

Midea R410A T1 50Hz Split Type Full DC Inverter Side-discharge Series Technical Service Manual

Applicable Model:

Indoor unit

Outdoor unit

MHC-96HWD1N1(A)

MOUA-96HD1N1-R

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Part. 1 General information

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1. Model Names of Indoor/Outdoor Units

Type	Indoor unit		Outdoor unit	
	Model	Power supply	Model	Power supply
Hi-static pressure duct type	MHC-96HWD1N1(A)	220-240V~, 1Ph, 50Hz	MOUA-96HD1N1-R	380-415V~, 3Ph, 50Hz

2. External Appearance

2.1 Indoor units

MHC-96HWD1N1(A)



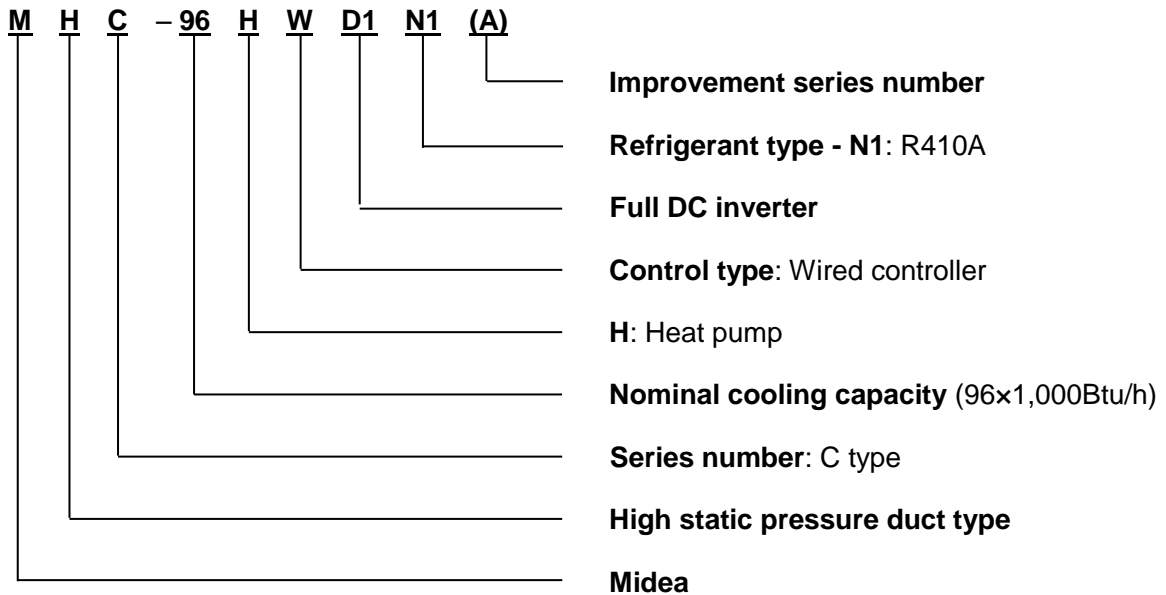
2.2 Outdoor unit

MOUA-96HD1N1-R

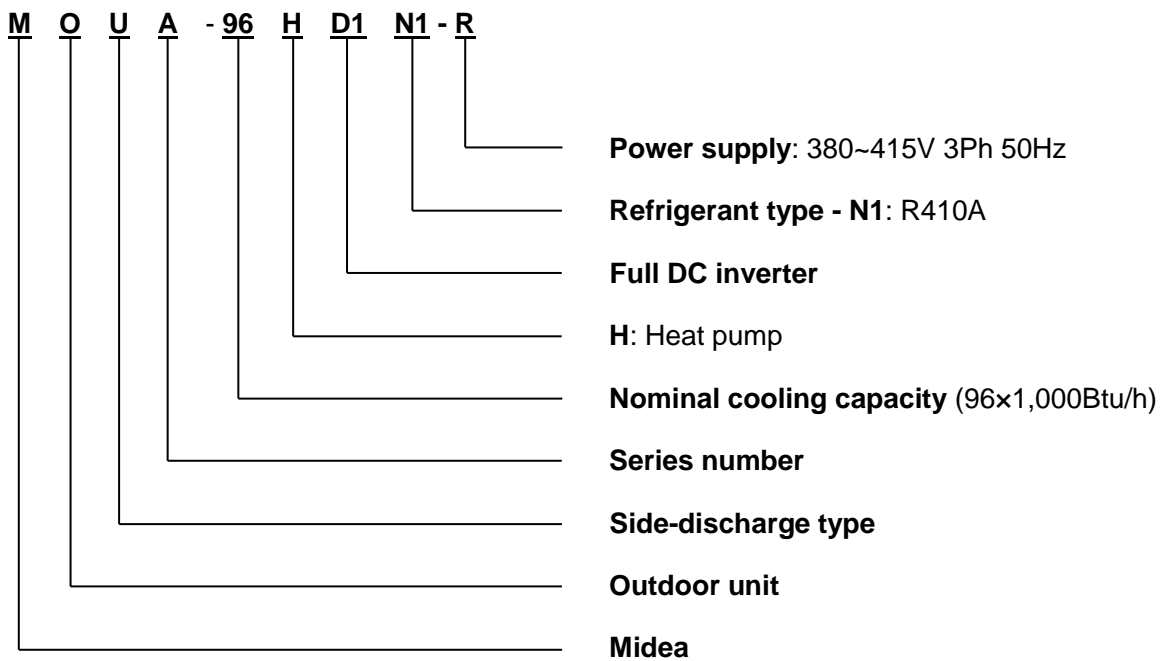


3. Nomenclature

3.1 Indoor unit



3.2 Outdoor unit



Part. 2 Outdoor Unit

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1. Specifications

Model		\	MOUA-96HD1N1-R
Power supply		V, Ph, Hz	380-415V~, 3Ph, 50Hz
Ambient temp in cooling		°C	-15~48
Ambient temp in heating		°C	-15~24
Rated input (Whole units)		W	11,700
Rated current (Whole units)		A	16
Compressor	Model	\	LNB53FCAMC
	Type	\	Rotary
	Brand	\	MITSUBISHI
	Quantity	\	1
	Capacity	kW	16.86
	Input	kW	5.2
	Crankcase heater	W	25
	Refrigerant oil type	\	FV50S
	Refrigerant oil charge	mL	1700 + 1500
Outdoor fan motor	Model	\	WZDK170-38G-1
	Type	\	DC
	Quantity	\	2
	Brand	\	Panasonic
	Insulation class	\	E
	Safe class	\	IP x 4
	Input	W	250(up)/185(down)
	Output	W	200(up)/150(down)
	Rated current	A	1.7(up)/1.4(down)
Outdoor fan	Material	\	Plastic
	Type	\	Axial fan
	Quantity	\	2
	Diameter	mm	560
	Height	mm	170
Outdoor coil	Number of rows	\	2
	Tube pitch(a)xrow pitch(b)	mm	21 x 19.4
	Fin spacing	mm	1.5
	Fin type	\	Hydrophilic fin
	Tube outside diameter	mm	Φ7
	Tube type	\	Inner groove tube
	Length x height	mm	1080 x 756
	Number of circuits	\	18
Outdoor air flow		m ³ /h	9800
Sound pressure level		dB(A)	59
Outdoor unit	Net dimension(WxDxH)	mm	1120x1558x528
	Packing dimension(WxDxH)	mm	1270x1720x565
	Net/Gross weight	kg	148/164

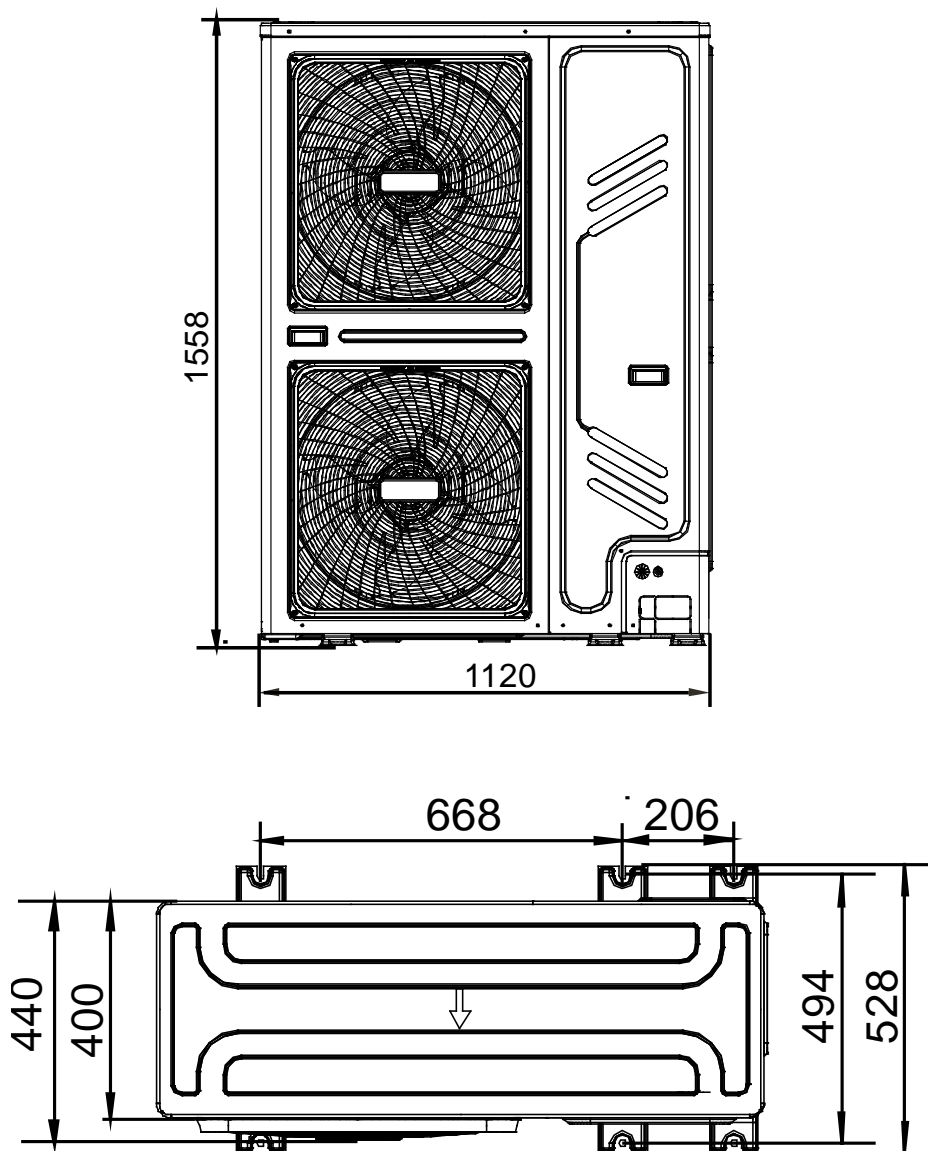
Specification:

Refrigerant	Type	\	R410a
	Factory charged	kg	7.2
Throttle type		\	Electronic expansion valve
Design pressure (Hi/Lo)		MPa	4.4/2.6
Refrigerant piping	Liquid pipe	mm	Φ9.53
	Gas pipe	mm	Φ25.4

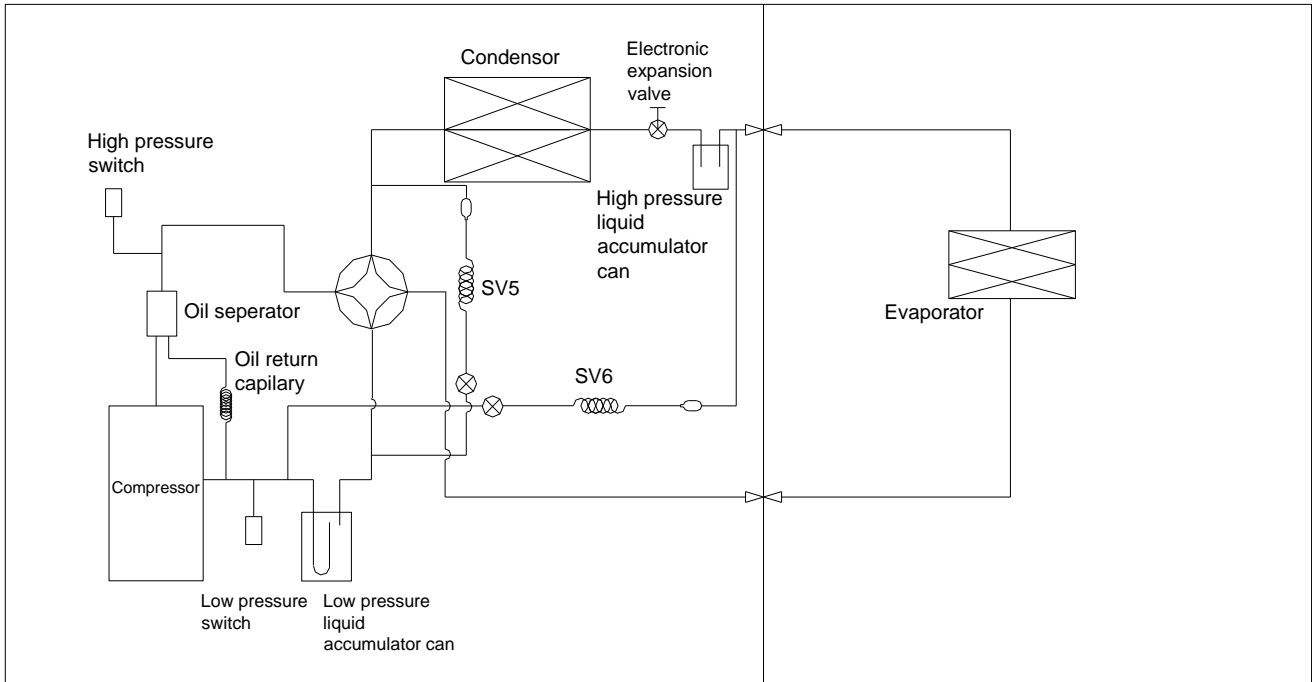
Note:

1. The nominal cooling capacity is based on the following conditions: Indoor temperature, 27°C DB, 19°C WB; Outdoor temperature, 35°C DB, 24°C WB.
2. The nominal heating capacity is based on the following conditions: Indoor temperature, 20°C DB, 15°C WB; Outdoor temperature, 7°C DB, 6°C WB
3. The noise is measured in the semi noise suppression lab.
4. Specifications are subject to change without prior notice for product improvement.

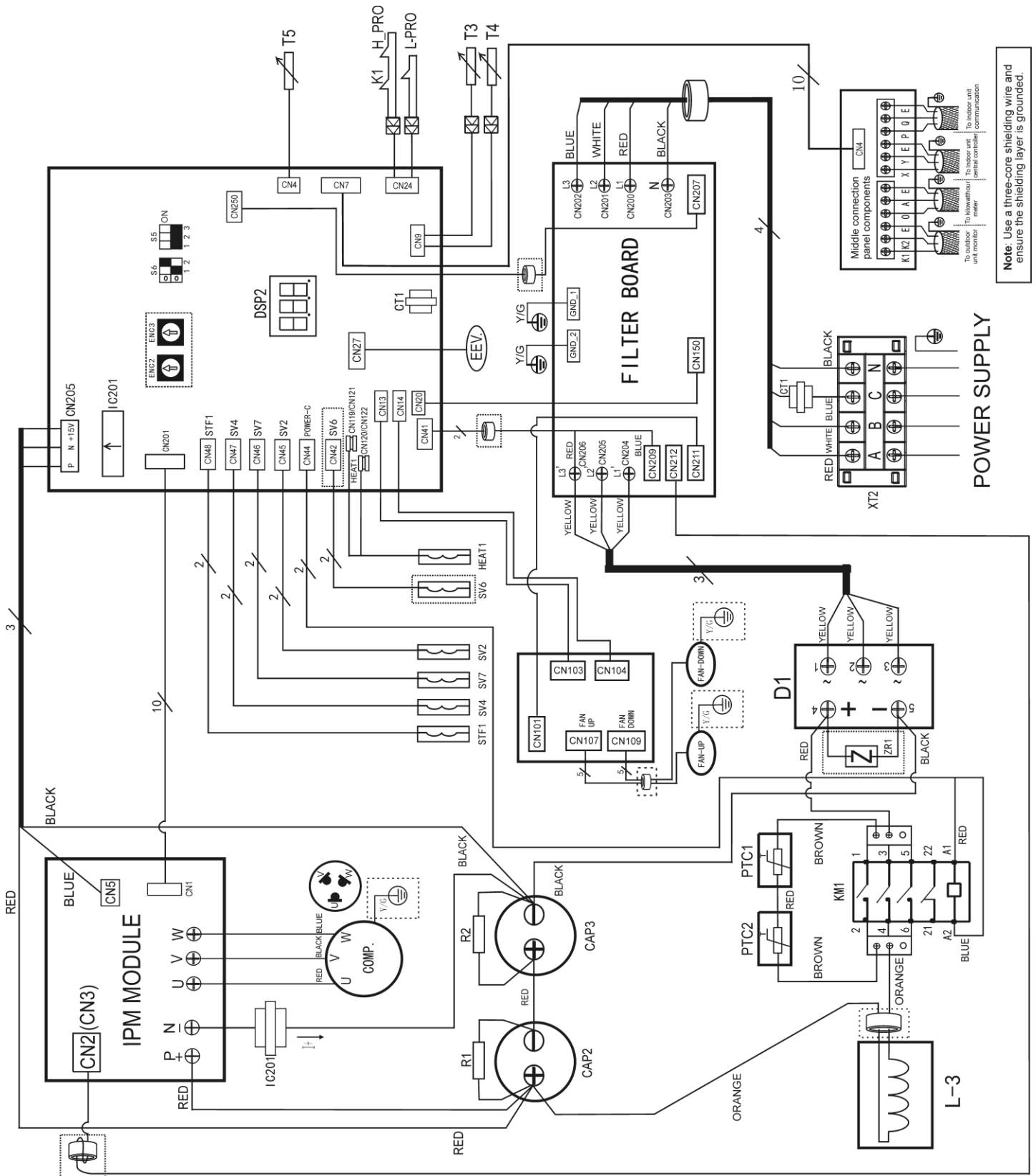
2. Dimension (Unit: mm)



3. Refrigerant circuit



4. Wiring Diagrams



Note: Use a three-core shielding wire and ensure the shielding layer is grounded.

Dial-up function definition

S5 function definition		S6 function definition	
	Heating priority mode (set by factory default)		Automatic addressing
	Cooling priority mode		Non-automatic addressing (set by factory default)
	Initial-start priority mode		Clear indoor unit address
	Heating only mode		
	Cooling only mode		

ENC2 function definition (Dial-up cannot be changed)		ENC3 function definition	
	Indoor unit capacity dial-up 0: 8HP (25.2kW/26kW) 1: 10HP (28kW) F: 7HP (22.4kW)		Outdoor unit network address dial-up 0-F indicates 0-15

Code	Name	Code	Name
COMP.	Inverter compressor	T5	Inverter compressor discharge temperature sensor
FAN-UP, FAN-DOWN	Fan motor	KM(B)	Contactator
STF1	4-way valve	E1, E2	Filter capacity
SV(2,4,5,6,7)	Solenoid valve	R1, R2	Cement resistor
EEV	Electric expansion valve	PTC	Thermal resistor
HEAT1	Crankcase heating	XT2	Big 4-phase terminal
L-PRO	Pipeline low pressure switch	L-3	Reactor
H-PRO	Pipeline high pressure switch	CT1, IC201	Current instrument transformer
K1	Discharge temperature switch	BD-1	Bridge rectifier
XS1-XS2, XP1-XP2	Middle terminal	ZR10	Varistor
T3	Piping temperature sensor	C1, C2	Ferrite core
T4	Outdoor ambient temperature sensor		

Contents displayed by DSP2

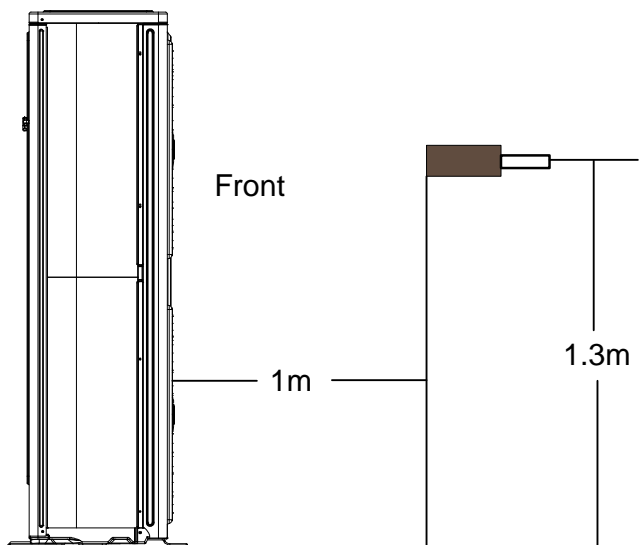
H0	COMM. Fault between IR341 and main chip.
H1	COMM. Fault between communication chip and main chip.
H4	3 times of P6 protection in 30 minutes.
H5	3 times of P2 protection in 30 minutes.
H7	The number of indoor units decreases.
H8	Reserved.
HF	M-HOME for the indoor and outdoor units does not match.
E1	Reserved.
E2	Communication fault between the outdoor and indoor units.
E4	T3 & T4 temperature sensor fault.
E5	Voltage protection fault or a leak of Phase B, Phase N.
E6	DC fan motor fault.
E7	Discharge temperature sensor fault.
EA	A fan in the A region run for more than 5 minutes in Heating mode.
Eb	2 times of E6 protection in 10 minutes.
P0	Inverter compressor top high temperature protection.
P1	High pressure protection.
P2	Low pressure protection.
P3	Outdoor input current protection.
P4	Compressor discharge high temperature protection.
P5	Outdoor condenser high temperature protection.
P6	Inverter module protection.
P8	Typhoon protection.
PE	Evaporator high temperature protection.

5. Electric Characteristics

Model	Outdoor Unit				Power Supply			Compressor		OFM	
	Hz	Voltage	Min.	Max.	MCA	TOCA	MFA	MSC	RLA	KW	FLA
MOUA-96HD1N1-R	50	380-415V	342V	440V	/	23	40	/	15.4	0.17	1.7

Note:**MCA: Min. Current Amps. (A)****MFA: Max. Fuse Amps. (A)****RLA: Rated Locked Amps. (A)****FLA: Full Load Amps. (A)****TOCA: Total Over-current Amps. (A)****MSC: Max. Starting Amps. (A)****OFM: Outdoor Fan Motor****KW: Rated Motor Output (kW)**

6. Sound Levels



Unit Number	Model	Noise level under three speeds of fan (dB(A))
1	MOUA-96HD1N1-R	59

7. Accessories

Accessory name of outdoor unit	Qty.	Purpose
Connection pipe	1	Connecting pipe of system
Curved connection pipe	1	

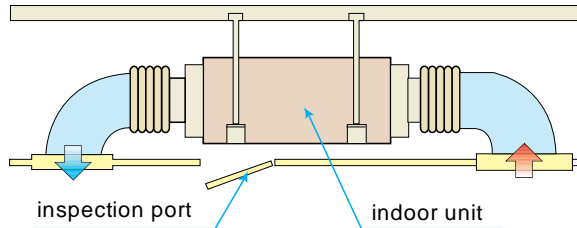
Part. 3 Indoor Unit

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1. Features

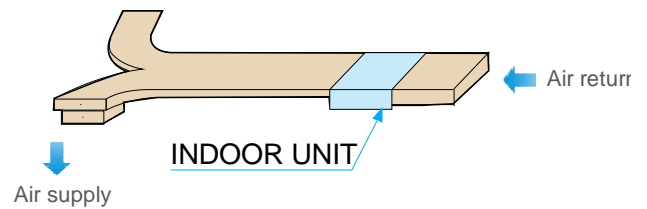
1.1 Compact design & convenient installation

- ✧ Convenient installation, hidden in the ceiling, unit installation is not hindered by the location of lighting fixtures or room structure.
- ✧ Air inlet and outlet flanges are standard and easy for duct connection.



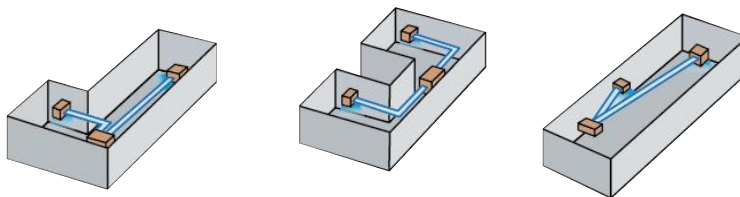
1.2 External static pressure

- ✧ Three speed fan motor.
- ✧ External static pressure is up to 150Pa.
- ✧ The indoor air flow is up to 4800m³/h.



1.3 Flexible duct design for different room styles

- ✧ Multi diffusers from one indoor unit supply airflow to multi rooms at the same time. The unit is suitable for various applications, such as restaurants, connect halls and hotels.



1.4 High efficient DC fan motor

- ✧ High energy efficient thanks to the DC fan motor.
- ✧ Contrast with the AC fan motor, the power consumption of DC fan motor can reduce up to 50%.



1.5 Optimized electronic control board

- ✧ Equipped with remote ON/OFF and remote Alarm connection terminal.
- ✧ Compatible with central controller CCM03/CCM30.
- ✧ Equipped with a fresh air fan motor joint control terminal.



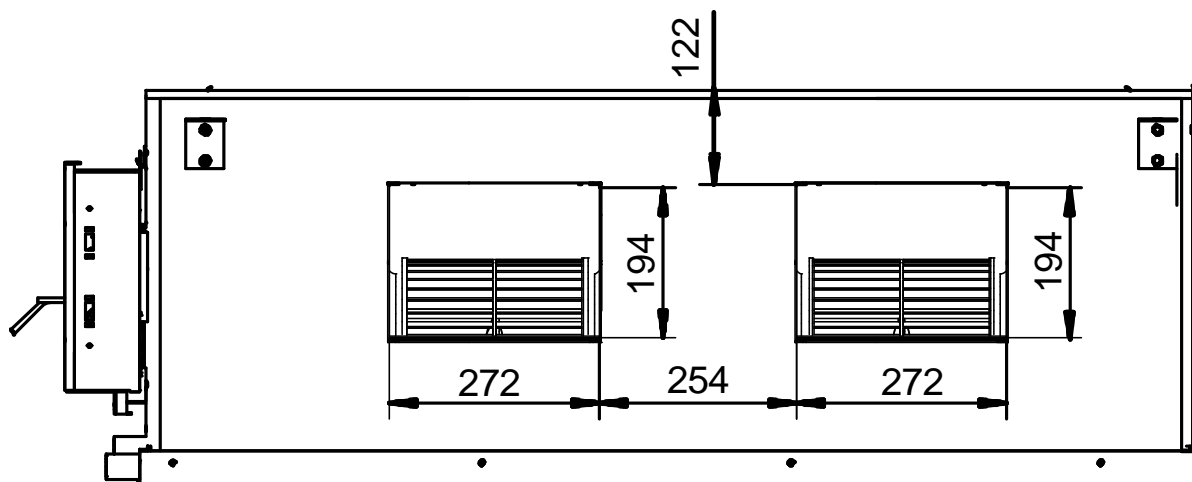
2. Specifications

Model		MHC-96HWD1N1(A)	
Power supply		V, Ph, Hz	220~240V, 1Ph, 50Hz
Cooling	Capacity	W	28,000
	Input	W	9,000
	EER	W/W	3.11
Heating	Capacity	W	31,500
	Input	W	8,500
	COP	W/W	3.71
Rated input		W	850
Rated current		A	4.5
Indoor fan motor	Model	\	WZDK750-38GS-W
	Brand	\	Panasonic
	Quantity	\	1
	Speed	r/min	1200/1160/1090
Indoor coil	Number of rows	\	4
	Tube pitch(a)xrow pitch(b)	mm	25.4x22
	Fin spacing	mm	1.5
	Fin type	\	Hydrophilic aluminum fin
	Tube size	mm	Φ9.52
	Tube type	\	Inner grooved copper pipe
	Coil(WxH)	mm	1,202x457.2
Number of circuits		\	18
Indoor air flow		m ³ /h	3000~4800
External static pressure		Pa	0~150
Indoor noise level		dB(A)	49~52
Refrigerant		\	R410A
Design pressure		MPa	4.4/2.6
Refrigerant pipe	Liquid side / Gas side	mm	Φ9.52/Φ25.4
	Max. refrigerant pipe length	m	50
	Max. difference in level (Outdoor upper)	m	25
	Max. difference in level (Outdoor lower)	m	30
Connection wire	Power wire	\	5x4.0mm ² (outdoor), 3x2.5mm ² (indoor)
	Signal wire	\	3x0.75mm ²
Drain pipe size (OD)		mm	Φ31(outdoor), Φ33(indoor)
Controller		\	KJR-29B1/BK-E (Wired controller)
Operation temperature		°C	17~30
Indoor unit	Dimension (W x H x D)	mm	1,470x512x775
	Packing (W x H x D)	mm	1,555x545x875
	Net/Gross weight	kg	83/92

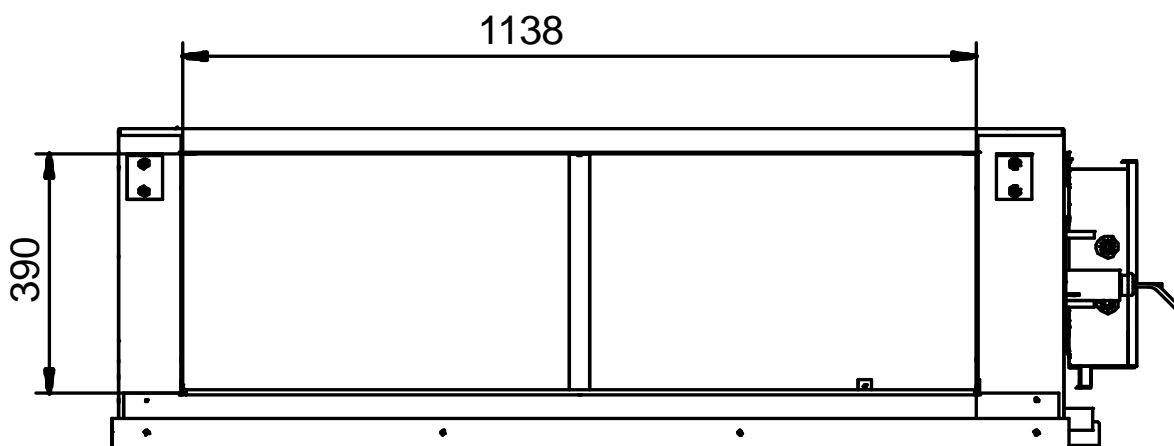
Note:

- The nominal cooling capacity is based on the following conditions.
Indoor temperature: 27°C DB, 19°C WB; Outdoor temperature: 35°C DB, 24°C WB.
- The nominal heating capacity is based on the following conditions.
Indoor temperature: 20°C DB, 15°C WB; Outdoor temperature: 7°C DB, 6°C WB
- The noise is measured in the semi noise suppression lab.
- Specifications are subject to change without prior notice for product improvement.

