Installation of Non-Wall Mounted Air Handlers

Technical Support Department

September 21

Contents

Frequently used Tools

Outlook	Name	Outlook	Name
	Copper pipe cutter		*Expander*
	Copper pipe bender		*Pressure gauge*
	Flaring tool		*Vacuum pump*

Frequently used Tools

Outlook	Name	Outlook	Name
	Anemometer		*Clamp meter*
	Acoustimeter		*Electric drill*
	Infrared thermometer		

Compact Cassette

Inches

>39.4

>39.4

>39.4

>39.4

>39.4

>39.4

>39.4

10.2

> 11.4

> 98.4

Outlet

Inlet

Outlet

Slim Cassette

Connecting point of drain pipe

Connecting point of refrigerant pipe (Liquid side ØC)

Connecting point of refrigerant pipe (Gas side ØB)

Ceiling

Outlet   Inlet   Outlet   Panel

34.6 In (ceiling hole)

>98.4

Ground

A

H

>39.4

>39.4

>39.4

>39.4
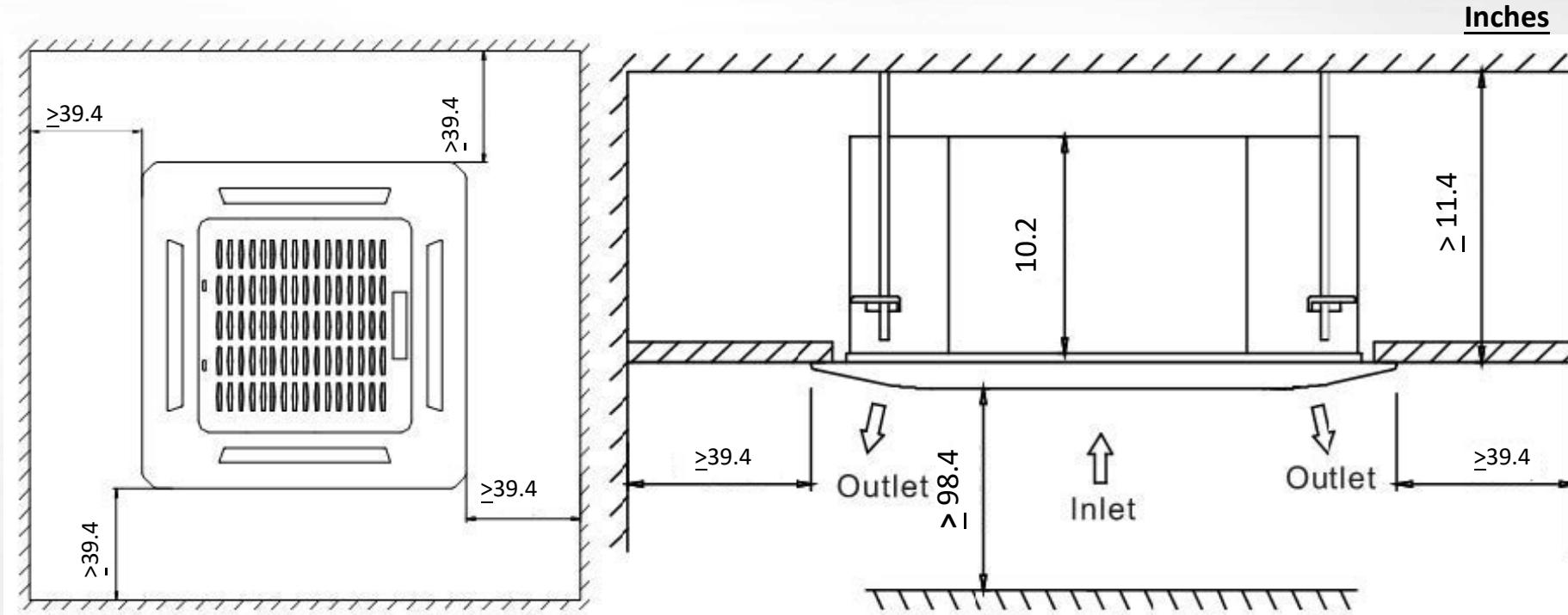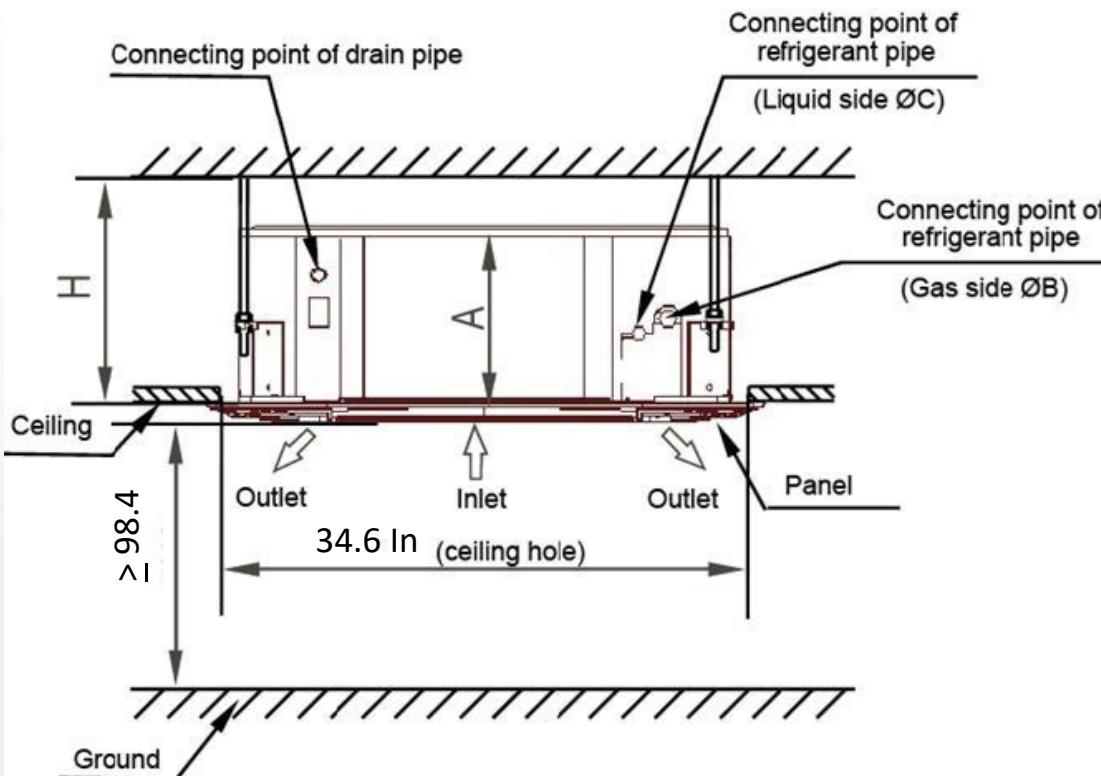
| Model	A	H
18K	8.07	>9.25
24-42K	9.65	>10.71
48-55K	11.3	>12.48
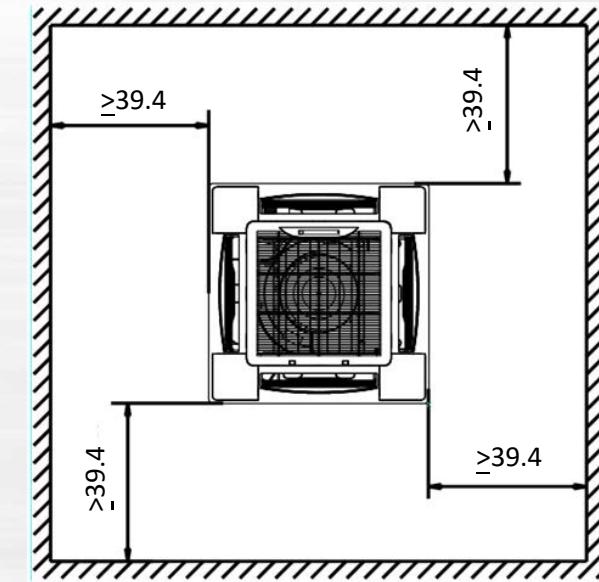
Service hole should be more than 25.2*25.2 In

Suspending the body

Determine the position
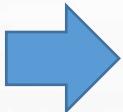
Drill holes on the ceiling
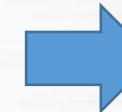
Insert the expanding hook into the hole and hang in the suspending rod.

Installation of the hooks

Use a leveling tool to check the body

Use nuts and washers on both sides of the hook to fix the body
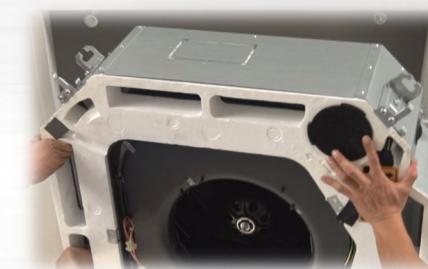
Mount the main body

Suspending the body

1. The horizontal level must be within $\pm 1°$.
2. The hanging pole must have screw thread on each end for adjusting the installation position. There should be 2 nuts for lock the position under the hanging hook on the body.

2 Nuts to lock

Water level

Wall

Main body

L

10 – 18mm (0.4-0.7")

Ceiling board

Normal drainage

0.8-1 m
Gradient more than 1/100
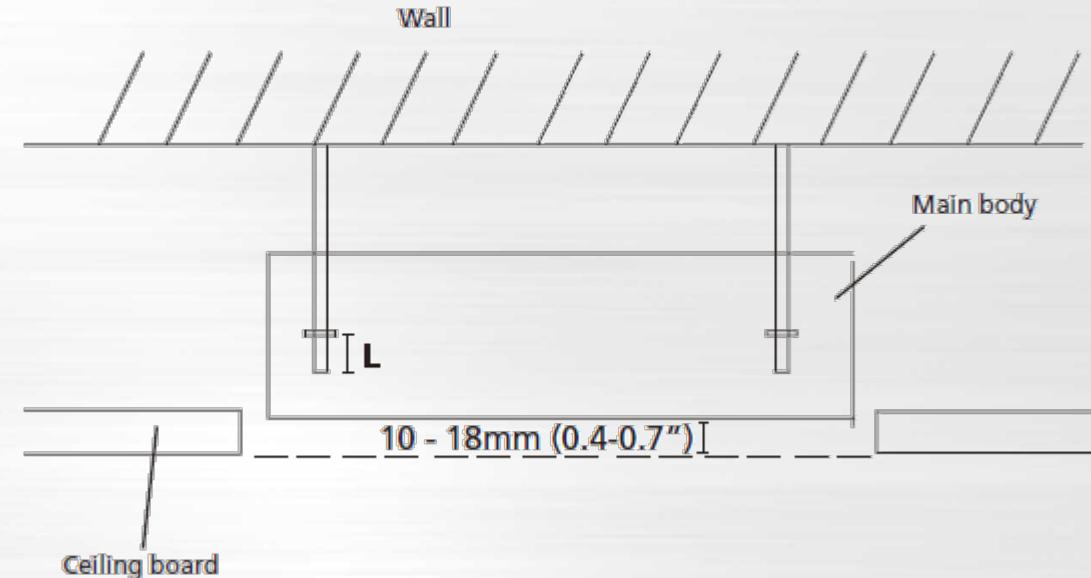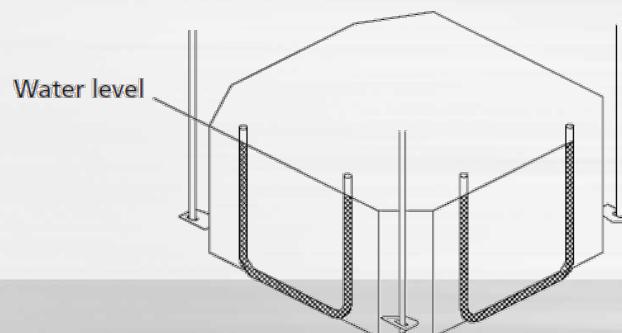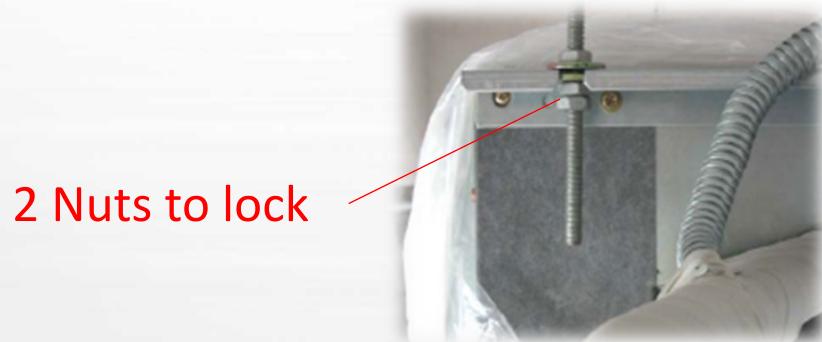
Gap is too much
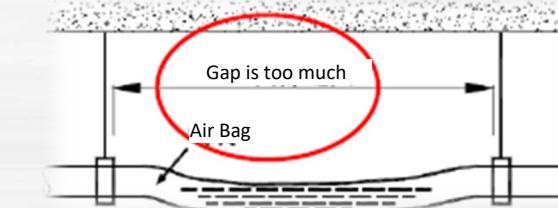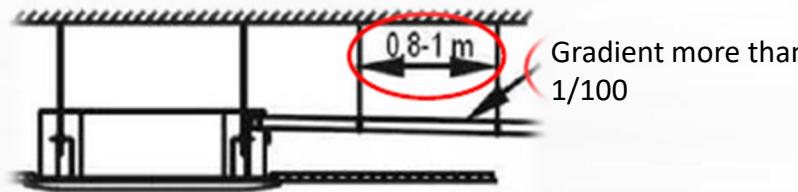
Air Bag

1. There should be supporters for drain pipe every 0.8 to 1 meters.
2. If the gap between supporters is too much, there would be air bags inside the pipe which would make drainage is very difficult.
3. Put the spring clamp on to avoid leakage.

Drain outlet is higher than unit
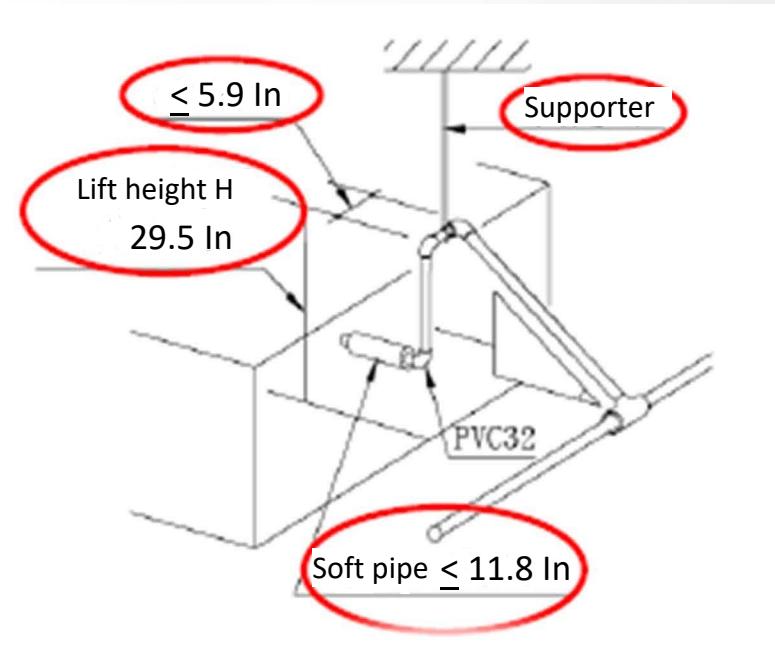

1. If the main drainage pipe is higher than the outlet on the body, the pipe must be life up.
2. The lift height should be no more than 750mm from the bottom of the drain pan.
3. Add a horizontal pipe which length is no more than 150mm for connect to the main drainage pipe.
4. There should be a hanging supporter to avoid the life pipe system falling.

