DELTA

VRF Ducted Fancoil Units
Series: 80PF, 80PP

INSTRUCTION MANUAL

WARNING!
Read and follow all safety precautions in
Instruction Manual - improper use can cause
serious injury.

www.delta-dct.com

User Notices

- ◆ When the units are operating, the total capacity of the indoor units should be no more than the capacity of outdoor unit. Otherwise, it can cause the shortage of cooling capacity (heating capacity) of each indoor unit.
- ◆ The power supply of the indoor unit must be the unified power supply. The indoor unit cannot have the individual power supply, and the entire indoor unit can only be controlled by one main power control. Disconnect the main power of all the indoor units before cleaning.
- ◆ In order to start the unit successfully, the general power supply switch of the air-conditioning units should be turned to the "ON" position for 8 hours before running.
- ◆ After each of indoor units received the stop running signal, the fan motor of the indoor unit will use the surplus cool or surplus heat of the heat exchanger go on running for 20-70 seconds, this is the preparation for the next time use and this is the normal phenomenon.
- ◆ When the selected mode of the indoor unit conflicts with the mode of outdoor unit, after 5 seconds, the wired remote control will display the operation conflict, the indoor unit will stop running, Verify and correct the conflict before resuming operation. There is no conflict in the COOL mode and DRY mode, and the FAN mode will not conflict with any other modes.
- ◆ The appliance should not be installed in the laundry.
- ◆ An all-pole disconnecting switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.

Contents

1 Safety Precautions

(1) Before using the appliance, read this manual thoroughly and operate it under its direction.

(2) "WARNING" and "ATTENTION" have the following meanings in these instructions:

⚠ **WARNING!** This mark indicates procedures, which if improperly performed, might lead to the death or serious injury to the users.

⚠ **ATTENTION!** This mark indicates procedures, which if improperly performed, might possibly result in personal injury to the user, or damage to property.

⚠ **WARNING!**

◆ When install the unit, please relegate to the special arrangement maintenance center. If improper performed, it can cause the water leakage, electric shock and fire etc..

◆ Please install the unit to a steady and stable place. If its strength is inadequate, the unit will drop off and will lead to the personal injury and death.

◆ In order to make sure the right water drainage, the installation of drainage pipe should be according to the installation methods of this manual, and also adopt the heat insulating measures to prevent water condensing. If installed improperly, it will cause water leakage and might moisten the furniture.

◆ Do not use or store the combustible and detonable materials near the air conditioner.

◆ When a malfunction happened (there is the burning smell etc.), please power off the general power supply of the units.

◆ Keep good ventilation in order to avoid the oxygen lack.

◆ Do not insert hands or other objects into the inlet or outlet grille.

◆ Due to the long time use, please check the mounting frame if it is broken or not.

◆ Do not refit the unit. When need to maintenance or remove the unit, please contact the local dealer or the professional.

⚠ **ATTENTION!**

◆ Ensure the power supply correspond to the nameplate and check the security of the power source before installation.

◆ Make sure that the wires, pipes and drain hose are properly connected before operation to avoid a fire or electric shock.

◆ The general power supply must be reliably earthed to ensure the units are earthed availably and avoid the electric shock. The earth wire can't be connected to the gas pipe, water pipe, wires of the lightning rod and telephone.

◆ Once the units start, need at least more than 5 minutes running then it could be turned off.

◆ Don't let children operate the units.

◆ Do not operate the units with wet hands.

◆ When cleaning the air conditioner or changing filters, please turn off the general power supply of the units first.

◆ Switch off power source when the units will not be operated for a long period.

◆ Do not expose the units to the moist, damp, or corrosion environment.

◆ After installation, when power is connected the electric leakage should be tested.

2 The selection of installation place and notice of the air conditioner unit

2.1 The selection of the installation place of the air conditioner unit

◆ The installation must accord with the national and local codes.

◆ Since the quality of installation would affect the operation directly, the user should contact the seller and have the conditioner installed and tested by the professional installers according to the installation instruction instead of by themselves.

◆ Only connect the power after all the installation works are completed.