3. Dimensions (Unit: mm)

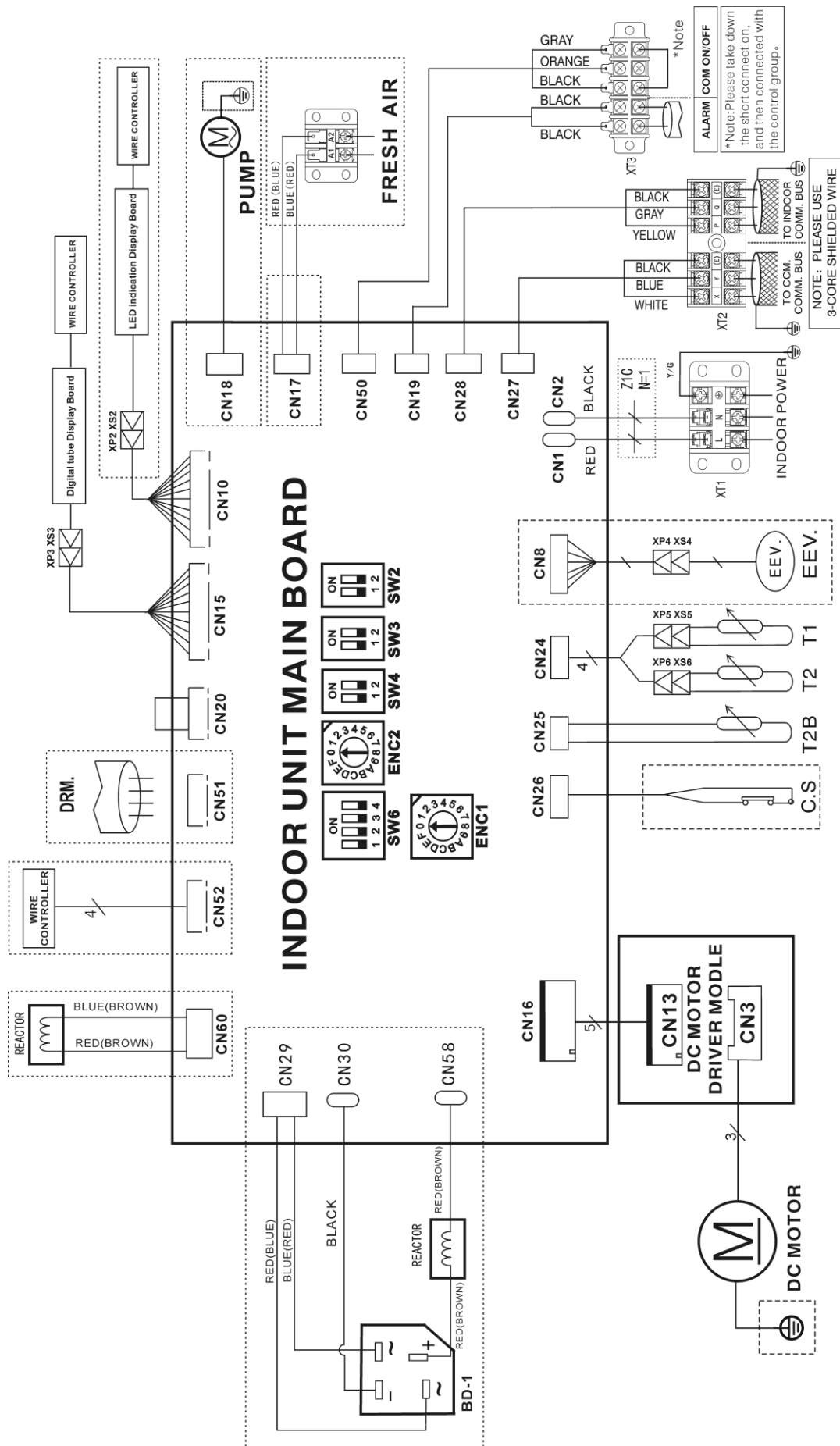


Air outlet duct connection screw hole location diagram



Return air duct rivet screw hole location diagram

4. Wiring Diagrams

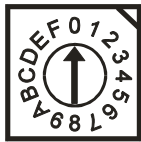
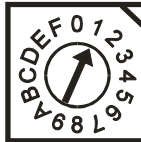
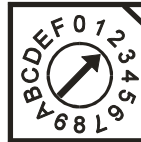
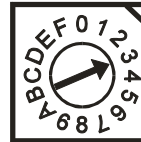
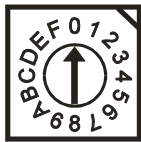
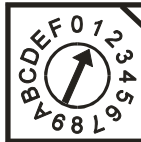
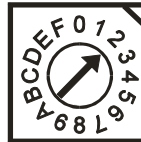
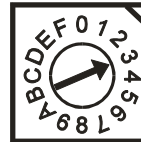














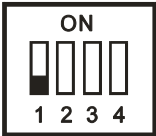
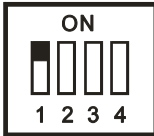





Error Code & Indication

Mode Conflict	Defrost_LED Flash or Show [E0]
Communication Error Between Indoor and Outdoor Unit	Time_LED Flash or Show [E1]
Temp. sensor (T1) Error	Run_LED Flash or Show [E2]
Temp. sensor (T2) Error	Run_LED Flash or Show [E3]
Temp. sensor (T2B) Error	Run_LED Flash or Show [E4]
Fan Protection	Time_LED Flash Slowly or Show [E6]
EEprom Error	Defrost_LED Flash Slowly or Show [E7]
Outdoor Unit Error	Alarm_LED Flash Slowly or Show [Ed]
Water Level Error	Alarm_LED Flash or Show [EE]

CODE	TITLE
C.S	WATER LEVEL SWITCH
EEV.	EXPANSION VALVE
T1	ROOM TEMP.
T2B	OUTER PIPE TEMP.
T2	MIDDLE PIPE TEMP.
PUMP	PUMP MOTOR
XP2-6	CONNECTOR
XS2-6	CONNECTOR
XT1-3	TERMINAL
BD-1	BRIDGE RECTIFIER

Function setting indication

For Setting Power				
ENC1				
Code	0	1	2	3
POWER	8HP	10HP	12HP	14HP
Factory setting	According to related model			
For Setting Static Pressure				
ENC2				
Code	0	1	2	3
POWER	0~50	51~80	81~120	121~150
Factory setting	✓			
For Setting Anti Cold Air Mode				
SW2				
TYPE	15°C	20°C	24°C	26°C
Factory Setting	✓			

For Setting TERMINAL Fan ON/OFF Interval				
SW3				
TYPE	2min	4min	6min	Fan Running
Factory Setting	✓			
For Heat Mode Temp. Compensation				
SW4				
TYPE	6°C	2°C	4°C	0°C
Factory Setting	✓			
SW6-1				
TYPE	Digital Tube Display Board (New Display Board)		LED Indication Display Board (Old Display Board)	
Factory Setting	✓			
SW6-2 SW6-3 SW6-4				
TYPE	RESERVED			
Factory Setting	✓			
For Setting Auto-Restart				
J1				
Mode	Auto		Non-auto	
Factory Setting	✓			
For Setting Auto-Restart				
J2				
Mode	One for One		Multi Split	
Factory Setting	✓			

5. Capacity Table

Cooling mode:

Indoor temperature			Outdoor temperature (DB °C)						
DB (°C)	WB (°C)		21.0	28.0	35.0	43.0	46.0	52.0	54.0
21.0	15.0	TC(kW)	28.84	27.44	26.04	24.92	24.08	22.68	21.00
		SC(kW)	21.34	21.13	20.83	20.93	20.47	19.96	18.90
		S/T	0.74	0.77	0.80	0.84	0.85	0.88	0.90
		PW(kW)	7.47	8.10	8.46	8.73	9.09	9.72	10.17
24.0	17.0	TC(kW)	29.68	28.28	26.88	25.20	24.64	23.24	21.84
		SC(kW)	22.26	22.06	21.77	21.17	20.94	20.45	19.66
		S/T	0.75	0.78	0.81	0.84	0.85	0.88	0.90
		PW(kW)	7.92	8.46	8.82	9.27	9.63	10.17	10.62
27.0	19.0	TC(kW)	30.24	28.84	28.00	26.04	25.48	24.08	22.68
		SC(kW)	22.38	22.21	21.84	21.35	21.15	20.71	19.73
		S/T	0.74	0.77	0.78	0.82	0.83	0.86	0.87
		PW(kW)	8.10	8.55	9.00	9.45	9.81	10.08	10.80
29.0	19.0	TC(kW)	30.52	29.12	28.56	26.32	25.62	24.36	22.96
		SC(kW)	25.64	24.75	24.56	23.95	24.08	23.39	22.27
		S/T	0.84	0.85	0.86	0.91	0.94	0.96	0.97
		PW(kW)	8.28	8.73	9.09	9.63	10.17	10.62	11.07
32.0	23.0	TC(kW)	30.80	29.68	29.12	26.88	26.04	25.20	23.52
		SC(kW)	26.18	25.82	25.63	25.00	25.00	24.44	23.28
		S/T	0.85	0.87	0.88	0.93	0.96	0.97	0.99
		PW(kW)	8.46	8.82	9.45	9.81	10.35	11.07	11.34

Notes:

1. DB = Dry Bulb Temperature (°C), WB = Wet Bulb Temperature (°C)
2. TC = Total Capacity (kW)
3. SC = Sensible Capacity (kW)

Heat pump mode:

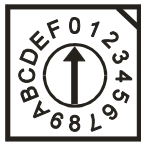
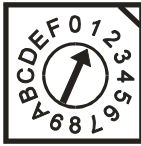
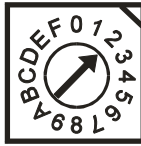
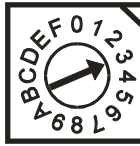
Indoor temperature	Outdoor temperature (DB °C / WB °C)									
	24/18		7/6		2/1		-5/-6		-7/-8	
DB (°C)	TC(kW)	PW(kW)	TC(kW)	PW(kW)	TC(kW)	PW(kW)	TC(kW)	PW(kW)	TC(kW)	PW(kW)
15	40.95	9.18	33.08	7.91	27.09	6.80	24.57	6.38	23.00	6.04
20	39.69	10.03	31.50	8.50	25.52	7.48	23.94	6.89	22.05	6.46
27	37.17	10.63	29.61	9.18	23.94	8.08	23.31	7.48	20.79	6.97

Notes:

1. DB = Dry Bulb Temperature (°C)
2. TC = Total Capacity (kW)
3. SC = Sensible Capacity (kW)

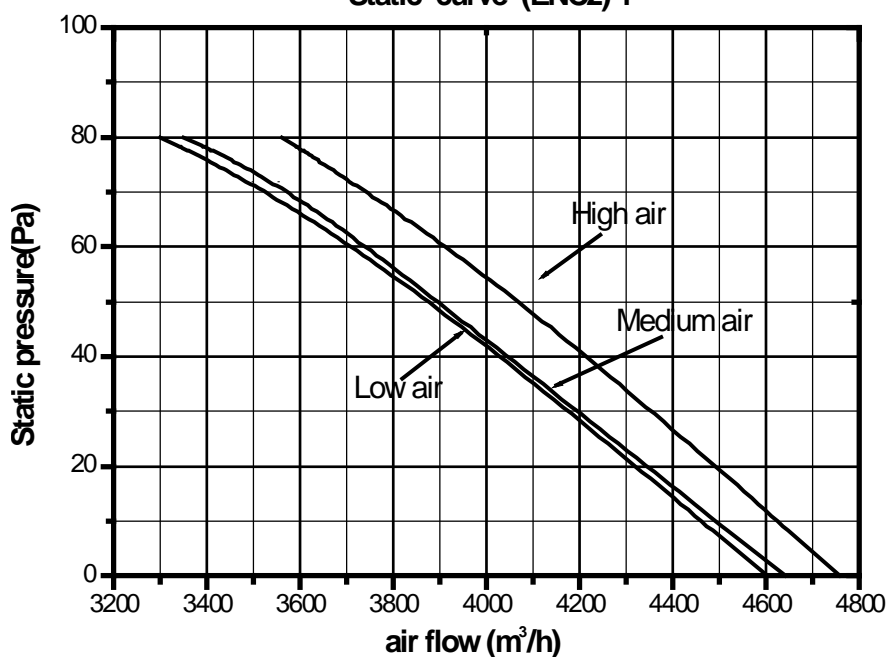
6. Static Pressure Curve

The corresponding table of electronic control dial code and static pressure range is shown below.

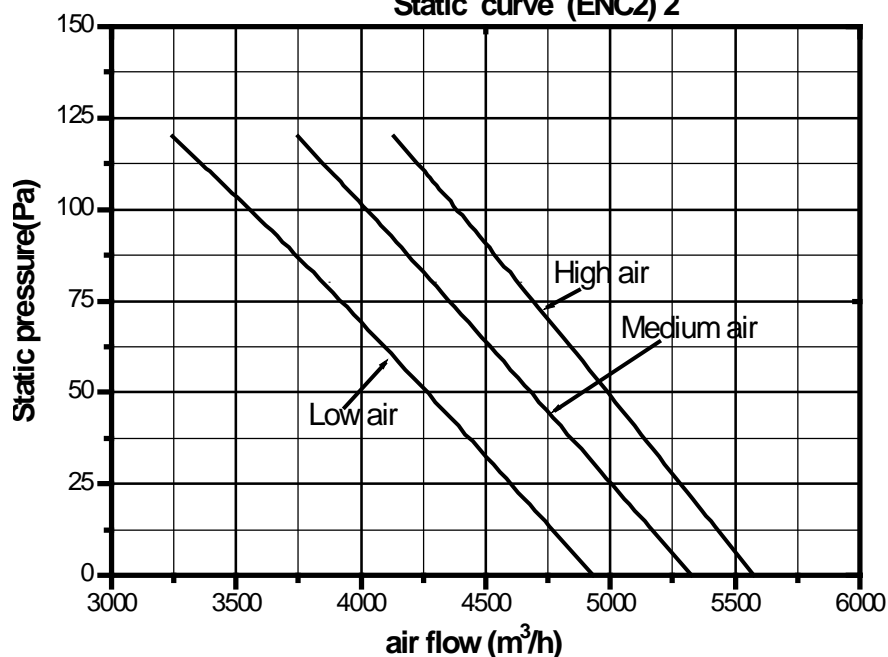
For Setting Static Pressure				
ENC2				
Code	0	1	2	3
POWER	0~50	51~80	81~120	121~150
Factory setting	✓			

Before starting the operation, the installer must set the electronic control dial code based on the actual value of the static pressure of the product .Otherwise, there will be problems.

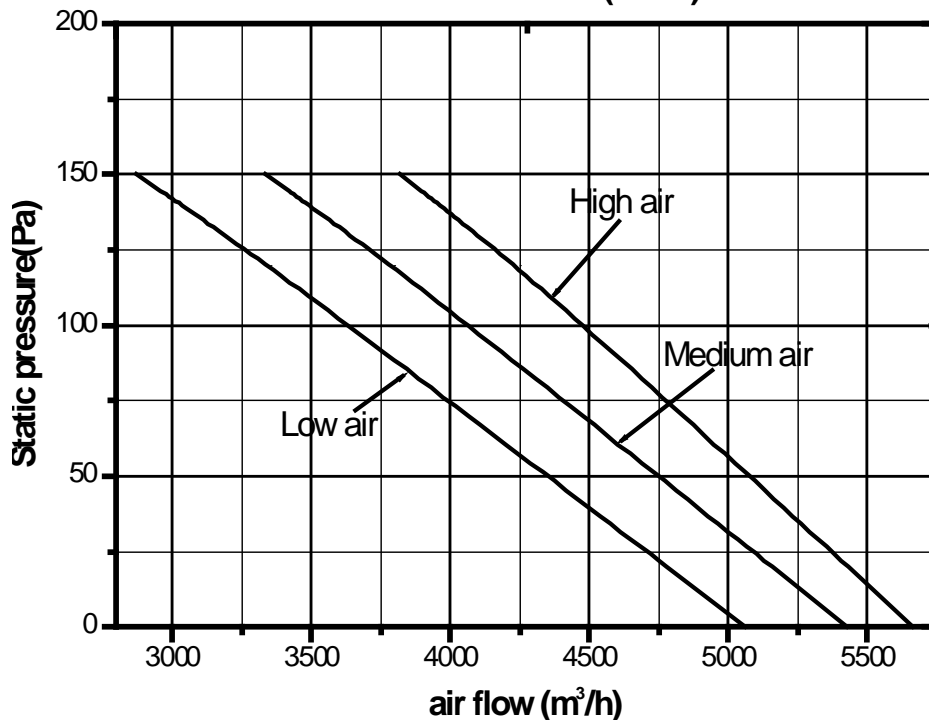
Static curve (ENC2) 1



Static curve (ENC2) 2



Static curve (ENC2) 3



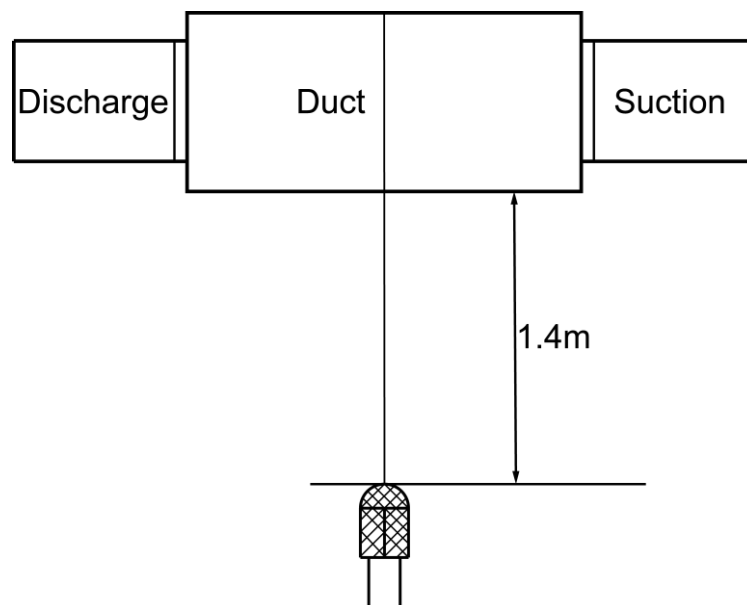
7. Electric Characteristics

Model	Indoor Unit				Power Supply		IFM	
	Hz	Voltage	Min.	Max.	MCA	MFA	kW	FLA
MHC-96HWD1N1(A)	50	220-240V	198V	254V	/	15	0.75	5.1

Note:

- MCA: Min. Current Amps. (A)
- MFA: Max. Fuse Amps. (A)
- IFM: Indoor Fan Motor
- kW: Fan Motor Rated Output (kW)
- FLA: Full Load Amps. (A)

8. Sound Levels



Unit Number	Model	Noise level under three speeds of fan (dB(A))
1	MHC-96HWD1N1(A)	49~52

9. Accessories

Accessory name of indoor unit	Qty.	Purpose
Owner' manual	1	
Installation manual	1	
Sealing tape	1	Sealed tube interface
Water connective pipe	1	Connect to water drainage pipe
Protective sleeve for refrigerant inlet and outlet pipes	2	
Wired controller	1	
Copper nut	1	Connect to liquid-side pipe
Water outlet connection pipe	1	Centralized drainage
Straight screwdriver	1	Inspection and DIP
Sealing ring	1	Centralized drainage
Waterproof chassis cover	2	Chassis auxiliary drainage plug

Part. 4 Installation & Troubleshooting

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8. Trouble shooting	36

1. Notes

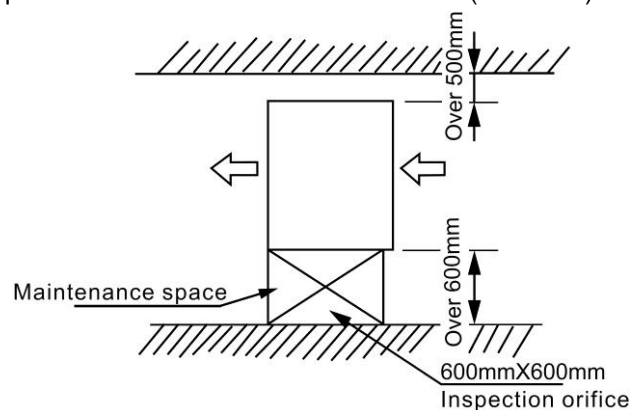
CAUTION:

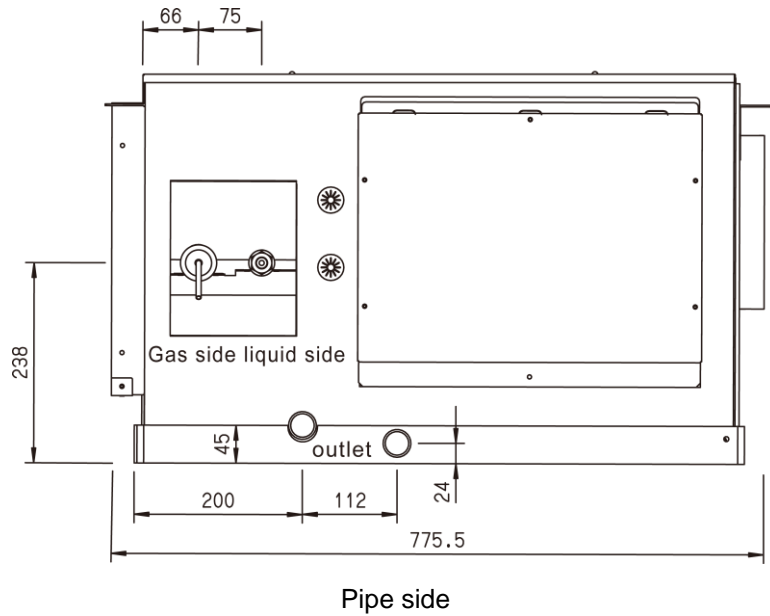
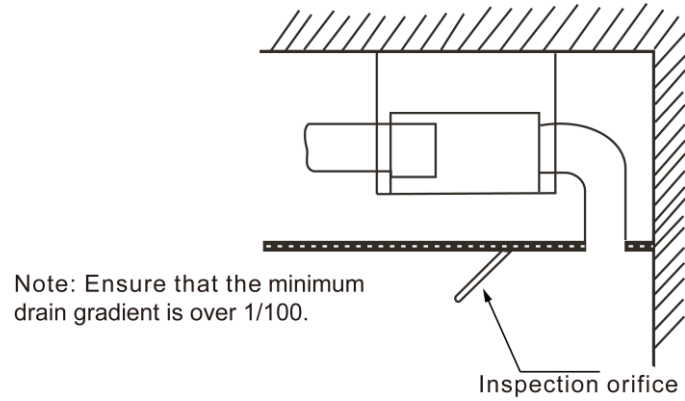
- Install the unit where enough space of installation and maintenance is available.
- Install the unit where the air inlet and outlet are not baffled and the least affected by external air.
- Install the unit where the supply air flow can be sent to all parts in the room.
- Install the unit where no heat is emitted from a heat source directly.
- Installing the equipment in any of the following places may lead to faults of the equipment (if that is inevitable, consult the supplier):
 - ✓ The site contains mineral oils such as cutting lubricant.
 - ✓ Seaside where the air contains much salt.
 - ✓ Hot ring area where corrosive gases exist, e.g., sulfide gas.
 - ✓ Factories where the supply voltage fluctuates seriously.
 - ✓ Inside a car or cabin.
 - ✓ Place like kitchen where oil permeates.
 - ✓ Place where strong electromagnetic waves exist.
 - ✓ Place where flammable gases or materials exist.
 - ✓ Place where acid or alkali gases evaporate, or other special environments.
 - ✓ Other special environments.
- Install the unit where the air inlet and air outlet are free from obstacles and strong wind.
- Install the unit in a dry and well ventilated place.
- Install the unit where the bearing surface is level and can bear weight of the unit, and is suitable for installing the unit horizontally without increasing noise or vibration.
- Install the unit where the operation noise and the expelling of air do not affect neighbors.
- Install the unit where no flammable gas is leaked.
- Install the unit where it is convenient for pipe connection and electric connection.

2. Installation of Duct Type Indoor Units

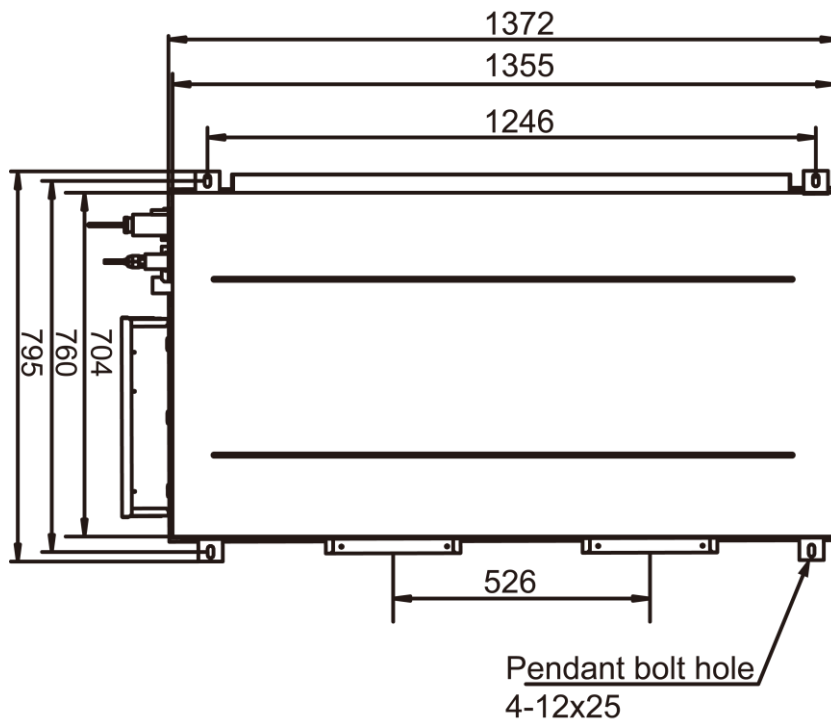
2.1 Installing space

Ensure enough space required for installation and maintenance. (Unit: mm)





2.2 Install $\Phi 10$ pendant bolts or ground bolts

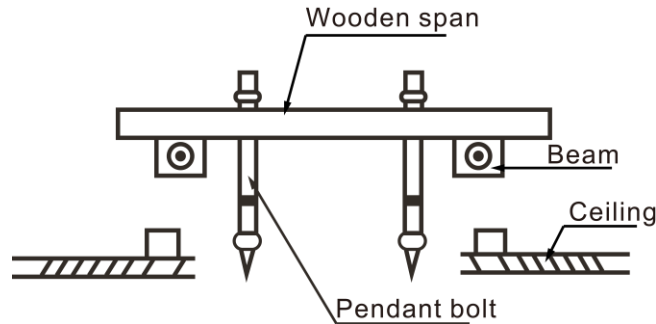


- Use $\Phi 10$ or bigger screws. The screw material is high-quality carbon steel (whose surface is zinc plated or undergoes other rustproof treatment) or stainless steel.

