


BGH Silent Air

BAJA SILUETA STANDARD

R-410A 



(BSBSM--CTM)

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※The specifications, designs, and information in this book are subject to change without notice for product improvement.

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SPECIFICATION

INDOOR UNIT

Product name			BSBSM36CTM	BSBSM48CTM	BSBSM60CTM
Power supply		V-ph-Hz	380~420-3-50	380~420-3-50	380~420-3-50
Cooling	Capacity	Btu/h	36000	48000	55000
	Input	W	4050	5540	6550
	Current	A	6,70	9,57	11,31
	EER	W/W	2,61	2,54	2,46
Heating	Capacity	Btu/h	39600	55000	60000
	Input	W	3400	4570	5460
	Current	A	6,1	7,89	7,90
	COP	W/W	3,41	3,53	3,22
Indoor fan motor	Model		YSK140-4P	YSK170-4P	YSK180-4P
	Qty		1	1	1
	Input	W	291/168/138	356/201/152	355/223/173
	Capacitor	uF	10UF/450V	10UF/450V	10UF/450V
	Speed(Hi/Med/Lo)	r/min	1070/790/710	1070/750/650	1080/830/710
Indoor coil	Number of rows		3	4	4
	Tube pitch(a)*row pitch(b)	mm	21x13.37	21x13.37	21x13.37
	Fin spacing	mm	1,4	1,4	1,4
	Fin type		Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	Φ7,inner grooved tube	Φ7,inner grooved tube	Φ7,inner grooved tube
	Coil length * height * width	mm	955x336x40.11	1030x378x53.48	1030x378x53.48
	Number of circuits		8	8	8
Indoor air flow (Hi/Med/Lo)	m ³ /h	2270/1890/1650	3010/2410/1940	3150/2510/1990	
Indoor external static pressure (Pa)	Pa	80	100	100	
Indoor noise level (Hi/Med/Lo)	dB(A)	48/40/37		47/40/38	
Throttle type		/	/	/	
Indoor unit	Dimension (WxDxH)	mm	1140x775x270	1200x865x300	1200x865x300
	Packing(WxDxH)	mm	1355x795x350	1385x920x373	1385x920x373
	Net/Gross weight	kg	36/43	44.5/53	47/55
Design pressure	MPa	4.2/1.5	4.2/1.5	4.2/1.5	
Drainage water pipe diameter	mm	0DΦ25	0DΦ25	0DΦ25	
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.52/Φ19(3/8"/3/4")	Φ9.52/Φ19(3/8"/3/4")	Φ9.52/Φ19(3/8"/3/4")
Controller			KJR-10B/DP(T)-E	KJR-10B/DP(T)-E	KJR-10B/DP(T)-E
Operation temperature	Cooling	°C	17~32	17~32	17~32
	Heating	°C	0~30	0~30	0~30

OUTDOOR UNIT

Product name		BSBSM36CTM	BSBSM48CTM	BSBSM60CTM	
Power supply	V-ph-Hz	380~420-3-50	380~420-3-50	380~420-3-50	
Max. input consumption	W	4950	6500	7500	
Max. input current	A	10	11	12,6	
Compressor	Model	C-SBN303H8D	C-SBN373H8D	C-SBN453H8D	
	Type	Scroll	Scroll	Scroll	
	Brand	Sanyo	Sanyo	Sanyo	
	Capacity	Btu/h	33438	48109	55956,8
	Input	W	3650	4750	5750
	Rated current(RL A)	A	6,58	8,22	9,77
	Locked rotor Amp(LRA)	A	48	/	67
	Thermal protector position		Internal	Internal	Internal
	Capacitor	μF	/	/	/
Refrigerant oil	ml	1700	1700	1700	
Outdoor fan motor	Model	YDK190-6D(B)	YDK190-6D(B)	YDK65-6F(B)	
	Qty	1	1	2	
	Input	W	290	290	162
	Capacitor	μF	10uF/450V	10uF/450V	(3.5UF/450V)X2
	Speed	r/min	830	830	765
Outdoor coil	Number of rows	2	2	2	
	Tube pitch(a)* row pitch(b)	mm	21x13.37	22x19.05	22x19.05
	Fin spacing	mm	1,4	1,6	1,6
	Fin type		Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	Φ7,inner grooved tube	Φ7.94, inner groove tube	Φ7.94, inner groove tube
	Coil length * height * width	mm	890x903x26.74	887x880x38.1	837x1100x38.1
	Number of circuits		7	10	4
Outdoor air flow (Max.)	m ³ /h	5500	6000	6500	
Outdoor noise level (sound pressure)	dB(A)	61	63	63	
Throttle type		Capillary	Capillary	Capillary	
Outdoor unit	Dimension (WxDxH)	mm	990x345x965	990x345x965	900x350x1170
	Packing(WxDxH)	mm	1120x435x1100	1120x435x1100	1032x443x1307
	Net/Gross weight	kg	85/93	90/95	96/105.5
Refrigerant type/Quantity	Type		R410A	R410A	R410A
	Charged volume	kg	2.4	2.8	3.2
Design pressure	MPa	4.2/1.5	4.2/1.5	4.2/1.5	
Refrigerant piping	Liquid side/ Gas side	mm (inch)	Φ9.52/Φ19(3/8"/3/4")	Φ9.52/Φ19(3/8"/3/4")	Φ9.52/Φ19(3/8"/3/4")
	Max. pipe length	m	30	50	50
	Max. difference in level	m	20	25	25
Ambient temperature	Cooling	°C	18~43	18~43	18~43
	Heating	°C	-7~24	-7~24	-7~24

1. Model Lists

1.1 Indoor Units

R410A		Capacity multiplied by 1000Btu/h		
Type	Function	36	48	60
Duct	Cooling and heating	●	●	●

1.2 Outdoor Units

Universal Outdoor unit Model	Compressor type	Compressor Brand	Matched indoor units
Heat Pump			
BSBSM36CTM	SCROLL	SANYO	BSBSME36CTM
BSBSM48CTM	SCROLL	SANYO	BSBSME48CTM
BSBSM60CTM	SCROLL	SANYO	BSBSME60CTM

2. External Appearance

2.1 Indoor Units

Duct



2.2 Outdoor Units



Single fan outdoor unit

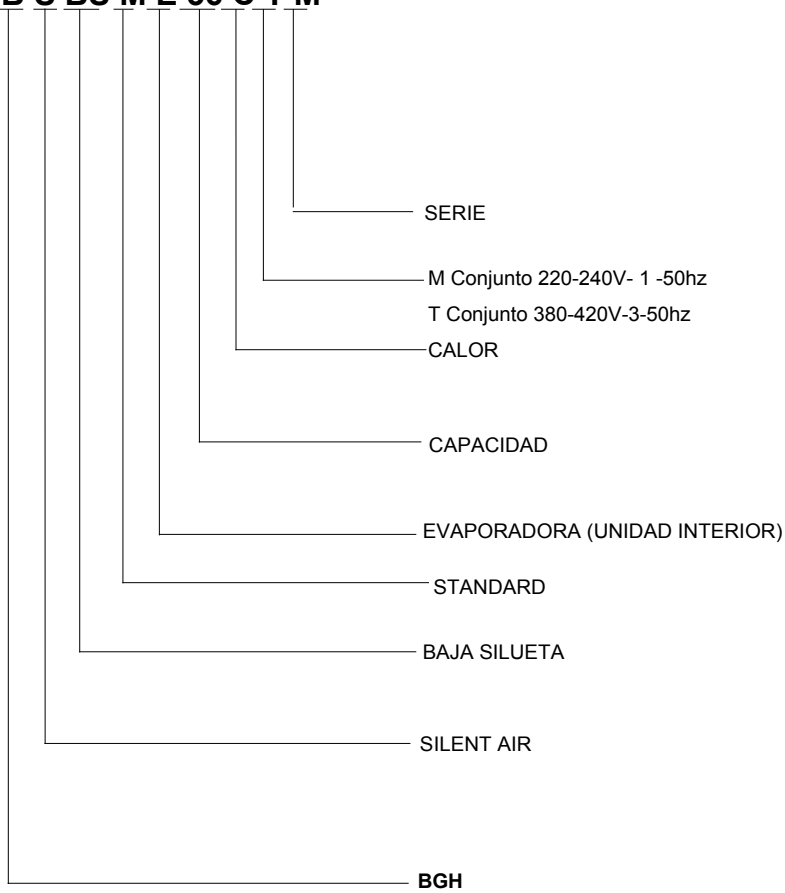


Double fan outdoor unit

3. Nomenclature

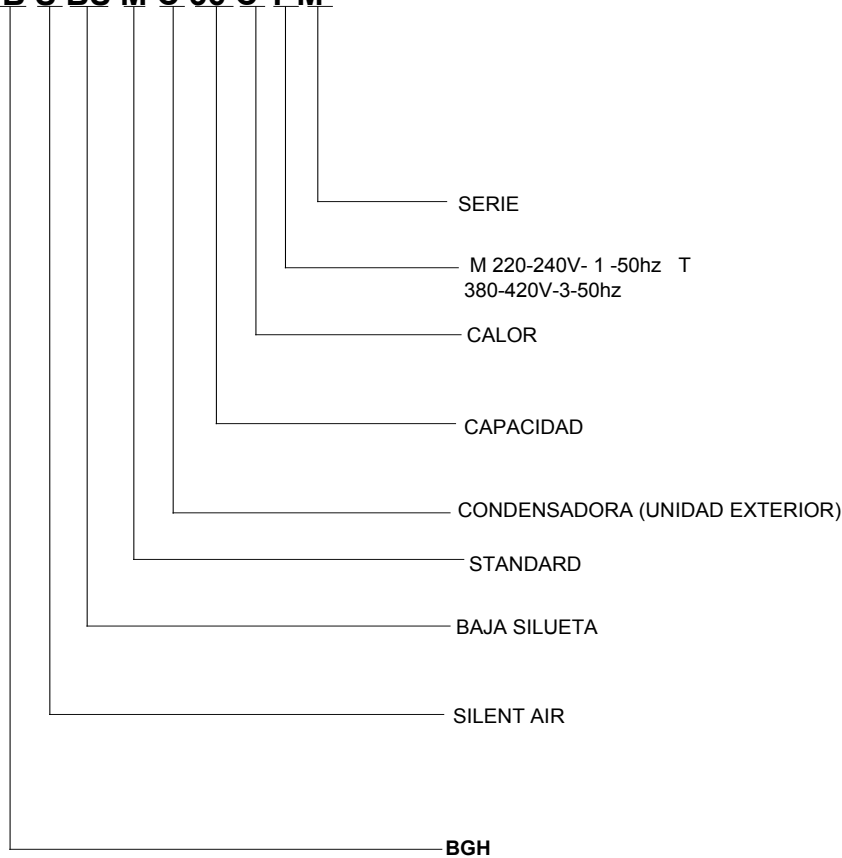
3.1 Indoor Unit

B S BS M E 36 C T M



3.2 Outdoor Unit

B S BS M C 36 C T M



4. Features

4.1 High quality coils:

The coil is constructed of advanced inner grooved copper tube and aluminum fins.



4.2 Anti-rust, 500 hours salt spray test.

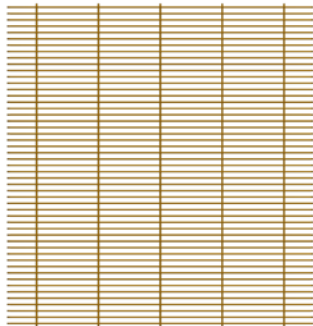
4.3 Low operation sound level: Well-known stable and quiet running fan motor.

4.4 Well-known compressor.

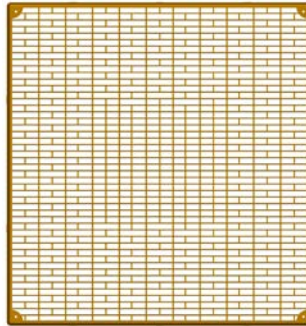
4.5 Compact design: Smaller dimension and larger stuffing capacity.

4.6 Universal outdoor unit design.

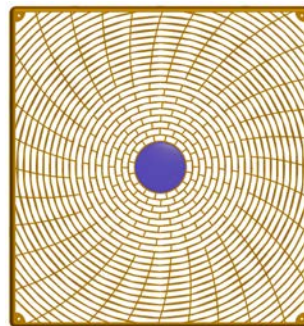
4.7 Optional air outlet grille: plastic type and wire type.



Wire type



Plastic type



Plastic type

4.8 Optional low temperature cooling module.

4.9 R410A environment friendly refrigerant.

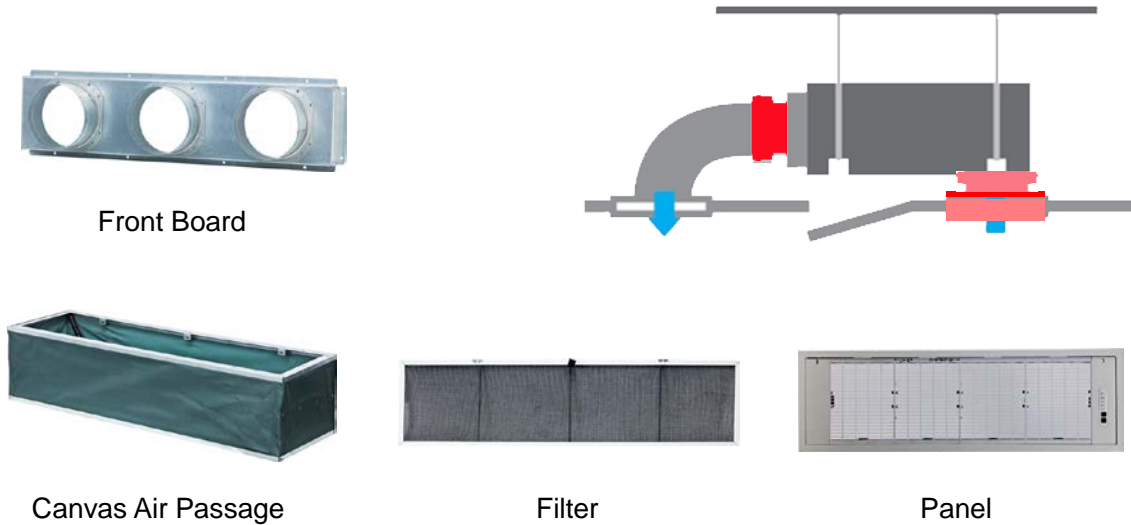
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Indoor Units**

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1. Features

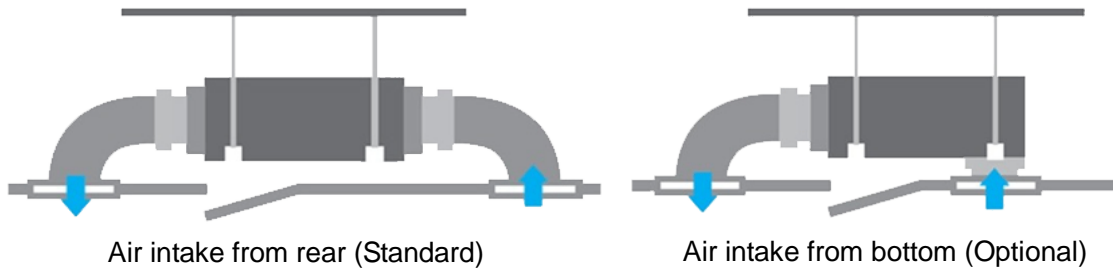
1.1 Installation accessories: (Optional)

- Front Board, Canvas Air Passage, Filter, Panel, for easy installation



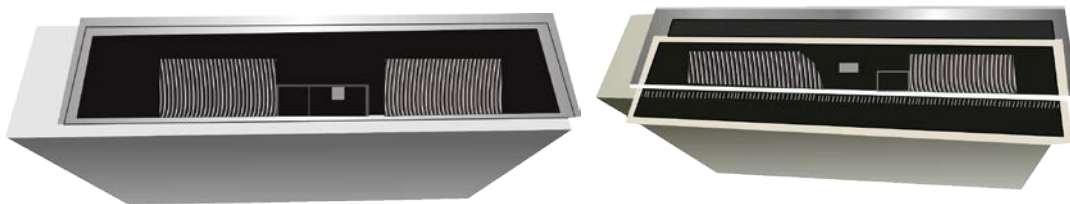
1.2 Easy Installation: Two air inlet styles (Bottom side or Rear side)

- Air inlet from rear is standard for all capacity; air inlet from bottom is optional.
- The size of air inlet frame from rear and bottom is same, it's very easy to move the cover from bottom to rear side, or from rear to the bottom, in order to matching the installation condition.

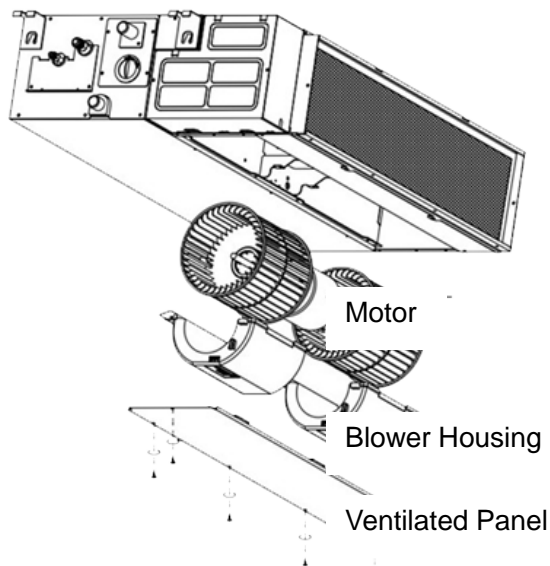


1.3 Easy maintenance

- Clean the filter (Optional, standard product without filter)
It is easy to draw out the filter from the indoor unit for cleaning, even the filter is installed in rear side or bottom side.

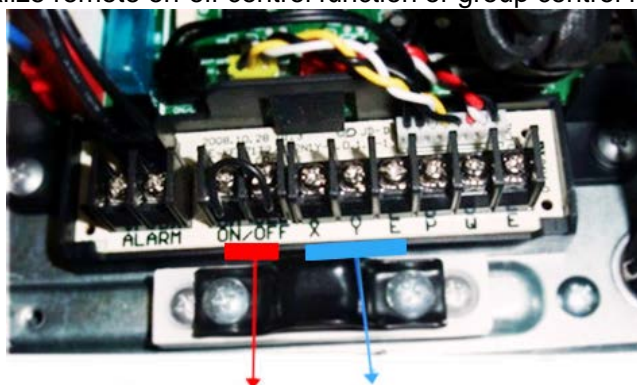


- Replace the motor or centrifugal fan
Remove the ventilated panel firstly. Remove a half of blower housing and take out the motor with centrifugal fan. Directly remove two bolts, and then replace the motor or centrifugal fan easily.



1.4 Reserved remote on-off and central control ports

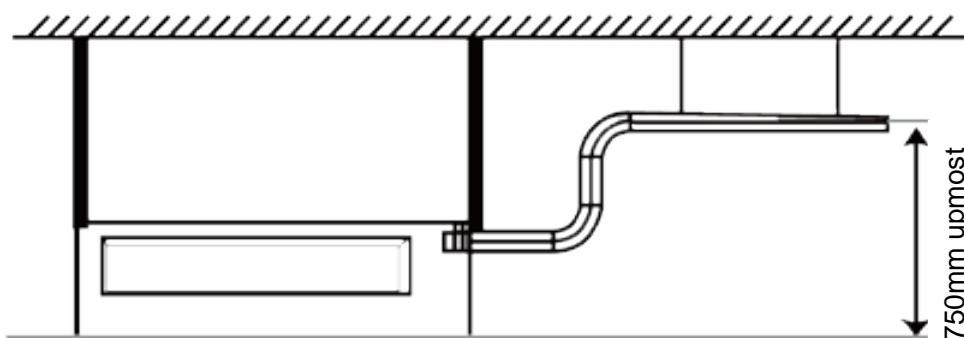
- Reserved remote on-off ports and central control ports, can connect the cable of an on-off controller or a central controller to realize remote on-off control function or group control function.

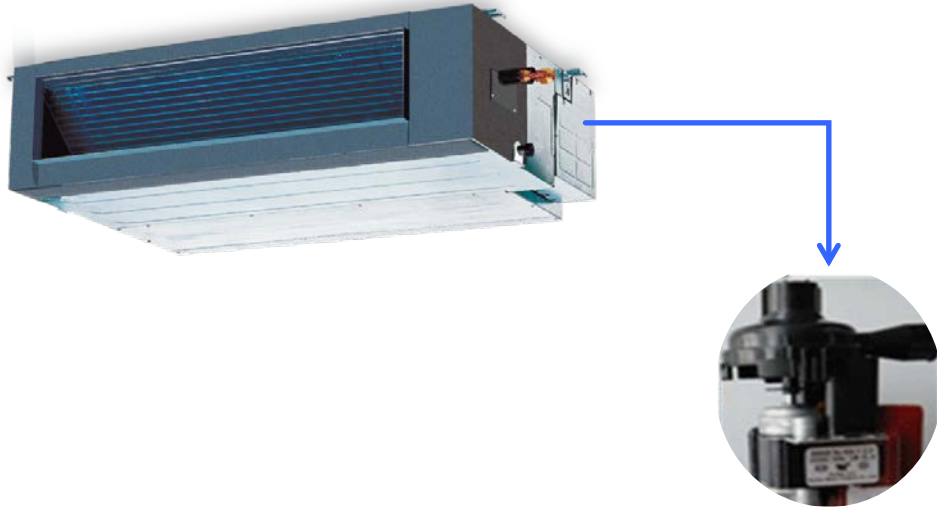


Remote on-off ports Central control ports

1.5 Built-in drain pump (Optional):

- Built-in drain pump can lift the water to 750mm upmost. It's convenient to install drainage piping under most space condition.

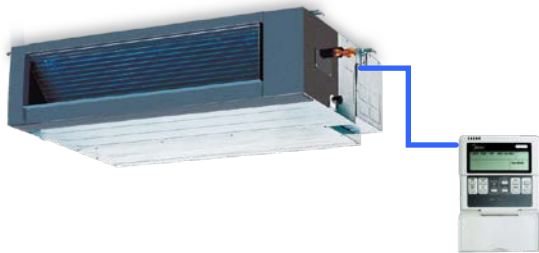




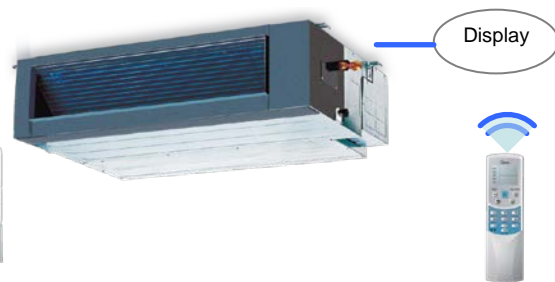
1.6 Built-in display board

- The standard indoor unit can be controlled by wired controller.
- There is a display board with a receiver in the E-box. Move out the display, and fix it in other place, even in the distance of 10m. The unit will realized remoter control.
- The wired controller and the display board can display the error code or production code when the chips detect some failure.