2.2 The selection of the installation place of the indoor unit

◆ Prevent exposing the indoor unit under the direct sun.

◆ Make sure that the top steeve, ceiling, and the structure of the construction etc. are strong enough to bear the weight of the unit.

◆ The drainage pipe is easy to drain.

◆ The air flow is not blocked at the outlet and intake vents.

◆ The connecting pipe indoor and outdoor can be lead to outside conveniently.

◆ The unit cannot be installed in the place where stores the inflammable, explosive substances or the place where would have leakage of flammable or explosive gas.

◆ The unit cannot be installed in the place where corrosive gas and serious dust, saline fog, lampblack or huge humidity exists.

⚠ NOTE!

The air conditioner unit installed in the following place may have malfunctions. If the malfunction is inevitable, please contact the appointed repair center of Delta Airconditioner.

① The place with grease all around.

② The seashore place with salinity and alkali.

③ The place with vulcanized gas(such as vulcanized hot spring).

④ The place with high frequency equipments (such as wireless equipments, electric welding machines and medical treatment equipments).

⑤ The place with special conditions.

2.3 The electric cord layout

◆ The cord should be installed according to the national standards.

◆ The power must be with the rated voltage and the electric circuit specific for air conditioner unit.

◆ Please don't pull the power cord with force.

◆ All the electric equipment should be installed by the professional personnel according to the local codes, regulation and this instruction.

◆ The power cord diameter should be big enough, and the destroyed power cord and connecting cord should be replaced by the specific ones.

◆ The grounding should reliably connected with the specific grounding equipment in the building, and this should be done by the professional personnel. There must be a creepage protection switch and an air switch with enough capacity (reference the following table). The air switch should maintain the functions of magnetic tripping and heat tripping to assure the protection when the short circuit or overload happens.

2.4 Grounding requirement

◆ The air conditioner is class I appliance, so please do take the reliable measurement to grounding.

◆ The yellow and green cord in the air conditioner unit is ground wire which cannot be used for other purpose, and cut off, as well as fixed up with screw. Otherwise, it would lead to a electric shock.

◆ The ground resistance should fit the requirement of the national standard GB 17790.

◆ The reliable ground terminal must be offered by the user. And please don't connect the grounding cord to the following place:

① Tap water pipe. ② Coal gas pipe. ③ Ejection pipe. ④ The place that is considered to be not reliable by the professional personnel.

2.5 The accessories used for installation

Every accessory used for installation of the indoor and outdoor unit please refer to the packing list in every individual package carton.

3 Installation of the ducted type indoor unit

3.1 Outline dimension diagram of indoor unit

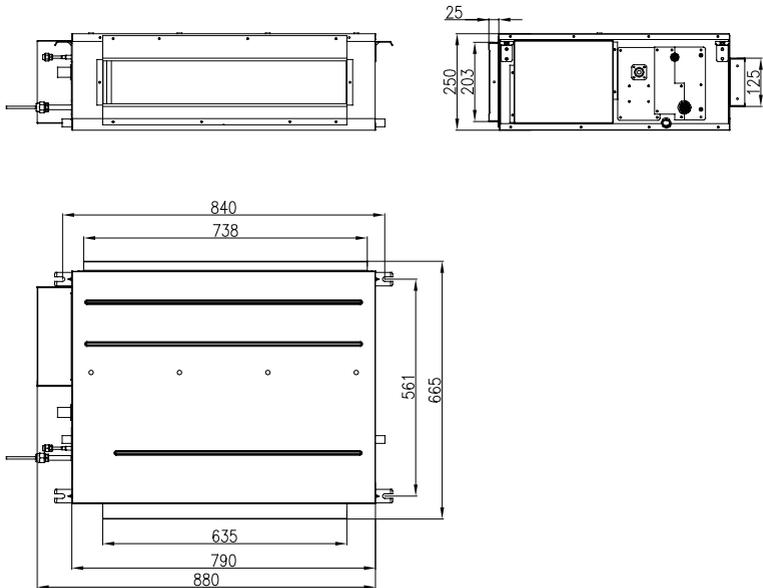The following figure is applicable to the indoor unit sizes 008/010/013.

