memory Function

What will be memorized includes modes, up and down wind blow, light, preset temperature, preset wind speed, general timing (no memory for moment timing), and Fahrenheit /Celsius degree. When the unit is powered on again after power failure, operation continues according to memorized content. If timing is not set by the last remote control command, the system will memorize the last remote control command and operate in the mode specified in the last remote control command. If timing is set by the last remote control command and power failure happens before the preset time, the system, as powered on again, will memorize the timing function set by the last remote control command. If the system is powered again. If timing is set by the last remote control command and timing of start or stop is reached before power failure, the system, as powered on again, will memorize operation state before power failure and will not perform timing action. Moment timing is out the range of memory.

(9) Locked Protection of PG Motor

When starting up the fans, if the motor has run at a lower speed continuously for a period, for preventing automatic protection of the motor, stop running, and display the locked operation; if the machine is running at present, the code of the locked fault---H6 of double-eight digital tubes will be displayed; if the machine is shut down at present, the information of the locked fault will not be displayed.

(10) Super Power Function

In cooling and heating modes (automatic, dehumidifying and air-supplying modes are without strong power), press the button of Super Power, the wind speed on the remote controller is displayed as super-high air flow, and the inner fans are also turned to super-high air flow;

(11) Health Function

When the inner fans are running, the remote controller is set at the Health function at this time (if there is no Health button on the remote controller, the Health On order is defaulted), then start the Health function device.

5. Fault Detection of Temperature Sensor

(1) Indoor Environment Temperature Sensor:

Detect the fault of thermo-bulb at any time;

(2) Indoor Pipe Temperature Temperature Sensor:

During the defrosting period, the fault of the thermo-bulb will be not detected, which shall be detected in 5 minutes after defrosting is completed; the fault of the thermo-bulb will be detected at other times;

(3) Protecting Treatments of Temperature Sensor:

1. When the thermo-bulb is detected to be short-circuited continuously for 30 seconds:

It is regarded that the temperature detected by the thermo-bulb is over-high (or unlimited), then the whole machine will exert corresponding safety stops according to the over-high temperature sensed by the thermo-bulb, and display corresponding temperature safety stops and faults of the thermo-bulb simultaneously.

2. When the thermo-bulb is detected in open circuit continuously for 30 seconds: stop the machine in protection, directly display corresponding faults of the thermo-bulb.

6. Forced Running Function of the Inner Units

(It is refrigerants reclaiming function which is used for the condition that refrigerants cannot be reclaimed by cooling operation in the season with low temperature.)

(1) Enter into Forced Running Control

Within 5 minutes after power-up, press the Lights Off button on the remote controller continuously for three times within 3 seconds to enter into the fluorine collecting mode, and display Fo, send the fluorine-collecting mode for 25 minutes continuously, each load will be treated as cooling when starting the machine (set the air flow as High, set the temperature as 16°C).

(2) Exit from the Forced Running Control

After receiving any remote signal, or signal of keys, the fluorine-collecting mode will exit, and operate in accordance with the current orders set; or exit the fluorine-collecting mode after running for 25 minutes, and the machine will be shut down automatically.

6.2.2 Functions of Outdoor Unit

1. Input Parameter Compensation

(1) Input parameter compensation function

As the structure feature of split unit, concerning the comfort, in heating mode, when compressor stops, the indoor ambient temperature is higher than preset temperature for 3 °C.

2. Check parameters to effectively make judgment and control

Insert the outdoor discharge temp sensor into corresponding temp sensor jacket of discharge pipe in order to protect safe and reliable operation of the unit, so that the control system can accurately detect the discharge temp as well as effectively control and protect it. Otherwise, the unit will stop and display the trouble of "outdoor discharge temp sensor failure (not be inserted correctly)" which can be recovered by pressing ON/OFF button.

3. Cooling Mode

3.1 Conditions and processes of cooling operation:

3.1.1 If the compressor stops, and [Tpreset – (Tindoor ambient – Δ Tcooling indoor ambient temperature compensation)] ≤0.5 °C, start up the unit for cooling operation;

3.1.2 During cooling operation, if $0^{\circ} \leq [\text{Tpreset} - (\text{Tindoor ambient } -\Delta\text{Tcooling indoor ambient temperature compensation})] < 2^{\circ}$, keep the cooling operation;

3.1.3 During cooling operation, if $2^{\circ} \leq [\text{Tpreset} - (\text{Tindoor ambient} -\Delta\text{Tcooling indoor ambient temperature compensation})]$, the cooling operation will stop after reaching to the setting temperature.

3.2 Temperature setting range

3.2.1 If Toutdoor ambient \geq [Tlow-temperature cooling], the temperature can be set at: 16~30 °C (Cooling at roomemperature);

3.2.2 If Toutdoor ambient < [Tlow-temperature cooling], the temperature can be set at: $25 \sim 30^{\circ}$ (Cooling at low temperature), that is, the minimum setting temperature to be judged by outdoor unit is 25° .

4. Dry Mode

4.1 Conditions and processes of dry operation: same as the cooling mode;

4.2 The temperature setting range is: 16~30°C;

5. Fan Mode

5.1 The compressor, outdoor fan and four-way valve are switched off;

5.2 The temperature setting range is: 16~30 °C.

6. Heating Mode

6.1. Conditions and processes of heating operation: (Tindoor ambient is the actual detection temperature of indoor

environment temp sensor, ΔTheating indoor ambient temperature compensation is the indoor ambient temperature compensation during heating operation)

6.1.1 If the compressor stops, and [(Tindoor ambient $-\Delta$ Theating indoor ambient temperature compensation) -Tpreset] \leq 0.5 °C, start the unit to enter into heating operation;

6.1.2 During heating operation, if $0^{\circ} \leq [(Tindoor ambient - \Delta Theating indoor ambient temperature compensation) - Tpreset] < 2^{\circ}$, keep the heating operation;

6.1.3 During heating operation, if $2^{\circ}C \leq [(Tindoor ambient - \Delta Theating indoor ambient temperature compensation)-Tpreset], the heating operation will stop after reaching the setting temperature.$

6.2 The temperature setting range in this mode is: 16~30 $^\circ\mathrm{C}$.

7. Defrosting Control (heating)

7.1 After the time for defrosting is judged to be satisfied, if the temperature for defrosting is satisfied for continuous 3minutes, the defrosting operation will start.

7.2 Start defrosting: Compressor stops and starts up 55S later;

7.3 Finish of Defrosting: Compressor stops and starts up 55S later;

7.4 The defrosting operation can exit when any of the conditions below is satisfied:

7.4.1 Toutdoor pipe \geq 12 °C;

7.4.2 Toutdoor ambient < -5 $^{\circ}$ C, and the Toutdoor pipe > 6 $^{\circ}$ C last more than 80S;

7.4.3The continuous running time of defrosting reaches.

8. Compressor Control

8.1. The frequency of compressor will be controlled according to the relationship of ambient temperature and preset temperature as well as changing speed of ambient temperature;

8.2 Start the compressor after starting cooling, heating, dry operation, and the outdoor fan for 5s;

8.3 When the unit is off, in safety stops and switching to fan mode, the compressor will stop immediately;

8.4 In all modes: once the compressor starts up, it will not be allowed to stop within 7 min. (Note: except the cases that require stop of the compressor such as fault protection, remote shutdown, mode switching etc.);

8.5 In all modes: once the compressor stops, it can't restart within 3-minute (Note: The indoor units with memory function can be restarted after remote shutdown and powering on again without delay).

9. Outdoor Fan Control

9.1 When the unit is off by remote control, in safety stops or stops after reaching the setting temperature, 1min later, the outdoor fan will stop;

9.2 In fan mode: The outdoor fan stops;

9.3 Start of defrosting: Outdoor fan will stop after compressor stops for 50S;

9.4 Finish of defrosting: Outdoor fan will start up when the compressor stops.

10. 4-way valve control

10.1 The 4-way valve is off under the modes of Cooling, dry and fan;

10.2 In heating mode, the 4-way valve is energized;

10.3 When the unit is off in heating mode or heating mode shifts to other modes, the 4-way valve will be de-energized after compressor stops for 2min;

10.4. After protection stops, the 4-way valve will be de-energized after 4min;

10.5 Start of defrosting: when entering defrosting mode, 4-way valve will be de-energized after the compressor stops for 50s; 10.6 Finish of defrosting: The 4-way valve will be energized after the compressor stops for 50s.