Wired Controller (Standard)



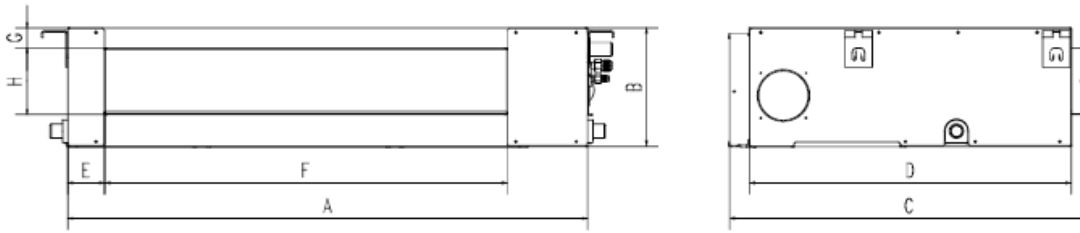
Remote Controller (Optional)



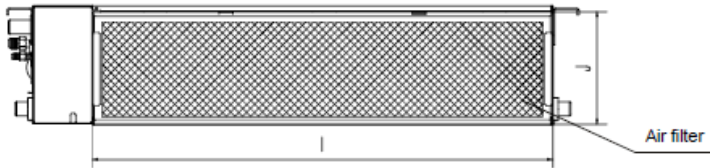
2. Dimensions

Outline dimension and air outlet opening size

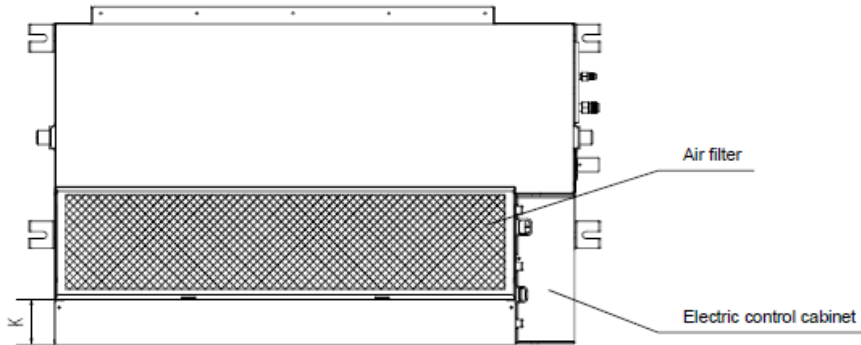
Unit: mm



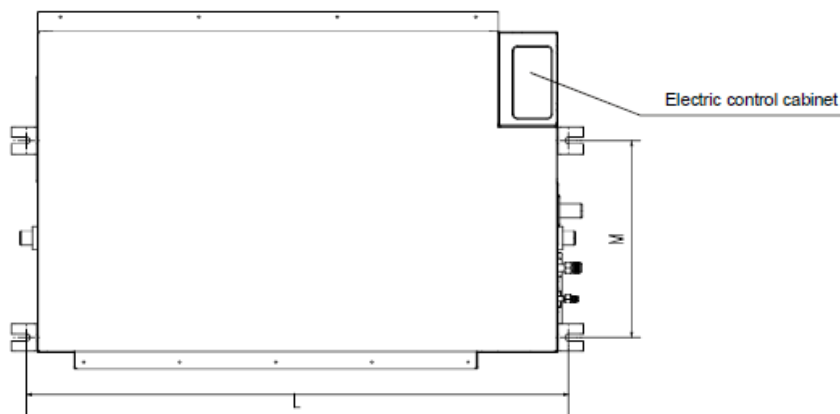
Air return opening size



Position size of descensional ventilation opening



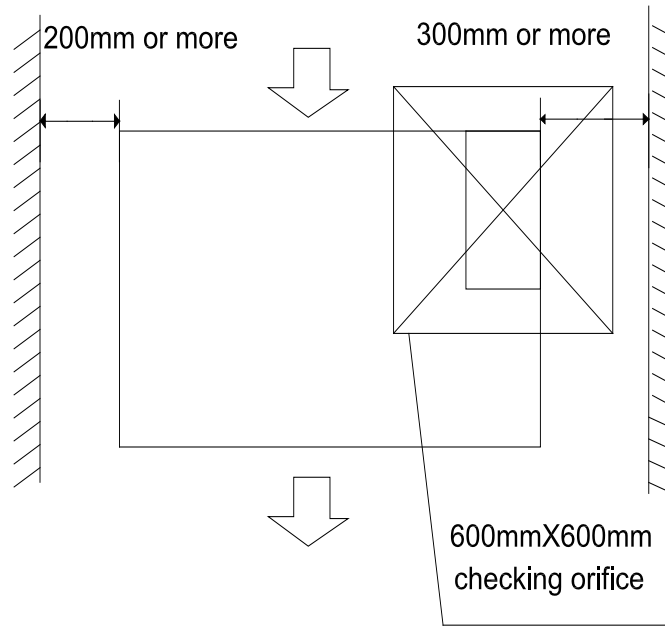
Size of mounted lug



Capacity (KBtu)	Outline dimension(mm)				Air outlet opening size				Air return opening size			Size of outline dimension mounted plug	
	A	B	C	D	E	F	G	H	I	J	K	L	M
30/36	1140	270	775	710	65	933	35	179	1035	260	20	1180	490
48/60	1200	300	865	800	80	968	40	204	1094	288	45	1240	500

3. Service Space

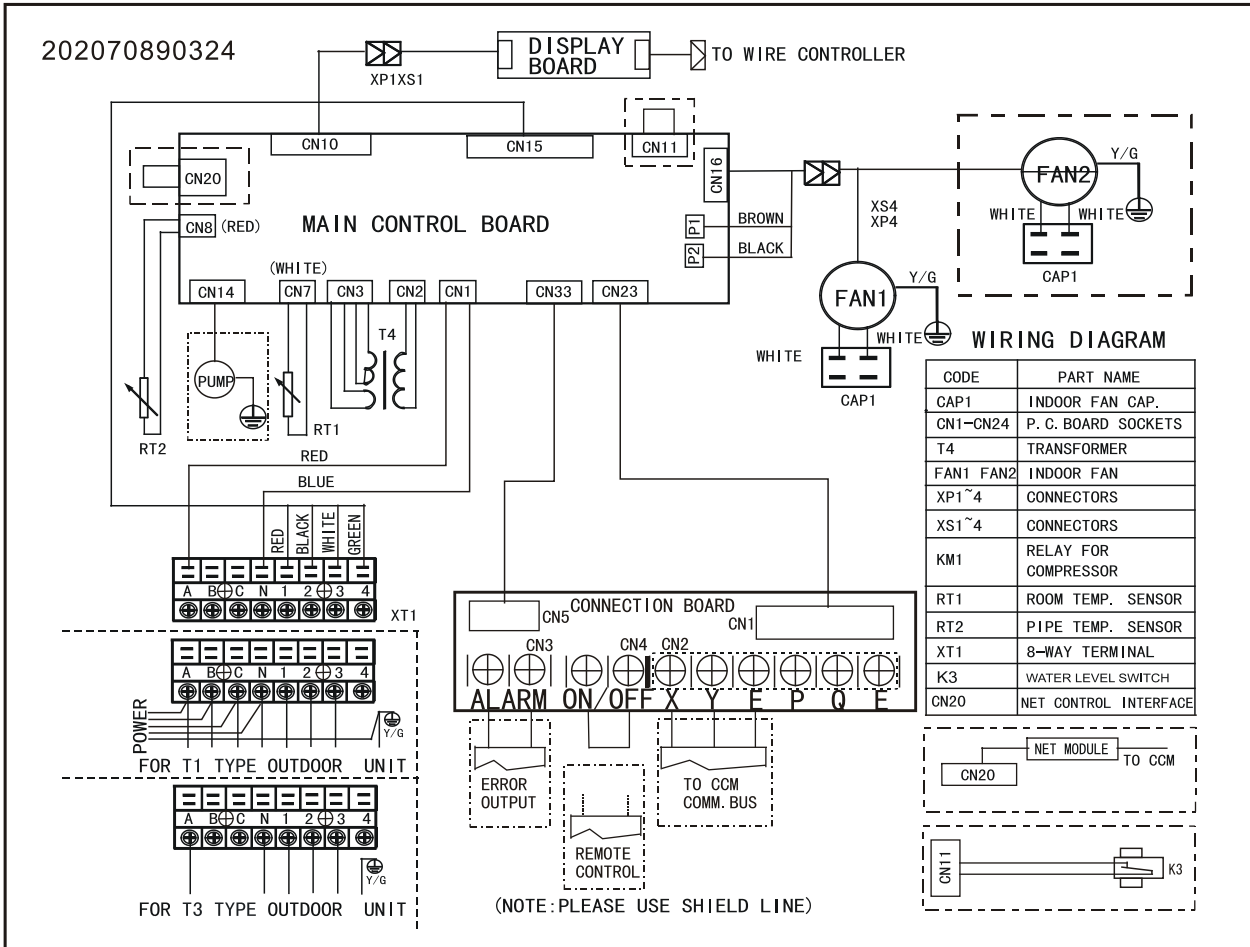
Ensure enough space required for installation and maintenance.



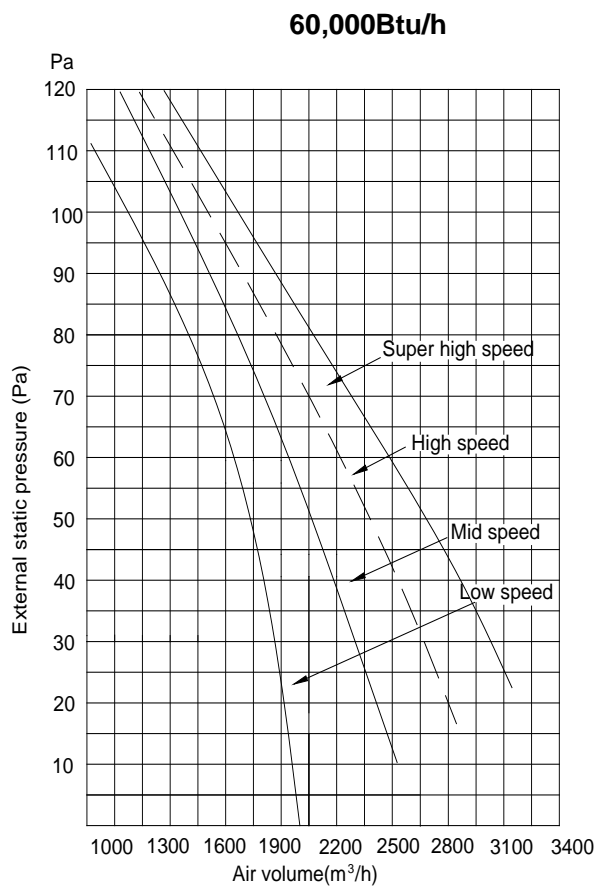
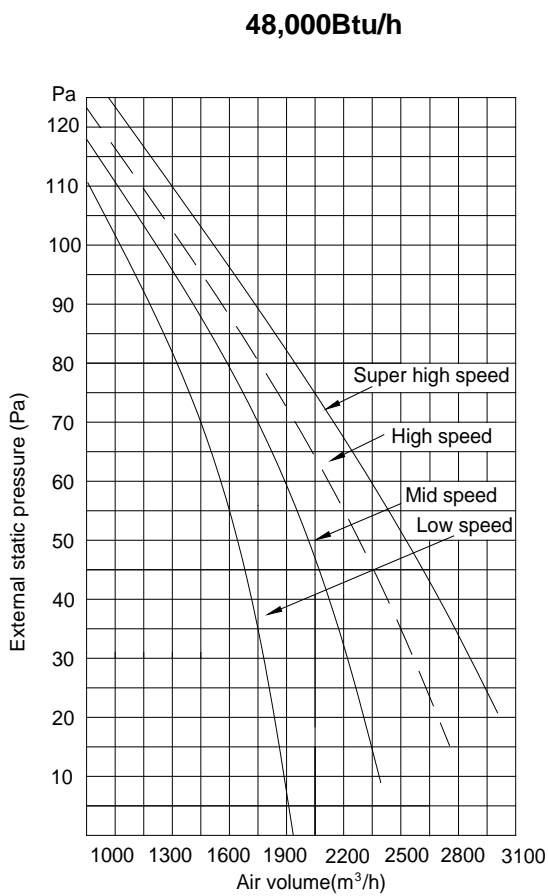
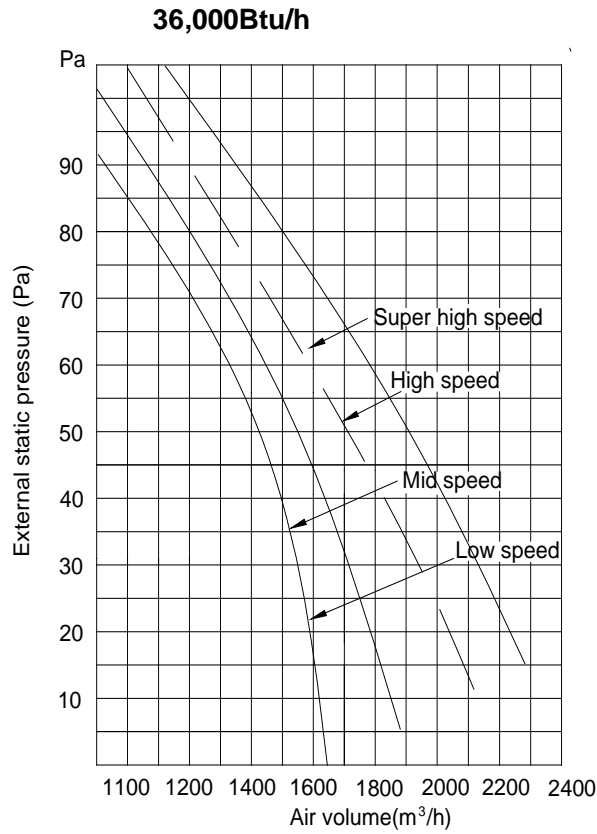
There is enough space for installation and maintenance. The ceiling is horizontal, and its structure can endure the weight of the indoor unit. The outlet and the inlet are not impeded, and the influence of external air is the least. The air flow can reach throughout the room. The connecting pipe and drainpipe could be extracted out easily. There is no direct radiation from heater.

4. Wiring Diagrams

BSBSME36CTM、BSBSME48CTM、BSBSME60CTM



5. Static Pressure



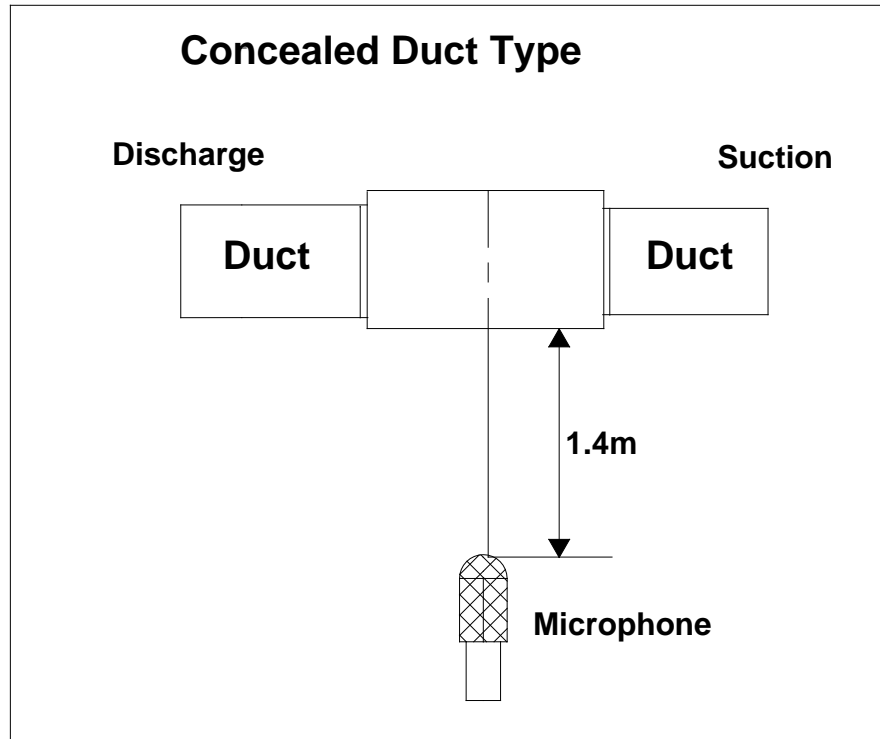
6. Electric Characteristics

Model	Indoor Units				Power Supply
	Hz	Voltage	Min.	Max.	MFA
BSBSME36CTM	50	380-420V	342V	440V	20
BSBSME48CTM	50	380-420V	342V	440V	30
BSBSME60CTM	50	380-420V	342V	440V	20

Note:

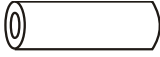





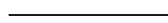

MFA: Max. Fuse Amps. (A)

7. Sound Levels



Model	Noise level dB(A)		
	H	M	L
BSBSME36CTM	48	40	37
BSBSME48CTM	47	45	43
BSBSME60CTM	47	40	38

8. Accessories

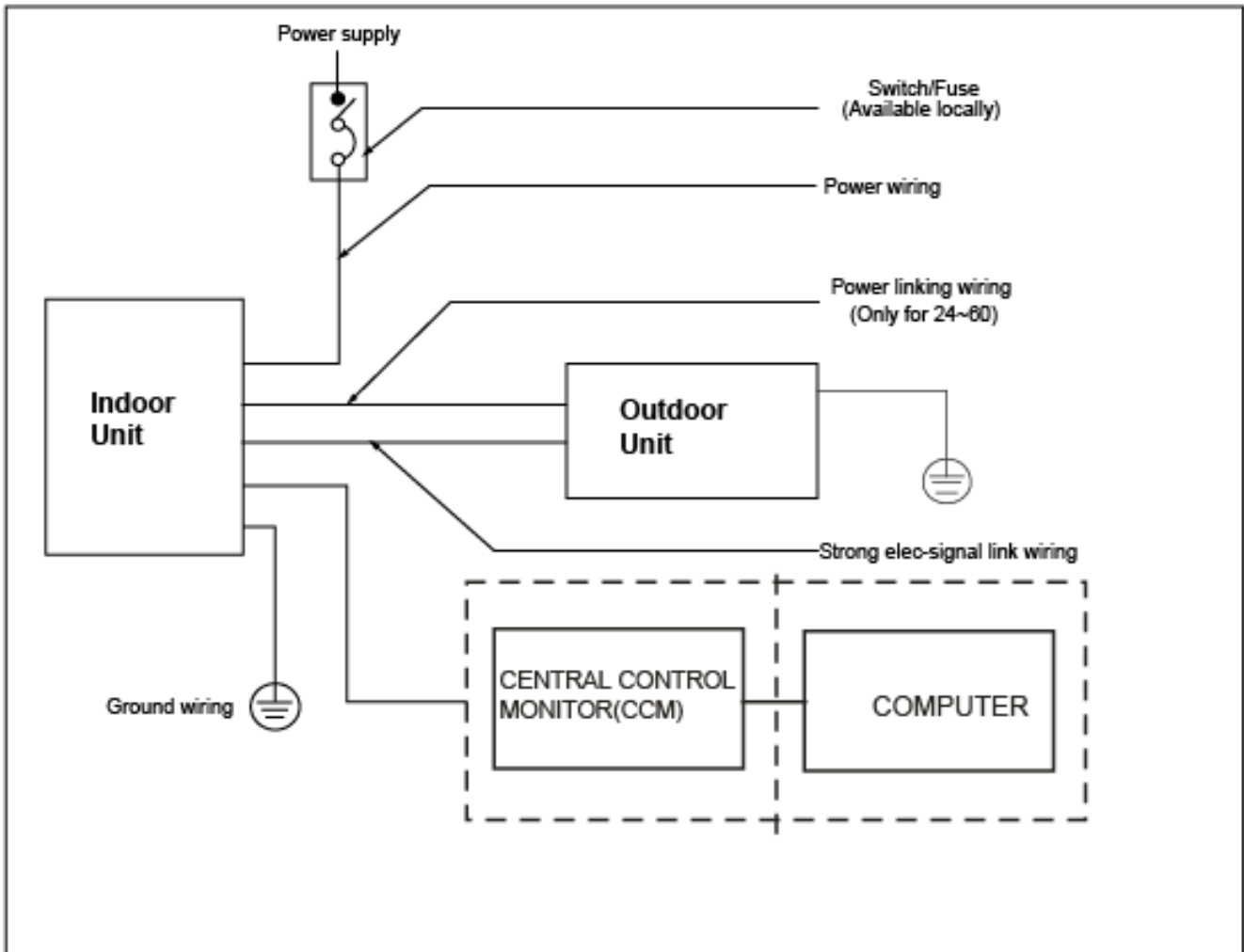
	Name	Shape	Quantity
Tubing & Fittings	Soundproof/insulation sheath		2
	Binding tape		1
	Seal sponge		1
Drainpipe Fittings	Drain joint		1
	Seal ring		1
Wire controller	Wire controller		1
others	Owner's manual		1
	Installation manual		1

9. The Specification of Power

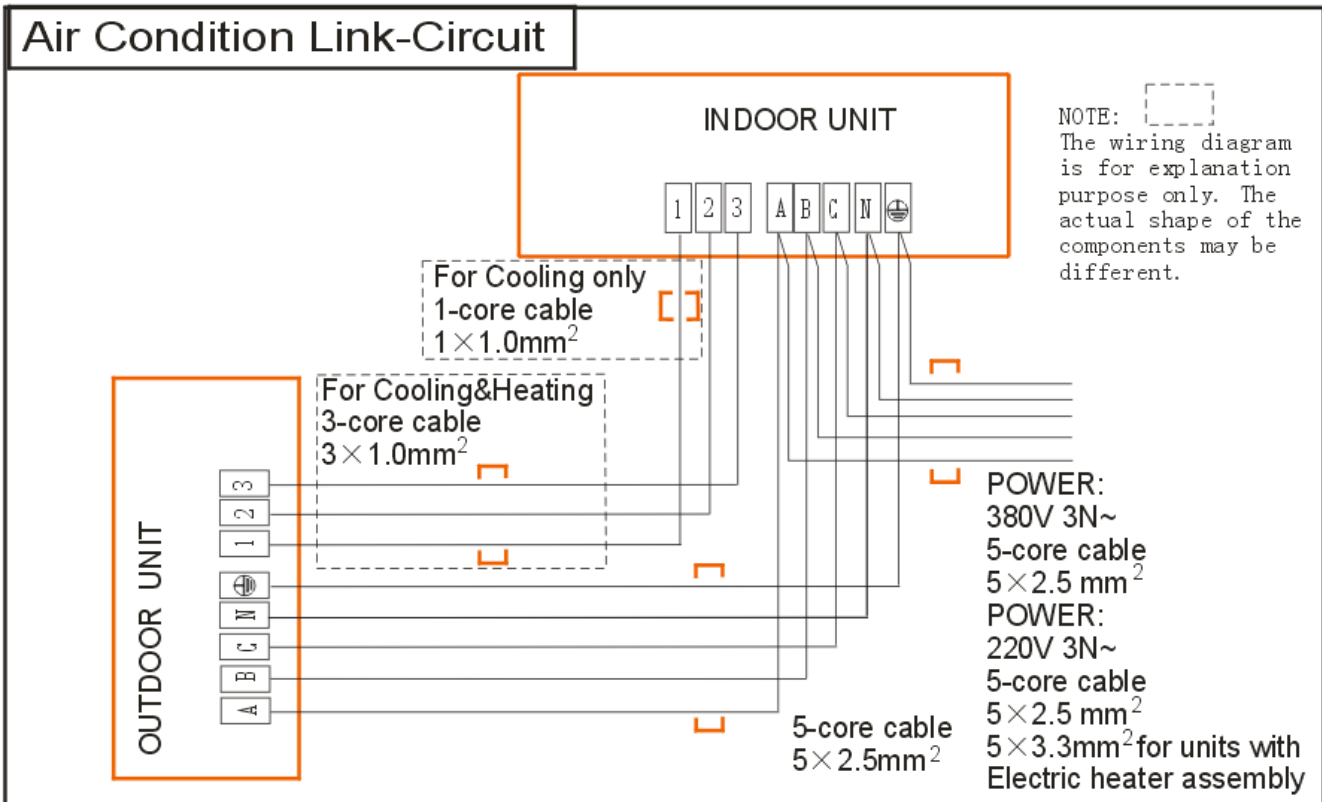
Cooling & heating

Model		30000-60000 Btu/h
Power	Phase	3-phase
	Frequency and Voltage	380-420V, 50Hz
Circuit Breaker/ Fuse (A)		25/20
Indoor Unit Power Wiring (mm ²)		5×2.5
Indoor/Outdoor Connecting Wiring (mm ²)	Ground Wiring	2.5
	Outdoor Unit Power Wiring	5×2.5
	Strong Electric Signal	3×1.0
	Weak Electric Signal	—————

