

# SERVICE MANUAL

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## Models

**HPU-42CF03**

### ● Features

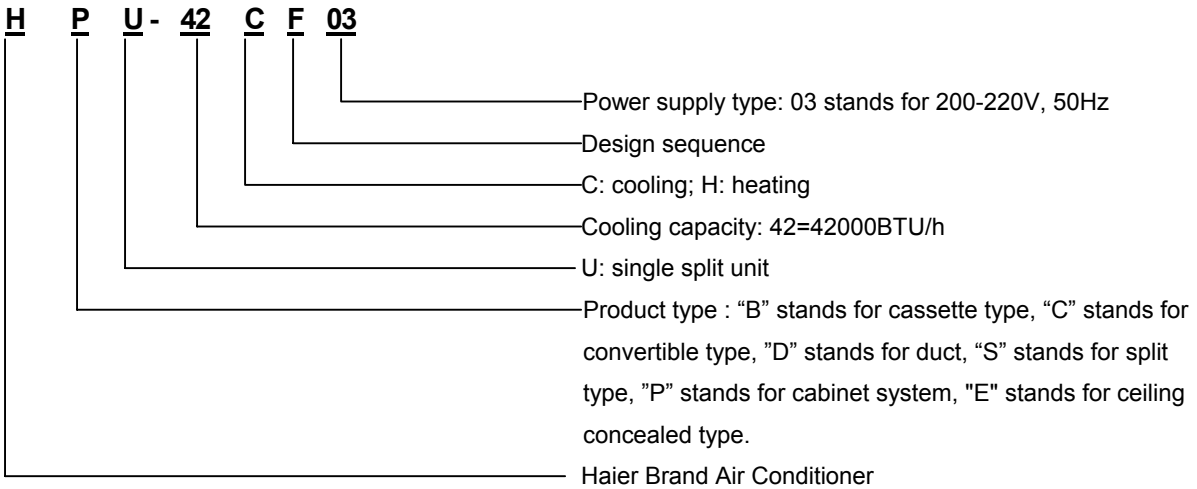
- New single fan outdoor unit
- The outdoor can match with multiple types indoor unit of the same capacity
- The indoor unit is identical for heat pump and cooling only unit
- Infra red remote controller
- Central control and full automation, if connected with a central controller
- 24-hour timer (standard)
- Auto-restart function

## CONTENTS

Contents.....	2
1. Description of products & features.....	3
2. Specification.....	5
3. Safety precaution.....	7
4. Net dimension of indoor and outdoor.....	9
5. Installation instructions.....	10
6. Parts and functions.....	20
7. Infrared controller functions.....	21
8. Weekly timer.....	31
9. Central controller.....	34
10. Refrigerant diagram.....	34
11. Electrical control functions.....	35
12. Diagnostic information (trouble shooting).....	50
13. Electrical data.....	56

## 1. DESCRIPTION OF PRODUCTS & FEATURES

### 1.1. Products code explanation



### 1.2 Brief Introduction for T1、T2、T3 working condition

Type of Air Conditioner	Climate type		
	T1	T2	T3
Cooling Only	18 °C~43°C	10°C~35°C	21°C~52°C
Heat pump	-7°C~43°C	-7°C~35°C	-7°C~52°C
Electricity Heating	~43°C	~35°C	~52°C

### 1.3 Operating Range of Air Conditioners

Temp.		Mode	Rated	Maximum	Minimum
Cooling	Indoor	DB °C	27	32	15
		WB °C	19	23	14
	Outdoor	DB °C	35	43	-5
		WB °C	24	26	6
Heating	Indoor	DB °C	20	27	10
		WB °C	14.5	---	--
	Outdoor	DB °C	7	23	-10
		WB °C	6	18	---

## 1.4 Product features

### **Single fan outdoor, more compact**

### **Newly designed display panel, more simple**

On the display panel there are power, operation, timer, and electric heating indicator, from which you can find the operation state directly, and the indicator flash times can show the failure.

### **Convenient infrared remote controller**

The newly designed infrared remote controller YR-H71 can be used for all indoor units of single type, multi split type, and H-MRV type except for the cabinet unit. This controller can be compatible with all old remote controllers except for that of cabinet units.

### **Auto-restart function (optional)**

All indoor units have auto-restart function. When the power supply cut off suddenly, the unit will automatically recover the previous running mode once the power supply is on.

### **Central control function, if connected with a detector and a central controller**

### **Weekly timer (if connected with a detector)**

### 2. SPECIFICATION

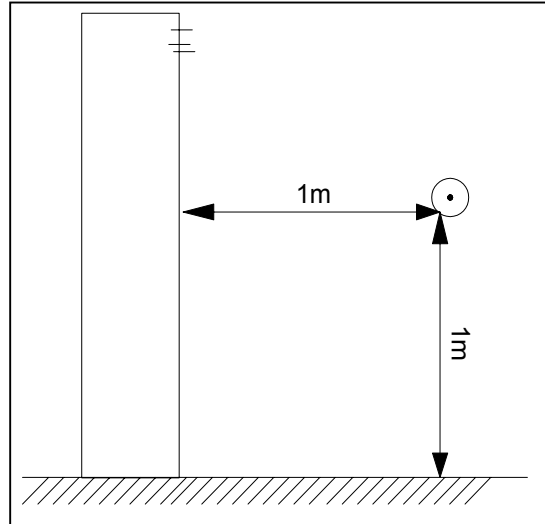
item		Model		HPU-42CF03	
Function				cooling	heating
Capacity			BTU/h	41000	-----
Capacity			kW	12	-----
Sensible heat ratio				75%	-----
Total power input			W	4700	-----
Max. power input			W	5200	-----
EER or COP			W/W	2.55	-----
Dehumidifying capacity			10 <sup>-3</sup> ×m <sup>3</sup> /h	5.0	
Power cable			section	5×2.5mm <sup>2</sup>	
Signal cable			section	4×0.75mm <sup>2</sup>	
Connecting cable			section		
Power source			N, V, Hz	1PH,220-230V,50HZ	
Running /Max.Running current			A / A	cooling 8.5/9.3	
Start Current			A	50	
Class of anti electric shock				I	
Circuit breaker			A	30	
Max. operating pressure of heat side			Mpa	2.8	
Max. operating pressure of cold side			Mpa	2.8	
Indoor unit	Unit model (color)			HPU-42CF03(INDOOR)(WHITE)	
	Fan	Type × Number		Centrifugal × 1	
		Speed		r/min	590±30/400±40/350±50
		Fan motor output power		kW	0.15
		Air-flow(H-M-L)		m <sup>3</sup> /h	1560
	Heat exchanger	Type / Diameter		mm	TP2M / 9.52x0.36
		Row / Fin pitch			2 / 1.45
		Temp. scope		°C	cooling: 43~60 / heating: 6~7
	Dimension	External	(L×W×H)	mm×mm×mm	1820×530×310
		Package	(L×W×H)	mm×mm×mm	1952×660×455
	Air sending angle				vertical: manual; horizontal: auto
	Drainage pipe (material , I.D./O.D.)			mm	/
	Control type (Remote /wired)				REMOTE
	Noise level (H-M-L)			dB(A)	56/46/40
	Weight (Net / Shipping)			kg / kg	60/64
Outdoor unit	Unit model (color)			HPU-42CF03(OUTDOOR) (WHITE)	
	Compressor	Model / Manufacture		JT160BCBY1L DAIKIN	
		Oil model		SUNISO 4GSDID-K/DAPHNE SE56P	
		Oil type		/	
		Oil charging		1500-1700	
		Type		SCROLL	
		Protection type		Inner thermal protection	
		Starting method		hard startup	
	Fan	Type × Number		Axial × 1	
		Speed		r/min	720±50
		Fan motor output power		kW	0.156
		Air-flow(H-M-L)		m <sup>3</sup> /h	6000
	Heat exchanger	Type / Diameter		mm	TP2M / 9.52x0.36
		Row / Fin pitch			2 / 1.65
		Temp. scope		°C	cooling: 43~60 / heating: 6~7
	Dimension	External	(L×W×H)	mm×mm×mm	1006×825×410
		Package	(L×W×H)	mm×mm×mm	1130×930×490
	Drainage pipe (material , I.D./O.D.)			mm	/
	Refrigerant control method			mm/mm	Capillary tube
	Defrosting				Automatic
Volume of Accumulator			L	NO	
Noise level			dB(A)	≤59	
material of reduce noise				/	
crankcase heater power			W	/	
Weight (Net / Shipping)			kg / kg	80/90	
Piping	Refrigerant	Type / Charge	g	R22/3150	
		No need to recharge	m	Total piping length less than 10meters	
		Recharge	g/m	65	
	Pipe	Liquid	mm	9.52	
		Gas	mm	19.05	
	Connecting method				Flared
Between I.D & O.D	Max.Drop between IU &OU*	m	30		
	Max.Piping length *	m	50		

5 Norminal condition: indoor temperature (cooling): 27°CDB/19°CWB, indoor temperature (heating): 20°CDB  
 Outdoor temperature(cooling): 35°CDB/24°CWB, outdoor temperature(heating): 7°CDB/6°CWB  
 The noise level will be measured in the third octave band limited values.

**Installation state: the unit should be placed on the flat floor or be mounted in horizontal direction.**

**Testing method:**

standing-on-floor unit: If the unit cooling capacity is over 28000W, the noise level should be measured at the front, left, right directions respectively.



outdoor unit:

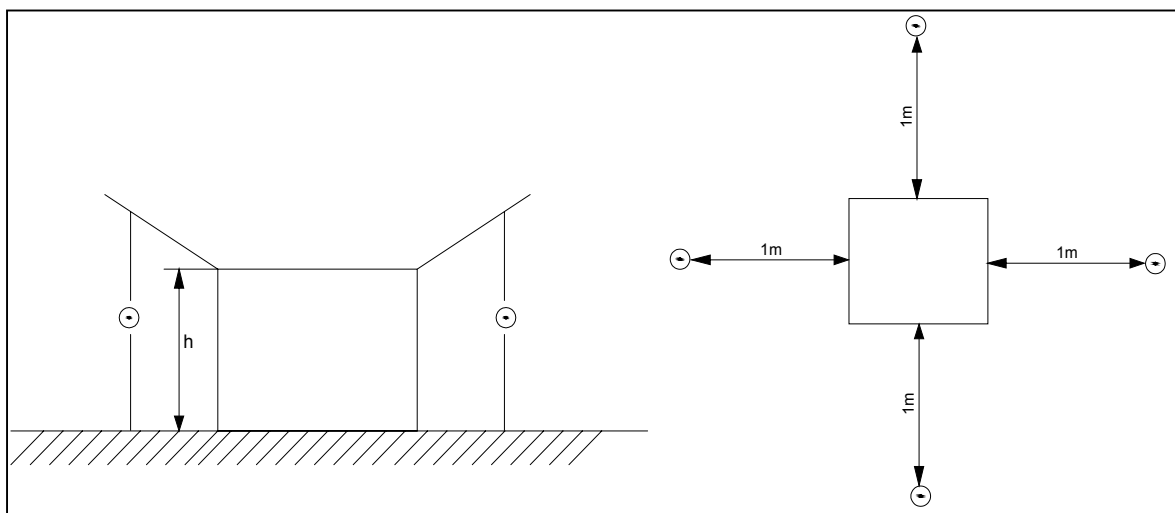
1.air outlet from side: the noise level is the average sound pressure level measured from front, left, right directions.

2.air outlet from top: the noise level is the average sound pressure level measured from front, back, left, right directions.

measured point:

$$H \text{ ( height to the ground )} = (h \text{ (unit height) } + 1m) / 2$$

and, it is 1m to each side.



Note: ⊙ is the real time

### 3. Safety precaution of indoor and outdoor

**Carefully read the following information in order to operate the airconditioner correctly.**

Below are listed three kinds of Safety Cautions and Suggestions.

**WARNING!** Incorrect operations may result in severe consequences of death or serious injuries.

**CAUTION!** Incorrect operations may result in injuries or machine damages; in some cases may cause serious consequences.

**INSTRUCTIONS:** These information can ensure the correct operation of the machine.

Be sure to conform with the following important Safety Cautions.

**The Safety Cautions should be at hand so that they can be checked at any time when needed.**

If the conditioner is transferred to the new user, this manual should be as well transferred to the new user.

## WARNING!

- If any abnormal phenomena is found (e. g.smell of firing), please cut off the power supply immediately, and contact the dealer to find out the handling method.

In such case, to continue using the conditioner will damage the conditioner, and may cause electrical shock or fire hazard.



- After a long time use of air-conditioner the base should be checked for any damages.

If the damaged base is not repaired, the unit may fall down and cause accidents.



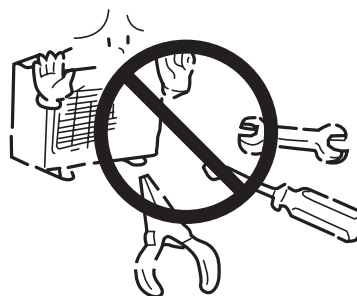
- Don't dismantle the outlet of the outdoor unit.

The exposure of fan is very dangerous which may harm human beings.



- When need maintenance and repairment, call dealer to handle it.

Incorrect maintenance and repairment may cause water leak, electrical shock and fire hazard.



**WARNING!**

- **Installed electrical-leaking circuit breaker.**

It easily cause electrical shock without circuit breaker.

- **Air-conditioner can't be installed in the environment with inflammable gases because the inflammable gases near to air-conditioner may cause fire hazard.**

- **Please let the dealer be responsible for installing the conditioner.**

Incorrect installation may cause water leak, electrical shock and fire hazard.

- **Call the dealer to take measures to prevent the refrigerant from leaking.**

If conditioner is installed in a small room be sure to take every measure in order to prevent suffocation accident even in case of refrigerant leakage.

- **When conditioner is deinstalled or reinstalled dealer should be responsible for them.**

Incorrect installation may cause water leaking, electrical shock and fire hazard.

- **Connect earthing wire.**

Earthing wire should not be connected to the gas pipe, water pipe, lightning rod or phone line, in-correct earthing may cause shock.



Earthing

- **No goods or nobody is permitted to placed on or stand on outdoor unit.**

The falling of goods and people may cause accidents.



- **Don't operate the air-conditioner with damp hands.**

Otherwise will be shocked.



- **Only use correctly-typed fuse.**

May not use wire or any other materials replacing fuse, other-wise may cause faults or fire accidents.



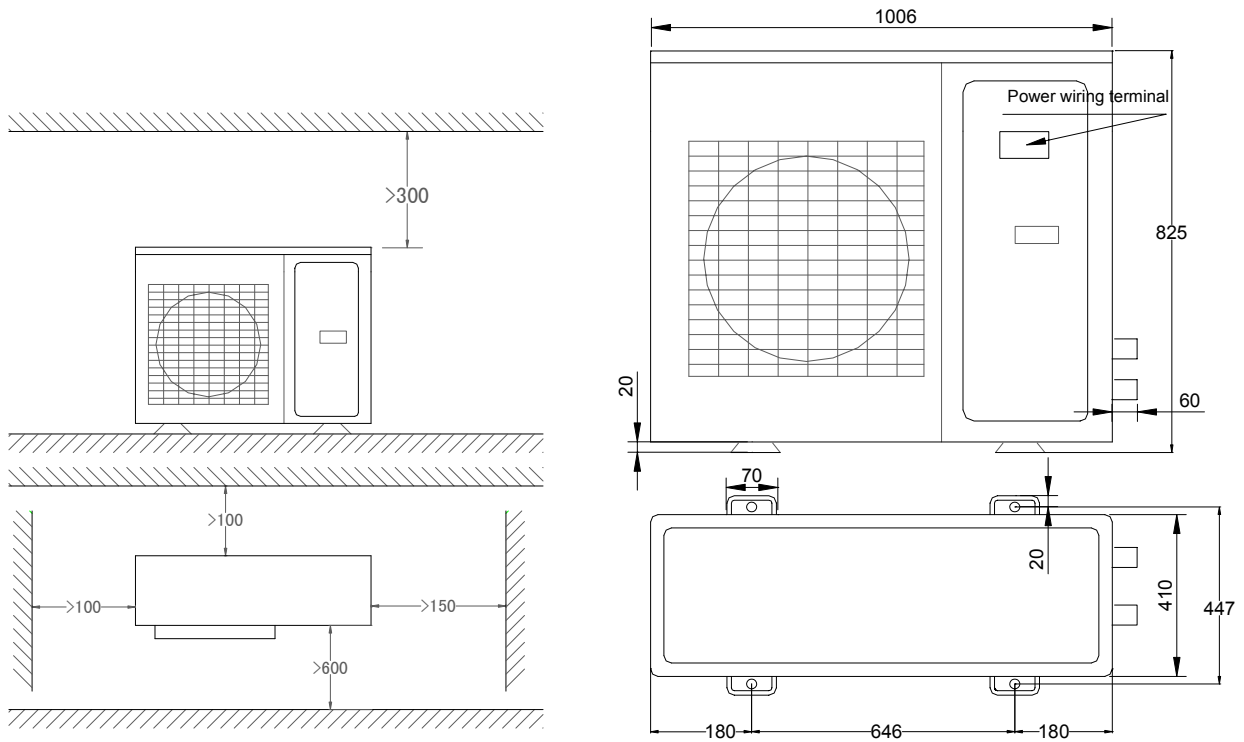
- **Use discharge pipe correctly to ensure efficient discharge.**

Incorrect pipe use may cause water leaking.

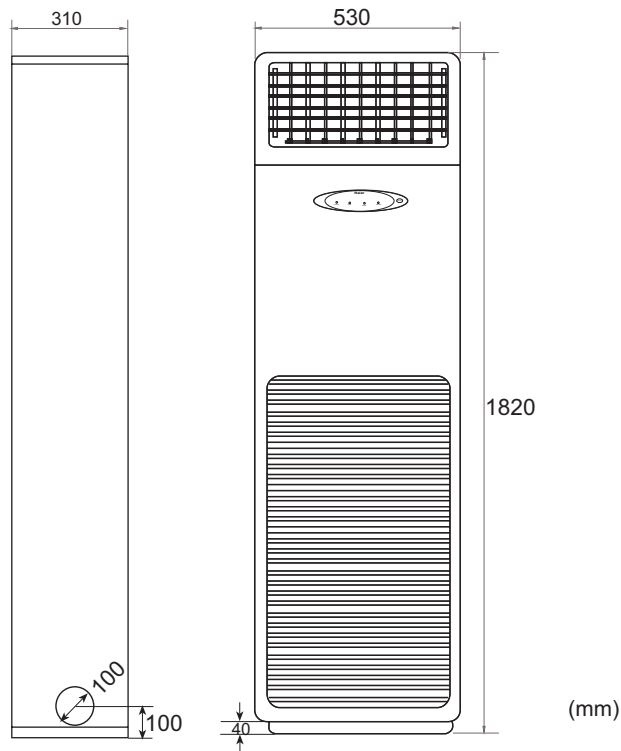


## 4. Net dimension of indoor and outdoor

### Outdoor:



### Indoor:



## 5. Installation Instructions

### 5.1 Outdoor unit installation

#### Necessary Tools:

- 1.Screwdriver
- 2.Hacksaw
- 3.70mm diameter hole drill
- 4.Spanner(dia.17,27mm)
- 5.Spanner(dia.14,17,27mm)
- 6.Pipe cutter
- 7.Flaring tool
- 8.Knife
- 9.Nipper
- 10.Gas leakage detector  
or soap water
- 11.Tape measure
- 12.Reamer
- 13.Refrigerant oil

#### Installation Position

- Place strong enough to support the unit weight, and will not cause vibration and noise.
- Place where discharged air and noise do not cause interference to the neighbors, and is sufficiently ventilated.
- Place where is less affected by rain or direct sunlight and sea breeze.
- Place with enough space to ventilation
- The unit cannot be installed on an unspecified metal frame
- It shall not be less than 2.5m high from the ground to the unit if installed close to the street
- Easy for maintenance

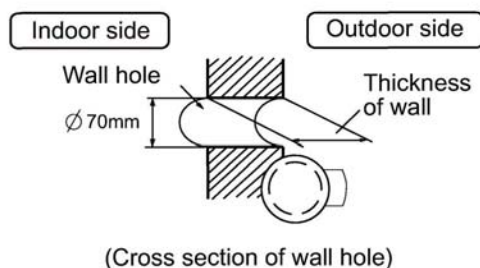
#### Fixing of the unit

##### 1.Position of the wall hole

The hole through the wall must be decided as per installation place and pipe direction. Please refer to the installation drawings.

##### 2. Making the wall hole

Drill a hole of 120\*70mm with a little slope to the exterior through the wall as follows:



## Installation Space

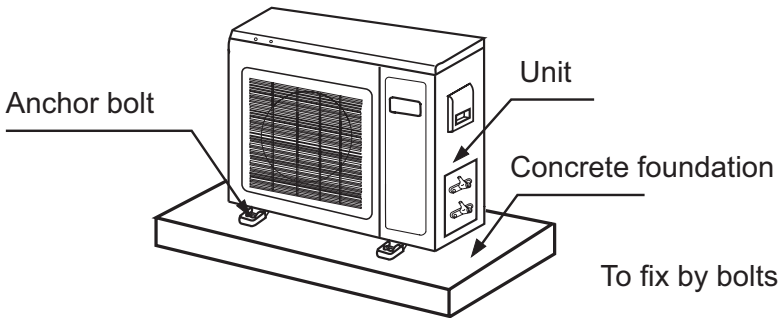
### Installation where the area with strong winds.

Install the unit so that the air outlet section of the unit must NOT be faced toward wind direction.

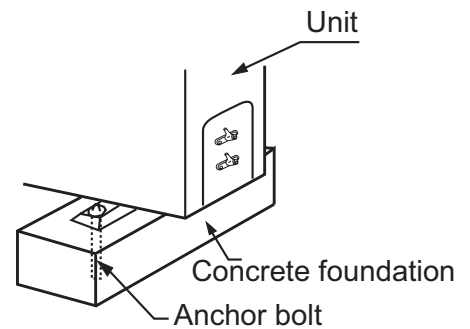
## Installation

Fix the unit in a proper way according to the condition of a place where it is installed by referring to the following .