11. Anti-freezing protection

11.1 In cooling and dry mode, if Tindoor pipe < 0 is detected for 3min continuously, the unit will stop; if 6° < Tindoor pipe, and compressor has stopped for 3min, the unit will resume running;

11.2 In cooling and dry mode, if Tindoor pipe < 6°C, running frequency of compressor will be decreased or stop increasing; 11.3 If the unit stops as anti-freezing protection for 6 times, it can not resume running automatically and display trouble code, it can resume by pressing ON/OFF button. During operation, if the compressor operates for over 10min, the times of anti-freezing protection stop will be cleared to zero. When the unit is off/ fan/ heating mode, the malfunction and malfunction times will be cleared to zero. (If the malfunction can not be removed)

12. Overload protection

12.1 In cooling and dry mode: if 65 °C ≤Toutdoor pipe, the unit will stop; if Toutdoor pipe < 55 °C, and compressor has stopped for 3min, the unit will resume running;

12.2 In cooling and dry mode: if $55\% \le T$ outdoor pipe, running frequency of compressor will be decreased or stop increasing; 12.3 In heating mode: if $64\% \le T$ indoor pipe, the unit will stop; if Tindoor pipe < 54%, and compressor has stopped for 3min, the unit will resume running;

12.4 In heating mode: if 54 °C ≤Tindoor pipe, running frequency of compressor will be decreased or stop increasing; 12.5 If the unit stops as overload protection for 6 times, it can not resume running automatically and display malfunction. It can resume running by pressing ON/OFF.During operation, if the compressor has operated for over 10 min, the times of overload protection stop will be cleared to zero. When the unit is off or in Fan mode or shifts to heating mode, the malfunction and malfunction times will be cleared to zero immediately. (If the malfunction can not be removed)

13. Compressor discharge temperature protection

13.1 If 115 C < T discharge, the unit will stop; if T discharge < 97 C, and compressor has stopped for 3min, the unit will resume running;

13.2 If 97 ℃≤Tdischarge, running frequency of compressor will be decreased or stop increasing;

13.3 If the unit stops as protection of compressor discharge temperature for 6 times, it can not resume running automatically and malfunction will be displayed. It can resume running by pressing ON/OFF. During operation, if the compressor has operated for over 10min, the time of compressor discharge temperature stop will be cleared to zero. When the unit is off/ shifts to fan mode, the malfunction and malfunction times will be cleared. (If the malfunction can not be removed)

14. Current protection

14.1. If 12A≤I alternating-current, running frequency of compressor will be decreased or stop increasing;

14.2. If 17A≤I alternating-current, the unit will stop; and after compressor has stopped for 3min, the unit will resume running; 14.3 If the unit stops as protection for compressor discharge temperature for 6 times, it can not resume running automatically and malfunction will be displayed. It can resume by pressing ON/OFF button. During operation, if the compressor has operated for over 10 min, the time of compressor discharge temperature stop will be cleared to zero.

15. Drop off voltage

During compressor operation, the system will stop and malfunction of drop off voltage will occur if voltage downward fluctuates rapidly, and it will re-start up automatically 3min later.

16. Communication malfunction

If the unit does not receive correct signal from indoor unit for 3min continuously, the unit will stop as communication malfunction protection; if communication malfunction has removed and compressor has stopped for 3min, the unit will resume running.

17. IPM module protection

When the compressor starts, if there is overcurrent or low control voltage for IPM module due to some abnormal results, IPM will detect module protection signal as the unit is on. Once the module protective signal is detected, stop the unit with module protection immediately. If the module protection is removed and compressor has stopped for 3min, the unit will be allowed to operate. If the module protection continuously occurs for three times, it can not be removed automatically, and you should press the ON/OFF button to resume operation. If the running time of compressor exceeds 10 min, the module protection times will be cleared.

18. Module overheating protection

18.1 If 80 ℃ ≤Tmodule, running frequency of compressor will be decreased or stop increasing;

18.2.If 95 °C \leq Tmodule, the unit will stop; if Tmodule < 87 °C, and compressor has stopped for 3min, the unit will resume running; 18.3 If the unit stops as module overheating protection occurs for 6 times, it can not resume running automatically and malfunction will be displayed, it can resume by pressing ON/OFF. During operation, if the time exceeds compressor running time, the time of module overheating protection stop will be cleared. When the unit is off or shifts to fan mode, the malfunction and malfunction times will be cleared. (If the malfunction can not be removed).

19 Compressor overload protection

19.1 If detect that the overload switch breaks within continuous 3S, the system will stop as protection;

19.2 If detect that the protection has removed and the compressor has stopped for 3min, the unit will be allowed to operate. 19.3 If the unit stops as compressor overload protection occurred for 3 times continuously, it can not resume running automatically and malfunction will be displayed.

It can resume operation by pressing ON/OFF button; and the times of compressor overload protection will be cleared after the compressor has run for 30min.

7. Installation Manual

7.1 Notices for Installation

Caution

1. The unit should be installed only by authorized service center according to local or government regulations and in compliance with this manual.

2.Before installing, please contact with local authorized maintenance center. If the unit isnot installed by the authorized service center, the malfunction may not be solved due to incovenient contact between the user and the service personnel.

3. When removing the unit to the other place, please firstly contact with the local authorized service center.

4. Warning: Before obtaining access to terminals, all supply circuits must be disconnected.

5. For appliances with type Y attachment, the instructions shall contain the substance of the following. 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.

6. The appliance must be positioned so that the plug is accessible.

7. The temperature of refrigerant line will be high; please keep the interconnection cable away from the copper tube.

8. The instructions shall state the substance of the following:

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.

7.1.1 Installation Site Instructions

Proper installation site is vital for correct and efficient operation of the unit. Avoid the following sites where:

- strong heat sources, vapours, flammable gas or volatile liquids are emitted.
- high-frequency electro-magnetic waves are generated by radio equipment, welders and medical equipment.
- salt-laden air prevails (such as close to coastal areas).
- the air is contaminated with industrial vapours and oils.
- the air contains sulphures gas such as in hot spring zones.
- corrosion or poor air quality exists.

7.1.2 Installation Site of Indoor Unit

1. The air inlet and outlet should be away from the obstructions. Ensure the air can be blown through the whole room.

2. Select a site where the condensate can be easily drained out, and where it is easily connected to outdoor unit.

3.Select a place where it is out of reach of children.

4. Select a place where the wall is strong enough to withstand the full weight and vibration of the unit.

5.Be sure to leave enough space to allow access for routine maintenance. The installation site should be 250cm or more above the floor.

6.Select a place about 1m or more away from TV set or any other electric appliance.

7.Select a place where the filter can be easily taken out.

8. Make sure that the indoor unit is installed in accordance with installation dimension instructions.

9.Do not use the unit in the laundry or by swimming pool etc.

7.1.3 Installation Site of Outdoor Unit

- 1.Select a site where noise and outflow air emitted by the unit will not annoy neighbors.
- 2.Select a site where there is sufficient ventilation.
- 3.Select a site where there is no obstruction blocking the inlet and outlet.
- 4. The site should be able to withstand the full weight and vibration.
- 5. Select a dry place, but do not expose the unit to direct sunlight or strong wind.

6.Make sure that the outdoor unit is installed in accordance with the installation instructions, and is convenient for maintenance and repair.

7. The height difference between indoor and outdoor units is within 10 m, and the length of the connecting tubing does not exceed 30 m.

8.Select a place where it is out of reach of children.

9.Select a place where the unit does not have negative impact on pedestrians or on the city.

7.1.4 Safety Precautions for Electric Appliances

1.A dedicated power supply circuit should be used in accordance with local electrical safety regulations.