Drainage for multi units

Drainage Test

Pump joint
Test cover
Test mouth
Slow tube
Body
Water-receiver
Drain plug
Test cap
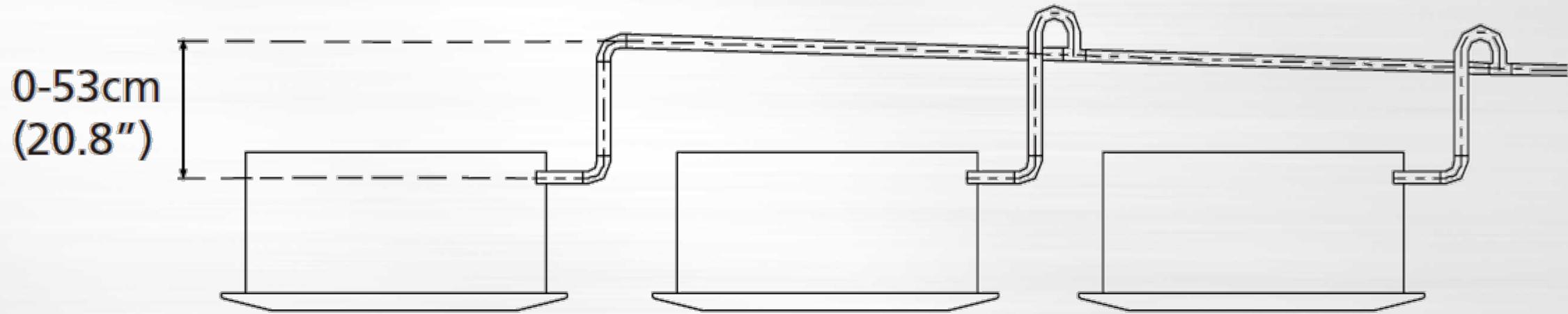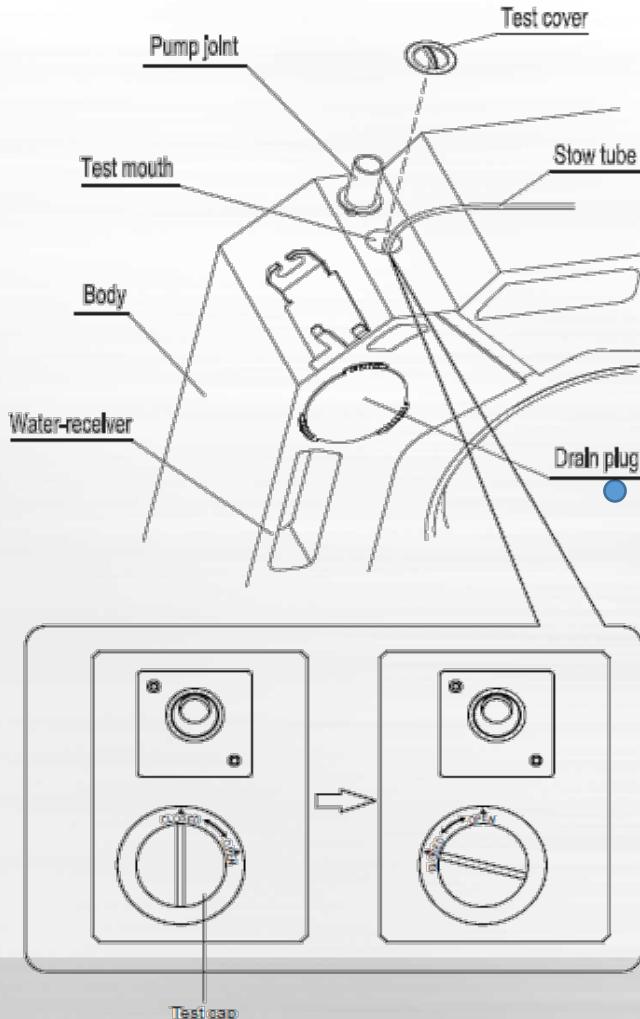
1. Remove the test cover and fill 2000ml water in.
2. Turn on the A/C in cooling mode, check if there is condensate water out.
3. Stop the A/C and wait for 3 minutes, then restart it to check if there is a problem.
4. Continue to fill water inside to the max level, check if the water pump start to work immediately.
5. Disconnect the drain pump and wait till the water level to alarm level to see if there is a full-water-alarm and if the A/C is shut down automatically.

Drain plug is for draining all the water out when there is a problem with the A/C unit. Make sure it is fixed well when the test is carried out.

Drainage test

Location of switches

There are many micro-switches and dial switches on the main PCB of indoor unit and you can find the instructions on wiring diagram.

Group control address setting

*S1 & S2: Network address setting switch*

Micro-switch S1 and dial-switch S2 are for address setting when you want to control this unit by a central controller.

Range: **00-63**

Auto-restart selecting

Micro-switch SW3 is for selection of auto-restart function.

Range: **Active, inactive**

Temperature compensation selecting

Micro-switch SW6 is for selection of temperature compensation in heating mode. This helps to reduce the real temperature difference between ceiling and floor so that the unit could run properly. If the height of installation is lower, smaller value could be chosen.

Range: **6ºC, 4ºC, 2ºC, E function** (reserved for special customizing)

SW6	SWITCH	FOR TEMP. COMPENSATION			
	ON STATE	ON 1 2	ON 1 2	ON 1 2	ON 1 2
	VALUE	6	4	2	E function
	Factory Setting	✓			

Fan control selecting
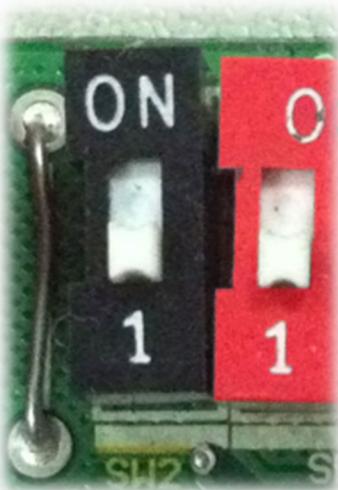
Micro-switch SW2 is for selection of indoor FAN ACTION if room temperature reaches the setponit.

Range: **OFF (in 127s),** **Keep running**

SW2	SWITCH	FOR FAN MOTER CONTROL THEN NO POWER REQUEST.	
ON STATE		ON	ON
MODE		FAN OFF	FAN ON
Factory Setting			✓

Parameter of anti-cold wind function

Micro-switch SW1 is for selection of indoor fan stop temperature (TEL0) when it is in anti-cold wind action in heating mode.

Range: **24ºC, 15ºC, 8ºC, According to EEROM setting** (reserved for special customizing)

Settings for mode priority in multi connection (9K-24K)
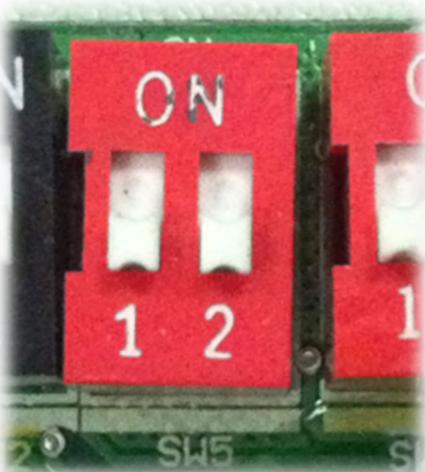
Micro-switch SW5 is for setting the priority of working mode when the unit is in multi connection.

Range: **Heating First**, **Cooling First** (2 positions without difference)

SW5	SWITCH	FOR MODE-PRIOR SETTING			
ON STATE		ON 1 2	ON 1 2	ON 1 2	ON 1 2
MODE		HEAT	HEAT	COOL	COOL
Factory Setting		✓			
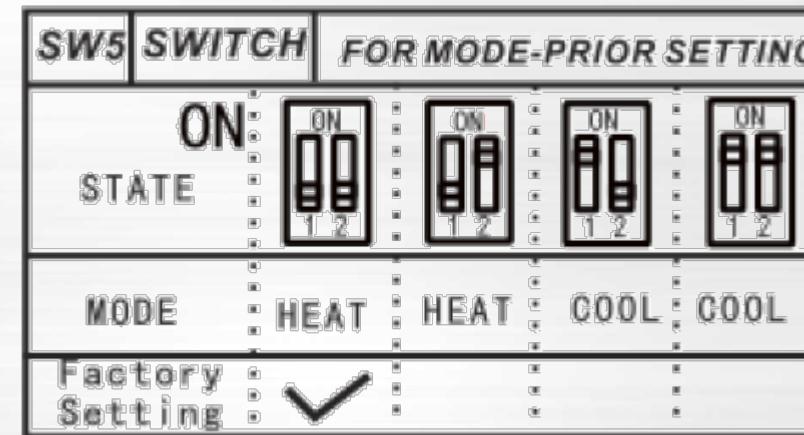
Settings for TWIN connection (36K and 48K)
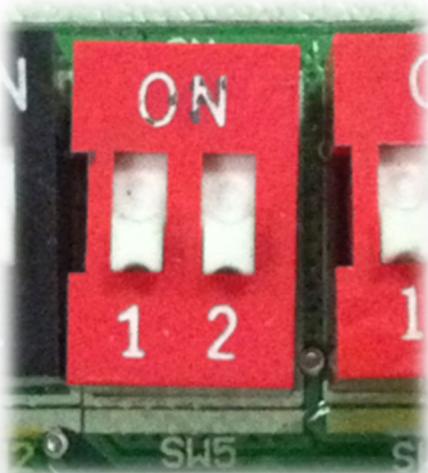
Micro-switch SW5 is for setting the master or slave unit when the unit is in twin connection.

Range: **Master no slave** (Normal 1 drive 1 connection), **Master** (2 positions without difference), **Slave**

SW5	SWITCH	FOR MAIN-SLAVE SETTING			
ON STATE		ON 1 2	ON 1 2	ON 1 2	ON 1 2
MODE		MAIN NO SLAVE	MAIN	MAIN	SLAVE
Factory Setting		✓			

Unit size selection (36K and 48K)

The indoor PCB is universal designed for whole series units from 36K to 55K. This ENC1 setting will tell the main program what size the unit is.

NOTE: Usually there is glue on it because the switch position cannot be changed at random unless you want to use this PCB as a spare part to use in another cassette unit. Then you have to select the right position to match the size of the unit.

ENC1	SWITCH	(FOR POWER)
	NUMBER	POWER
	4	4000W-5300W (2.0HP)
	5	5400W-7100W (2.5HP)
	6	/
	7	7500W-9000W (3.2HP)
	8	9100W-10500W (4.0HP) → 36K
	9	12000W-14000W (5.0HP) → 48K
	A	14500W-16000W (6.0HP)

Procedure

Remove the grille.
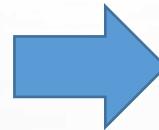
Remove the 4 corner covers.
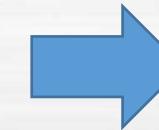
Install the panel.

Put the corner covers back.

Put the grille back.

Connect the swing motor and display panel.

Notice
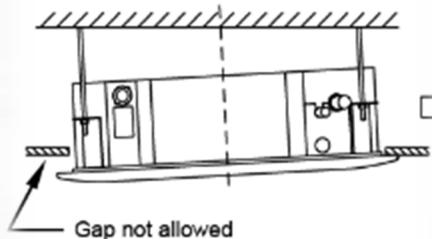
The panel must be close to the bottom of the body, or there may be cool air out even condensate water leakage.

Gap not allowed

① Loosen upper nut

② Adjust lower nut

✕

✓
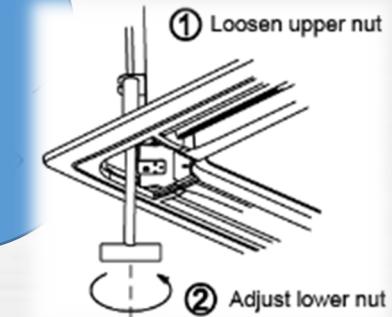
Settings for mode priority in multi connection (18K, 24K)

Micro-switch SW5 is for setting the priority of working mode when the unit is in multi connection.