- The treatment of the ceiling varies between buildings. For detailed measures, consult with the fitting-out staff.
- Fix the pendant bolts firmly and reliably in light of the specific situation.
- Installation of the pendant bolt in different environments.

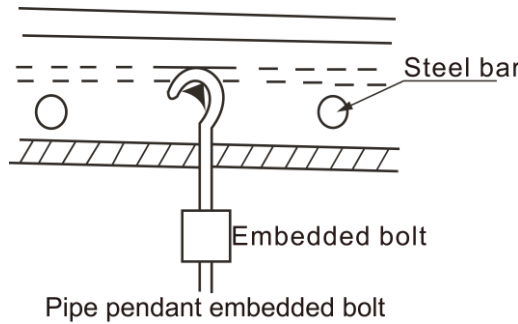
A. Wooden structure

Put rectangular sticks across the beams, and set pendant bolts.



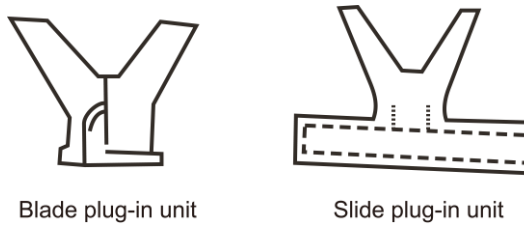
B. New concrete roughcast

Use embedded bolts, embedded pulling plugs, and embedded stick harness.



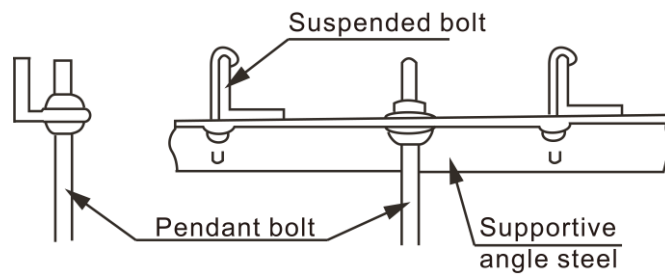
C. New concrete roughcast

Set it with embedded bushes or embedded bolts.



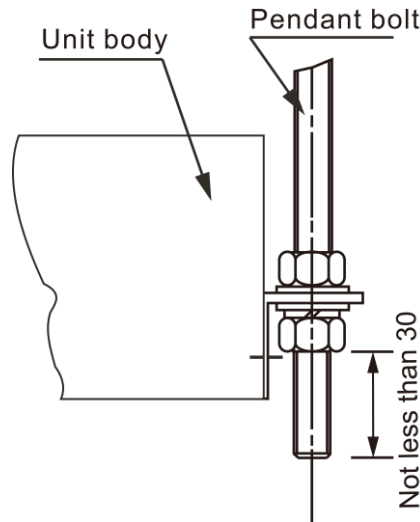
D. Steel beam and girder structure

Set and use supportive angle steel.



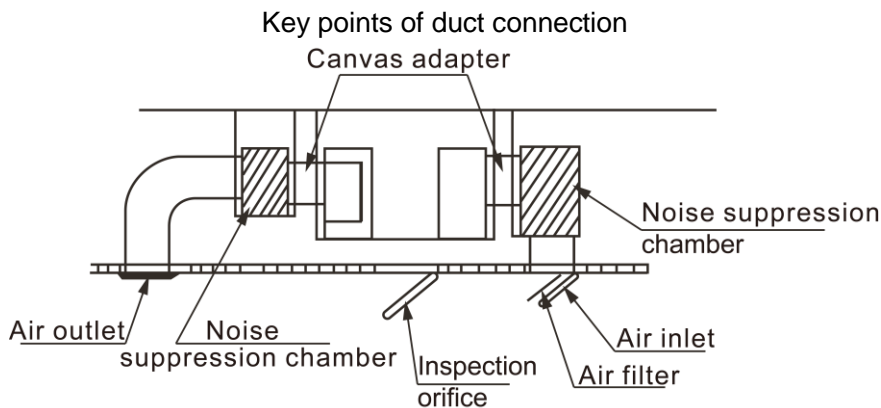
2.3 Suspending the indoor unit

Use a hoisting device to hoist the indoor unit, align it with the installation screw, adjust the horizontality and then tighten it.



2.4 Design and connection of duct

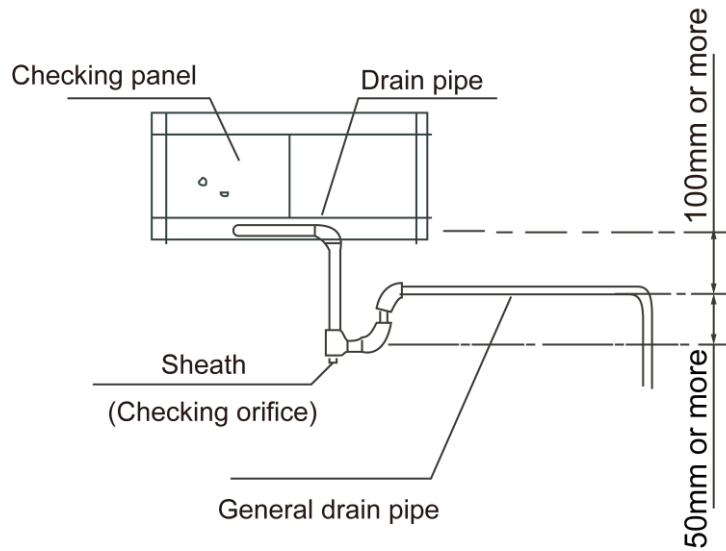
- The duct design must comply with the national heating air conditioner pipeline design specifications.
- The duct accessories and materials must be produced by professional manufacturers.
- In order to prevent air flow shorting, do not keep the air inlet pipe near the air outlet pipe.
- Install a filter at an easy-to-maintain place such as intake pipe. (Otherwise, the duct will gather on the air heat exchanger and lead to fault and water leak of the air conditioner.)
- In order to suppress noise effectively, install noise suppression and sound insulation devices, especially in the noise-sensitive spaces such as meeting rooms.
- For connection of the flange plane, use non-flammable canvas adapter to prevent transmission of vibration. For its size, see the indoor unit outline diagram. Use M6X20 screws (configured on site) for connection.
- All pipelines must be connected closely and soundly without leak of air. The pipelines must be adiabatic and free from condensation.



2.5 Install the drainpipe

1. Install the indoor unit drainpipe

- Install a drain stream trap in the drainpipe to prevent water from overflowing. (The drainpipe absorbs the odor. When the outside static pressure is high (especially the air inlet), it is difficult to drain the water.)
- Drainage should be natural. When constructing, the outside pipe of outdoor unit should be inclined (1/50~1/100).
- The bending part of drainpipe should be fewer than 2. Furthermore, to reduce the depositing dust, avoid bending the pipe as possible as you can.
- Make sure there is no dust or rubbish falling into indoor unit drain elbow and drainpipe.
- After installation, remove the checking panel, pour some water in the drain elbow to see whether it drains smoothly.



Caution: Rubbish is easy to accumulate at drain stream trap. Make sure to install a plug or other things which is easy to clean.

2. Test draining

Open the clapboard of indoor unit, pour the water in to see whether it drain smoothly and whether there is water leakage.

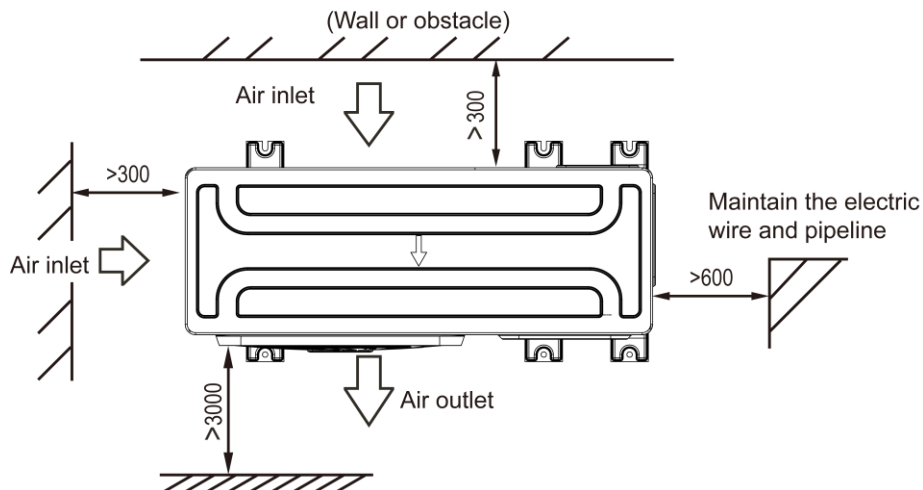
3. Heat insulation

After confirming that drainage is smoothly and there is no leakage, wrap the drainpipe with insulation material, or there will be condensed water.

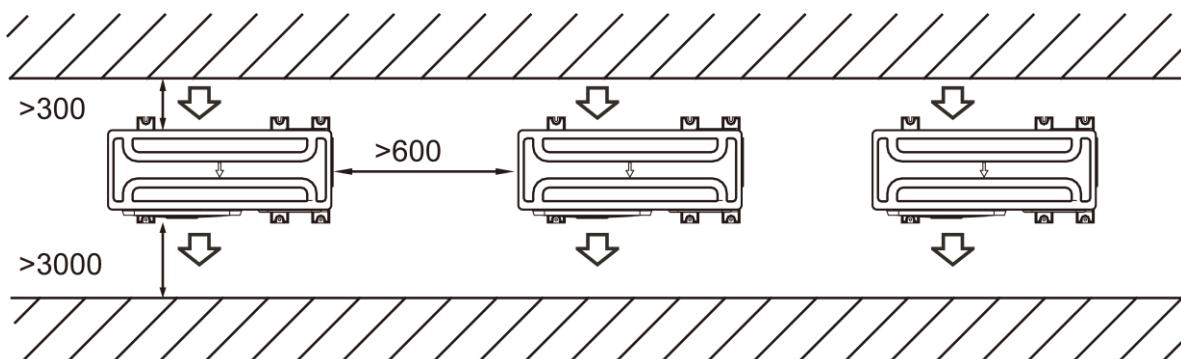
3. Installation of Outdoor Units

3.1 Installing space

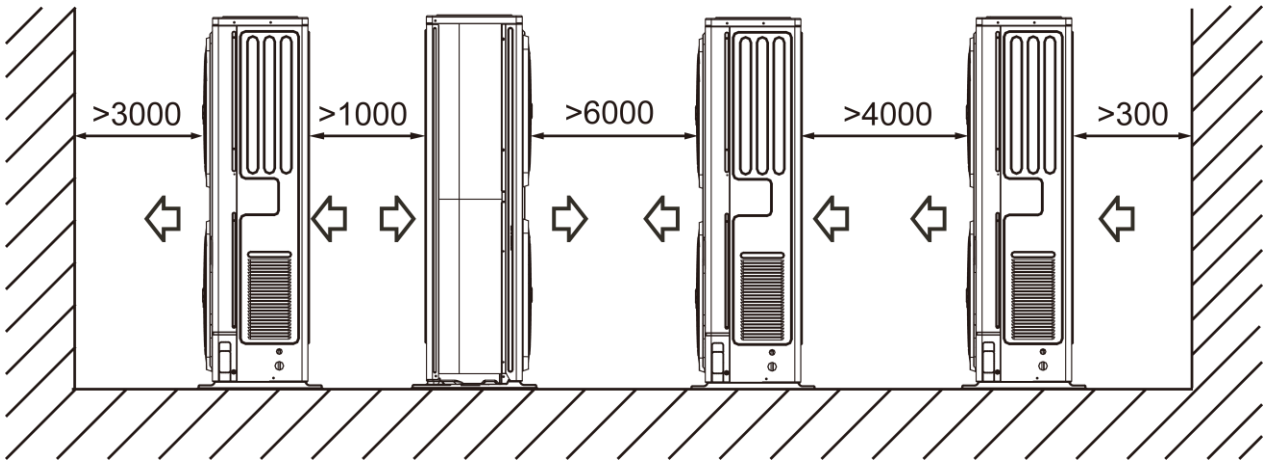
Single unit installation



Parallel connect the two units or above

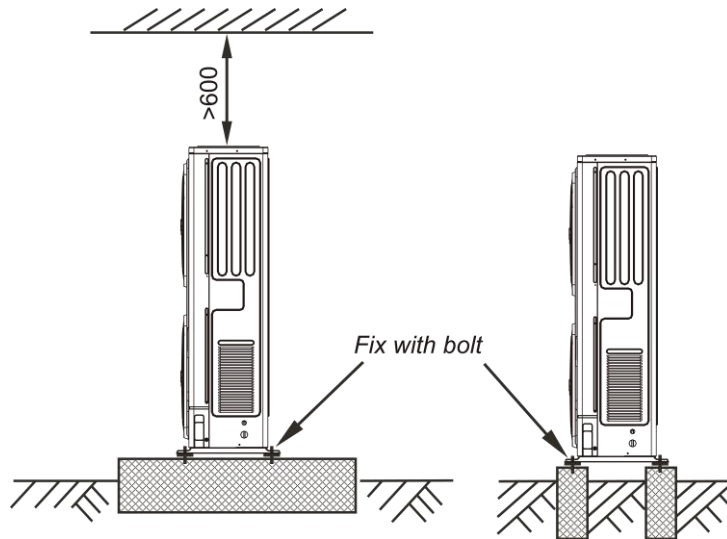


Parallel connect the front with rear sides



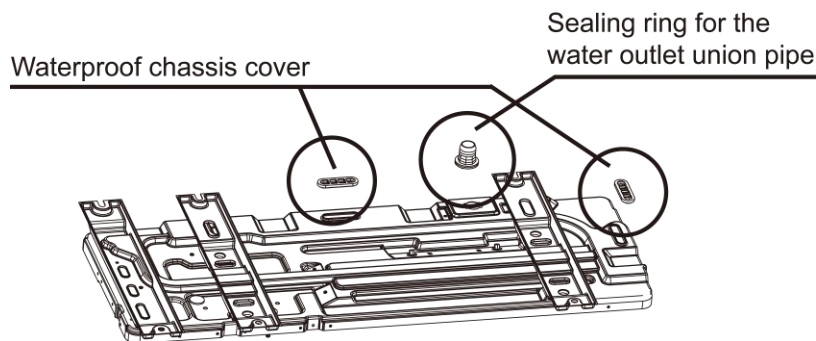
3.2 Moving and installation

- Since the gravity center of the unit is not at its physical center, so please be careful when lifting it with a sling.
- Never hold the inlet of the outdoor unit to prevent it from deforming.
- Do not touch the fan with hands or other objects.
- Do not lean it more than 45°, and do not lay it sidelong.
- Make concrete foundation according to the specifications of the outdoor units.(refer to Fig.4-6)
- Fasten the feet of this unit with bolts firmly to prevent it from collapsing in case of earthquake or strong wind.



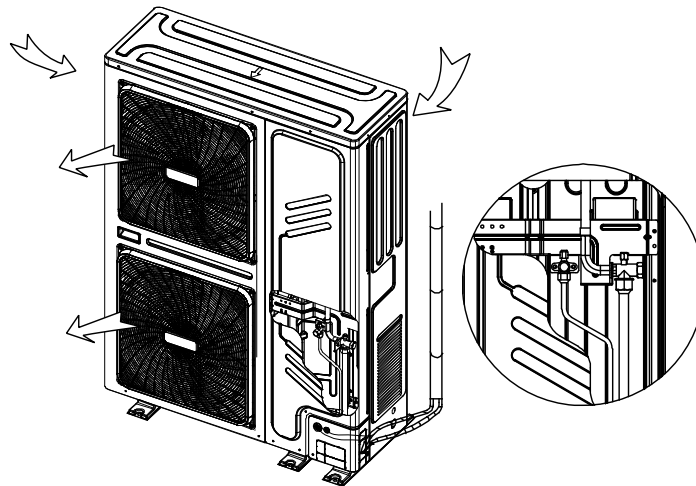
3.3 Centralized chassis drainage

When the outdoor unit requires centralized drainage, install the chassis and two waterproof covers for the chassis. Install the water outlet union pipe and sealing ring on the chassis, and then connect the drainage pipe to complete centralized drainage installation.



3.4 Install the connecting pipe of outdoor

Check whether the height drop between the indoor unit and outdoor unit, the length of refrigerant pipe, and the number of the bends meet the following requirements:



The indoor and outdoor connecting pipe interface and power line outlet
 Various piping and patterns can be selected, such as out from the front, the back, the side, and undersurface, etc. (The follow display the locations of several piping and wiring knock-off interfaces)

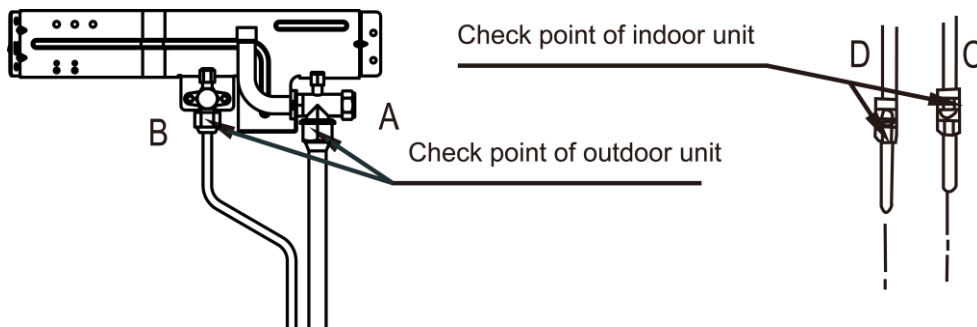
Front out pipe	Side out pipe

3.5 Leak Detection

Use soap water or leak detector to check every joint whether leak or not.

Notes:

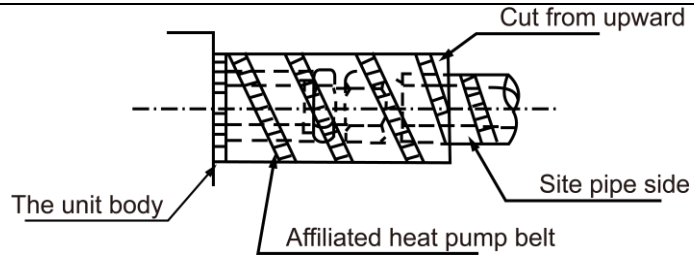
- A is low pressure side stop valve
- B is high pressure side stop valve
- C and D is connecting pipes interface of indoor and outdoor units



3.6 Heat Insulation

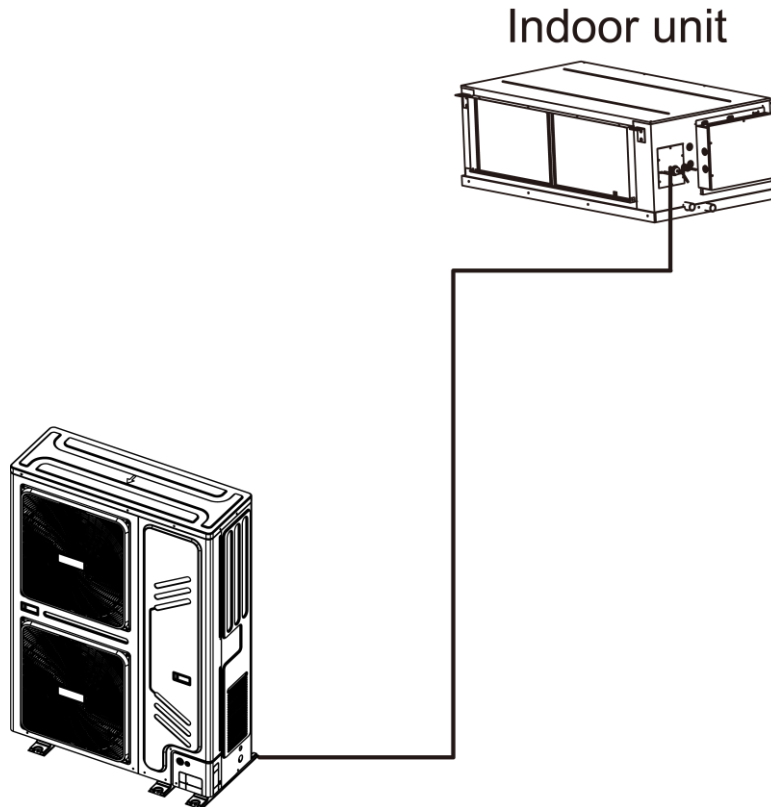
Do the heat insulation to the pipes of air side and liquid side separately. The temperature of the pipes of air side and liquid side when cooling, for avoiding condensation please do the heat insulation fully.

- The air side pipe should use closed cell foamed insulation material, which the fire-retardant is B1 grade and the heat resistance over 120°C.
- When the external diameter of copper pipe $\leq \Phi 12.7\text{mm}$, the thickness of the insulating layer at least more than 15mm;
- When the external diameter of copper pipe $\geq \Phi 15.9\text{mm}$, the thickness of the insulating layer at least more than 20mm.
- Please use attached heat-insulating materials do the heat insulation without clearance for the connecting parts of the indoor unit pipes.



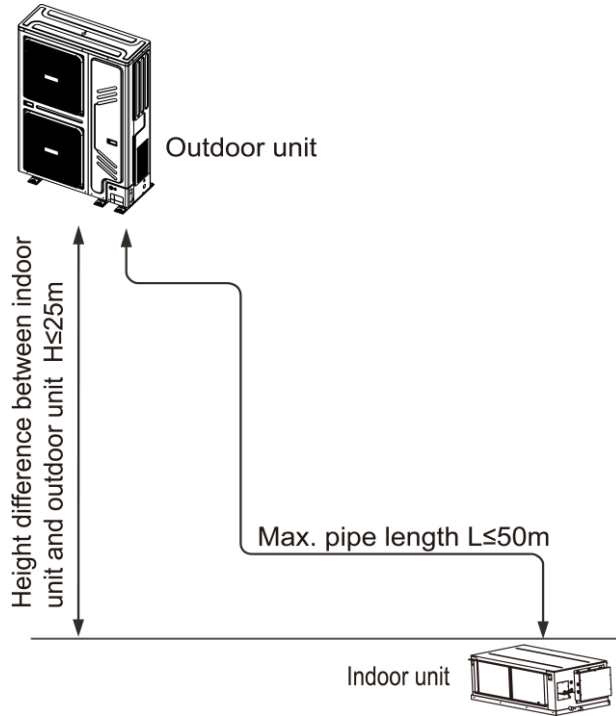
4. Connection of Refrigerant Pipe

4.1 Size of outdoor unit pipes and piping methods



Model	Gas side	Liquid side
MOUA-96HD1N1-R	Φ25.4mm	Φ9.5mm
MHC-96HWD1N1(A)	Φ25.4mm	Φ9.5mm

4.2 Allowed length of refrigerant pipe and height difference



			Allowed value
Max. actual length of pipe (L)			50m
Max. height difference	Height difference between indoor unit and out door unit (H)	Outdoor (upper)	25m
		Outdoor (lower)	30m

4.3 Refrigerant Replenishment Quantity

- For one-way pipe whose length is no longer than 5m, please refer to nameplate for refrigerant filling amount.No extra refrigerant is needed.
- One-way pipe whose length is longer than 5m, additional refrigerant quantity should be calculated by pipe diameter and length of outdoor and indoor unit liquid side pipe.For details, please refer to table below.

Diameter of liquid-side pipe	Refrigerant replenishment quantity	Remarks
Φ9.5mm	0.030×(L-5) kg	L is the length of one-way pipe.

5. Electric Connection

5.1 Caution

- Use special power supply for the air conditioner. Design power supplies specific to the indoor unit and outdoor unit. The supply voltage must comply with the nominal voltage.
- The external supply circuit of the air conditioner must have a ground wire, and the power supply ground wire of the indoor unit must be connected with the external ground wire firmly.
- The wiring must be performed by professional technicians according to the circuit diagram labels.
- Distribute the wires according to the relevant electric technical standards promulgated by the State, and set the Residual Current-operated Circuit Breaker (RCCB) properly.
- The power wire and the signal wire shall be laid out neatly and properly, without mutual interference or contacting the connection pipe or valve.
- No power cable is attached to this equipment. The user can select the power cable by reference to the stipulated power supply specifications. No joint of wires is allowed.
- Upon completion of wire connection, double check it and then connect the power supply.
- An all-pole disconnection device which has at least 3mm separation distance in all pole and a residual

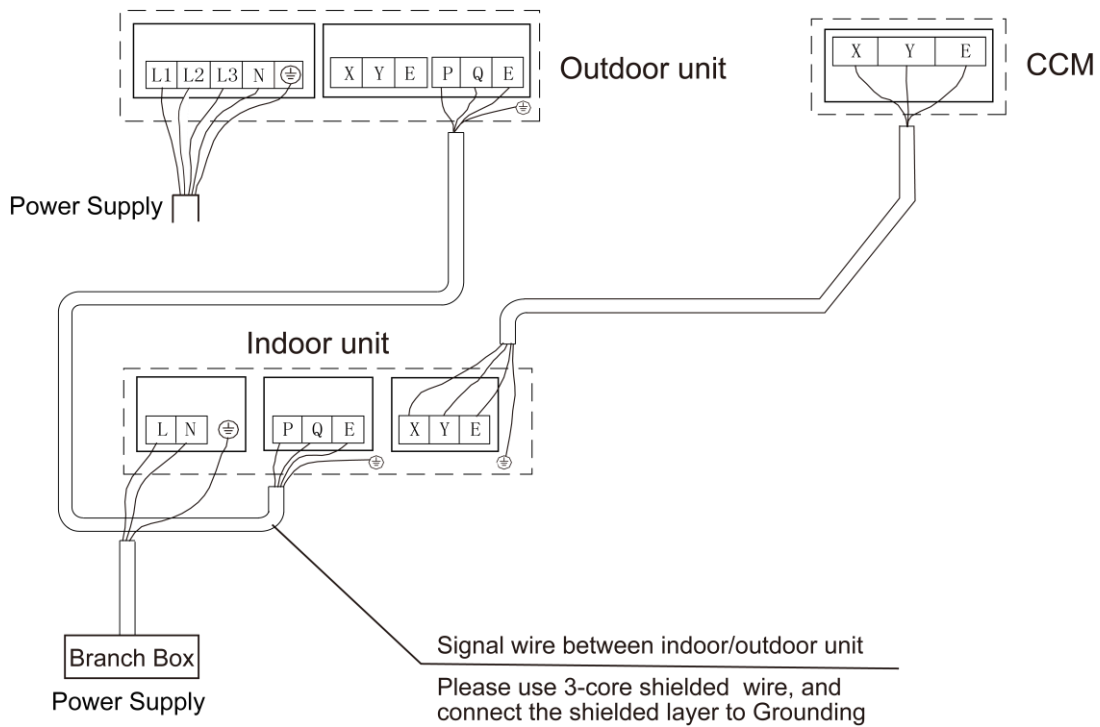
current device (RCD) with the rating of above 10mA shall be incorporated in the fixed wiring according to the national rule.