Fig.1

The following figure is applicable to the indoor unit sizes 015-048.
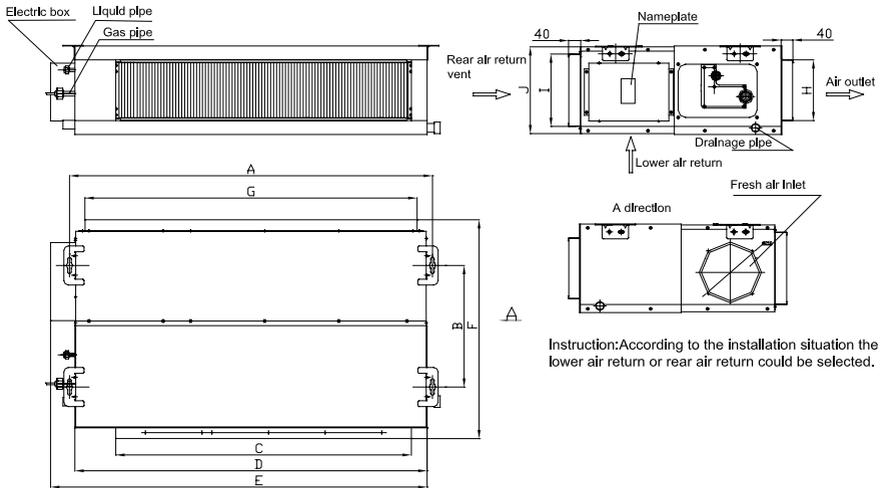
Fig.2

① Looking into the air outlet vent, the wiring is in the left of the unit.
② According to the actual installation, there are two ways for the return air, bottom return air or rear return air.

Unit:mm

Product Capacity Size	A	B	C	D	E	F	G	H	I	J
016	932	430	738	892	980	721	738	125	203	266
020/025	1114	420	918	1074	1159	736	1010	207	207	300
032/040	1382	420	1155	1340	1425	736	1280	207	250	300
048	1382	420	1155	1340	1425	736	1280	207	250	300

3.2 Schematic diagram of installation spaces

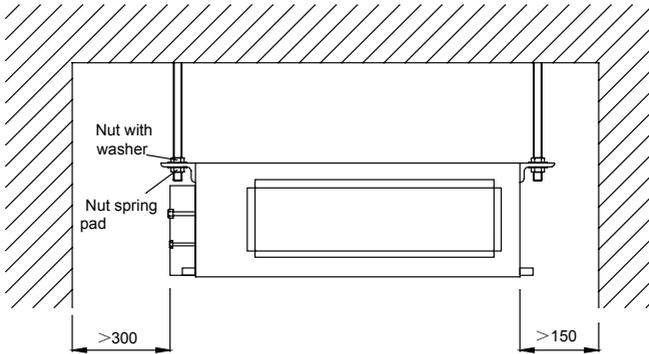Nut with washer

Nut spring pad

>300

>150

Fig.3

(1) Ensure that the latches at top are firm enough to stand the weight of unit.

(2) Convenience to drain by the drain hose.

(3) There is no obstacle around intake and outlet vent to keep good ventilation.

(4) Ensure the installation distance of the indoor unit as shown in fig.3 and also the necessary space for care and maintenance.

(5) Keep it far from any heater, leakage of combustible gas and place with fume.

(6) This unit is the cassette type (hided in the ceiling), as shown in fig.3.

(7) Indoor unit, outdoor unit, power cord, and connection pipe should keep a distance of at least 1m from the TV set, radio, so as to prevent incurring image interference and noise on the above mentioned home appliance. (If the electric wave is strong, even though they are kept 1m apart, noise would still happen.)