Range: **Heating First**, **Cooling First**

SW5	ON ▮ 1	ON ▯ 1
MODE	HEATING PRIORITY	COOLING PRIORITY
FACTORY SETTING	✓	

Service Space

7.9 In or more

11.8 In or more

Electrical Box

23.6In X 23.6In checking orifice

Confirm the minimum drain tilt is 1/100 or more

checking orifice
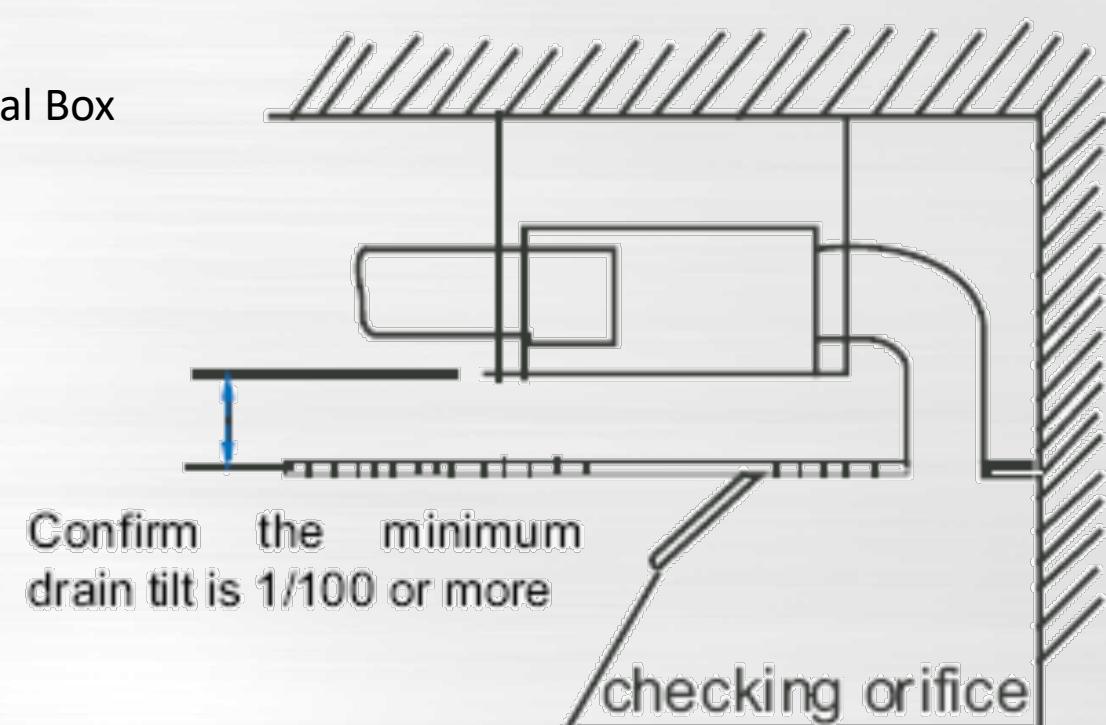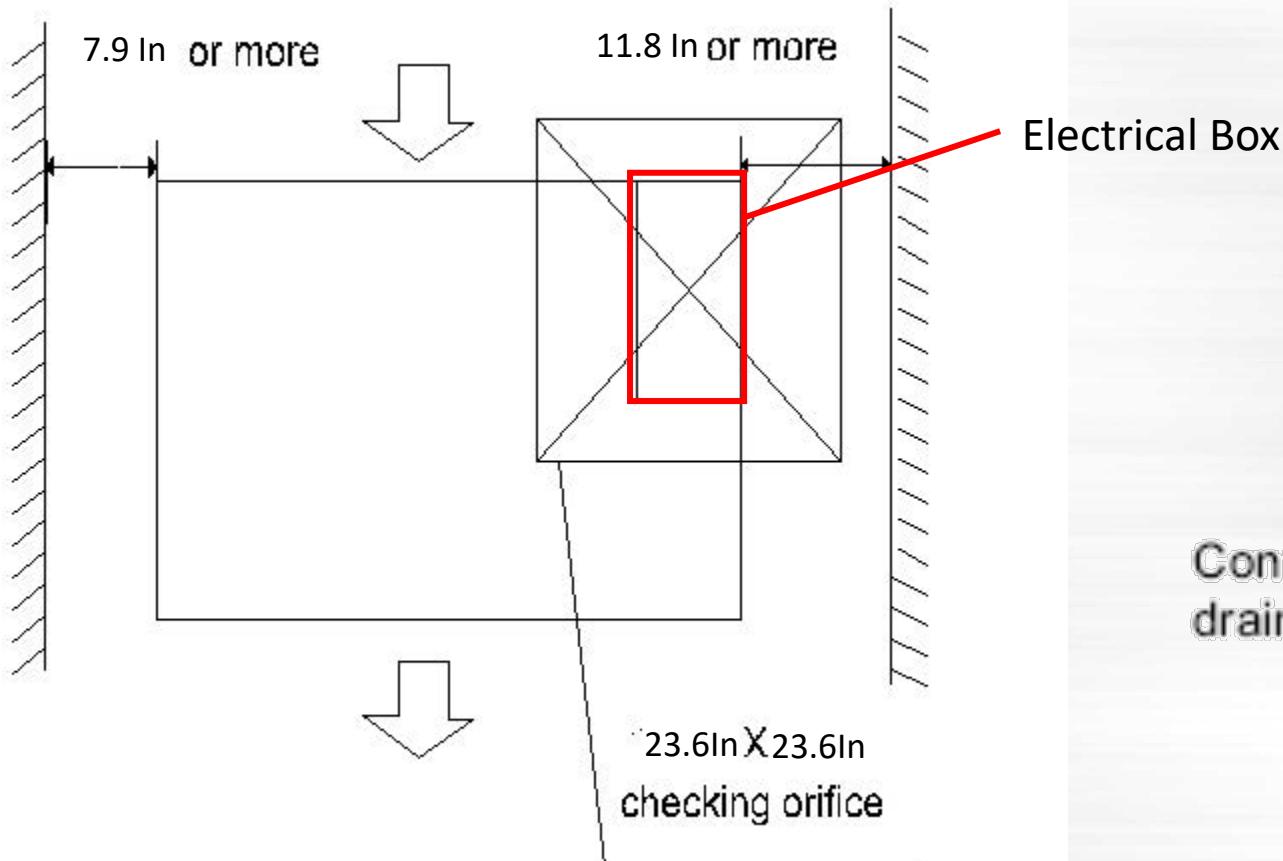
Install Suspending rod

Electric control box
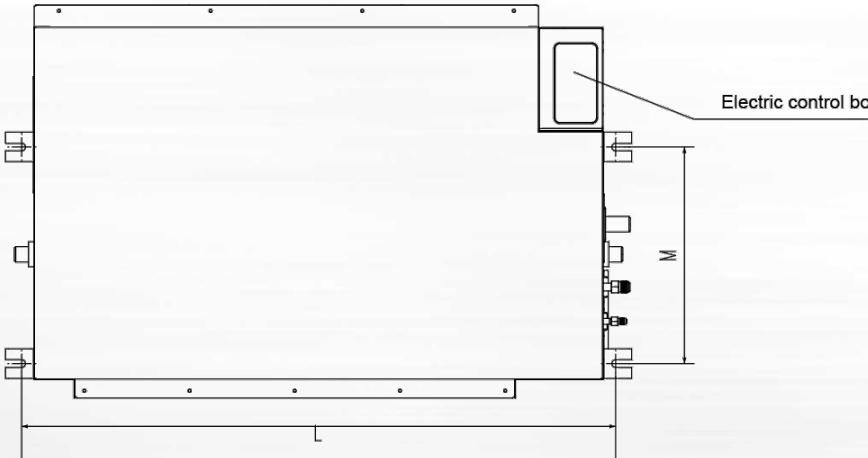
1. Determine the positions of rods according to right dimension chart.
2. Drill 4 holes for the expansion hook regarding the determined positions.
3. Insert the expansion hook and tighten the outer nut.
4. Mount the suspending rod.

| Capacity (KBtu)	Size of outline dimension mounted hook (In)	
	L	M
12	29.1	3.8
18, 24	37.8	3.8
30, 36, 42, 48, 55	48.8	19.7
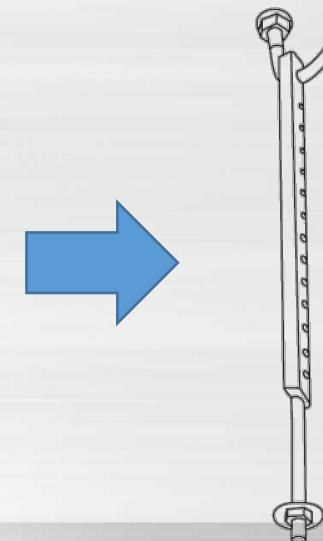
Suspending the unit

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 $\pm 1^o$.
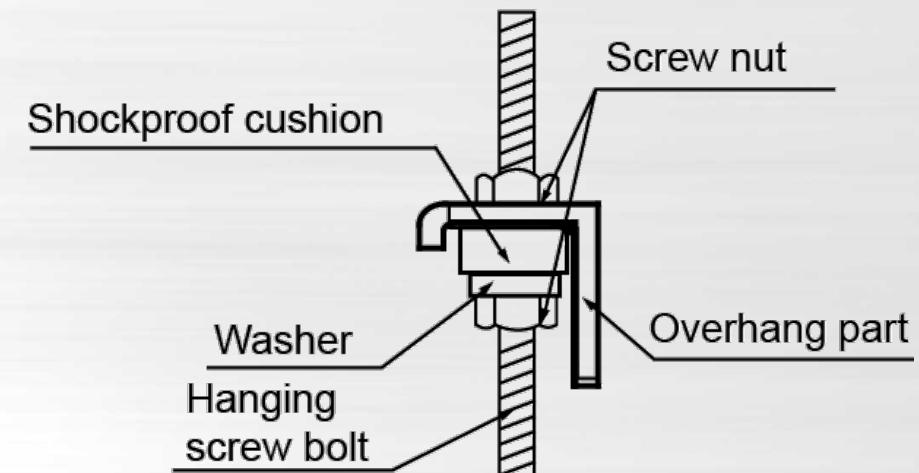
If you want to change the air return direction

Air return flange

1

Dentilation panel

Side rail

2

Seal sponge

3

4
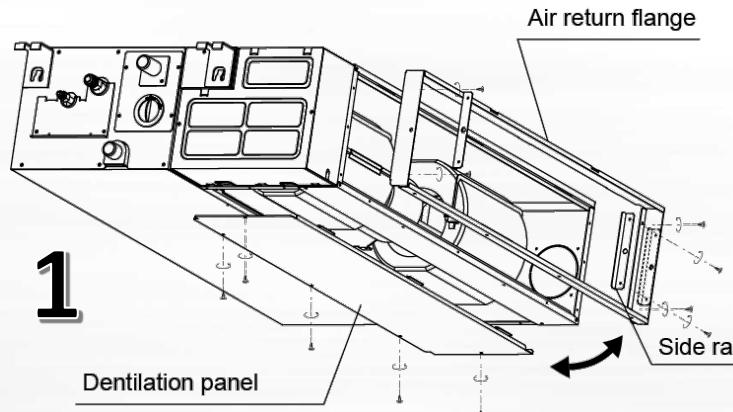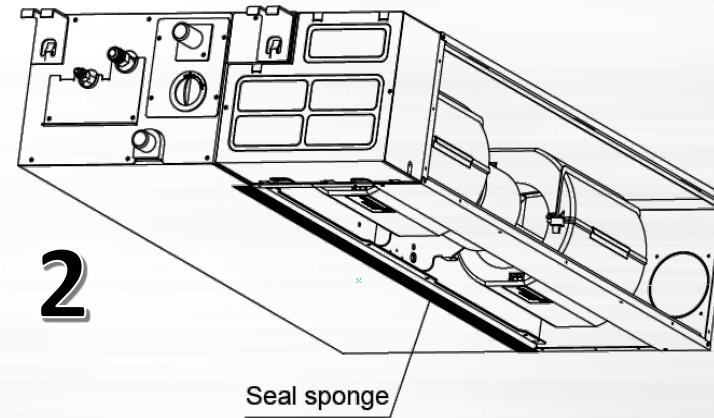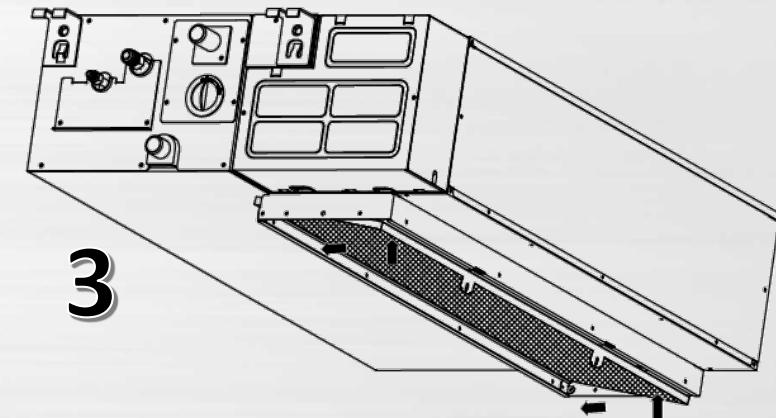
1. Take off ventilation panel and flange, cut off the staples at side rail.
2. Stick the attached seal sponge as per the indicating place in the picture, and change the mounting positions of air return panel and air return flange.
3. Insert the filter into flange inclined from air return opening, and then push up.
4. Be sure the fixing blocks of filter have been inserted to the reserved flange holes.
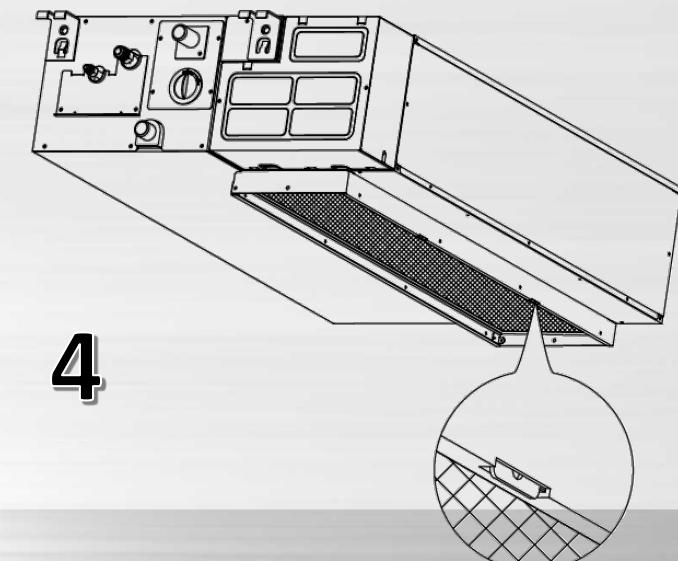
Duct Installation
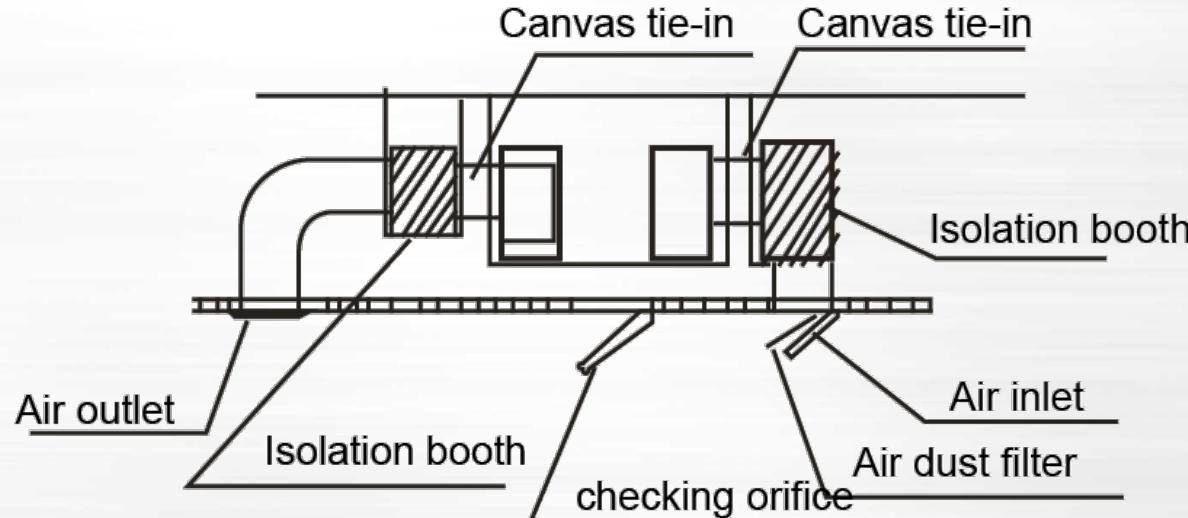
1. Do not put the connecting duct weight on the indoor unit.
2. When connecting duct, use inflammable canvas tie-in to prevent vibrating.
3. When connecting duct, install in place prone to takedown for maintenance.
4. Select suitable unit corresponding to external duct static pressure and fan curve of the unit.
5. If installed in place like meeting room where noise is easy to be perceived, design isolation booth and internal duct under layer to muffle the duct system and reduce the air encounter noise in the duct.

Unit size selection (36-60K)

The indoor PCB is universal designed for whole series units from 36K to 60K. This ENC1 setting will tell the main program what size the unit is.

NOTE: Usually there is glue on it because the switch position cannot be changed at random unless you want to use this PCB as a spare part to use in another unit. Then you have to select the right position to match the size of the unit.