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

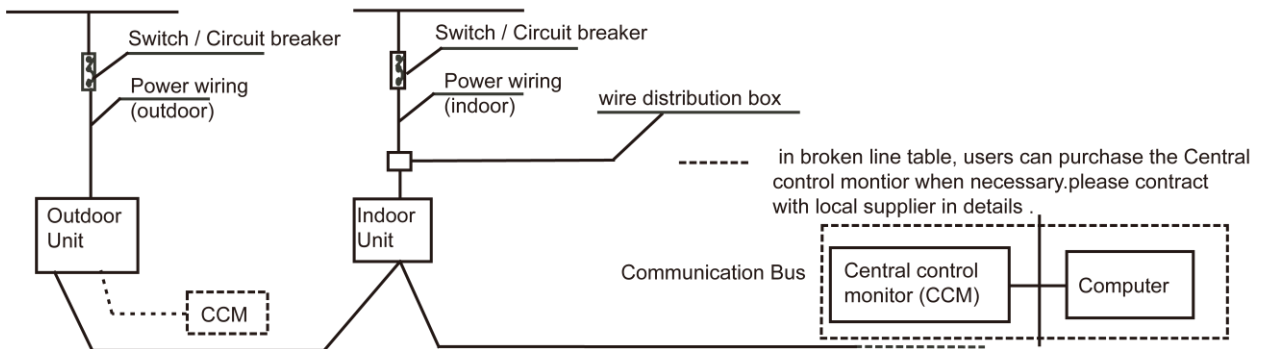
5.2 Specifications of power supply

Model	MHC-96HWD1N1(A)	MOUA-96HD1N1-R
Power	220-240V~50Hz	380-415V 3N~50Hz
Switch capacity of the main power supply / Fuse(A)	16/16	40/40
Indoor unit power cable	3x2.5mm ² (Includes grounded wire)	/
Outdoor unit power cable	\	5x6.0mm ² (Includes grounded wire)
Indoor Unit /Outdoor Unit Signal Wire (mm ²) (Weak electric signal)	3-core shielded wire 3x0.75	

5.3 Schematic diagram

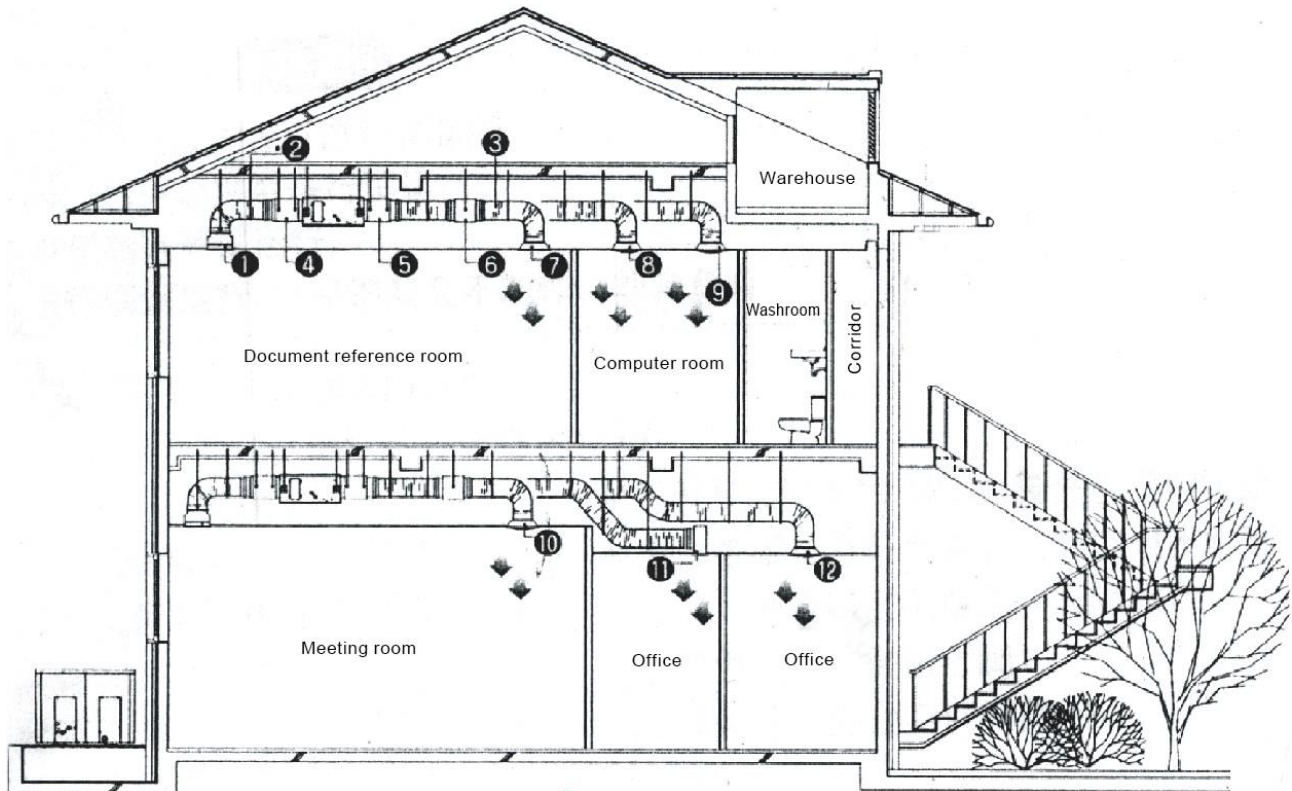


Power (380-415V~ 50Hz 3-Phase)

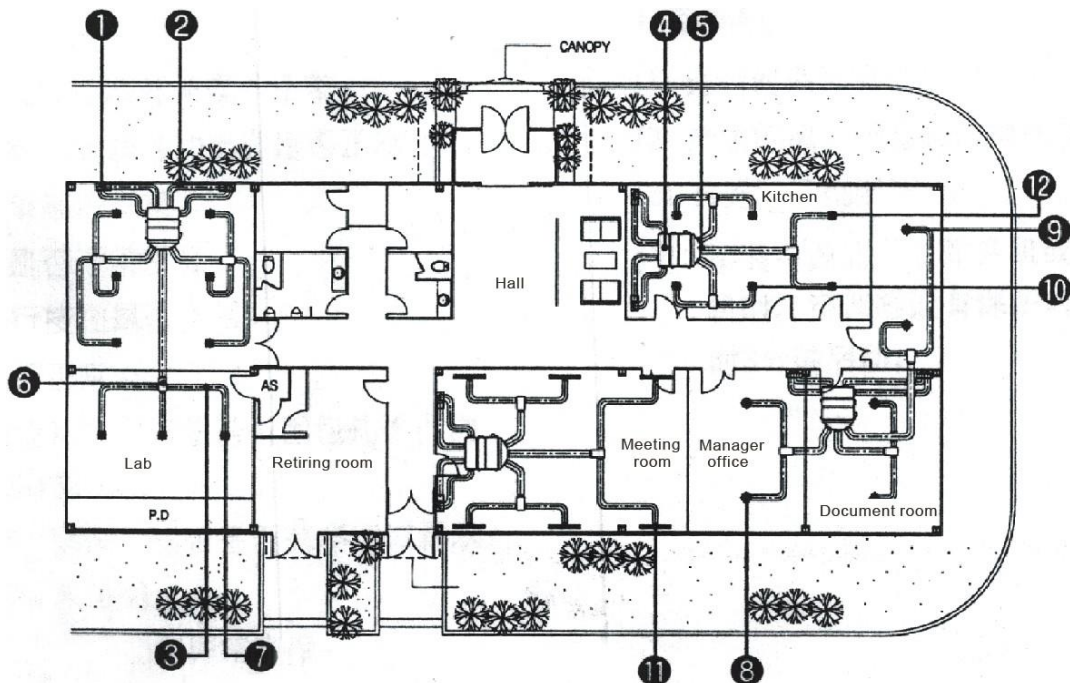


6. Duct Design Scheme

Examples of construction and ventilation pipeline design scheme (Flowering hidden series.)



Construction and ventilation pipeline design scheme



7. Trial Run

- Please conduct in accordance with the nameplate of Trial Run Tenor on the electric control box.
- Perform the trial run only after the outdoor unit has been powered on for over 12 hours.
- Check whether all valves are opened before trial run.
- Check the electric safety before trial run.

- Do not perform compulsory operation in any way, because it is very dangerous if the protection device is not active.
- Perform trial run only after all installations are finished.
- Confirm the following issues before trial operation:
- Install the remote controller holder as required by the user. The holder must be installed in a location suitable for transmitting the signals of the remote controller to the indoor unit.
- Use the remote controller or wired controller to let the air conditioner run in the cooling mode. Inspect the following items according to the operation manual. If any fault occurs, remove the fault first.
- Check the indoor unit:
 - ✓ Whether any vibration or abnormal sound occurs during the operation.
 - ✓ Whether the air, noise and condensate generated by the unit affect the neighbors.
 - ✓ Whether any refrigerant is leaked.
 - ✓ Check whether the connective copper pipes and drain pipes generate condensate due to loose wrapping.
 - ✓ Open the air inlet grille of indoor unit to check whether any penetration or leak of water occurs, especially at the drain stopper.

8. Trouble shooting

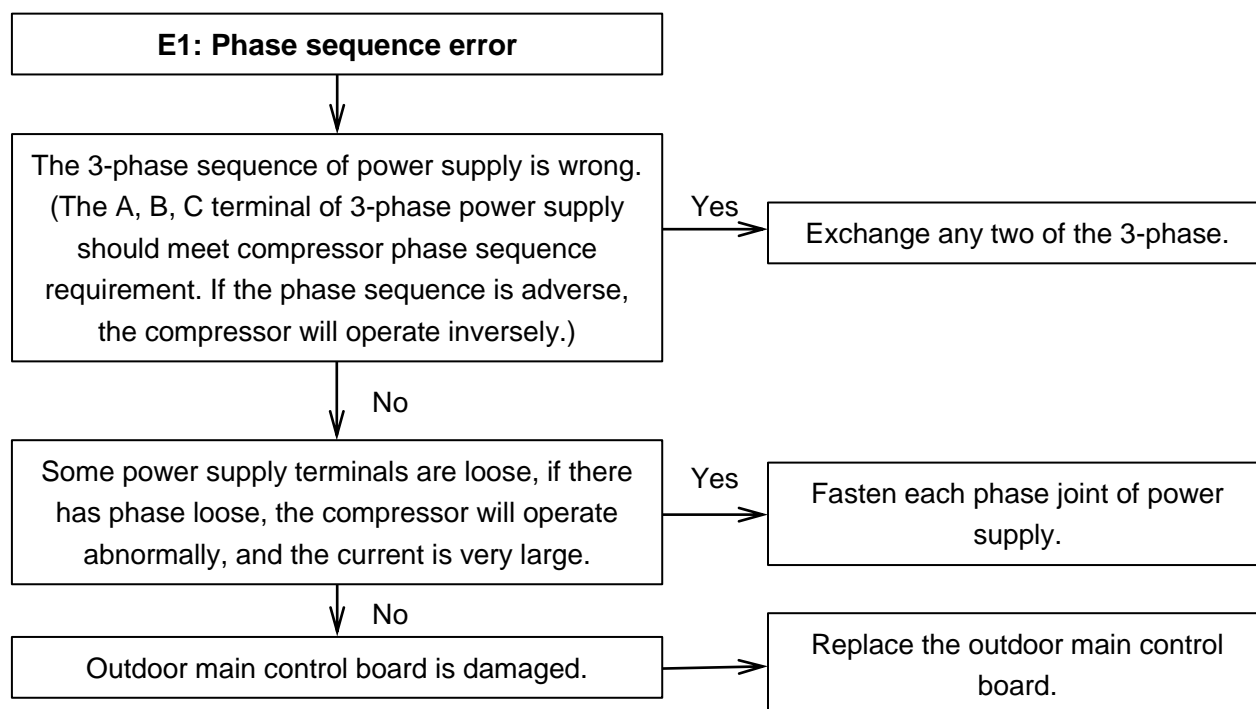
8.1 Malfunction code of outdoor unit

Fault code	Content	Note
E1	Phase sequence error	
E2	Indoor & outdoor unit communication error	
E4	Ambient temperature T4/pipe temperature T3 sensor error	
E5	Voltage error	
E6	DC fan motor fault	
E7	Discharge sensor error	
EA	A fan in the A region run for more than 5 minutes in HEAT mode	
Eb	2 times of E6 protection in 10 minutes	
E8	Outdoor unit address is wrong	
E9	EEprom error	
H0	IR341 and main control chip communication error	
H1	Communication chip and main control chip communication error	
H4	Three times P6 protection in 60 minutes	
H5	Three times P2 protection in 60 minutes	
H6	Three times P4 protection in 100 minutes	
H7	The number of indoor units decreases	
H8	High pressure sensor error	Discharge pressure less than or equal to 0.3MPa
H9	Three times P9 protection in 60 minutes	
HF	M-HOME for the indoor and outdoor units does not match	
P0	Top high temperature protection of inverter compressor	Display H6, if three times in 100 minutes
P1	High pressure protection or high temperature protection of discharge sensor	
P2	Low pressure protection	Display H5, if three times in 60 minutes

P3	Outdoor input current protection	
P4	Compressor discharge temperature protection	Display H6, if three times in 100 minutes
P5	Pipe temperature protection	
P6	Inverter module protection	Display H4, if three times in 60 minutes.
P8	Typhoon protection	
PE	Evaporator high temperature protection	
P9	DC fan module protection	Display H9, if three times in 60 minutes
L0	Inverter module error	
L1	DC generatrix low voltage error	
L2	DC generatrix high voltage error	
L4	MCE error/ synchronization/ closed loop	
L5	Zero speed protection	
L7	Phase sequence error	
L8	Frequency difference in one second more than 15Hz protection	
L9	Frequency difference between the real and the setting frequency more than 15Hz protection	

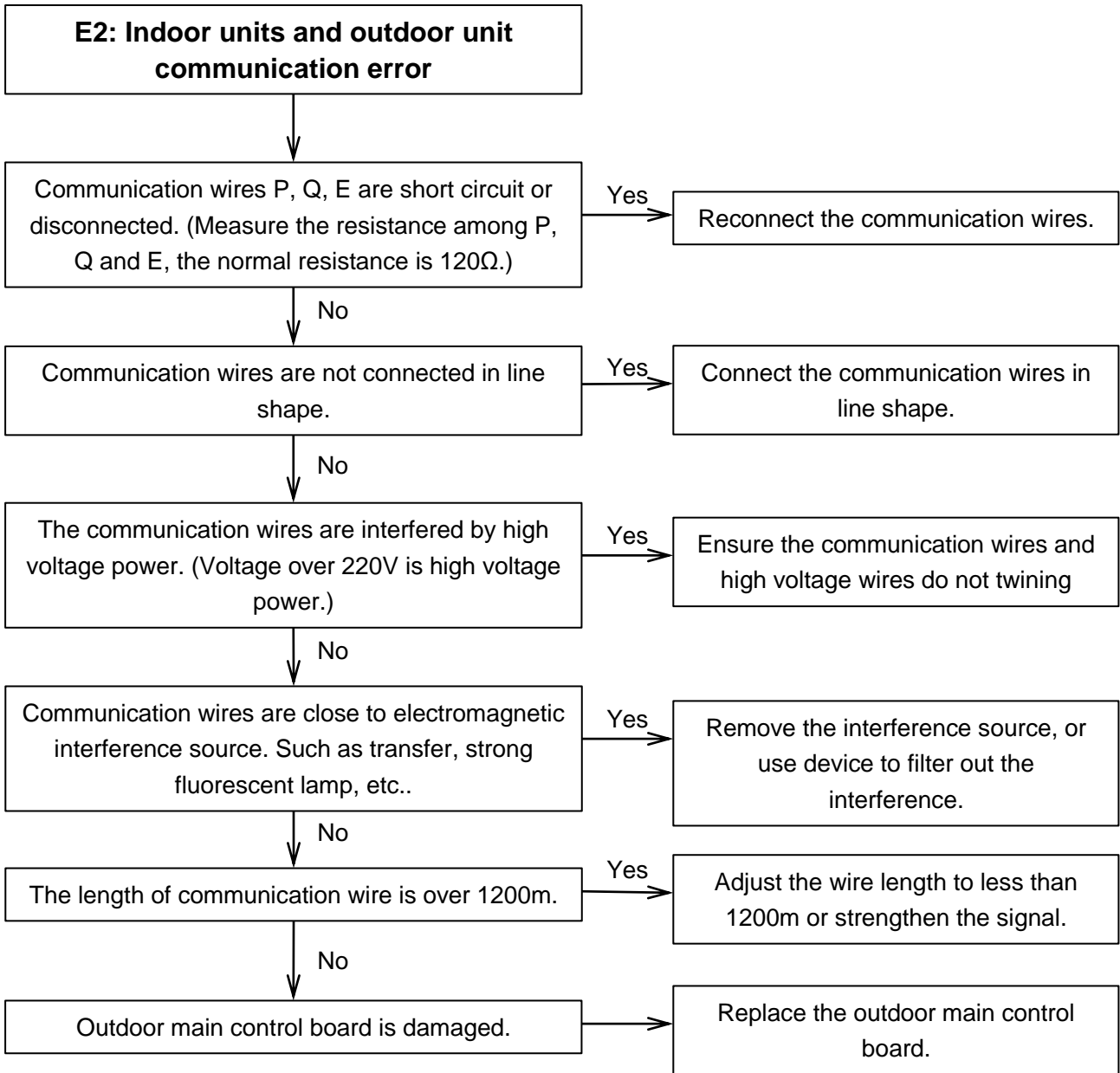
8.2 Troubleshooting

✓ E1: Phase sequence error

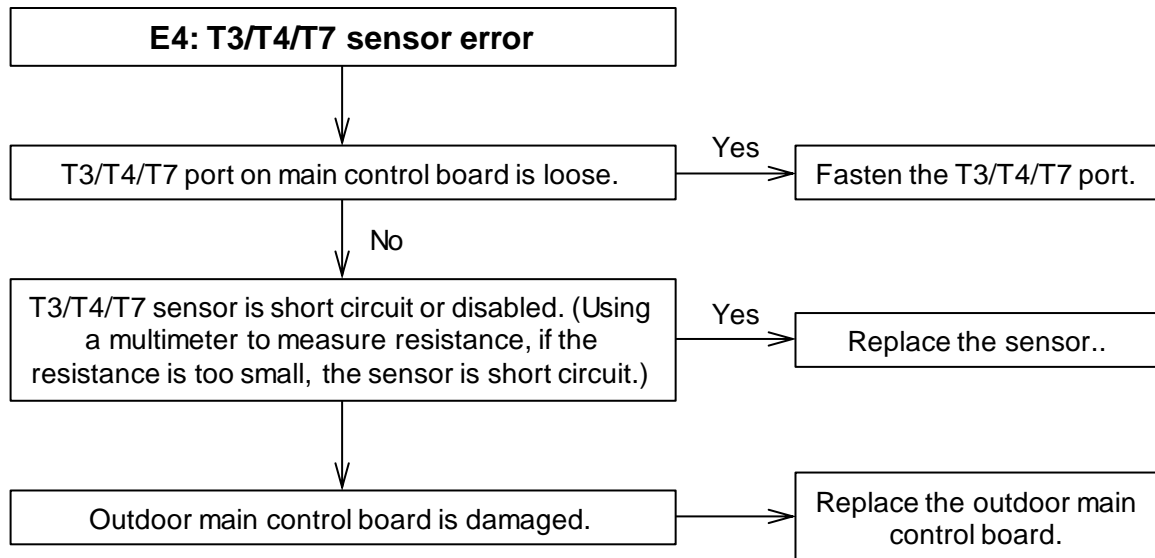


If the wiring connection of each outdoor unit is according to A, B, C phase sequence, when the quantity of outdoor units is large, the current difference between C phase and A, B phase will be very large for the power supply load of each outdoor unit is on C phase, it is very easy to lead to air switch break and wiring terminal burnout. So when the quantity of outdoor units is large, the phase sequence should be staggered, then the current can be distributed to the three phases equally.

✓ **E2: Indoor & outdoor unit communication error**



- ✓ E4: Ambient temp. T4/pipe temp. T3 sensor error
- ✓ E7: Discharge temp. sensor T7 error



Case: There is no display on main control board, and the problem still exists after replacing main control board. Voltage values on measuring plate (such as 220V, 5V, 12V, etc.) are normal; after measuring resistance value of sensor, find that T4 thermo-bulb is earth-continuity, and further discover that the thermal cable of T4 sensor is punched by bolt, as follows:

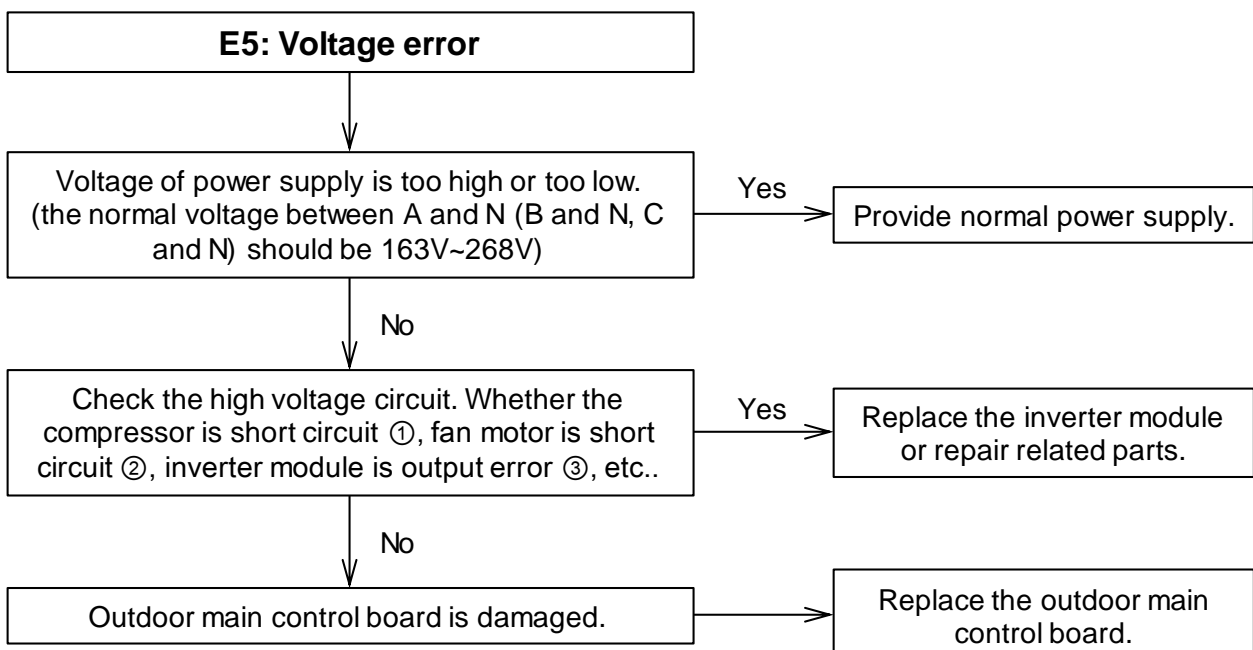


T4 sensor is worn out and connected with sheet metal



After being reconnected, the system becomes normal

- ✓ E5: Voltage error



Notes:

1. How to check whether the compressor is short circuit ①:

The normal resistance value of inverter compressor among U V W is 0.7~1.5Ω, and infinity to earth. If the resistance value is out of the range, the compressor is abnormal.

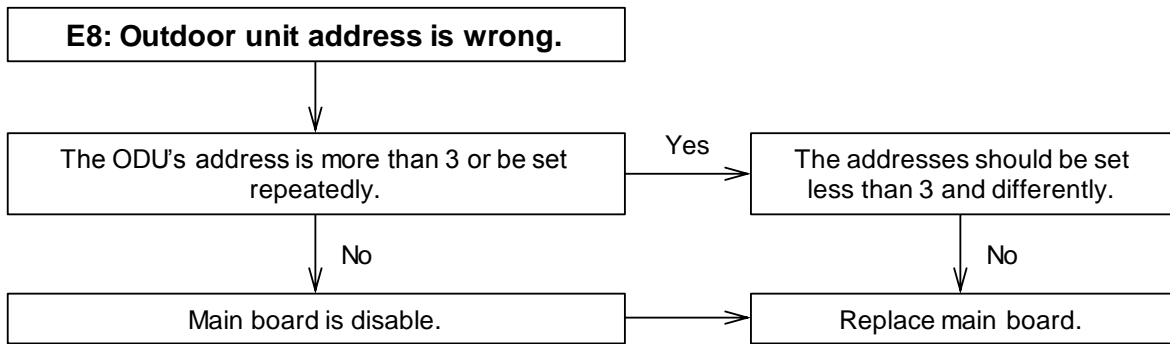
2. How to check whether the fan motor is short circuit ②:

The normal value of DC fan motor coil among U V W is less than 10Ω, and the value of AC fan motor coil is from a few ohm to hundreds of ohm for different fan motor model. If the measured value is 0Ω, the fan motor is short circuit.

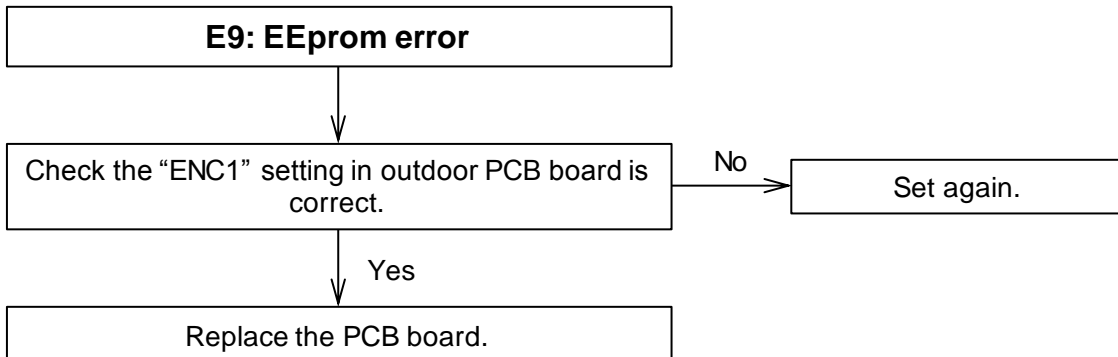
3. How to check whether the inverter module is output error ③:

Dial the multimeter to diode file, black pen on P and red pen respectively on U,V,W, if the multimeter displays 0.4~0.7 V, it is normal; Red pen on N, black pen respectively on U,V,W, if the multimeter displays 0.4~0.7 V, it is normal. Satisfying the above two conditions at the same time indicates that the inverter module has no problem.