(a) Concrete foundation



(b) Foundation anchor

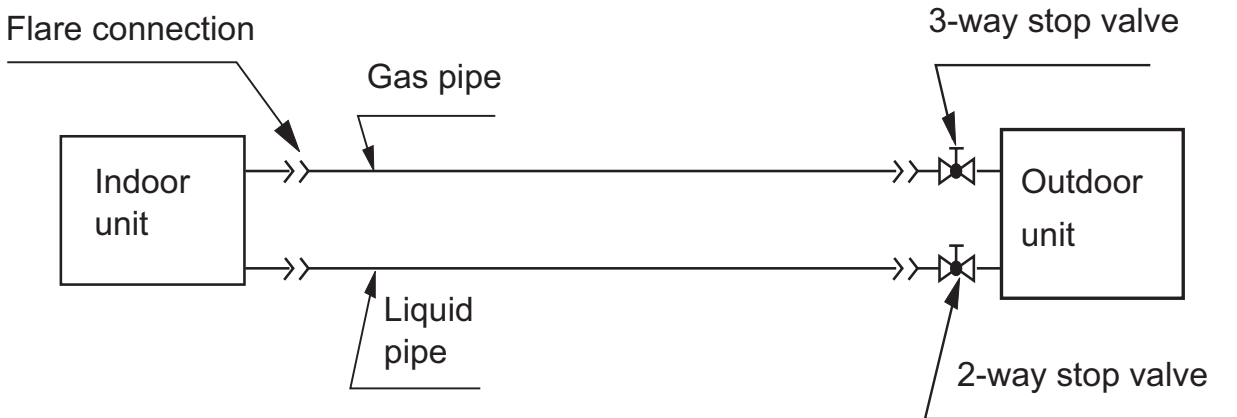


Install the unit so that the angle of inclination must be less than 3 degrees.

## Refrigerant piping

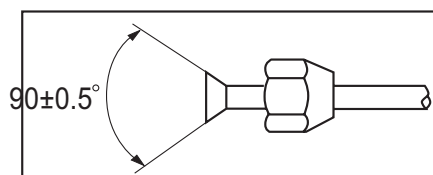
### Outline piping

#### Flare connection



### Piping size

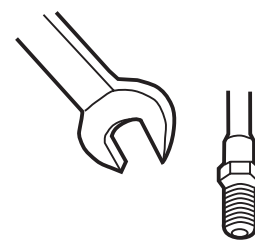
Liquid pipe	$\phi$ 9.52x0.8mm
Gas pipe	$\phi$ 15.88x1.0mm



- Connect the flare nuts to the pipes, and then flare the pipes.

## Precautions for refrigerant piping

- Do not twist or crush piping.
- Be sure that no dust is mixed in piping.
- Bend piping with as wide angle as possible.
- Keep insulating both gas and liquid piping.
- Check flare-connected area for gas leakage.



## Piping connection

- Connecting method (indoor unit)  
Apply refrigerant oil at half union as large and flare nut.  
To bend a pipe, give the roundness as possible not to crush the pipe.  
When connecting pipe, hold the pipe centre to centre then screw nut on by hand, refer to Fig.  
Be careful not to let foreign matters, such as sands enter the pipe.



Forced fastening without centering may damage the threads and cause a gas leakage.

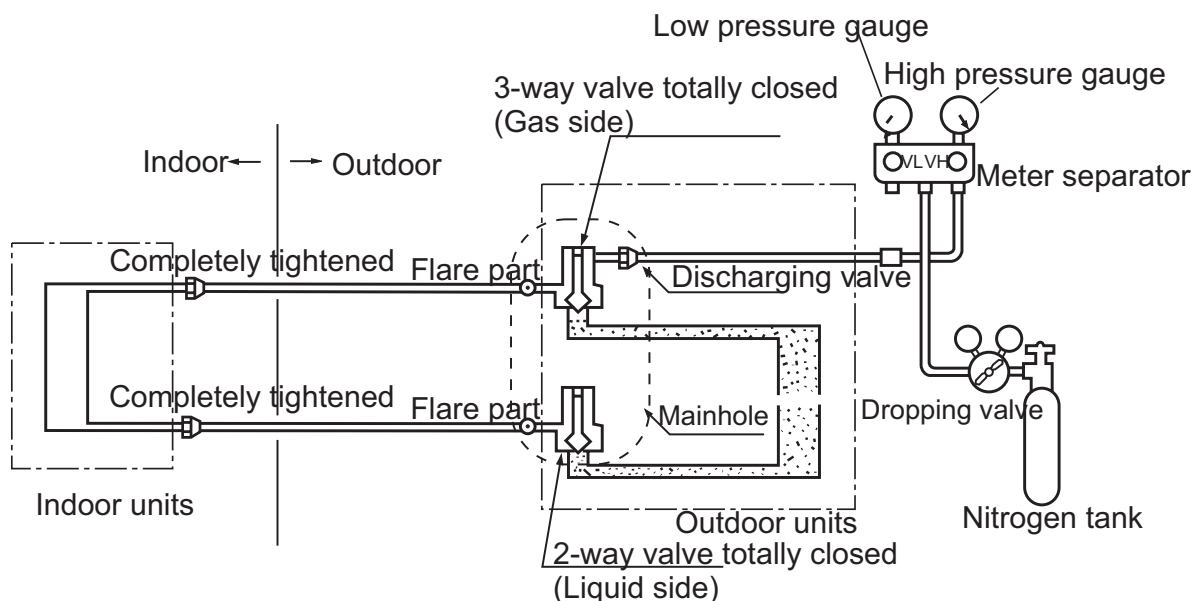
Pipe diameter	Fastening torque
Liquid pipe 6.35mm	14.2-17.2N·m
Liquid pipe 9.52mm	32.7-39.9N·m
Gas pipe 12.7mm	49.5-60.3N·m
Gas pipe 15.88mm	61.8-75.4N·m
Gas pipe 19.05mm	97.2-118.6N·m

## Air discharging method

After finishing connection of refrigerant pipe, it shall perform air tightness test.

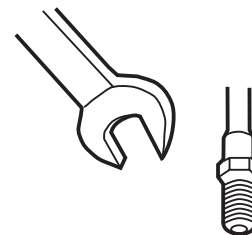
- The air tightness test adopts nitrogen tank to give pressure according to the pipe connection mode as the following figure shown.

The gas and liquid valve are all in close state. In order to prevent the nitrogen entering the circulation system of outdoor unit, tighten the valve rod before giving pressure (both gas and liquid valve rods).



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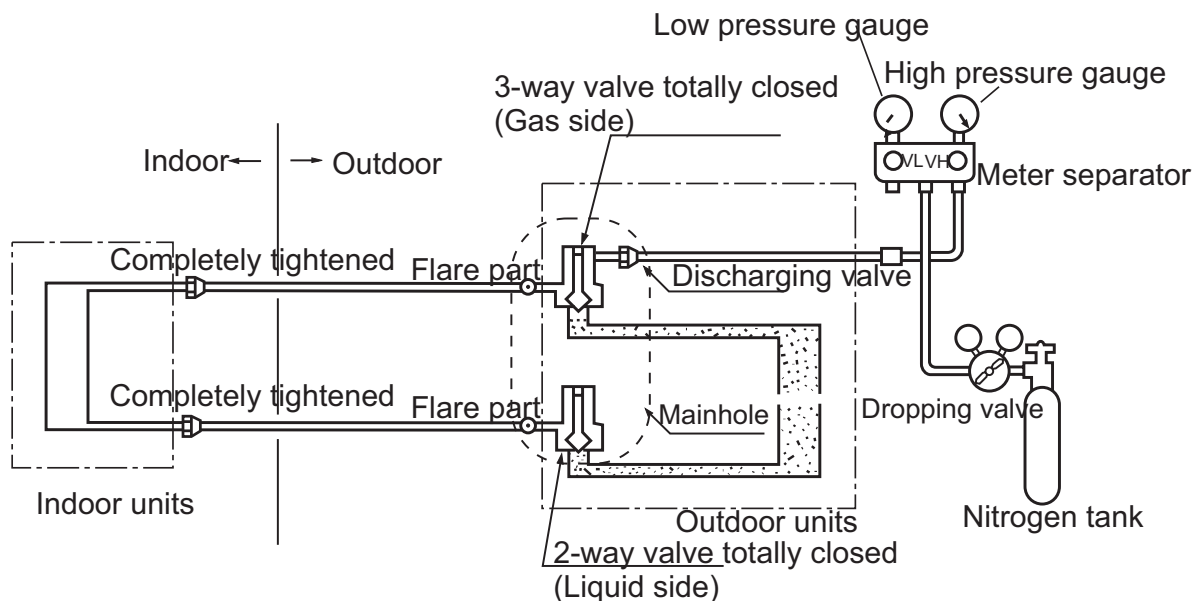
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First step: 0.3MPa (3.0kg/cm<sup>2</sup>g) pressurize over 3 minutes.

Second step: 1.5Mpa (15kg/cm<sup>2</sup>g) pressurize over 3 minutes. Large leakage will be found.

Third step: 3.0 MPa (30kg/cm<sup>2</sup>g) pressurize about 24 hours. Little leakage will be found.

- Check if the pressure drops
  - If the pressure does not drop, the unit is passed
  - If the pressure drops, please check the leaking point.

After pressurizing for 24 hours, each 1°C difference of ambient temperature will result in 0.01MPa(0.1kg/cm<sup>2</sup>g) pressure change. It shall be corrected during test.

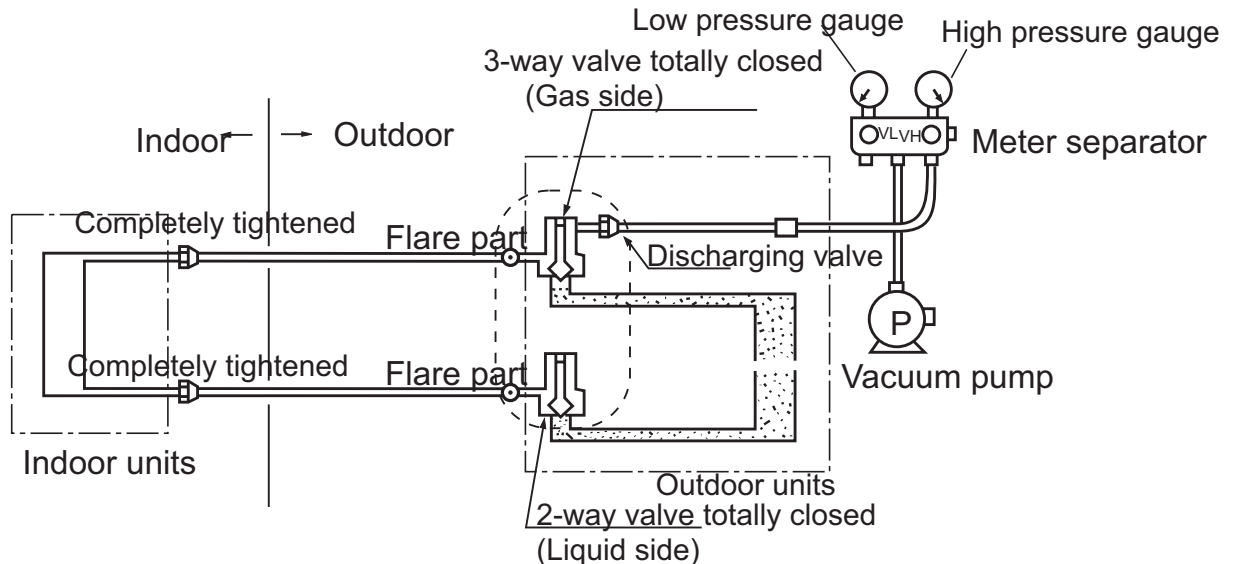
- Checking the leaking point

From the first to third steps, if the pressure drops, check the leakage in each joint by the sense of hearing, feeling or soap water, etc. to find the leaking point.

After confirming the leaking point, welding it again or tighten the nut tightly again.

### Piping and indoor unit vacuumizing

- Use vacuum pump to perform vacuumizing. It is strictly forbidden to use the refrigerant to remove the air inside the system.
- After air tightness test and discharging all the nitrogen, connect the vacuum pump as the following figure shown.



- It shall use the vacuum pump of (lower than -755mmHg)high vacuum degree and large air discharging (over 40l/min).
- The vacuumizing time depends on the length of the connecting pipe, generally is 1~2 hours. When vacuumizing, it shall be confirmed both gas and liquid side valves are closed.
- If after 2 hours vacuumizing, it cannot reach the vacuum degree below -755mmHg, it can be vacuumized for other 1 hour.
- If after 3 hours vacuumizing, it still cannot reach the vacuum degree below -755mmHg, check if there is any leaking point and repair the them.

- If after over 2 hours vacuumizing, the vacuum degree is below -755mmHg, close the VL and VH on the meter separator and stop vacuumizing. 1 hour later to confirm if the vacuum degree changes. If changes, it indicates there is leaking point in the system. Check the leaking point and repair.
- After finishing the above vacuumizing, change the vacuum pump into refrigerant pump to charge the refrigerant.

### Charging amount of refrigerant

When the total length (L) of the two indoor units' connecting pipe is less than 5m, it is unnecessary to charge additional refrigerant.

If the connecting pipe (L) exceeds 5m, it shall charge Mg additional refrigerant per meter.

That is: Refrigerant charging amount = (L-5) x M (g)

For the unit with liquid pipe 6.35mm, M=30

For the unit with liquid pipe 9.52mm, M=65

Only in COOLING operation can charge the additional refrigerant.

- When charging, the refrigerant shall be charged from the charging nozzle of low pressure vavle.
- Be carefull when charging refrigerant, do not let the air mix into the system,and must charge the additional refrigerant in liquid condition.

### Electric wiring

#### ⚠ WARNING

DANGER OF BODILY INJURY OR DEATH

TURN OFF ELECTRIC POWER AT CIRCUIT BREAKER OR POWER SOURCE BEFORE MAKING ANY ELECTRIC CONNECTIONS. GROUND CONNECTIONS MUST BE COMPLETED BEFORE MAKING LINE VOLTAGE CONNECTIONS.

#### (1) Selection of size of power supply and interconnecting wires.

##### Precautions for Electric wiring

- Electric wiring work should be conducted only by authorized personnel.
- Do not connect more than three wires to the terminal block. Always use round type crimped terminal lugs with insulated grip on the ends of the wires.
- Use copper conductor only.

Select wire sizes and circuit protection from table below. (This table shows 20 m length wires with less than 2% voltage drop.)

Item Model	Phase	Circuit breaker		Power source wire size	Earth leakage breaker	
		Switch breaker	Overcurrent protector		Switch break	Leak curre
AU282AHAFA	3	30	20	2.5mm <sup>2</sup>	30	30mA

#### (2) Wiring connection

Make wiring to supply power to the outdoor unit, so that the power for the indoor unit is supplied by terminals.

**For the detailed wiring connection with the indoor units, see the corresponding indoor operation and instruction manual.**

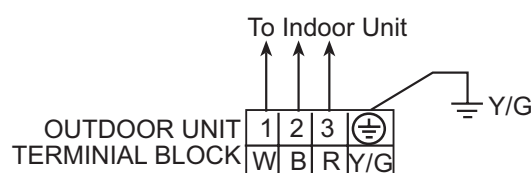


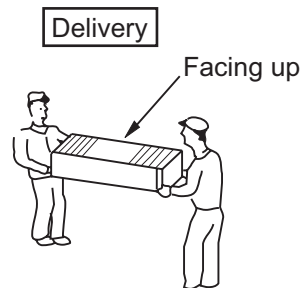
FIG.1

## 5.2 Indoor unit installation

### Display of whole unit

- Try to bring the packed unit to the installation place.
- When it is necessary to unpack the unit, be careful not to damage the unit. Wrap it with nylon etc.
- After unpacking, be sure to place the unit with the front side to be up.

Note: When delivering, don't hold plastic parts such as inlet or outlet grill etc.



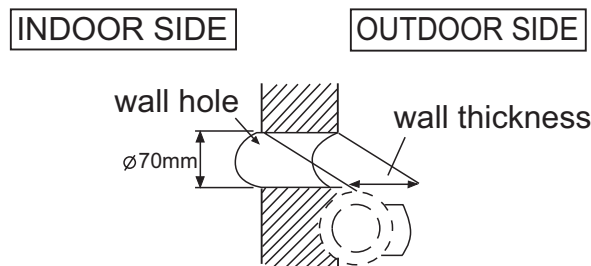
### Fixing of the unit

#### Position of the wall hole

- Wall hole should be decided according to installation place and piping direction. (refer to installation drawings)

#### Making a hole

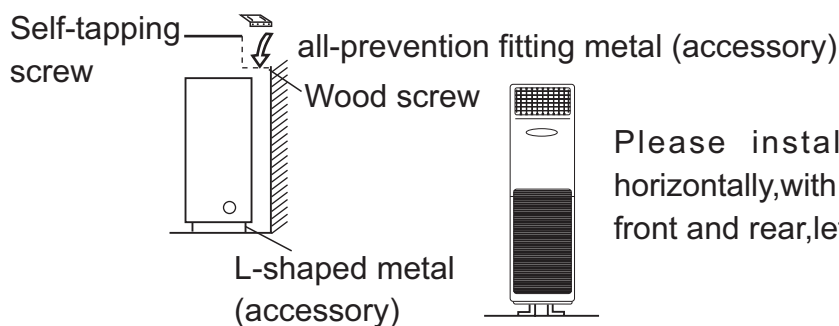
- Drill a hole of 70mm dia. with a little slope towards outside.
- Install piping hole cover and seal it with putty after installation.



( Cross section of wall hole )

### Fixing of indoor unit

To prevent it from fall off, please fix the unit with fall-prevention fitting at wall and L-shaped metal at floor.

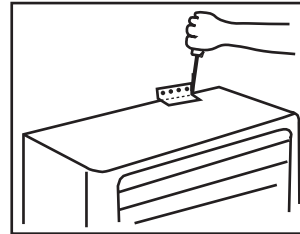
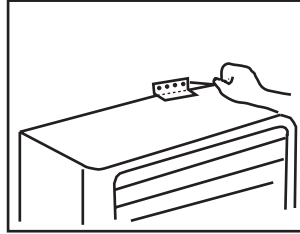


Please install the whole unit horizontally, with a slope of 1 degree at front and rear, left and right.



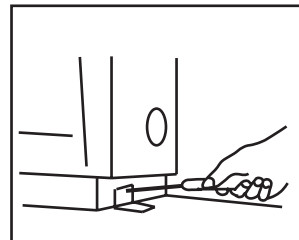
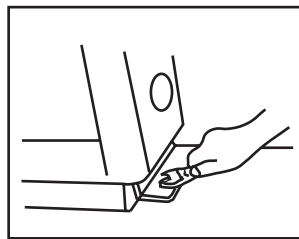
### Installation of anti-fall plate:

Fix the anti-fall plate to the wall with screws so that there is no clearance between them. With the unit set up vertically, fix the anti-fall plate to the unit with screws while making an adjustment at the long portion of the hole so that there is no clearance between the upper surface and the anti-fall plate.



### Installation of L-shaped metal

Fix to the unit with screws so that there is no clearance between the anti-fall plate and the unit. After confirming that the unit has been set up vertically to the floor, fix it to the floor with bolt.



### Piping connection

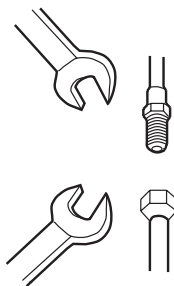
#### 1. Connecting method

Apply refrigerant oil at half union and flare nut.

To bend a pipe, give the roundness as large as possible not to crash the pipe.

When connecting pipe, hold the pipe centre to centre then screw nut on by hand, refer to Fig.

Be careful not to let sundries, such as sands enter the pipe.

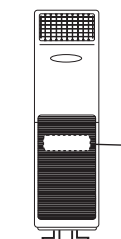


Forced fastening without centering may damage the threads and cause a gas leakage.

Pipe dia	Fastening torque
Liquid pipe 9.52mm(3/8")	29.4N·m
Gas pipe 15.88mm(5/8")	98.0N·m
Gas pipe 19.05mm(3/4")	117.7N·m

#### 2. Piping connection of indoor unit

Arrangement of piping and drainage pipe

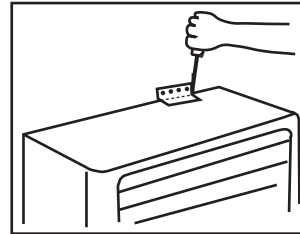
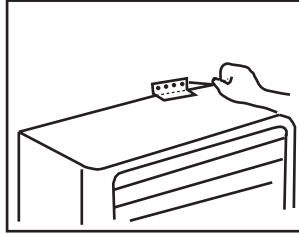


After opening inlet grill, you will see a control box as shown in the Fig.

Remove the cover before wiring work.

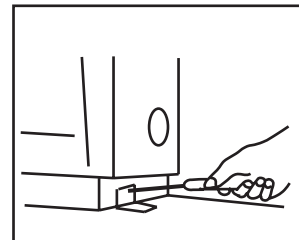
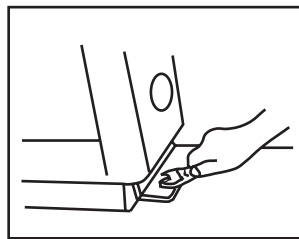
### Installation of anti-fall plate:

Fix the anti-fall plate to the wall with screws so that there is no clearance between them. With the unit set up vertically, fix the anti-fall plate to the unit with screws while making an adjustment at the long portion of the hole so that there is no clearance between the upper surface and the anti-fall plate.



### Installation of L-shaped metal

Fix to the unit with screws so that there is no clearance between the anti-fall plate and the unit. After confirming that the unit has been set up vertically to the floor, fix it to the floor with bolt.



### Piping connection

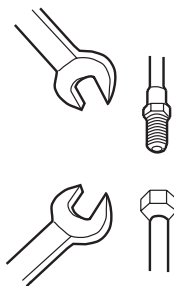
#### 1. Connecting method

Apply refrigerant oil at half union and flare nut.

To bend a pipe, give the roundness as large as possible not to crash the pipe.

When connecting pipe, hold the pipe centre to centre then screw nut on by hand, refer to Fig.

Be careful not to let sundries, such as sands enter the pipe.

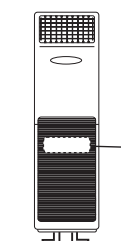


Forced fastening without centering may damage the threads and cause a gas leakage.