"105" means 10.5kW (36K)
"140" means 14.0kW (48K)

FOR SETTING POWER							
ENC1							
CODE	4	5	7	8	9	A	B
POWER	≤53	54~71	72~90	91~105	106~140	141~160	≥161
FACTORY SETTING	ACCORDING TO RELATED MODEL.						

36K   48K   60K

Group control address setting

Micro-switch S1 and dial-switch S2 are for address setting when you want to control this unit by a central controller.

Range: **00-63**

FOR SETTING NETADDRESS				
S1+S2				
CODE	0~F	0~F	0~F	0~F
NETADDRESS	0~15	16~31	32~47	48~63
FACTORY SETTING				

Auto-restart selecting

Micro-switch SW3 is for selection of auto-restart function.

Range: **Active, inactive**

FOR SETTING AUTO-RESTART		
SW3	ON ▮ 1	ON ▯ 1
MODE	AUTO-RESTART	NOT AUTO-RESTART
FACTORY SETTING	✓	

Temperature compensation selecting

Micro-switch SW6 is for selection of temperature compensation in heating mode. This helps to reduce the real temperature difference between ceiling and floor so that the unit could run properly. If the height of installation is lower, smaller value could be chosen.

Range: **6℃, 4℃, 2℃, E function** (reserved for special customizing)

FOR TEMP. COMPENSATION(HEATING)				
SW6	ON 1 2	ON 1 2	ON 1 2	ON 1 2
CODE	6℃	2℃	4℃	EEPROM DEFAULT
FACTORY SETTING			✓	

Parameter of anti-cold wind function

Micro-switch SW1 is for selection of indoor fan stop temperature (TEL0) when it is in anti-cold wind action in heating mode.

Range: **24ºC,   15ºC, Fan motor do not stop, According to EEROM setting** (reserved for special customizing)

FOR ANTI-COLD WIND				
SW1	ON □□ 1 2	ON □■ 1 2	ON ■■ 1 2	ON ■■ 1 2
TEL0	24℃	15℃	8℃	EEPROM DEFAULT
FACTORY SETTING	✓			

TEL0+23-△TE1	6	Setting Speed
		TEL0+18-△TE1
TEL0+21-△TE1	5	H
		TEL0+16-△TE1
TEL0+19-△TE1	4	M
		TEL0+14-△TE1
TEL0+17-△TE1	3	M
		TEL0+12-△TE1
TEL0+15-△TE1	2	L
		TEL0+10-△TE1
	1	SUPSLOWFAN
TEL0+13-△TE1		
		TEL0
	0	Stop
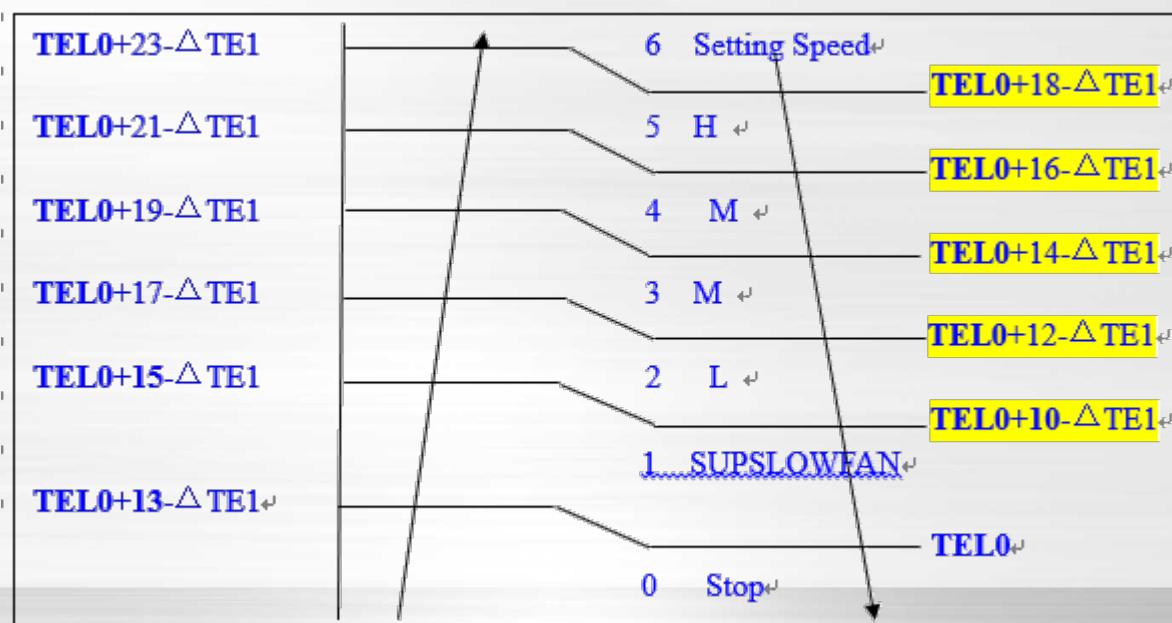
Settings for TWIN connection (36K-60K)
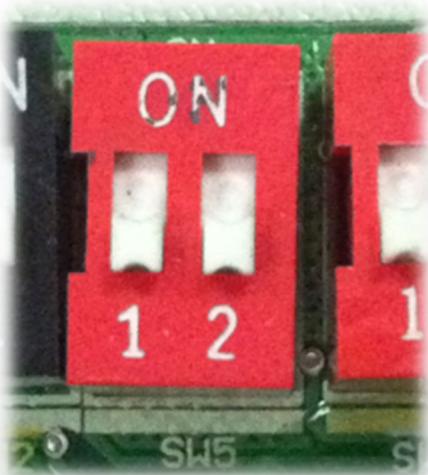
Micro-switch SW5 is for setting the master or slave unit when the unit is in twin connection.

Range: **Master no slave** (Normal 1 drive 1 connection), **Master** (2 positions without difference), **Slave**

FOR MAIN-SLAVE SETTING				
SW5	ON 1 2	ON 1 2	ON 1 2	ON 1 2
MODE	MAIN NO SLAVE	MAIN	MAIN	SLAVE
FACTORY SETTING	✓			

Set Static Pressure

Choose SP1, SP2, SP3 or SP4 of fan speed settings to meet the air volume request according to the fan curves in the service manual and installation manual.

MTIU-18HWFN1-M
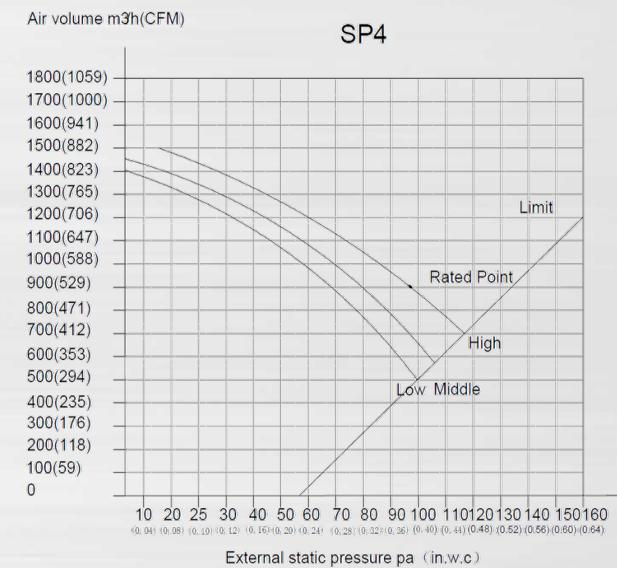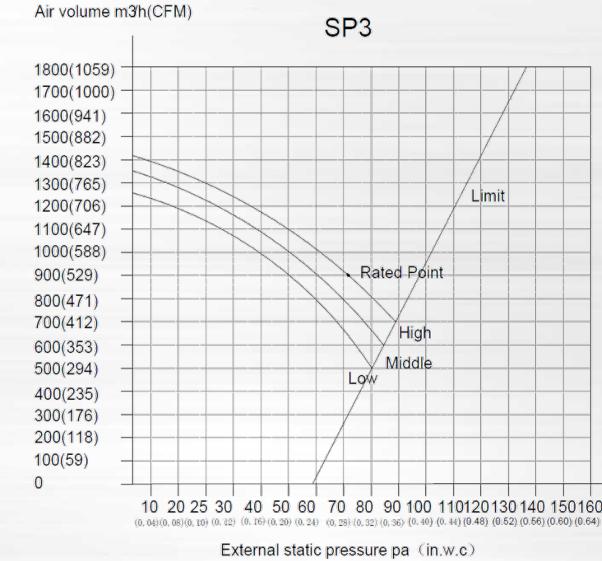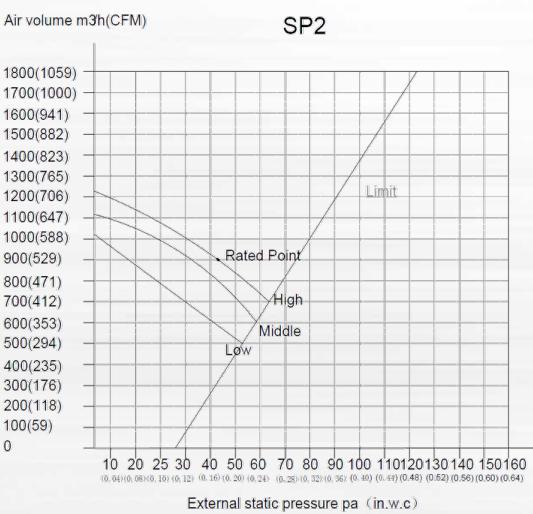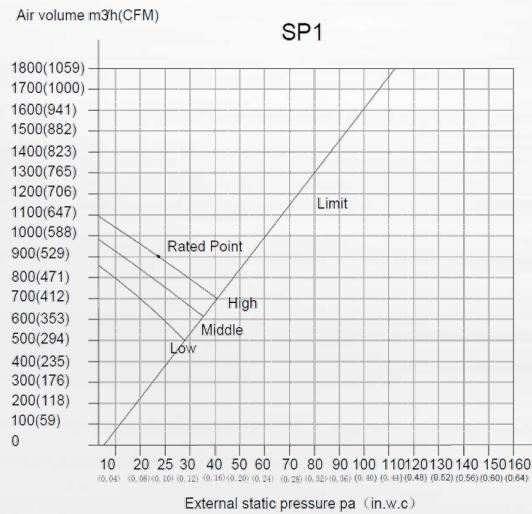
Set Static Pressure

Using the wire controller to set airflow rate (some models)

When the air conditioning unit is off, perform the follwoing steps:

① Press "MODE" and "FAN" for three seconds.
② Press "△" or "▽" to select the SP.
③ Press "MODE" to set the airflow rate in the range of 0~4.
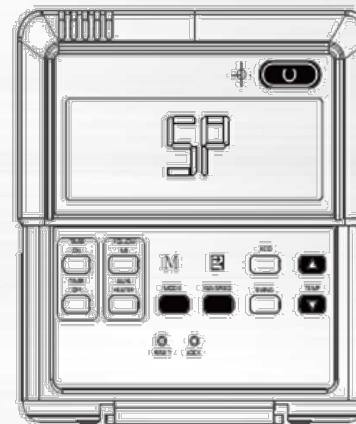
"0": No airflow change
"1"~"4":Airflow increase progressively

④ Press "ON/OFF" to finish the airflow setting.

Set Static Pressure

Set the airflow to different static pressure requested. Turn off the unit, and then
- Press and hold "COPY" button for more than 3 seconds;
- Press "∧" and "∨" button to select "SP"

$$\rightarrow \Gamma I \rightarrow \Gamma 2 \rightarrow \Gamma 2b \rightarrow \Gamma 3 \rightarrow \Gamma 4 \rightarrow SP \rightarrow \Pi F \rightarrow$$

- Press "☑" button to active SP setting, and press "∨" or "∨" button to select "1", "2", "3" or "4".
- Press "☑" again to finish setting.

Service Space
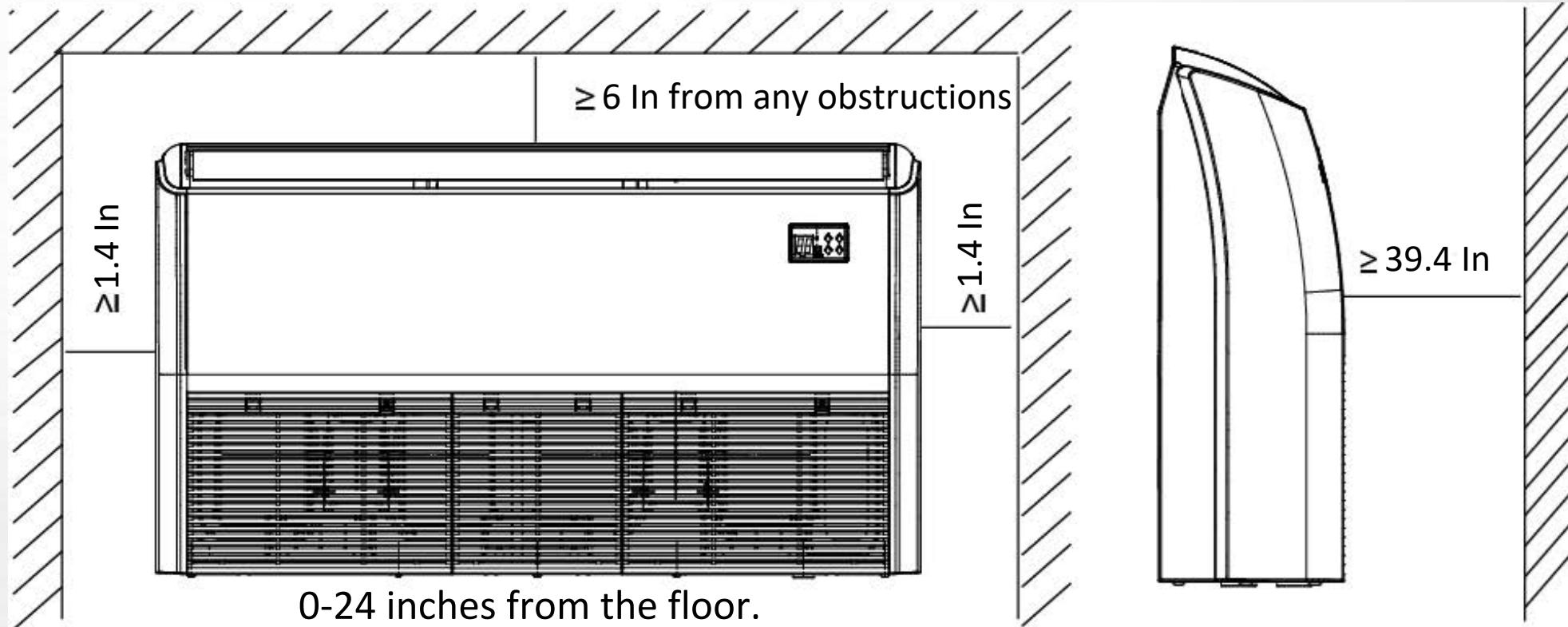
≥ 6 In from any obstructions

≥1.4 In

≥1.4 In

≥ 39.4 In

0-24 inches from the floor.

Keep enough space for maintenance.
keep the drainage pipe has a min. decline 1/100.