3.3 Install the indoor unit

(1) Insert the anchor bolt M10 to the hole then nail the iron nails into the bolts. The distance between holes is shown in fig.4. The installation of the anchor bolt is shown in fig.5.
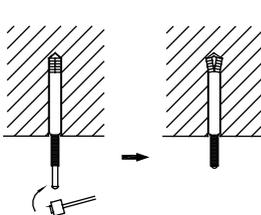

Hoisting screw   Hook

Fig.4   Fig.5
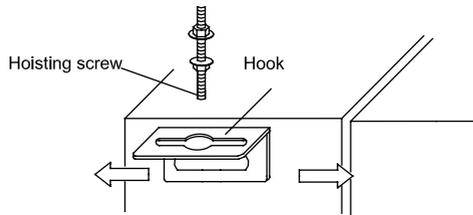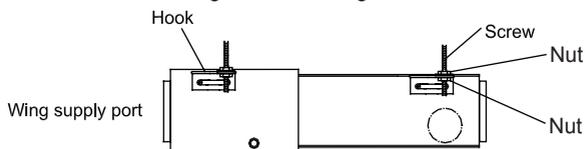
(2) Install the hook on the unit, as shown in fig.5.

(3) Install the indoor unit to the ceiling as shown in fig.6.
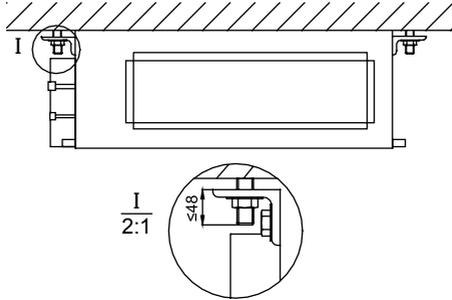

Hook   Screw

Nut

Wing supply port

Nut

Fig.6

⚠ NOTE!

    ① Open an opening on the ceiling and then properly smooth and reinforce the surrounding of the opening to prevent vibration. Please consult the user or builder for more details.

    ② If the ceiling is not strong enough, an angle iron stand can be made and has the unit fixed on it.

3.4 Water level test for indoor unit

    The water level test must be tested after installing the indoor unit to make the front, back, left and right or the unit are horizontal, as shown below.

Horizontal tester
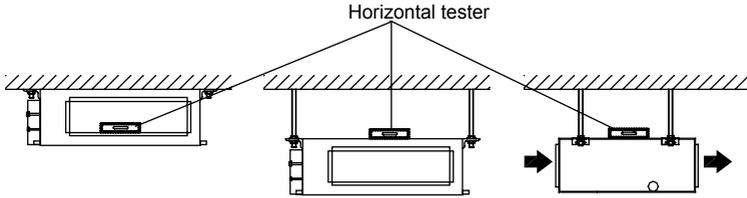
3.5 Installation of the air supply pipe

Return air   Return air   Supply air
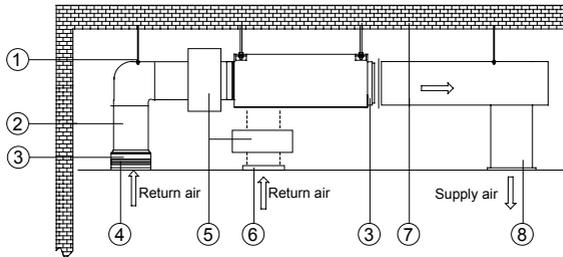
Fig.7 Sketch of install ducted type unit

No.	Name	No.	Name
1	Hanger Rod	5	Static Pressure Box
2	Return Air Duct	6	Filter Screen
3	Canvas Duct	7	Main Supply Air Duct
4	Return Air Inlet	8	Supply Air Outlet

⚠ NOTE!

    Fig.7 only shows the installation of the rear back air vent, but the button back air vent can also been installed according to the actual installation need. The method of installation is similar to the

6

rear back air vent's. The air supply pipe, which is either rectangle or round and connect with the air vent of the indoor unit, should at least keep one open. The round air pipe should adopt the round preservation pipe to transmit cool (heat) air to room. The round air pipe should add a transitional pipe, which size should match the one of air supply vent of the unit. After connecting the transitional pipe, install the round air outlet vent connection pipe, whose longest length to every individual air outlet vent should be not more than 10m. Ducted type indoor unit model 70 can share 3 transitional pipe, while model 100,120 can share 4. The transitional pipe, whose straight length is 200, and the round air outlet connection pipe, whose diameter is 200, produced by our company, can be ordered separately as standard fittings. Model 50 and the model below do not share the round air vent. The following is the diagram for how to install the return air pipe.