Pipe dia	Fastening torque
Liquid pipe 9.52mm(3/8")	29.4N·m
Gas pipe 15.88mm(5/8")	98.0N·m
Gas pipe 19.05mm(3/4")	117.7N·m

#### 2. Piping connection of indoor unit

Arrangement of piping and drainage pipe



After opening inlet grill, you will see a control box as shown in the Fig.

Remove the cover before wiring work.

## Electric wiring

Note:

Electric wiring must be done by qualified person.

Use copper wire only, the parameter of connecting cable is H07RN-F 4G 0.75mm<sup>2</sup>.

The power cable should be over 5G2.5mm<sup>2</sup>, the power cable is self-provided.

The power supply connects from the outdoor unit.

### Wiring of indoor unit

Insert the cable from outside the wall hole where piping already exist.

Pull it out from front.

Loosen terminal screws and insert cable end fully into terminal block, then tighten it.

Pull the cable gently to make sure it is tight.

Replace cover after wiring.

### Wiring of outdoor unit

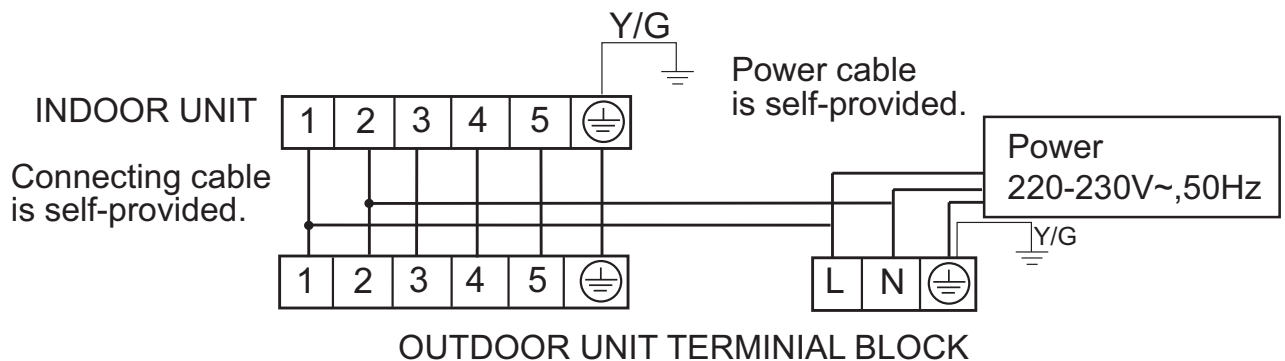
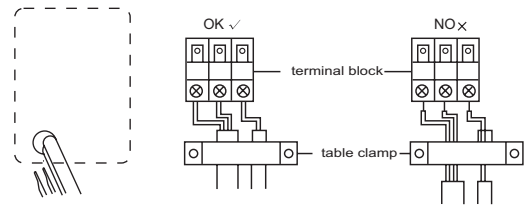
Insert the cable from inside the wall hole where piping already exists.

Pull it out from front.

Loose terminal screw and insert cable end fully into terminal block, then tighten it.

Pull the cable gently to make sure it is tight.

Replace cover after wiring.

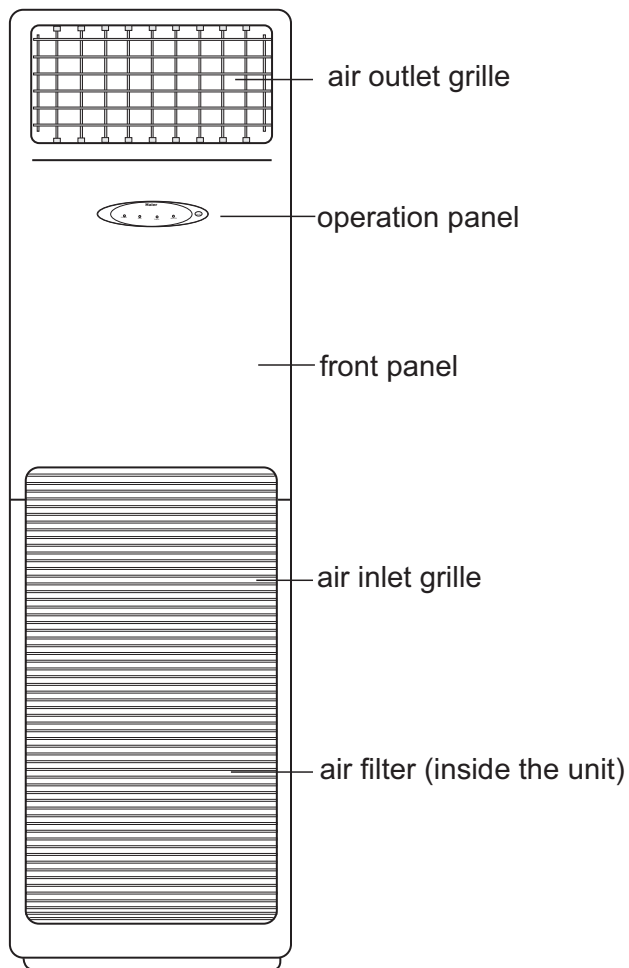


Note:

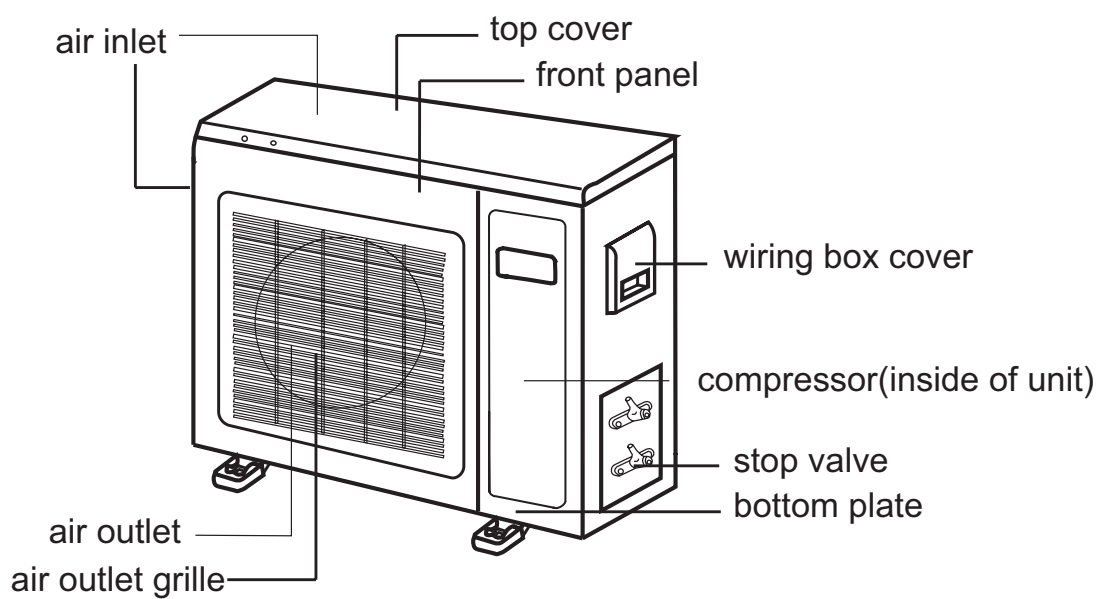
- When connecting indoor and outdoor wire, check the number on indoor and outdoor terminal blocks. Terminals of same number and same color shall be connected by the same wire.
- Incorrect wiring may damage air conditioner's controller or cause operation failure.

## 6. Parts and Functions

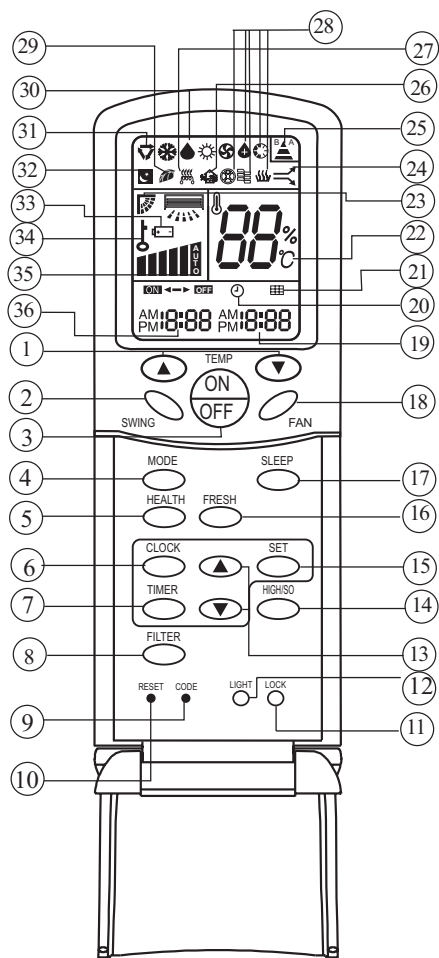
### 6.1 Cabinet type indoor unit



### 6.2 outdoor unit



## 7 .Infrared controller YR-H71(used for unitary free indoor units except for AP182ACBEA)



### 1.TEMP Setting Button

(Used to set temperature. Setting ranges: 16°C to 30°C)

In Up/Down function, for controlling up and down filter.

### 2.SWING Button

If you press this button once, auto swing will be activated.

If you press this button again, the louver will fix in the present position.

### 3.Power ON/OFF Button

Used for unit start and stop

After power on, the LCD of remote controller will display the previous operation state (except for TIMER,SLEEP and SWING state).

**NOTE:** 1.Cooling only air conditioner does not have the displays and functions related to heating.

### 2.HIGH/SO button

This button is activated in Cooling/Heating mode, the fan speed is in AUTO mode after pressing it and "high function" will be cancelled automatically after 15 minutes running.

### 4.Operation MODE

Used to select operation mode.

Every time you press MODE button, operation mode changes according to following sequence:



### 5.HEALTH Button

Used to set health mode, if the unit has the negative ion function and oxygen bar function.

### 6.CLOCK Button

Used to set correct time.

### 7.CLOCK Button

Used to select TIMER ON, TIMER OFF.

(Note: if time of TIMER ON is the same as TIMER OFF,TIMER ON/OFF cannot be set)

### 8. FILTER Button

Used to set up/down function of filter.

### 9. CODE Button

Used to select code A or B, for the units except that we recommend especially, the code is A.

### 10.RESET Button

Press this button by using a sharp article to resume the correct operation of the remote controller in case of need, i.e. for example in case of malfunctions due to electromagnetic noise.

### 11.LOCK Button

Used to lock operation button and LCD display contents: by pressing this button, other buttons comes out of function and lock state display appears; if you press it again, lock state will be no more active and lock state display will disappear.

### 12.LIGHT Button

Used to light the control panel (only for cabinet unit)

### 13.Up and down Button

Used to set TIMER and CLOCK up or down.

### 14.HIGH/SO Button

Used to select HIGH or SOFT operation.

### 15.SET Button

Used to confirm TIMER and CLOCK settings.

### 16.FRESH Button

Used to set fresh mode, the unit will draw in fresh air.

### 17.SLEEP Button

(The clock must be corrected before setting sleep function) Used to set sleep mode.

### 18.FAN Button

Used to select fan speed:LOW,MID,HIGH,AUTO.

### 19.TIMER OFF Display

### 20.CLOCK Display

### 21.FILTER Display

### 22.TEMPERATURE Display

### 23.AUTO SWING Display

### 24.HIGH/SO Display

### 25.SIGNAL SENDING Display

### 26.FRESH AIR Display

### 27.ELECTRICAL HEATING Display

### 28.Some other buttons

All these functions are not available now.

### 29.HEALTH Display

Displays when healthy run function is set.

### 30.DEHUMIDIFICATION Display

### 31.Operation MODE Display

AUTO RUN	COOL RUN	DRY RUN	HEAT RUN	FAN RUN

### 32.SLEEP State Display

### 33.BATTERY Energy Display

Notify the user when it is time to change the batteries.

### 34.LOCK State Display

### 35.FAN SPEED Display

LO		
MID		
HI		
AUTO		

### 36.TIMER ON Display

### Remote Controller' Operation

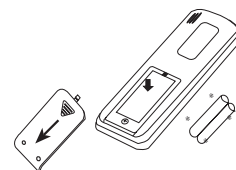
- When in use, direct signal transmission head to the receiver placed on the indoor unit

- The distance between the remote controller and the receiver should be max 7m and there should be no obstacle between them.
- Do not throw the remote controller; prevent it from being damaged.
- When operating the remote controller in an area where electronically controlled lights are installed or wireless handsets are used, please move closer to the indoor unit as the function of the remote controller might be affected by signals emitted by the above mentioned equipments.

### Battery loading

### Battery loading

Batteries are fitted as follows:



Remove the battery compartment lid Slightly press and disengage the battery compartment lid marked with "▽" and then hold the remote controller by the upper section and then remove the battery compartment lid by pressing in the direction of the arrow as shown in the figure above.

### Loading the battery

Ensure that batteries are correctly placed in the compartment as required for positive and negative terminals.

### Replacing the battery compartment lid

The battery compartment lid is reinstalled in the reverse sequence.

### Display review

Press the button to see if batteries are properly fitted. If no display appears, refit the batteries.

### Confirmation indicator

If no indication is displayed after press ON/OFF button, reload the batteries.

### Caution:

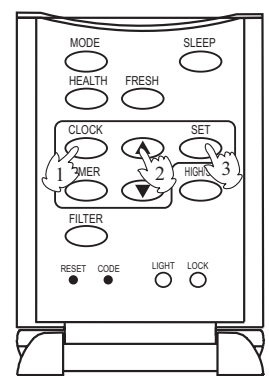
If the remote controller does not operate as designed after fitting new batteries of the same type, press the Reset button (marked ↓) with a pointed article.

### Clock Set

When unit is started for the first time and after replacing batteries in remote controller, clock should be adjusted as follows:

- 1.Press CLOCK button, clock indication of " AM " or " PM " flashes.
- 2.Press ▲ or ▼ to set correct time. Each press will increase or decrease 1 min. If the button is kept pressed, time will increase or decrease quickly.
- 3.After time setting is confirmed, press "SET" : AM or PM stop flashing, while clock starts working.

Note:AM means morning and PM means afternoon.

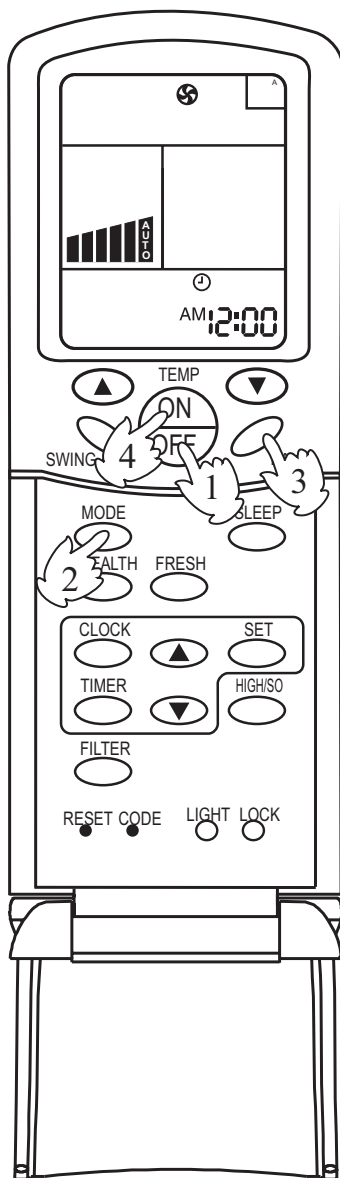


Note:

It is recommended that the batteries be removed from the compartment if the remote controller is not used for an extended period.

The remote controller is programmed for automatic test of operation mode after the batteries are replaced. When the test is conducted, all icons will appear on the screen and then disappear if the batteries are properly fitted.

## Fan Operation



### 1. Unit start

Press ON/OFF button to start your air conditioner.

Previous operation status appears on LCD (except for TIMER, SLEEP, and SWING setting).

### 2. Select operating mode

Press MODE button. At each press, operation mode changes as follows:



Then select FAN

### 3. Adjust fan speed

Press FAN button. At each press, fan speed changes as follows:



Air conditioner will run at the selected fan speed.

When in AUTO mode, unit will adjust fan speed according to room temperature automatically.

### 4. Unit stop

Press ON/OFF button to stop unit.

About FAN mode

When the air conditioner runs in FAN mode, it is not possible to select AUTO FAN or to set temperature.

## AUTO, COOL , HEAT and DRY Operation

### 1. Unit start

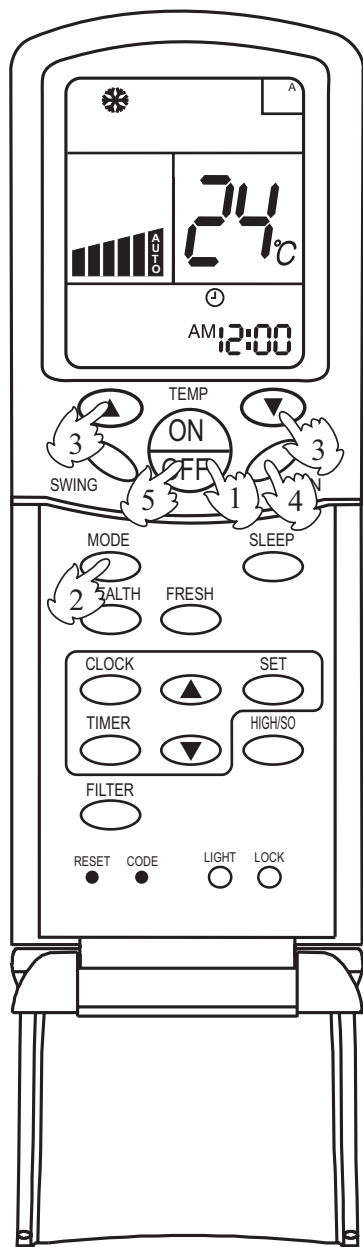
Press ON/OFF button, unit starts.

Previous operation status appears on LCD (except for TIMER, SLEEP and SWING setting)

### 2. Select operation mode

Press MODE button. At each press, operation mode changes as follows:





Then  or  or  or

3. Temperature setting

Press TEMP button.

- ▲ Every time the button is pressed, temp. setting increases 1°C; if the button is kept pressed, temp. setting will increase quickly.
- ▼ Every time the button is pressed, temp. setting decreases 1°C, if the button is kept pressed, temp. setting will decrease quickly.

Set proper temperature

4. Adjust FAN button

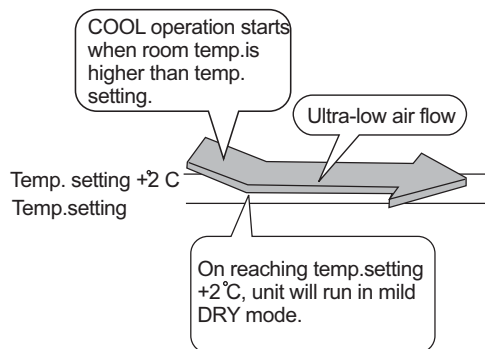
Press FAN button. At each press, fan speed changes as follows:



Air conditioner will run at the selected fan speed.

5. Unit stop

Press ON/OFF button, unit stops.



In ATUO mode, the temperature setting is not displayed on LCD. In this mode, during running air conditioner will select COOL, HEAT or FAN mode automatically according to the room temperature.

In DRY mode, when room temperature becomes 2°C higher than temperature setting, unit will run intermittently at LOW speed regardless of FAN setting. When room temperature is lower than temperature setting, unit will only run FAN operation.

In HEAT mode, warm air will blow out after a short period of time due to cold-draft prevention function.

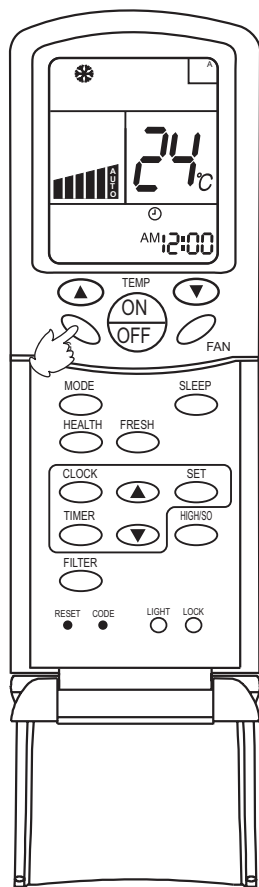
## Adjusting air flow direction

### AUTO SWING

Press SWING button. Up and down airflow varies upwards and downwards. Left and right airflow varies left and right sides. When the automatic swing louver moves to the proper angle, press SWING button can fix the airflow direction.

- Always use SWING button on the remote controller to adjust flaps. Adjusting them by hand may result in air conditioner's abnormally running.





- In COOL or DRY mode, do not leave the louver in downward position for a long time, as the water vapor close to the grille may condense and water may drop from the air conditioner.
- Please carefully set temperature when children, old or weak people use the air conditioner.
- In case of great humidity, If the vertical flaps are completely turned towards left or right, the louver will drop water.
- Never adjust the louver directly by hand, as this could make it work abnormally. If the louver work abnormally, stop unit, restart and adjust the louver by remote controller.

### After unit stops:

Displays on the LCD disappear.

All indicators on the indoor unit go out.

Swing louver automatically close the air outlet.

### Hints:

As in COOL mode air flows downwards, adjusting airflow horizontally will be much more helpful for a better air circulation. As in HEAT mode air flows upwards, adjusting airflow downward will be much more helpful for a better air circulation. Be careful not to catch a cold when cold air blows downward directly.

## Sleep Function

Before going to bed you can press down the SLEEP button and the air conditioner will run so as to make you sleep more comfortably. Before using this function, the clock must be set.

### Use of SLEEP function

After the unit's start, set running mode and then press SLEEP button once to make the air conditioner have the previous-set sleep time (first power-on is "1h"). The sleep symbol will appear.

▲/▼: Press time button, you can choose the time in 1~8 hours. Each time the button is pressed, the time increases/decreases 1 hour: "xh" and "OFF" indications appear on the display.