Install the suspending rods
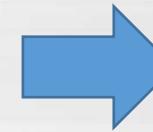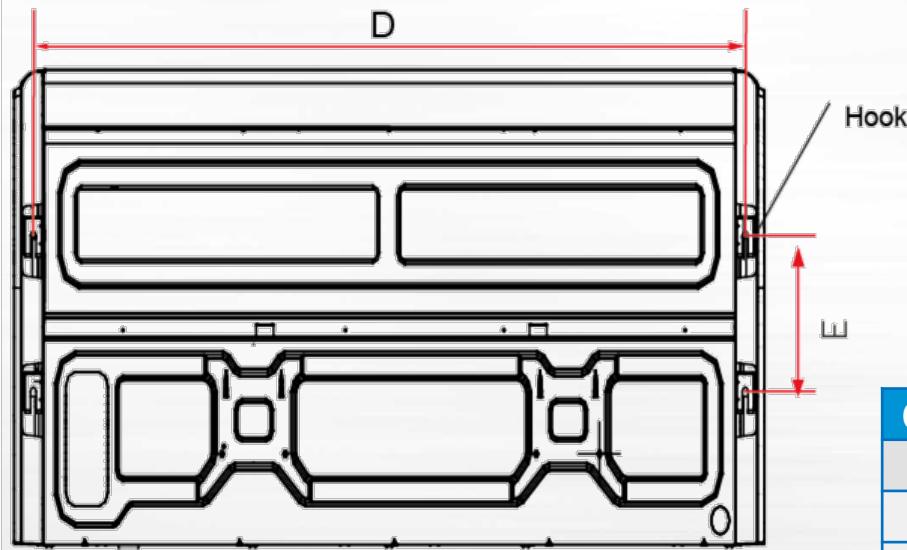
Hook

| Capacity (Btu/h)	D	E
18K, 24K	38.7	8.7
30K	47.2	8.7
36-55K	61.6	8.7

Select the position of installation hooks according to the hook holes distance showed in upper picture.

Drill four holes of Ø0.5In, 1.8~2In deep at the selected positions on the ceiling. Then embed the expansible hooks (fittings).

Suspend the body

a. Remove the side board and the grille.
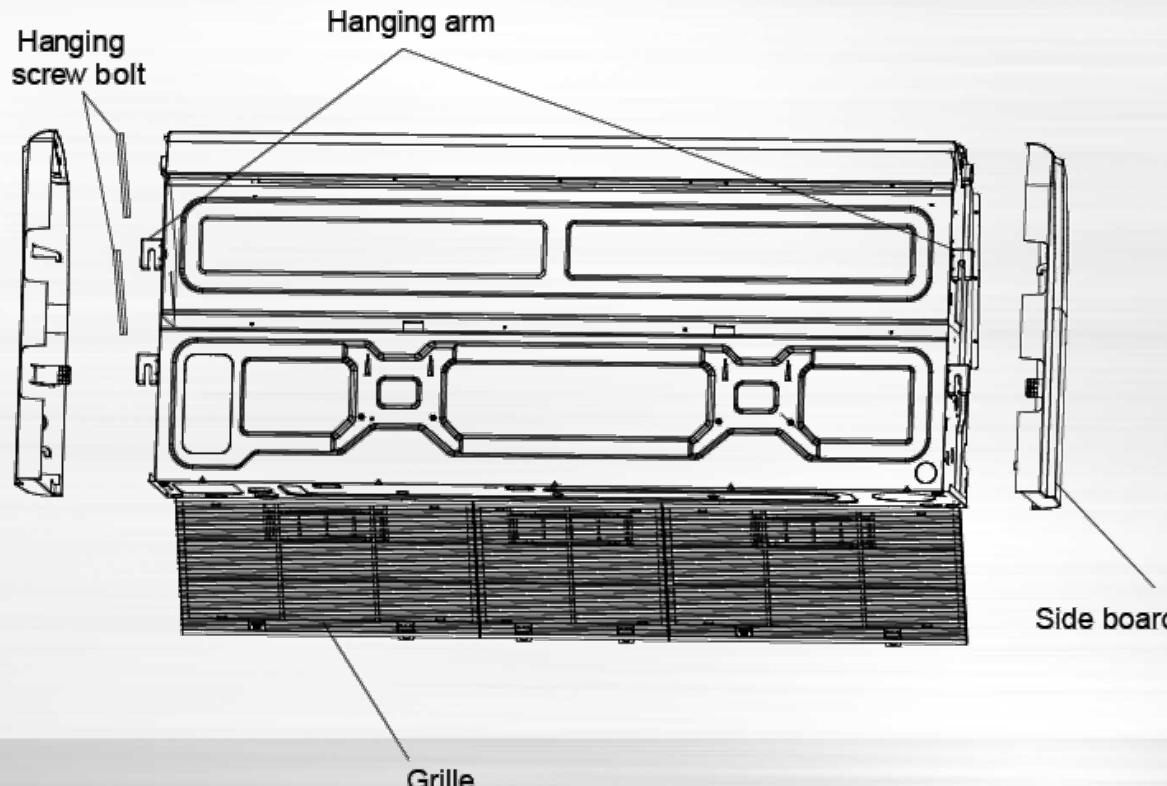
Suspend the body

b. Locate the hanging arm on the hanging screw bolt. Prepare the mounting bolts on the unit.
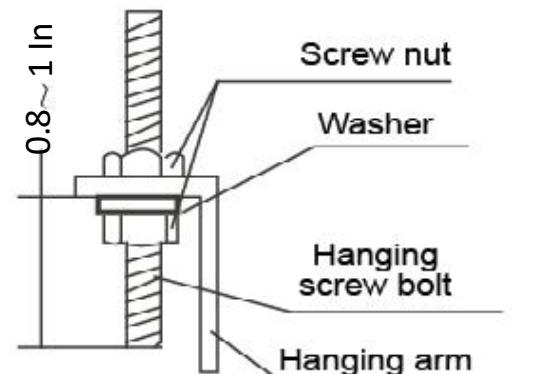
c. Put the side panels and grilles back.
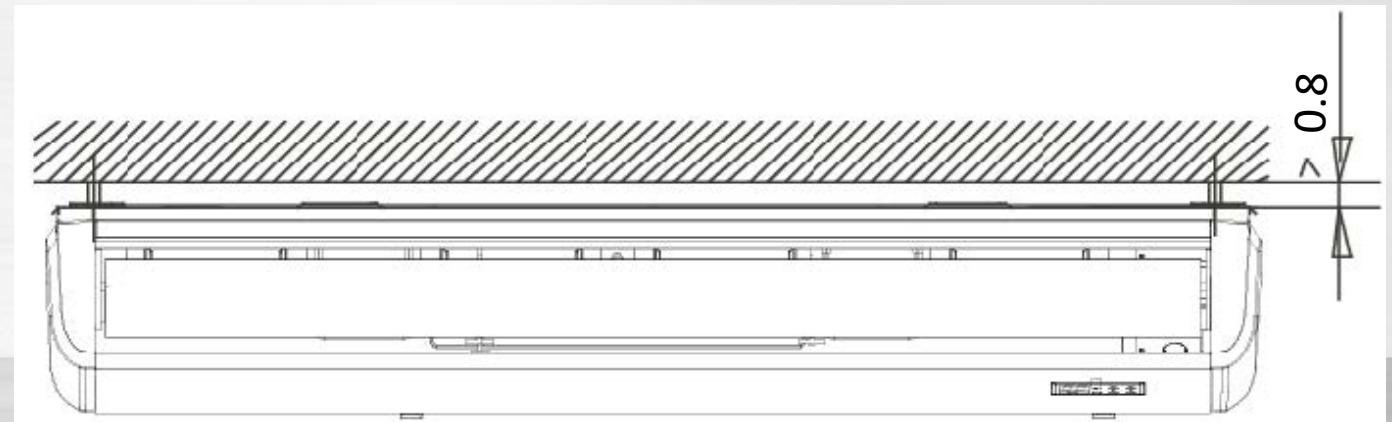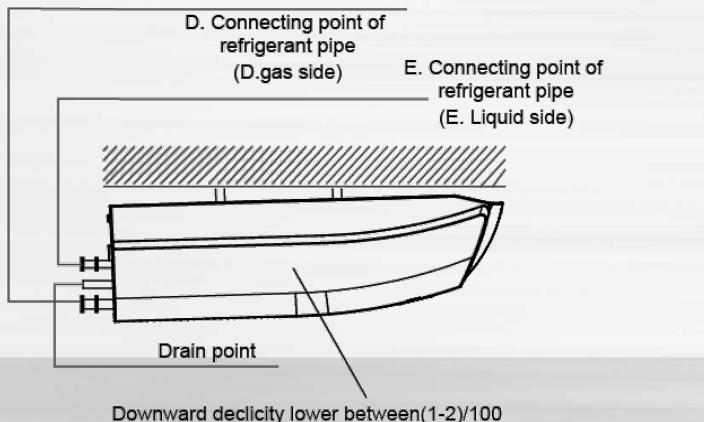
Install the pendant bolt
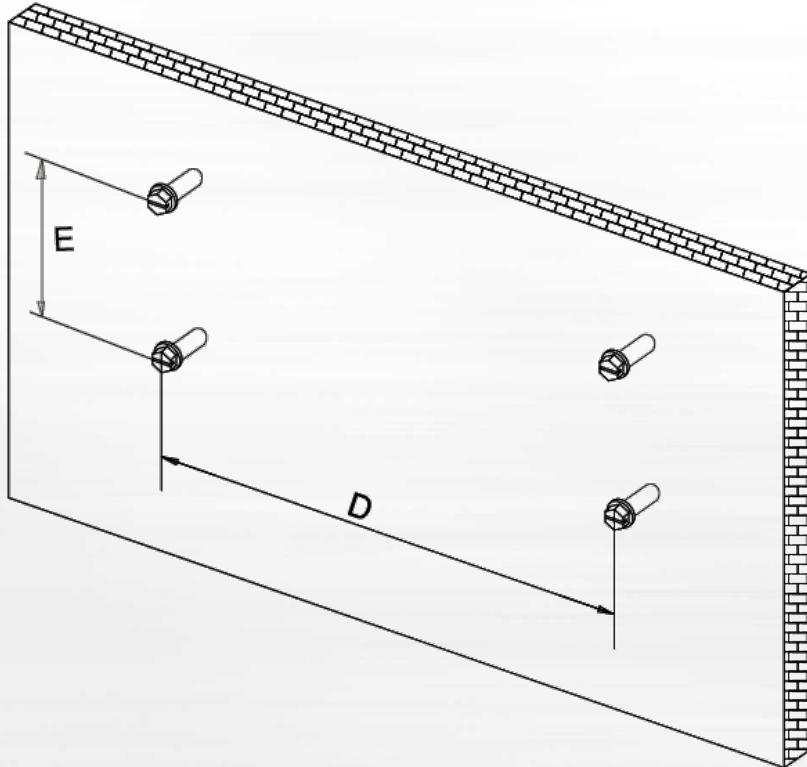
| Capacity (Btu/h)	D	E
18K, 24K	38.7	8.7
30K	47.2	8.7
36-55K	61.6	8.7

Determine the position of pendant bolt according to the dimensions in above table, and drill 4 holes for them. Then insert the tapping screws into the wall.

Mount the main body

Hang the indoor unit by insert the tapping screws into the hanging arms on the main unit. (The bottom of body can touch with floor or suspended, but the body must install vertically.)

NOTE: *The unit cannot be installed this way if it is customized with a built-in drain pump.*

Group control address setting

Micro-switch S1 and dial-switch S2 are for address setting when you want to control this unit by a central controller.

Range: **00-63**

FOR SETTING NETADDRESS				
S1+S2				
CODE	0~F	0~F	0~F	0~F
NETADDRESS	0~15	16~31	32~47	48~63
FACTORY SETTING	✓			

Auto-restart selecting
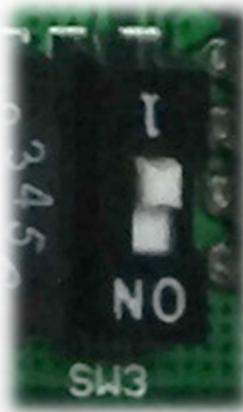
Micro-switch SW3 is for selection of auto-restart function.

Range: **Active, inactive**

FOR SETTING AUTO-RESTART		
SW3	ON ☐ 1	ON ☐ 1
AUTO-RESTART	ACTIVE	INACTIVE
FACTORY SETTING	✓	

Fan control selecting (18K-48K)
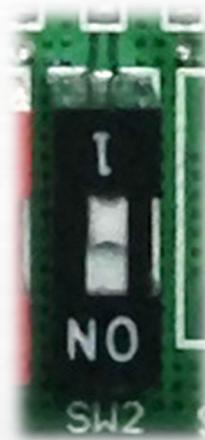
Micro-switch SW2 is for selection of indoor FAN ACTION if room temperature reaches the setponit and the compressor stops.

Range: **OFF (in 127s),** **Keep running** (No anti-cold wind function).

SW2	ON ▯ 1	ON ▮ 1
FAN MOTOR CONTROL THEN NO POWER REQUEST	FAN OFF	FAN ON
FACTORY SETTING		✓

Unit size selection (36K-60K)

The indoor PCB is universal designed for whole series units from 36K to 55K. This ENC1 setting will tell the main program what size the unit is.

NOTE: Usually there is glue on it because the switch position cannot be changed at random unless you want to use this PCB as a spare part to use in another unit. Then you have to select the right position to match the size of the unit.

FOR SETTING POWER							
ENC1							
CODE	4	5	7	8	9	A	B
POWER	≤53	54~71	72~90	91~105	106~140	141~160	≥161
FACTORY SETTING	ACCORDING TO RELATED MODEL.						

36K   48K   60K

"105" means 10.5kW (36K)
"140" means 14.0kW (48K)

Fan quantity selecting (36K-60K)

Micro-switch SW4 is for selection of quantity of fan motors. Same as size selection switch, this switch is for making the PCB suitable for all series units. DO NOT change it at random unless you want to use the PCB as a spare part

Range: **Single Fan, Double Fan**

| For Setting Fan Quantity (optional)		
SW4	ON ▮ 1	ON ▯ 1
Mode	Single Fan	Double Fan
Factory Setting		✓

Temperature compensation selecting
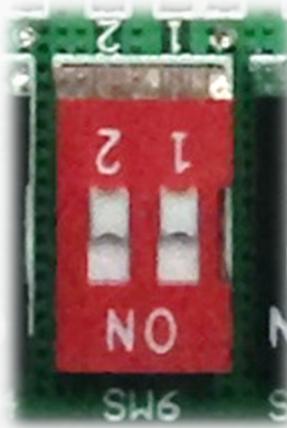
Micro-switch SW6 is for selection of temperature compensation in heating mode. This helps to reduce the real temperature difference between ceiling and floor so that the unit could run properly. If the unit is on-floor installed, 0 should be chosen.