2.Don't drag the power cord with excessive force.

3. The unit should be reliably earthed and connected to an exclusive earth device by the professionals.

- 4. The air switch must have the functions of magnetic tripping and heat tripping to prevent short circuit and overload.
- 5. The minimum distance between the unit and combustive surface is 1.5m.

6. The appliance shall be installed in accordance with national wiring regulations.

7.An all-pole disconnection switch with a contact separation of at least 3mm in all poles should be connected in fixed wiring.

Note:

- Make sure the live wire, neutral wire and earth wire in the family power socket are properly connected.
- There should be reliable circuit in the diagram. Inadequate or incorrect electrical connections may cause electric shock or fire.

7.1.5 Earthing Requirements

1.Air conditioner is type I electric appliance. Please ensure that the unit is reliably earthed.

2. The yellow-green wire in air conditioner is the earthing wire which can not be used for other purposes. Improper earthing may cause electric shock.

3. The earth resistance should accord to the national criterion.

4. The power must have reliable earthing terminal. Please do not connect the earthing wire with the following:

① Water pipe ② Gas pipe ③ Contamination pipe ④ Other place that professional personnel consider is unreliable

5. The model and rated values of fuses should accord with the silk print on fuse cover or related PCB.

7.2 Installation Dimension Diagram



Schematic diagram being reference only (outdoor unit is with variation), please refer to real product for authentic information.

7.3 Install Indoor Unit

7.3.1 Installing of Mounting Plate

1. Mounting plate should be installed horizontally. As the water tray's oulet for the indoor unit is two-way type, during installation, the indoor unit should slightly slant to water tray's outlet for smooth drainage of condensate.

2. Fix the mounting plate on the wall with screws.

3.Be sure that the mounting plate has been fixed firmly enough to withstand about 60 kg. Meanwhile, the weight should be evenly shared by each screw.



7.3.2 Boring Piping Hole

1.Slant the piping hole (Φ 55) on the wall slightly downward to the outdoor side. 2.Insert the piping-hole sleeve into the hole to prevent the connection piping and wiring from being damaged when passing through the hole.

7.3.3 Installing of Drain Hose

1.Connect the drain hose to the outlet pipe of the indoor unit.Bind the joint with rubber belt.

2.Put the drain hose into insulating tube.

3.Wrap the insulating tube with wide rubber belt to prevent the shift of insulating tube. Slant the drain hose downward slightly for smooth drainage of condensate.

Note: The insulating tube shoud be connected reliably with the sleeve outside the outlet pipe. The drain hose should be slanted downward slightly, without d-istortion, bulge or fluctuation. Do not put the outlet in the water.

7.3.4 Connecting Indoor and Outdoor Electric Wires

1.Open the front panel.

2.Remove the wiring cover, connect and fix power connection cord to the terminal board shown in Fig 2.

3. Make the power connection cord pass through the hole at the back of indoor unit.

4. Reinstall the cord anchorage and wiring cover.

5.Reinstall the front panel.







NOTE:

All wires between indoor and outdoor units must be connected by the qualified electric contractor.

- Electric wires must be connected correctly. Improper connection may cause malfunction.
- Tighten the terminal screws securely.
- After tightening the screws, pull the wire slightly to confirm whether it's firm or not.
- Make sure that the electric connections are earthed properly to prevent electric shock.
- Make sure that all wiring connections are secure and the cover plates are reinstalled properly. Poor installation may cause fire or electric shock.

7.3.5 Installing of Indoor Unit

• The piping can be output from right, right rear, left or left rear.

1.When routing the piping and wiring from the left or right side of indoor unit, cut off the tailings from the chassis as necessary(As shown in Fig.3)

(1)Cut off the tailing 1 when routing the wiring only;

(2)Cut off the tailing 1 and tailing 2 when routing both the wiring and piping.

2. Take out the piping from body case, wrap the piping, power cords, drain hose with the tape and then make them pass through the piping hole. (As shown in Fig.4)

3.Hang the mounting slots of the indoor unit on the upper hooks of the mounting plate and check if it is firm enough.(As shown in Fig.5)

4. The installation site should be 250cm or more above the floor.

7.3.6 Installing of Connection Pipe

1. Align the center of the pipe flare with the related valve.

2.Screw in the flare nut by hand and then tighten the nut with spanner and torque wrench by referring to the following:

Hex nut diameter	Tightening torque (N·m)
Ф6	15~20
Φ 9.52	31~35
Φ 12	50~55
Φ16	60~65
Φ 19	70~75



7.4 Install Outdoor Unit

7.4.1 Electric Wiring

 Remove the handle on the right side plate of outdoor unit.
 Take off wire cord anchorage. Connect and fix power connection cord and power cord to the terminal board.Wiring should fit that of indoor unit.
 Fix the power connection cord and power cord with wire clamps and then connect the corresponding connector.

4.Confirm if the wire has been fixed properly.

5.Reinstall the handle.



NOTE:

Incorrect wiring may cause malfunction of spare part.

• After the wire has been fixed, ensure there is free space between the connection and fixing places on the lead wire. Schematic diagram being reference only, please refer to real product for authentic information.






7.4.2 Air Purging and Leakage Test

1. Connect charging hose of manifold valve to charge end of low pressure valve

(both high/low pressure valves must be tightly shut).

- 2. Connect joint of charging hose to vacuum pump.
- 3. Fully open the handle of Lo manifold valve.

4. Open the vacuum pump for vacuumization. At the beginning, slightly loosen joint nut of low pressure valve to check if there is air coming inside. (If noise of vacuum pump has been changed, the reading of multimeter is 0) Then tighten the nut. 5. Keep vacuuming for more than 15mins and make sure the reading of multimeter is- 1.0×10^5 pa(-76cmHg).

- 6. Fully open high/low pressure valves.
- 7. Remove charging hose from charging end of low pressure valve.
- 8. Tighten lid of low pressure valve. (As shown in Fig.6)

7.4.3 Outdoor Condensate Drainage (only for Heat pump type)

During heating operation, the condensate water and defrosting water should be drained out reliably through the drain hose. Install the outdoor drain connector in a Φ 25 hole on the the base plate and attach the drain hose to the connector, so that the waste water formed in the outdoor unit can be drained out .The hole diameter 25 must be plugged.





Whether to plug other holes will be determined by the dealers according to actual conditions.

7.5 Check After Installation and Test Operation

7.5.1 Check after Installation

Items to be checked	Possible malfunction
Has the unit been fixed firmly?	The unit may drop, shake or emit noise.
Have you done the refrigerant leakage test?	It may cause insufficient cooling(heating)
Is thermal insulation sufficient?	It may cause condensation.
Is water drainage satisfactory?	It may cause water leakage.
Is the voltage in accordance with the rated voltage marked on the nameplate?	It may cause electric malfunction or damage the unit.
Is the electric wiring or piping connection installed correctly and securely?	It may cause electric malfunction or damage the parts.
Has the unit been securely earthed?	It may cause electrical leakage.
Is the power cord specified?	It may cause electric malfunction or damage the parts.
Is the inlet or outlet blocked?	It may cause insufficient cooling(heating)
Is the length of connection pipes and refrigerant capacity recorded?	The refrigerant capacity is not accurate.

7.5.2 Operation Test

1.Before Operation Test

(1)Do not switch on power before installation is finished completely.

(2)Electric wiring must be connected correctly and securely.

(3)Cut-off valves of the connection pipes should be opened.

(4)All the impurities such as scraps and thrums must be cleared from the unit.

2.Operation Test Method

(1)Switch on power and press "ON/OFF" button on the remote controller to start the operation.

(2)Press MODE button to select the COOL, HEAT (Not available for cooling only unit), FAN to check whether the operation is normal or not.

7.6 Installation and Maintenance of Healthy Filter

7.6.1 Installation of Healthy Filter

1.Lift up the front panel from it's two ends, as shown by the arrow direction, and then remove the air filter.(as shown in Fig.a)

2.Attach the healthy filter onto the air filter, (as shown in Fig.b).