#### Operation Mode

##### 1. In COOL, DRY mode

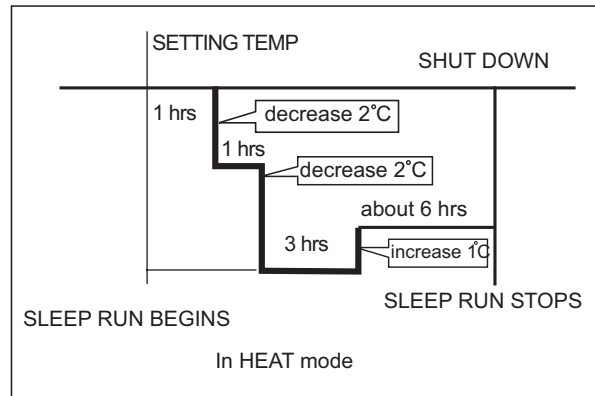
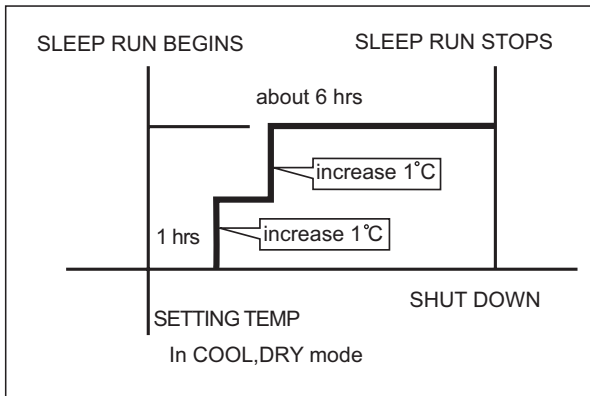
One hour after sleeping operation start, the temperature is 1°C higher than the setting one. After another hour, temperature rises 1°C: sleep run continuously for another 6 hours and then stops. The actual temperature is higher than the setting one which is to prevent from being too cold to your sleep.

##### 2. In HEAT mode

One hour after sleeping operation start, the temperature is 2°C lower than the setting one. After another hour, temperature decreases by 2°C more. Temperature will automatically rise by 1°C after another 3 hours' continuous operation. The actual temperature is lower than the setting one which is to prevent from being too hot to your sleep.

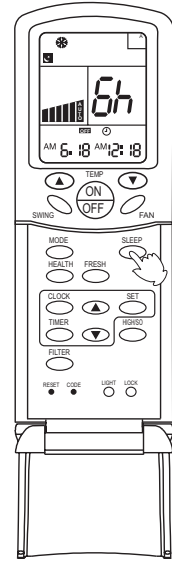
##### 3. In AUTO mode.

The air conditioner will run in corresponding sleep operation according to the automatically selected operation mode.



### Notes:

- After setting SLEEP function, it is not possible to set clock.
- If set-sleep time does not reach 8 hours, unit will automatically stop operation after set time is reached.
- Set "TIMER ON" or "TIMER OFF" in COOL,DRY mode function first, then set SLEEP. After set SLEEP function, the TIMER function cannot be set.



### Timer ON/OFF Function

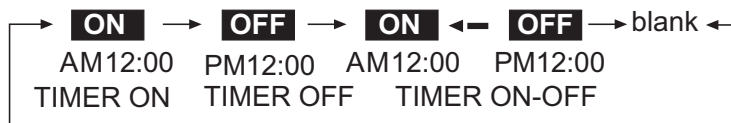
Set clock correctly before starting TIMER operation

1. Unit start

After unit start, select your desired operation mode (operation mode will be displayed on LCD)

2. TIMER mode selection

Press TIMER button on the remote controller to change TIMER mode. Every time the button is pressed, display of TIMER mode changes as follows:



Then select TIMER mode as needed (TIMER ON or TIMER OFF).

Now **ON** or **OFF** will flash.

3. TIMER setting (press time adjust buttons  $\blacktriangle$   $\blacktriangledown$ )

$\blacktriangle$  Every time the button is pressed, time increases 10 minuts. If the button is kept pressed, time changes quickly.

$\blacktriangledown$  Every time the button is pressed, time decreases 10 minuts. If the button is kept pressed, time changes quickly. It can be adjusted within 24 hours at will.

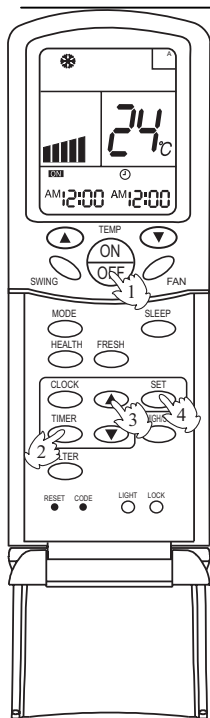
4. Confirm setting

After setting correct time, press SET button to confirm time. Now **ON** or **OFF** stop flashing.

Time displayed: unit starts or stops at X hour X min (TIMER ON or TIMER OFF)

5. Cancel TIMER mode

Just press TIMER button several times until TIMER mode disappears.



### Hints:

After replacing batteries or if a power failure occurs, TIMER setting must be reset. Remote controller has memory function. When you use TIMER mode next time, just press SET button after mode selection if timer setting is the same as the previous one.

### Note:

After setting TIMER function, the remote controller displays TIMER time. If you want to see clock time, just press CLOCK button once: clock time will be displayed (if you press the button again continuously, you can adjust clock). 5 seconds later, the display will show TIMER time again.

## Timer ON-OFF Function

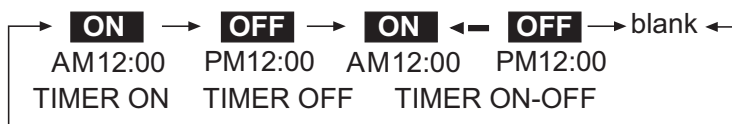
Set clock correctly before starting TIMER operation

### 1. Unit start

After unit start, select your desired operation mode (operation mode will be displayed on LCD)

### 2. TIMER mode selection

Press TIMER button on the remote controller to change TIMER mode. Every time the button is pressed, display of TIMER mode changes as follows:



Then select TIMER ON-OFF mode. **ON** will flash.

### 3. Time setting for TIMER ON

Press time button  $\blacktriangle$

$\blacktriangle$  Every time the button is pressed, time increases 10 minutes. If the button is kept pressed, time will change quickly.

$\blacktriangledown$  Every time the button is pressed, time decreases 10 minutes. If the button is kept pressed, time will change quickly. It can be adjusted within 24 hours at will.

AM refers to morning and PM refers to afternoon.

### 4. Timer confirming for TIMER ON

After setting correct time, press TIMER button to confirm time. Now **ON** stops to flash, while **OFF** starts flashing. Time displayed : unit starts at X hour X min.

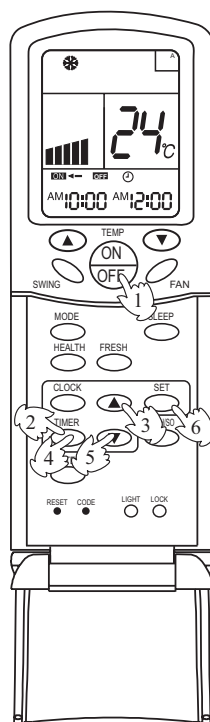
### 5. Timer setting for TIMER OFF

Press time buttons  $\blacktriangle$  and follow the same procedures in " Time setting for TIMER ON"

### 6. Time confirming for TIMER OFF

After time setting, press SET button to confirm time. **OFF** stops to flash.

Time displayed: unit starts at X hour X min.



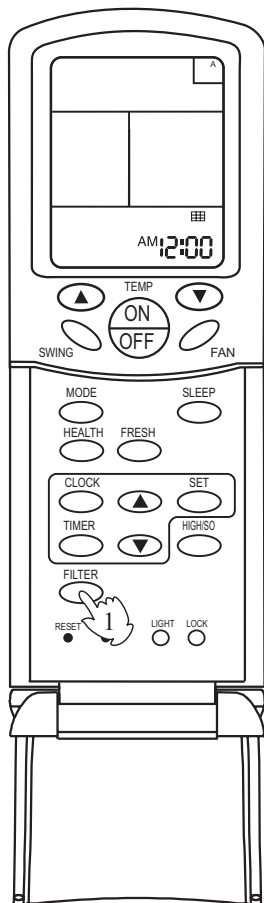
## 7. Canel TIMER mode

Just press TIMER button several times until TIMER mode disappears. According to the time setting sequence of TIMER ON and TIMER OFF, either start-stops or stops-start can be realized.

If the time setting of TIMER ON is the same as TIMER OFF, TIMER ON-OFF function cannot be set.

## Filter Up/Down

(Only for 600\*600 panel of single unit)



After the air conditioner has operated for a certain period, dust has accumulated on the filter, and the filter up/down function can be used to clean it.

1. Whether unit starts or stops, continuously press FILTER button for 3 seconds, and enter the filter up/down waiting status (when unit stops, the yellow TIMER indicator flashes, and filter and clock indication are displayed on the remote controller. Only the FILTER button, the temperature buttons "▲" "▼" and time buttons ◆ are active).

2. Press temperature "▼" button or time "▼" button in filter up/down waiting status: the up/down mechanism makes the filter moving downward and does not stop until it has reached the maximum limit.

3. Press temperature "▲" button or time "▲" button in filter up/down waiting status: the up/down mechanism makes the filter to moving upward till near the surface board and then automatically adjusts it to reset (when adjusting to reset, it will not be controlled by the remote controller till the adjustment is finished).

4. During moving downward, press temperature "▲" button or time "▲" button: moving stops.

5. During moving downward, press temperature "▼" button or time "▼" button: moving stops.

6. Continuously press FILTER button 3 seconds again to cancel the filter up/down waiting mode (unit stops, the yellow timer indicator stops flashing, the filter goes back to the original position, the remote controller goes back to off status and only clock is displayed).

Note:

If the filter does not thoroughly go back to the original position, only needs to operate several times repeatedly.

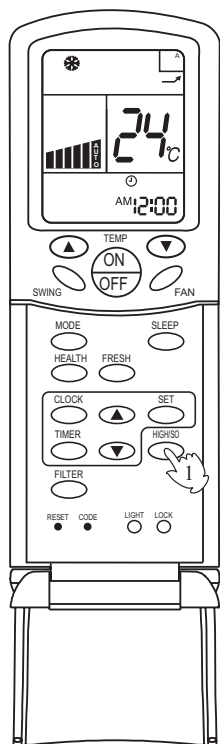
## " High mode " Operation

### Outline of operation in "High Mode"

This function is suitable when the set temperature must be reached in the shortest delay. The button "HIGH/SO", referred to this function, is effective in Cooling/Heating mode (not in Auto/Dry/Fan modes).


NOTICE:

- When the air conditioner is operating in " High Mode ", unevenness of room air temperature may occur due to the intensive operation in a short time.
- Anyway, operation in "High Mode", does not last for more than 15 minutes, then regular operation is automatically restored.




**ON**

**Press the HIGH/SO button once**

The indication  appears on the display of the remote controller and operation in "High Mode" starts. The AUTO fan speed is automatically set and the corresponding indication is also displayed.

**OFF**

**Press the HIGH/SO button twice**

If the button is pressed once, the indication  is displayed on the remote controller. If you press the button once again, the indication disappears, regular operation is restored and fan speed goes back to the mode set before "High Mode" operation.


## " Soft mode " Operation

### Outline of operation in "Soft Mode"

Operation in "Soft Mode", more silent, is suitable when noises should be reduced, e.g.. for reading or sleeping. The button "HIGH/SO", referred to this operation, is effective in Cooling/Heating mode (not in Auto/Dry/Fan modes).


**ON**

**Press the HIGH/SO button twice**

The indication  appears on the display of the remote controller and operation in "Soft Mode" starts. The AUTO fan speed is automatically set and the corresponding indication is also displayed.

**OFF**

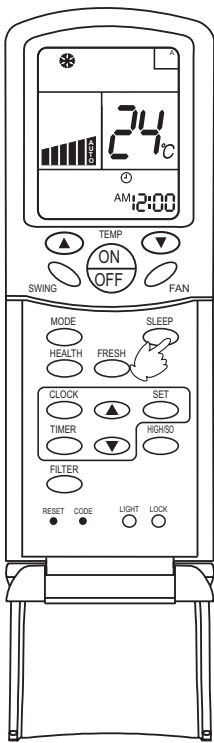
**Press the HIGH/SO button twice**

If the button is pressed once, the indication  is disappears from the remote controller's display. If you press the button once again, regular operation is restored and fan speed goes back to the mode set before "Soft Mode" operation.

### NOTICE:

- When the air conditioner is operating in " High Mode ", unevenness of room air temperature may occur due to the intensive operation in a short time.
- Anyway, operation in "High Mode", does not last for more than 15 minutes, then regular operation is automatically restored.

## Auto restart function setting



After the power failure compensation is set, if power failure suddenly occurs while the air conditioner is working, it will resume the previous working state when the power is supplied again.

**Setting Method:** When the remote controller is on (excluding timer mode and fan mode), press the "Sleep" button on the remote controller 10 times within 5 seconds, and after the buzzer rings 4 times, the air conditioner will enter the state of auto restart.

**Cancel Method:** Press the "Sleeping" button on the remote controller 10 times within 5 seconds, and after the buzzer rings 2 times, the auto restart mode will be cancelled.

**Notes:** When a power failure suddenly occurs during the air conditioner is working after the power failure compensation is set, if the air conditioner will not be used for a long time, please cut off the power supply to prevent its operation from being resumed after the power is supplied again, or press the "Switch On/Off" button after the power comes again.

**If the unit has not the "sleep" button or function, please realize the function by pressing "swing" with the same method.**

### Note:

This kind of remote controller can be used for all UNITARY FREE indoor units except for AP182ACBEA.

## 8 Weekly timer YCS-A001

### Instruction:

**1 - PROGRAM**-the display shows the weekly timer timing setting state, and in setting state, the timing information can be adjusted.

**2 - No:8-timing group number:** when it is not set timing, there is no timing group number; after setting timing, it will automatically form a group number according to each kind of setting combination, so that in the sequent timing setting, it can execute instant setting by using timing group number.

**3 - Setting state and holiday functional area**-1 (MON), 2 (TUE), 3 (WED), 4 (THU), 5 (FRI), 6 (SAT), 7 (SUN) are used to indicate the 7 days in a week; the symbol of this part will display after powered on; after set the corresponding weekday's timing function, the ON symbol under the corresponding symbol will display, if not set timing, there will be no display; if not set Holiday function, the OFF symbol on the upside of the indicating symbol will not display, after set Holiday function, the OFF will display and at the same time temporarily the previous timing setting and turn off the air conditioner.

**4 - No. 1 group and No.2 group timing setting display area**-when entering timing setting state, the contents of timing will flash; choose Date, Hour and Minute to perform increase and decrease adjustment by the adjusting key.

**5 - Time display area**-including display the weekday, hour and minute; before setting timing function, please calibrate the current clock.

**6 - Unit number trouble code display area**-when the air conditioner in the control network has trouble, the corresponding unit number and the trouble code will display in this area.

**7 - Program**

Enter or exit the timing setting in normal condition,

**8 - Holiday**

Close the units and invalid for timing in no affect on the timing setting condition.

**9 - Number**

Group setting and timing setting (take one day as a standard unit)

**10 - Hour**

Timing setting condition and time setting condition ,select the adjustment

**11 - Min.**

Timing setting condition and time setting condition ,select the adjustment

**12 - Time**

Enter and exit the at present date and time condition in normal condition

**13 - Week**

Timing setting condition and time setting condition ,select the adjustment

**14 -Timing setting condition and time setting condition** , increase the setting parameters

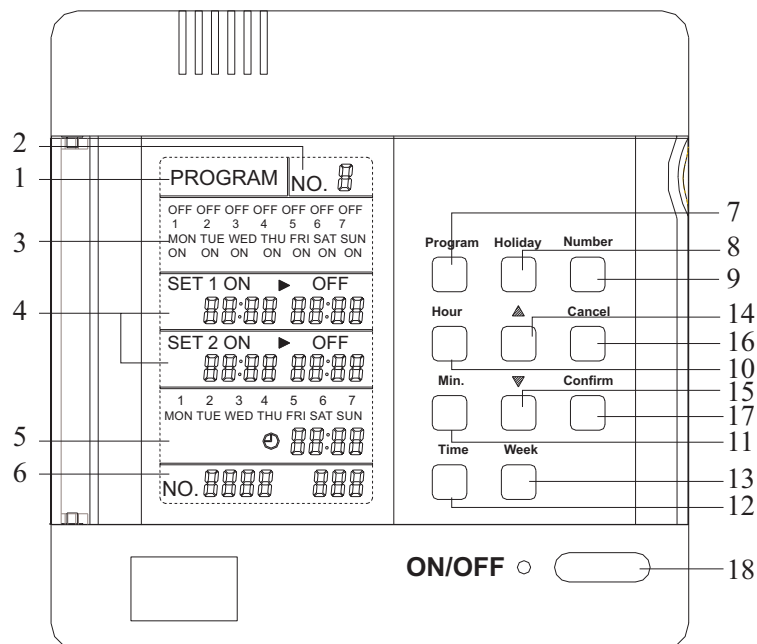
**15 -Timing setting condition and time setting condition** , decrease the setting parameters

**16 - Cancel**

Cancel the present setting before confirm the parameter.

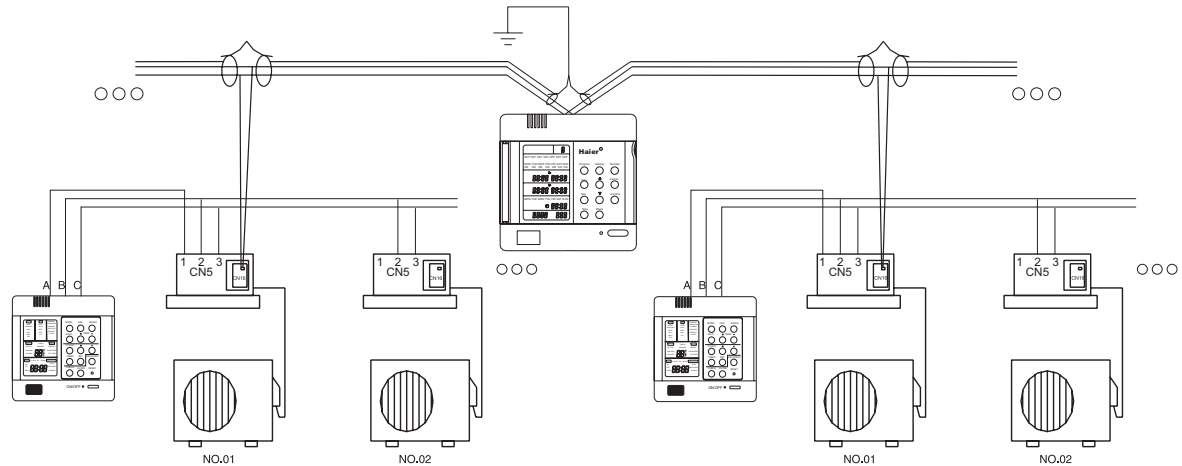
**17 - Confirm** Confirm the parameter.

**18 - ON/OFF** Open/close the unit.



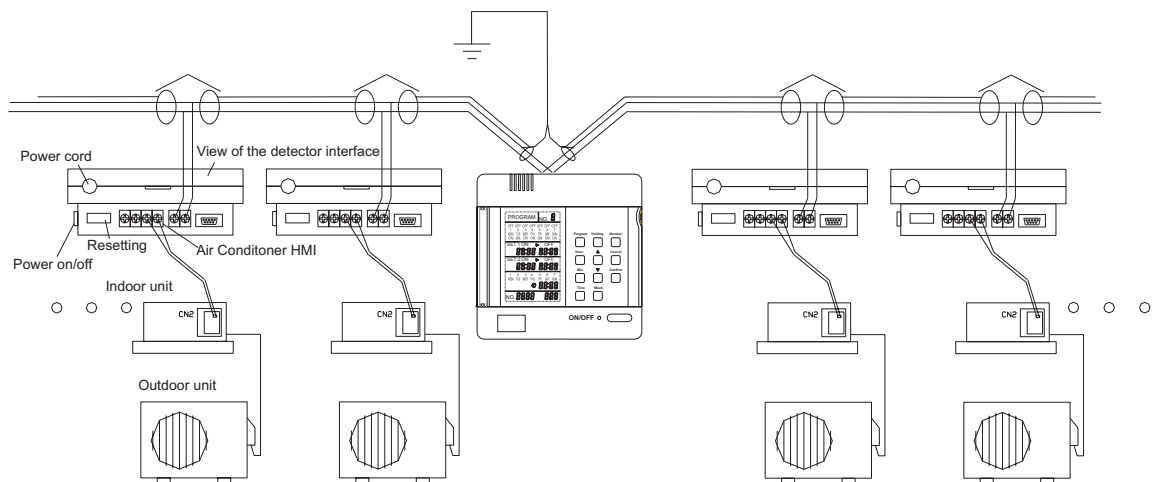
### Connecting method

1. Use group controller and weekly timer to realize the group control function + weekly timing function, applicable for the units except for the unit which needs detector to realize the weekly timer function, such as cabinet type, console type.



2. Use weekly timer to realize weekly timing function, applicable for the units which need detector to realize the weekly timer function, such as cabinet type, console type.