Range: **0ºC, 2ºC, 4ºC, E function** (reserved for special customizing)

For temp. compensation				
SW6	ON 1 2	ON 1 2	ON 1 2	ON 1 2
CEILING AND FLOOR TYPE	0℃	2℃	4℃	According to E Function .
For Setting CEILING TYPE or FLOOR TYPE	FLOOR TYPE	CEILING TYPE		
Factory Setting	✓			

FOR TEMP. COMPENSATION(HEATING)				
SW6	ON 1 2	ON 1 2	ON 1 2	ON 1 2
CODE	0℃	2℃	4℃	EEPROM default
FACTORY SETTING	✓			

Parameter of anti-cold wind function

Micro-switch SW1 is for selection of indoor fan stop temperature (TEL0) when it is in anti-cold wind action in heating mode.

Range: **24ºC,   15ºC, Fan motor do not stop, According to EEROM setting** (reserved for special customizing)

Service Space
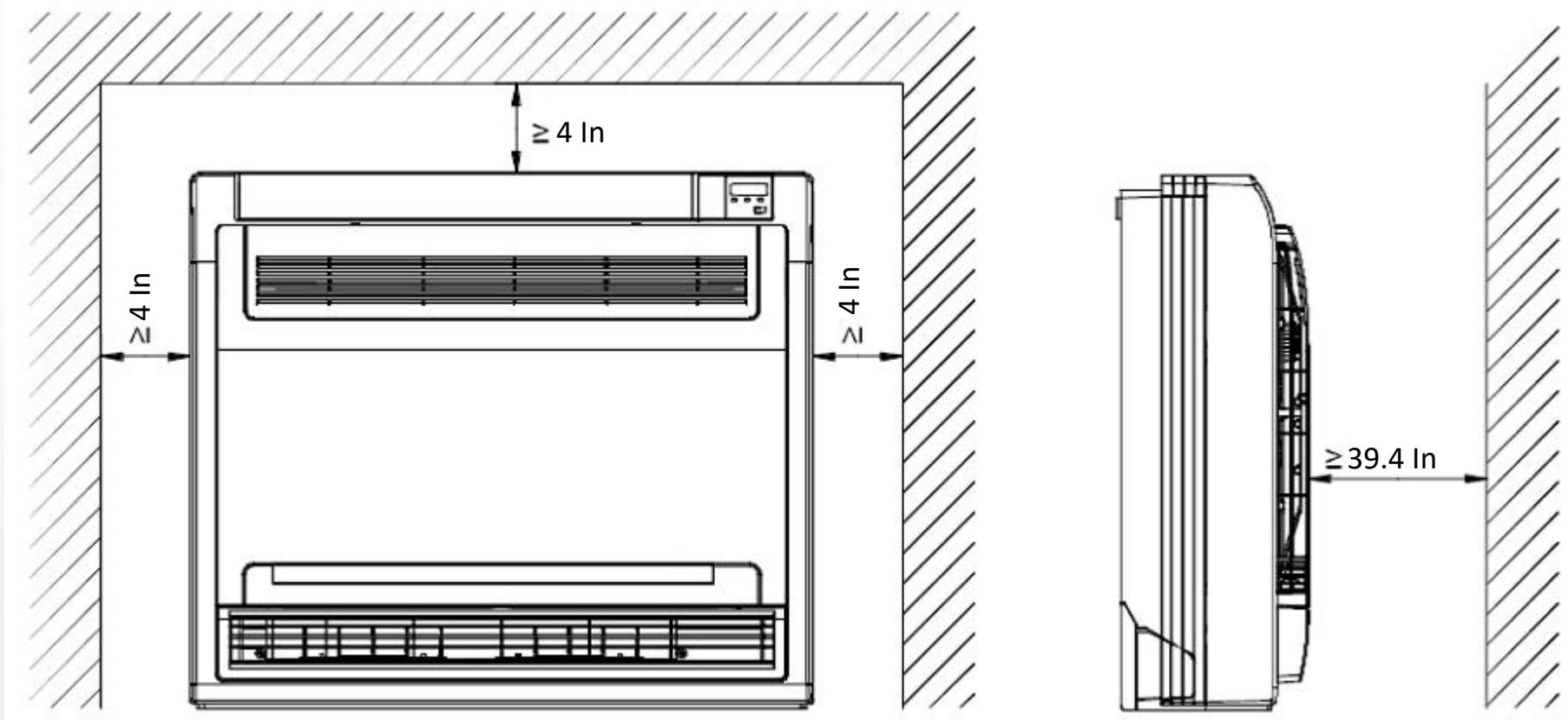
≥ 4 In

≥ 4 In

≥ 4 In

≥ 39.4 In

Keep enough space for maintenance.
keep the drainage pipe has a min. decline 1/100.

Install the mounting hook

Hook

Tapping screw

Washer

195mm

<0.24 In
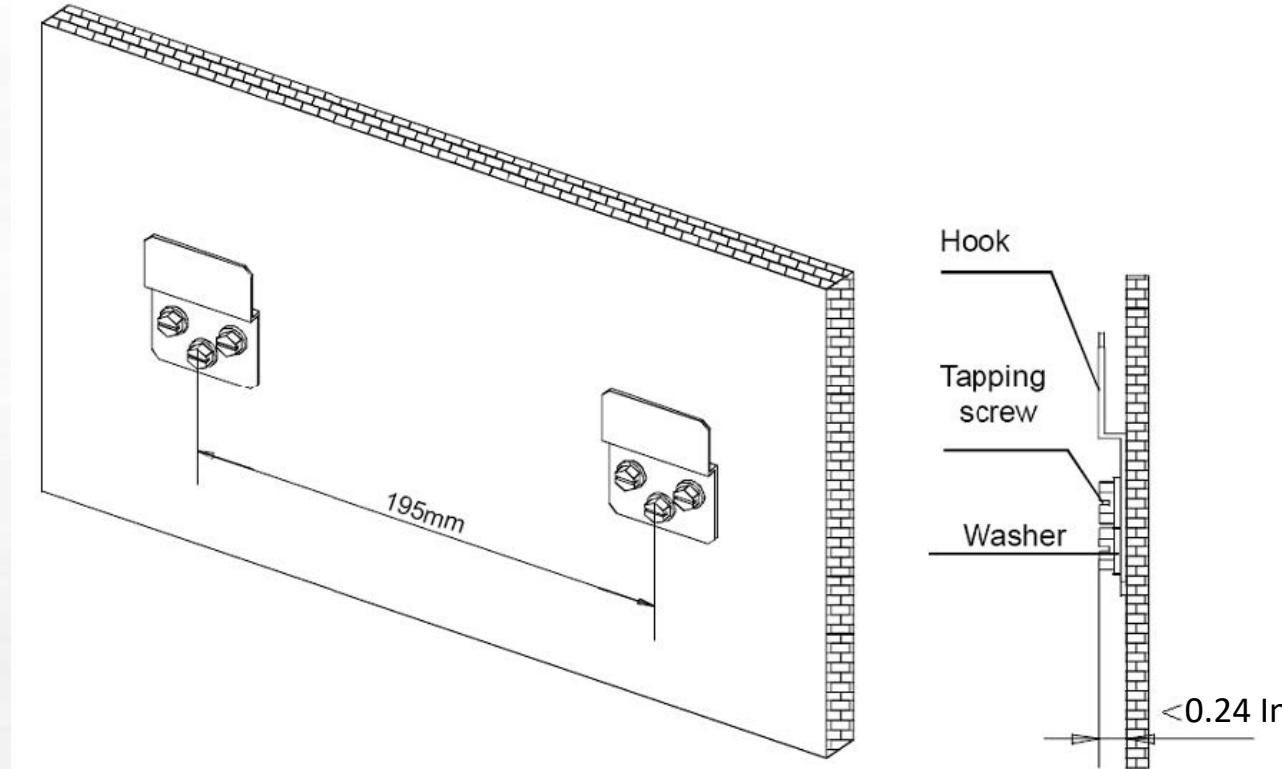
Determine the position of mounting hooks according to the hook holes distance showed in above picture.

Fix the hook with tapping screw into the wall.

Mount the body
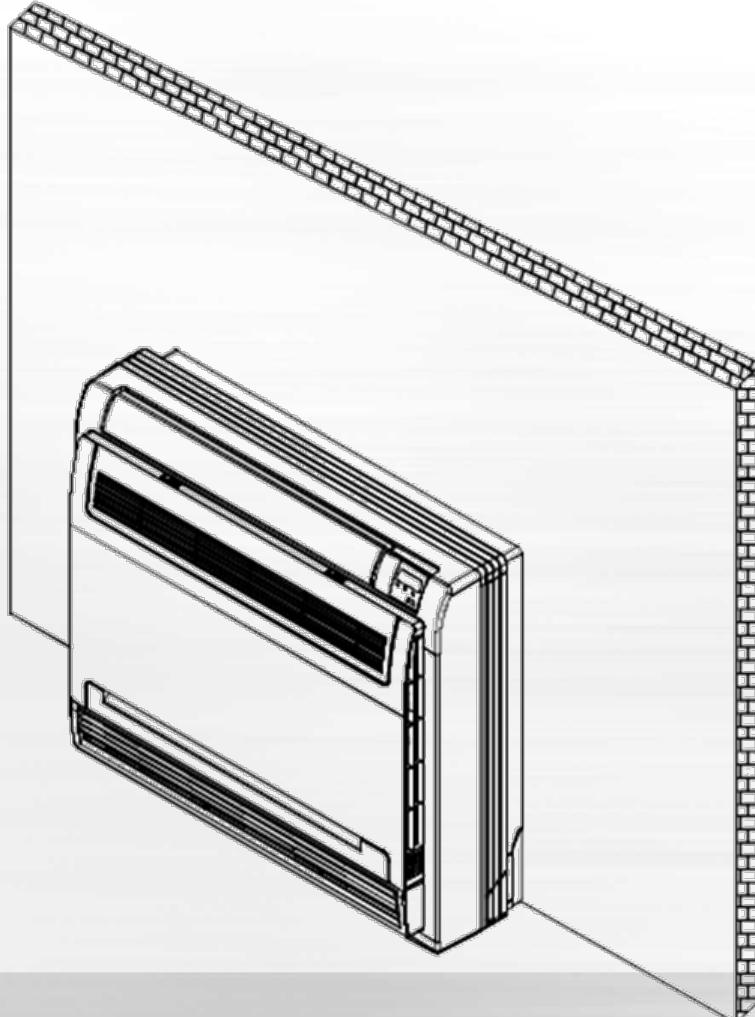
Mount the indoor unit on the hooks.
(The bottom of body can touch with floor or suspended, but the body must install vertically.)

Air outlet selection
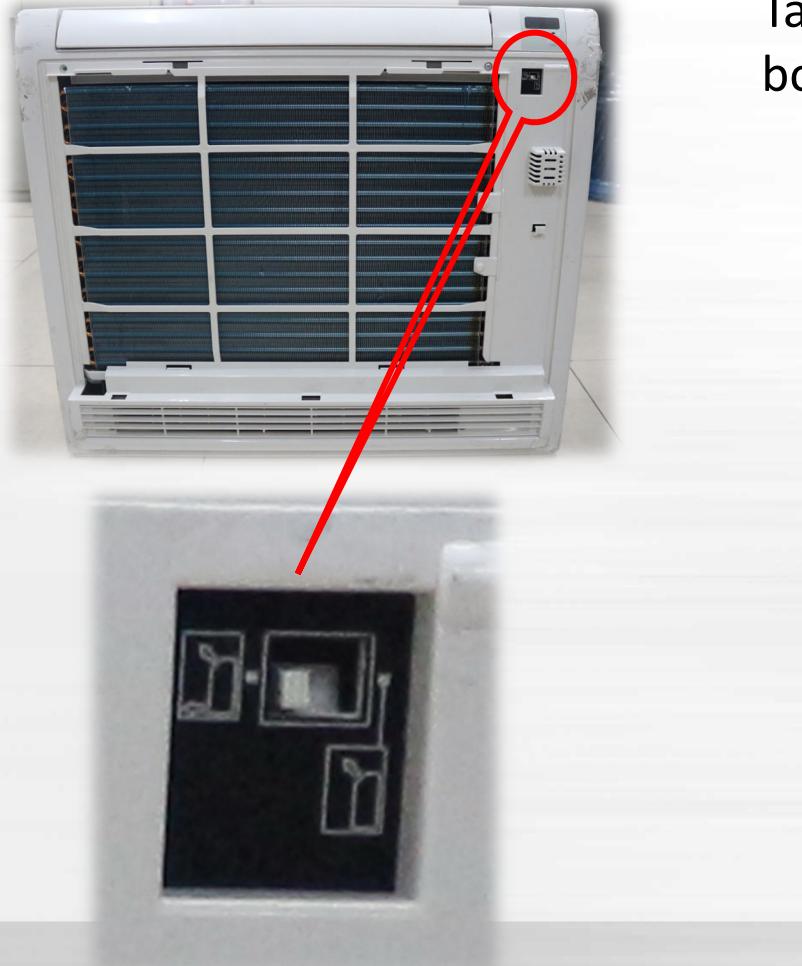
Take off the panel, you can see the switch which is used for selecting both air outlets or upper air outlet only.

Temperature compensation selecting
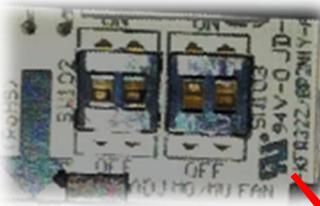
Micro-switch SW6 is for selection of temperature compensation in heating mode. This helps to reduce the real temperature difference between ceiling and floor so that the unit could run properly. If the unit is on-floor installed, 0 should be chosen.

Range: **E function** (reserved for special customizing) **/0ºC, 2ºC, 4ºC, -2ºC,**

FOR TEMP. COMPENSATION(HEATING)				
SW102	ON 1 2	ON 1 2	ON 1 2	ON 1 2
Mode	According to E Function (0℃)	2℃	4℃	-2℃
Factory Setting	⌄			

Fan control selecting
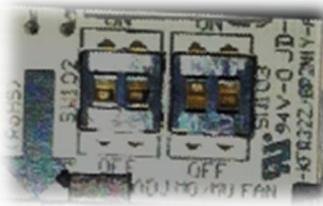
Micro-switch SW103 is for selection of indoor FAN ACTION if room temperature reaches the setponit and the compressor stops.

Range: **OFF (in 127s), Low Speed, Setting Speed, Termal** (runs for 1 minute ever 4-minute stop).

For Setting Fan Motor Control then No Power Request				
SW103	ON ⬜⬜ 1 2	ON ⬜⬛ 1 2	ON ⬛⬜ 1 2	ON ⬜⬜ 1 2
Mode	FAN OFF	LOW FAN SPEED	SETTING FAN SPEED	TERMAL
Factory Setting		⌄		

Auto-restart selecting

Micro-switch SW101 is for selection of lower louver (Reserved for new Console).

Range: **Inactive**, **Active**

Auto-restart selecting
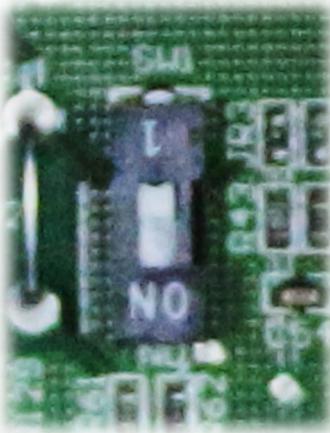
Micro-switch SW1 is for selection of auto-restart function.