3. Install the air filter properly along the arrow direction in Fig.c, and then close the panel .





-Healthy filter

7.6.2 Cleaning and Maintenance

Remove the healthy filter and reinstall it after cleaning according to the installation instruction. Don't use brush or hard things to cleanthe filter. After cleaning, be sure to dry it in the shade.

7.6.3 Service Life

The general serive life for the healthy filter is about one year under normal condition. As for silver ion filter, it is invalid when its surface becomes black (green).

This supplementary instruction is provided for reference to the unit with healthy filter. If the graphics provided herein is different from the actualproduct, please refer to the atual product. The quantity of healthy filters is based on the actual delivery.

8. Exploded Views and Parts List

8.1 Indoor Unit

C1VI-18



	Description	Part Code	
NO.	Description	C1VI-18	Qty
	Product Code	CB171N05000	
1	Front Panel Assy	20012260	1
2	Filter Sub-Assy	1112208901	2
3	Screw Cover	24252016	3
4	Baffle Plate	26112228	1
5	Front Case Sub-Assy	20012288	1
6	Air Louver 1	10512116	1
7	Air Louver 2	10512117	1
8	Helicoid tongue	26112238	1
9	Left Axile Bush	10512037	1
10	Rear Case assy	12312214	1
11	Rubber Plug (Water Tray)	76712012	1
12	Ring of Bearing	26152022	1
13	O-Gasket sub-assy of Bearing	76512051	1
14	Cross Flow Fan	10352019	1
15	Evaporator Support	24212133	1
16	Evaporator Assy	1002937	1
17	Wall Mounting Frame	1252218	1
18	Motor Press Plate	26112178	1
19	Fan Motor	15012116	1
20	Pipe Clamp	26112164	1
21	Drainage hose	5230014	1
22	Step Motor	15012086	1
23	Crank	10582070	1
24	Display Board	30565042	1
25	Guide Louver	10512115	1
26	Axile Bush	10542008	1
27	Electric Box	2011210801	1
28	Terminal Board	4201026601	1
29	Electric Box Cover2	20112081	1
30	Main Board	30138736	1
31	Shield cover of Electric Box	1592092	1
32	Electric Box Cover1	20122128	1
33	Jumper	4202300102	1
34	Capacitor CBB61	33010043	1
35	Electric Box Assy	2030211503	1
36	Connecting Cable	400204056	1
37	Connecting Cable	40020318	0
38	Ambient Temperature Sensor	390000453	1
39	Temperature Sensor	390000632	1
40	Remote Controller	305100413	1

The data above are subject to change without notice.





	Description	Part Code	
NO.	Description	C1VI24	Qty
	Product Code	CB171N05100	
1	Front Panel Assy	20012328	1
2	Filter Sub-Assy	11122091	2
3	Screw Cover	24252016	3
4	Front Case	20012295	1
5	Air Louver 1	10512159	3
6	Helicoid tongue	26112187	1
7	Left Axile Bush	10512037	1
8	Rear Case assy	22202117	1
9	Rubber Plug (Water Tray)	76712012	1
10	Ring of Bearing	26152025	1
11	O-Gasket sub-assy of Bearing	76512051	1
12	Cross Flow Fan	10352030	1
13	Evaporator Support	24212103	1
14	Evaporator Assy	1002269	1
15	Wall Mounting Frame	1252004	1
16	Motor Press Plate	26112184	1
17	Fan Motor	15012098	1
18	Pipe Clamp	26112188	1
19	Drainage hose	523001405	1
20	Step Motor	1521300101	1
21	Crank	10582070	1
22	Display Board	30565042	1
23	Guide Louver	10512118	1
24	Axile Bush	10542008	2
25	Electric Box	2011210801	1
26	Terminal Board	4201026601	1
27	Electric Box Cover2	20112081	1
28	Main Board	30138737	1
29	Shield cover of Electric Box	1592102	1
30	Electric Box Cover1	20122154	1
31	Jumper	4202300101	1
32	Capacitor CBB61	33010034	1
33	Electric Box Assy	2030211510	1
34	Connecting Cable	400204056	1
35	Connecting Cable	400205408	0
36	Ambient Temperature Sensor	390000453	1
37	Tube Sensor	390000591	1
38	Remote Controller	30510041	1

The data above are subject to change without notice.

8.2 Outdoor Unit

C1VO-18



	Description	Part Code	
NO.	Description	C1VO-18	Qty
	Product Code	CB172W02500	
1	Fan Motor	1501307502	1
2	Capacitor CBB61	33010010	1
3	Electric Box	20113013	1
4	Radiator	49010252	1
5	Main Board	301386923	1
6	Electric Box Assy	2010300608	1
7	Terminal Board	42010255	1
8	Left Side Plate	01303169P	1
9	Top Cover	01253034P	1
10	Motor Support Sub-Assy	0170339802	1
11	Supporting board(condenser)	01795028	1
12	Clapboard Sub-Assy	01233117	1
13	Condenser Assy	01163007	1
14	Sensor insert	42020063	1
15	Temperature Sensor	3900030903	1
16	Reactor	43130186	1
17	Right Side Plate	0130324402P	1
18	Big Handle	26233431	1
19	Cut-off valve Sub-Assy	07135084	1
20	Valve Support Sub-Assy	0171311501P	1
21	Cut-off valve Sub-Assy	07135083	1
22	Capillary Sub-assy	03063505	1
23	4-Way Valve Assy	03123623	1
24	Magnet Coil	4300040033	1
25	Compressor Gasket	76815215	3
26	Compressor and fittings	00205262	1
27	Drainage Joint	26113009	1
28	Chassis Sub-assy	01205168P	1
29	Axial Flow Fan	10333010	1
30	Cabinet	01433034P	1
31	Front Grill	22413015	1

The data above are subject to change without notice.

C1VO-24



	Description	Part Code	
NO.	Description	C1VO-24	Qty
	Product Code	CB172W02600	
1	Fan Motor	1501506301	1
2	Electric box (fireproofing)	01413148	1
3	Capacitor CBB61	33010010	1
4	Electric Box	20113008	1
5	Radiator	49010252	1
6	Main Board	301387291	1
7	Electric Box Assy	0260356804	1
8	Terminal Board	42010255	1
9	left handle	26235401	1
10	Left Side Plate	01305041P	1
11	Top Cover	01255005P	1
12	Motor Support Sub-Assy	01705020	1
13	Supporting board(condenser)	01795010	1
14	Clapboard Sub-Assy	01232902	1
15	Condenser Assy	0111398102	1
16	Rear Grill	01473043	1
17	Wiring clamp	26115004	1
18	Temperature Sensor	3900030901	1
19	Reactor	43130021	1
20	Capacitor CBB65	33000065	1
21	Capacitor Clamp sub-assy	01413098	1
22	Right Side Plate	01305053P	1
23	Handle	26235254	1
24	Cut-off valve Sub-Assy	07133464	1
25	Valve support assy	01715010P	1
26	Cut-off valve Sub-Assy	07133060	1
27	Capillary Sub-assy	0306348502	1
28	4-way Valve Assy	03123596	1
29	Magnet Coil	4300040045	1
30	Compressor Gasket	76815215	3
31	Compressor and fittings	00205262	1
32	Drainage Connecter	06123401	1
33	Chassis Sub-assy	01203865P	1
34	Drainage Plug	06813401	3
35	Insulated board (cover of electric box)	20113003	1
36	Axial Flow Fan	10335008	1
37	Front Panel	01535008P	1
38	Front grill	22415002	1

The data above are subject to change without notice.

9. Troubleshooting

9.1 Precautions before Performing Inspection or Repair

Be cautious during installation and maintenance. Do operation following the regulations to avoid electric shock and casualty or even death due to drop from high attitude.

* Static maintenance is the maintenance during de-energization of the air conditioner.

For static maintenance, make sure that the unit is de-energized and the plug is disconnected.

*dynamic maintenance is the maintenance during energization of the unit.