10. Field Wiring



BSBSME36CTM、BSBSME48CTM、BSBSME60CTM



Part 3
Outdoor Units

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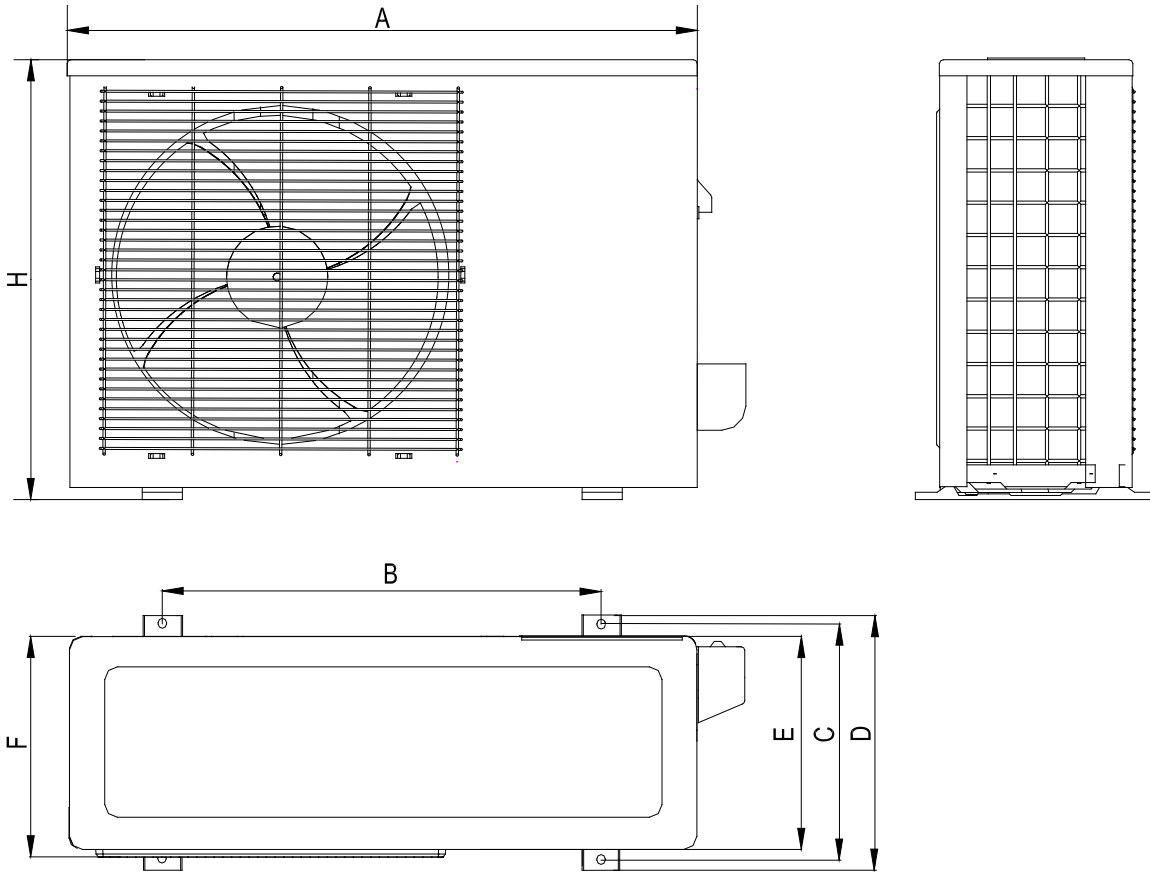
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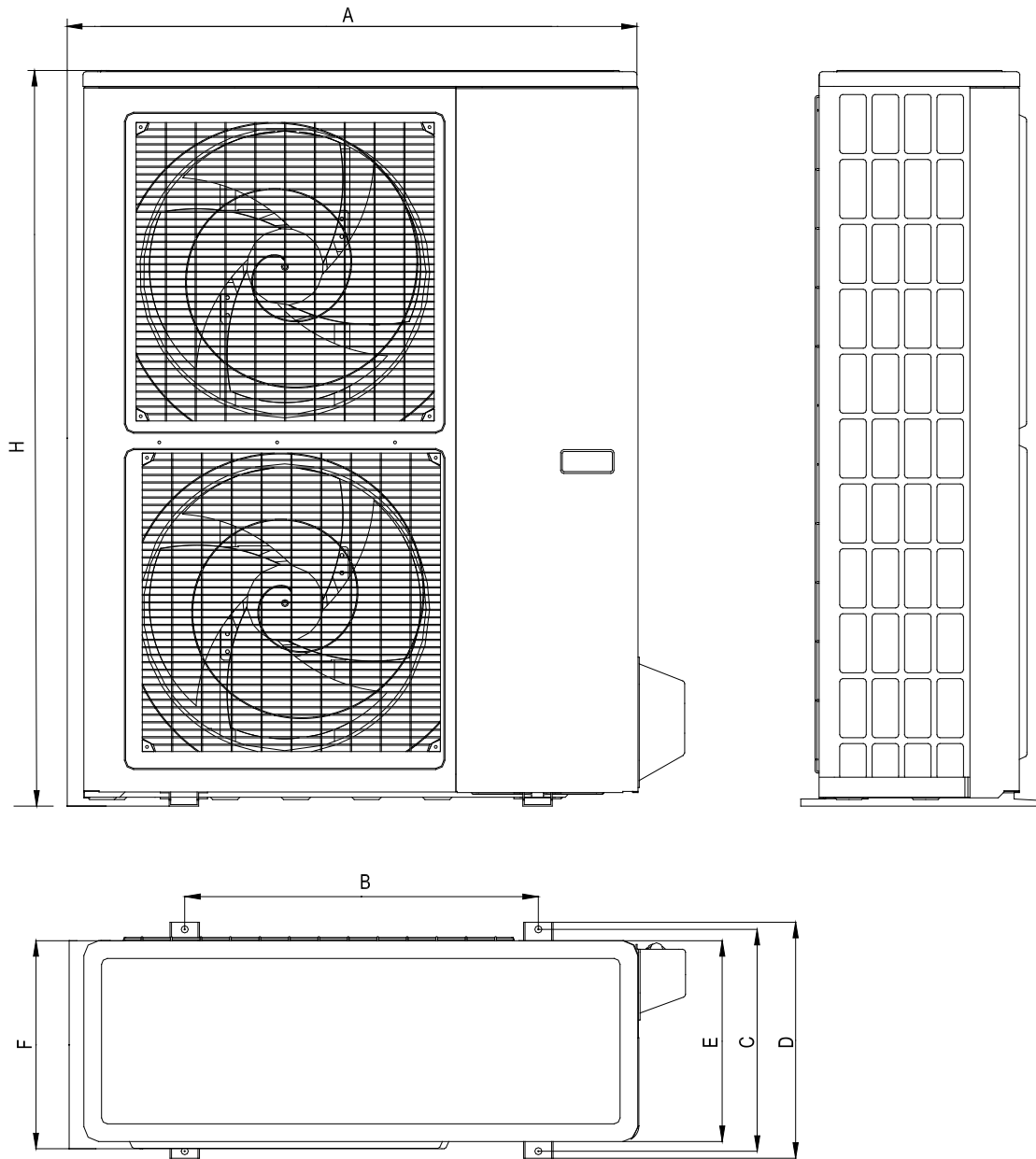
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1. Dimensions

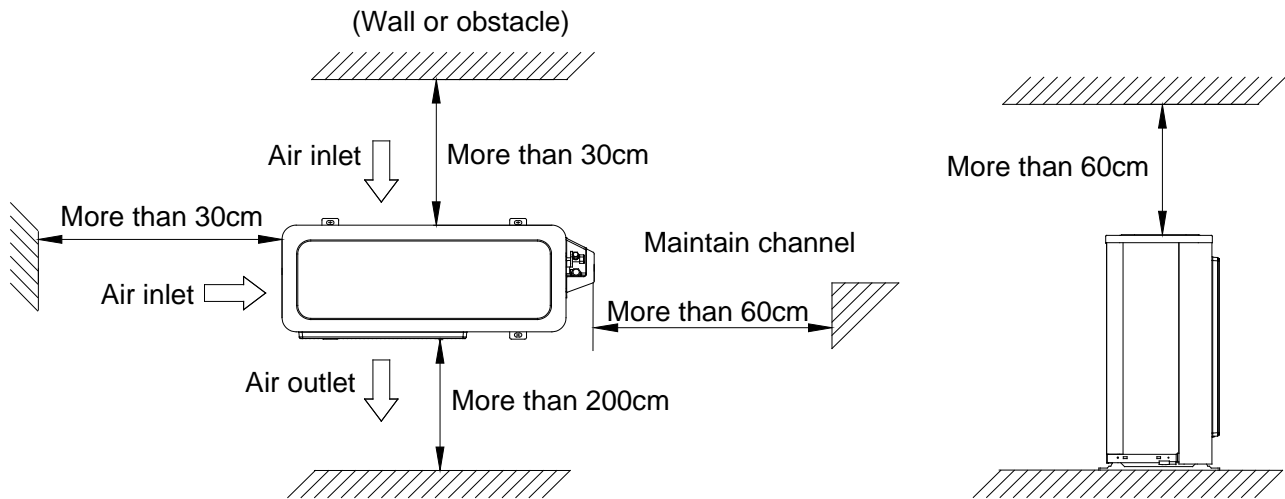


Model	Unit: mm						
	A	B	C	D	E	F	H
BSBSMC36CTM	990	624	366	396	340	345	965
BSBSMC48CTM	990	624	366	396	340	345	965



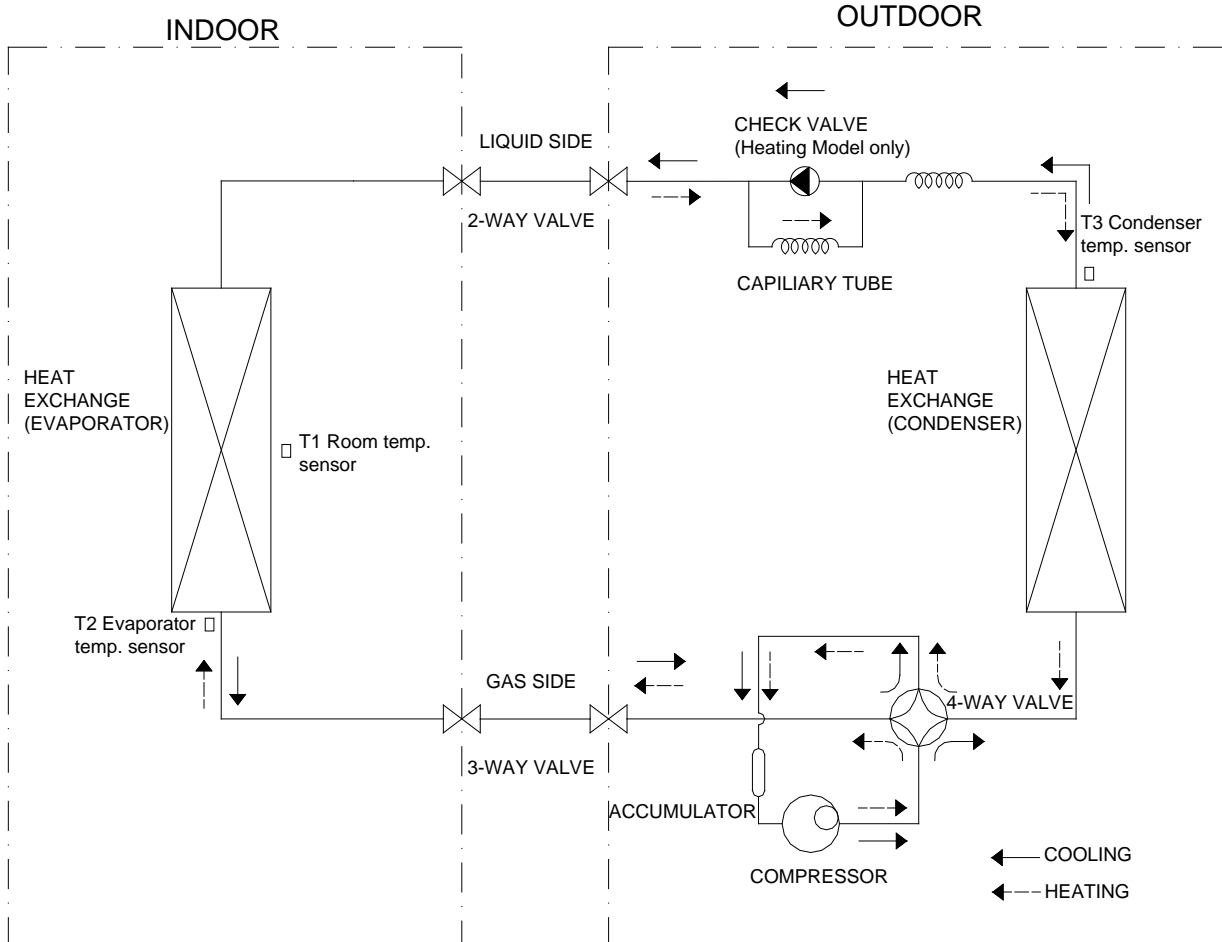
Model	Unit: mm						
	A	B	C	D	E	F	H
BSBSMC60CTM	900	590	378	400	330	350	1170

2. Service Space

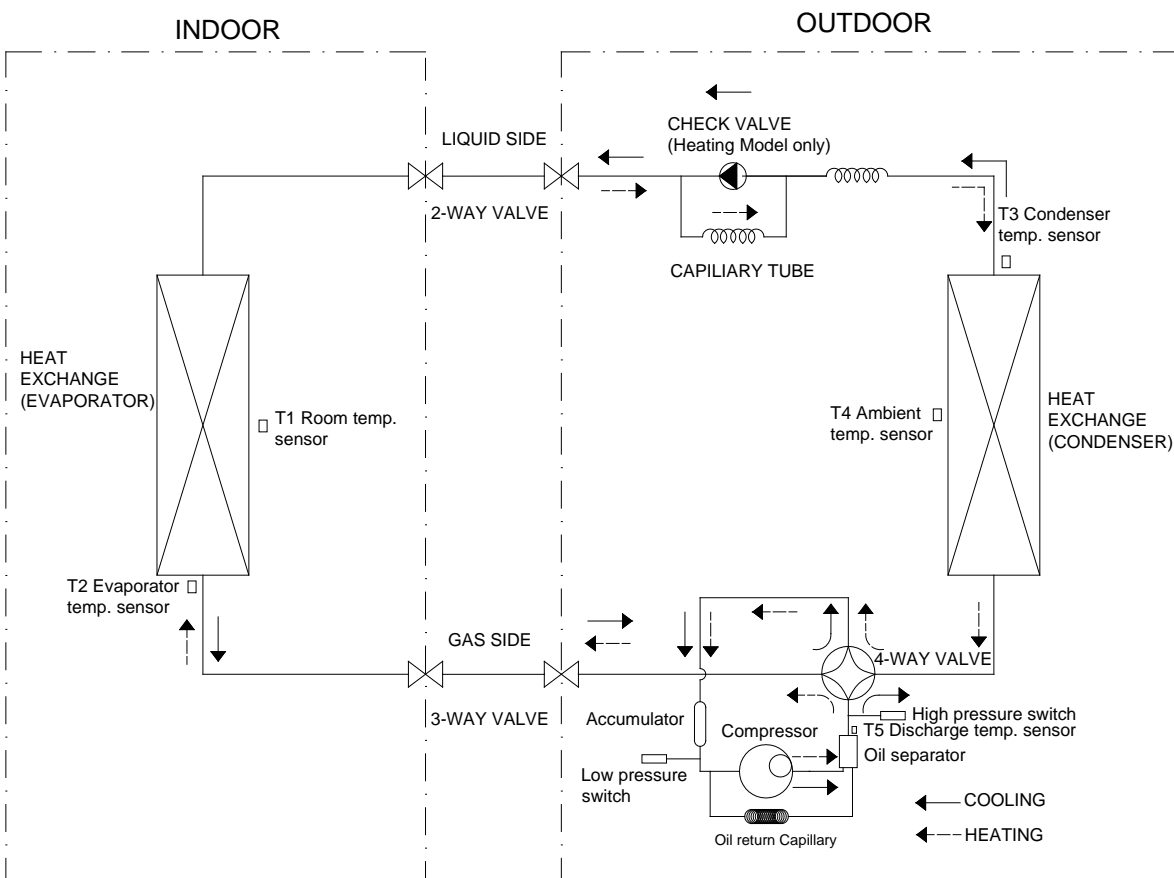


3. Piping Diagrams

BSBSCM36CTM

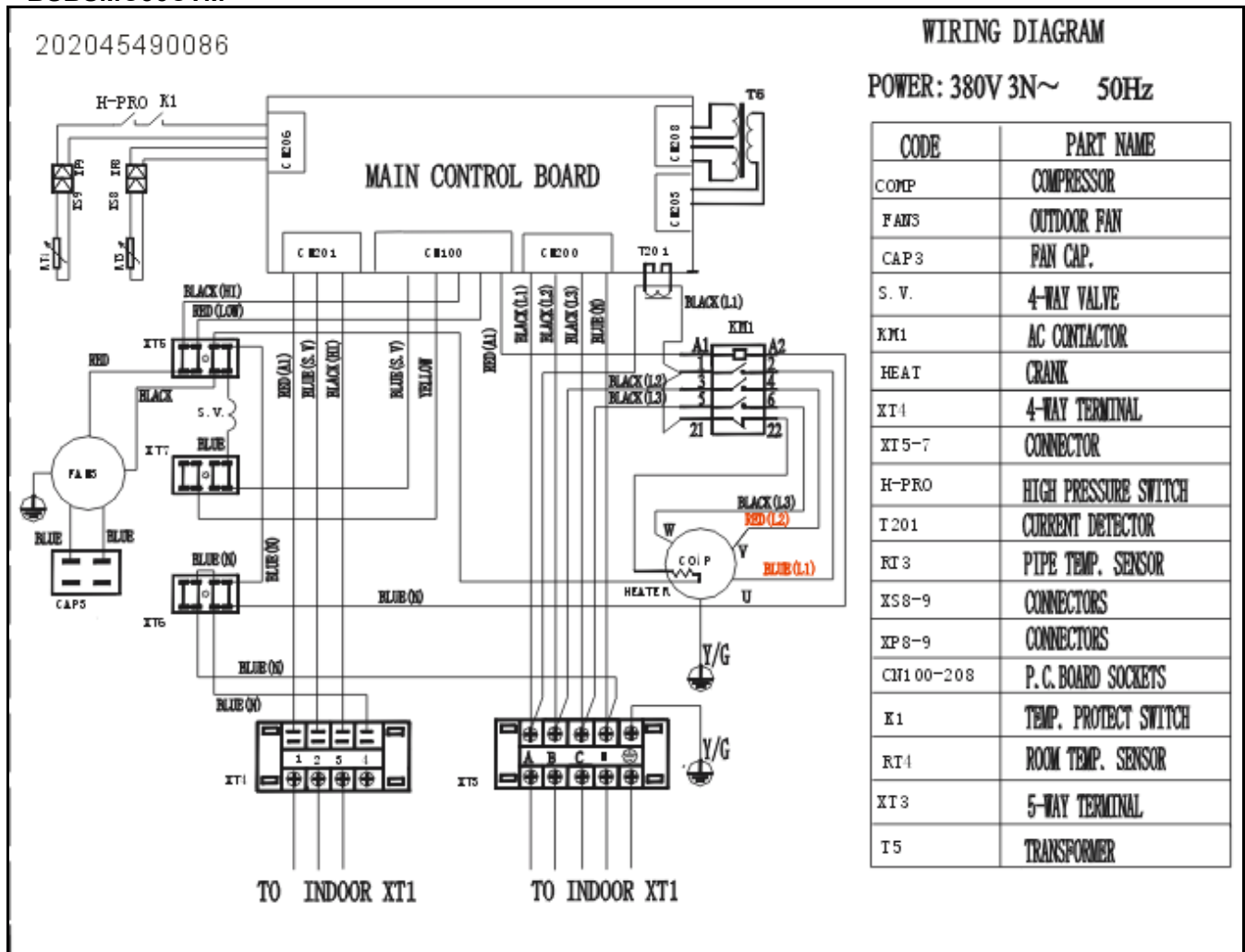


BSBSCM48CTM, BSBSCM60CTM

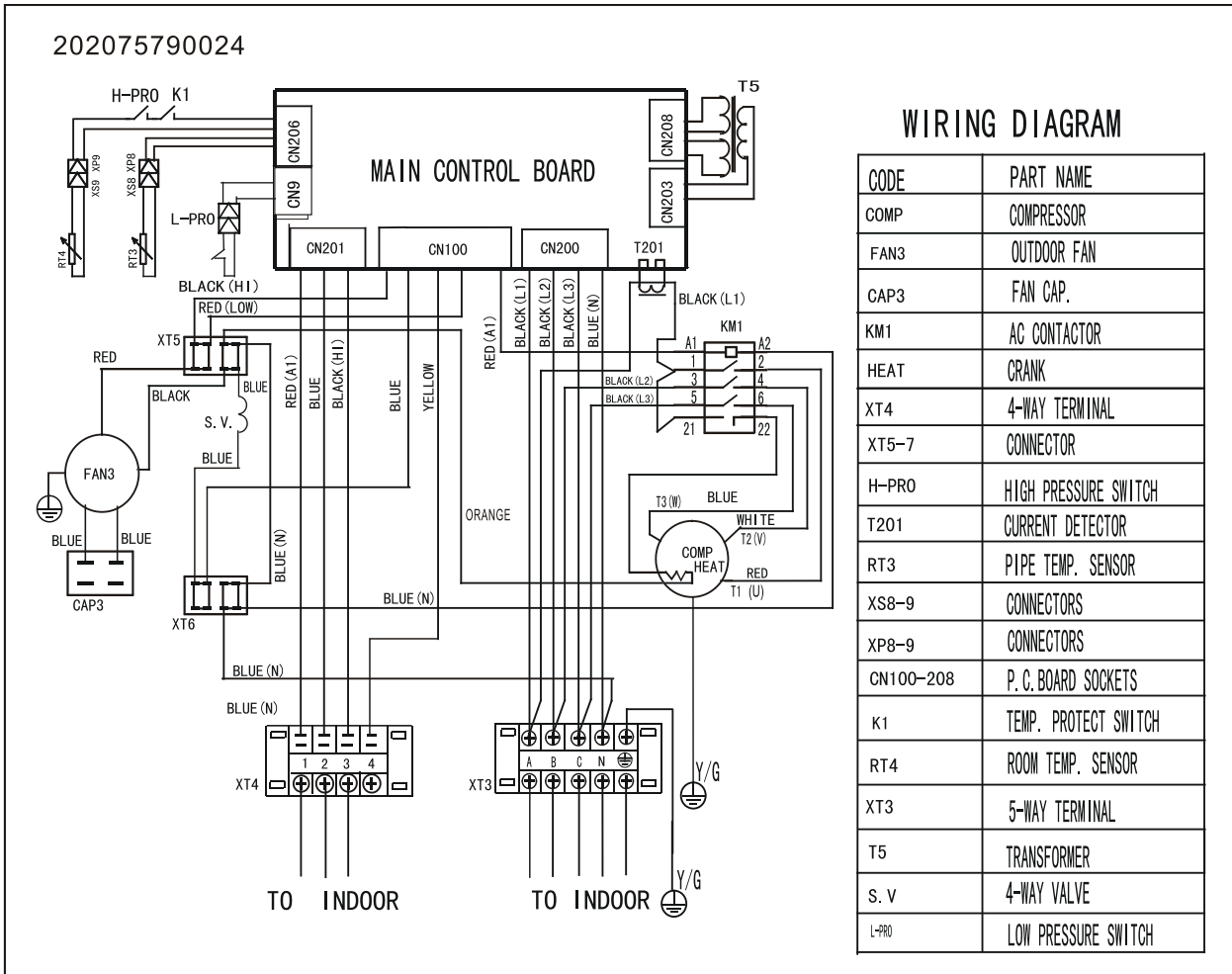


4. Wiring Diagrams

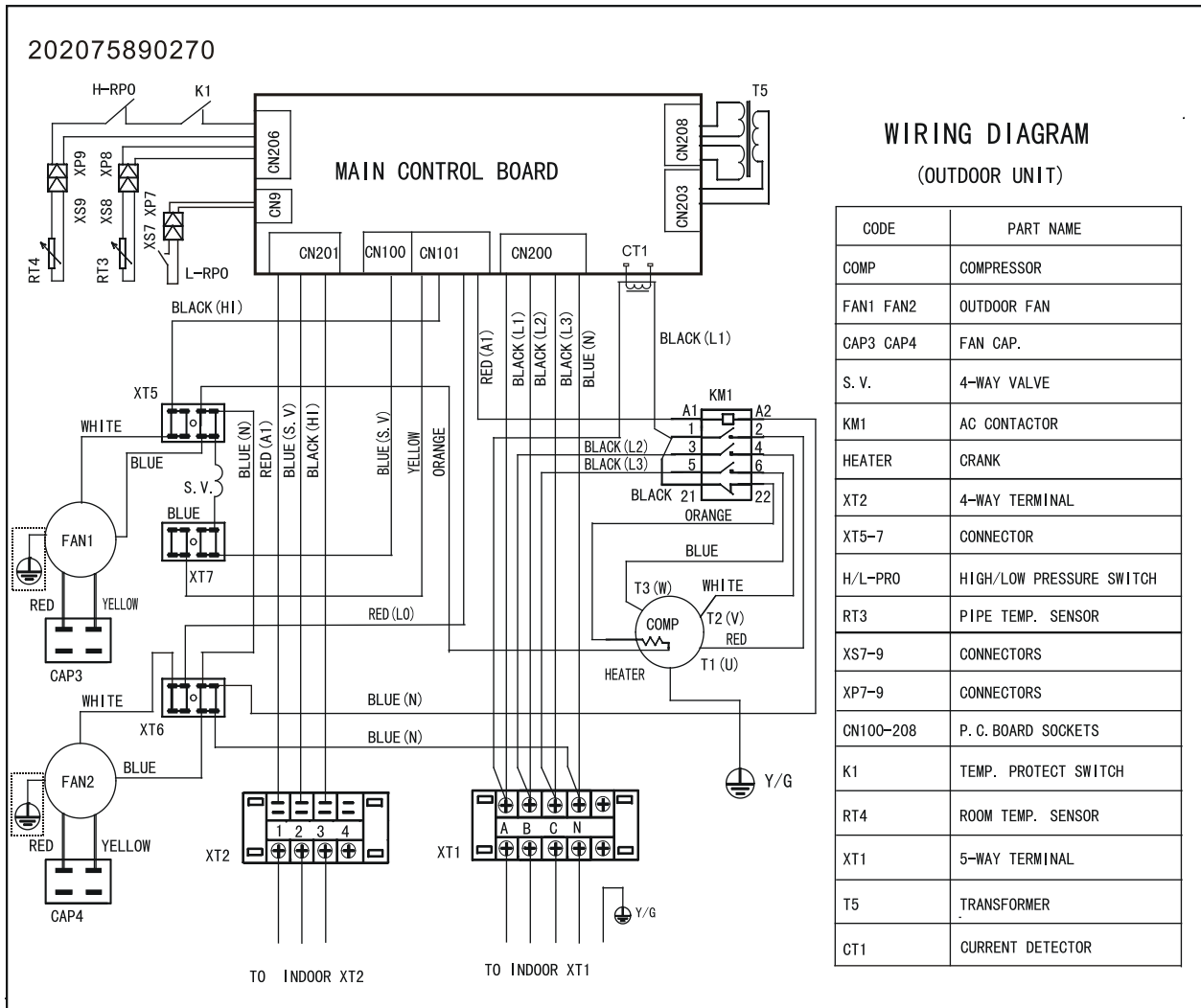
BSBMC36CTM



BSBMC48CTM(220075702130)