Range: **Active, inactive**

For Setting Auto-Restart		
SW1	ON ▮ 1	ON ▮ 1
Mode	ACTIVE	INACTIVE
Factory Setting	✓	

Piping limits

R410a Inverter Units

Model	12K	18K	24K	36K	48K	60K
The length of refrigerant pipe (ft)	82.02	98.4	164	213	213	213
The max elevation between indoor and outdoor units (ft)	32.8	65.6	82.02	98.4	98.4	98.4

Additional refrigerant charge

| Refrigerant	Model (kBtu/h)	Liquid Pipe Dimension	Unit amount (g/m)	Formula
R410A	12, 18	Φ6.35	15	(L-7.5)×15
	24 - 60	Φ9.53	30	(L-7.5)×30

Single way communication KJR-12B

There is a connection wire with a 5-pin socket to connect with the single-way communication wired controller KJR-12B at the other side of the display board of all indoor units.
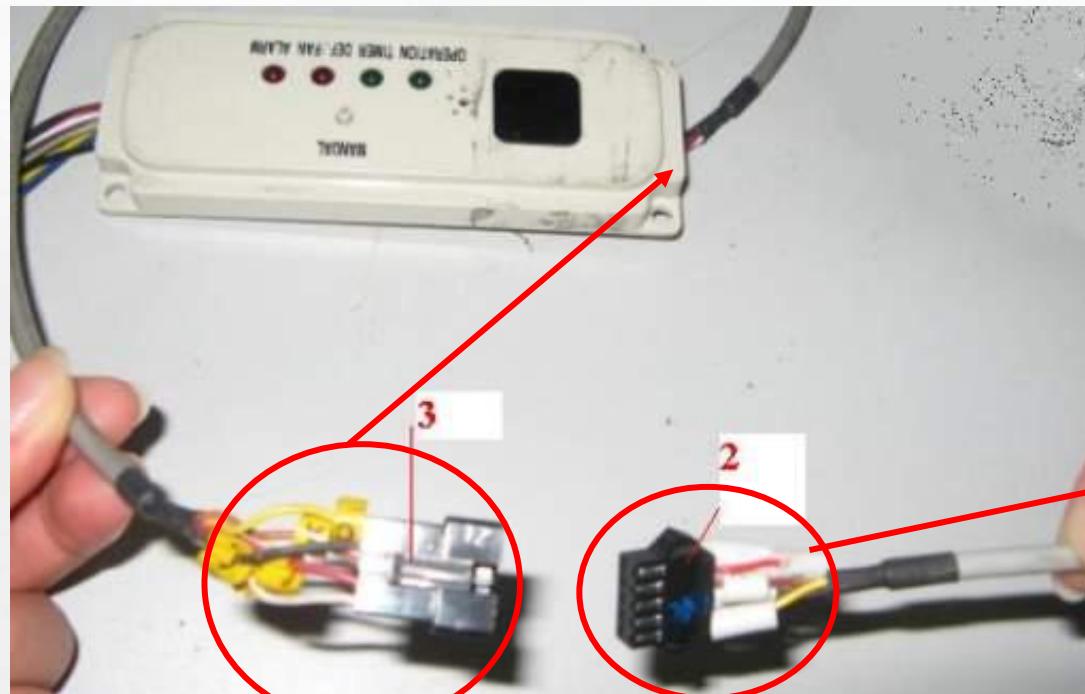
Single way communication KJR-12B

On cassette unit, you will find it inside the panel with other connectors.

The connective wires group

5-core wire

Front grille
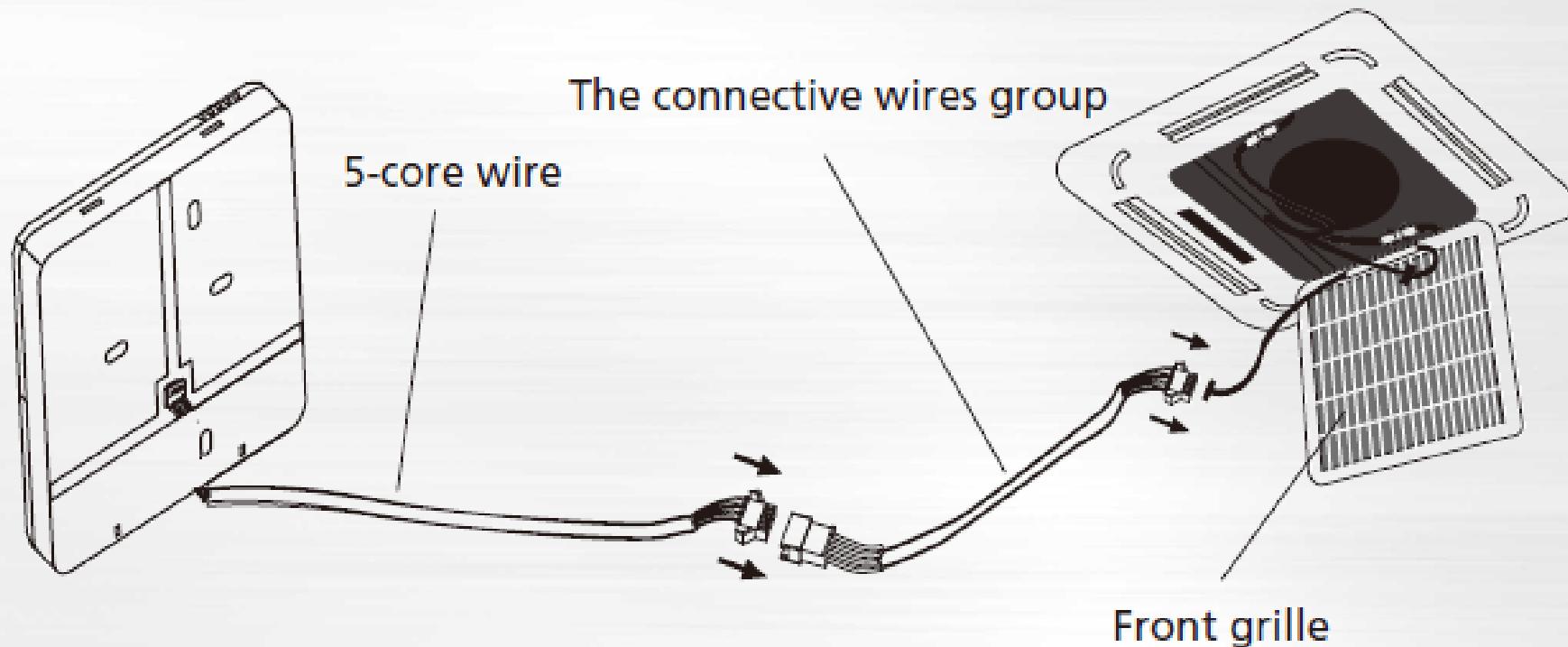
Single way communication KJR-12B

On ceiling & floor unit, you will find it inside the left side panel.
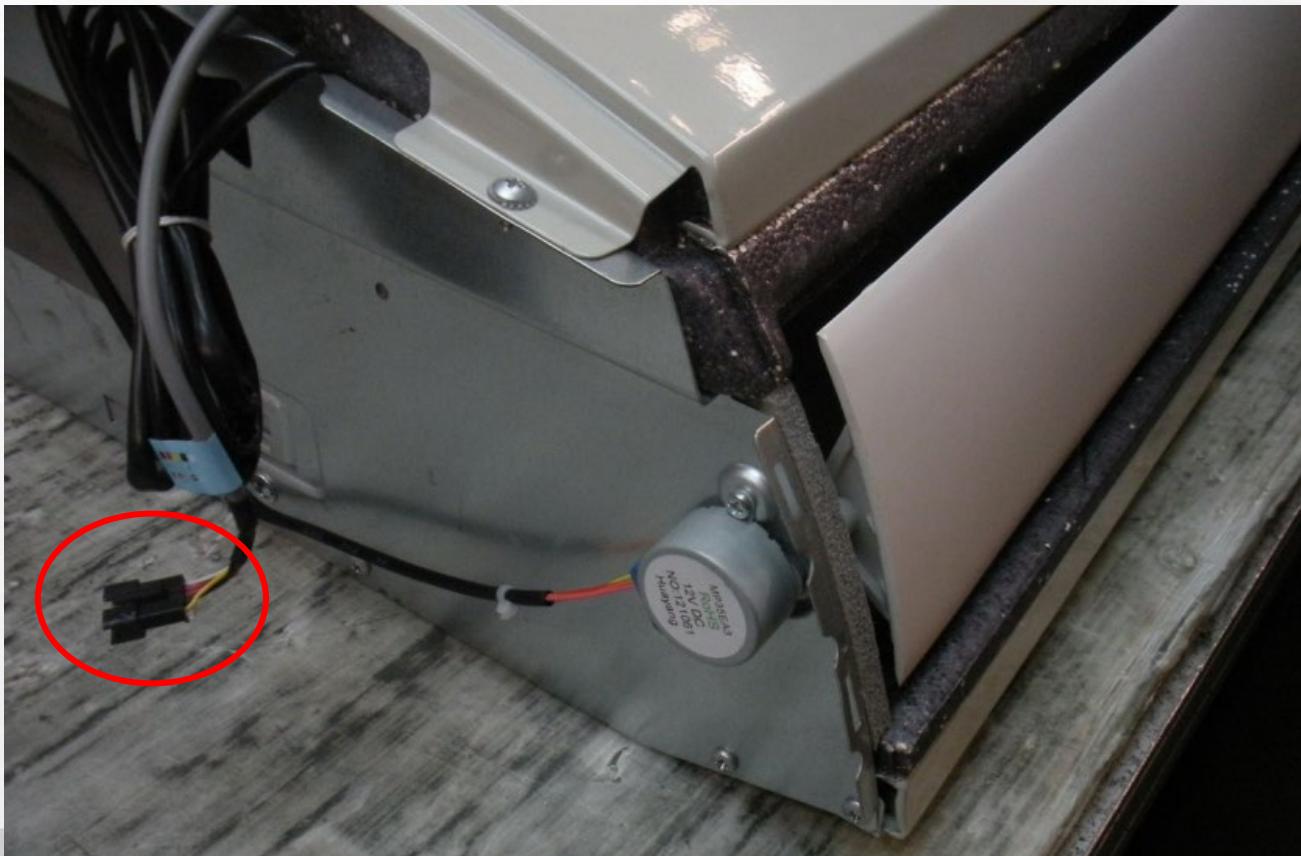
Single way communication KJR-12B

On duct unit, the KJR-12B is standard.
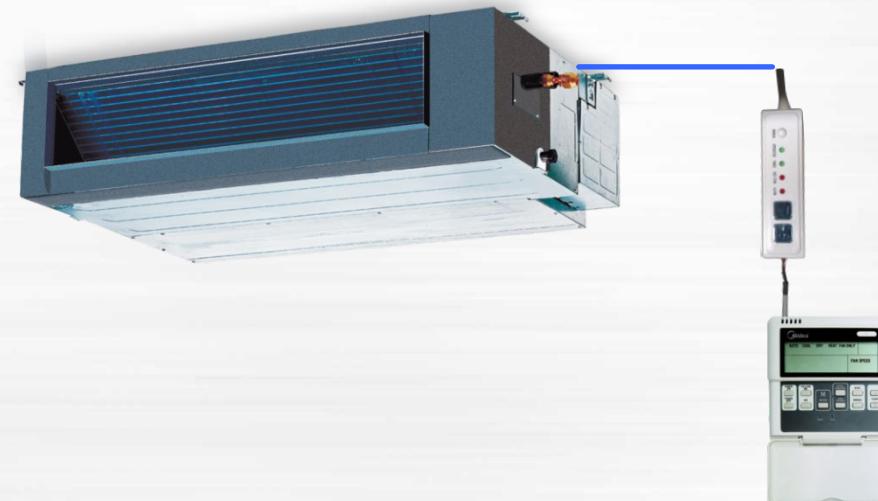
## Single way communication KJR-12B

On console unit, you can find it below the display board when the panel and the frame is removed.
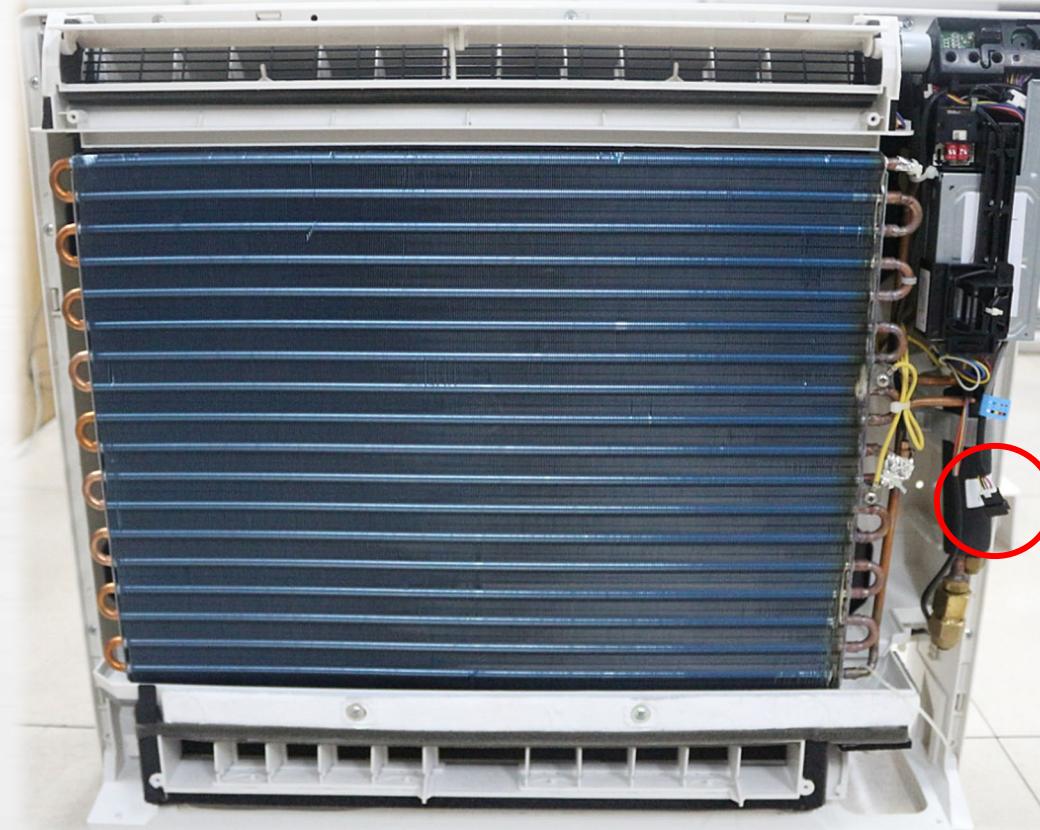
Dual-way communication weekly timer KJR-120 Series

This wired controller should be connected in to the 4-pin socket CN40 on indoor main PCB.
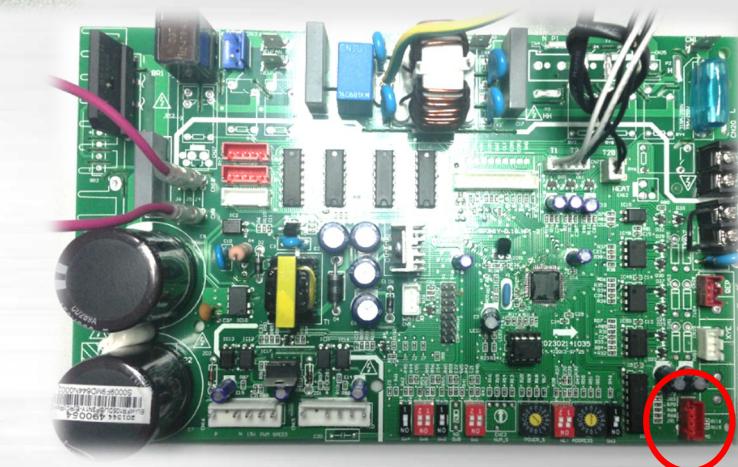
Group controller CCM03

This wired controller should be connected to XYE ports indoor wiring terminal.