Before dynamic maintenance, check the electricity and ensure that there is ground wire on the site. Check if there is electricity on the housing and connection copper pipe of the air conditioner with voltage tester. After ensure insulation place and the safety, the maintenance can be performed.

Take sufficient care to avoid directly touching any of the circuit parts without first turning off the power.

At times such as when the circuit board is to be replaced, place the circuit board assembly in a vertical position.

Normally, diagnose troubles according to the trouble diagnosis procedure as described below. (Refer to the check points in servicing written on the wiring diagrams attached to the indoor/outdoor units.)

No.	Troubleshooting procedure
1	Confirmation
2	Judgement by Flashing LED of Indoor/Outdoor Unit
3	How to Check simply the main part

NOTE:

A large-capacity electrolytic capacitor is used in the outdoor unit controller(inverter). Therefore, if the power supply is turned off, charge(charging voltage DC280V to 380V) remains and discharging takes a lot of time. After turning off the power source, if touching the charging section before discharging, an electrical shock may be caused. Discharge the electrolytic capacitor completely by using soldering iron, etc.

<Discharging method>

(1) remove the inverter cover(Outdoor Unit)



(2)As shown below,connect the discharge resistance (approx.100 Ω , 20W)or plug of the soldering iron to voltage between + - terminals of the electrolytic capacitor (test 3 "D" and "E" point) on PC Board for 30s, and then perform discharging

C1V0-18



C1V0-24



9.2 Confi rmation

(1)Confirmation of Power Supply
Confirm that the power breaker operates(ON) normally;
(2)Confirmation of Power Voltage
Confirm that power voltage is AC 220-240 ±10%. If power voltage is not in this range, the unit may not operate normally.

9.3 Flashing LED of Indoor/Outdoor Unit and Primary Judgement

No.	Malfunction Name	Dial-8 Code Display	Indicator Di ON 0.5s an Operation	d of Indoor splay (durir d OFF 0.5s Cool	Unit ng blinking,) Heating	Displ Outd (Indic of dis they circul □ OI ■ IIIu ☆ Bli	ay Me oor Ui splay s will be arly e =F umina ink	ethod nit nas 3 status e displ very 5 ted	of kinds and ayed 5s.) D30	A/C status	Possible Cause s
			Indicator	Indicator	Indicator	(D40)	(D41)	(D42)	(D43)		
1	High pressure protection of system	E1	OFF 3s and blink once				\$	及	*	During cooling and drying operation, except indoor fan operates, all loads stop operation. During heating operation, the complete unit stops.	Possible reasons: 1. Refrigerant was superabundant; 2. Poor heat exchange (including filth blockage of heat exchanger and bad radiating environment); Ambient temperature is too high.
2	Antifreezing protection	E2	OFF 3S and blink twice							During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates.	 Poor air-return in indoor unit; Fan speed is abnormal; Evaporator is dirty.
3	High discharge temperature protection of compressor	E4	OFF 3S and blink 4 times						*	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Please refer to the malfunction analysis (discharge protection, overload).
4	Overcurrent protection	E5	OFF 3S and blink 5 times					\$		During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	 Supply voltage is unstable; Supply voltage is too low and load is too high; Evaporator is dirty.
5	Communi- cation Malfunction	E6	OFF 3S and blink 6 times						4	During cooling operation, compressor stops while indoor fan motor operates. During heating operation, the complete unit stops.	Refer to the corresponding malfunction analysis.
6	High temperature resistant protection	E8	OFF 3S and blink 8 times							During cooling operation: compressor will stop while indoor fan will operate. During heating operation, the complete unit stops.	Refer to the malfunction analysis (overload, high temperature resistant).
7	Circuit PG motor (indoor fan) has circuit malfunction by zero cross detection	U8	OFF 3S and blink for 17 times							Operation of remote controller or control panel is available, but the unit wont act.	Control board is damaged.
8	PG motor (indoor fan motor) does not operate	H6	OFF 3S and blink 11 times							The complete unit will stop operation.	Poor connection for PGF in circuit diagram; Malfunction of indoor units control panel AP1; Malfunction of indoor units motor M1.
9	Malfunction protection of jumper cap	C5	OFF 3S and blink 15 times							The complete unit will stop operation.	Poor connection for the jumper cap on indoor units control panel AP1; please reinsert or replace the jumper cap;
10	Indoor ambient temperature sensor is open/short circuited	F1		OFF 3S and blink once						During cooling and drying operation, indoor unit operates while other loads will stop; during heating operation, the complete unit will stop operation.	1.Room temperature sensor hasnt been connected well with indoor units control panel AP1 (refer to the wiring diagram for indoor unit); 2.Room temperature sensor is damaged (please refer to the resistance table of temperature sensor)

No.	Malfunction Name	Dis	splay Metho	d of Indoor	Unit	Displ Outd (Indic of dis they circul	Display Method of Outdoor Unit (Indicator has 3 kinds of display status and they will be displayed circularly every 5s.)		Jisplay Method of Dutdoor Unit Indicator has 3 kinds of display status and hey will be displayed <u>irrcularly every 5s.</u>) A/C status Possible Rease □ OFF		Possible Reasons
		Dual-8 Code Display	Indicator Di ON 0.5s an Operation	splay (durir d OFF 0.5s Cool	ng blinking,) Heating	■ IIIu ☆ Bli	umina ink D6	ted D16	D30		
		-15	Indicator	Indicator	Indicator	(D40)	(D41)	(D42)	(D43)		
11	Indoor evaporator temperature sensor is open/short circuited	F2		OFF 3S and blink twice						During cooling and drying operation, indoor unit will operate while other loads will stop; During heating operation, the complete unit will stop operation.	1.Room temperature sensor hasnt been connected well with indoor units control panel AP1 (refer to the wiring diagram for indoor unit); 2.Room temperature sensor is damaged (please refer to the resistance table of temperature sensor)
12	Outdoor ambient temperature sensor is open/short circuited	F3		OFF 3S and blink 3 times				47		During cooling and drying operating, compressor stops while indoor fan operates; During heating operation, the complete unit will stop operation	Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)
13	Outdoor condenser temperature sensor is open/short circuited	F4		OFF 3S and blink 4 times				\$		During cooling and drying operation, compressor stops while indoor fan will operate; During heating operation, the complete unit will stop operation.	Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)
14	Outdoor discharge temperature sensor is open/short circuited	F5		OFF 3S and blink 5 times				\$	\$	During cooling and drying operation, compressor will sop after operating for about 3 mins, while indoor fan will operate; During heating operation, the complete unit will stop after operating for about 3 mins.	1.Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor) 2.The head of temperature sensor hasnt been inserted into the copper tube
15	Limit/ decrease frequency due to overload	F6		OFF 3S and blink for 6 times				☆	☆	All loads operate normally, while operation frequency for compressor is decreased	Refer to the malfunction analysis (overload, high temperature resistant)
16	Decrease frequency due to overcurrent	F8		OFF 3S and blink 8 times						All loads operate normally, while operation frequency for compressor is decreased	The input supply voltage is too low; System pressure is too high and overload
17	Decrease f r e q u e n c y due to high air discharge	F9		OFF 3S and blink 9 times						All loads operate normally, while operation frequency for compressor is decreased	Overload or temperature is too high; Refrigerant is insufficient; Malfunction of electric expansion valve (EKV)
18	Voltage for DC bus-bar is too high	PH		OFF 3S and blink 11 times					☆	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 265VAC, turn on the unit after the supply voltage is increased to the normal range. 2. If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if its normal, theres malfunction for the circuit, please replace the control panel (AP1)
19	Malfunction of complete units current detection	U5		OFF 3S and blink 13 times				*		During cooling and drying operation, the compressor will stop while indoor fan will operate; During heating operating, the complete unit will stop operation.	Theres circuit malfunction on outdoor units control panel AP1, please replace the outdoor units control panel AP1.
20	Overcurrent protection of phase current for compressor	P5		OFF 3S and blink 15 times			☆			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.