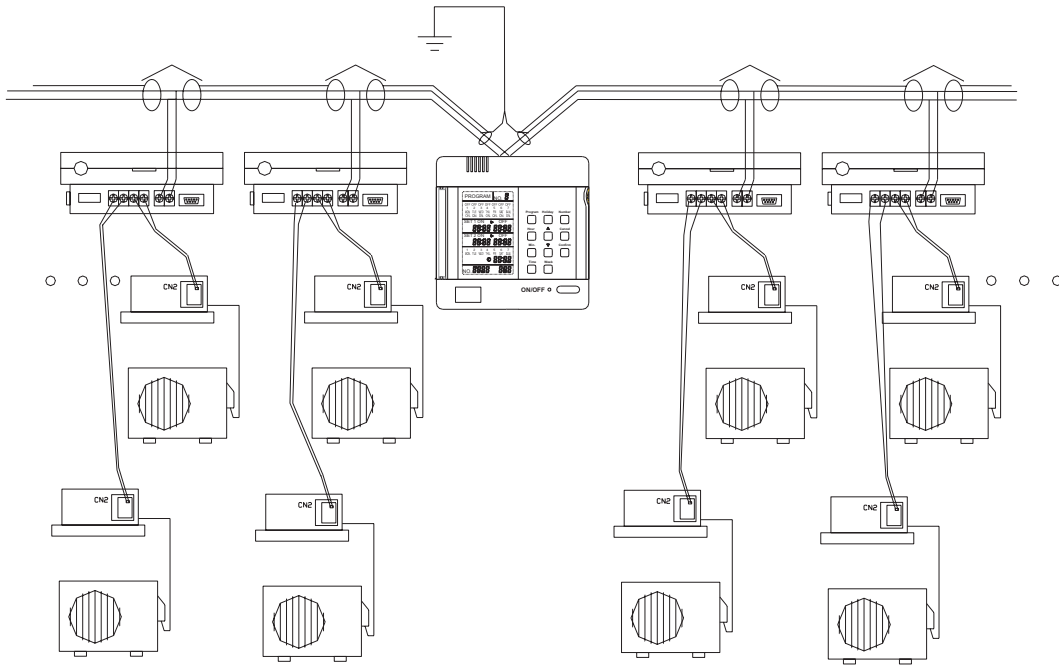
The detector is connected with one air conditioner by the 4-core screw fixed terminals A+ and A- of air conditioner interface, then accordingly set the dial-code switch of the detector in single unit working mode; the address number setting shall be performed according the planned program, for specific setting and corresponding address, please refer to the dial-code switch setting in detector's operation manual; use weekly timer to fulfill weekly timing function, the system needs to be connected with weekly timer; each detector and weekly timer is connected with shielded twisted pair communication bus by the 2-core screw fixed terminals (A and B) of its RS-485 interface; the communication bus must be shielded and grounded, and the resistors in its two ends shall be suited.



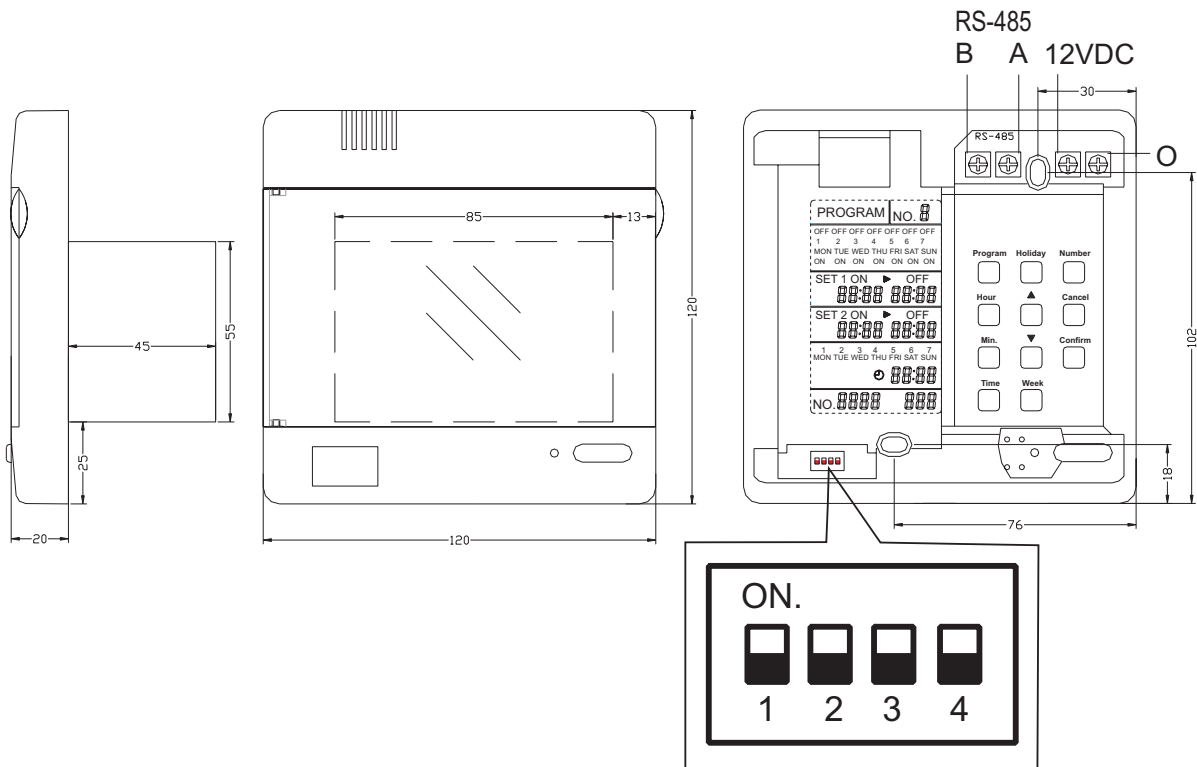
3. Use weekly timer to realize two units auto-changeover function, applicable for the units which need detector to realize the weekly timer function, such as cabinet type, console type.

The detector is connected with two same model air conditioners by the 4-core screw fixed terminals of air conditioner interface; then accordingly set the dial-code switch of the detector in double units working mode, and the double units switch time is default 24 hours; the address number setting shall be performed according the planned program, for specific setting and corresponding address, please refer to the dial-code switch setting in detector's operation manual; use weekly timer to fulfill double units switch weekly timing function, the system needs to be connected with weekly timer; each detector and weekly timer is connected with shielded twisted pair communication bus by the 2-core screw fixed terminals (A and B) of its RS-485 interface; the communication bus must be shielded and grounded, and the resistors in its two ends shall be suited.



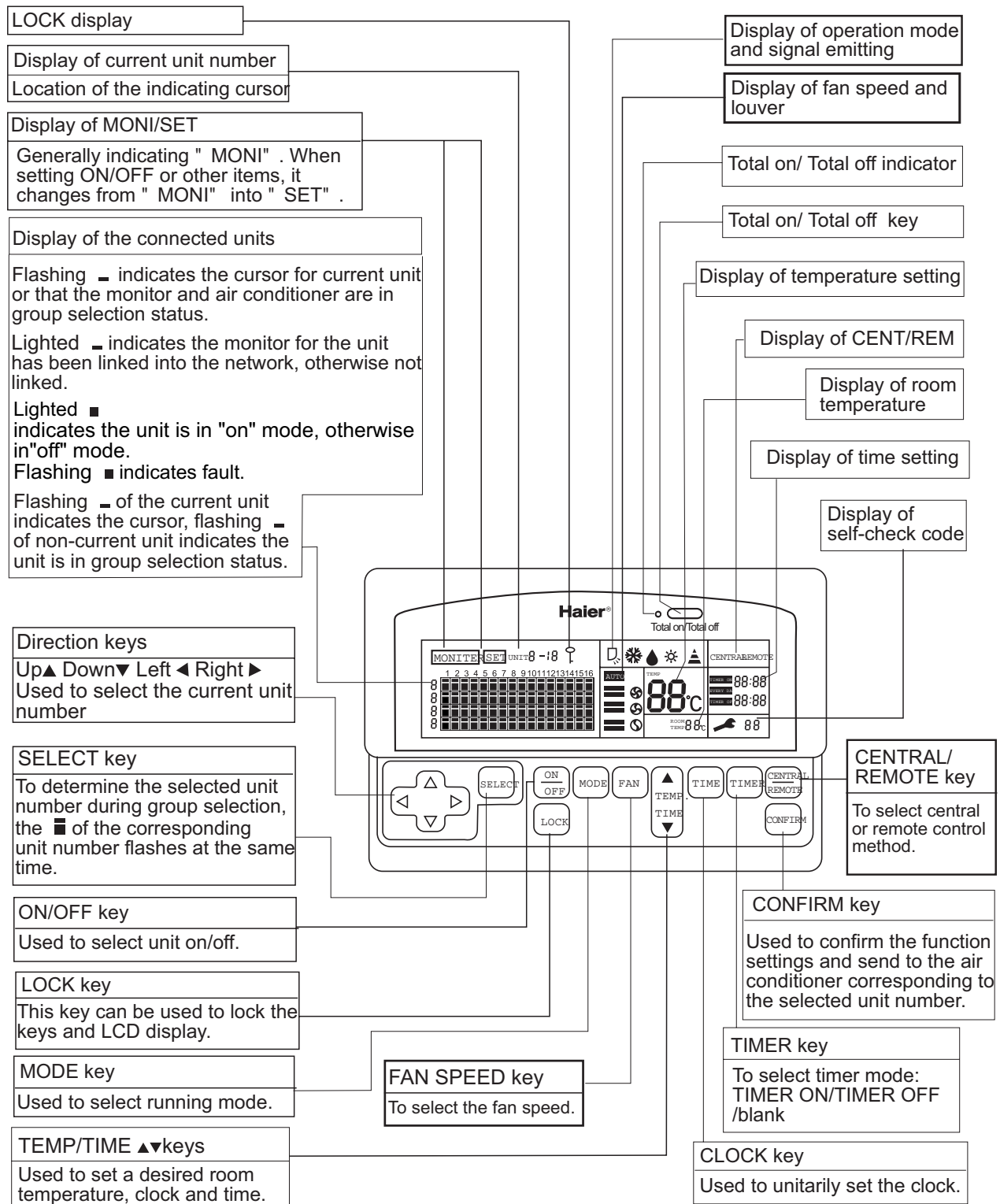


### Installation dimensions



### 9 Central Controller YCZ-A001

Function description:



**Note:** In MONI mode, pressing SEL, MODE, FAN SPEED, TEMP TIME keys may change the MONI mode into SET mode. If SET key or other keys hasn't been pressed within 10s, it will automatically return to MONI mode.

### 1. Communication function

Communicate with the indoor PCB in the group control network

To communicate with the indoor PCB through the R S-485 bus (A, B). The central controller sends commands to and receives response from indoor PCB; communication by address enables sending and receiving control information, work information and fault information between indoor PCB and the central controller.

### 2. LCD display function:

The LCD could display the fundamental status of air conditioning units (are the units existing? On/off? Fault? Are units group selected? Cursor and the current unit no.);

The LCD can display the working status of the air conditioning unit with the current number (mode, fan speed, temperature setting, room temperature, timer, error code, central/remote control status);

The working status of the central controller (monitor/set status, panel locking status, signaling status).

### 3. Key input function:

The keys for moving the current unit number cursor and for group selection: ▲, ▼, ►, ◀, SELECT;

The keys for setting working status of the air conditioning unit and control conditions: ON/OFF, MODE, FAN SPEED, TEMP, TIME ▲/▼, CLOCK, TIMER, CENT/REM, SET;

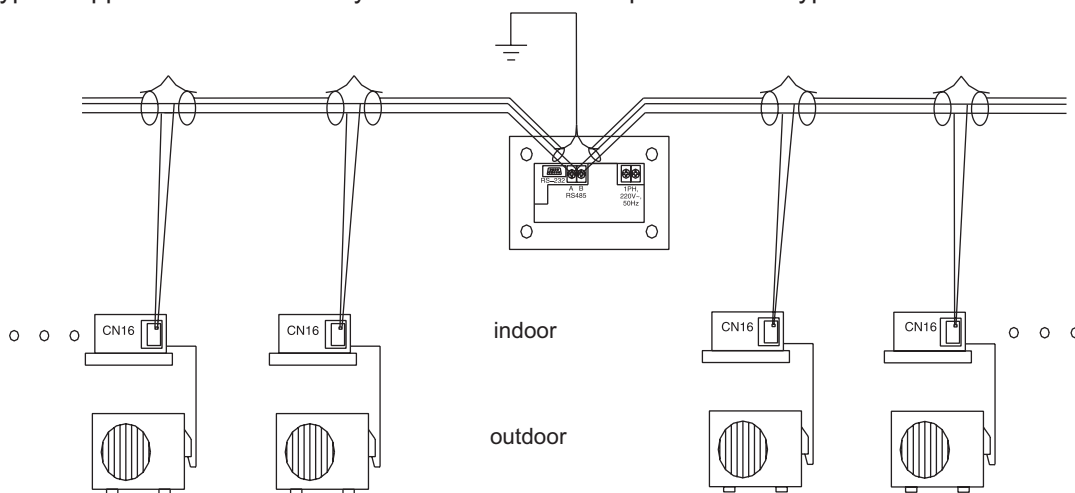
The key for locking key function of the central controller: LOCK.

### 4. Unit number setting function:

To enrich the control functions of Haier commercial air conditioner remote monitoring system, multiple controllers could be set to work together for a combination of multiple functions. For this, the central controller is provided with a two-digital switch for setting controller address.

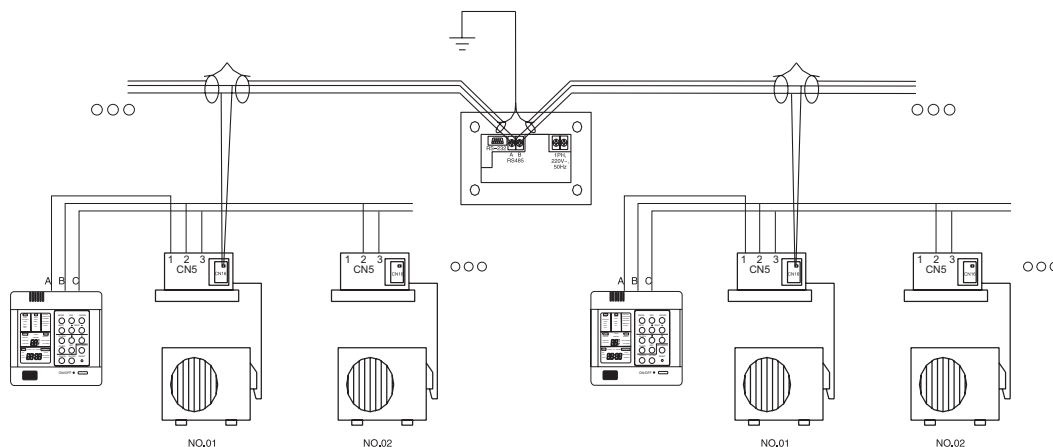
### 5. Realizing central control function with the central controller(max.128 indoor units can be connected)

this type is applicable for the unitary free indoor units except for cabinet type.

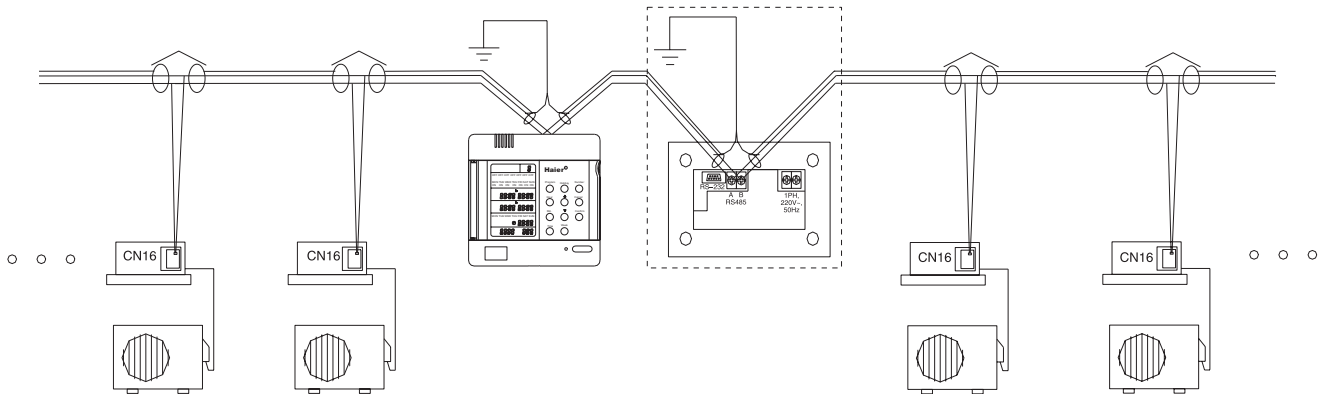


### 6. Central control system + Group control system(max.128 x16 indoor units can be connected),this type is applicable for the unitary free indoor units except for cabinet type.

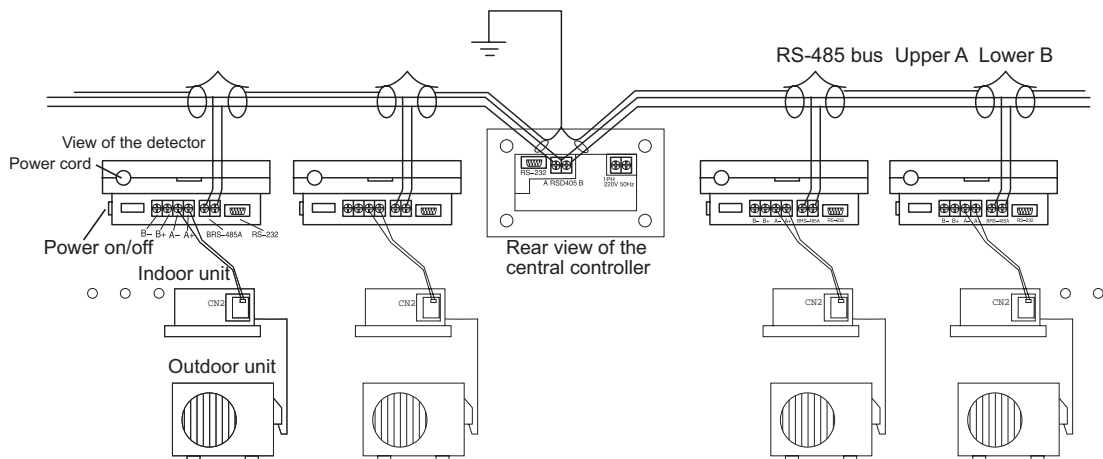
this type is applicable for the unitary free indoor units except for cabinet type.



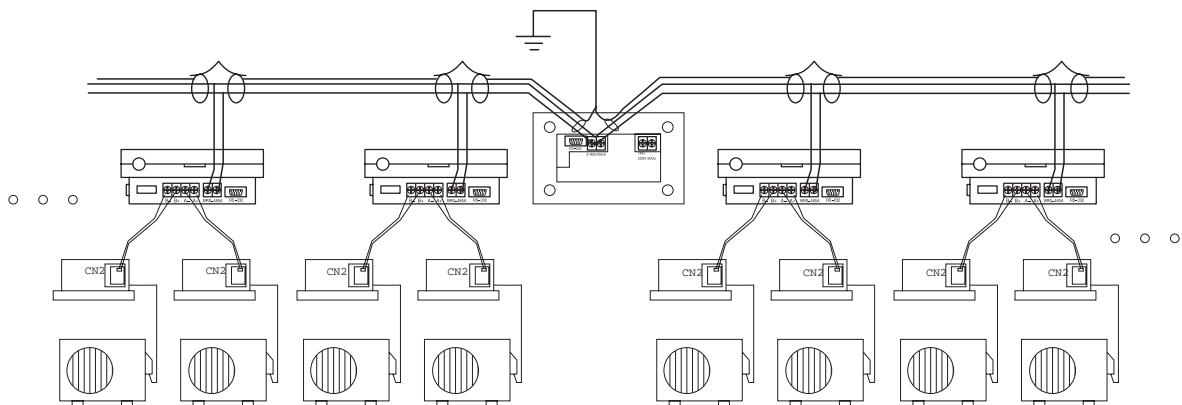
7. Use central controller + weekly timer to realize the group control function + weekly timing function, this type is applicable for the unitary free indoor units except for cabinet type.



8. Realizing group control function with the central controller, for the unit which needs the detector, such as cosole unit, cabinet units.

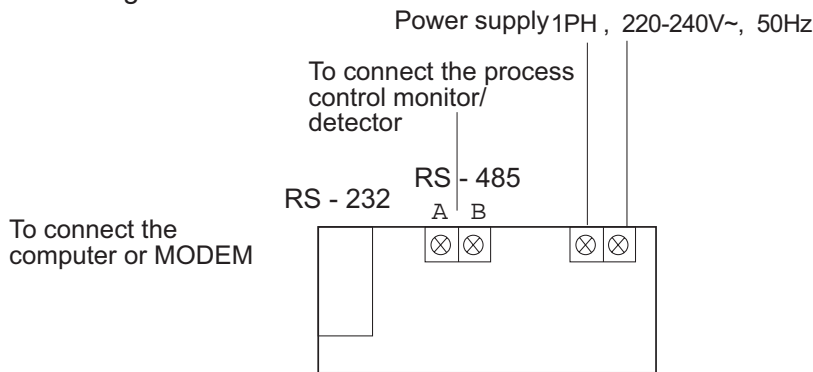


9. Realizing double unit switch-over group control function with the central controller, for the unit which needs the detector, such as cosole unit, cabinet units.