⚠ NOTE!

① The longest length of the air pipe means the general length of the air supply pipe to the farthest air supply vent plus the general length of the return air pipe to the relative farthest return air vent.

② As to the unit with the auxiliary heater, if the return air pipe is needed to be connected, the straight length of transitional air pipe should not be shorter than 200mm.
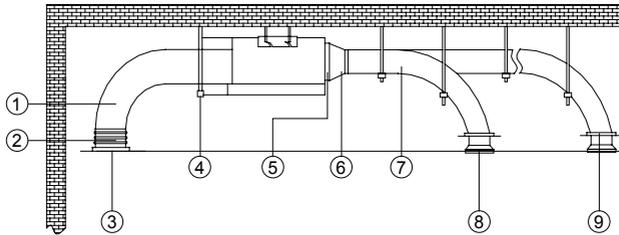
No.	Name	No.	Name
1	Return Air Duct	6	Transition Pipe
2	Canvas Duct	7	Supply Air Duct
3	Return Air Blinds	8	Diffuser
4	Hanger Rod	9	Diffuser Connector
5	Supply Air Outlet		

3.6 Installation of the return air pipe

① Preinstall the round air outlet vent on the transitional pipe and fix it by screws.

② Sheath the transitional air pipe on the air outlet vent and connect it by rivets.

③ Sheath the air outlet pipe on round air outlet vent and wrap it tightly by strap, then the connection with the unit has been finished.

3.7 Type and dimension of the return air and the air supply vent
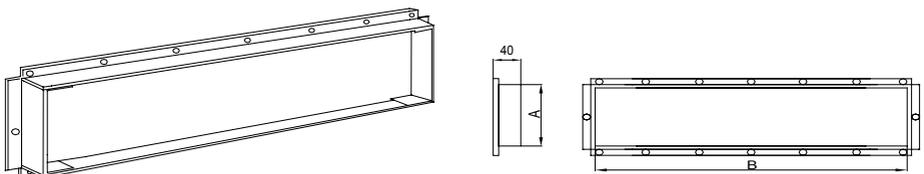
Product Capacity Sizes	Dimention of wind supply port		Dimention of back wind port	
	A	B	A	B
008/010/013	125	635	203	738
016	125	738	203	738
020/025	207	918	250	1010
032/040/048	207	1155	250	1280

3.8 Installation of the return air pipe

(1) The rear back air type is adopted for the unit when the unit leaves the factory, and the back air cover is installed at the bottom as shown below.
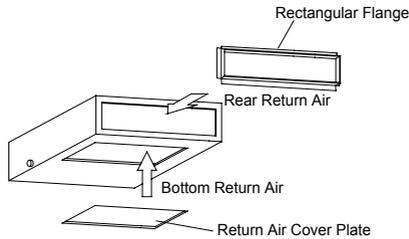
(2) When the button return air vent is needed to be adopted, change the position of the rectangle flange and the back air cover.

(3) Connect the return air pipe on the return air vent of the indoor unit by rivets, and connect the other terminal to the return air vent. In order to adjust the weight conveniently, pucker a canvas air pipe, and strengthen it with 8# iron thread.

◆ Installation type can be selected according to the overall plans and all factors into the conditions of the building and maintenance, as shown in fig.8(a), and fig.8(b).
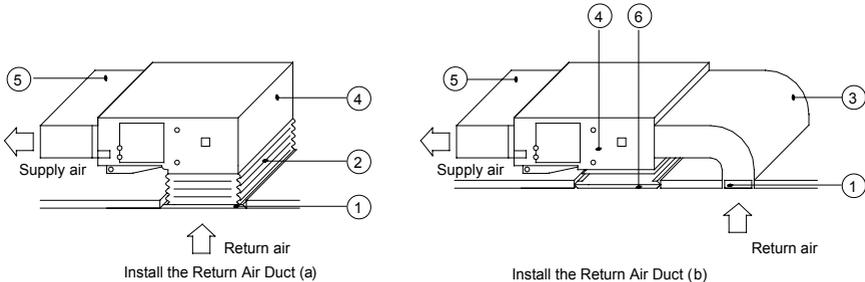