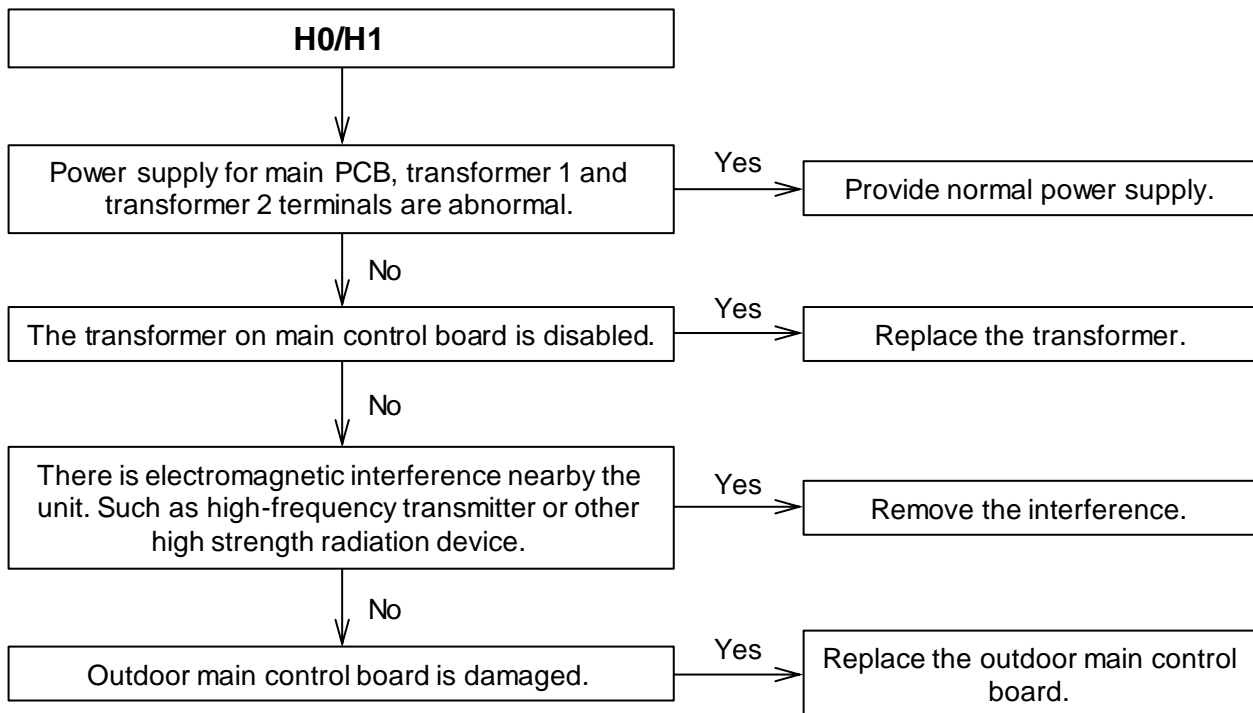
✓ **E8: Outdoor unit address is wrong**



✓ **E9: EEprom error**

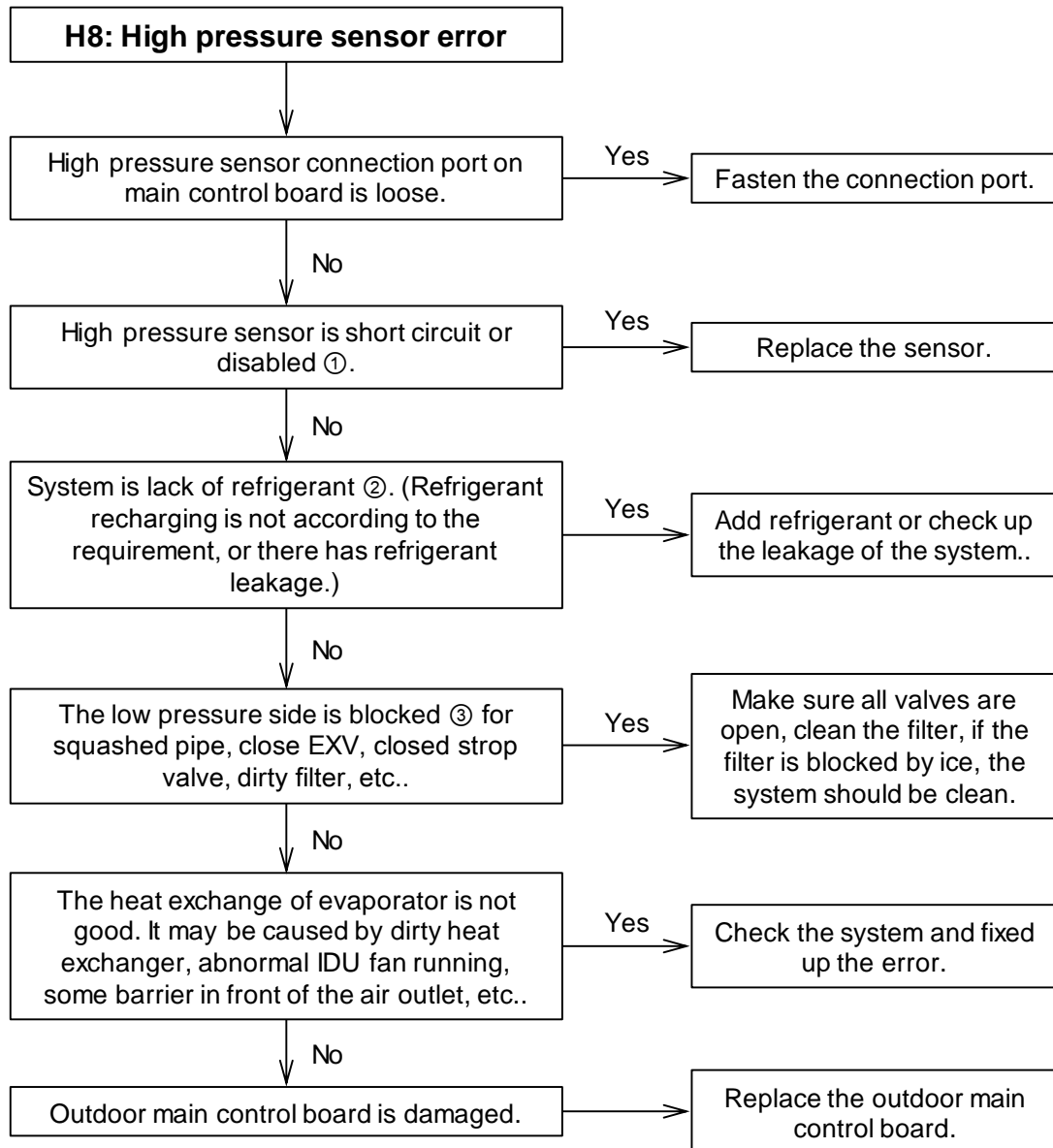


- ✓ **H0: Communication error between main control chip and module chip;**
- ✓ **H1: Communication error between main control chip and communication chip**



✓ **H8: High pressure sensor error**

When the discharge pressure is lower than 0.3MPa, the system will display H8 error, the ODU in standby. When the discharge pressure is back to normal, H8 disappears and normal operation resumes.



Notes:

1. How to check whether the high pressure sensor is short circuit or disabled ①

Measure the resistance among the three terminals of the pressure sensor, if the resistance value is megohm or infinite, the pressure sensor is disabled, otherwise, it may be normal.

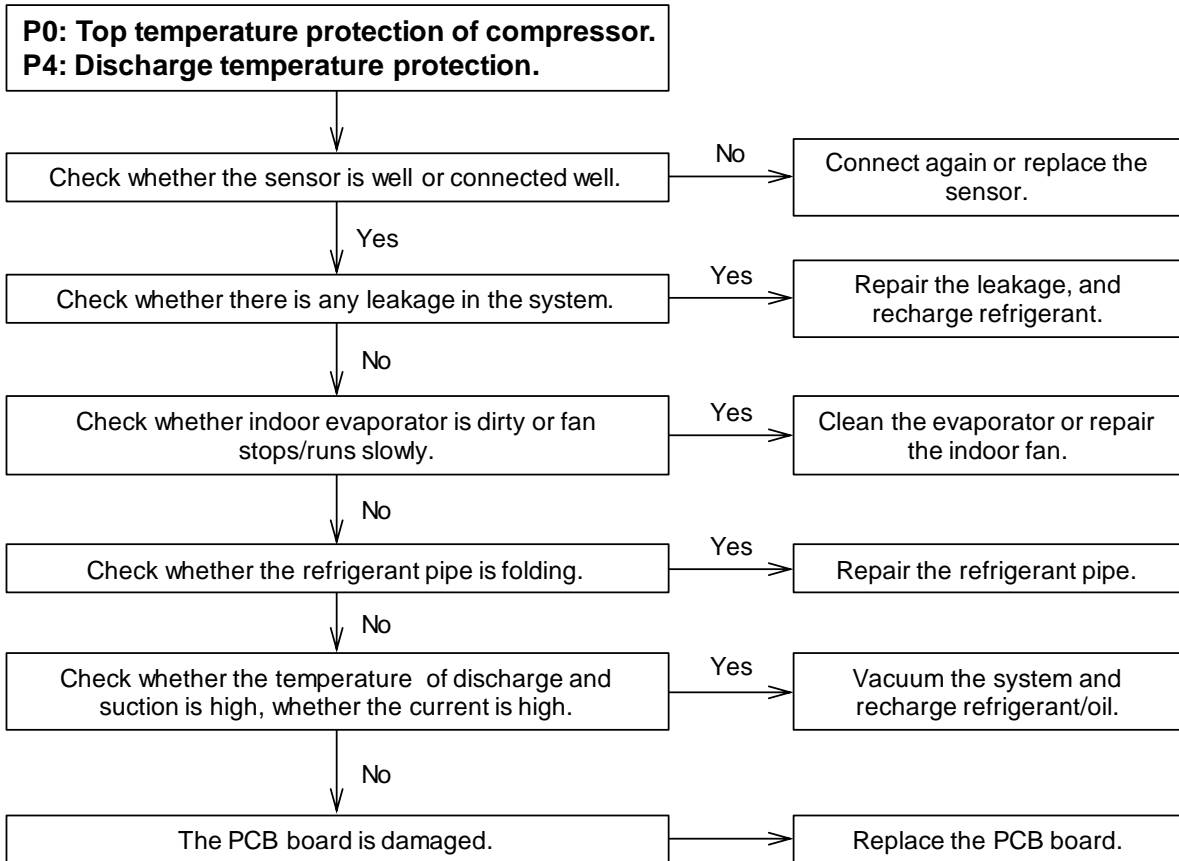
2. The phenomenon of lack of refrigerant ②:

Top temperature and discharge temperature of all compressors are higher than normal value, discharge pressure and suction pressure are both lower than normal value, current is lower than normal value, suction pipe may be frosting. All the phenomenon will disappear after recharging refrigerant.

3. The phenomenon of the low pressure side is blocked ③:

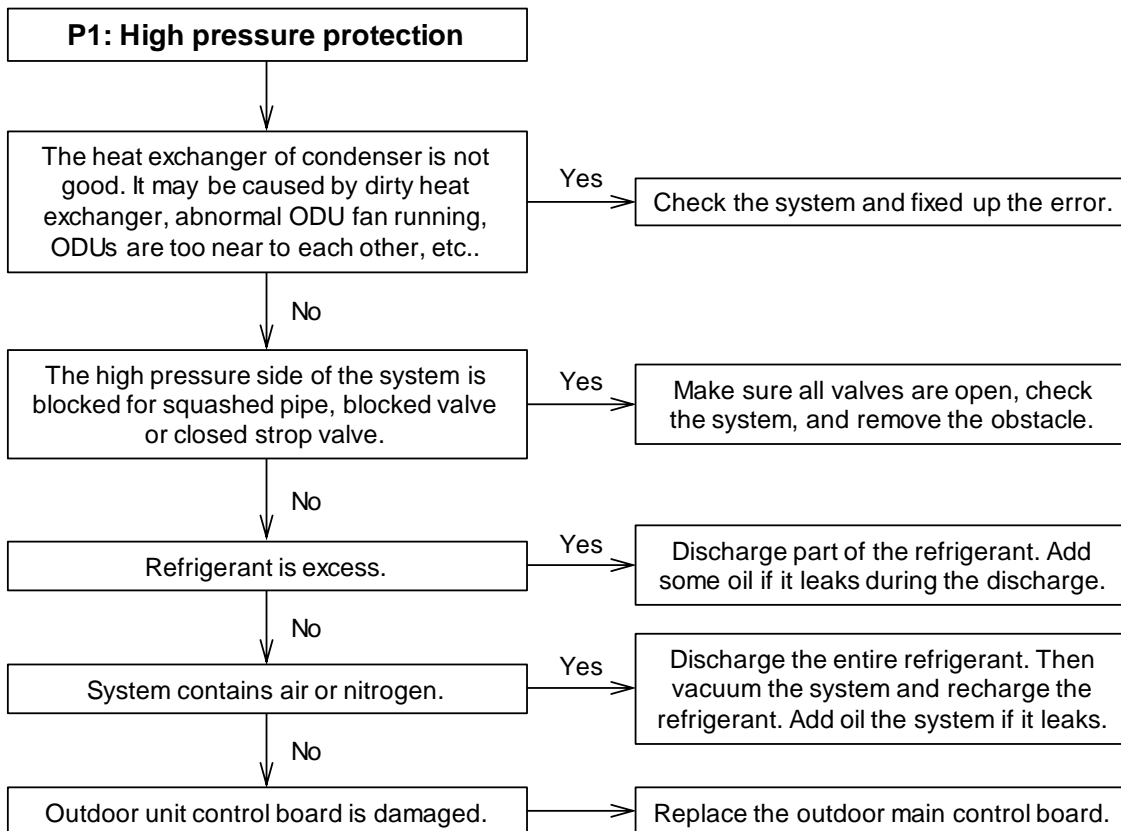
The discharge temperature is higher than normal value*, low pressure is lower than normal value*, current is lower than normal value* and suction pipe may be frosting.

- ✓ **P0: Top temperature protection of compressor**
- ✓ **P4: Discharge temperature protection**

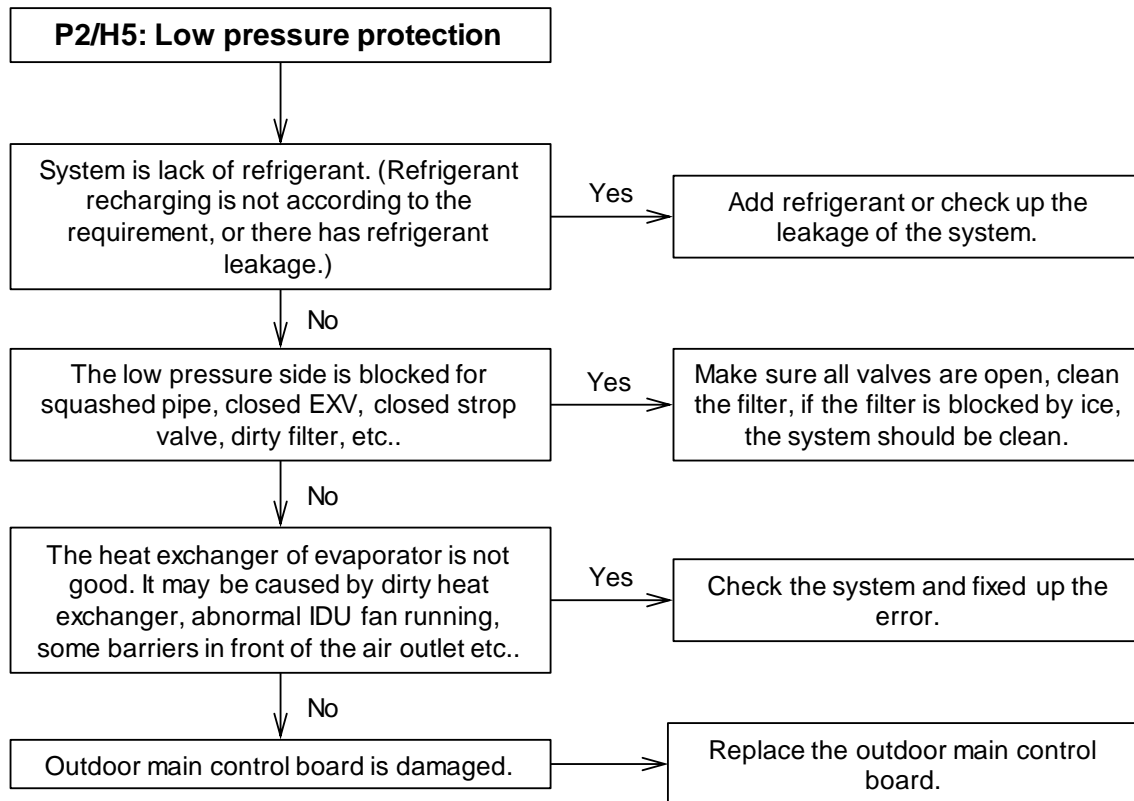


Notes: There are three times in 100 minutes, “H6” will be displayed. Repower-on, the protection will be canceled. At the same time, the reason of protection should be settled.

- ✓ **P1: High pressure protection or high temperature protection of discharge sensor**

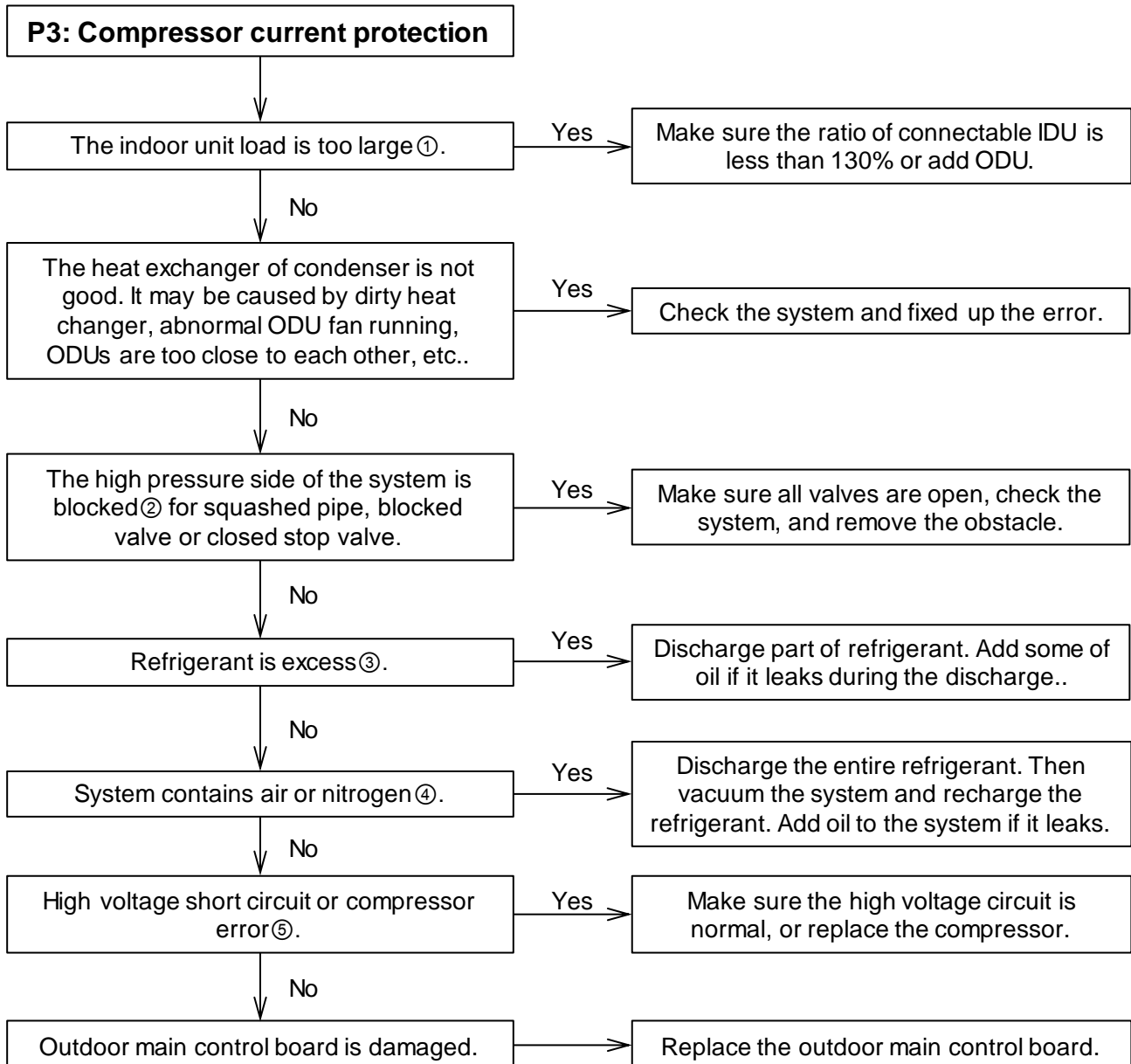


✓ **P2: Low pressure protection**

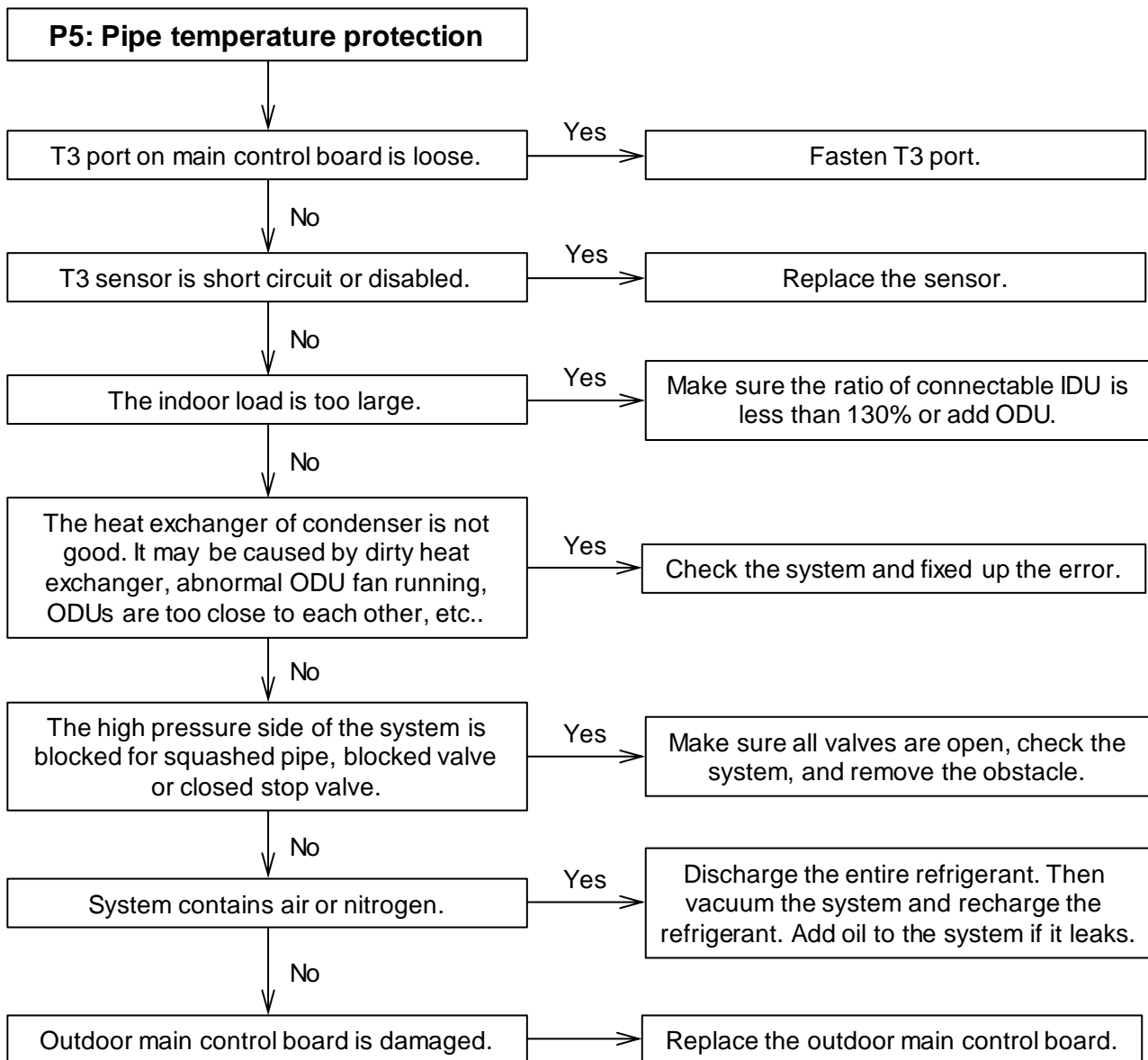


✓ **P3: Over-current protection of compressor**

P3: When the current of inverter compressor is over 12A, the system will display P3 protection, the ODU in standby. When the current goes back to normal range, P3 disappears and normal operation resumes.



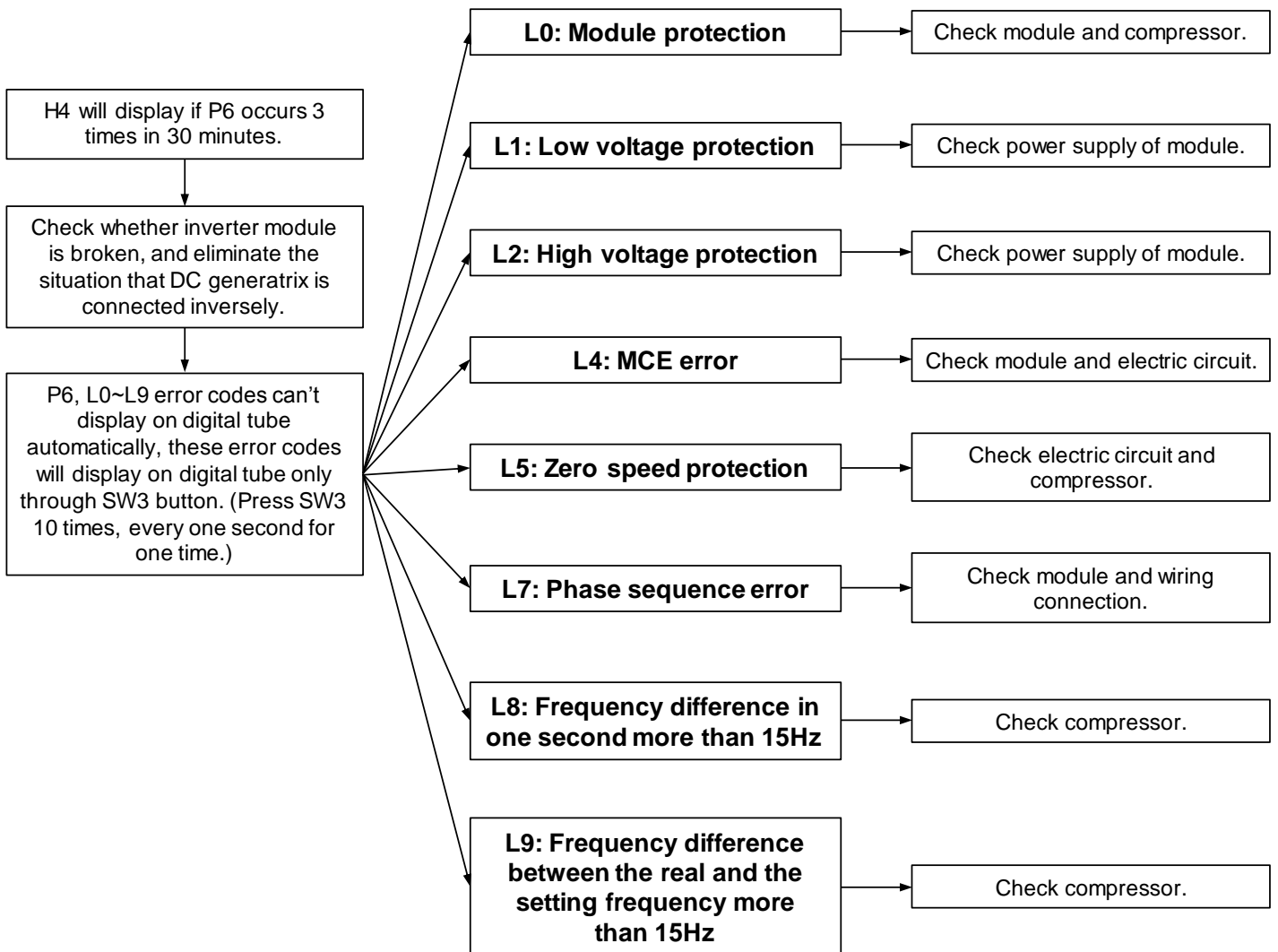
✓ **P5: Pipe temperature protection**



✓ **P6: Inverter module protection**

P6, L0~L9 error codes can't display on digital tube automatically, these error codes will display on digital tube only through SW3 button (pressure SW3 ten times, every one second for a time)

If the system display three times P6 protection in 60 minutes, the system will stop and display H4 error code. When the system displays H4 error code, the system can resume only by restarting the machine. At this time, malfunction should be disposed promptly to avoid further damage.



1) L0 troubleshooting

Step 1: Compressor check

Measure the resistance between each two of U, V, W terminals of the compressor, all the resistance should be the same and equal to 0.9~5 Ohms. (Fig. A and Fig. B)

Measure the resistance between each of U, V, W terminals of the compressor to ground (Fig. C), all the resistance should trend to infinity (Fig. D), otherwise the compressor has been malfunction, needs to be replaced.



Fig. A



Fig. B

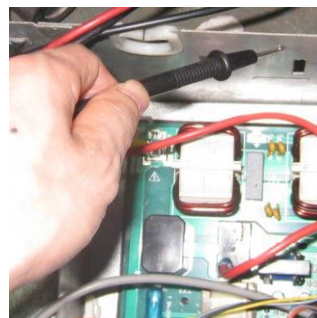


Fig. C

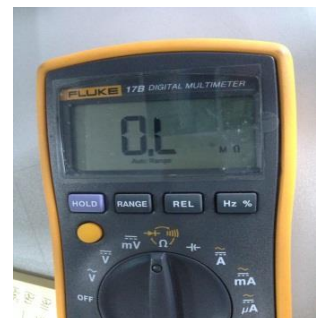
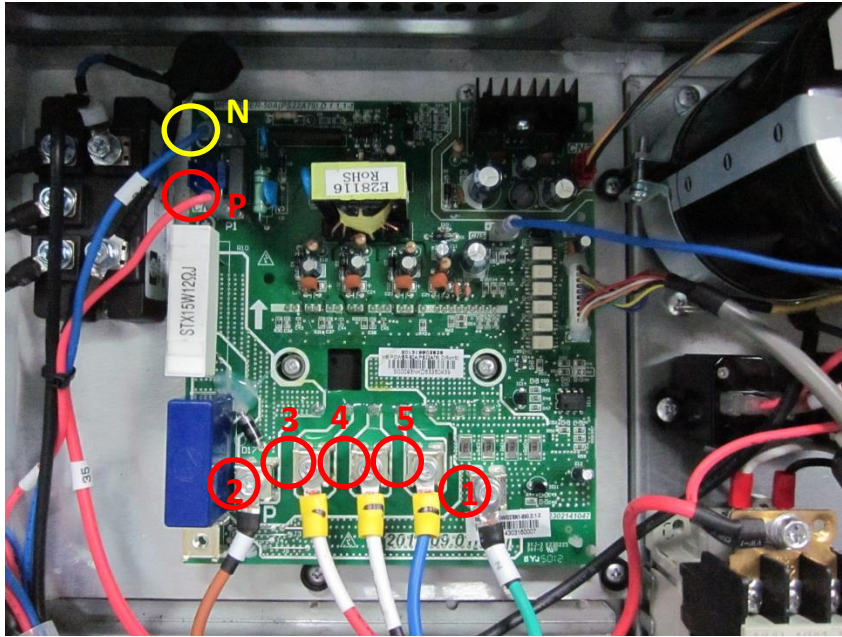


Fig. D

If the resistance value are normal, then go to step 2.