No.	Malfunction	Di	splay Metho	d of Indoor	Unit	Displ Outd (Indic of dis they circu	Display Method of Outdoor Unit (Indicator has 3 kinds of display status and they will be displayed circularly every 5s.)			A/C status	Possible Reasons	
	i vanie	Dual-8 Code	Indicator Di ON 0.5s an	splay (durir d OFF 0.5s	ng blinking, s)	□ O ■ IIII ☆ BI	FF umina ink	ted				
		Display	Operation Indicator	Cool Indicator	Heating Indicator	D5 (D40)	D6 (D41)	D16 (D42)	D30 (D43)			
21	Defrosting	H1			OFF 3S and blink once					Defrosting will occur in heating mode. Compressor will operate while indoor fan will stop operation.	Its the normal state	
22	Static dedusting protection	H2			OFF 3S and blink twice						/	
23	Overload protection for compressor	H3			OFF 3S and blink 3 times		☆	\$		During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	1. Wiring terminal OVC-COMP is loosened. In normal state, the resistance for this terminal should be less than 10hm. 2.Refer to the malfunction analysis (discharge protection, overload)	
24	System is abnormal	H4			OFF 3S and blink 4 times					During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (overload, high temperature resistant)	
25	IPM protection	H5			OFF 3S and blink 5 times		☆			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.	
26	PFC protection	HC			OFF 3S and blink 6 times			\$	\$	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis	
27	Desynchron- izing of compressor	H7			OFF 3S and blink 7 times		☆		\$	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.	
28	Decrease frequency due to high temperature resistant during heating operation	HO			OFF 3S and blink 10 times			☆	*	All loads operate normally, while operation frequency for compressor is decreased	Refer to the malfunction analysis (overload, high temperature resistant)	
29	Failure start- up	LC			OFF 3S and blink 11 times		\$		*	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis	
30	Malfunction of phase current detection circuit for compressor	U1			OFF 3S and blink 13 times		\$			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1	

No.	Malfunction Name	Di	splay Metho	d of Indoor splay (durir	Unit na blinkina.	Display Method of Outdoor Unit (Indicator has 3 kinds of display status and they will be displayed circularly every 5s.)		Display Method of Outdoor Unit (Indicator has 3 kinds of display status and they will be displayed circularly every 5s.)			Display Method of Outdoor Unit (Indicator has 3 kind: of display status and they will be displayed circularly every 5s.)			of kinds and layed 5s.)	A/C status	Possible Reasons
		Dual-8 Code Display	ON 0.5s an Operation	d OFF 0.5s	Heating	■ IIIU ☆ Bli D5	ink D6	D16	D30							
31	EEPROM malfunction	EE			OFF 3S and blink 15 times				(D43)	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1					
32	Charging malfunction of capacitor	PU			OFF 3S and blink 17 times					During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Refer to the part three—charging malfunction analysis of capacitor					
33	Malfunction of module temperature sensor circuit	P7			OFF 3S and blink 18 times				☆	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1					
34	Module high temperature protection	P8			OFF 3S and blink 19 times			☆		During cooling operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	After the complete unit is de- energized for 20mins, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If its no use, please replace control panel AP1.					
35	Malfunction of voltage dropping for DC bus-bar	U3			OFF 3S and blink 20 times					During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Supply voltage is unstable					
36	Voltage of DC bus-bar is too low	PL			OFF 3S and blink 21 times					During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	 Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 150VAC, turn on the unit after the supply voltage is increased to the normal range. If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if its normal, theres malfunction for the circuit, please replace the control panel (AP1) 					
37	Limit/ decrease frequency due to high temperature of module	EU							☆	All loads operate normally, while operation frequency for compressor is decreased	Discharging after the complete unit is de-energized for 20mins, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If its no use, please replace control panel AP1.					
38	The four-way valve is abnormal	U7						☆		If this malfunction occurs during heating operation, the complete unit will stop operation.	1.Supply voltage is lower than AC175V; 2.Wiring terminal 4V is loosened or broken; 3.4V is damaged, please replace 4V.					
39	Zero- crossing malfunction of outdoor unit	U9						☆		During cooling operation, compressor will stop while indoor fan will operate; during heating,the complete unit will stop operation.	Replace outdoor control panel AP1					
40	Limit/ decrease frequency due to antifreezing	FH								All loads operate normally, while operation frequency for compressor is decreased	Poor air-return in indoor unit or fan speed is too low					

9.4 How to Check simply the main part



(2)PG motor (indoor fan) does not operate (H6)

Possible causes:

- 1. Fan motor is locked;
- 2. The feedback terminal of PG motor is not connected tightly;
- 3. The control terminal of PG motor is not connected tightly;
- 4. Motor is damaged;
- 5. Malfunction of the rotation speed detection circuit of the mainboard.
- See the flow chart below:



(3)Jumper cap malfunction (C5)

Possible causes:

- 1. There is no jumper cap on the controller;
- 2. Jumper cap is not inserted properly and tightly;
- 3. Jumper cap is damaged;
- 4. Controller is damaged.
- See the flow chart below:



4.2 Outdoor unit:





Troubleshooting

Test point No.	Test point	Related elements	Test value under normal condition
Test 1	Between A and C	Neutral wire, live wire	160V-265V
Test 2	Between B and C	Neutral wire, live wire	160V-265V
Test 3	Between D and E	Electrolytic capacitor of DC bas bar	DC 180V-380V
Test 4	Between F and G	Electrolytic capacitor of switch power	DC 180V-380V
Test 5	Both ends of diode D10	D10 (IPM module +15V)	DC 14.5V-15.6V
Test 6	Both ends of electrolytic capacitor C40	C40 (+12V power)	DC 12V-13V
Test 7	Both ends of electrolytic capacitor C82	C82 (+5V power)	DC 5V
Test 8	Both ends of electrolytic capacitor C225	C225 (+3.3V power)	DC 3.3V
Test 9	Between S and T	Communication circular current	DC 56V
Test 10	Between point N and GND	R78 to N terminal (ground) (signal receiving terminal of outdoor unit)	Jumping between 0V and 3.3V
Test 11	U12	Between 1 and 2 at leading foot of U12	Jumping between 0V and 3.3V
Test 12	Between point M and GND	R75 to M terminal (signal sending terminal of outdoor unit)	Jumping between 0V and 3.3V
Test 13	U15	Between 3 and 4 at leading foot of U15	Jumping between 0V and 3.3V

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Troubleshooting

Test point No.	Test point	Related elements	Test value under normal condition
Test 1	Between A and C	Neutral wire, live wire	160V-265V
Test 2	Between B and C	Neutral wire, live wire	160V-265V
Test 3	Between D and E	Electrolytic capacitor of DC bas bar	DC 180V-380V
Test 4	Between F and G	Electrolytic capacitor of switch power	DC 180V-380V
Test 5	Both ends of diode D10	D10 (IPM module +15V)	DC 14.5V-15.6V
Test 6	Both ends of sheet capacitor C911	C911 (+12V power)	DC 12V-13V
Test 7	Both ends of sheet capacitor C914	C914 (+5V power)	DC 5V
Test 8	Both ends of sheet capacitor C83	C83 (+3.3V power)	DC 3.3V
Test 9	Both ends of sheet capacitor C912	C912 (+17V power)	DC 15-18V
Test 10	Between point N and GND	R78 to N terminal (ground) (signal receiving terminal of outdoor unit)	Jumping between 0V and 3.3V
Test 11	U12	Between 1 and 2 at leading foot of U12	Jumping between 0V and 3.3V
Test 12	Between point M and GND	R75 to M terminal (signal sending terminal of outdoor unit)	Jumping between 0V and 3.3V
Test 13	U15	Between 3 and 4 at leading foot of U15	Jumping between 0V and 3.3V
Test 14	Between S and T	Communication circular current	DC 56V

(2) Capacity charging malfunction (outdoor unit malfunction) (AP1 below is control board of outdoor unit)

Main detection point:

- Detect if the voltage of L and N terminal of wiring board is between 210AC-240AC by alternating voltage meter;
- Is reactor (L) well connected? Is connection wire loosened or pull-out? Is reactor (L) damaged?