BSBSC60CTM

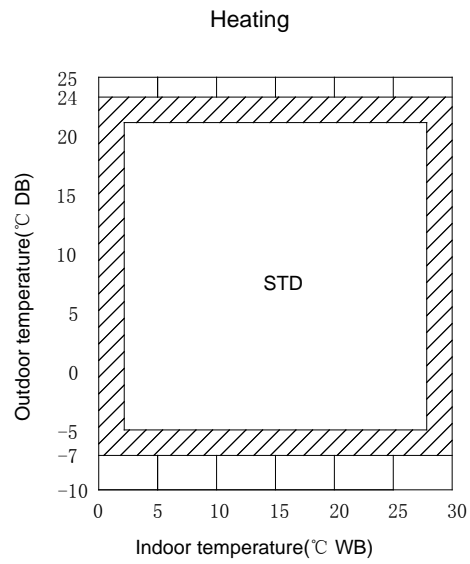
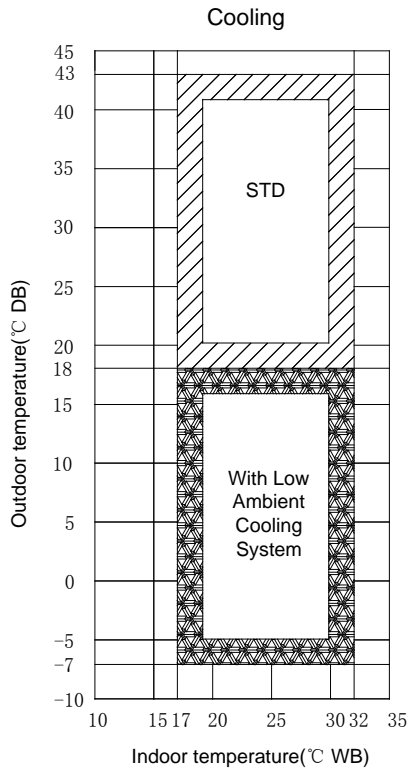


5. Electric Characteristics

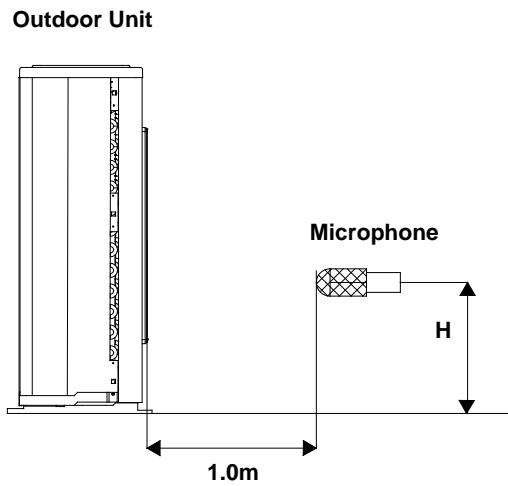
Model	Outdoor Unit			
	Hz	Voltage	Min.	Max.
BSBSMC36CTM	50	380~420V	342V	440V
BSBSMC48CTM	50	380~420V	342V	440V
BSBSMC60CTM	50	380~420V	342V	440V

6. Operation Limits

Temperature Mode	Cooling operation	Heating operation
Room temperature	17°C~32°C	0°C~30°C
Outdoor temperature	18°C~43°C	-7°C~24°C
	(-7°C~43°C: For the models with low temperature cooling system)	



7. Sound Levels

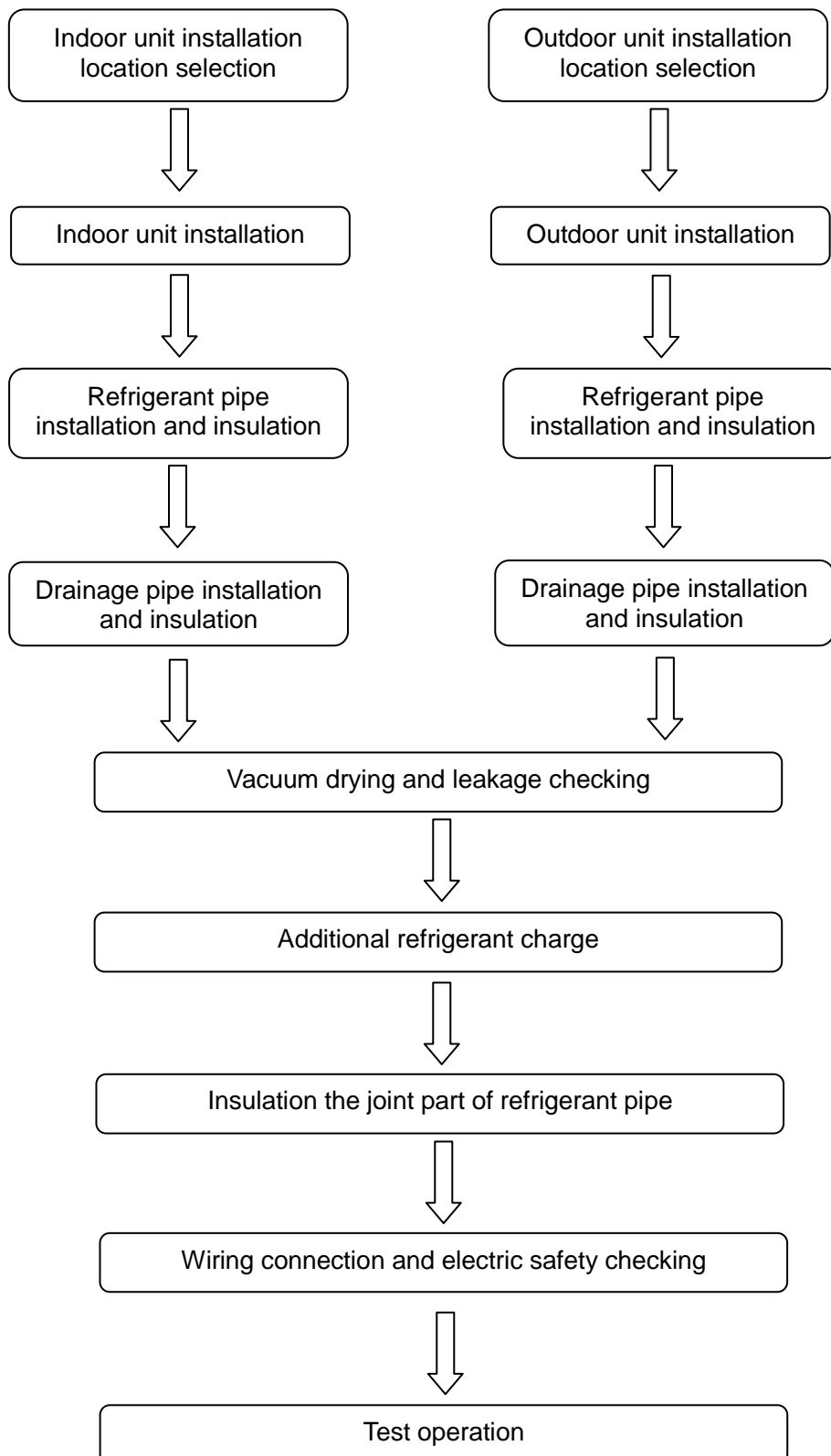


Note: $H = 0.5 \times \text{height of outdoor unit}$

Model	Noise level dB(A)
BSBMC36CTM	62
BSBMC48CTM	63
BSBMC60CTM	63

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1. Installation Procedure



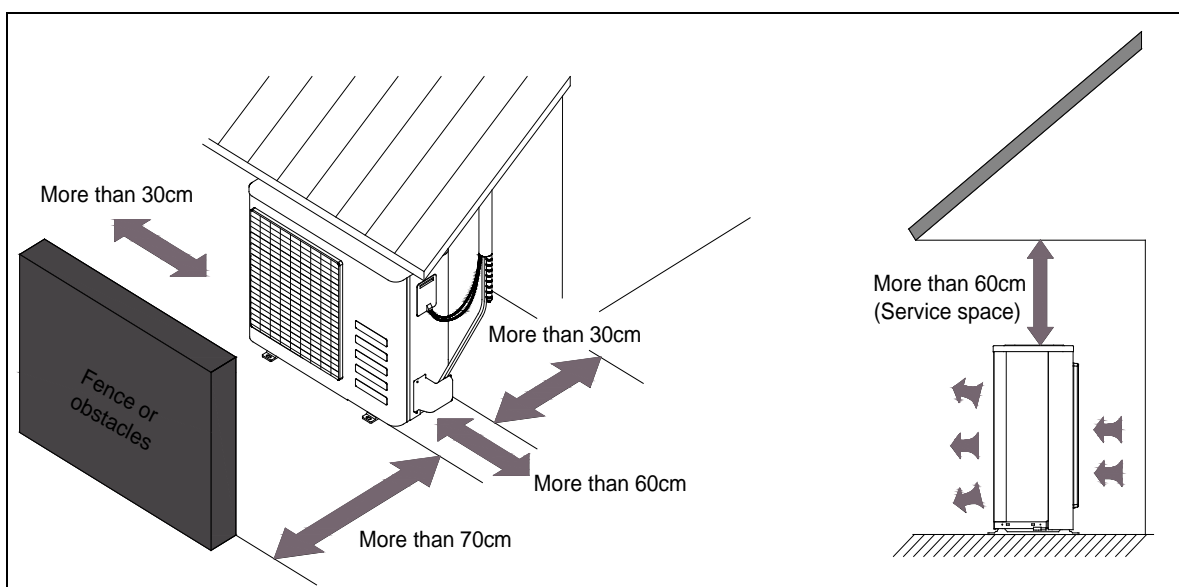
2. Location selection

2.1 Indoor unit location selection

- The place shall easily support the indoor unit's weight.
- The place can ensure the indoor unit installation and inspection.
- The place can ensure the indoor unit horizontally installed.
- The place shall allow easy water drainage.
- The place shall easily connect with the outdoor unit.
- The place where air circulation in the room should be good.
- There should not be any heat source or steam near the unit.
- There should not be any oil gas near the unit
- There should not be any corrosive gas near the unit
- There should not be any salty air near the unit
- There should not be strong electromagnetic wave near the unit
- There should not be inflammable materials or gas near the unit
- There should not be strong voltage vibration.

2.2 Outdoor unit location selection

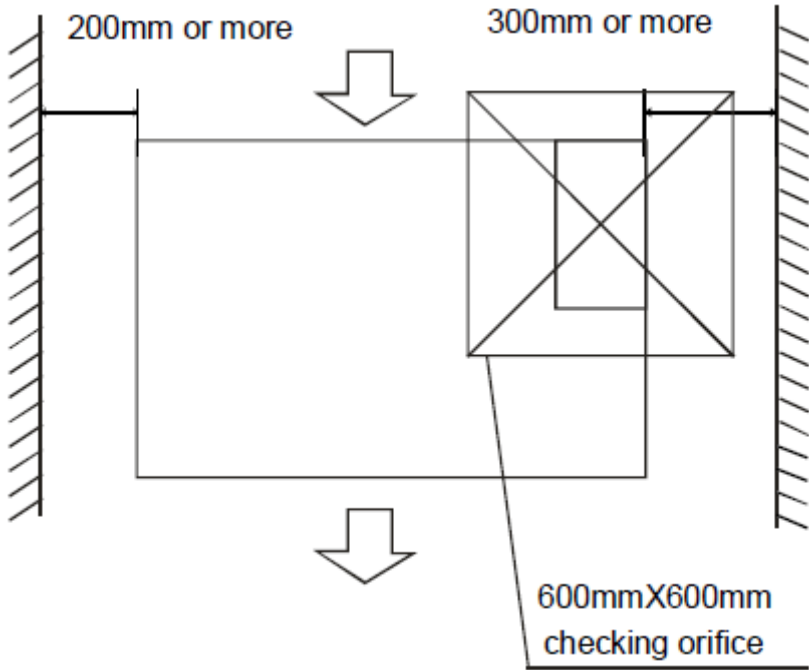
- The place shall easily support the outdoor unit's weight.
- Locate the outdoor unit as close to indoor unit as possible
- The piping length and height drop can not exceed the allowable value.
- The place where the noise, vibration and outlet air do not disturb the neighbors.
- There is enough room for installation and maintenance.
- The air outlet and the air inlet are not impeded, and not face the strong wind.
- It is easy to install the connecting pipes and cables.
- There is no danger of fire due to leakage of inflammable gas.
- It should be a dry and well ventilation place
- The support should be flat and horizontal
- Do not install the outdoor unit in a dirty or severely polluted place, so as to avoid blockage of the heat exchanger in the outdoor unit.
- If is built over the unit to prevent direct sunlight, rain exposure, direct strong wind, snow and other scraps accumulation, make sure that heat radiation from the condenser is not restricted.



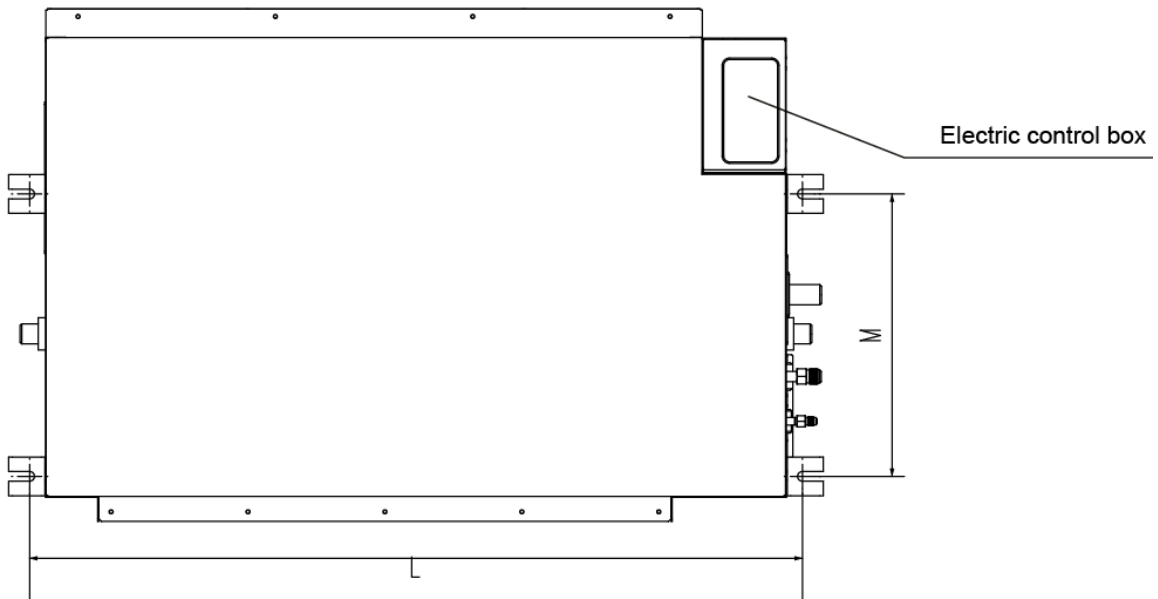
3. Indoor unit installation

3.1 A5 duct indoor unit installation

3.3.1 Service space for indoor unit



3.3.2 Bolt pitch



Capacity (KBtu)	Size of outline dimension mounted plug	
	L	M
12	740	350
18	960	350
24	960	350
30/36	1180	490
48/60	1240	500

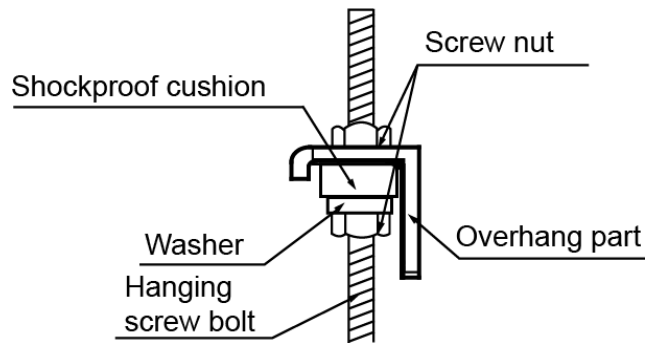
3.3.3 Install the pendant bolt

Select the position of installation hooks according to the hook holes positions showed in upper picture. Drill four holes of $\varnothing 12\text{mm}$, 45~50mm deep at the selected positions on the ceiling. Then embed the expansible hooks (fittings).



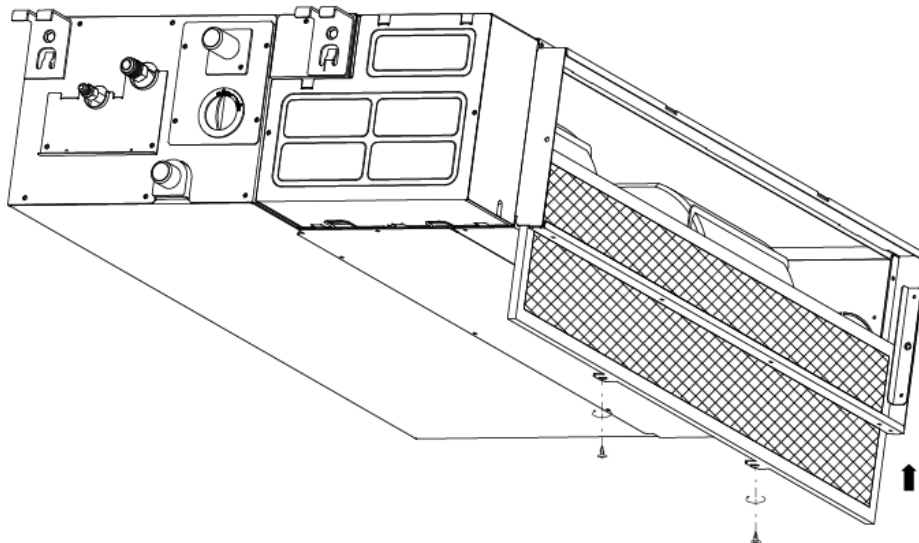
3.3.4 Install the main body

Make the 4 suspender through the 4 hanger of the main body to suspend it. Adjust the hexangular nuts on the four installation hooks evenly, to ensure the balance of the body. Use a leveling instrument to make sure the levelness of the main body is within $\pm 1^\circ$.



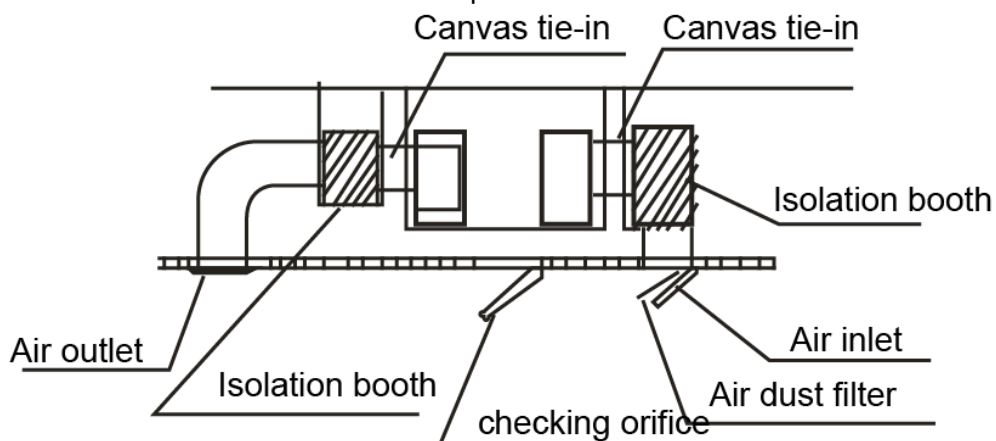
3.3.5 Install the air filter

Insert the air filter through the filter slot and fix it with 2 screws.



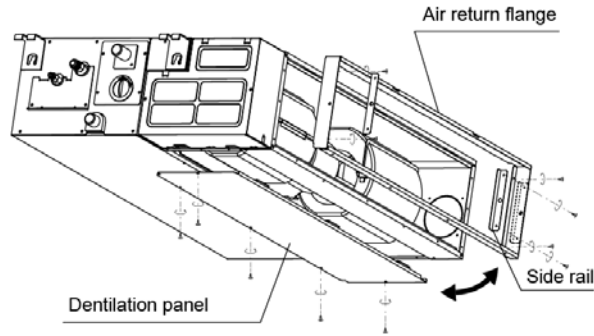
3.3.6 Install the air duct

Please design the air duct as below recommended picture

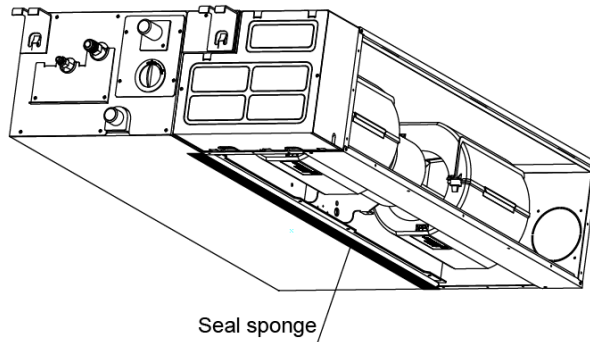


3.3.7 Change the air inlet direction

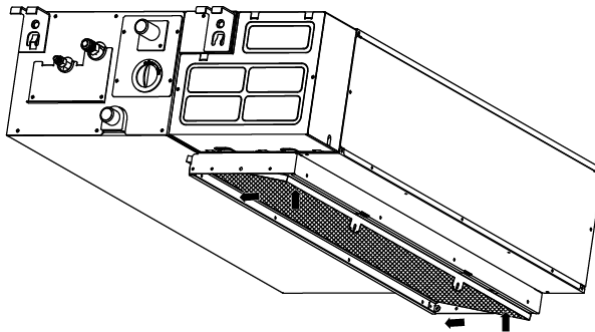
① Take off ventilation panel and flange, cut off the staples at side rail.



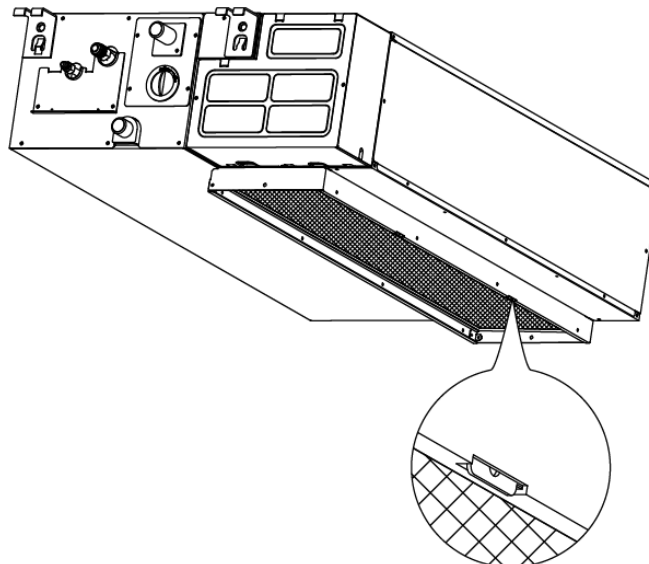
② Stick the attached seal sponge as per the indicating place in the following fig, and then change the mounting positions of air return panel and air return flange .



③ When install the filter mesh, please plug it into flange inclined from air return opening, and then push up.

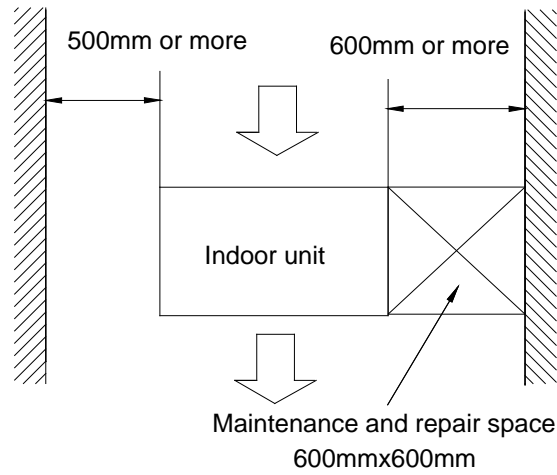


④ The installation has finish, upon filter mesh which fixing blocks have been insert to the flange positional holes.