Step 2: Module check

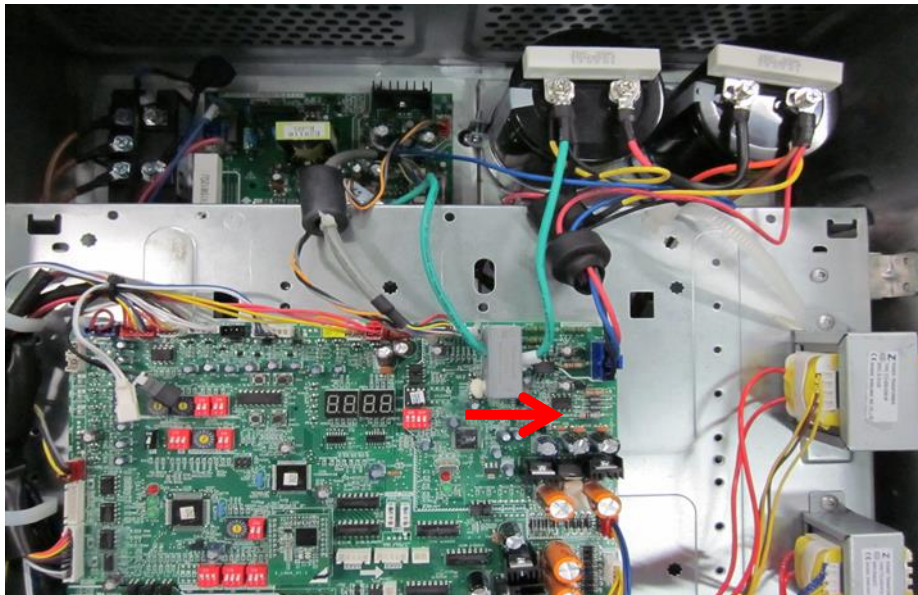


- 1) DC voltage between terminal P and terminal N should be 1.41 times of the local power supply voltage.
- 2) DC voltage between terminal 1 and 2 should be 510V~580V.
- 3) Disconnect the terminal 3, 4, and 5 from inverter compressor. Measure the resistance between any two terminals among terminal 1, 2, 3, 4, 5. All the values should be infinity. If any of the value approximates to 0, the inverter module is damaged and should be replaced.

After replaced the inverter module, if the system is still abnormal, then go to step 3.

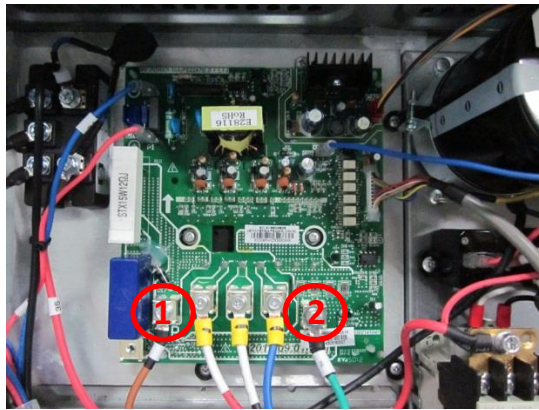
Step 3: DC generatrix check

Direction of the current in DC supply wire which is running through the inductor should be the same as the direction of arrow marked on the inductor.

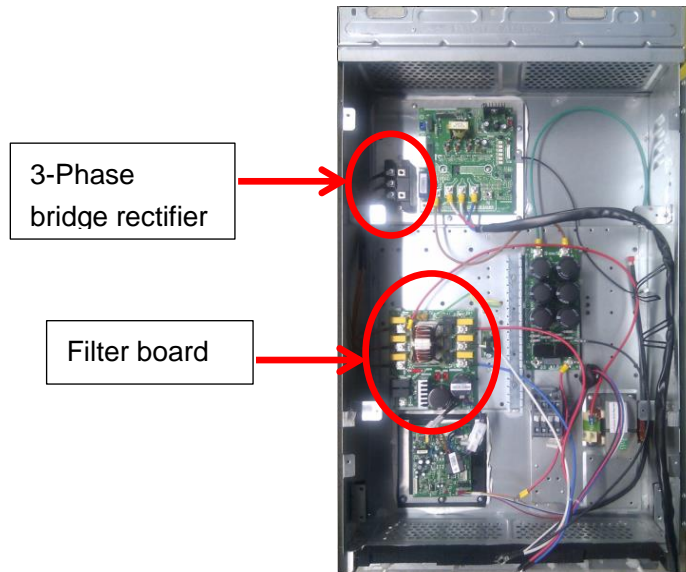


2) L1/L4 troubleshooting

Step 1: Check the DC voltage between 1 and 2 terminal, the normal value should be 510V~580V, if the voltage is lower than 510V, go to step 2.

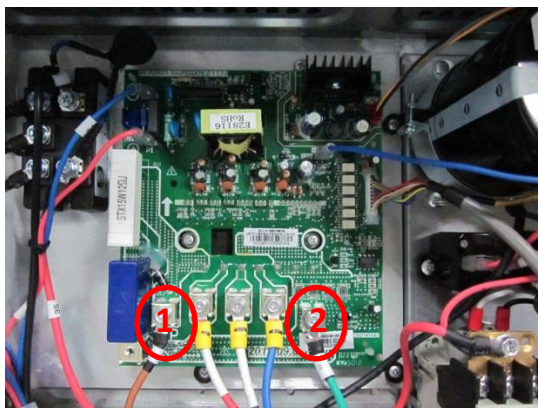


Step 2: Check whether the wires of rectifier circuit are loose or not. If wires are loosen, fasten the wires. If wires are OK, replace the main PCB.

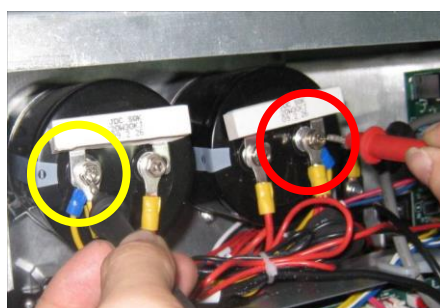


3) L2 troubleshooting

Step 1: Check the DC voltage between 1 and 2 terminal, the normal value should be 510V~580V, if the voltage is higher than 580V, go to step 2.



Step 2: Check the voltage between the two electrolytic capacitors, the normal value should be 510V~580V.



Turn the measure range of the meter to 1kV, measure the voltage between two electrolytic capacitors



If the value is not in the range, that means the power supply for electrolytic capacitors has problem, you should check the power supply, whether the voltage is too high and whether the voltage is stable.

If the voltage value is normal, then the main PCB has malfunction, it needs to be replaced.

4) L8/L9 troubleshooting

Step 1: Compressor check

Measure the resistance between each two of U, V, W terminals of the compressor, all the resistance should be the same and equal to 0.9~5 Ohms. (Fig. A and Fig. B)

Measure the resistance between each of U, V, W terminals of the compressor to ground (Fig. C), all the resistance should trend to infinity (Fig. D), otherwise the compressor has been malfunction, needs to be replaced.



Fig. A



Fig. B

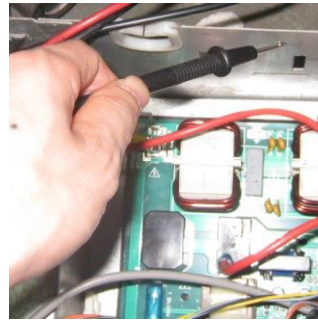


Fig. C

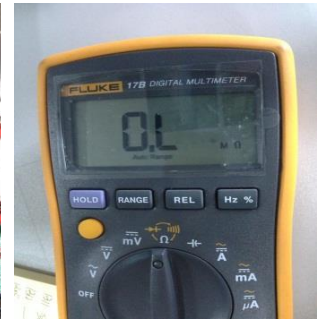


Fig. D

If the resistance value are normal, then go to step 2.

Step 2: Disconnect the power wiring from the compressor(named compressor A) of the faulted system(named system A).

If there is a system running normally nearby(named system B):

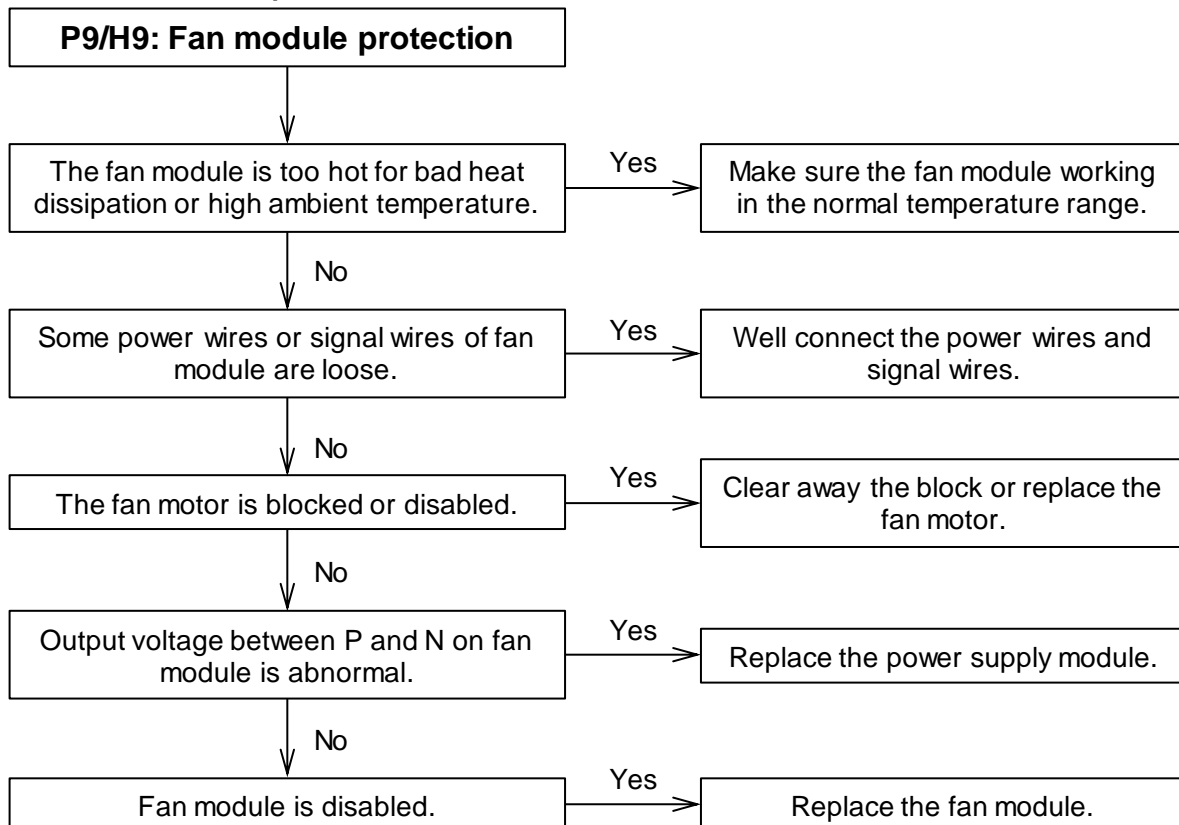
Extend the power line of the inverter compressor of system B, connect compressor A to the control box of system B, make sure that the U, V, W terminals are connected in right order, then start system B.

If compressor A can start normally, that means compressor is OK, the control box of system A is malfunction, then replace the main PCB of system A with correct wire connection.

If compressor A can not start normally, that means compressor A is damaged, needs to be replaced.

If there is no normal system nearby:

Replace the main PCB of system A with correct connection, if compressor A can start normally, it means the main PCB which is replaced is damaged. If compressor A still can't start normally, replace the compressor.

✓ **P9: DC Fan module protection**

Notes: There are three times in 60 minutes, 'H9' will be displayed. Repower-on, the protection will be canceled. At the same time, the reason of protection should be settled.

Part. 5 Controller

- 1. Wired Controller: KJR-29B1/BK-E (Standard)..... 53**
- 2. Touch Key Centralized Controller: CCM30 62**

1. Wired Controller: KJR-29B1/BK-E (Standard)



KJR-29B1/BK-E

1.1 Wired controller specifications

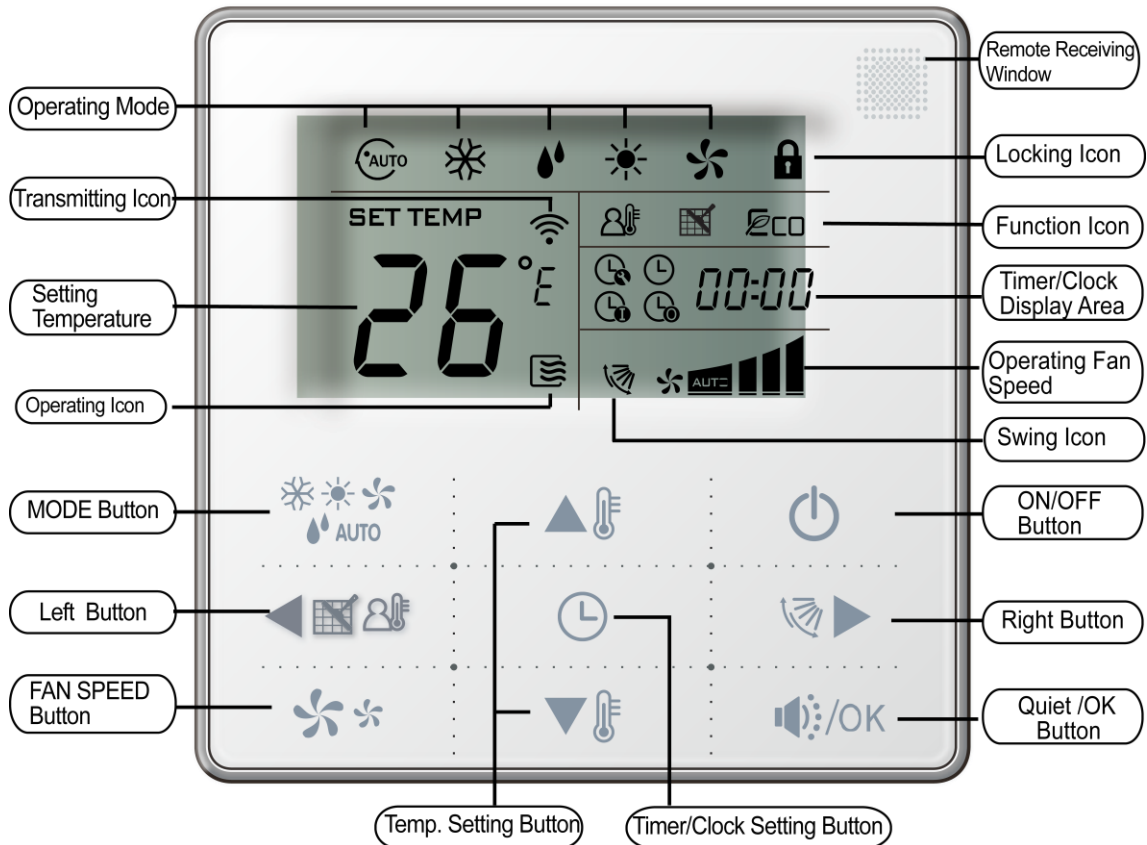
Model	KJR-29B/BK-E
Power Supply Voltage	5.0V DC
Ambient Temperature Range	-5°C~43°C
Ambient Humidity Range	RH40%~RH90%

Performance Features

1. Operating mode: cool, heat, dry, fan and auto.
2. Set the mode through buttons.
3. Indoor setting temperature range: 17°C ~30°C.
4. LCD (Liquid Crystal Display).
5. Touch key
6. Can switch Fahrenheit degree and Centigrade degree.

New function	Basic function
Air filter cleaning reminding function	ON and OFF the air-conditioner
Indoor unit address setting function	Auto-restart function
Remote control receiver function	Time ON and Time OFF setting
Lock the wired controller	Clock setting
Silent mode	Setting the Operating mode and Temperature
Follow me function	Fan speed and Swing functions

1.2 Wired controller outlook



1.3 Operation instructions

1) Remote signal receiving function:

the wired controller can be a remote signal receiving device, it is possible to use the wireless remote controller to control the air conditioner through the wired controller when the system have been powered on.

Note: The wired controller will not receive the swing controlling instruction. For the indoor unit with swinging function, you can directly use the wireless remote controller to control swinging through the display panel of the indoor unit, or use the swing button on the wired remote controller to control the indoor unit for swinging.

2) On and off the air conditioner:

Press the On/Off button to control the indoor unit on and off status.

When the unit is turned off, press the On/Off button, the unit will be turned on and the operating icon lights up.

When the unit is turned on, press the On/Off button, the unit will be turned off the operating icon lights off.


3) Set the operating mode

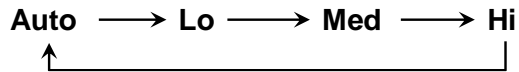
Press the mode button to set the operating mode, after each button press the operating mode will circle as follow:



Note: HEAT is only for Heat Pump.



4) Fan speed setting

Under COOL, HEAT and FAN modes, press the fan speed button  can adjust the fan speed setting. After each fan speed button press will circle as follow:





Note: Under AUTO and DRY modes the fan speed is not adjustable and the default fan speed is auto.







5) Temperature setting


Under AUTO, COOL, DRY, HEAT modes, press the temperature setting buttons  and  to set the temperature, the adjusting range is 17°C~30 °C (or 62 °F~88 °F).



Note: The setting temperature cannot be adjusted under fan mode.

6) Timer on and timer off setting

Press the timer/clock setting button , then enter into the timer on setting status, and screen will display  and *0-0h*.

Press the buttons  and  to adjust the timer. If the timer setting is less than 10 hours, each press  or  will increase or decrease 0.5 hour. When the timer setting is more than 10 hours, each press  or  will increase or decrease 1 hour, the maximum timer setting is 24 hours.

After finish adjusting the timer on setting, press the button  or wait for 5 seconds to confirm and exit the timer on setting.

Under the timer on setting status, press the timer/clock setting button , then enter into the timer off setting status, and the screen will display  and *0-0h*.



The setting method of timer off is the same as the timer on.





Under timer setting state, set the timer on and the timer off to be 0.0h can cancel timer on and time off.


Note: If the wired controller has been set timer on/off, press the ON/OFF to turn on or turn off the unit then the timer will be canceled simultaneously.

7) Clock setting


Press the timer/clock button  setting for 3 seconds, and then enter into the clock setting status.


The hour position of the clock will flash, and can press  and  to adjust the hour value.

After finishing the hour setting, press left button  or right button  to switch to minute position setting, then the minute position will flash, press  and  to adjust the minute value.




After finish the clock setting, press the  button or wait for 5 seconds to confirm and exit the setting state.

8) Quiet operation



Under COOL, HEAT, FAN modes, press the  button to set into the quiet operation, it is used to reduce the running noise through setting the fan speed to low.

Note: Under AUTO, DRY mode, the fan speed is auto and the  button does not work.


9) Lock the wired controller


Press the temperature adjusting buttons  and  simultaneously, the wired controller enters into locking state, and the locking icon  will be lighted up.

Under the locking state, the wired controller will not respond to the buttons pressing and the control instruction from the wireless remote controller.

Simultaneously press the temperature adjusting buttons  and  again can cancel the locking state.



10) Air filter cleaning reminding function

The wired controller records the total running time of the indoor unit, when the accumulated running time reaches the pre-set value, the air filter cleaning reminding icon  will be lighted up, to remind that the air filter of the indoor unit need to be cleaned.


Press  for 3 seconds, and reset the reminding icon and the wired controller will re-accumulate the total running time of the indoor unit.


Note: The default setting value of the reminding function is 2,500 hours, and it can change to be 5,000 hours or 10,000 hours. The setting methods refer to the part of wired controller initial parameter setting.

11) Swing function

If the indoor unit supports swing function, press the right button  to adjust the air outlet direction of the indoor unit. Press this button for 3 seconds can turn on or turn off the auto swing function, the swing icon  will be lighted up when the auto swing function is turned on.

12) Follow-me function

When the system is running and the operating mode is AUTO, COOL or HEAT, press the  button will activate the follow-me function; press this button again to deactivate the function. Operating mode changeover will deactivate the function as well.

When the follow-me function is activated, the icon  will be light up, the wired controller will display room temperature read from local sensor, and transmit the temperature value to the indoor unit every 3 minutes.

1.4 Installation of wired controller

1) Safety precaution

- ✓ Stated below are important safety issues that must be obeyed. Confirm there is no abnormal phenomena during test operation after complete.
- ✓ Installation by other persons may lead to imperfect installation, electric shock or fire. Improper installation may lead to electric shock or fire. A random disassembly may cause abnormal operation or heating, which may result in fire.

- ✓ Do not install the controller in a place vulnerable to leakage of flammable gases. Once flammable gases are leaked and left around the wired controller, fire may occur.
- ✓ The wiring should adapt to the wired controller current. Otherwise, electric leakage or heating may occur and result in fire. The specified cables shall be applied in the wiring. No external force may be applied to the terminal. Otherwise, wire cut and heating may occur and result in fire.
- ✓ Don't place the wired controller near the lamps, to avoid the remote signal of the controller to be disturbed. Do not install the unit and controller in a place with much oil, steam, sulfide gas. Otherwise, the product may deform and fail.

2) Accessories

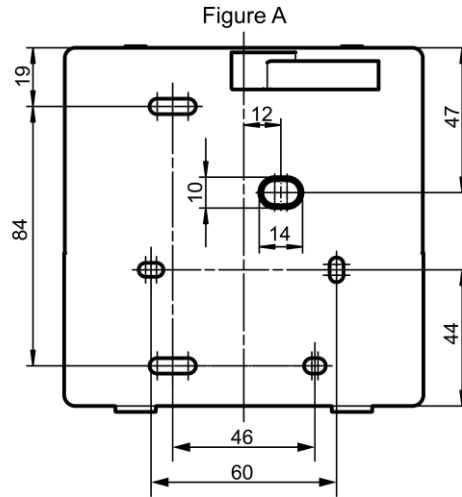
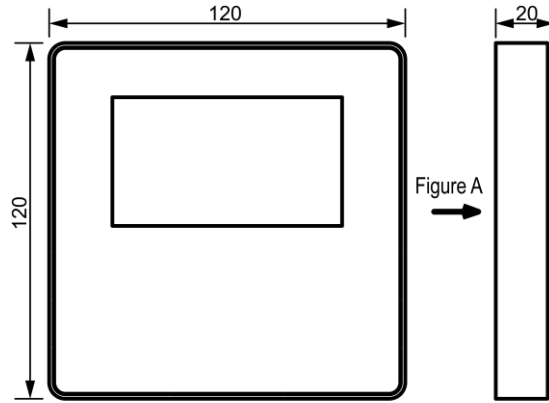
Name	Qty	Remarks
Wired controller	1	\
Cross round head wood mounting screw	3	M4x20 (For mounting on the wall.)
Cross round head mounting screw	2	M4x25 (For mounting on the electrical switch box.)
Installation manual	1	\
Owner's manual	1	\
Plastic expansion pipe	3	For mounting on the wall
Plastic screw bar	2	For fixing on the 86 electrician box.
Switching wires for signal receiving board	1	For connecting the signal receiving board and 4-core shield wire.
Switching wires for wired controller signal	1	(If needed) For connecting the main control panel and 4-core shielding wire.

3) Supplied assemblies on the site

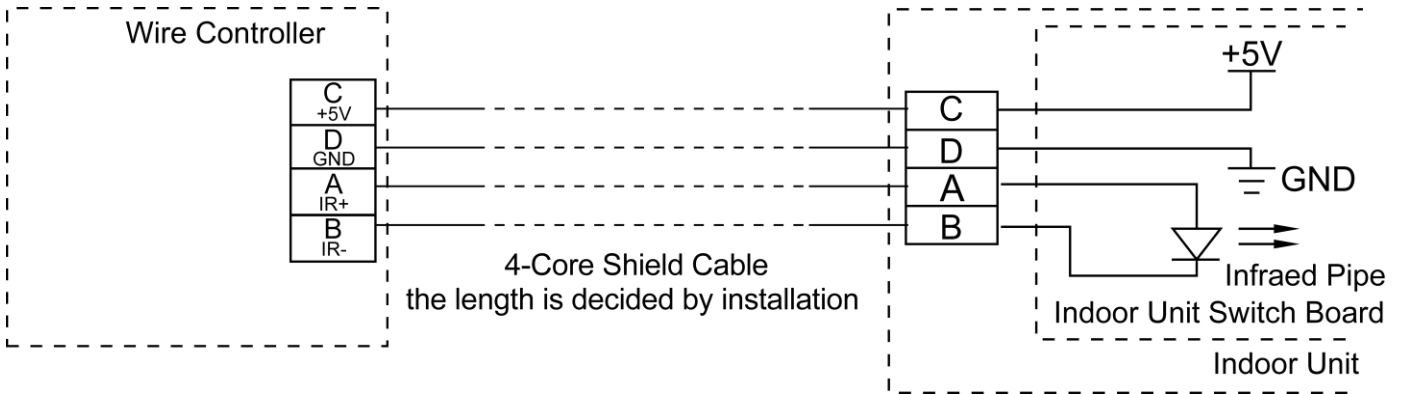
Name	Qty (Embedded into wall)	Specification (Only for reference)	Remarks
4-core shielded cable	1	0.5mm ² ×4	The longest is 15m.
86 Electrician box	1	\	\
Wiring tube (Insulating sleeve and tightening screw.)	1	\	\

4) Installation procedure

- ✓ The installation manual contains information about the procedure of installing wired controller. Please refer to indoor unit installation manual for connecting between wired controller and indoor unit.
- ✓ Circuit of wired controller is low voltage circuit. Never connect it with a standard 220V or 380V circuit or put it into a same wiring tube with the circuit.
- ✓ The shield cable must be connected stable to the ground, or transmission may fail.
- ✓ Don not attempt to extend the shield cable by cutting, if it is necessary, use terminal connection block to connect.
- ✓ After finishing connection, do not use mugger to have the insulation check to the signal wire.
- ✓ Wired remote controller structure size figure (Unit: mm):

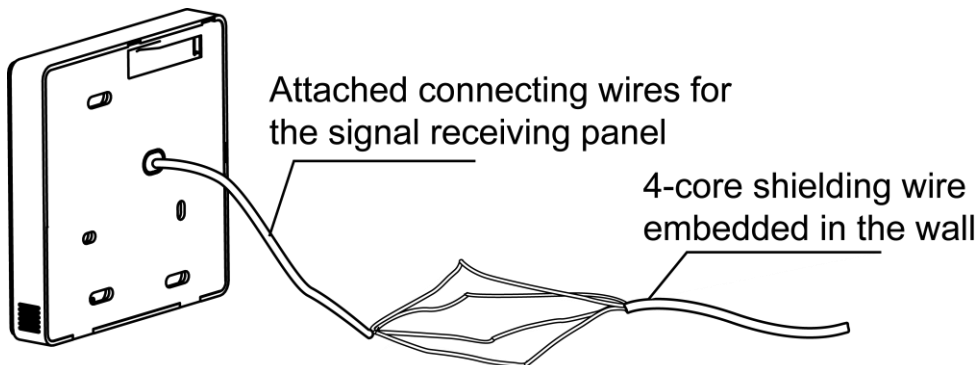


✓ Wiring principle sketch:

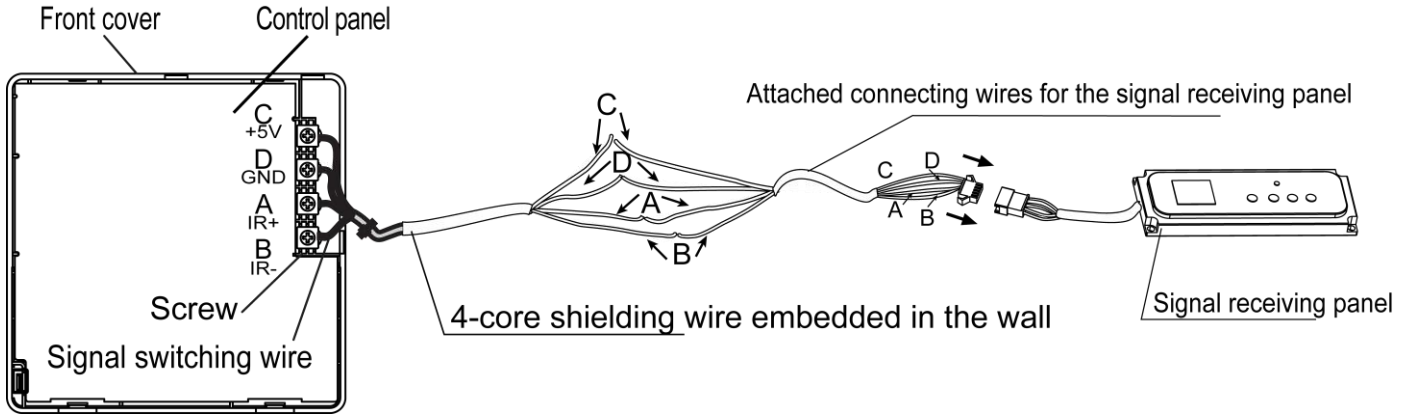


✓ Wiring figure:

Connect two terminals of embedded 4-core shielding wire with the switching wires of wired controller and signal receiving board. Make sure the sequence of 4 terminals (A, B, C and D) should correspond to the wire sequence of signal switching wires (A, B, C and D).