## Installation procedure

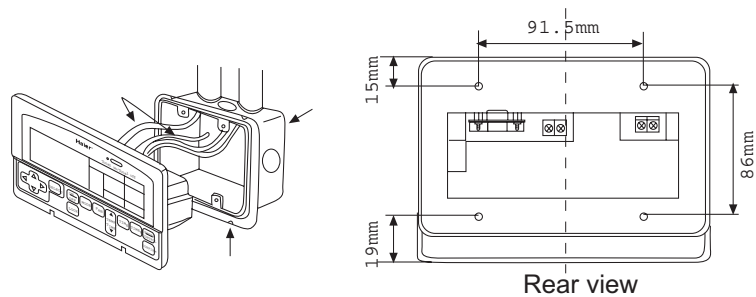
### 1. Wire connecting



### 2. Installation method

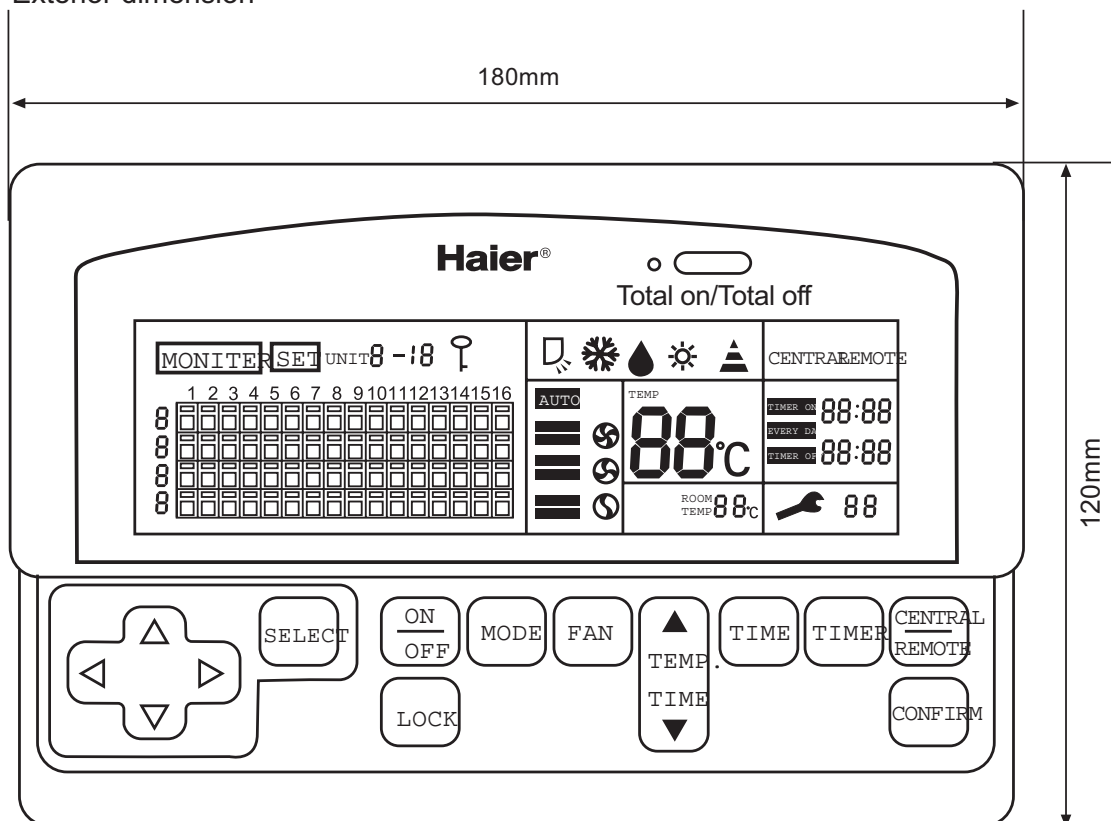
A wiring box cover must be used.

The central controller shall be installed into the installation box built in the wall fastening with 4 screws (as shown).

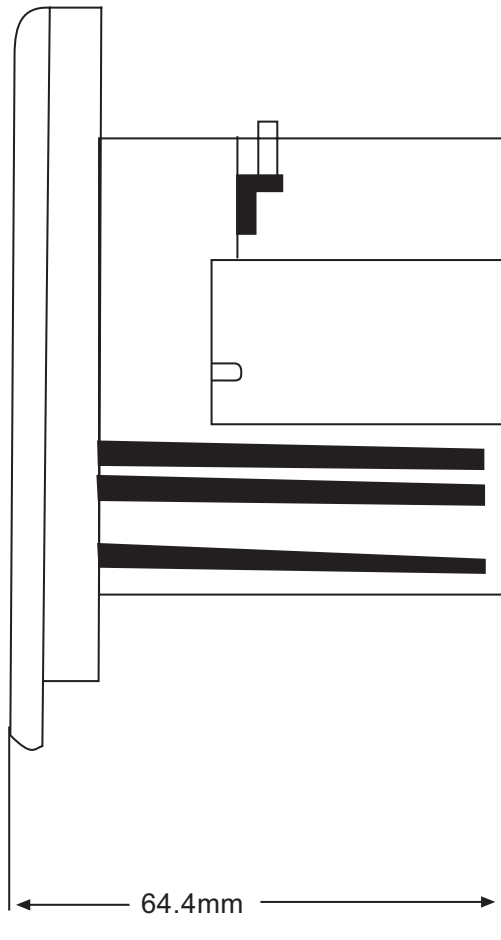


**Note:** Please confirm the supply voltage of AC220-240V and correct wiring. In application environment with intense electromagnetic interference, the central controller should be shielded, while the connecting wire between the monitor and the central controller should be shielded twin twisted wire.

### Exterior dimension



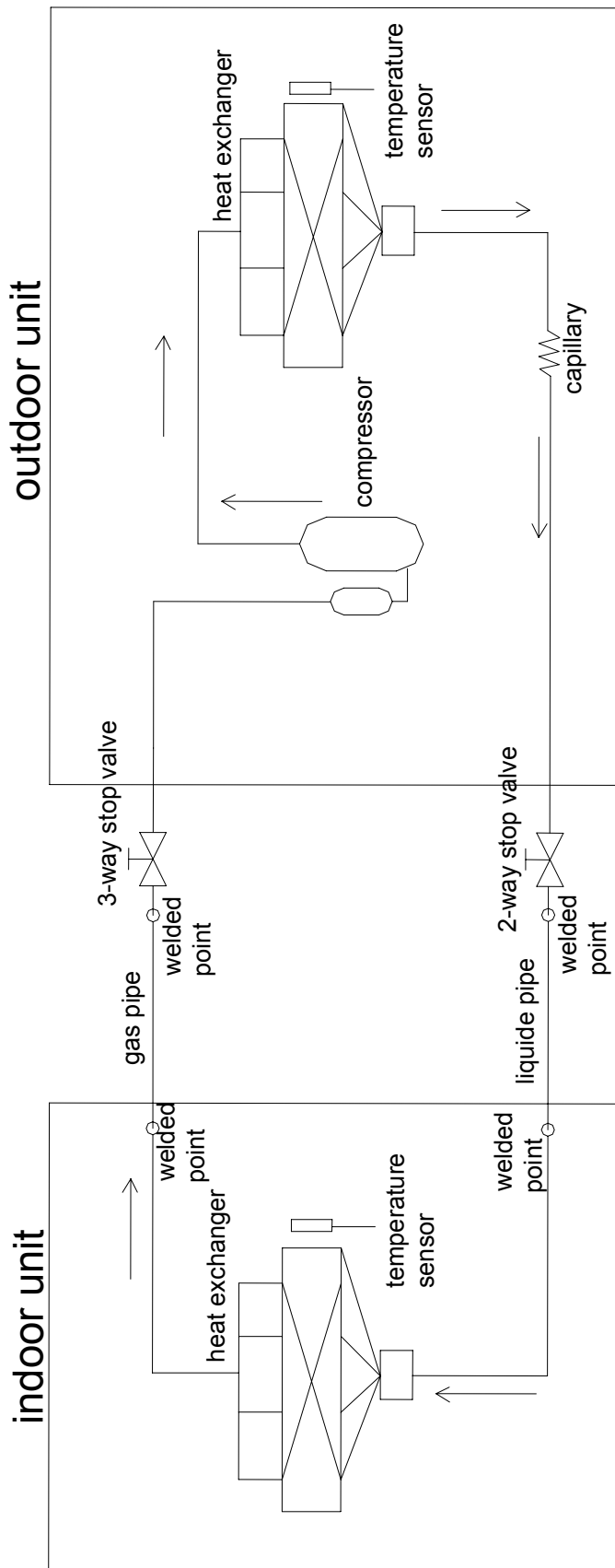
(Fig.1)



As illustrated:  
(Figure 1 is the front view and Figure 2  
is the side view) The central controller  
is 180mm long, 120mm wide and 64.4 mm  
thick.

(Fig.2)

### 10. Refrigerant Diagram



## 11. Electrical Control Functions

### 11.1 Features description

11.1.1 The operation modes include Auto, cooling, dry, ventilation, and heating; can set the compulsory cooling; indoor fan motor can select Auto, High, Med, Low speed; can set TIMER ON, TIMER OFF, TIMER ON/OFF, and SLEEP mode; auto checking water level and control the drainage pump; blade is controlled by sychromotor; equipped with compressor 3-minute protection; anti overload, anti freezed, broken sensor protection, etc., and can check the communication failure, also can check indoor ambient temp., indoor coil temp. sensor. The operation panel adopts LCD display, sending signal by pressing the button, and can be controlled by distant remote controller; in charging of collecting indoor ambient temperature, adopts series two-way communication with the mainboard. The mainboard will control indoor unit according to the signal from operation panel, and send series communication with outdoor.

11.1.2 LED indication: When the controller is in operation, the running LED will be light; when the controller is switched off, the running LED is off too. If TIMER and SLEEP fuction work, the TIMER LED is on; if TIMER and SLEEP do not work, TIMER LED is off. If compressor works, the compressor LED is on; if compressor stops, the LED is off. If water pump works, its LED is on; if water pump stops, the LED is off.

11.1.3 Temperature compensation control: When the ambient temp. sensor on indoor PCB works, the default temp. compensation in heating mode is 4°C.

11.1.4 In defrosting, the unit will not execute the remote switch off order.

### 11.2 Indoor AUTO speed control

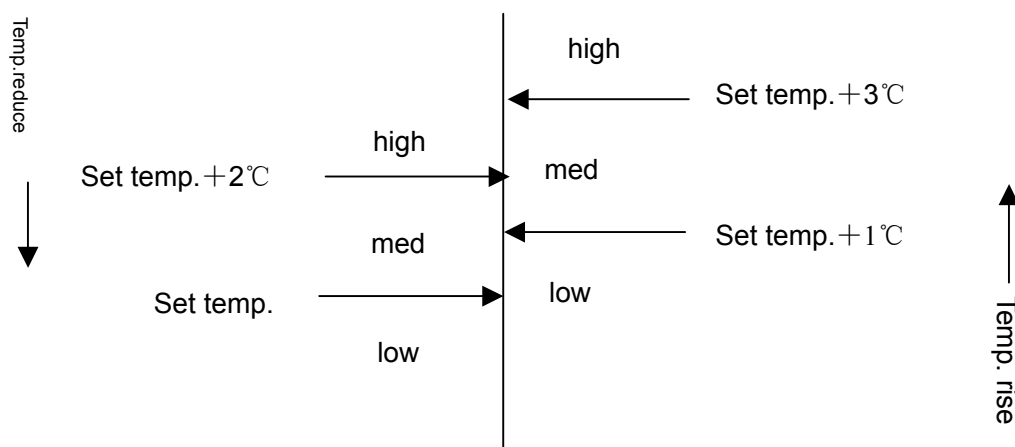
Tr: room temperature; Ts: set temperature

a. In cooling

If the unit enters auto fan speed for the first time,  $Tr > Ts + 2$ , high speed;  $Tr \leq Ts$ , low speed; otherwise, med speed. If the present speed is Auto High speed, when  $Tr < Ts + 2$ , speed will change into Auto Med; if the present speed is Auto Med, when  $Tr > Ts + 3$ , it will change into High speed;  $Tr < Ts$ , it will change into Low speed. If the present speed is low speed,  $Tr > Ts + 1$ , it will change into Med speed.

If the fan speed changes from low to high, there will be 3-minute delay, but if changing from high to low, there is no delay.

The sketch map is as follow:



b. In heating

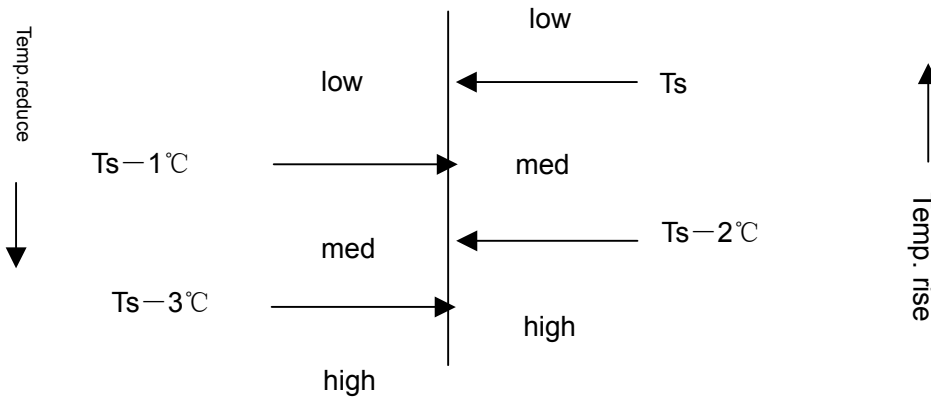
**Wired control type:** If the unit enters auto fan speed for the first time,  $Tr > Ts - 1$ , low speed;  $Tr \leq Ts - 3$ , high speed; otherwise, med speed. If the present speed is Low speed, when  $Tr < Ts - 1$ , speed will change into Med; if the present speed is Auto Med, when  $Tr > Ts$ , it will change into Low speed; If the



present speed is Auto med speed,  $Tr > Ts$ , it will change into low speed. If the present speed is High speed,  $Tr > Ts - 2$ , fan speed enters into Med speed. ( $Ts$  is the set temperature displayed on wired controller).

If the fan speed changes from low to high, there will be 3-minute delay, but if changing from high to low, there is no delay.

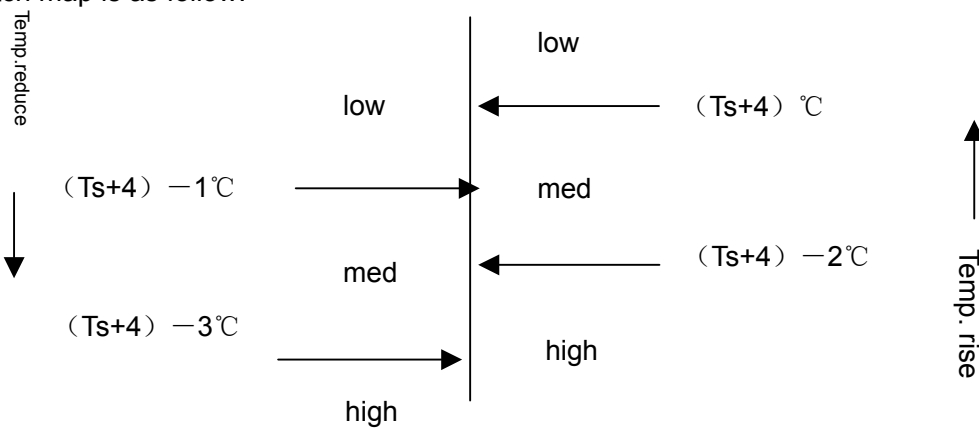
The sketch map is as follow:



**Infrared control type:** If the unit enters auto fan speed for the first time,  $Tr > (Ts+4) - 1$ , low speed;  $Tr \leq (Ts+4) - 3$ , high speed; otherwise, med speed. If the present speed is Low speed, when  $Tr < (Ts+4) - 1$ , speed will change into Med; if the present speed is Auto Med, when  $Tr > (Ts+4)$ , it will change into Low speed;  $Tr < (Ts+4) - 3$ , High speed. If the present speed is High speed,  $Tr > (Ts+4) - 2$ , fan speed enters into Med speed. ( $Ts$  is the set temperature displayed on wired controller).

If the fan speed changes from low to high, there will be 3-minute delay, but if changing from high to low, there is no delay.

The sketch map is as follow:



### 11.3 Auto mode control

#### a. Heat pump model

If the operation mode is Auto mode, the system will confirm the operation mode according to the temperature drop between  $Ts$  and  $Tr$ , and then operate at this mode.

If the unit enters Auto mode for the first time, it will select mode due to below conditions:

- $Tr > Ts$       Cool mode
- $Tr = Ts$       Fan mode
- $Tr < Ts$       Heat mode

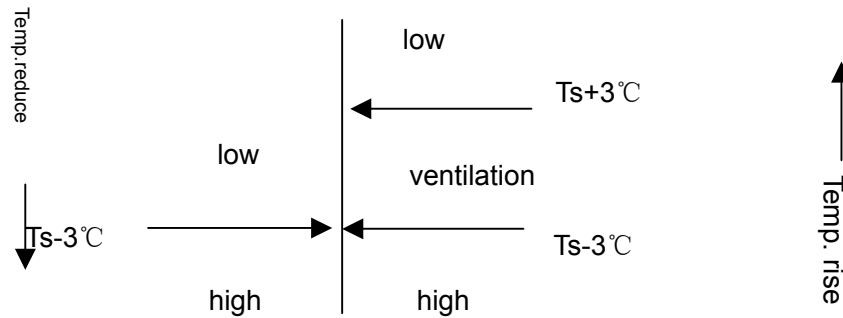
If the unit is in cooling mode, when the temperature arrives stop value, the compressor stops; the system will measure the temperature after compressor stops for 3 minutes. At this time, if  $Tr < Ts - 3°C$ , the unit will enter heating mode, or it will still be cooling mode.

If the unit is in heating mode, when the temperature arrives stop value, the compressor stops; the system will measure the temperature after compressor stops for 3 minutes. At this time, if  $Tr < Ts + 3^{\circ}\text{C}$ , the unit will enter cooling mode, or it will still be heating mode.

If the unit is in heating mode, when indoor heat exchanger temperature is over  $63^{\circ}\text{C}$ , the unit will turn into cooling mode automatically, in 1 hour, the indoor heat exchanger temperature will not be limited, and heating operation will stop temporarily, 1 hour later, the system will adjust the working mode due to the above conditions.

If the unit is in heating mode for the first time, compressor motor will start up, within 8 minutes the system will not measure indoor ambient temperature, the remote controller will be off.

The sketch map is as follow:



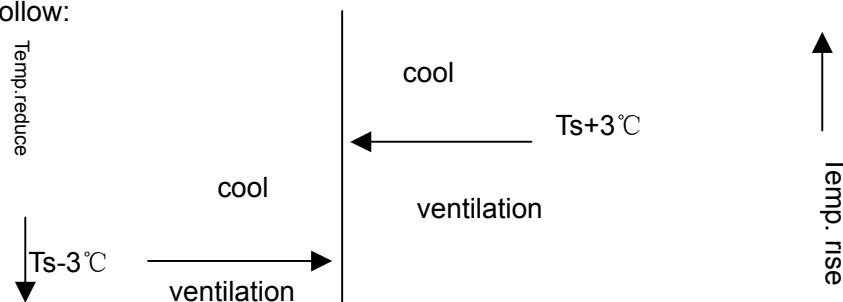
### b. Cooling only model

If the unit is in Auto mode for the first time, the system will select operation mode due to the below condition:

- $Tr \geq Ts + 3^{\circ}\text{C}$       cooling mode
- $Tr < Ts + 3^{\circ}\text{C}$       ventilation mode

After entering Auto mode, the operation mode can be changed between cooling mode and fan mode according to indoor ambient temperature: if the unit now is in cooling mode, when  $Tr < Ts - 3$ , the mode will be changed to Fan; if the unit is in Fan mode, when  $Tr \geq Ts + 3$ , the mode will be changed to cooling mode.

The sketch map is as follow:

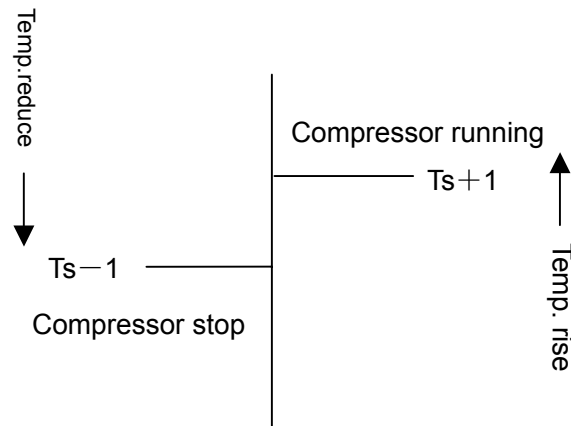


Indoor temperature will be controlled according to the set temperature (the control precision is  $\pm 1^{\circ}\text{C}$ ). The fan blade can swing or be fixed on one position, and the fan speed can be Low, Med, High or Auto. In this mode, you can set TIMER or SLEEP function.

### 11.4 Cooling mode operation

11.4.1 4-way valve is not electrified, the compressor stop/running will be controlled by the temperature drop between  $Tr$  and  $Ts$ .  $Ts$ : set temperature,  $Tr$ : present room temperature.

- $Tr \geq Ts + 1$       compressor running
- $Tr \leq Ts - 1$       compressor stop
- $Ts - 1 < Tr < Ts + 1$       compressor maintains the original state



11.4.2 Anti-current rush: After compressor is running for 1.6 seconds, outdoor fan motor and indoor fan motor can work.

11.4.3 Outdoor fan motor and compressor work or stop simultaneously, indoor fan motor speed can be set High, Med, Low or Auto mode, the fan blade can swing or be fixed on one position. You can set TIMER or SLEEP function.

11.4.4 Anti-freezed protection: (be invalid at compulsory operation, trial running, or heating mode)

Every time compressor running time is over 6 minutes, if indoor coil temperature  $T_g < 1^\circ\text{C}$ , and keeps for 1 minute, compressor and outdoor motor will stop, and change into Fan mode; if the compressor stops for 9 minute and indoor coil temperature rises upto  $10^\circ\text{C}$ , the system will resumes cooling operation, compressor and outdoor motor will work again.

11.4.5 Temperature cutoff protection

2HP model: when indoor coil temperature is over  $68^\circ\text{C}$  and keeps for 10 seconds, compressor and outdoor motor stop; if indoor coil temperature is below  $48^\circ\text{C}$  and compressor stops for over 9 minutes, compressor and outdoor motor will work again.

3HP, 5HP model: the indoor coil temperature will be sent to outdoor unit, if indoor coil temperature is over  $68^\circ\text{C}$  and keeps for 10 seconds, then the system will send stop-compressor signal; after the compressor stops, if indoor unit has checked that indoor coil temperature is below  $48^\circ\text{C}$ , and compressor stops for over 9 minutes, then the system will send start-compressor signal, the compressor will resume the normal operation.

11.4.6 Current peak value protection

3HP, 5HP: controlled by outdoor unit.

2HP: after compressor is running for 60 seconds, if CT current is over I3(21A) and keeps for 3 seconds, compressor and outdoor motor will resume.