Install the Return Air Duct (a)

Install the Return Air Duct (b)

Fig.8 Installation of the back air pipe

No.	Name	No.	Name
1	Return Air Inlet (with filter)	4	Indoor unit
2	Canvas Duct	5	Supply Air Duct
3	Return Air Duct	6	Grille

3.9 Installation the fresh air pipe

The following figure is applicable to the indoor unit sizes 020-048 only.

(1) When the fresh air pipe is needed to be connected, cut the fresh air baffle as shown in fig.9. Plug up the gap of the fresh air baffle by sponge if the fresh air pipe is not be used.

(2) Install the round flange so that the fresh air pipe can be connected as fig.10.

Cut off

Cut off   Fresh air baffle   Round air duct

Fig.9   Fig.10
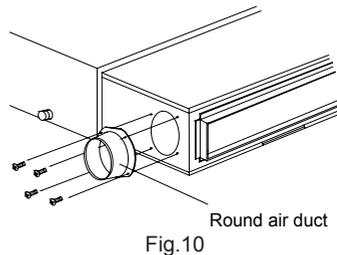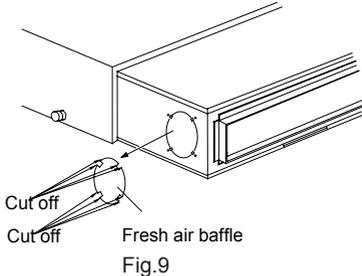
(3) Sealing and heat preservation should be done for both the air pipe and round flange pipe.

(4) Fresh air should be treated via the air filter.

⚠ **Attention:**

◆ There should be thermal insulation layers around the supply air and air return ducts as well as on the fresh air ducts to protect against heat losses and condensation. Adhere the plastic nails onto the ducts, and then attach a layer of insulation cloth with the tinfoil onto the ducts. Fix the plastic nail and then seal tightly the joints by way of tinfoil tapes. Some other materials with good thermal insulation properties can also be used.

◆ The air supply and air return ducts should be fixed to the prefabricated ceiling boards with iron stands. The joints of the air ducts should be sealed tightly to prevent from air leakage.

◆ The designing and operation of the air ducts should comply with the related state standards and procedures for engineering.

◆ It is recommended to leave at least a space of 150mm between the edges of the air return duct and the wall, and a filter screen should be placed at the air return opening.

◆ Muffling and vibration reduction should be taken into consideration during the designing and operation of the air ducts. In addition, the noise source should be kept away from the crowds. It is absolutely not allowed to design the placement of the air return opening right over the head of the users (in the offices, lounges or other public sites).

3.10 Installation of Condensed Water Pipes

(1) The condensed water pipes should be kept at 5—10 degrees of gradient to facilitate discharge of condensed water. Thermal insulation materials should be placed at the joints of the condensed water pipes so as to prevent from dew condensation. (As shown in Fig.11)

(2) There is an outlet for condensed water on both the left and right sides of the indoor unit. When the outlet of the condensed water is determined, the outlet on the opposite side should be blocked with a stopper and wrapped with strings so as to prevent the water from leaking. Thermal materials will be used to wrap the sealing properly.
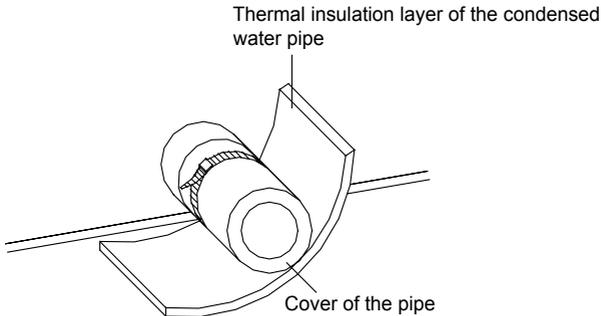

Thermal insulation layer of the condensed water pipe

Cover of the pipe

Fig.11 Thermal insulation of the condensed water pipe

(3) The outlet for condensed water on the right side is blocked with a stopper when the product leaves the factory.