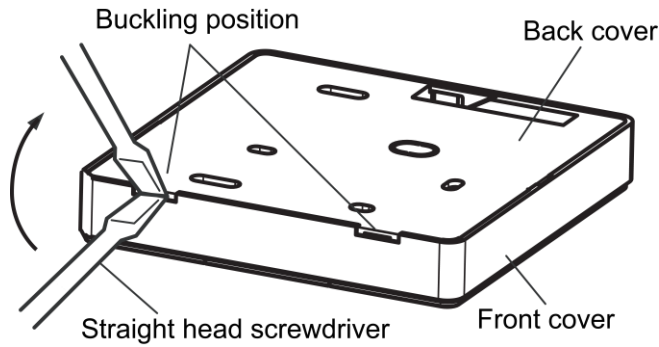
If the embedded 4-core shielding wire cannot go through the wired controller, it can use signal switching for connection; make sure the wires are reliable and firm.



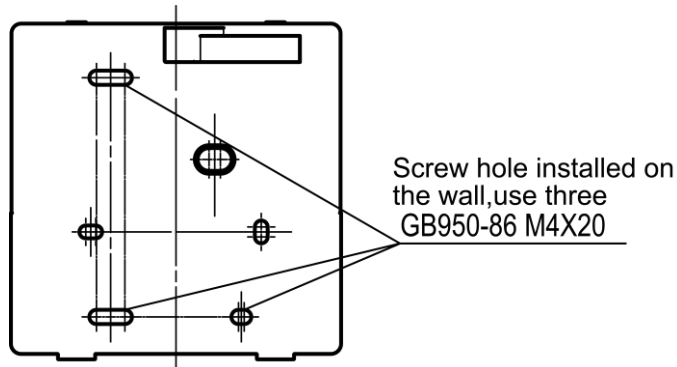
The tightening torque range of screw is: 0.8~1.2N·m (8~12kgf·cm).

✓ Wired controller back cover installation

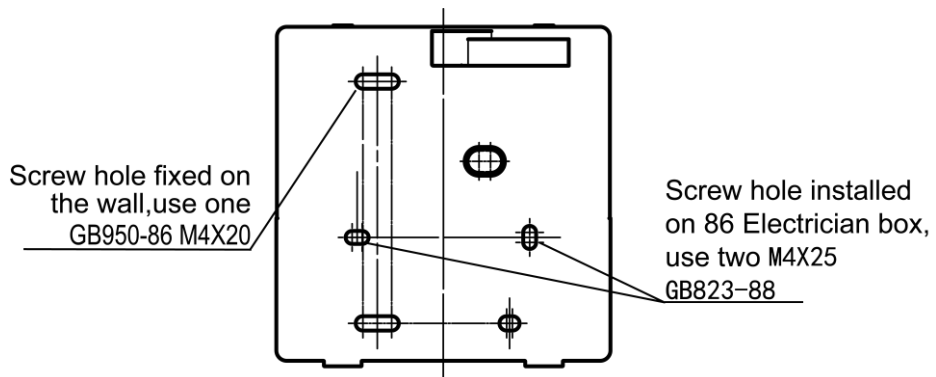
Use straight head screwdriver to insert into the buckling position in the bottom of wired controller, and spin the screwdriver to take down the back cover. Pay attention to spinning direction, otherwise will damage the back cover.



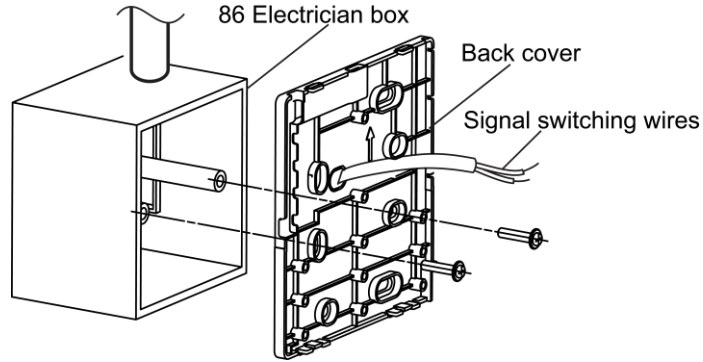
Use three M4x20 screws to directly install the back cover on the wall.



Use two M4x25 screws to install the back cover on the 86 electrician box, and use one M4x20 screws for fixing on the wall.



Adjust the length of two plastic screw bars in the accessory to be standard length from the electrical box screw bar to the wall. Make sure when install the screw bar to the electric box screw bar, make it as flat as the wall.

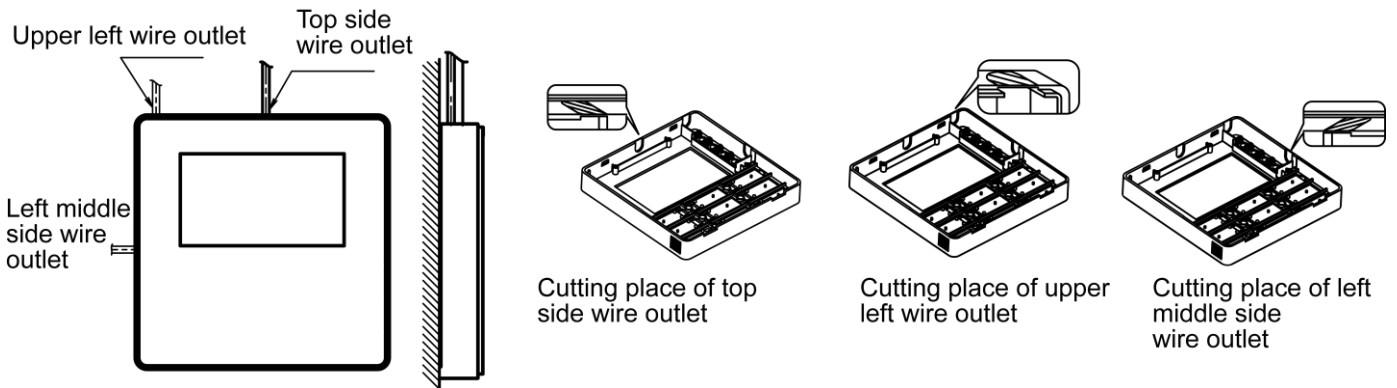


Use cross head screws to fix the wired controller bottom cover in the electrical box through the screw bar. Make sure the wired controller bottom cover is on the same level after installation, and then install the wired controller back to the bottom cover.

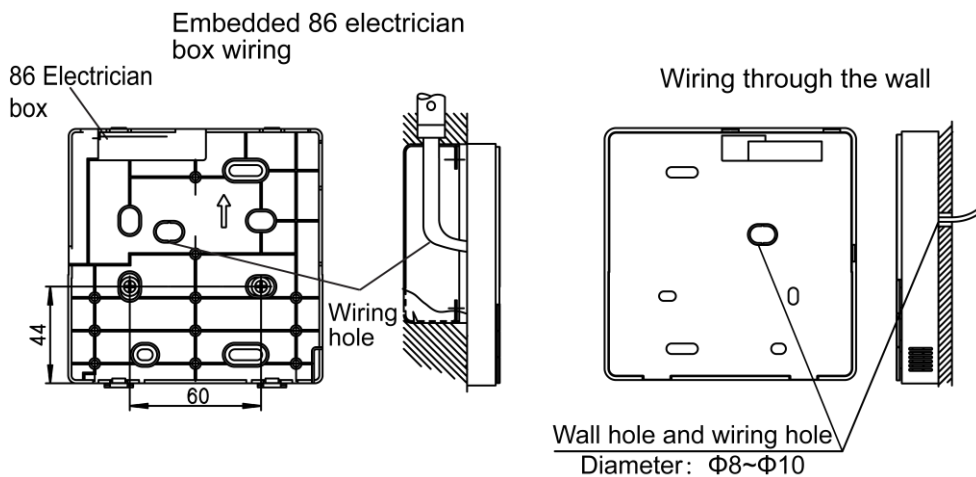
Over fasten the screw will lead to deformation of back cover.

✓ Neaten the wires of the wired controller

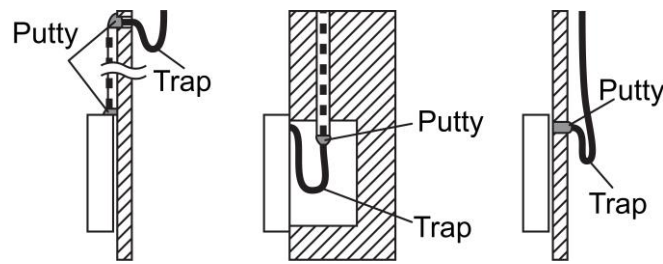
There are three positions of signal wire outlet around the wired controller, when the wired controller directly is installed on the flat wall.



When the wired controller is stalled with electrician box, the back cover of wired controller is already reserved one hole for wire outlet. It is also available for the shielded wire passing by the wall.

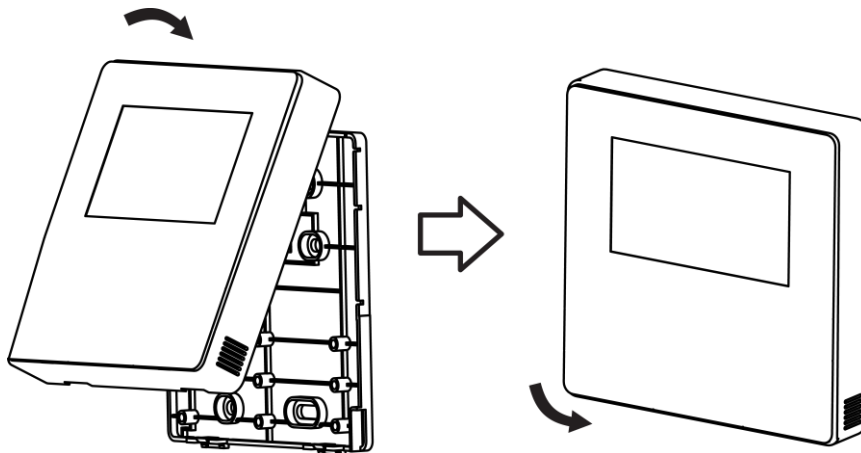


Avoid the water enter into the wired controller, use trap and putty to seal the connectors of wires during wiring installation. When under installation, reserve certain length of the connecting wire for convenient to take down the wired controller while during maintenance.

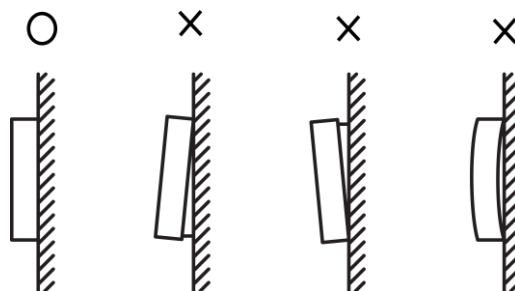


✓ Wired controller’s front cover installation:

After adjusting the front cover and then buckle the front cover. Avoid clamping the communication switching wire during installation.



Correct install the back cover and firmly buckle the front cover and back over, otherwise will make the front cover drop off.






✓ Wired controller initial parameter setting


Change the related functions of the controller through adjusting the initial parameters.

The wired controller initial parameter includes two codes ‘XY’. The first code ‘X’ means the function class, the second code ‘Y’ means detailed configuration of this function.

Step1: Simultaneously press the mode button  and fan speed button  of the wired controller for 5 seconds to enter the parameter setting state.

Step2: The value of the first code ‘X’ is ‘0’, press the temperature setting buttons  and  to adjust the second code value.

Step3: After setting the second code value, press Quiet/OK button  to switch the first code to the next value.

Step4: When the first code value is ‘6’, press Quiet/OK button  again to exit the parameters setting.

The parameter setting table

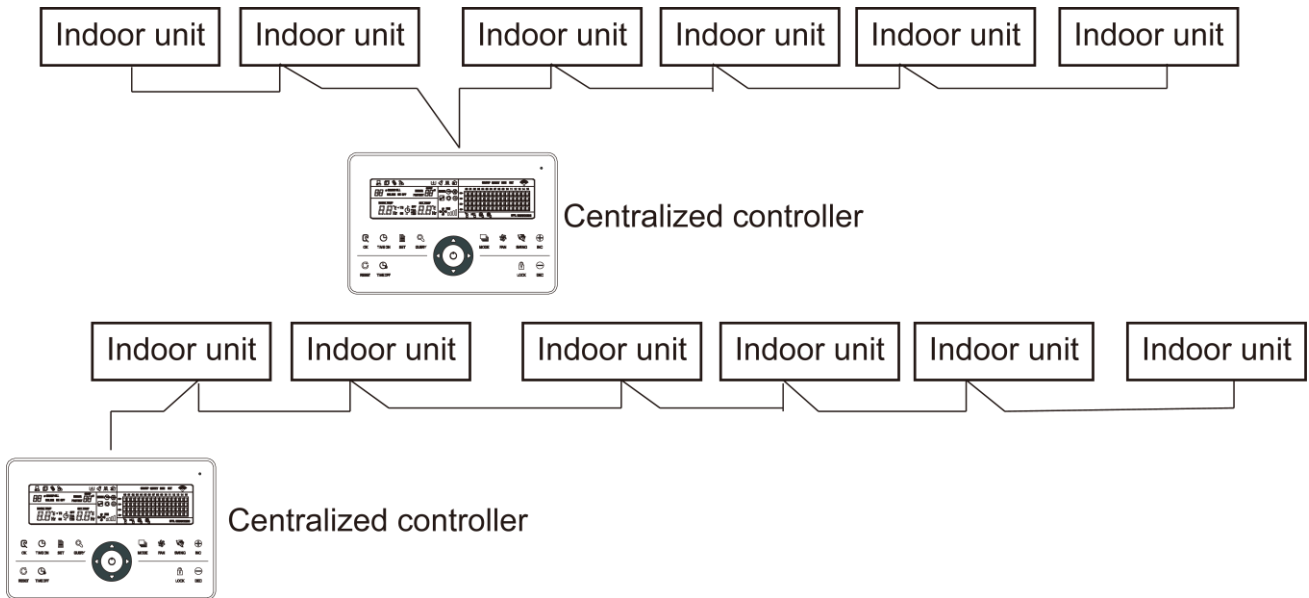
First code	Function	Second code				
		0	1	2	3	4
0	Cooling-only/Heat pump selection	Heat pump (Default)	Cooling only	\	\	\
1	Indoor unit communication address setting	Yes (Default)	None	\	\	\
2	Power-off memory	Yes (Default)	None	\	\	\
3	Filter cleaning reminding	Cancel the reminding function	1250 hours	2500 hours	5000 hours	10000 hours
5	Remote receiving function	Yes (Default)	None	\	\	\
6	Centigrade/Fahrenheit display	Centigrade (Default)	Fahrenheit	\	\	\

Notes: The second code of the filter cleaning reminding is 2500hours, which as default.

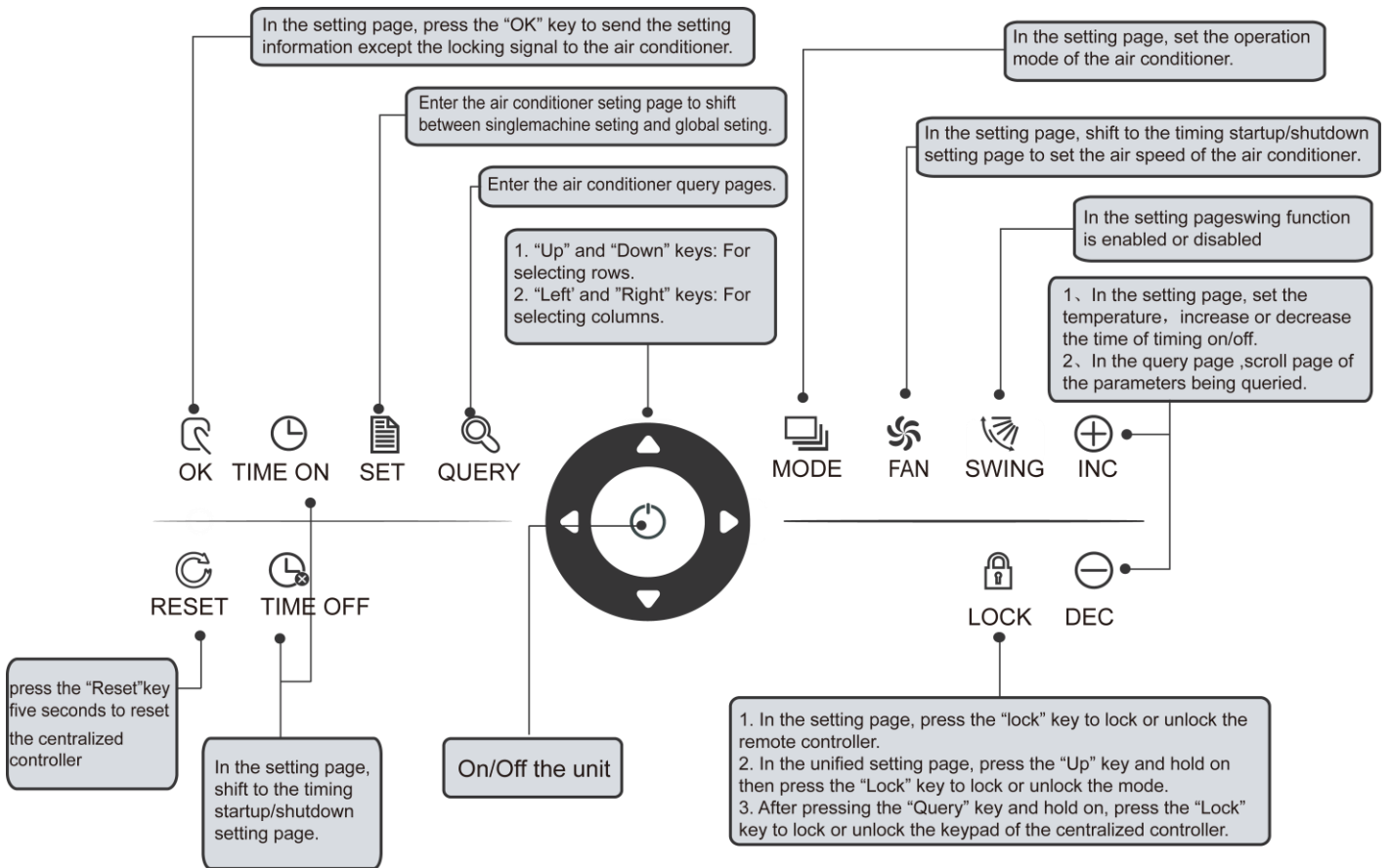
2. Touch Key Centralized Controller: CCM30



CCM30 is new designed and it is a touch key centralized controller. It can be connected up to 64 indoor units, and the connection length can be up to 1200m. The CCM30 centralized controller has the air filter cleaning reminding function and it is convenient to remind users to clean the air filter. Both of the following wiring modes centralized controller and indoor units are applicable.



2.1 General functions and description



(1) Query key

Any time when you press the key, the selected operation mode is to query the operational state of the air conditioner.

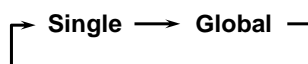
By default, the first in-service air conditioner will be queried.

(2) Setting key

In other display modes, press this key can enter the setting mode.

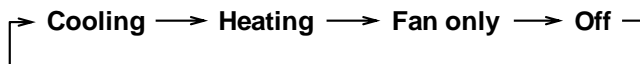
By default, it is a single setting, and the first in-service air conditioner is displayed. In setting the operation mode, press this key again, and the operation will be performed for all air conditioners in the network. Press

the key repeatedly to shift between a single setting and global setting.



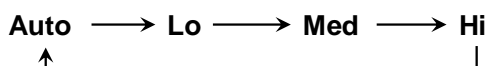
(3) Mode key

Under the setting operation mode, press this key to set the operation.



(4) Fan key

Under the setting operation mode, press this key to set the fan of the indoor unit to run in the automatic, high, medium or low level of air.



(5) Time on key

Under the setting operation mode, press this key can set the timing to turn on the air conditioner; press this key again can exit the timing setting, and restore the normal temperature regulation operation mode

(6) Time off key

Under the setting operation mode, press this key can set the timing shutdown of air conditioner, press this key again will exit the timing setting, and restore the normal temperature regulation operation mode.

(7) Swing key

Under the setting operation mode, press this key can enable or disable the swing function. If all currently selected air conditioners have no swing function, no effect will result after pressing the key.

(8) Leftward key

In the query mode, if this key is pressed, the operation state data of the previous air conditioner will be displayed. If it is currently on the first machine, the data of the last machine will be displayed, when the key is pressed. If you hold down this key, the address will decrease one by one. In the setting mode, if it is in single operation mode, the air conditioner of the previous in-service address number will be selected, when this key is pressed, if it is in the global operation mode, no effect will result when this key is pressed. In the main page, press the key to enter the query mode. By default, it is the first in-service air conditioner.

(9) Rightward key


In the query mode, when the key is pressed, the next in-service air conditioner is selected, and its operational state data will be displayed. If it is currently on the last air conditioner, the first one is selected and its data displays, when the key is pressed. If this key is long pressed, the address will increase one by one.

In the setting mode, if it is in the single operation mode, when the key is pressed, the next in-service air conditioner will be selected. If it is in the global operation mode, no effect will result when the key is pressed.

In the main page, press the key to enter the query mode. By default, it is the first in-service air conditioner.

(10) Downward key

In the main page, press this key can enter the query mode. By default, it is the first in-service air conditioner. In

any other time, press this key  will select the next row corresponding position air conditioner.

In the setting mode, if the global operation mode is selected, this key is invalid. If it is on the last row, press this key again to shift to the first row air conditioner. If this key is long pressed, the row will increase one by one.

(11) Upward key 

In the main page, press this key can enter the query mode. By default, it is the first in-service air conditioner. In any other time, press this key will select the previous corresponding position air conditioner. In the setting mode, if selected all the air conditioners to operate, this key is invalid. If it is on the first row, press this key again, and shift to the last row corresponding air conditioner. If you hold down this key, the row will decrease one by one.

(12) Add key  INC

1) Query mode:

Press this key, display the data of the last page. If it is now in the last page, press this key again and the first page will be displayed.

2) Setting operation mode


① Temperature adjusting method

Press this key; the setting temperature will increase 1°C. If you hold down the key "INC", the setting temperature will increase one by one.

When reached the highest allowed to set temperature, it cannot increase.

② Timing on or timing off setting method

Press this key "INC", it will select the next setting time. If you hold down this key, the next data will be selected one by one. When reached the max. allowed setting time, it cannot increase.

(13) Reduce key  DEC

1) Query mode

Press this key "DEC", display the data of the previous page. If it is now in the first page, press is key again and the last page will be displayed.

2) Setting operation mode

① Temperature adjusting method

Press this key "DEC", the setting temperature will decrease 1°C. If you hold down this key, the setting temperature will decrease one by one. When reached the lowest allowed set temperature, it cannot decrease.

② Timing on or timing off setting method

Press this key "DEC", it will select the next setting time. If you hold down the key "DEC", the next data will be selected one by one. When reached the min allowed setting time, it cannot decrease.

(14) ON/OFF key 

Any time when you press the key, the centralized startup/shutdown operation is performed for all current in-service air conditioners in the centralized controller network.

(15) Confirmation key  OK

In the setting mode, press this key can send the currently selected mode state and the auxiliary function state to the selected air conditioner.

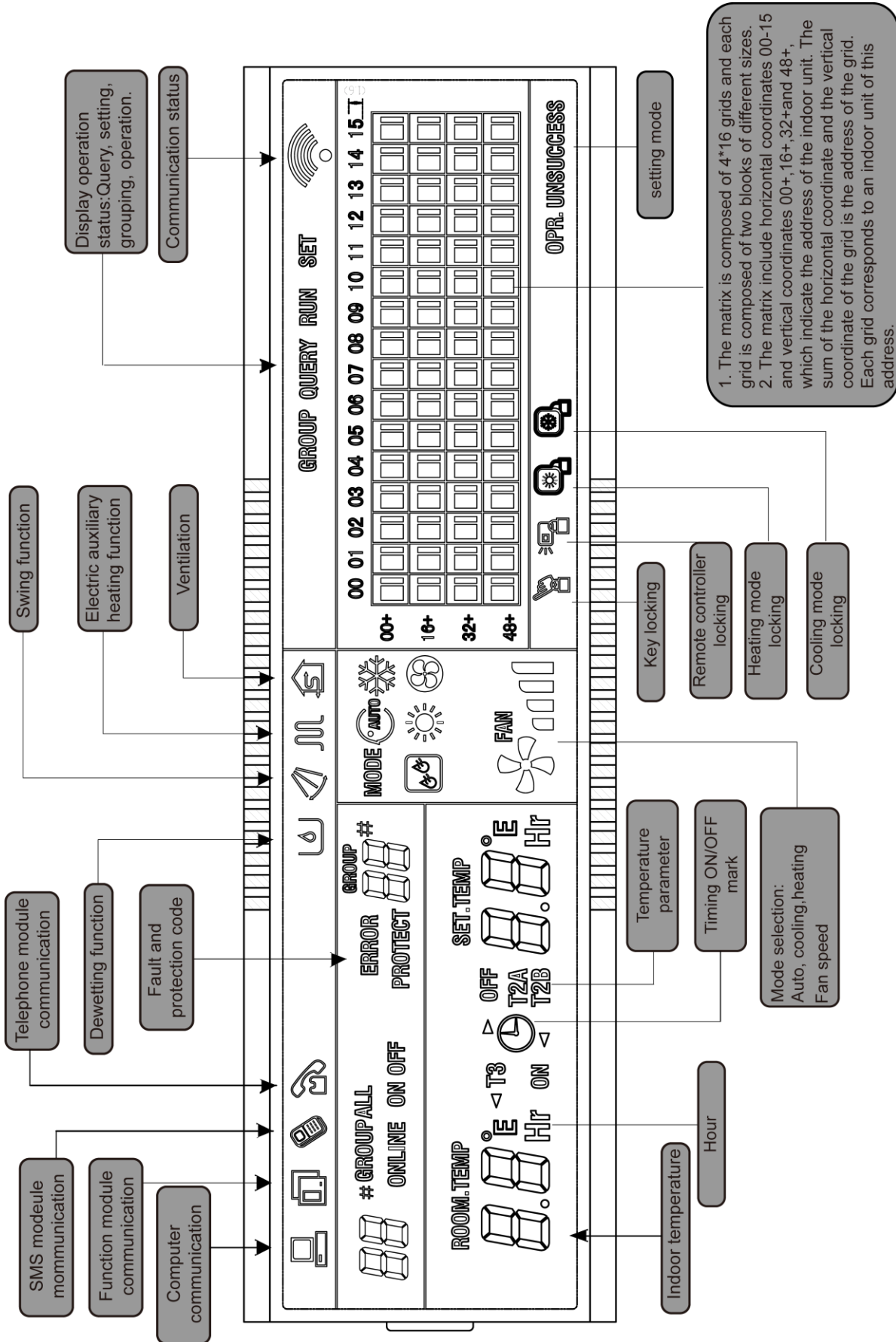
(16) Reset key  RESET

Any time when the reset key is pressed, the centralized controller will reset. The result is the same as the result of restoring power-on after power failure.