Central controller
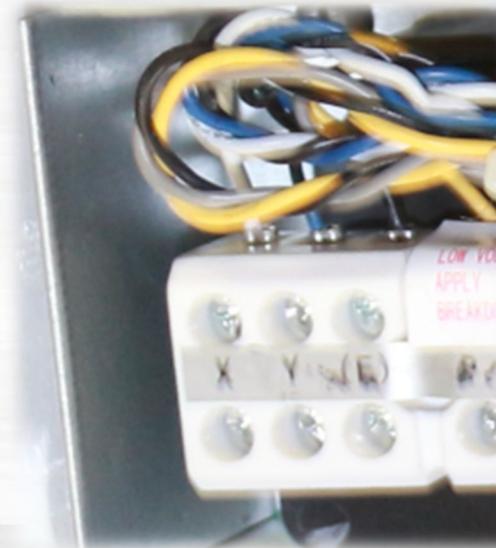
Group controller CCM03

Make all indoor units connected together by connecting XYE ports of all units and set correct net addresses, you can control all the units with one CCM03 controller.

X, Y, E   *Max. 64*   *X, Y, E*

*CCM03*

Remote alarm ports (CN33)
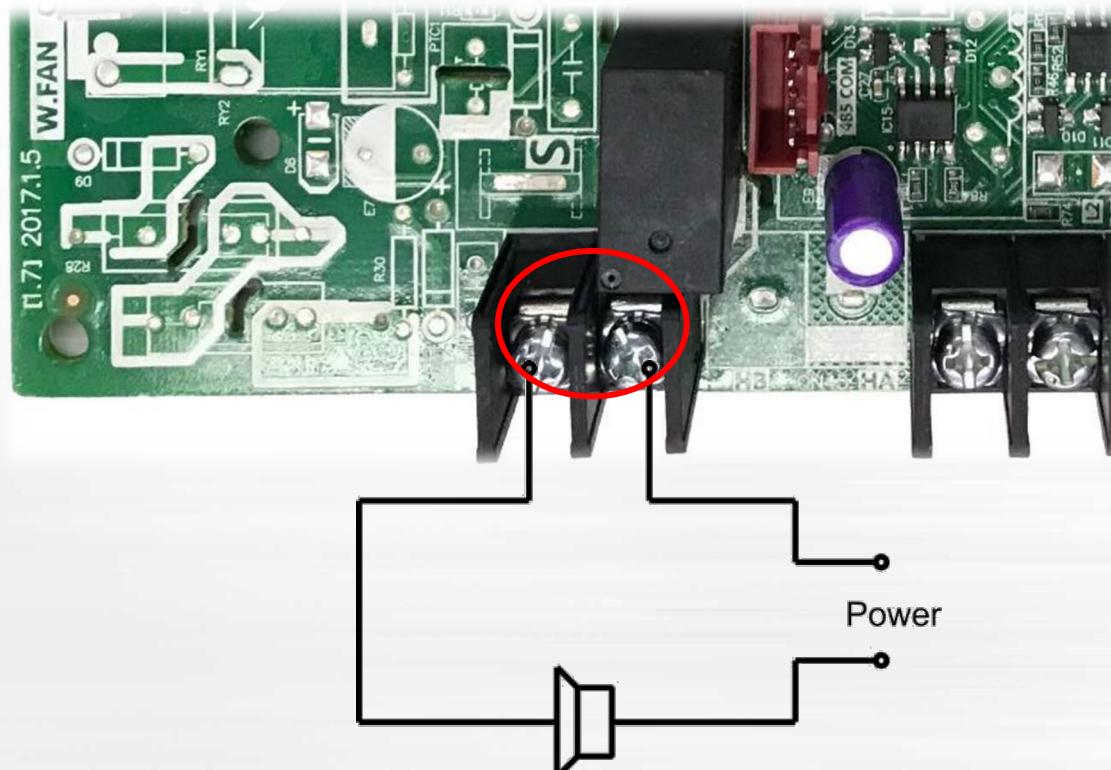
Power

These 2 ports are dry contacts and there is no power output but a ON/OFF signal. The alarm components and the power supply are prepared by the users or installers.

There are reserved ports for connecting a remote alarm installed in central control room or somewhere like it, which will be active when the A/C unit is faulty or in a protection state.

Remote ON/OFF ports (CN23) Cassette Unit

Jumper JR6 (Standard)

If the jumper is missing, there will be "CP" error code.
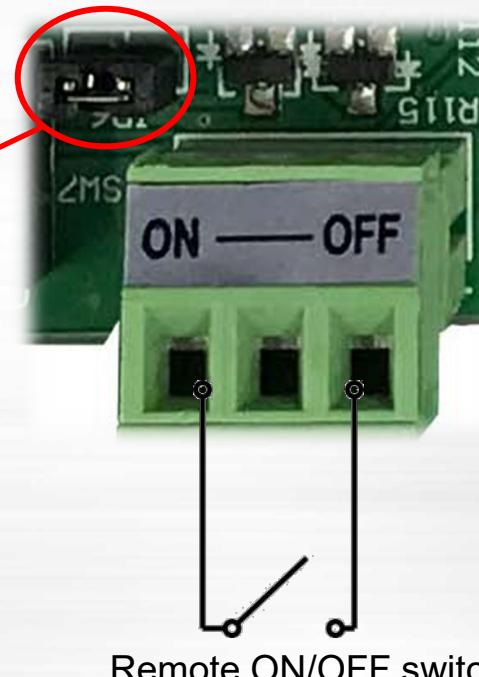
Remote ON/OFF switch

There are reserved ports for connecting a remote switch to control the unit to run or stop. The switch can be set manually or automatically by a special system such as fire alarm system.

NOTE: If there is no remote switch connected, these 2 ports should be short connected.

Remote ON/OFF ports (CN23) Duct Unit

Jumper J7 (Standard)

If the jumper is missing, there will be "CP" error code.
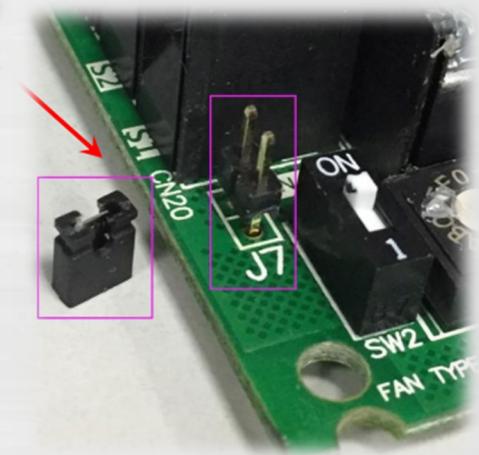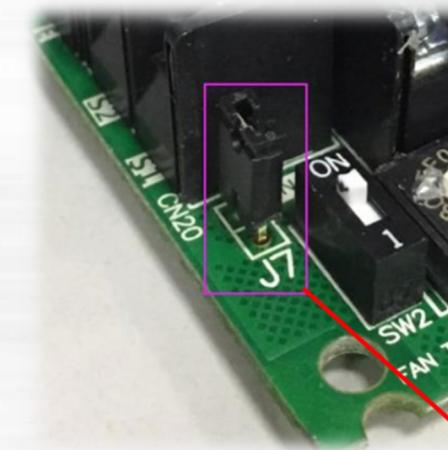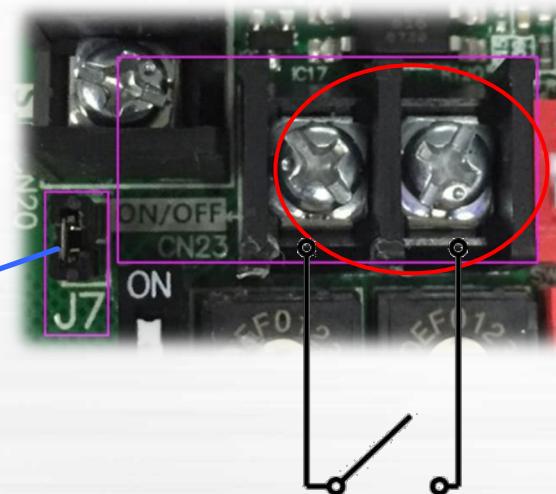
Remote ON/OFF switch

There are reserved ports for connecting a remote switch to control the unit to run or stop. The switch can be set manually or automatically by a special system such as fire alarm system.

NOTE: If there is no remote switch connected, these 2 ports should be short connected.

Remote ON/OFF ports (CN23)
Ceiling-Floor and Console
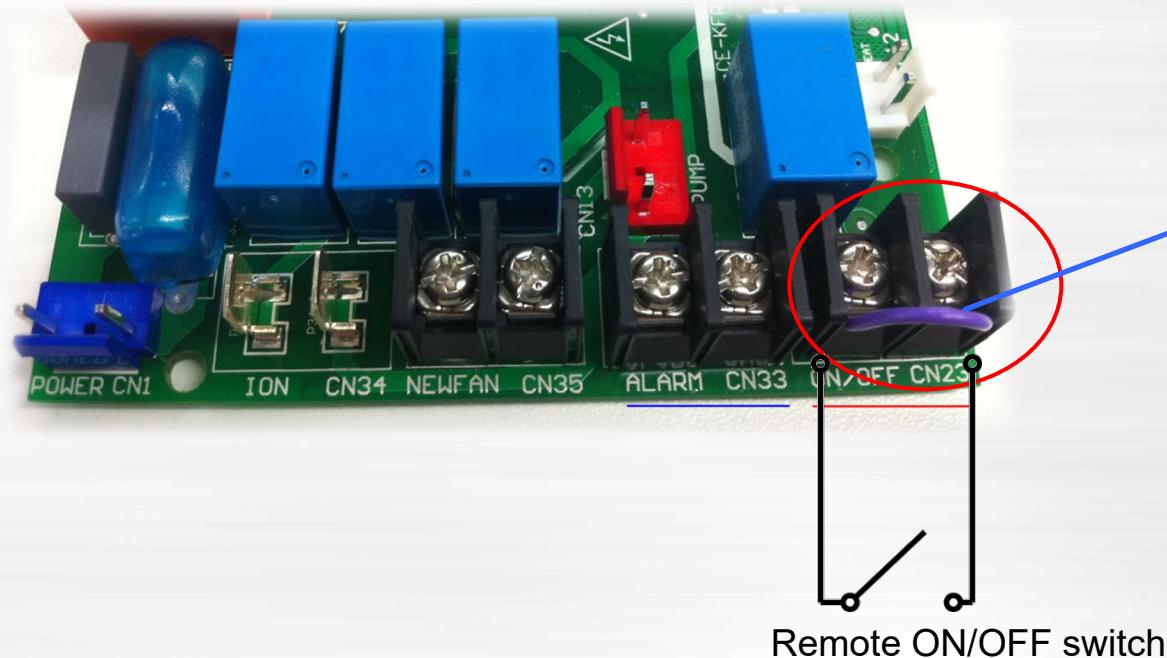
Short connecting
wire (Standard)

If the short wire is missing,
there will be "CP" error code.

Remote ON/OFF switch

There are reserved ports for connecting a remote switch to control the unit to run or stop. The switch can be set manually or automatically by a special system such as fire alarm system.

NOTE: If there is no remote switch connected, these 2 ports should be short connected.

Ports for Ventilation Fan (CN43)
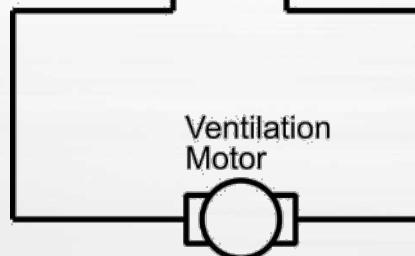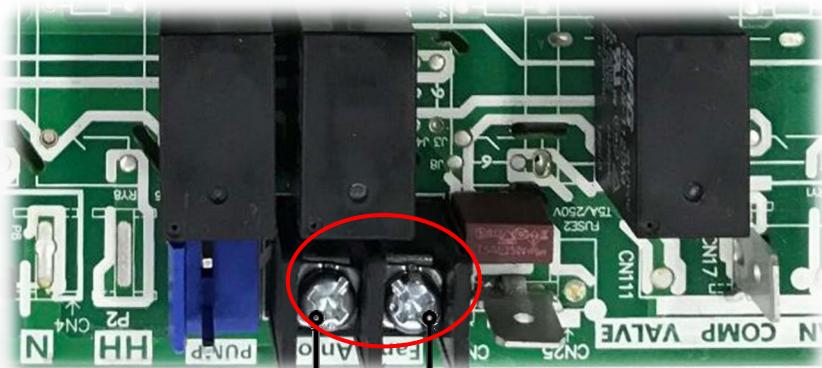
There is a 220V-240V power supply from these 2 ports. If the input power of ventilation motor is lower than 200W, it can be connected to these ports directly.
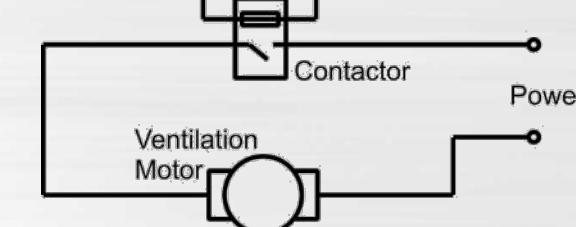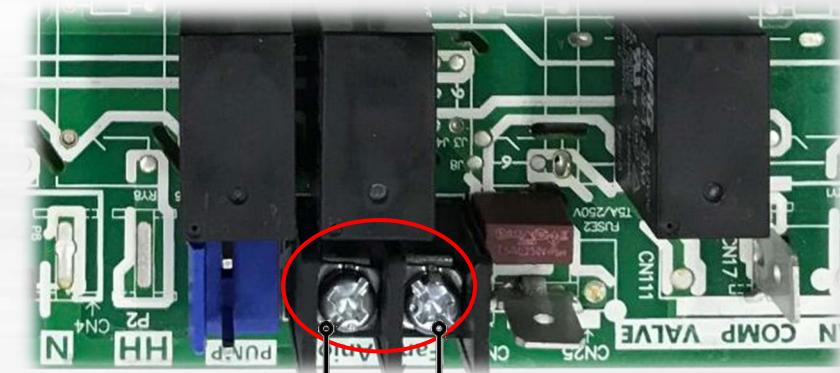
If the input power of the ventilation motor is more than 200W, a contactor should be installed to control the motor. And the power supply from the ports can be used to connect the windings of the contactor so as to control the big ventilation motor.

THANKS

FOR YOUR ATTENTION