(3) IPM protection, desynchronizing malfunction, phase current of compressor is overcurrent (AP1 below is control board of outdoor unit)

Main detection point:

If control board AP1 and compressor COMP is well connected? If they are loosened? If the connection sequence is correct?

Is voltage input in the normal range (Test the voltage between L, N of wiring board XT by DC voltage meter)?

If coil resistance of compressor is normal? Is compressor coil insulating to copper pipe well?

If the work load of unit is heavy? If radiating of unit is well?

If the refrigerant charging is appropriate?



(4) Diagnosis for anti-high temperature, overload protection (AP1 below is control board of outdoor unit) Main detection point:

- If the outdoor ambient temperature is in normal range;
- If the indoor and outdoor fan is running normal;
- If the radiating environment of indoor and outdoor unit is well.



(5) Diagnosis for failure start up malfunction (AP1 below is control board of outdoor unit) Main detection point:

- If the compressor wiring is correct?
- If the stop time of compressor is enough?
- If the compressor is damaged?
- If the refrigerant charging is too much?



(6) Diagnosis for compressor synchronism (AP1 below is control board of outdoor unit) Main detection point:

- If the system pressure is over-high?
- If the work voltage is over-low?



(7) Diagnosis for overload and discharge malfunction (AP1 below is control board of outdoor unit) Main detection point:

- If the electron expansion valve is connected well? Is the expansion valve damaged?
- If the refrigerant is leakage?
- If the overload protector is damaged?



(8) PFC (correction for power factor) malfunction (outdoor unit malfunction) (AP1 below is control board of outdoor unit)

Main detection point:

• Check if reactor (L) of outdoor unit and PFC capacity are damaged



(9) Communication malfunction (AP1 below is control board of outdoor unit) Main detection point:

• Check if the connection wire and the built-in wiring of indoor and outdoor unit is connected well and no damaged;

• If the communication circuit of indoor mainboard is damaged? If the communication circuit of outdoor mainboard (AP1) is damaged?





(10) Diagnosis process for outdoor communication circuit:

Temp(℃)	Resistance(kΩ)						
-19	138.1	20	18.75	59	3.848	98	1.071
-18	128.6	21	17.93	60	3.711	99	1.039
-17	121.6	22	17.14	61	3.579	100	1.009
-16	115	23	16.39	62	3.454	101	0.98
-15	108.7	24	15.68	63	3.333	102	0.952
-14	102.9	25	15	64	3.217	103	0.925
-13	97.4	26	14.36	65	3.105	104	0.898
-12	92.22	27	13.74	66	2.998	105	0.873
-11	87.35	28	13.16	67	2.896	106	0.848
-10	82.75	29	12.6	68	2.797	107	0.825
-9	78.43	30	12.07	69	2.702	108	0.802
-8	74.35	31	11.57	70	2.611	109	0.779
-7	70.5	32	11.09	71	2.523	110	0.758
-6	66.88	33	10.63	72	2.439	111	0.737
-5	63.46	34	10.2	73	2.358	112	0.717
-4	60.23	35	9.779	74	2.28	113	0.697
-3	57.18	36	9.382	75	2.206	114	0.678
-2	54.31	37	9.003	76	2.133	115	0.66
-1	51.59	38	8.642	77	2.064	116	0.642
0	49.02	39	8.297	78	1.997	117	0.625
1	46.6	40	7.967	79	1.933	118	0.608
2	44.31	41	7.653	80	1.871	119	0.592
3	42.14	42	7.352	81	1.811	120	0.577
4	40.09	43	7.065	82	1.754	121	0.561
5	38.15	44	6.791	83	1.699	122	0.547
6	36.32	45	6.529	84	1.645	123	0.532
7	34.58	46	6.278	85	1.594	124	0.519
8	32.94	47	6.038	86	1.544	125	0.505
9	31.38	48	5.809	87	1.497	126	0.492
10	29.9	49	5.589	88	1.451	127	0.48
11	28.51	50	5.379	89	1.408	128	0.467
12	27.18	51	5.197	90	1.363	129	0.456
13	25.92	52	4.986	91	1.322	130	0.444
14	24.73	53	4.802	92	1.282	131	0.433
15	23.6	54	4.625	93	1.244	132	0.422
16	22.53	55	4.456	94	1.207	133	0.412
17	21.51	56	4.294	95	1.171	134	0.401
18	20.54	57	4.139	 96	1.136	135	0.391
19	19.63	58	3.99	97	1.103	136	0.382

Appendix 1: Resistance Table for Indoor and Outdoor Ambient Temperature Sensors (15K)

Temp(°C)	Resistance(kΩ)	Temp(℃)	Resistance(kΩ)	Temp(℃)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)
-19	181.4	20	25.01	59	5.13	98	1.427
-18	171.4	21	23.9	60	4.948	99	1.386
-17	162.1	22	22.85	61	4.773	100	1.346
-16	153.3	23	21.85	62	4.605	101	1.307
-15	145	24	20.9	63	4.443	102	1.269
-14	137.2	25	20	64	4.289	103	1.233
-13	129.9	26	19.14	65	4.14	104	1.198
-12	123	27	18.13	66	3.998	105	1.164
-11	116.5	28	17.55	67	3.861	106	1.131
-10	110.3	29	16.8	68	3.729	107	1.099
-9	104.6	30	16.1	69	3.603	108	1.069
-8	99.13	31	15.43	70	3.481	109	1.039
-7	94	32	14.79	71	3.364	110	1.01
-6	89.17	33	14.18	72	3.252	111	0.983
-5	84.61	34	13.59	73	3.144	112	0.956
-4	80.31	35	13.04	74	3.04	113	0.93
-3	76.24	36	12.51	75	2.94	114	0.904
-2	72.41	37	12	76	2.844	115	0.88
-1	68.79	38	11.52	77	2.752	116	0.856
0	65.37	39	11.06	78	2.663	117	0.833
1	62.13	40	10.62	79	2.577	118	0.811
2	59.08	41	10.2	80	2.495	119	0.77
3	56.19	42	9.803	81	2.415	120	0.769
4	53.46	43	9.42	82	2.339	121	0.746
5	50.87	44	9.054	83	2.265	122	0.729
6	48.42	45	8.705	84	2.194	123	0.71
7	46.11	46	8.37	85	2.125	124	0.692
8	43.92	47	8.051	86	2.059	125	0.674
9	41.84	48	7.745	87	1.996	126	0.658
10	39.87	49	7.453	88	1.934	127	0.64
11	38.01	50	7.173	89	1.875	128	0.623
12	36.24	51	6.905	90	1.818	129	0.607
13	34.57	52	6.648	91	1.736	130	0.592
14	32.98	53	6.403	92	1.71	131	0.577
15	31.47	54	6.167	93	1.658	132	0.563
16	30.04	55	5.942	94	1.609	133	0.549
17	28.68	56	5.726	95	1.561	134	0.535
18	27.39	57	5.519	96	1.515	135	0.521
19	26.17	58	5.32	97	1.47	136	0.509

Appendix 2: Resistance Table for Indoor and Outdoor Tube Temperature Sensor (20K)

Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)
-29	853.5	10	98	49	18.34	88	4.75
-28	799.8	11	93.42	50	17.65	89	4.61
-27	750	12	89.07	51	16.99	90	4.47
-26	703.8	13	84.95	52	16.36	91	4.33
-25	660.8	14	81.05	53	15.75	92	4.20
-24	620.8	15	77.35	54	15.17	93	4.08
-23	580.6	16	73.83	55	14.62	94	3.96
-22	548.9	17	70.5	56	14.09	95	3.84
-21	516.6	18	67.34	57	13.58	96	3.73
-20	486.5	19	64.33	58	13.09	97	3.62
-19	458.3	20	61.48	59	12.62	98	3.51
-18	432	21	58.77	60	12.17	99	3.41
-17	407.4	22	56.19	61	11.74	100	3.32
-16	384.5	23	53.74	62	11.32	101	3.22
-15	362.9	24	51.41	63	10.93	102	3.13
-14	342.8	25	49.19	64	10.54	103	3.04
-13	323.9	26	47.08	65	10.18	104	2.96
-12	306.2	27	45.07	66	9.83	105	2.87
-11	289.6	28	43.16	67	9.49	106	2.79
-10	274	29	41.34	68	9.17	107	2.72
-9	259.3	30	39.61	69	8.85	108	2.64
-8	245.6	31	37.96	70	8.56	109	2.57
-7	232.6	32	36.38	71	8.27	110	2.50
-6	220.5	33	34.88	72	7.99	111	2.43
-5	209	34	33.45	73	7.73	112	2.37
-4	198.3	35	32.09	74	7.47	113	2.30
-3	199.1	36	30.79	75	7.22	114	2.24
-2	178.5	37	29.54	76	7.00	115	2.18
-1	169.5	38	28.36	77	6.76	116	2.12
0	161	39	27.23	78	6.54	117	2.07
1	153	40	26.15	79	6.33	118	2.02
2	145.4	41	25.11	80	6.13	119	1.96
3	138.3	42	24.13	81	5.93	120	1.91
4	131.5	43	23.19	82	5.75	121	1.86
5	125.1	44	22.29	83	5.57	122	1.82
6	119.1	45	21.43	 84	5.39	123	1.77
7	113.4	46	20.6	 85	5.22	124	1.73
8	108	47	19.81	 86	5.06	125	1.68
9	102.8	48	19.06	87	4.90	126	1.64

Appendix 3: Resistance Table for Outdoor Discharge Temperature Sensor (50K)
10. Removal Procedure

10.1 Removal Procedure of Indoor Unit

A Warning Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.



Steps	Procedu	re
3. Ren	nove horizontal louver	
	Disassemble the axial bush on horizontal louver, bend the horizontal louver to let the shaft come out of the groove and then re- move the horizontal louver.	Horizontal louver
4. Ren	nove electric box cover 2	
	Twist off one screw on electric box cover 2, and then remove the electric box cover 2.	Electric box cover 2

Steps	Proce	dure
5. Remove swing blade		
	Loosen the clasps on horizontal louver and then remove the swing blade.	Clasp
6. Rei	move front case	
1	Open the screw cap on front case, and twist off the 7 screws fixing the front case with screwdriver.	
2	Loosen the 6 clasps on front case.	Clasp

Steps	Proce	edure
3	Remove the front case.	Front case
7. Ren	nove electric box cover	
1	Pull out the axial bush on tempera- ture sensor.	
2	Twist off the screws fixing the earthing wire with screwdriver.	
3	Pull out the electric box cover.	Electric box cover

Steps	Proce	dure
8. Rem	ove electric box	
1	Twist off the screws fixing the displayer with screwdriver.	Screw
2	Pull out the wiring terminal on displayer.	Display board
3	Pull out the connection wire between swing motor and motor.	
4	Twist off the screws fixing the electric box with screwdriver.	



Steps		Procedure
4	Loosen the clasps between evaporator and chassis.	
5	Adjust the pipeline slightly	The second secon
6	Remove the evaporator.	Evaporator

Steps	Proce	edure
10. Rer	nove motor and cross flow blade	
1	Twist off the screws fixing the motor press plate with screwdriver.	
2	Remove the motor press plate.	
3	Remove cross flow blade and motor.	Cross flow blade Motor
4	Twist off the screws fixing the swing motor with screwdriver.	

Steps		Procedure
5	Remove swing motor.	
6	Twist off the screws fixing the cross flow blade and swing motor with screwdriver.	
7	Remove the motor.	Cross flow blade Motor

10.2 Removal Procedure of Outdoor Unit

A Warning Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.

18K (not show electric heating tape)

Steps	Proc	edure
1. Remo	ove top panel	
1	Appearance	
2	Twist off the screws used for fixing the handle, pull the handle up ward to remove it.	Handle
3	Remove the 3 screws connecting the top	
	panel with the front panel and the right side	
2. Remo	ove grille and panel	
1	Remove the 2 screws connecting the grille and the panel, and then remove the grille.	
		grille

Steps	Proce	dure
2	Remove the 5 screws connecting the panel with the chassis and the motor support, and then remove the panel.	panel
3. Remo	ove left side plate and right side plate	
1	Remove the screws connecting the right side plate with the chassis, the valve support and the electric box, and then remove the right side plate assy.	right side plate
2	Remove the screws connecting the left side plate and the chassis, and then remove the left side plate assy	left side plate

Steps	Proced	ure
4. Remo	ve fan motor	
1	Remove the nuts fixing the blade and then remove the axial flow blade.	axial flow blade
2	Remove the 4 tapping screws fixing the motor; disconnect the leading wire insert of the motor and then remove the motor.Remove the 2 tapping screws fixing the motor support and then pull the motor support upwards to remove it.	fan motor fixing frame
5. Remo	ve electric box	electric box
	Remove the screws fixing the electric box sub-assy; loosen the wire bundle; pull out the wiring terminals and then pull the electric box upwards to remove it.	

Steps	Pn	ocedure
6.Remo	ve soundproof sponge	
	Since the piping ports on the soundproof sponge are torn easily, remove the soundproof sponge carefully.	Sundproof sponge
7. Rem	ove isolation sheet	
	Remove the 3 screws fixing the isolation sheet and then remove the Isolation sheet.	Isolation sheet

Steps		
8.Remov	e 4-way valve assy	
	Discharge the refrigerant completely;unsolder the pipelines connecting the compressor and the condenser assy, and then remove the 4-way valve assy.	4-way valve assy
9. Remo	ov e compressor	
	Remove the 3 foot nuts fixing the compressor, and then remove the compressor.	compressor
10.Remo	ove condenser sub-assy	
1	Remove the screws connecting the support (condenser) and condenser assy,and then remove the support (condenser).	support

Steps	Pro	cedure
2	Remove the chassis sub-assy and condenser sub-assy.	condenser sub-assy

A Warning Be sure to wait for a minimum of 10 minutes after

turning off all power supplies before disassembly.

24K (not show electric heating tape)



Steps	Proce	dure
2	Remove the 5 screws connecting the panel with the chassis and the motor support, and then remove the panel.	panel (
3. Remo	ove left side plate and right side plate	
1	Remove the screws connecting the right side plate with the chassis, the valve support and the electric box, and then remove the right side plate assy.	right side plate
2	Remove the screws connecting the left side plate and the chassis, and then remove the left side plate assy.	left side plate

Steps	Proced	ure
4. Remo	ve fan motor	
1	Remove the nuts fixing the blade and then remove the axial flow blade.	axial flow blade
2	Remove the 4 tapping screws fixing the motor; disconnect the leading wire insert of the motor and then remove the motor. Remove the 2 tapping screws fixing the motor support and then pull the motor support upwards to remove it.	fan motor fixing frame
5. Remo	ve electric box	electric box
	Remove the screws fixing the electric box sub-assy; loosen the wire bundle; pull out the wiring terminals and then pull the electric box upwards to remove it.	

Steps	Pr	ocedure
6.Remo	ve fireproof electric box and soundproof sponge	
1	Twist off the screws on fireproof electric box and then remove the fireproof electric box.	Fireproof electric box
2	Since the piping ports on the soundproof sponge are torn easily, remove the soundproof sponge carefully.	i i i i i i i i i i i i i i i i i i i
7. Rem	OVE isolation sheet	
	Remove the 3 screws fixing the isolationsheet and then remove the Isolation sheet.	isolation sheet

Steps	Pn	ocedure
8. Remov	ve 4-way valve assy	
	Discharge the refrigerant completely;unsolder the pipelines connecting the compressor and the condenser assy,and then remove the 4-way valve assy.	4-way valve assy
9. Remo	ov e compressor	
	Remove the 3 foot nuts fixing the compressor and then remove the compressor.	compressor Compressor
10.Remo	ove condenser sub-assy	
1	Remove the screws connecting the support (condenser) and condenser assy,and then remove the support(condenser).	support

Steps	Pr	ocedure
2	Remove the chassis sub-assy and condenser sub-assy.	condenser sub-assy