(17) Lock key  LOCK

Any time when this key is pressed, the selected air conditioner can be locked or unlocked.

2.2 LCD display



2.3 Other operations

※ Various locking functions

1. Centralized controller locking

The centralized controller locking state will be recorded when powered off. It won't dismiss when re-power on

until receiving the unlocking order.

1) Effect

① When the centralized controller is under locking state, it cannot change the air conditioner's operating state through the centralized controller (such as ON/OFF the unit, setting mode, change the setting temperature, change the fan speed, unlock the exiting locking state etc.), but it can do the query operation, until unlocking and then recover to normal.

② When the centralized controller is under the locking state, all the air conditioners in the centralized controller network will be remote controller locked.

2) Operation

① Locking

The centralized controller can be locked by the computer only.

② Unlocking

a) When the centralized controller and computer communicate normally

The centralized controller can be unlocked by the computer only. When the centralized controller is unlocked, the controller will send the order to unlock the remote controller locking of all the air conditioners.

b) When the centralized controller and computer communication abnormally

When the centralized controller is locking, the centralized controller can be unlocked by the way that the press QUERY key and holds on, then press MODE key (it should operate within one minute after centralized controller is re-powered on or the RESET key is pressed).

The remote controller locking of the air conditioner is remained.

2. Remote controller locking

1) Effect

① When the air conditioner is under remote controller locking state, it will not receive the remote signals from remote controller or wired controller, until unlocking.

② The air conditioner can be operated by the centralized controller.

2) Operation

① Can lock or unlock through the computer.

② Can operate by a centralized controller.

In the centralized controller setting interface, press LOCK key to lock or unlock.

If the current state is remote controller locking, press the key to unlock.

If there's no remote controller locking, press the key to lock.

3. Mode locking

1) Effect

Under the mode locking state, only can choose the mode which hasn't conflict with locking mode through centralized controller to operate the air conditioner,

2) Operation

Can set the heat and cool mode lock or not.

Under mode locking state, if set the new mode locking, it must be unlocking first, then can operate the new mode locking.

① Can lock or unlock through the computer.

② Can operate by a centralized controller.

In the centralized controller setting interface, choose all the air conditioners of the centralized controller network as the object, press Upward key and hold on, then press LOCK key to do the mode locking or unlocking.

If the current state is mode locking, press the key to unlock.

If there isn't a mode of locking, press the key to lock.

※ Power on or reset

When the centralized controller is powered on or resets by the RESET key:

The buzzer long buzz for 2 seconds: all display segments of the LCD are luminous for 2 seconds and then goes off;

1 second later, the system enters normal display state. The centralized controller is in the main page display state and displays the first page, and searches the in-service air conditioners in the network.

Once the search is finished, the centralized controller enters the mode setting page, and sets the first in-service air conditioner by default.



※ **Emergency stop and forced on**

When the emergent stop switch of the centralized controller is connected, all the air conditioners in the centralized controller network will be shut down compulsorily, and the LED flashes as 0.5Hz. The centralized controller and computer and all functional modules are disabled from startup and shutdown until the emergent stop switch is broken. When the forced on the switch of the centralized controller is connected, all air conditioners in the network of the centralized controller will start up compulsorily. By default, they will run before the power failure mode.

The startup and shut down operations of the centralized controller and computer and all functional modules will be disabled (only the command of a startup is sent to the air conditioner, without affecting operation of the remote controller after startup) until the forced on the switch is broken.

If the foregoing two switches are connected concurrently, the emergent stop switch shall have preference.




※ **ON and OFF operation**


Use the " " key or " " key can turn on and turn off the air conditioners in the centralized controller network.

The ON mode will accord to the system mode locking or other limit conditions for judging, if there is conflict, it will auto adjust to the next mode without conflict; if all the modes have a conflict, then it cannot operate the unit.


※ **Use " " key to TURN ON and TURN OFF the unit**


Press this key can operate a single air conditioner or all the air conditioners in the centralized controller network.

1) Choose the object. Press SET key to choose a single air conditioner or all air conditioners in the centralized controller network. If choose a single air conditioner, then use the keys , ,  and

 can choose the air conditioner.


2) Use "MODE", "FAN", "ADD" and "Reduce" key to set the operating mode and operating parameters, such as fan speed, setting temperature etc.

3) Use " " key, centralized controller sends the relative order to the operating object.

After setting the operating parameter for the air conditioner, if not press the key " ", the setting parameter will not be sent to the air conditioner, and the current operation of the air conditioner is not affected (except locking operation).

※ **Use " " key to TURN ON and TURN OFF the unit**

Only can operate all air conditioners, not for single in the centralized controller network:

Long press " " key: press this key for over 2 seconds then loose.

Short press " " key: press this key and then loose within 2 seconds.

According to different states and operation ways of air conditioners in the current centralized, there are

following situations:

1) If there are one or more air conditioners is under ON state (include timing process of timing ON and OFF), "

⏻" key only short press effective.

Only sends the shutdown order to the air conditioner which under the ON state, and if the unit is under the OFF state, the controller will not send OFF order to it.

The memory function is activated; the current state of all air conditioners is memorized.

2) All the air conditioners in the centralized controller network are OFF states.

① Short press "⏻" key

The centralized controller reads the memory contents, and sends relative order to all air conditioners.

② Long press "⏻" key



a) If current page is setting parameters, and the setting mode is not OFF, the centralized controller will send orders to all air conditioners according to parameters, such as setting mode, fan speed, setting temperature, etc.

b) If the current is under setting interface but the setting mode is OFF state or under other interfaces, the centralized controller will send the default ON order to all air conditioners. The default ON order is: cooling mode, high fan speed, setting temperature is 24°C or 76°F, operates the swinging function.

※ **Air filter cleaning remind display description**

1) The centralized controller records the total running time of the indoor unit.

When the accumulated running time reaches the pre-set value, the reminding dual "88" (as show in c part of the Fig. A) will display "FL" to remind users that the air filter of the indoor unit need to be cleaned.

When the centralized controller displays FL, it needs to manual operation to clear the icon. Press SWING key  and hold on then press QUERY key , can clear FL reminding.

At the same time, the accumulated time of centralized controller powered on will be cleared.

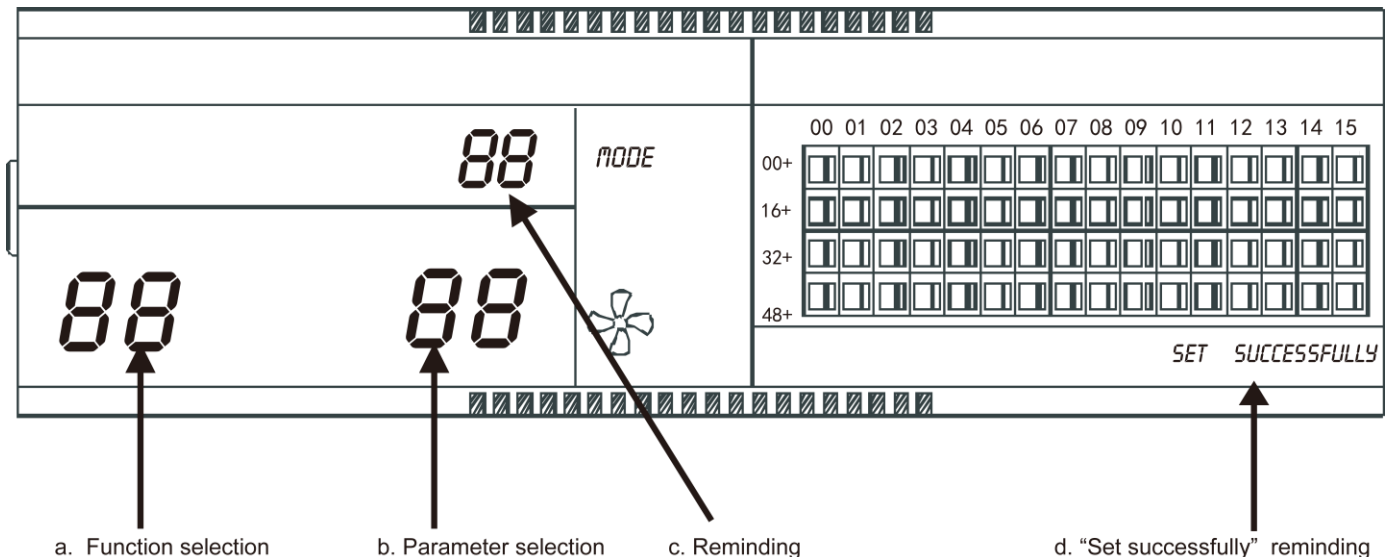



Fig. A

2) Function setting

① Dial the dial code 3 to "ON" (refer to table 2.3), and when controller power on within 1 minute, press QUERY key and FAN key together will enter the optional function setting page. The icon  (as show in b part of the Fig. A) will be flashed with 1Hz frequency (default display 00), and users can choose the

function from table 2.2. Press "INC" and "DEC" keys can select function, and then press "OK" key to enter parameter selection.

- ② After entering parameter selection, the function selection icon **BB** (as show in a part of the Fig. A) will be lighted on; the parameter selection icon **BB** (as show in b part of the Fig. A) will be flashed with 1Hz frequency and display optional parameter code. Through pressing "INC" and "DEC" keys can select the detailed parameter.

- ③ Press "OK" to confirm parameter selection (details parameter codes' corresponding time refer to table 2.3).

- ④ After setting successfully, the function selection icon **BB** and parameter selection icon will be lighted on, the screen will display "Setting successfully" (as show in b part of the Fig. A). After 3 seconds will exit optional function setting automatically, and the screen will be back to normal display. After entering optional function setting, no operations in 5 seconds will exit function selection automatically, the setting parameter will not change. Only press "OK" key to confirm the parameter then the setting parameter will save.

Table 2.1 Code of selecting the clear filter function

Function code	Function setting
00	Only display, no function
01	Cleaning filter screen reminding

Table 2.2 Code of different times of reminding clear filter

Parameter code	Time (hour)
00	0
01	1250
02	2500
03	5000
04	10000

※ Dial code operation specification

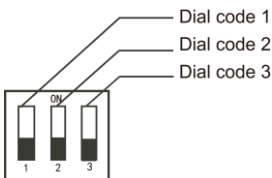


Table 2.3 Dial code definition

	ON	OFF
Dial code 1	CCM30 for 3-pipes	CCM30 for 2-pipes
Dial code 2	Fahrenheit	Centigrade
Dial code 3	With the optional function	No the optional function

Notes:

1. For the new series product, we can connect the indoor CCM controller via XYE port of master outdoor unit of every refrigerant system. Notice that in this case, the outdoor unit must be set to auto addressing mode. And it will be effective after about 6 minutes.
2. To connect indoor CCM controller via XYE port of indoor unit, this wiring method is suitable for all type of indoor units, not just for new indoor units.
3. When new indoor units and old indoor units mix connect to one refrigerant system, we can just connect the indoor CCM controller via XYE port of indoor units. If we connect the indoor CCM controller via XYE port of master outdoor unit, the CCM controller cannot control old indoor units.
4. If one system that connect to indoor CCM controller include 10 HP or above duct indoor unit, we recommend you set the address of every indoor unit manually.












2.4 Fault and Protection codes

Fault code	content
EF	Other fault.
EE	Water level detection malfunction.
ED	Reserved.
EC	Cleaning malfunction.
EB	Inverter module protection.
EA	Current of compressor is too large (4 Times).
E9	Communication malfunction between main board and display board.
E8	Wind blowing speed is out of control.
E7	EEProm error.
E6	Detection of current direction alternating is abnormal.
E5	T3 or T4 sensor of discharge of compressor fails down.
E4	T2B sensor malfunction.
E3	T2A sensor malfunction.
E2	T1 sensor malfunction.
E1	Communication malfunction.
E0	Phase sequence disorder or loss of power phase.
07#	/
06#	/
05#	/
04#	/
03#	Communication malfunction between centralized controller and PC (gateway).
02#	Communication malfunction between centralized controller and functional module.
01#	Communication malfunction between centralized controller and network interface module.
00#	Communication malfunction between network interface module and main control board.


Protection code	Content
PF	Other protection.
PE	Reserved.
PD	Reserved.
PC	Reserved.
PB	Reserved.
PA	Reserved.
P9	Reserved.
P8	Compressor's current is too large.
P7	Voltage of power supply is too high or too low.
P6	Pressure of discharge is too low.
P5	Pressure of discharge is too high.
P4	Temp. of discharge pipe is abnormal.
P3	Temp. of compressor is abnormal.
P2	Condenser high-temperature protection.
P1	Anti-cool air or defrost protection.
P0	Evaporator temperature protection.

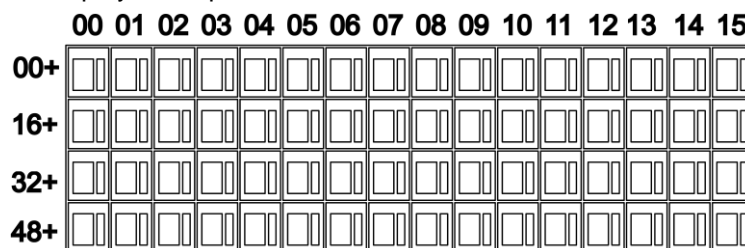
2.5 General display data entries

1) General display data is displayed in all display pages.

- Under the interconnected control of the computer or gateway, the data is displayed in graphic (). Otherwise, no data is displayed.
- If the centralized controller is connected with the functional module for communication, the data is displayed in graphics (). Otherwise, no data is displayed.
- If the centralized controller is connected with the SMS remote control module for communication, the data is displayed in graphics (). Otherwise, no data is displayed.
- If the centralized controller is connected with the telephone remote control module for communication, the data is displayed in graphics (). Otherwise, no data is displayed.
- In normal operation of the centralized controller, the periodical cycle module communicates with the network interface module, and the data is displayed dynamically and cyclically: (blank), , , .
- In the centralized control locked state or the keypad locked state, the locking flag () is displayed. After unlocking, it is not displayed. In the centralized controller locked state or the keypad locked state, the locking flag is displayed constantly. If both of them are locked concurrently, the locking flag is displayed constantly.
- In the setting page, if the selected air conditioner is in the remote controller locked state (in case of non-single unit operation, as long as one unit is in the remote controller locked state, it is deemed the locked state), the flag () is displayed constantly.
- If all indoor units lock the cooling mode, this flag () will display, and if all indoor units lock the heating mode, the flag () will display.

2) Data display handling

- Indoor unit code (address) display: display range: 00~63, and with # being luminous concurrently.
- Indoor temperature display: display range: 00~99°C (or 99°F). The indoor temperature is displayed concurrently. If the temperature is higher than 99°C (or 99°F), 99°C (or 99°F) will be displayed. If the temperature value is invalid, '--'will be displayed.
- If timing startup or shutdown is set, the flag () is displayed.
- T3, T2A and T2B display: in the single-machine query page, display can shift between T3, T2A and T2B; by the way, the temperature value is displayed concurrently, with the corresponding °C being luminous.
- In case of air conditioner fault or protection, the corresponding fault or protection code, the corresponding fault or protection code can be displayed.
- Liquid crystal matrix display description:



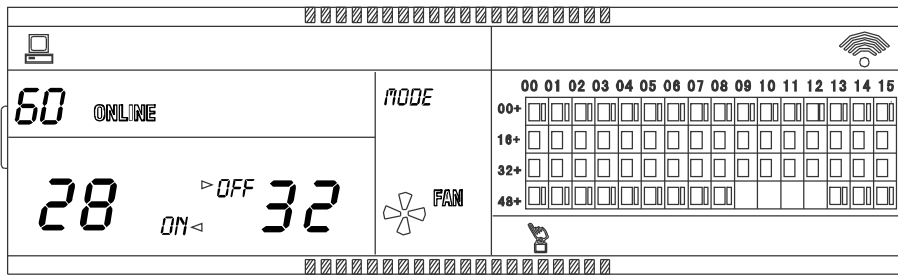
The liquid crystal matrix is composed of 4x16 grids, and each grid is composed of two blocks of different sizes. The matrix includes horizontal coordinates 00~15 on the upper side and vertical coordinates 00+, 16+, 32+ and 48+ on the left side, which indicate the address of the indoor unit. The sum of the horizontal coordinate and the vertical coordinate of the grid is the address of the grid. Each grid corresponds to an indoor unit of this address. One grid is composed of two blocks of different sizes. The state indication table is as follows;

	Constantly on	Slow blink		Fast blink
Big black block	In-service	Selected		Out of service
Small black block	Power on		Fault of indoor or outdoor unit	Power off

3) LCD display description

● Description of the main page

The LCD displays the main page, 60 air conditioners are in service, of which 28 are powered on and 32 off.



In the matrix, the big dots from (16+, 00) to (32+, 15) are luminous, and the small dots are not luminous. It indicates the 32 air conditioners with the addresses from 16 to 47 are powered off.

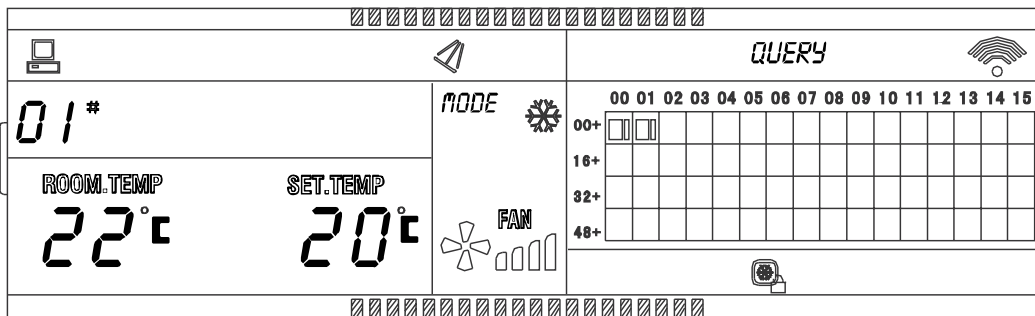
In the matrix, the big and small dots from (48+, 09) to (48+, 12) are not luminous. It indicates the four air conditioners with the address from 57 to 60 are outside the network.

All other big and small dots in the matrix are luminous. It indicates all other air conditioners are in the network and powered on.

The address of the air conditioner is sum of the coordinates. For example, the address of (48+, 09) is 09+48=57.

The centralized controller keypad is locked, and the centralized controller communicates with the computer normally.

● Description of the query page

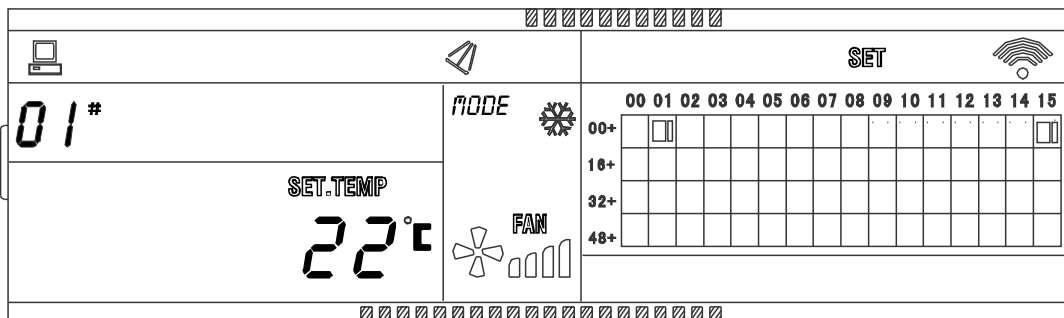


The LCD displays the query page, and the air conditioner with the address of 01 is being queried. Mode of the air conditioner with the address 01 is cooling, high speed air supply, swing on, indoor temperature 22°C, setting temperature 20°C and cooling mode locked.

In the matrix, only the big and small black dots at (00+, 00) and (00+, 01) are luminous. It indicates the in-service and power-on state of the air conditioners with the addresses of 00 and 01.

The centralized controller communicates with the computer normally.

● Description of the setting page



The LCD display displays the setting page, and queries the air conditioner with the address of 01.

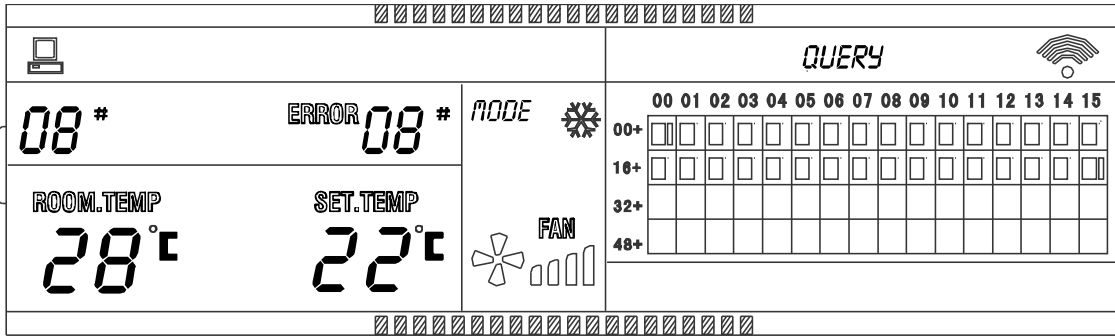
The mode of the air conditioner with the address 01 is: Cooling, high fan speed, swing on, setting temperature 22°C and cooling.

In the matrix, only the big black dots at (00+, 01) to (00+, 15) are luminous. It indicates the air conditioners

with the addresses 01 and 15 are in service.

The centralized controller communicates with the computer normally.

● **Fault page display description**



Query the air conditioner with the address of 08 in the query page.

The air conditioner with the address of 08 is faulty, and fault code is 08. The big black dot below (00+, 08) blinks.

In the matrix, only the big and small black dots at (00+, 00) and (16+, 15) illuminate. It indicates the in-service state of the air conditioner power on, with the addresses 00 and 31.

The centralized controller communicates with the computer normally.

2.6 Centralized controller installation

※ **Dimensions (Unit: mm)**

There are two kinds of appearance for your choice. The main difference is the controller cover and you can choose you like.

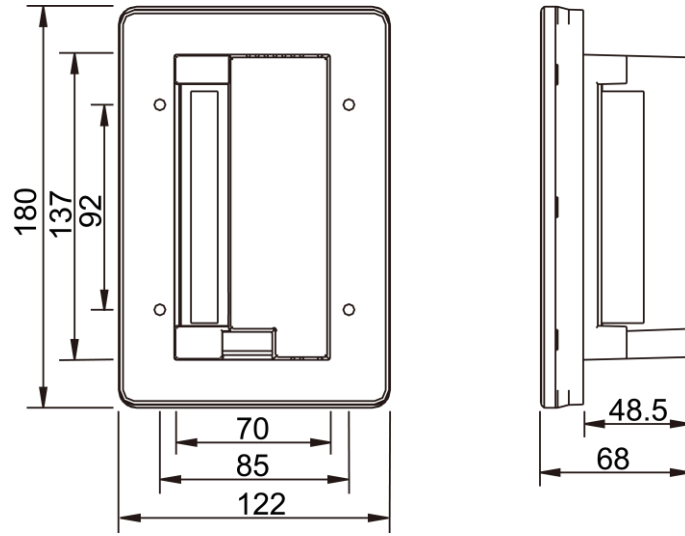
- (1) The structure A must be embedded into the wall of the installation mode, taken from the walls of the interior wiring way would be more appropriate; and you must reserve a chisel installation on the wall before installation.
- (2) The structure B does not need to be embedded into the wall, playing four mounting screw mounting and shape is a regular cuboid, can also like the old structure embedded in the wall mounted, connecting line from the set control above and below, and a rear leading-out.



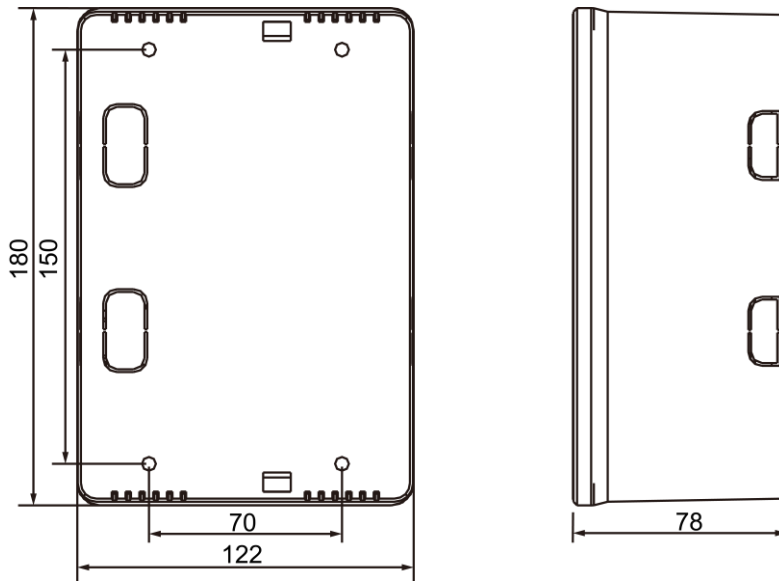
CCM30/BKE-A



CCM30/BKE-B

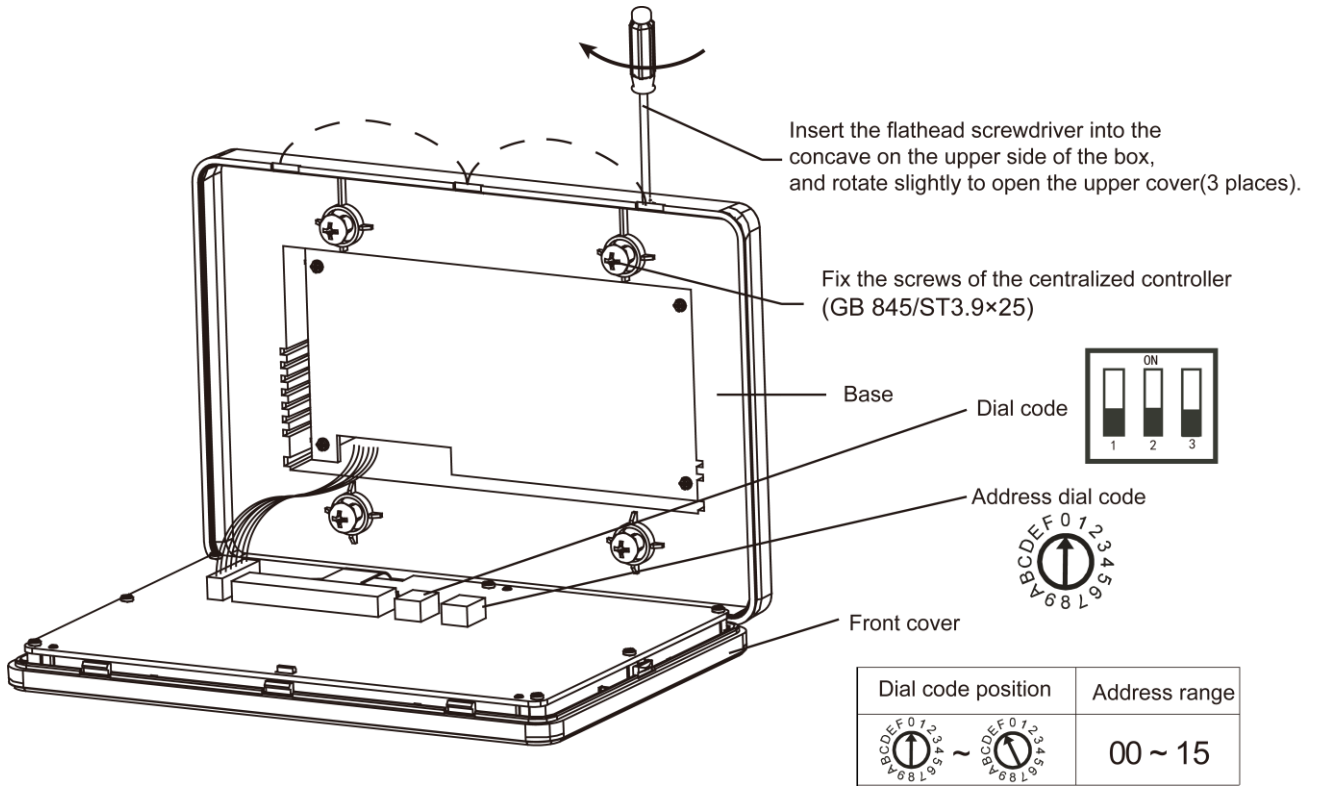


CCM30 BKE/A



CCM30 BKE/B

※ Installation diagram



※ Terminal instruction