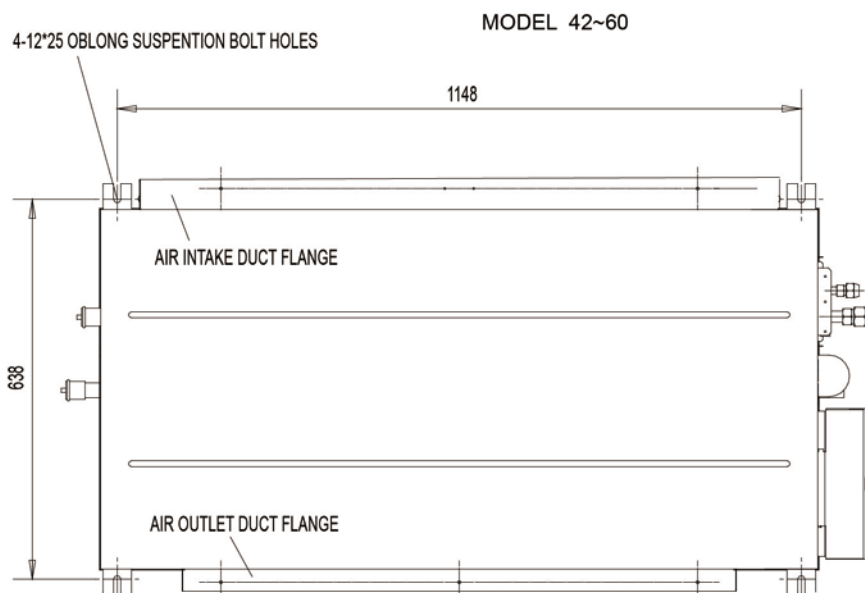
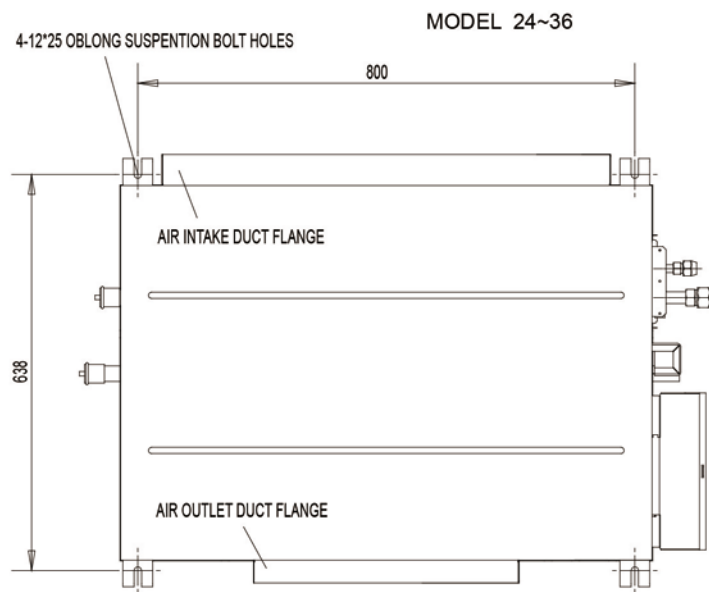


3.2 HESP duct indoor unit installation

3.4.1 Service space for indoor unit



3.4.2 Bolt pitch



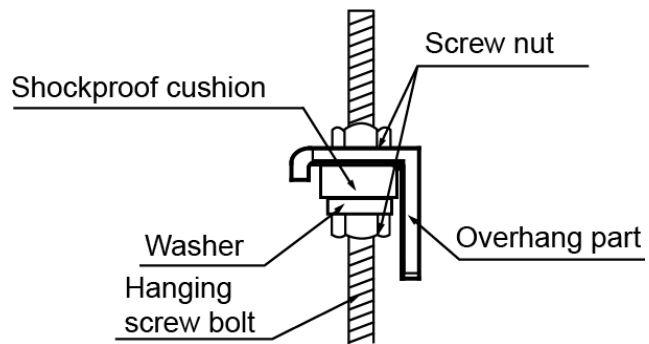
3.4.3 Install the pendant bolt

Select the position of installation hooks according to the hook holes positions showed in upper picture. Drill four holes of $\varnothing 12\text{mm}$, 45~50mm deep at the selected positions on the ceiling. Then embed the expansible hooks (fittings).



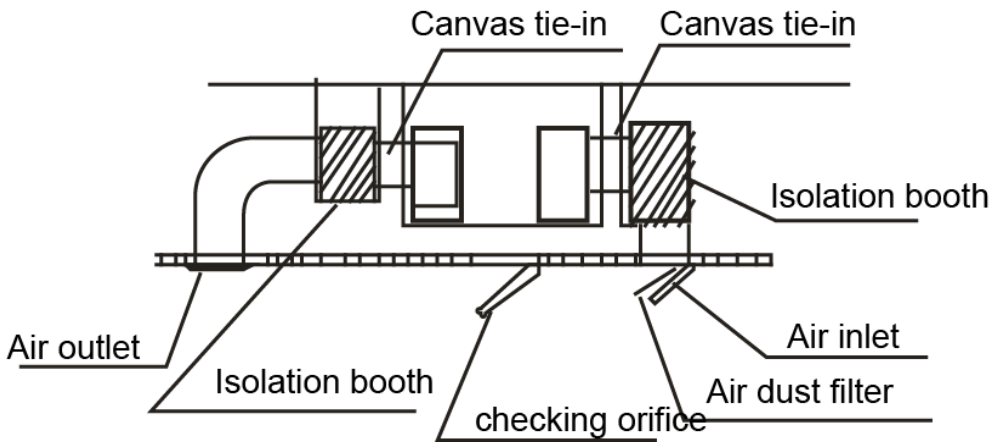
3.4.4 Install the main body

Make the 4 suspender through the 4 hanger of the main body to suspend it. Adjust the hexangular nuts on the four installation hooks evenly, to ensure the balance of the body. Use a leveling instrument to make sure the levelness of the main body is within $\pm 1^\circ$.



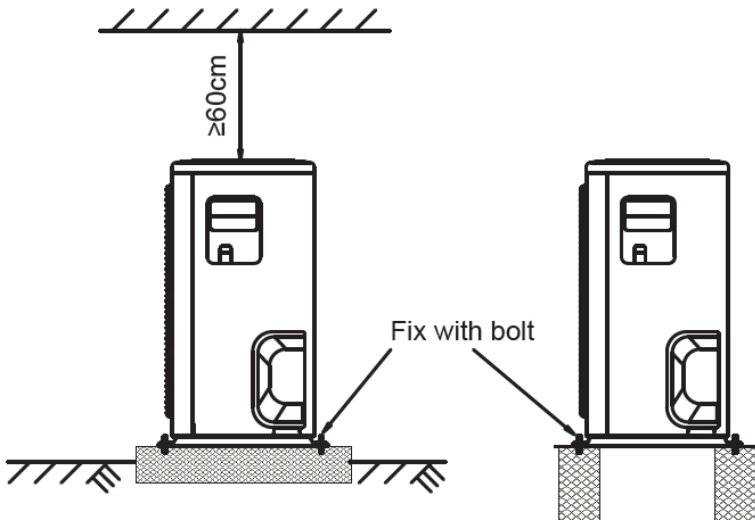
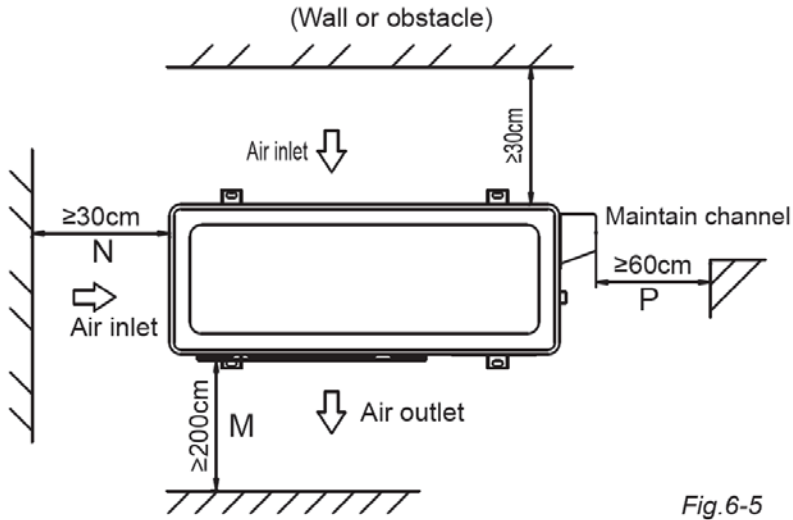
3.4.5 Install the air duct

Please design the air duct as below recommended picture

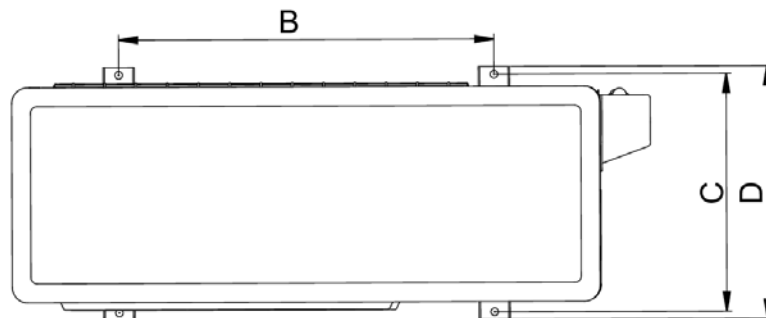


4. Outdoor unit installation (Side Discharge Unit)

4.1 Service space for outdoor unit



4.2 Bolt pitch



Model	B	C	D
BSBSMC36CTM	624	366	396
BSBSMC48CTM	624	366	396
BSBSMC60CTM	590	378	400

4.3 Install the Unit

Since the gravity center of the unit is not at its physical center, so please be careful when lifting it with a sling.

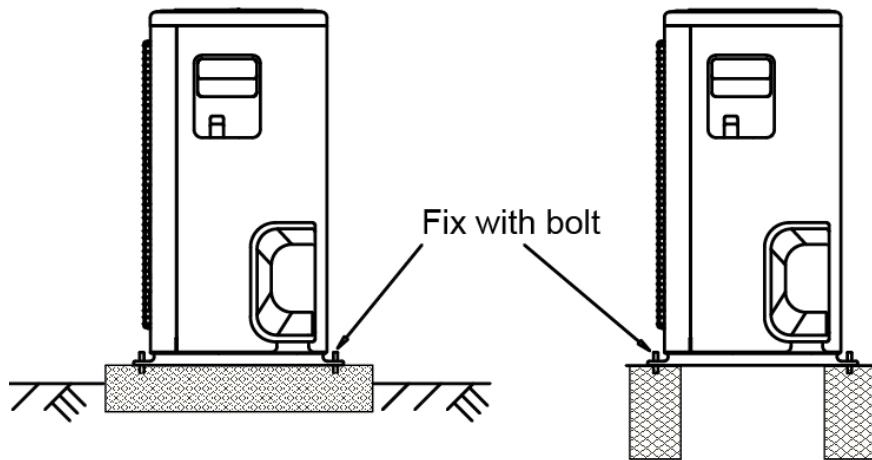
Never hold the inlet of the outdoor unit to prevent it from deforming.

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.

Fasten the feet of this unit with bolts firmly to prevent it from collapsing in case of earthquake or strong wind.



5. Refrigerant pipe installation

5.1 Maximum pipe length and height drop

Considering the allowable pipe length and height drop to decide the installation position. Make sure the distance and height drop between indoor and outdoor unit not exceeded the date in the following table.

Model	Max. Length	Max. Elevation
12,000Btu/h	15m	8m
18,000Btu/h ~30,000Btu/h	25m	15m
36,000Btu/h	30m	20m
48,000Btu/h~60,000Btu/h	50m	25m

5.2 The procedure of connecting pipes

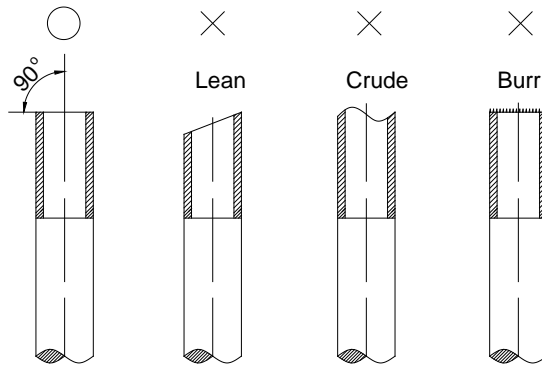
5.2.1 Choose the pipe size according to the specification table.

5.2.2 Confirm the cross way of the pipes.

5.2.3 Measure the necessary pipe length.

5.2.4 Cut the selected pipe with pipe cutter

- Make the section flat and smooth.



5.2.5 Insulate the copper pipe

- Before test operation, the joint parts should not be heat insulated.

5.2.6 Flare the pipe

- Insert a flare nut into the pipe before flaring the pipe
- According to the following table to flare the pipe

Pipe diameter	Flare dimension A (mm)		Flare shape
	Min	Max	
1/4" (6.35)	8.3	8.7	<p>The diagram shows a cross-section of a pipe flare. The flare angle is 90°±4. The angle between the pipe wall and the flare edge is 45°. The width of the flare is labeled 'A'. The thickness of the flare is labeled 'a'. The radius of the flare edge is labeled 'R0.4~0.8'.</p>
3/8" (9.52)	12.0	12.4	
1/2" (12.7)	15.4	15.8	
5/8" (15.9)	18.6	19.1	
3/4" (19)	22.9	23.3	

- After flared the pipe, the opening part must be seal by end cover or adhesive tape to avoid duct or exogenous impurity come into the pipe.

5.2.7 Drill holes if the pipes need to pass the wall.

5.2.8 According to the field condition to bend the pipes so that it can pass the wall smoothly.

5.2.9 Bind and wrap the wire together with the insulated pipe if necessary.

5.2.10 Set the wall conduit

5.2.11 Set the supporter for the pipe.

5.2.12 Locate the pipe and fix it by supporter

- For horizontal refrigerant pipe, the distance between supporters should not be exceed 1m.
- For vertical refrigerant pipe, the distance between supporters should not be exceed 1.5m.

5.2.13 Connect the pipe to indoor unit and outdoor unit by using two spanners.

- Be sure to use two spanners and proper torque to fasten the nut, too large torque will damage the bellmouthing, and too small torque may cause leakage. Refer the following table for different pipe connection.

Pipe Diameter	Torque		Sketch map
	(kgf.cm)	(N.cm)	
1/4" (6.35)	144~176	1420~1720	
3/8" (9.52)	333~407	3270~3990	
1/2" (12.7)	504~616	4950~6030	
5/8" (15.9)	630~770	6180~7540	
3/4" (19)	990~1210	9270~11860	

6. Drainage pipe installation

Install the drainage pipe as shown below and take measures against condensation. Improperly installation could lead to leakage and eventually wet furniture and belongings.

6.1 Installation principle

- Ensure at least 1/100 slope of the drainage pipe
- Adopt suitable pipe diameter
- Adopt nearby condensate water discharge

6.2 Key points of drainage water pipe installation

6.2.1 Considering the pipeline route and elevation

- Before installing condensate water pipeline, determine its route and elevation to avoid intersection with other pipelines and ensure slope is straight.

6.2.2 Drainage pipe selection

- The drainage pipe diameter shall not small than the drain hose of indoor unit
- According to the water flowrate and drainage pipe slope to choose the suitable pipe, the water flowrate is decided by the capacity of indoor unit.

Relationship between water flowrate and capacity of indoor unit

Capacity (x1000Btu)	Water flowrate (l/h)
12	2.4
18	4
24	6
30	7
36	8
42	10
48	12
60	14

According to the above table to calculate the total water flowrate for the confluence pipe selection.

For horizontal drainage pipe (The following table is for reference)

PVC pipe	Reference value of inner diameter of pipe (mm)	Allowable maximum water flowrate (l/h)		Remark
		Slope 1/50	Slope 1/100	
PVC25	20	39	27	For branch pipe
PVC32	25	70	50	
PVC40	31	125	88	
PVC50	40	247	175	Could be used for confluence pipe
PVC63	51	473	334	

Attention: Adopt PVC40 or bigger pipe to be the main pipe.

For Vertical drainage pipe (The following table is for reference)

PVC pipe	Reference value of inner diameter of pipe (mm)	Allowable maximum water flowrate (l/h)	Remark
PVC25	20	220	For branch pipe
PVC32	25	410	
PVC40	31	730	
PVC50	40	1440	Could be used for confluence pipe
PVC63	51	2760	
PVC75	67	5710	
PVC90	77	8280	

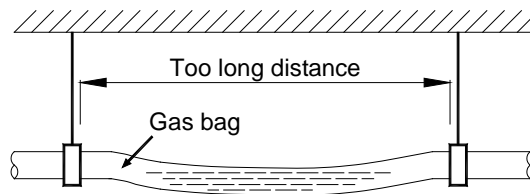
Attention: Adopt PVC40 or bigger pipe to be the main pipe.

6.2.3 Individual design of drainage pipe system

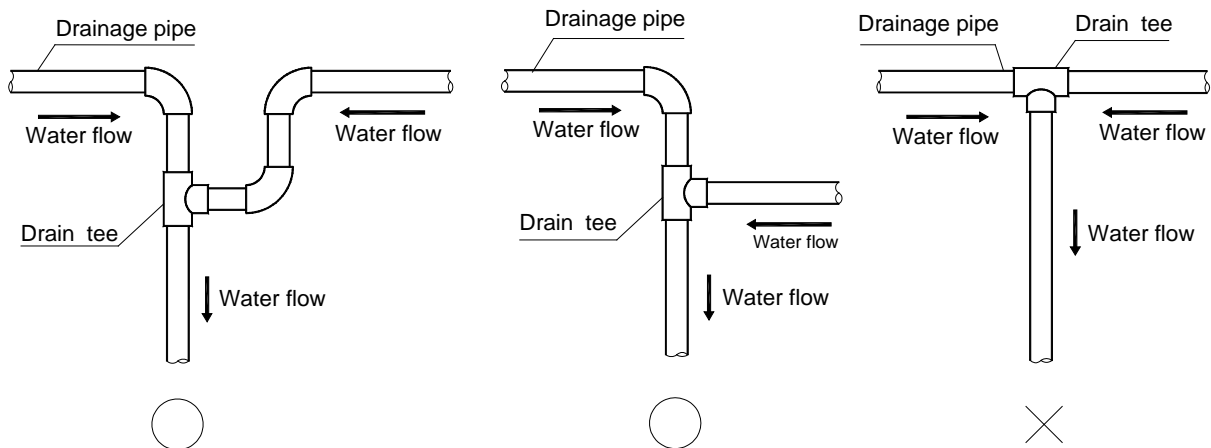
- The drainage pipe of air conditioner shall be installed separately with other sewage pipe, rainwater pipe and drainage pipe in building.
- The drainage pipe of the indoor unit with water pump should be apart from the one without water pump.

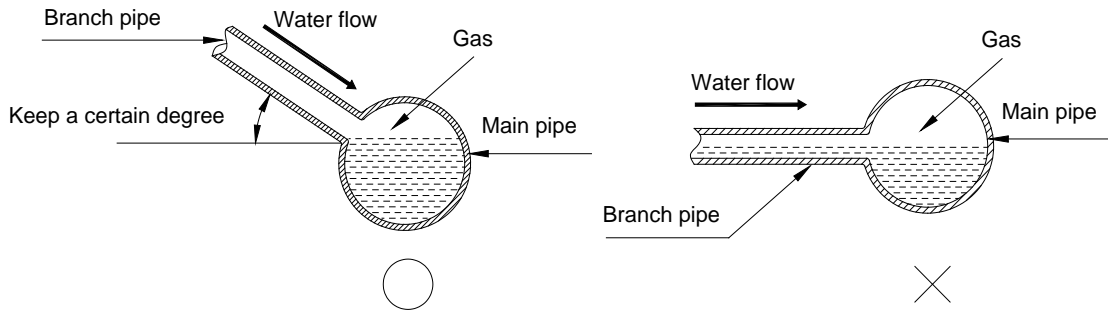
6.2.4 Supporter gap of drainage pipe

- In general, the supporter gap of the drainage pipe horizontal pipe and vertical pipe is respectively 1m~1.5m and 1.5m~2.0m.
- Each vertical pipe shall be equipped with not less than two hangers.
- Overlarge hanger gap for horizontal pipe shall create bending, thus leading to air block.



6.2.5 The horizontal pipe layout should avoid converse flow or bad flow

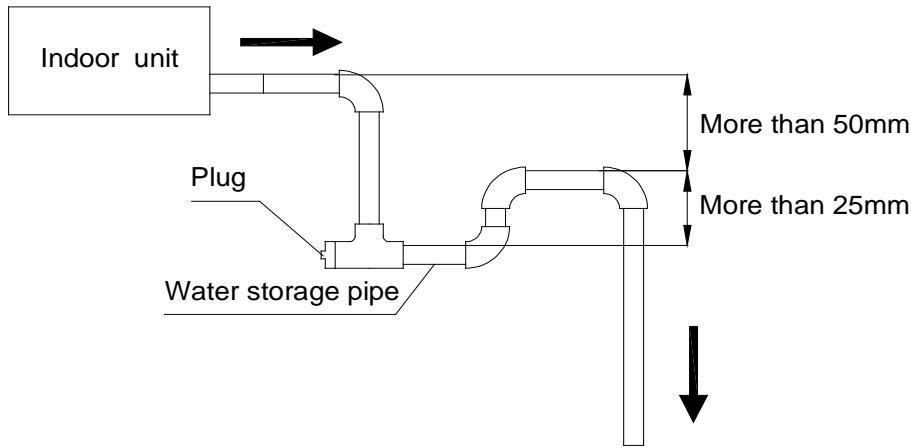




- The correct installation will not cause converse water flow and the slope of the branch pipes can be adjusted freely
- The false installation will cause converse water flow and the slope of the branch pipe can not be adjusted.

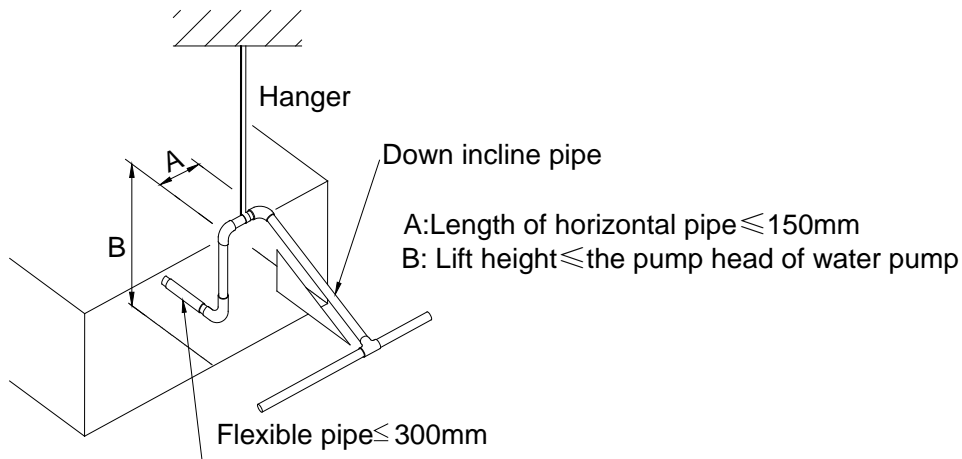
6.2.6 Water storage pipe setting

- If the indoor unit has high extra static pressure and without water pump to elevate the condensate water, such as high extra static pressure duct unit , the water storage pipe should be set to avoid converse flow or blow water phenomena.



6.2.7 Lifting pipe setting of indoor unit with water pump

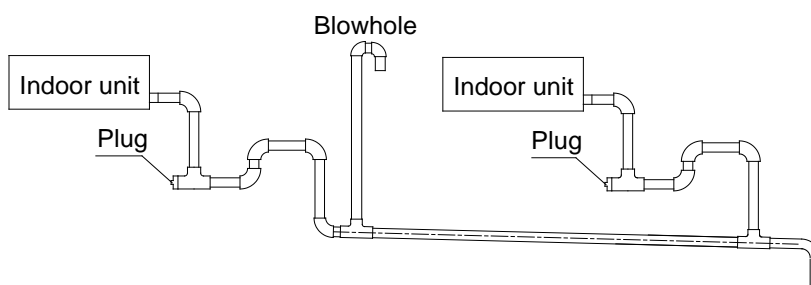
- The length of lifting pipe should not exceed the pump head of indoor unit water pump.
 Pump head of big four way cassette: 750mm
 Pump head of compact four way cassette: 500mm
- The drainage pipe should be set down inclined after the lifting pipe immediately to avoid wrong operation of water level switch.
- Refer the following picture for installation reference.



6.2.8 Blowhole setting

- For the concentrated drainage pipe system, there should design a blowhole at the highest point of main pipe to ensure the condensate water discharge smoothly.

- The air outlet shall face down to prevent dirt entering pipe.
- Each indoor unit of the system should be installed it.
- The installation should be considering the convenience for future cleaning.



6.2.9 The end of drainage pipe shall not contact with ground directly.

6.3 Drainage test

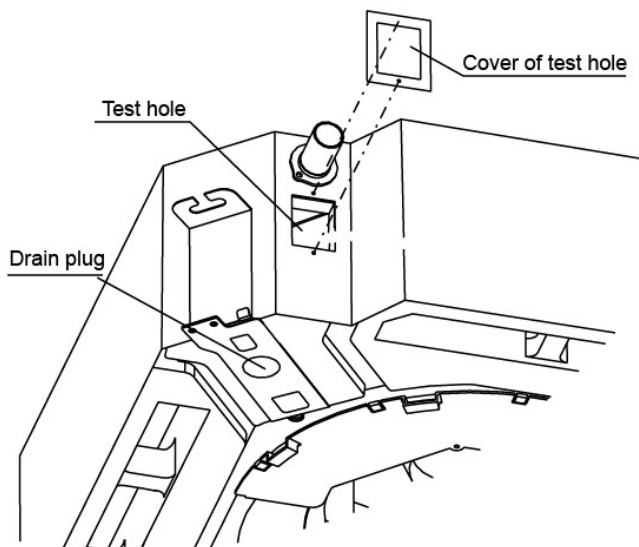
6.3.1 Water leakage test

After finishing the construction of drainage pipe system, fill the pipe with water and keep it for 24 hours to check whether there is leakage at joint section.

6.3.2 Water discharge test

1. Natural drainage mode(the indoor unit with outdoor drainage pump)

Infuse above 600ml water through water test hole slowly into the water collector, observe whether the water can discharge through the transparent hard pipe at drainage outlet.
2. Pump drainage mode
 - 2.1 Disconnect the plug of water level switch, remove the cover of water test hole and slowly infuse about 2000ml water through the water test hole, be sure that the water will not touch the motor of drainage pump.