## 11.5 Dry mode operation

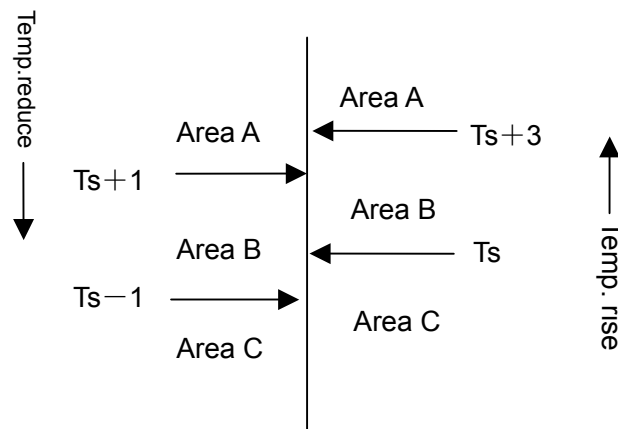
9.5.1 If the unit enters Dry mode for the first time, compressor, outdoor motor, and indoor motor will operate due to the below procedure:

- 1)  $T_r > T_s + 2^\circ\text{C}$ , compressor and outdoor motor continue running, indoor motor will run at the set speed, this is Area A.
- 2)  $T_s \leq T_r \leq T_s + 2^\circ\text{C}$ , compressor and outdoor motor will run for 10 minutes and then stop for 6 minutes, indoor fan motor will run at low speed, this is Area B.
- 3)  $T_r < T_s$ , compressor, and outdoor motor stop running, indoor fan motor runs at low speed, this is Area C.

11.5.2 After dry mode begins running, the system will change among Area A, Area B, Area C according

to the indoor ambient temperature; if in Area A, when  $Tr < Ts + 1$ , the system changes into Area B; if in Area C, when  $Tr > Ts$ , the system changes into Area B; if in Area B, when  $Tr > Ts + 3$ , the system will change into Area A, when  $Tr < Ts - 1$ , the system will change into Area C.

The operation is as follow:



### 11.5.3 Anti-freezed protection

Every time compressor is running for over 6 minutes, if indoor coil temp.  $Tg < 1^\circ\text{C}$ , compressor and outdoor motor stop; 9 minutes later, indoor coil temperature rises to  $10^\circ\text{C}$  and then the compressor will resume to be normal, compressor and outdoor motor will work again.

### 11.5.4 Temperature cutoff protection

2HP model: If indoor coil temperature is over  $68^\circ\text{C}$  and keeps for 10 seconds, compressor and outdoor motor will stop; After compressor stops, if indoor unit checked indoor coil temp. is below  $48^\circ\text{C}$  and compressor stop time is over 9 minutes, compressor and outdoor motor will be normal.

3HP, 5HP model: indoor unit will send the indoor coil temperature to outdoor, if indoor coil temperature is over  $68^\circ\text{C}$  and keeps for 10 seconds, the system will send compressor-stop signal to outdoor; after compressor stops, if indoor coil temperature is below  $48^\circ\text{C}$  and compressor stop time is over 9 minutes and send compressor-start signal to outdoor, then the compressor will be normal.

## 11.6 Fan mode control

Compressor and outdoor motor stop working, indoor motor can set High, Med and Low speed, the fan blade can swing or be fixed on a position. In this mode, you can set TIMER function, but there is no SLEEP function. Also, you can set high voltage dirt collecting or fresh air function.

## 11.7 Heating mode control

### 11.7.1 Wired control type model:

1) 4-way valve control: When entering heating mode, compressor starts up, 4-way valve is always electrified; in heating mode, compressor is off, and 4-way valve will be off 2 minutes later. If the unit changes from heating to other modes, the compressor will stop firstly, 2 minutes later, 4-way valve will be off.

2) If the unit enters heating mode for the first time, compressor and outdoor motor will start up, indoor unit will control compressor stop/start according to the temperature drop between room temp. ( $Tr$ ) and set temp ( $Ts$ ).

$Tr \geq Ts + 1$	compressor stop
$Tr \leq Ts - 1$	compressor run
$Ts - 1 < Tr < Ts + 1$	compressor in original state

### 11.7.2 Remote control type model

1) 4-way valve control: When entering heating mode, compressor starts up, 4-way valve is always

electrified; in heating mode, compressor is off, and 4-way valve will be off 2 minutes later. If the unit changes from heating to other modes, the compressor will stop firstly, 2 minutes later, 4-way valve will be off.

2) If the unit enters heating mode for the first time, compressor and outdoor motor will start up, 8 minutes later, the system will check indoor temperature, indoor unit will control compressor stop/start according to the temperature drop between  $T_r$  and  $T_s$ . Every time compressor starts up, within 8 minutes, it will not be affected by indoor temperature, and the remote controller can cancel the 8-minute limit.

$T_s$ : set temperature on remote controller,  $T_r$ : present room temperature,  $\Delta T$ : compensation temperature,

$$\begin{aligned} T_r &\geq (T_s+4) + \Delta T + 1 && \text{compressor stop} \\ T_r &\leq (T_s+4) - 1 && \text{compressor run} \\ (T_s+4) - 1 &< T_r < (T_s+4) + \Delta T + 1 && \text{compressor in original state} \end{aligned}$$

In heating mode, there is auto temp. compensation, the requested condition: the time is less than 5 minutes between the moment compressor stops when arriving the set temperature to the moment when compressor starts up again. The principle is as follow:

A.  $\Delta T = T_s - T_r$  (room temp. when compressor starts up)

B. When  $T_s - T_r \geq 2^\circ\text{C}$ ,  $\Delta T = 2^\circ\text{C}$ ; when  $T_s - T_r = 1^\circ\text{C}$ ,  $\Delta T = 1^\circ\text{C}$ ; when  $T_s - T_r \leq 0^\circ\text{C}$ ,  $\Delta T = 0^\circ\text{C}$ .

C. When temp. compensation works, if pressing remote controller temp. decreasing button,  $\Delta T = 0^\circ\text{C}$ ; if pressing temp. increasing button,  $\Delta T$  remains original value.

Anti-current rush protection: After compressor runs for 1.6 seconds, outdoor motor, indoor motor can work.

Outdoor motor and the compressor runs or stops simultaneously (except for overheat protection), indoor fan speed can be set at High, Med, Low or Auto speed, and the fan blade can swing or be fixed on one position. You can set TIMER or SLEEP mode.

### 3) Overheat protection

In heating mode, when compressor has started up and indoor fan motor has run for over 30 seconds, if indoor coil temperature  $T_g > 60^\circ\text{C}$ , outdoor motor will stop; if  $T_g < 56^\circ\text{C}$  and outdoor motor has stopped for 45 seconds, outdoor motor will resume; if  $T_g > 68^\circ\text{C}$ , compressor will stop, and indoor motor will run as the condition that thermostat is OFF. After the compressor stops for 9 minutes and  $T_g$  has decreased to

$48^\circ\text{C}$ , the system will resume to heating mode, and compressor and outdoor motor will continue to work.

If  $T_g > 56^\circ\text{C}$ , low speed of indoor motor is invalid, so fan motor will turn into med speed. If  $T_g > 60^\circ\text{C}$ , med speed is invalid, so fan motor will turn into high speed. If  $T_g < 52^\circ\text{C}$ , fan motor will resume to original speed. Overheat protection will be controlled by outdoor MCU according to the actual temperature.

### 4) Anti-cold air function in heating

After entering heating mode for the first time or defrosting is over, if  $T_g$  is below  $28^\circ\text{C}$ , indoor motor will stop; if  $T_g$  is over  $28^\circ\text{C}$  and below  $38^\circ\text{C}$ , indoor motor will run at low speed; if  $T_g$  is over  $38^\circ\text{C}$  or compressor has run for over 4 minutes, indoor fan motor will run at the set speed.

### 5) Blowing remaining heat

3HP and 5HP model: In heating mode, when arriving the set temperature, compressor stops, and indoor motor of wired control type model will stop after running at low speed for 50 seconds, while the indoor motor of remote control type model will stop after running at low speed for 4 minutes. If being switched off in heating, the indoor motor of both wired control and remote control unit will stop after

running at low speed for 50 seconds.

2HP model: If being switched off in heating, the indoor motor will stop after running at low speed for 50 seconds.

### 6) Crankcase heater control

No matter at any mode, if compressor is on, the heater is off; if compressor is off, the heater is on.

### 7) Auxiliary electric heater function

Startup condition:

- A.  $T_r \leq T_s - 2^\circ\text{C}$ ;
- B. Compressor has run for 1 hour
- C. Room temperature is below  $23^\circ\text{C}$
- D. Indoor fan motor is working
- E. There is electric heating startup signal

If the system can meet the above 5 conditions, electric heating function can work.

If one of the below conditions can be met, the auxiliary electric heating will stop.

- A. Compressor or indoor motor stop working
- B.  $T_r \geq 25^\circ\text{C}$
- C.  $T_r \geq T_s - 1^\circ\text{C}$
- D. No electric heating startup signal

### 8) Current peak value protection

3HP, 5P model: controlled by outdoor unit.

2HP model: after compressor is running for 60 seconds, if CT current is over I1(13.5A) and keeps for 5 seconds, outdoor motor will stop. When the outdoor motor stop time is up to 45 seconds and the compressor current is below I2(11A), outdoor motor will resume; If CT current is over I3(21A) and keeps for 3 seconds, compressor and outdoor motor stop. When the compressor stop time is up to 3 minutes and the CT current is below 18A, compressor and outdoor motor will resume.

### 9) Auto defrost operation

#### Status 1: Outdoor PCB exists

##### a. Start conditions

In heating mode, compressor has run for 30 minutes contineously.

Or, compressor has run for 45 minutes in all, and run for over 5 minutes contineously.

If one of the above conditions can be met, and indoor receives the defrosting temperature arriving signal from outdoor, the unit will begin to defrost and send defrost start signal to outdoor.

##### b. Finish conditions

The defrosting signal is cancelled or the defrosting time is over 12 minutes (including 1 minute before or after defrost), defrost is over and send defrost finish signal.

#### Status 2: No outdoor PCB

##### a. Start conditions

i. Indoor is on overload protection and outdoor motor stop, within 10 minutes after outdoor motor runs again, the unit does not enter overheat again and compressor has run for over 45 minutes in all, run for 20 minutes contineously, also indoor coil temperature is below  $43^\circ\text{C}$ ;

ii. After compressor has run for 20 minutes contineously,  $T_g$  decreases  $1^\circ\text{C}$  for every 6 minutes and occurs for 3 times,  $T_g$  is below  $40^\circ\text{C}$  and after compressor has run for 5 minutes;

iii. Compressor has run for 3 hours in all, and run for 20 minutes contineously,  $T_g$  is below  $40^\circ\text{C}$ ;

iv. Temperature drop between  $T_g$  and  $T_r$  is below  $16^\circ\text{C}$  and compressor run for over 45 minutes in all, run for 20 minutes contineously;  $T_g$  is below  $40^\circ\text{C}$ ;

If one of the above conditions is met, the system will enter defrost.

b. Finish conditions

Defrost time is over 10 minutes.

**Status 3: No outdoor PCB, but with defrosting sensor**

a. Start conditions

In heating mode, when outdoor temperature  $T_p < 0^\circ\text{C}$ , the timing will begin; when  $T_p \geq 0^\circ\text{C}$ , the timing stops.

When being electrified for the first time or defrosting is over, compressor starts up, after running for 3 minutes, the system will check  $T_{p0}$  (when  $T_{p0} < -2^\circ\text{C}$ , count as the actual value; the other conditions, count as  $-2^\circ\text{C}$ ), if  $T_{p0} < -2^\circ\text{C}$ ,  $\Delta T = T_p - T_{p0}$

① Accumulative time [15m~30m],  $\Delta T < -12^\circ\text{C}$ , enter defrost (time is over 3 minutes);

② Accumulative time [30m~60m],  $\Delta T < -8^\circ\text{C}$ , enter defrost (time is over 3 minutes);

③ Accumulative time [1Hr~2Hr],  $\Delta T < -5^\circ\text{C}$ , enter defrost (time is over 3 minutes);

④ Accumulative time [2Hr~3Hr],  $\Delta T < -3^\circ\text{C}$ , enter defrost (time is over 3 minutes);

Accumulative time [3Hr~], enter defrost.

b. Finish conditions

① Defrost operation time  $> 10\text{min}$  (exclude the former or later time), quit the defrost;

②  $T_p > 10^\circ\text{C}$ , quit defrost;

c. In defrosting, the parts will response as follows:

For the unit with outdoor PCB: compressor, 4-way valve will be controlled by indoor unit, and outdoor motor is controlled by outdoor unit.

For the unit without outdoor PCB: all are controlled by indoor unit.

The detailed response is as follow: compressor and outdoor motor stop, meanwhile, indoor motor stops, and 55 seconds later, 4-way valve is close. 5 seconds later, compressor starts up.

When defrosting is over, compressor will not stop, but outdoor motor works. After fan motor runs for 30 seconds, 4-way valve is open, and indoor motor will run at anti-cold air mode.

d. For the unit with auxiliary electric heater

1. If when defrost condition is met, electric heat is working, so the electric heater will be over firstly, and 20 seconds later, enter defrost again.

2. If before defrosting, the auxiliary electric heat is at standby state, so after defrosting, if the auxiliary electric heating request is met, it will start.

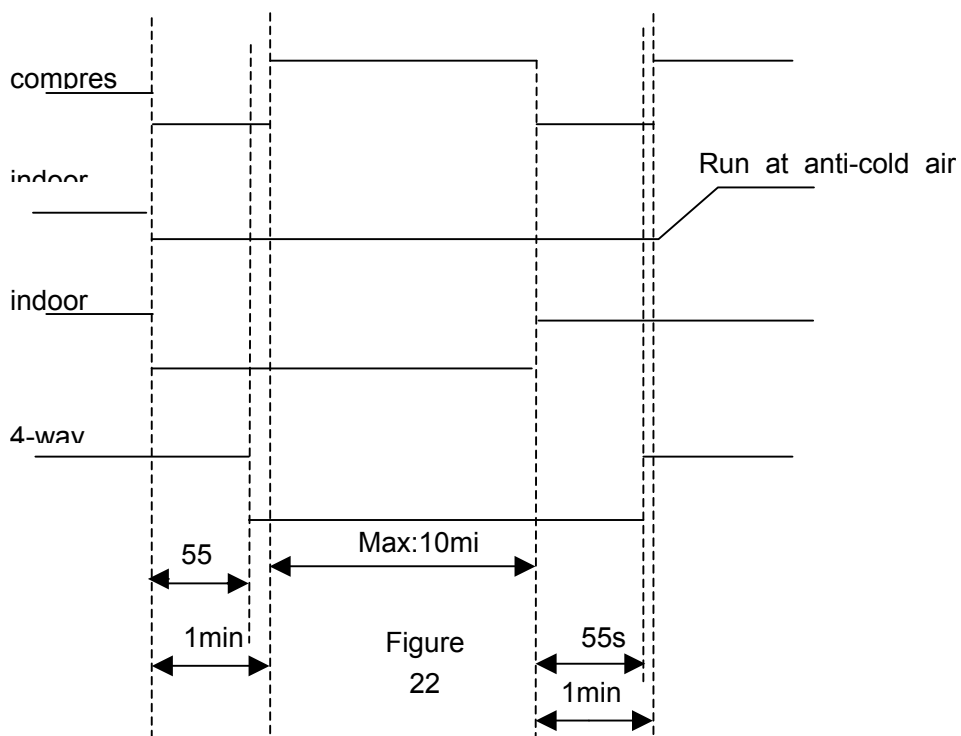


Figure 22

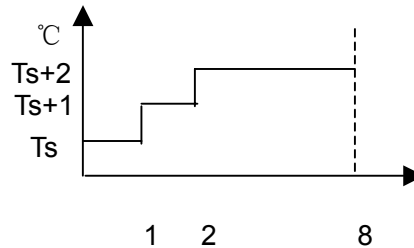
## 10) Manual defrost

If the manual defrost signal is sent from operation panel, the indoor and outdoor will not adjust the defrosting condition to execute the defrost function directly. The course is identical to that of auto defrost. The quit condition is that defrosting time is up to 5 minutes.

## 9.8 Sleep function

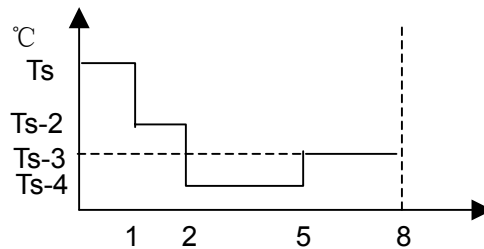
When the unit is at cooling/dry/heating mode, you can set sleep function. In cooling/dry state, after entering sleep for 1 hour, the set temperature will rise 1°C; another 1 hour, the set temperature will rise another 1 hour, and after the unit continues working for 6 hours, it will shut off.

In non-heating mode, sleep state chart:



In heating mode, after entering sleep for 1 hour, the set temperature will decrease 2°C; another 1 hour later, the set temp. will decrease another 2°C; another 3 hours later, the set temp. will rise 1°C, and continue working for 3 hours, then the unit will shut off.

In heating mode, sleep state chart:



## 11.9 Compulsory cooling

After receiving the compulsory cooling signal, the unit will run in cooling mode and indoor/outdoor motor will run at high speed for 5 minutes (that is compressor runs for 5 minutes) and send signal to outdoor. Within 5 minutes, the system will not adjust the protection, and not affected by the ambient temperature, but the compressor will not be limited by 3-minute protection, 5 minutes later, the unit will turn into the common cooling mode. In compulsory operation, the crankcase heater, negative ion, and fresh air will stop.

### 11.10 Full water detection and control of water pump

- In cooling and dehumidification mode, if compressor is working, the water pump is working, too; if compressor stops, 5 minutes later the water pump will stop, too.
- For standby of cooling, heating, and fan mode, if the drainage pan is full, the float switch will be disconnected. If the controller has checked the signal and keep for 2 seconds, the water pump will start to work. After the float is reset, the water pump will continue to work for 5 minutes.
- If the controller has checked the full-water signal for over 5 minutes, the indicator on the wired controller will alarm, and the compressor will stop. The water pump will work for 5 minutes, then stop for 5 minutes, until the float is reset, 5 minutes later the alarm will disappear.

### 11.11 Negative ion/high voltage dirt collecting function



When there is health set signal, and indoor fan motor is running, also gate switch is close, the negative ion/high voltage dirt collecting will work.

### 11.12 Fresh air function

When there is fresh air signal, fresh air function will work. At any state, there will be fresh air output. There are two kinds of fresh air types: continue type and auto type.

- a. Continue type: as long as there is fresh air signal, fresh air will work until receiving stop signal.
- b. Auto type: fresh air works for 20 minutes and stops for 20 minutes, repeat as the principle until receiving the stop signal.

### 11.13 Filter elevating function (for cassette unit)

The filter elevating function is controlled by remote controller or the operation panel, if the indoor unit receives the command, it will shut off.

- A. When indoor unit receives filter down command, the filter motor will control filter to go down, the max. time is 56 seconds, if it is over 56 seconds, the filter will stop going down.
- B. If receiving go-up command after stopping for 1 second, the filter will go up immediately, and the max. time is 58 seconds; if checking that gate switch signal is off during going up, the filter will not go up and enter adjusting, that is: going down for 1 second, stop 1 second, going up for 2 seconds, stop 1 second, repeat like this for 3 times, then the filter operation is over.
- C. If receiving go-up command during going down, going down will stop; if receiving going up command again and stop time is up to 1 second, the filter will go up and the up time is 2 seconds more than the down time. After going up is over, the filter enters adjustment and then stop.
- D. If receiving go-down command during going up, going up will stop; if receiving going down command again and stop time is up to 1 second, the filter will go down and the down time is 2 seconds less than the up time.
- E. If receiving go-up or go-down command after the up/down operation stops, the filter can continue going up or down, but the total up or down time can not be more than (56+2) seconds and 56 seconds.

### 11.14 Pressure switch control

For the unit without outdoor PCB, if pressure switch is not selected, the relative function is not available; For the unit without outdoor PCB selects pressure switch, the procedure is as follow: after compressor runs for 3 minutes, the unit will check pressure switch, if pressure switch is overflow and low pressure switch action works for over 30 seconds, compressor and outdoor motor stops, meanwhile, alarm will occur, and compressor will not start up; If being electrified again after power off, the protection can be cancelled.

### 11.15 3-minute protection of compressor when startup

Once the compressor stops running, you can restart up only after 3 minutes. When the unit powered off in operation, if the shutoff time is below 3 minutes, it will be 3 minutes at least after powered on when the compressor starts up again. Powered on for the first time, there is no 3-minutes delay protection.

## 12. Diagnostic information (troubleshooting)

### 12.1 System failure

If the refrigerant in the system cannot flow fluently or the airflow circles more slowly, please check due to the following procedures.

Cooling:

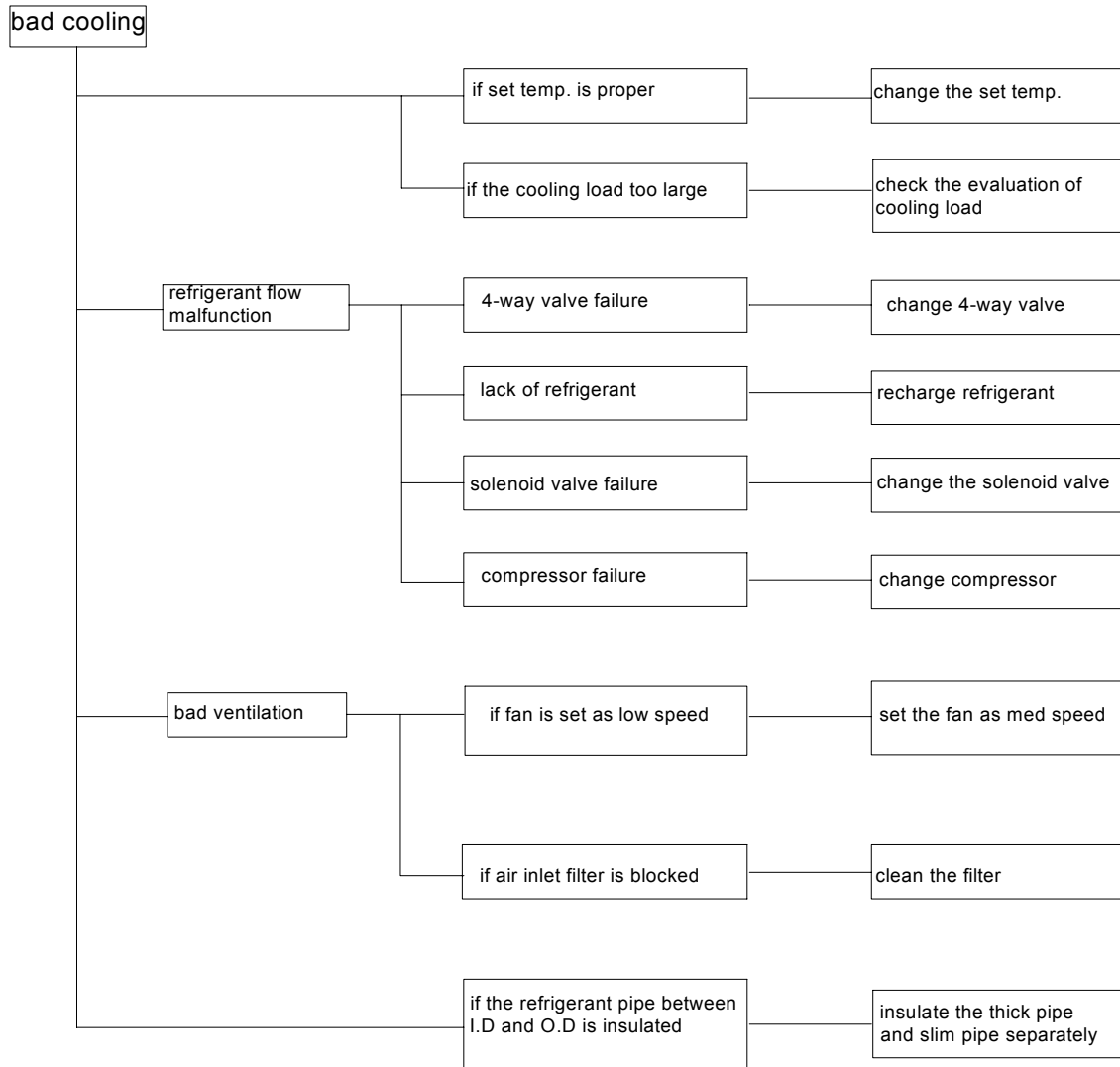


Figure 1

### 12.2 Failure code

The remote receiver, wired controller and indoor PCB indicator all can indicate the failure code.