- 2.2 Power on and let the air conditioner operate for cooling. Check operation status of drainage pump, and then connect the plug of water level switch, check the operation sound of water pump and observe whether the water can discharge through the transparent hard pipe at drainage outlet. (In light of the length of drainage pipe, water shall be discharged about 1 minute delayed)
- 2.3 Stop the operation of air conditioner, power off the power supply and put the cover of water test hole back to the original place.
 - a. After stopped the air conditioner 3 minutes, check whether there is anything abnormal. If drainage pipes have not been distributed properly, over back-flow water shall cause the flashing of alarm indicator at remote-controlled receiving board and even water shall run over the water collector.
 - b. Continuously infusing water until water level alarmed, check whether the drainage pump could discharge water at once. If water level does not decline under warning water level 3 minutes later, it

shall cause shutdown of unit. When this situation happens, the normal startup only can be recovered by turning down power supply and eliminating accumulated water.

Note: Drain plug at the main water-containing plate is used for eliminating accumulated water in water-containing plate when maintaining air conditioner fault. During normal operation, the plug shall be filled in to prevent leakage.

6.4 Insulation work of drainage pipe

Refer the introduction to the insulation engineering parts.

7. Vacuum Drying and Leakage Checking

7.1 Purpose of vacuum drying

- Eliminating moisture in system to prevent the phenomena of ice-blockage and copper oxidation. Ice-blockage shall cause abnormal operation of system, while copper oxide shall damage compressor.
- Eliminating the non-condensable gas (air) in system to prevent the components oxidizing, pressure fluctuation and bad heat exchange during the operation of system.

7.2 Selection of vacuum pump

- The ultimate vacuum degree of vacuum pump shall be -756mmHg or above.
- Precision of vacuum pump shall reach 0.02mmHg or above.

7.3 Operation procedure for vacuum drying

Due to different construction environment, two kinds of vacuum drying ways could be chosen, namely ordinary vacuum drying and special vacuum drying.

7.3.1 Ordinary vacuum drying

1. When conduct first vacuum drying, connect pressure gauge to the infusing mouth of gas pipe and liquid pipe, and keep vacuum pump running for 1 hour (vacuum degree of vacuum pump shall be reached -755mmHg).
2. If the vacuum degree of vacuum pump could not reach -755mmHg after 1 hour of drying, it indicates that there is moisture or leakage in pipeline system and need to go on with drying for half an hour.
3. If the vacuum degree of vacuum pump still could not reach -755mmHg after 1.5 hours of drying, check whether there is leakage source.
4. Leakage test: After the vacuum degree reaches -755mmHg, stop vacuum drying and keep the pressure for 1 hour. If the indicator of vacuum gauge does not go up, it is qualified. If going up, it indicates that there is moisture or leak source.

7.3.2 Special vacuum drying

The special vacuum drying method shall be adopted when:

1. Finding moisture during flushing refrigerant pipe.
2. Conducting construction on rainy day, because rain water might penetrated into pipeline.
3. Construction period is long, and rain water might penetrated into pipeline.
4. Rain water might penetrate into pipeline during construction.

Procedures of special vacuum drying are as follows:

1. Vacuum drying for 1 hour.
2. Vacuum damage, filling nitrogen to reach 0.5Kgf/cm² .
Because nitrogen is dry gas, vacuum damage could achieve the effect of vacuum drying, but this method could not achieve drying thoroughly when there is too much moisture. Therefore, special attention shall be drawn to prevent the entering of water and the formation of condensate water.
3. Vacuum drying again for half an hour.
If the pressure reached -755mmHg, start to pressure leakage test. If it can not reached the value, repeat vacuum damage and vacuum drying again for 1 hour.

- 4 Leakage test: After the vacuum degree reaches -755mmHg, stop vacuum drying and keep the pressure for 1 hour. If the indicator of vacuum gauge does not go up, it is qualified. If going up, it indicates that there is moisture or leak source.

8. Additional refrigerant charge

- After the vacuum drying process is carried out, the additional refrigerant charge process need to be performed.
- The outdoor unit is factory charged with refrigerant. The additional refrigerant charge volume is decided by the diameter and length of the liquid pipe between indoor and outdoor unit. Refer the following formula to calculate the charge volume.

Diameter of liquid pipe (mm)	Φ6.35	Φ9.52	Φ12.7
Formula	$V=11g/m \times (L-5)$	$V=30g/m \times (L-5)$	$V=60g/m \times (L-5)$

V: Additional refrigerant charge volume (g).

L : The length of the liquid pipe (m).

Note:

- Refrigerant may only be charged after performed the vacuum drying process.
- Always use gloves and glasses to protect your hands and eyes during the charge work.
- Use electronic scale or fluid infusion apparatus to weight refrigerant to be recharged. Be sure to avoid extra refrigerant charged, it may cause liquid hammer of the compressor or protections.
- Use supplementing flexible pipe to connect refrigerant cylinder, pressure gauge and outdoor unit. And The refrigerant should be charged in liquid state. Before recharging, The air in the flexible pipe and manifold gauge should be exhausted.
- After finished refrigerant recharge process, check whether there is refrigerant leakage at the connection joint part.(Using gas leakage detector or soap water to detect).

9. Engineering of insulation

9.1 Insulation of refrigerant pipe

9.1.1 Operational procedure of refrigerant pipe insulation

Cut the suitable pipe → insulation (except joint section) → flare the pipe → piping layout and connection → vacuum drying → insulate the joint parts

9.1.2 Purpose of refrigerant pipe insulation

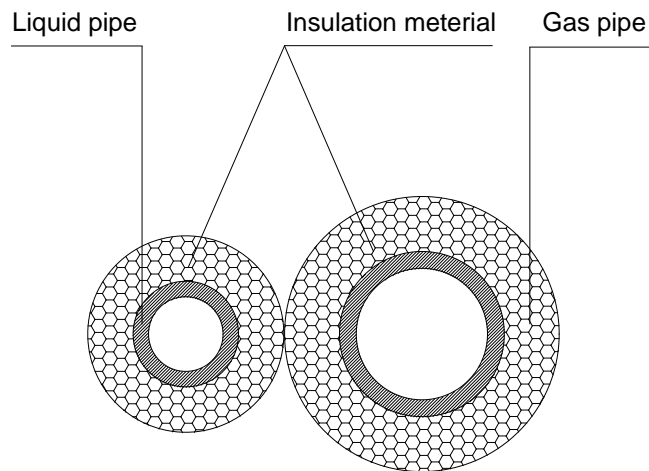
- During operation, temperature of gas pipe and liquid pipe shall be over-heating or over-cooling extremely. Therefore, it is necessary to carry out insulation; otherwise it shall debase the performance of unit and burn compressor.
- Gas pipe temperature is very low during cooling. If insulation is not enough, it shall form dew and cause leakage.
- Temperature of gas pipe is very high (generally 50-100°C) during heating. Insulation work must be carried out to prevent hurt by carelessness touching.

9.1.3 Insulation material selection for refrigerant pipe

- The burning performance should over 120°C
- According to the local law to choose insulation materials
- The thickness of insulation layer shall be above 10mm.If in hot or wet environment place, the layer of insulation should be thicker accordingly.

9.1.4 Installation highlights of insulation construction

- Gas pipe and liquid pipe shall be insulated separately, if the gas pipe and liquid pipe were insulated together; it will decrease the performance of air conditioner.



- The insulation material at the joint pipe shall be 5~10cm longer than the gap of the insulation material.
- The insulation material at the joint pipe shall be inserted into the gap of the insulation material.
- The insulation material at the joint pipe shall be banded to the gap pipe and liquid pipe tightly.
- The linking part should be use glue to paste together
- Be sure not bind the insulation material over-tight, it may extrude out the air in the material to cause bad insulation and cause easy aging of the material.

9.2 Insulation of drainage pipe

9.2.1 Operational procedure of refrigerant pipe insulation

Select the suitable pipe → insulation (except joint section) → piping layout and connection → drainage test → insulate the joint parts

9.2.2 Purpose of drainage pipe insulation

The temperature of condensate drainage water is very low. If insulation is not enough, it shall form dew and cause leakage to damage the house decoration.

9.2.3 Insulation material selection for drainage pipe

- The insulation material should be flame retardant material, the flame retardancy of the material should be selected according to the local law.
- Thickness of insulation layer is usually above 10mm.
- Use specific glue to paste the seam of insulation material, and then bind with adhesive tape. The width of tape shall not be less than 5cm. Make sure it is firm and avoid dew.

9.2.4 Installation and highlights of insulation construction

- The single pipe should be insulated before connecting to another pipe, the joint part should be insulated after the drainage test.
- There should be no insulation gap between the insulation material.

10. Engineering of electrical wiring

10.1 Highlights of electrical wiring installation

- All field wiring construction should be finished by qualified electrician.
- Air conditioning equipment should be grounded according to the local electrical regulations.
- Current leakage protection switch should be installed.
- Do not connect the power wire to the terminal of signal wire.
- When power wire is parallel with signal wire, put wires to their own wire tube and remain at least 300mm gap.
- According to table in indoor part named “the specification of the power” to choose the wiring, make sure the selected wiring not small than the date showing in the table.

- Select different colors for different wire according to relevant regulations.
- Do not use metal wire tube at the place with acid or alkali corrosion, adopt plastic wire tube to replace it.
- There must be not wire connect joint in the wire tube If joint is a must, set a connection box at the place.
- The wiring with different voltage should not be in one wire tube.
- Ensure that the color of the wires of outdoor and the terminal No. are same as those of indoor unit respectively.

11. Test operation

11.1 The test operation must be carried out after the entire installation has been completed.

11.2 Please confirm the following points before the test operation.

- The indoor unit and outdoor unit are installed properly.
- Tubing and wiring are correctly completed.
- The refrigerant pipe system is leakage-checked.
- The drainage is unimpeded.
- The ground wiring is connected correctly.
- The length of the tubing and the added stow capacity of the refrigerant have been recorded.
- The power voltage fits the rated voltage of the air conditioner.
- There is no obstacle at the outlet and inlet of the outdoor and indoor units.
- The gas-side and liquid-side stop valves are both opened.
- The air conditioner is pre-heated by turning on the power.

11.3 Test operation

Set the air conditioner under the mode of "COOLING" by remote controller, and check the following points.

Indoor unit

- Whether the switch on the remote controller works well.
- Whether the buttons on the remote controller works well.
- Whether the air flow louver moves normally.
- Whether the room temperature is adjusted well.
- Whether the indicator lights normally.
- Whether the temporary buttons works well.
- Whether the drainage is normal.
- Whether there is vibration or abnormal noise during operation.

Outdoor unit

- Whether there is vibration or abnormal noise during operation.
- Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
- Whether any of the refrigerant is leaked.

Part 5
Electrical Control System

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1. Electrical Control Function

1.1 Definition

- T1: Indoor room temperature
- T2: Coil temperature of evaporator
- T3: Coil temperature of condenser
- T4: Outdoor ambient temperature
- T5: Compressor discharge temperature

1.2 Main Protection

1.2.1 Time Delay at restart for compressor.

1.2.2 Sensor protection at open circuit and breaking disconnection.

1.2.3 Phase check function

If the phase sequence is detected wrong or lack of 1 or 2 phase, the unit won't start and there is error code displayed on outdoor PCB.

1.2.4 Low pressure check function

The low pressure switch should be always closed. If it is open, the system will stop until the fault is cleared. During defrosting procedure and 4 minutes after defrosting ends, low pressure switch won't be checked.

Note: The system will not check if the protection could be cleared in 30 seconds after the protection occurs.

If this protection occurs 3 times, it won't recover automatically until the main power is cut off.

1.2.5 Over-current protection

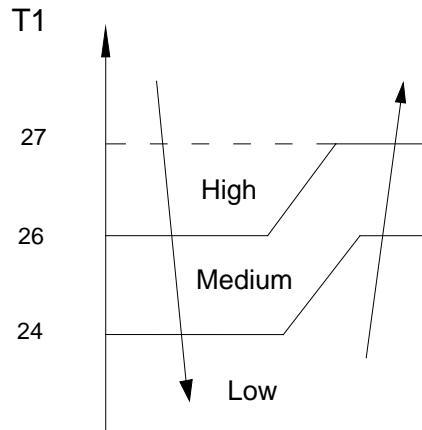
When compressor is running, if the current is over twice of the rated for 3 seconds, the compressor will stop and an error code will be displayed on the outdoor PCB. If the current becomes normal, the compressor will restart after 3 minutes.

Note: The current won't be checked within 3 seconds after the compressor starts. The system will not check if the protection could be cleared in 30 seconds after the protection occurs.

1.3 Operation Modes and Functions

1.3.1 Fan mode

- (1) Outdoor fan and compressor stop.
- (2) Temperature setting function is disabled, and no setting temperature is displayed.
- (3) Indoor fan can be set to high/(med)/low/auto.
- (4) The louver operates same as in cooling mode.
- (5) Auto fan:



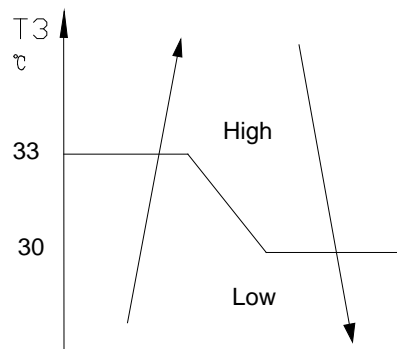
1.3.2 Cooling Mode

1.3.2.1 Outdoor fan running rules

For 1-phase outdoor units:

The On-off outdoor units have single fan speed. The outdoor fan will run following the compressor except when AC is in evaporator high temp. protection in heating mode, condenser high temp. protection in cooling mode, defrosting mode and the current protection.

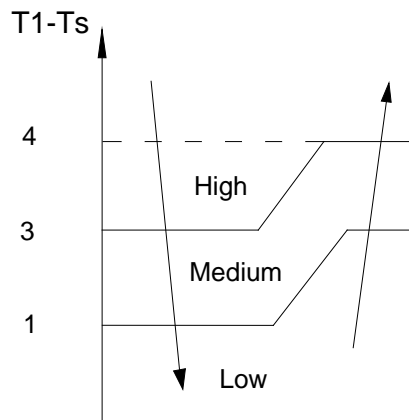
For 3-phase outdoor units:



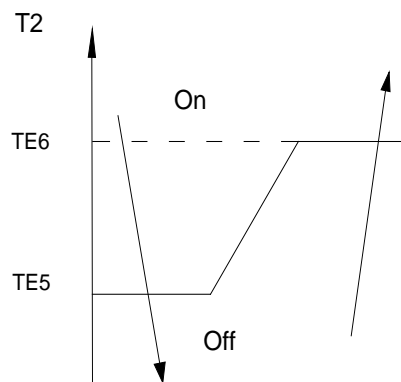
1.3.2.2 Indoor fan running rules

In cooling mode, indoor fan runs all the time and the speed can be selected as high, (medium), low and auto.

The auto fan:

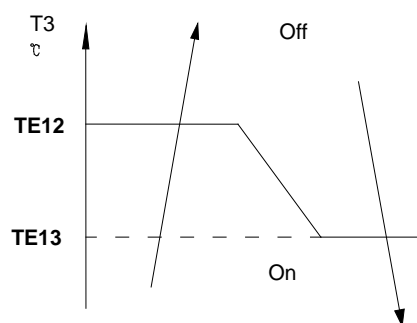


1.3.2.3 Low evaporator coil temperature T2 protection



When the evaporator coil temp. $T2$ keeps lower than $TE5$ for 3 minutes, the compressor and outdoor fan will shut off. When $T2$ is higher than $TE6$, the compressor and outdoor fan will restart up.

1.3.2.4 Condenser high temperature T3 protection



When $T3 \geq TE12$ for Time1, the compressor will shut off. When $T3 < TE13$, the compressor will restart.

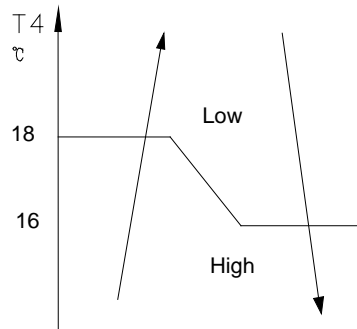
1.3.3 Heating Mode(For heat pump models)

1.3.3.1 Outdoor fan running rules:

For 1-phase outdoor units:

The On-off outdoor units have single fan speed. The outdoor fan will run following the compressor except when AC is in evaporator high temp. protection in heating mode, condenser high temp. protection in cooling mode, defrosting mode and the current protection.

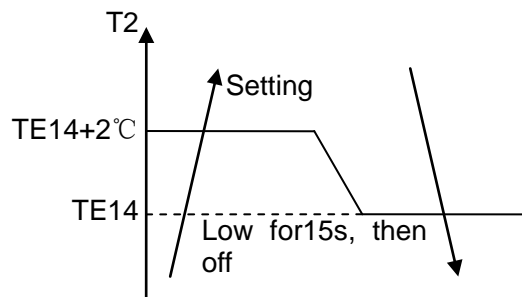
For 3-phase outdoor units:



1.3.3.2 Indoor fan running rules:

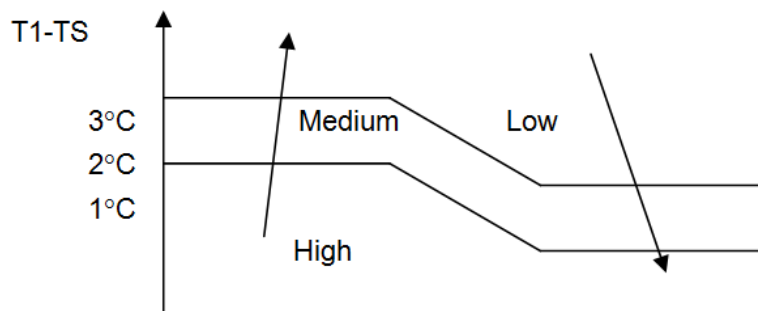
When the compressor is on, the indoor fan can be set to high/med/low/auto. And the anti-cold wind function has the priority.

Only for DL: If the compressor stops caused by the room temperature rising, the indoor fan will follow the below rules. During this period, the anti-cold-wind is disabled.



Auto fan action:

For DL ceiling installation & duct::



1.3.3.3 Defrosting mode:

For 1-phase outdoor units:

● **Condition of defrosting:**

AC will enter defrosting mode if any of the following items is satisfied.

A: For DL, high static pressure duct & cassette :The compressor keeps running over 40 minutes and $T_3 < -2^\circ\text{C}$

For A5 duct: $T_3 < 0^\circ\text{C}$ and the compressor keeps running over 45 minutes. Meanwhile $T_3 < -3^\circ\text{C}$ for 3minutes.

B: After the last defrosting, the time that the outdoor fan is off but the compressor is on in high T2 protection cumulates up to 90 minutes.

- **Condition of ending defrosting:**

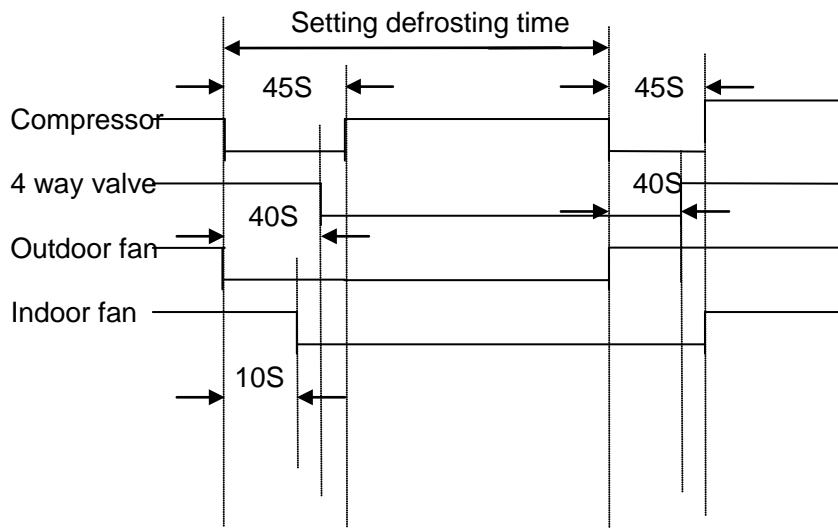
If any one of the following items is satisfied, the defrosting will terminate and the machine will turn to normal heating mode.

A: T_3 rises to be higher than 20°C .

B: The machine has run for 10 minutes in defrosting.

- **Defrosting action:**

For A5 duct:



For the others type::

The compressor is running, and 4-way valve and outdoor fan stop. The indoor fan works as anti-cold wind procedure. When defrosting is over, the compressor keeps running and the 4-way valve and outdoor fan will start up.

For 3-phase outdoor units:

- **Condition of defrosting:**

$T_3 < 0^\circ\text{C}$ and the compressor keeps running over 45 minutes. Meanwhile $T_3 < -3^\circ\text{C}$ for 3minutes.

- **Condition of ending defrosting:**

If any one of the following items is satisfied, the defrosting will terminate and the machine will turn to normal heating mode.

A: T_3 rises to be higher than 20°C .

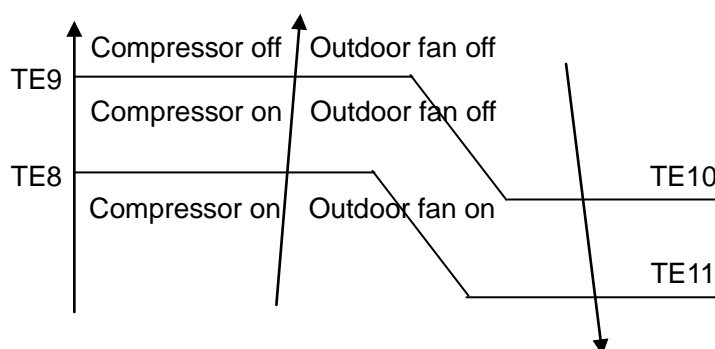
B: The machine has run for 10 minutes in defrosting.

- **Defrosting action:**

The compressor is running, and 4-way valve and outdoor fan stop. The indoor fan works as anti-cold wind procedure. When defrosting is over, the compressor keeps running and the 4-way valve and outdoor fan will start up.

1.3.3.4 High evaporator coil temp.T2 protection:

For duct:



1.3.4 Auto-mode

This mode can be chosen with remote controller and the setting temperature can be changed between 17~30°C.

In auto mode, the machine will choose cooling, heating or fan-only mode according to ΔT ($\Delta T = T1 - Ts$).

$\Delta T = T1 - Ts$	Running mode
$\Delta T > 2^{\circ}\text{C}$	Cooling
$-1 < \Delta T \leq 2^{\circ}\text{C}$	Fan-only
$\Delta T \leq -1^{\circ}\text{C}$	Heating

Indoor fan will run at auto fan of the relevant mode.

The louver operates same as in relevant mode.

If the machine switches mode between heating and cooling, the compressor will keep stopping for 15 minutes and then choose mode according to $T1 - Ts$.

If the setting temperature is modified, the machine will choose running function again.

1.3.5 Drying mode

1.3.5.1 The indoor fan will keep running at low speed.

1.3.5.2 All protections are active and the same as that in cooling mode.

1.3.5.3 The louver operates the same as in cooling mode.

1.3.6 Timer function

1.3.6.1 Timing range is 24 hours.

1.3.6.2 Timer on. The machine will turn on automatically when reaching the setting time.

1.3.6.3 Timer off. The machine will turn off automatically when reaching the setting time.

1.3.6.4 Timer on/off. The machine will turn on automatically when reaching the setting "on" time, and then turn off automatically when reaching the setting "off" time.

1.3.6.5 Timer off/on. The machine will turn off automatically when reaching the setting "off" time, and then turn on automatically when reaching the setting "on" time.

1.3.6.6 The timer function will not change the AC current operation mode. Suppose AC is off now, it will not start up firstly after setting the "timer off" function. And when reaching the setting time, the timer LED will be off and the AC running mode has not been changed.

For high static pressure duct & cassette: The timer function will change the AC current operation mode. Suppose users set the “timer off” function and AC is off now, the AC will turn on firstly and then turn off when reaching the setting time.

1.3.6.7 The setting time is relative time.

1.3.7 Economy function

1.3.7.1 It is valid in cooling, heating and auto mode.

1.3.7.2. Turning off, changing mode or setting fan speed will cancel economy function.

1.3.7.3 Operation process in sleep mode is as follow:

After pressing ECONOMIC or SLEEP button on the controller, the machine will go into economy mode.

When cooling, the setting temperature rises 1°C (be lower than 30°C) every hour, 2 hours later the setting temperature stops rising.

For heat pump models, when they are in heating, the setting temperature reduces 1°C (be higher than 17°C) every hour, 2 hours later the setting temperature stops reducing.

1.3.7.4 In this mode, the fan speed is forced into AUTO mode.

1.3.8 Auto-Restart function

The indoor unit is equipped with auto-restart function, which is carried out through an auto-restart module. In case of a sudden power failure, the module memorizes the setting conditions before the power failure. The unit will resume the previous operation setting (not including Swing function) automatically after 3 minutes when power returns.

1.3.9 Drain pump control(For duct & Cassette)

1.3.9.1 Water level check

The water lever will be checked every 5 seconds, if the feedback signal is abnormal, it will be considered as drain water full by the control system.