#### 12.2.1 Failure code list

Power lamp flash times/LED on PCB flash times	failure description	reasons	treatment
1	Indoor ambient temp. sensor failure	sensor broken down or short circuit for more than 2m continuously	due to the signal,resumable
2	Indoor pipe temp. sensor failure	sensor broken down or short circuit for more than 2m continuously	due to the signal,resumable
4	Outdoor pipe temp. sensor failure	sensor broken down or short circuit for more than 2m continuously	due to the signal,resumable
8	Communication failure between panel and indoor unit	communication abnormal for more than 4m continuously	due to the signal,resumable
16	Low pressure malfunction	low pressure switch acts for 30m	Need to be checked, reset

#### 12.2.2 Sensor malfunction

If indoor ambient temp. sensor and indoor pipe temp. sensor are valid, there is no outdoor sensor, in the following conditions, the unit will confirm the sensor is failure:

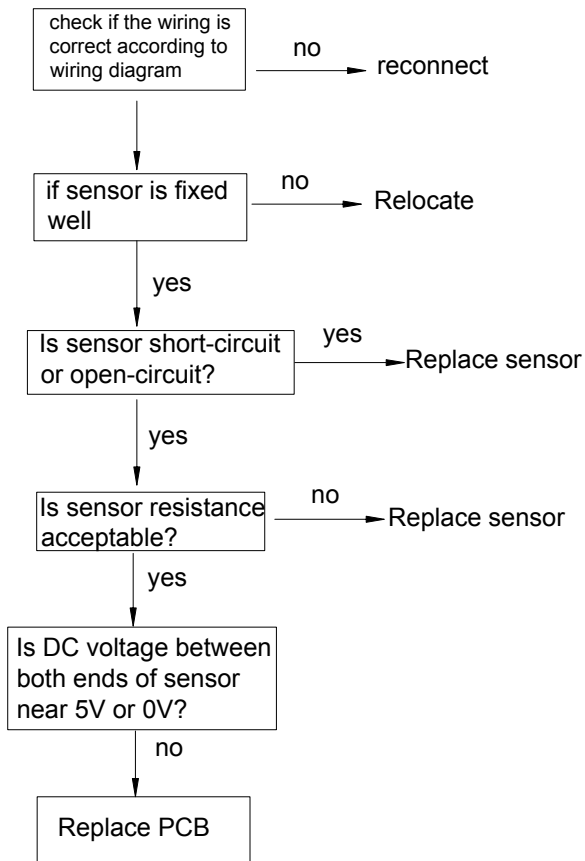
Mainboard checks that the sensor is in open circuit, short circuit or close to short circuit continuously for 2 minutes, the mainboard will confirm that sensor is failure, the system will stop running, alarm occurs; If the signal is resumed, the system will resume automatically.

If indoor ambient temp. sensor and indoor pipe temp. sensor is valid, also there is outdoor sensor, in the following conditions, the unit will confirm the sensor is failure:

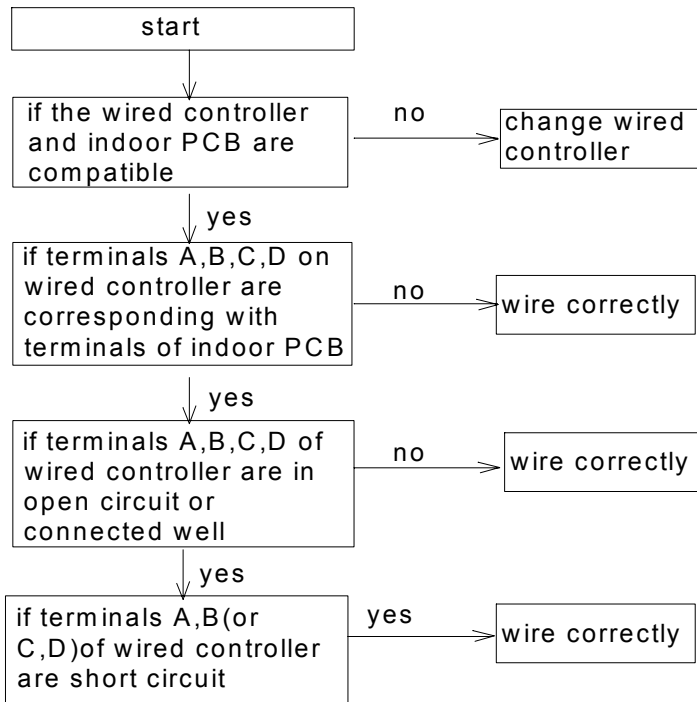
Mainboard checks that the outdoor pipe temp. sensor is in open circuit, short circuit or close to short circuit continuously for 2 minutes, the mainboard will confirm that sensor is failure, the system will stop running, alarm occurs; If the signal is resumed, the system will resume automatically.

Diagnose and troubleshooting:

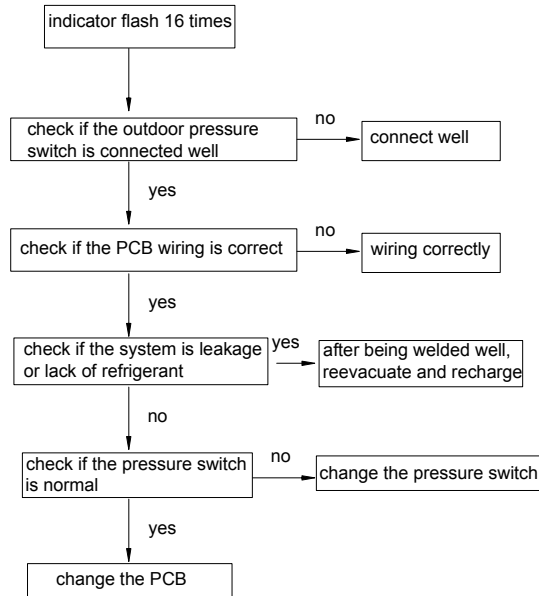
### 1) Sensor failure



### 2) Communication failure between operation panel and indoor unit



### 3) Low pressure abnormal



If there is other failure, please check if the dip switch is correct.

### 12.3 Typical resistance value of sensors

Indoor coil temperature sensor:  $R_{25^{\circ}\text{C}}=10\text{K}\Omega \pm 3\%$ ,  $B(25/50)=3741\text{K} \pm 70\text{K}$

temperature	value	temperature	value	temperature	value
-30°C	155.4	11°C	18.4	52°C	3.525
-29°C	146.4	12°C	17.59	53°C	3.402
-28°C	138.1	13°C	16.81	54°C	3.283
-27°C	130.2	14°C	16.08	55°C	3.17
-26°C	122.9	15°C	15.38	56°C	3.061
-25°C	116	16°C	14.71	57°C	2.956
-24°C	109.5	17°C	14.08	58°C	2.855
-23°C	103.5	18°C	13.48	59°C	2.759
-22°C	97.77	19°C	12.91	60°C	2.666
-21°C	92.44	20°C	12.36	61°C	2.577
-20°C	87.42	21°C	11.84	62°C	2.491
-19°C	82.71	22°C	11.35	63°C	2.408
-18°C	78.29	23°C	10.88	64°C	2.329
-17°C	74.12	24°C	10.43	65°C	2.253
-16°C	70.21	25°C	10	66°C	2.179
-15°C	66.52	26°C	9.592	67°C	2.108
-14°C	63.06	27°C	9.204	68°C	2.04
-13°C	59.79	28°C	8.833	69°C	1.975
-12°C	56.71	29°C	8.479	70°C	1.912
-11°C	53.81	30°C	8.141	71°C	1.851
-10°C	51.08	31°C	7.819	72°C	1.793
-9°C	48.5	32°C	7.511	73°C	1.737
-8°C	46.07	33°C	7.217	74°C	1.682
-7°C	43.77	34°C	6.936	75°C	1.63

-6°C	41.6	35°C	6.668	76°C	1.58
-5°C	39.55	36°C	6.411	77°C	1.531
-4°C	37.62	37°C	6.166	78°C	1.484
-3°C	35.79	38°C	5.931	79°C	1.439
-2°C	34.06	39°C	5.707	80°C	1.395
-1°C	32.43	40°C	5.492	81°C	1.353
0°C	30.88	41°C	5.287	82°C	1.313
1°C	29.42	42°C	5.09	83°C	1.274
2°C	28.03	43°C	4.902	84°C	1.236
3°C	26.72	44°C	4.722	85°C	1.2
4°C	25.48	45°C	4.549	86°C	1.164
5°C	24.3	46°C	4.383	87°C	1.13
6°C	23.18	47°C	4.225	88°C	1.098
7°C	22.12	48°C	4.073	89°C	1.066
8°C	21.12	49°C	3.927	90°C	1.035
9°C	20.17	50°C	3.788		
10°C	19.26	51°C	3.654		

Indoor ambient temperature sensor: R25°C=23K Ω ± 3.5%, B(25/5)=4177K± 103K

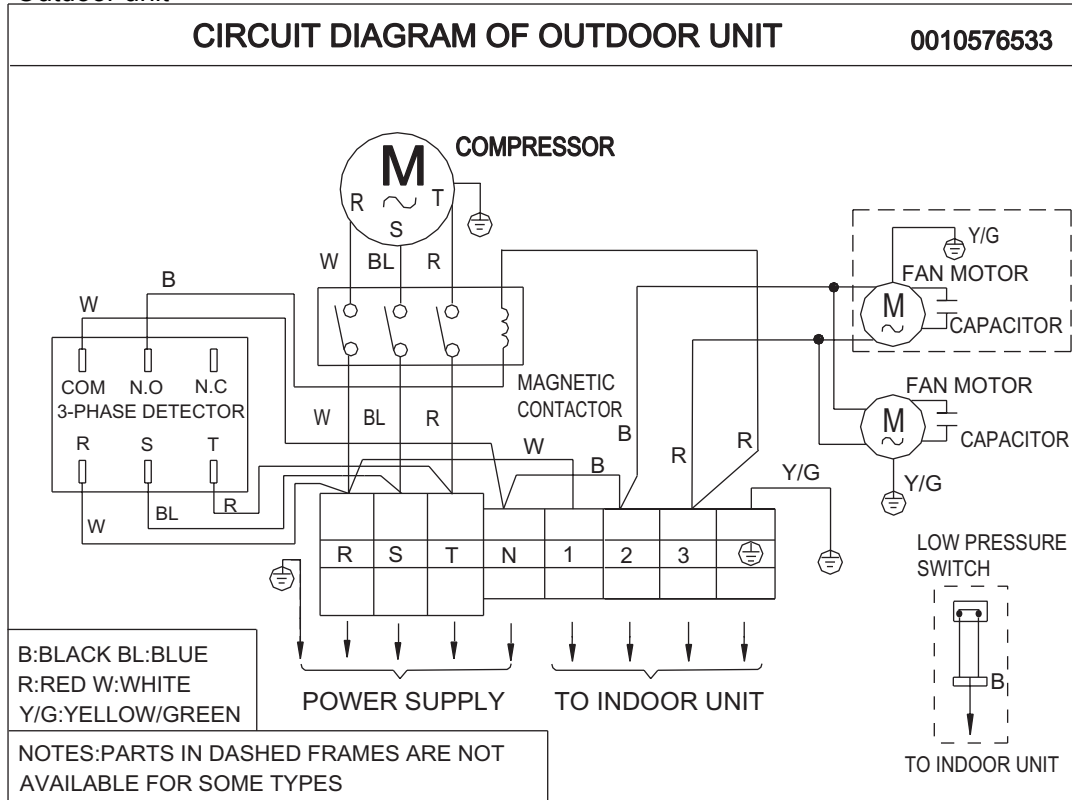
temperature	value	temperature	value	temperature	value
-20°C	251.8	16°C	35.31	52°C	7.178
-19°C	236.9	17°C	33.63	53°C	6.897
-18°C	223.1	18°C	32.04	54°C	6.628
-17°C	210.1	19°C	30.53	55°C	6.371
-16°C	197.9	20°C	29.1	56°C	6.125
-15°C	186.5	21°C	27.75	57°C	5.889
-14°C	175.9	22°C	26.47	58°C	5.664
-13°C	165.9	23°C	25.25	59°C	5.449
-12°C	156.5	24°C	24.1	60°C	5.243
-11°C	147.7	25°C	23	61°C	5.046
-10°C	139.5	26°C	21.96	62°C	4.857
-9°C	131.8	27°C	20.97	63°C	4.676
-8°C	124.5	28°C	20.03	64°C	4.502
-7°C	117.7	29°C	19.14	65°C	4.336
-6°C	111.3	30°C	18.3	66°C	4.177
-5°C	105.3	31°C	17.49	67°C	4.024
-4°C	99.63	32°C	16.73	68°C	3.878
-3°C	94.3	33°C	16	69°C	3.738
-2°C	89.3	34°C	15.3	70°C	3.603
-1°C	84.58	35°C	14.65	71°C	3.474
0°C	80.14	36°C	14.02	72°C	3.35
1°C	75.96	37°C	13.42	73°C	3.231
2°C	72.02	38°C	12.85	74°C	3.117
3°C	68.31	39°C	12.31	75°C	3.008
4°C	64.81	40°C	11.79	76°C	2.903

5°C	61.51	41°C	11.3	77°C	2.802
6°C	58.39	42°C	10.83	78°C	2.705
7°C	55.45	43°C	10.39	79°C	2.611
8°C	52.68	44°C	9.96	80°C	2.522
9°C	50.06	45°C	9.553		
10°C	47.58	46°C	9.165		
11°C	45.24	47°C	8.794		
12°C	43.02	48°C	8.441		
13°C	40.93	49°C	8.103		
14°C	38.95	50°C	7.78		
15°C	37.08	51°C	7.472		

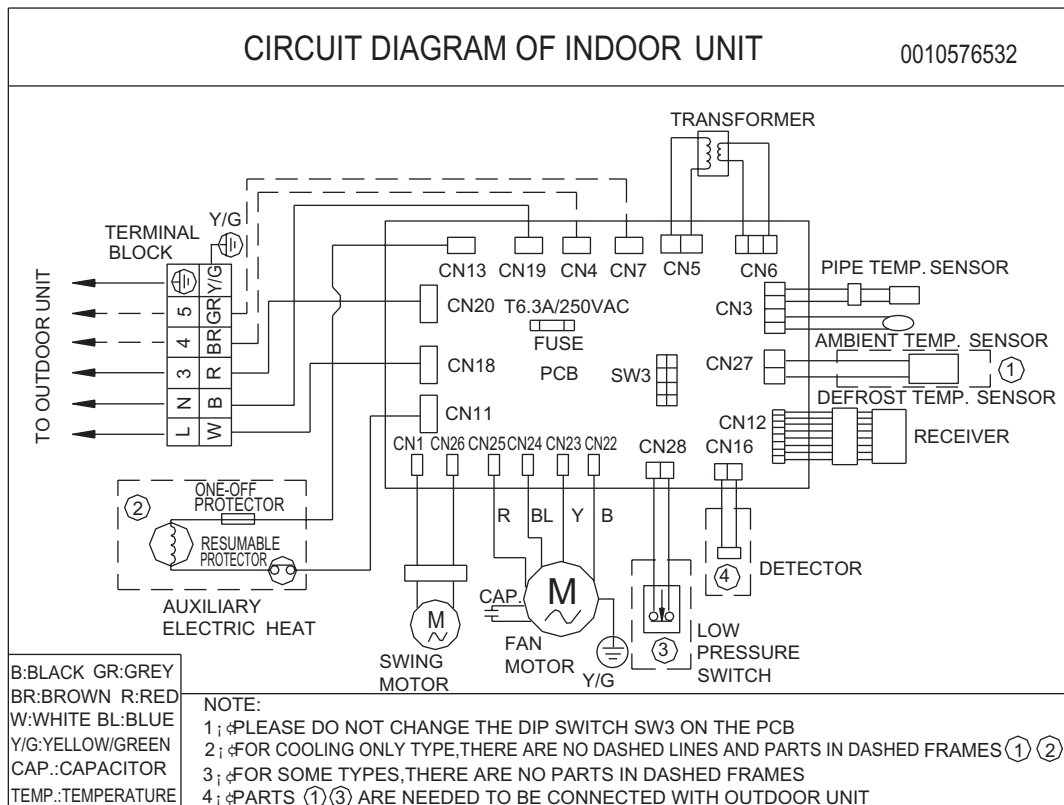
## 13. Electric data

### Wiring diagram

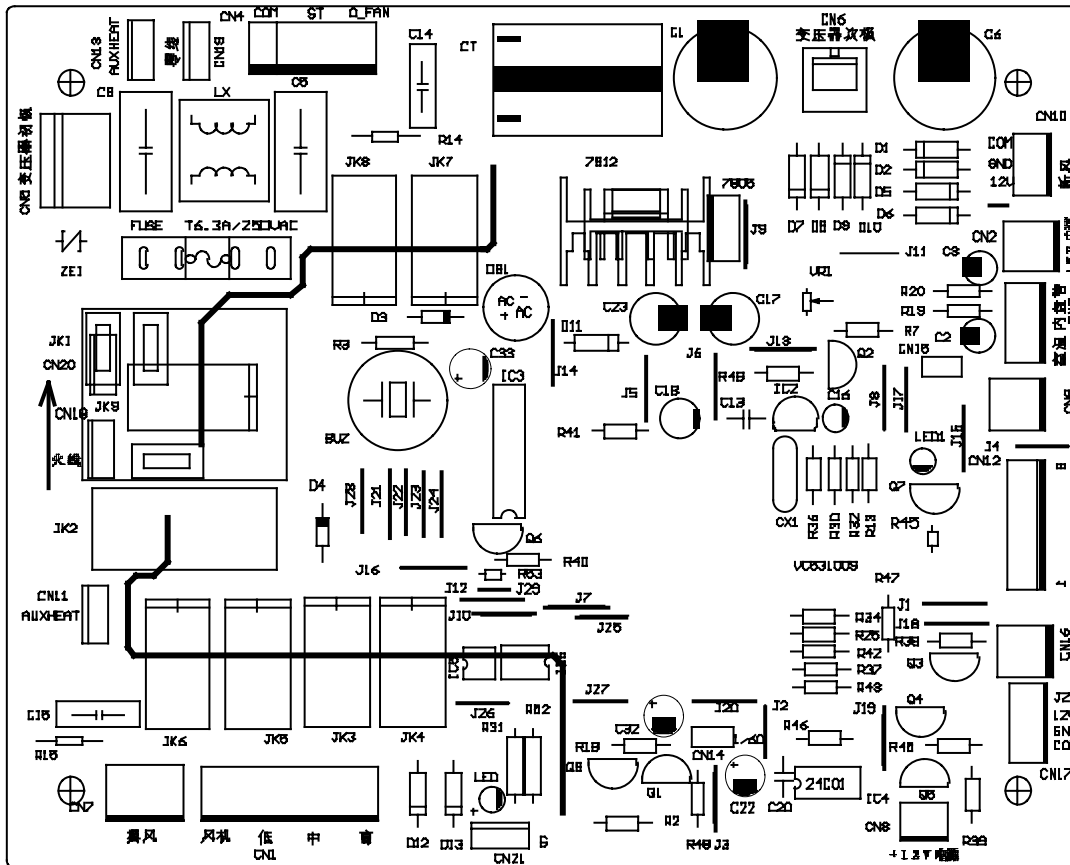
#### a. Outdoor unit



#### b. Indoor unit







Ports functions:

- CN1: live wire control port of swing motor
- CN3: connection port of ambient temp. sensor and coil temp. sensor
- CN4: control port of outdoor 4-way valve (not available for cooling only unit)
- CN5: connection port for primary side of transformer
- CN6: connection port for secondary side of transformer
- CN7: control port of outdoor motor (not available for cooling only unit)
- CN11: live wire control port for electric heater
- CN12: control port connecting to display board
- CN13: neutral wire connecting port of electric heater
- CN16: connection port for remote detector
- CN18: live wire input port for PCB
- CN19: neutral wire input port for PCB
- CN20: control port for outdoor compressor (also used to control outdoor motor for cooling only unit)
- CN22: High speed control port of indoor motor
- CN23: Med speed control port of indoor motor
- CN24: Low speed control port of indoor motor
- CN25: indoor motor neutral wire port
- CN26: swing motor neutral wire port
- CN27: outdoor defrosting sensor control port (not available for cooling only unit)
- CN28: outdoor low pressure switch control port

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