1.3.9.2 Drain pump control

If there is no water full error, the drain pump will be on when the unit is in cooling mode (including auto-cooling and forced cooling) and dry mode. It will be off when the unit is in heating mode, fan only mode or off state (if the pump is on before the unit is off, it will delay 3 minutes to be off).

If there is a water full error, the drain pump will be on when the error occurs. Afterwards:

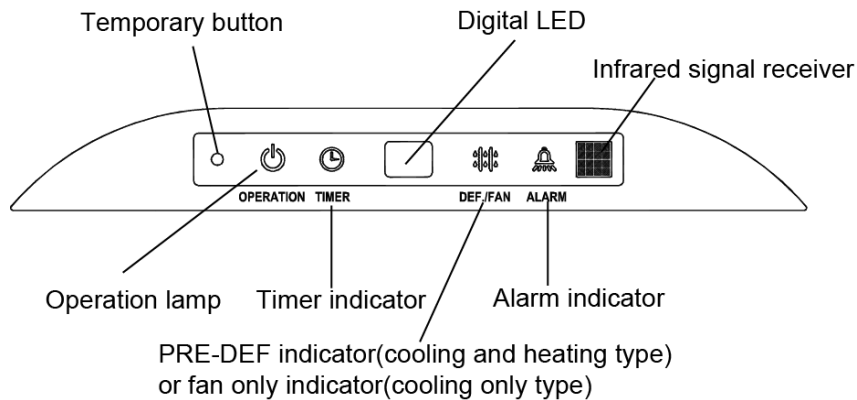
If the error disappears in 3 minutes, the drain pump will work as normal state. (if it is necessary to turn off the pump, it will be off in 1 minute delay.)

If the error is still there in 3 minutes, the drain pump will be off as well as the AC unit. The error can be cleared only when the power of the unit is cut off.

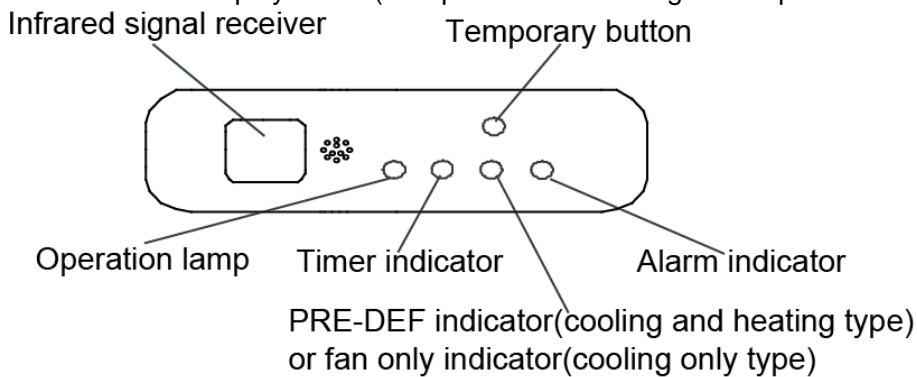
2. Troubleshooting

2.1 Display board

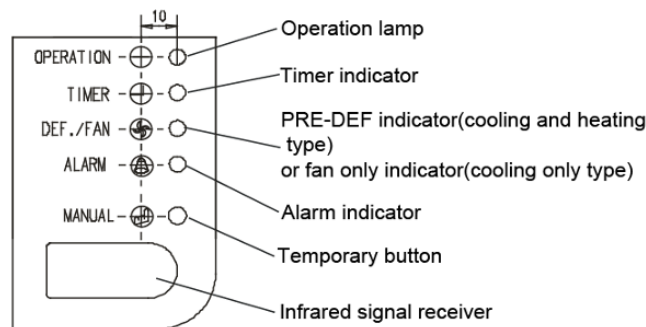
2.1.1 Icon explanation on indoor display board (Big cassette).



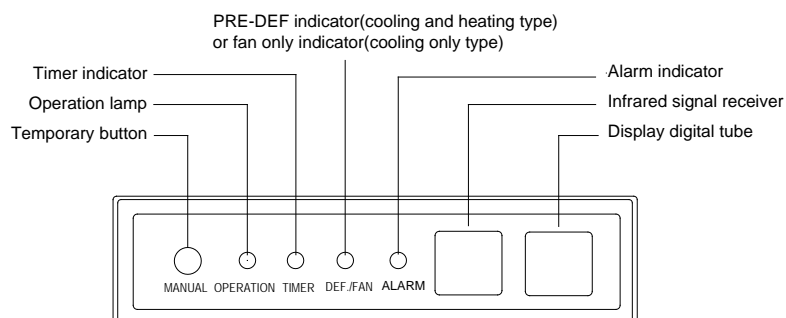
2.1.2 Icon explanation on indoor display board (Compact cassette & High static pressure Duct).



2.1.3 Icon explanation on indoor display board (Ceiling & Floor)



2.1.4 Icon explanation on indoor display board (A5 Duct)



2.2. Self-diagnosis

Indoor unit's LED indication

(1) For the A5 Duct

During malfunction or protection, the indicators and digital LED displays as follow:

No	Operation	Timer	Def/Fan	Alarm	Digital LED Display	Malfunction or protection
1	X	☆	X	X	E2	Indoor temperature sensor is abnormal
2	☆	X	X	X	E3	Evaporator temperature sensor is abnormal
3	X	X	☆	X	E4	Condenser temperature sensor is abnormal
4	☆	☆	X	X	E7	EEPROM malfunction
5	X	X	X	☆	E8	Full-water malfunction

Note: "X" means off, "☆" means flashes at 5Hz

LEDs' for the indication of outdoor trouble

Type	Contents	LED1	LED2	LED3
Trouble	Phase sequence	Flash	Off	Off
Trouble	Lack of phase(A,B)	Flash	Off	Off
Trouble	Lack of phase(C)	Off	Off	Off
Trouble	Protection of Low pressure	Flash	Flash	Off
Trouble	Overload of current	Off	Off	Flash
Trouble	Communication malfunction	Flash	Off	Flash
Trouble	Open-circuit and short-circuit trouble of T3	Off	Flash	Flash
Trouble	Open-circuit and short-circuit trouble of T4	Off	Flash	Off
Trouble	High temperature protection of condenser	Flash	Flash	Flash

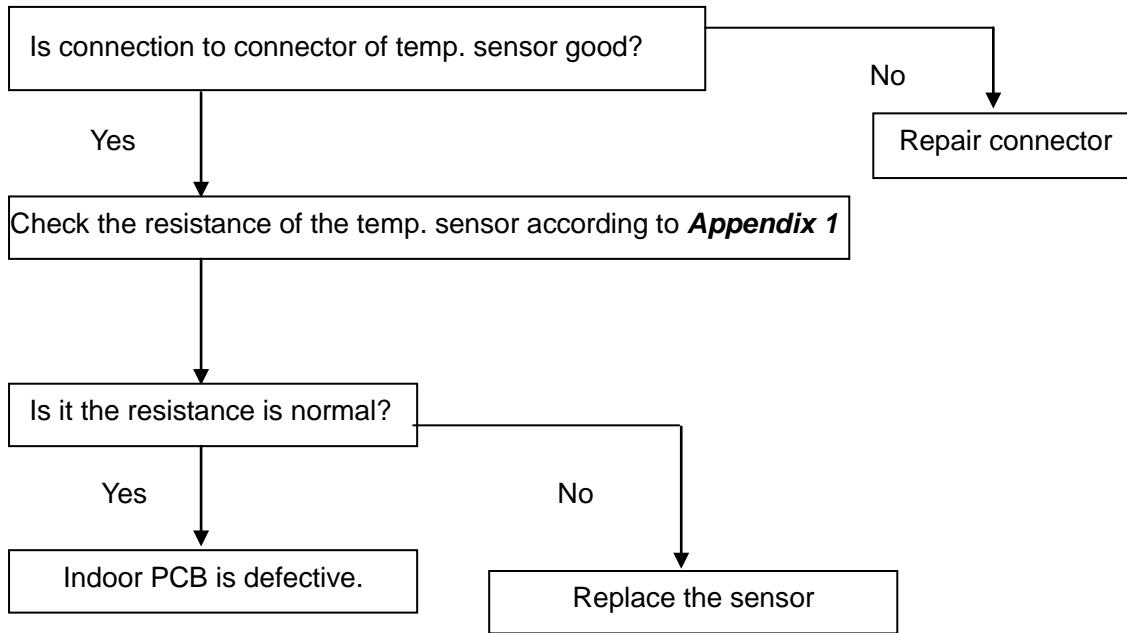
Note:

1. If the LED1-LED3 are flashing slowly, means the system is stand-by.
2. T3: Outdoor condenser temperature sensor
3. T4: Outdoor ambient temperature sensor

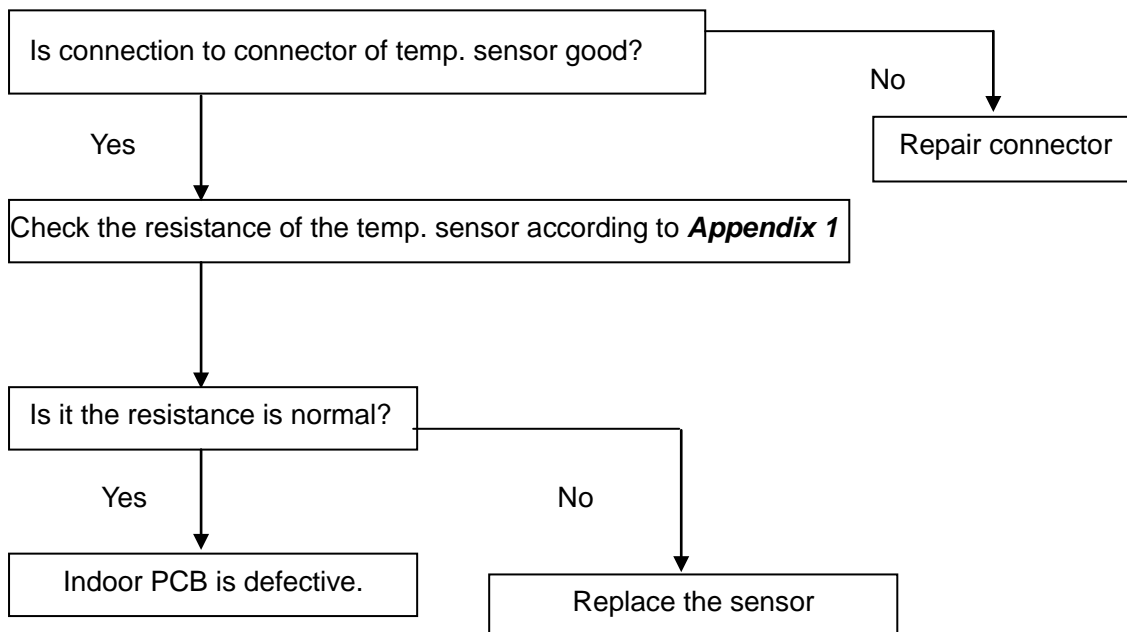
2.3. Solving steps for typical malfunction

(1) For indoor unit

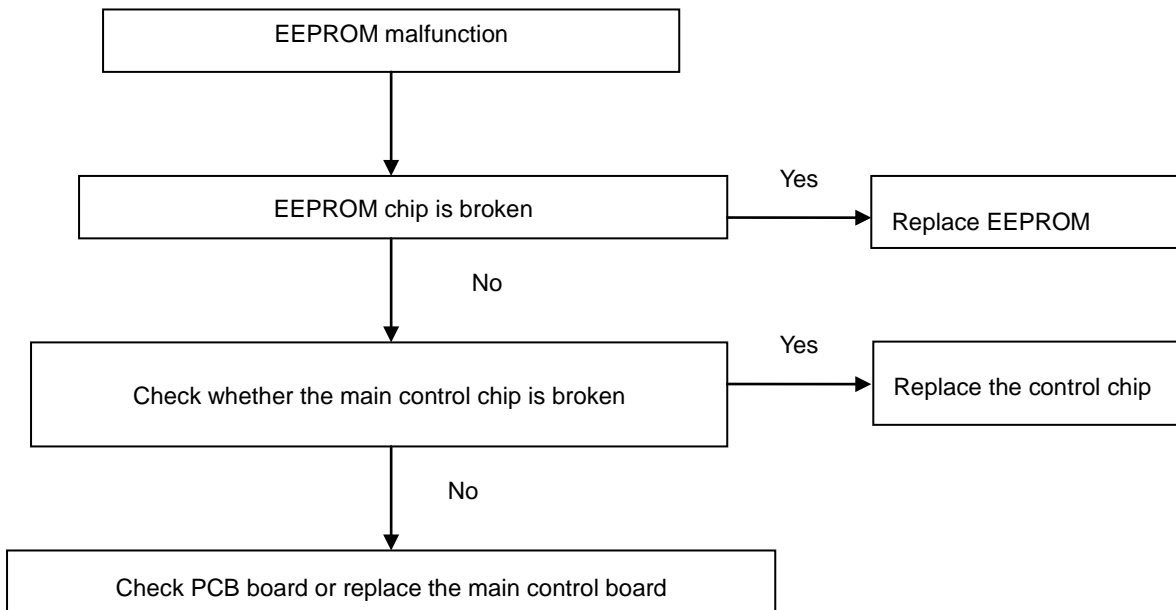
a. Indoor room temperature T1 and sensor evaporator temperature sensor T2 is abnormal



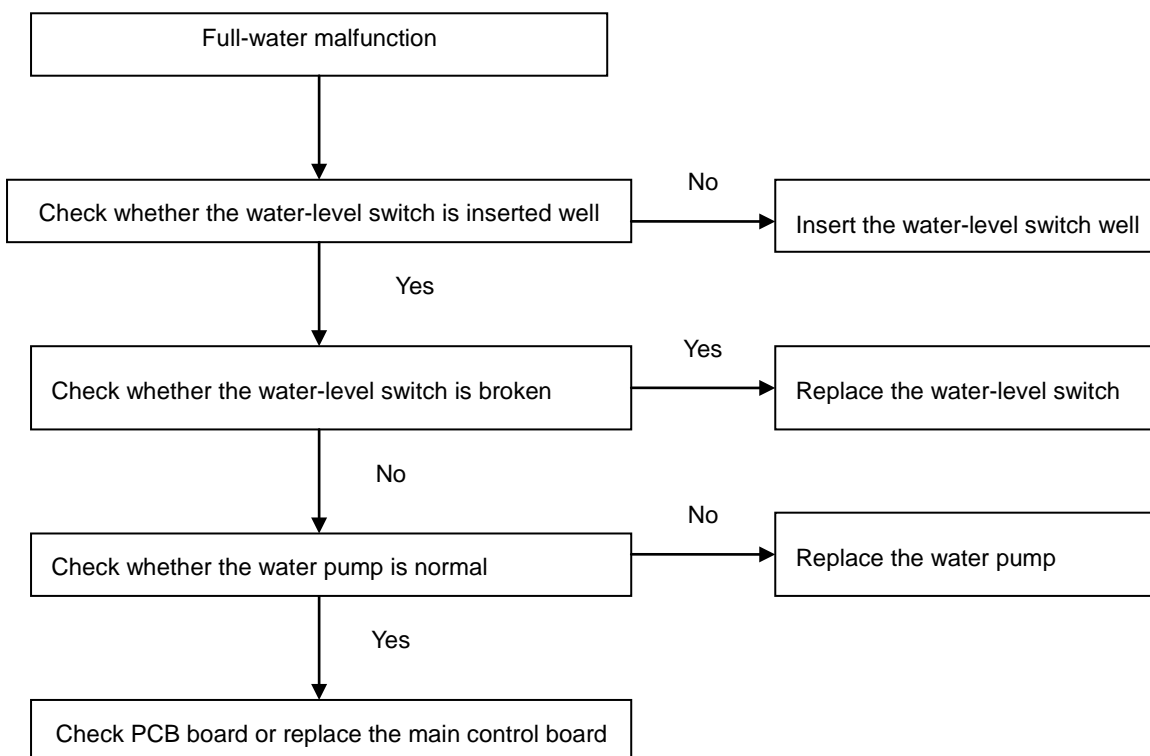
b. Condenser temperature sensor T3 is abnormal



c. EEPROM malfunction

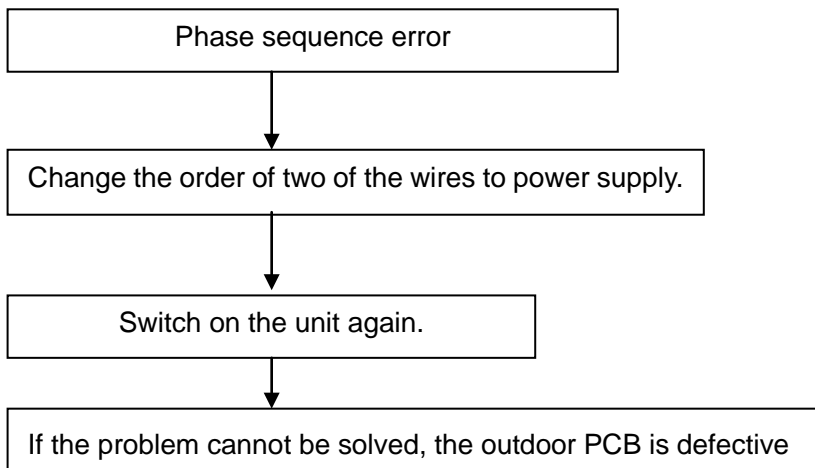


d. Full-water malfunction

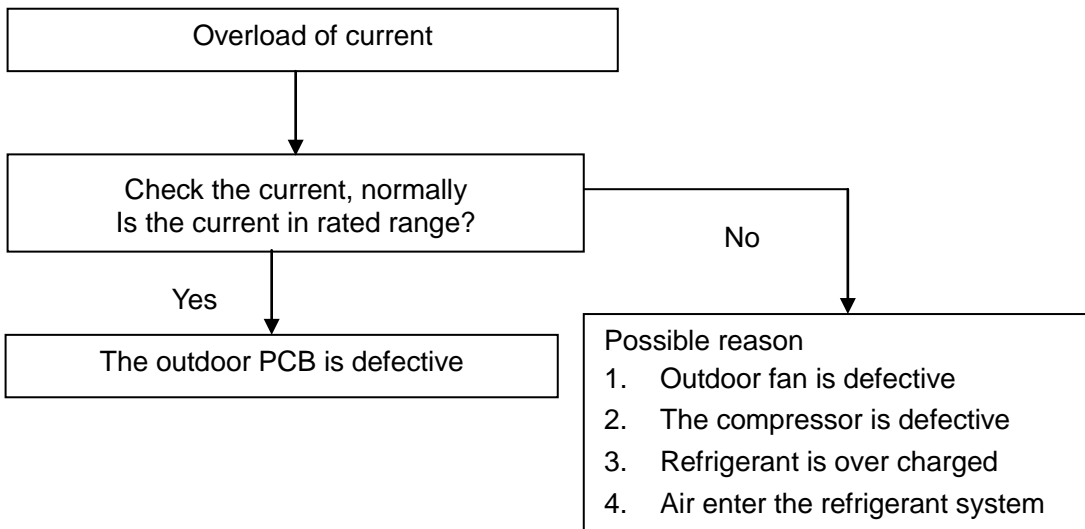


(2) For the outdoor unit

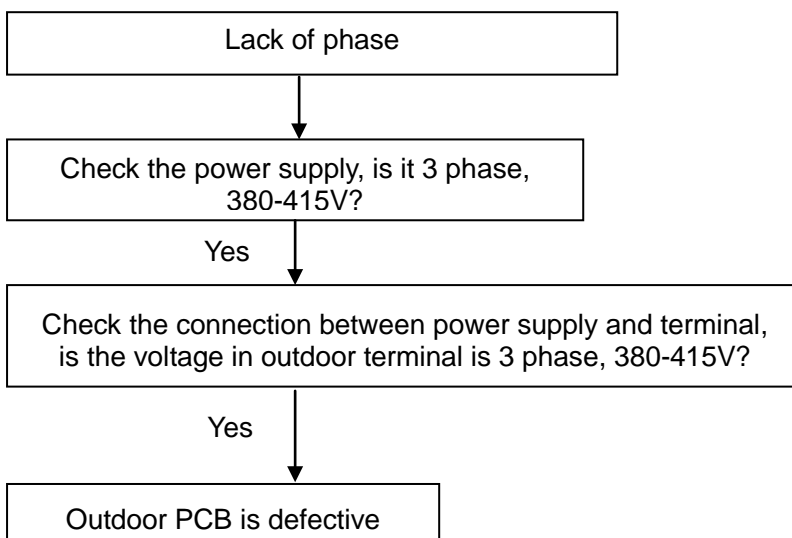
a. Phase sequence error:



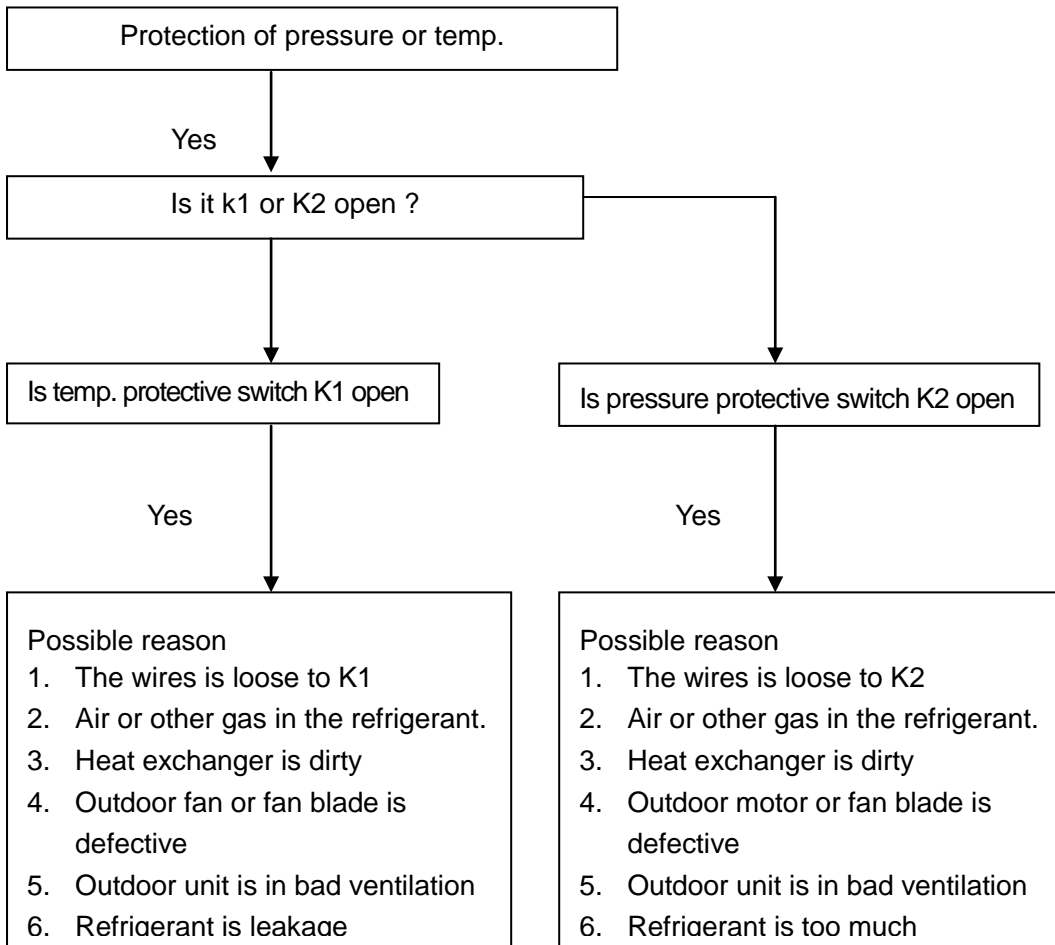
b. Overload of current



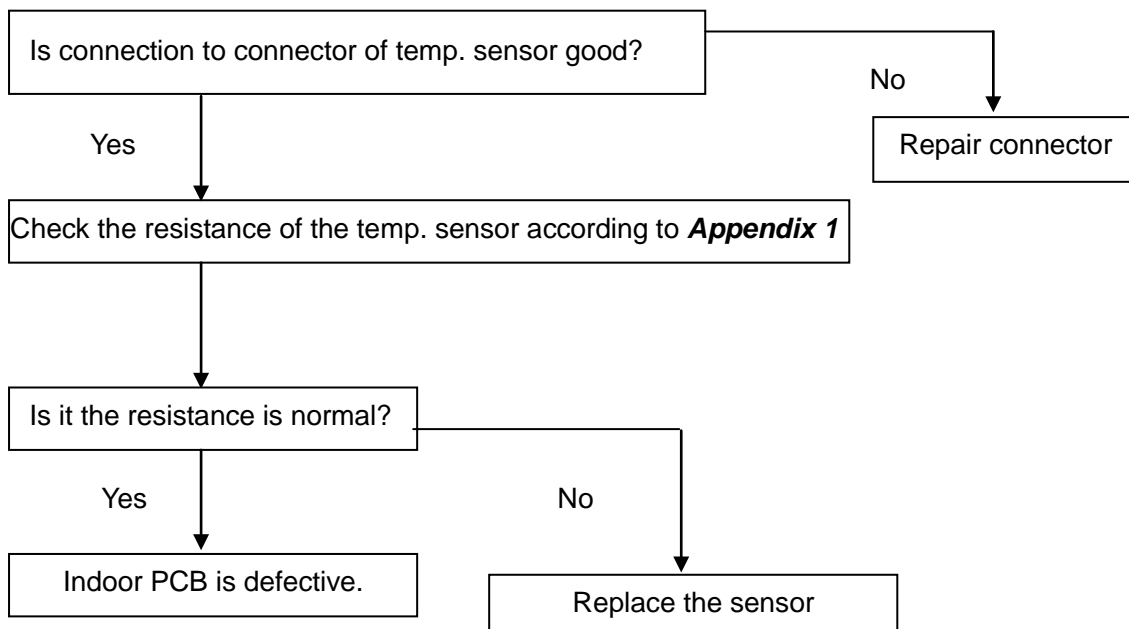
c. Lack of phase



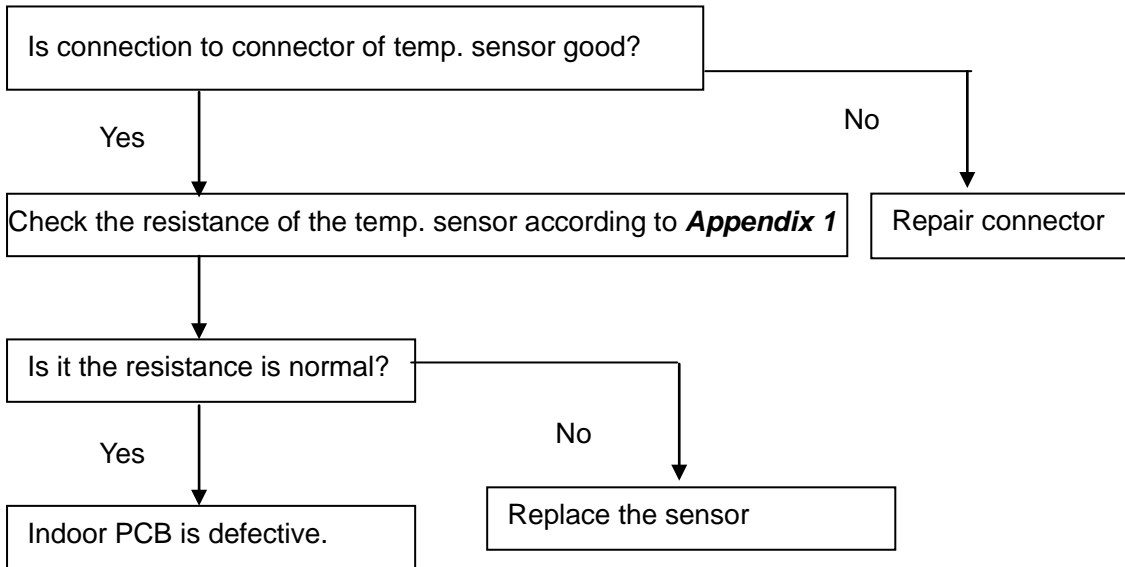
d. Protection of pressure or temp.



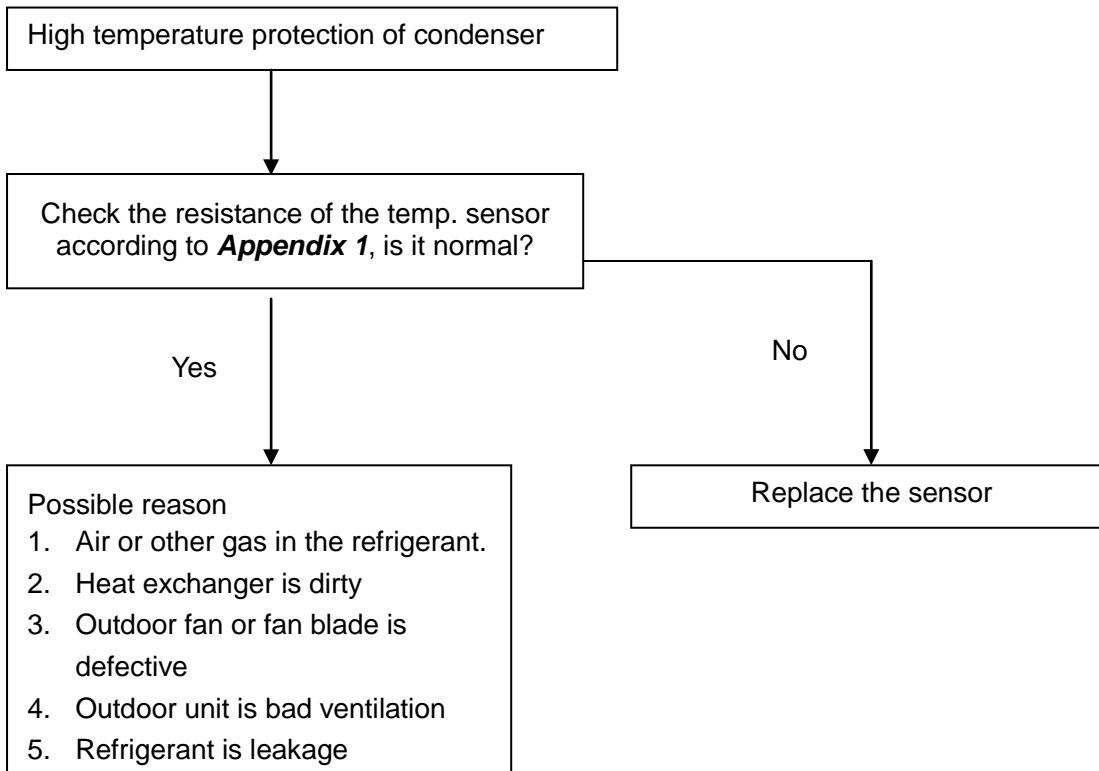
e. Open-circuit and short-circuit trouble of T3



f. Open-circuit and short-circuit trouble of T4



g. High temperature protection of condenser



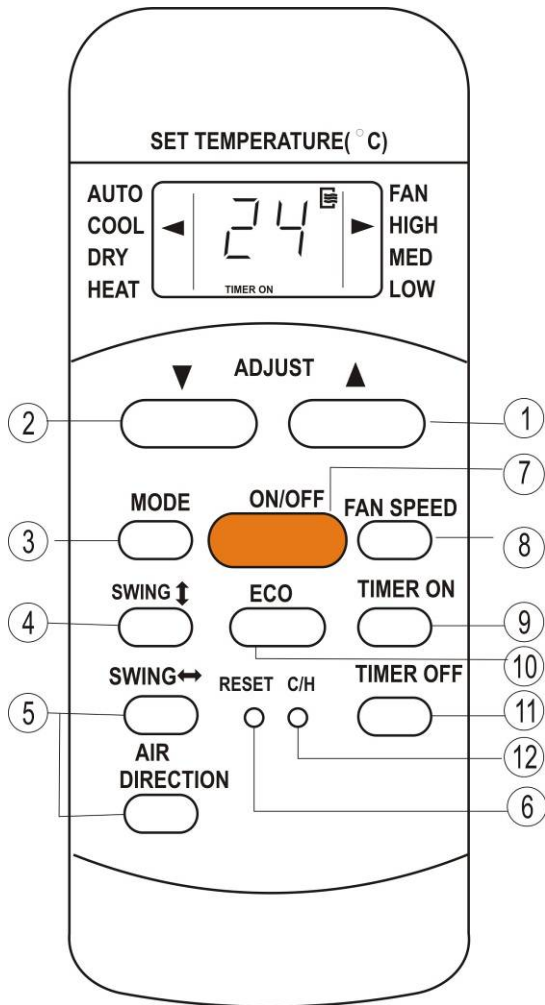
Appendix 1 Temperature Sensor Resistance Value Table (°C--K)

°C	K Ohm	°C	K Ohm	°C	K Ohm	°C	K Ohm
-20	115.266	20	12.6431	60	2.35774	100	0.62973
-19	108.146	21	12.0561	61	2.27249	101	0.61148
-18	101.517	22	11.5000	62	2.19073	102	0.59386
-17	96.3423	23	10.9731	63	2.11241	103	0.57683
-16	89.5865	24	10.4736	64	2.03732	104	0.56038
-15	84.2190	25	10.000	65	1.96532	105	0.54448
-14	79.3110	26	9.55074	66	1.89627	106	0.52912
-13	74.5360	27	9.12445	67	1.83003	107	0.51426
-12	70.1698	28	8.71983	68	1.76647	108	0.49989
-11	66.0898	29	8.33566	69	1.70547	109	0.48600
-10	62.2756	30	7.97078	70	1.64691	110	0.47256
-9	58.7079	31	7.62411	71	1.59068	111	0.45957
-8	56.3694	32	7.29464	72	1.53668	112	0.44699
-7	52.2438	33	6.98142	73	1.48481	113	0.43482
-6	49.3161	34	6.68355	74	1.43498	114	0.42304
-5	46.5725	35	6.40021	75	1.38703	115	0.41164
-4	44.0000	36	6.13059	76	1.34105	116	0.40060
-3	41.5878	37	5.87359	77	1.29078	117	0.38991
-2	39.8239	38	5.62961	78	1.25423	118	0.37956
-1	37.1988	39	5.39689	79	1.21330	119	0.36954
0	35.2024	40	5.17519	80	1.17393	120	0.35982
1	33.3269	41	4.96392	81	1.13604	121	0.35042
2	31.5635	42	4.76253	82	1.09958	122	0.3413
3	29.9058	43	4.57050	83	1.06448	123	0.33246
4	28.3459	44	4.38736	84	1.03069	124	0.32390
5	26.8778	45	4.21263	85	0.99815	125	0.31559
6	25.4954	46	4.04589	86	0.96681	126	0.30754
7	24.1932	47	3.88673	87	0.93662	127	0.29974
8	22.5662	48	3.73476	88	0.90753	128	0.29216
9	21.8094	49	3.58962	89	0.87950	129	0.28482
10	20.7184	50	3.45097	90	0.85248	130	0.27770
11	19.6891	51	3.31847	91	0.82643	131	0.27078
12	18.7177	52	3.19183	92	0.80132	132	0.26408
13	17.8005	53	3.07075	93	0.77709	133	0.25757
14	16.9341	54	2.95896	94	0.75373	134	0.25125
15	16.1156	55	2.84421	95	0.73119	135	0.24512
16	15.3418	56	2.73823	96	0.70944	136	0.23916
17	14.6181	57	2.63682	97	0.68844	137	0.23338
18	13.9180	58	2.53973	98	0.66818	138	0.22776
19	13.2631	59	2.44677	99	0.64862	139	0.22231

3. Controller

3.1 Wireless Remote Controller (Optional) RG51Q1/BGE

The R51Q1/BGE wireless remote controller is standard for Four-way cassette type and the Ceiling& floor type.

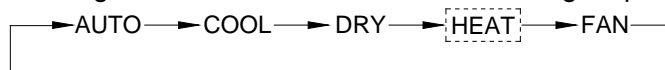


General Function for wireless remote controller:

Model	RG51Q1/BGE
Rated voltage	3.0V(2pieces of LR03 7 # batteries)
Min voltage for sending signal of CPU	2.4V
Effective receiving distance	8m~11m
Operation condition	-5~60°C

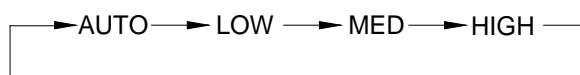
Buttons and functions

1. **Adjust ▼** : Decrease the set temp. Keeping pressing will decrease the temp with 1°C per 0.5s.
2. **Adjust ▲** : Increase the set temp. Keeping pressing will increase the temp with 1°C per 0.5s.
3. **MODE**: Once pressing, running mode will be selected in the following sequence:



NOTE: No heating mode for cool only type unit.

4. **VERT SWING**: Used to stop or start horizontal louver movement or set the desired up/down air flow direction. The louver changes 6 degree in angle for each press. If keep pushing more than 2 seconds, the louver will swing up and down automatically.
5. **HORIZ SWING**: Used to stop or start vertical louver movement.
6. **AIR DIRECTION**: Used to set the desired up/down air flow direction. The louver changes 6 degree in angle for each press.
7. **ON/OFF**: For turning on or turning off the air conditioner.
8. **FAN SPEED**: Fan speed will be selected in following sequence once pressing this button:



9. **TIME ON**: For time ON setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour. Adjusting the figure to 0.00 will cancel time ON setting.
10. **ECO**: Activate or turn off economic operation mode. It is suggested to turn on this function when sleeping. (Only available when remote controller is used with corresponding unit.)
11. **TIME OFF**: For time OFF setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour.

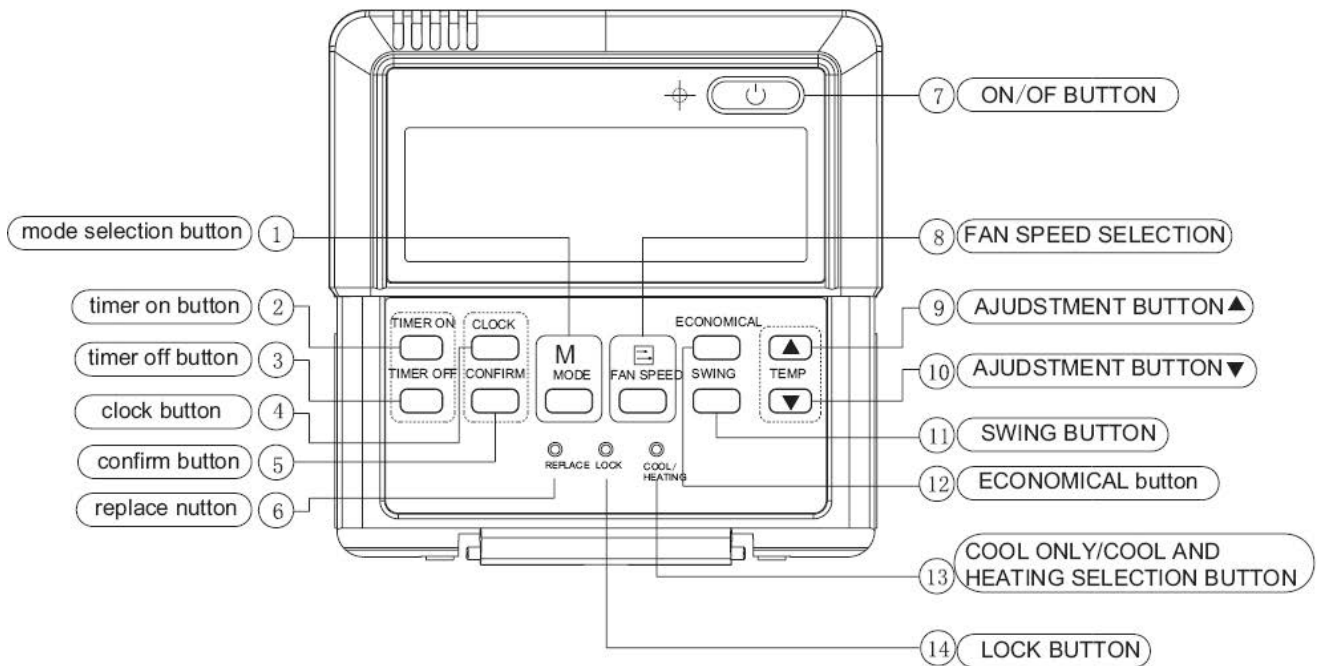
Adjust the figure to 0.00 will cancel time ON setting.

12. **C/H** (inner located): Press this button with a needle of 1mm to shift the mode between Cooling only and Cooling & Heating according to the feature of the machine.
13. **RESET** (inner located): Press this button with a needle of 1mm to cancel the current setting and reset remote controller.

3.2 Wired Remote Controller

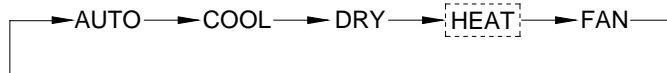
KJR-10B

Name and functions of buttons on the wire controller



1 mode selection button:

It is used to select mode, push the button one time, then the operation modes will change In turn as follows:



Remark: no heating mode if wire controller is set as the cool only.

2 Timer on button:

Push the button to set TIMER ON, each time you push the button the time moves forward by 0.5 hours. When the set time is over 10 hours, each time you push the button the time moves forward by 1 hour. If want to cancel the TIMER ON, then adjust the time of TIMER ON as 0.0

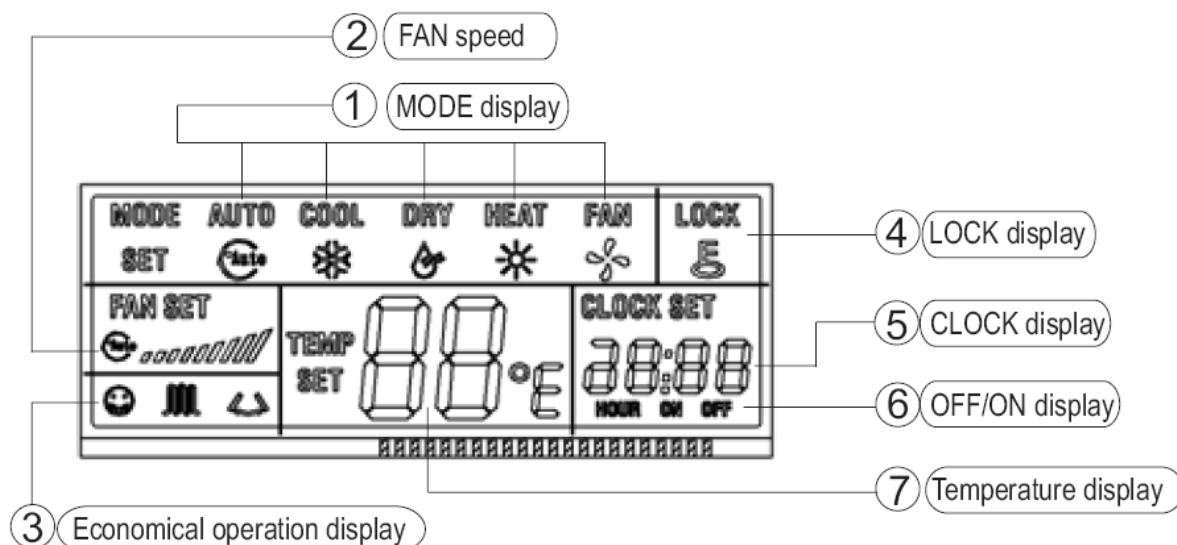
3 Timer off button:

Push the button to set TIMER OFF, each time you push the button the time moves forward by 0.5 hours. When the set time is over 10 hours, each time you push the button the time moves forward by 1 hour. If want to cancel the TIMER OFF, then adjust the time of TIMER OFF as 0.0

4 CLOCK button:

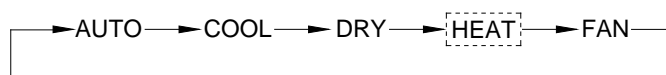
Normally display the clock set currently (display 12:00 for the first electrifying or resetting). When push the button for 4 seconds, the hour part on the clock display flashes every 0.5 seconds, then push button and to adjust hour; push the button CLOCK again, the minute part flashes every 0.5 seconds, then push and button to adjust minute. When set clock or alter clock setting, must push the confirm button to complete the setting

Name and function of LCD on the wire controller



1 Mode select button (MODE):

Press MODE button to select "COOL", "DRY", "HEAT", or "FAN ONLY" mode. (HEAT is invalid for COOL ONLY wire controller.)



2 Fan speed button (FAN SPEED)

Press FAN SPEED to select fan speed from "AUTO", "LOW", "MED", and "HIGH". NOTE: some air conditioners have no MED fan speed, and then the MED is regarded as HIGH.

3 Economical operation displays:

Press ECONOMICAL to display economical operation, if press ECONOMICAL again then the display disappears

4 Lock display

Press LOCK to display the icon of LOCK. Press the button again then the icon of LOCK disappears. In the mode of LOCK, all the buttons are invalid except for LOCK button.

5 CLOCK display.

Usually display the clock set currently. Press the button CLOCK for 4 seconds, the HOUR part will flash, press button ▲ and ▼ to adjust HOUR. Press the button CLOCK again, the minute part flash, press button ▲ or ▼ to adjust MINUTE. After clock set or clock operation, it must press CONFIRM to complete the set.

6 TIMER ON/OFF display:

Display ON at the state of TIMER ON adjustment or after only set the TIMER ON; Display OFF at the state of TIMER OFF adjustment or after only set the TIMER OFF; Display ON/OFF if simultaneously set the mode of TIMER ON and TIMER OFF.

7 Temperature display area:

Usually display the set temperature. Press the buttons of and to set temperature, at the mode of FAN, there is no figure display in the area.

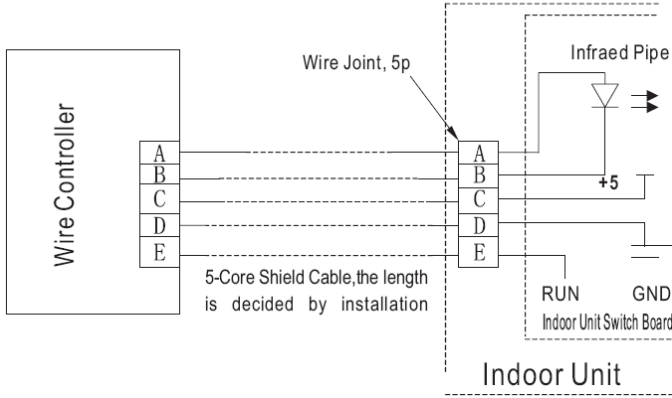
Remark:

The wired controller will reset to factory setting with auto mode, auto fan and 24°C setting temperature when the air conditioner restarts after power failure.

And this may cause inconsistent displays on the wired controller and on the air conditioner. You need to readjust the running status through the wired controller.

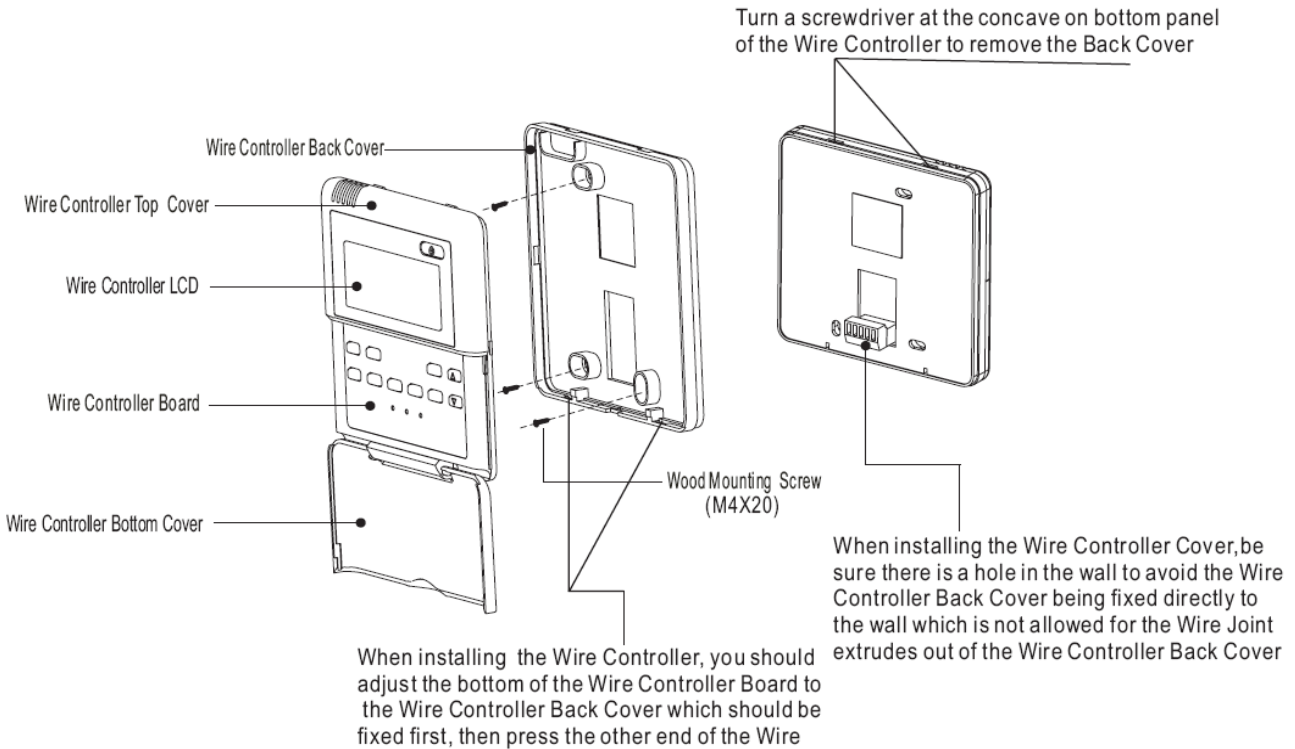
Installation

Wiring Principle Sketch:



Installation Notice:

When the air conditioner needs the constant frequency wire Controller, be sure adding a Wire Joint with 5 terminal named A, B, C, D, E in indoor unit, and fixing a infrared emitter whose anode and cathode connecting with A and B near the receiver in the Indoor Unit Switch Board, then connecting the terminal +5v, GND, Run in the Switch Board to C,D,E respectively.



NOTE

Never turn screws too tightly, or else the cover would be dented or the Liquid Crystal breaks.

Please leave enough long cable for maintenance of the Wire Controller Board.