⚠ **Attention:** It must be made sure that there is no leakage at the joints of the condensed water pipes.

3.11 Designing of the Drainage Pipelines

(1) The drainage pipes should be kept at a certain gradient (1/50—1/100) so as to avoid bulges of pipes where there might be water bends.

(2) When connecting the drainage pipes with the unit, care must be taken not to exert too much force on the pipelines of either side of the unit, and the pipes should be fixed as close to the unit as possible.

(3) The drainage pipes can be the locally purchased hard PVC pipes for common purposes. When making the connections, the end of the PVC pipe should be inserted into the drainage hole. Use drainage hose and wire bondage to fix it tightly. It is not allowed to use adhesive glue to join the drainage hole and the drainage tube.

(4) When the drainage pipeline is laid for a couple of units, the position of the shared pipeline should be approximately 100mm lower than the drainage outlet of each unit. In this case, some special-purpose pipes with thicker walls will be used.

3.12 Installation of Drainage Pipeline

(1) Diameter of the drainage pipe should not be less than that of connecting pipe.(PE pipes: size: outer diameter 255mm, wall thickness ≥1.5mm)

(2) The drain pipe should be as short as possible and its gradient should be at least 1/100 in order to avoid forming air pockets.

(3) If there is no enough gradient for discharge hose, the riser pipe for drainage should be installed.

(4) In order to prevent the discharge hose from bending, mutual distance of hanger brackets should be at least 1.0-1.5m.
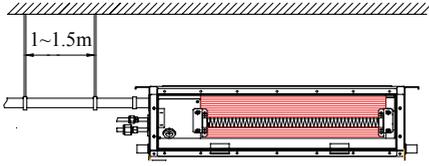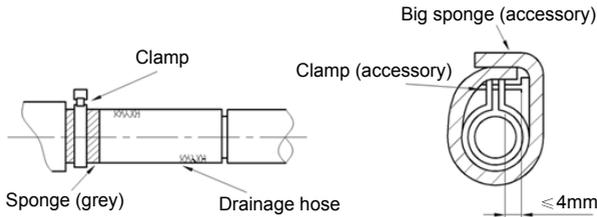

(correct) gradient is over 1/100
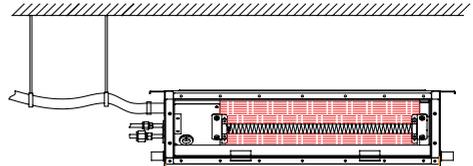
X (wrong)

(5) Insert the discharge hose to the drain outlet and then screw the pipe clamp up.

(6) For heat insulation, wrap the clamp of the discharge hose with sponge.

(7) Execute heat insulation to the indoor discharge hose.

Big sponge (accessory)

Clamp

Clamp (accessory)

Sponge (grey)   Drainage hose   ≤4mm

3.13 Cautions of the Riser Pipe for drainage

The installation height of the riser pipe for drainage should be less than 850mm. It should be perpendicular to the unit and the distance between them should be less than 800mm.

hanger bracket

ceiling

1~1.5m

1000mm 850mm 150mm

riser pipe for drainage

≤300mm

discharge hose (accessories)   ①   ② clamp (accessories)
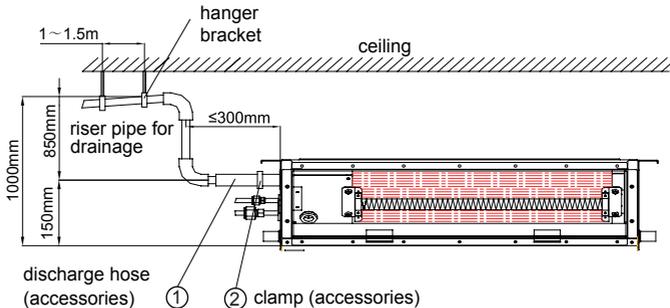
⚠ **Note:**

① The height of inclination of the attached discharge hose should be within 75mm to prevent the drain outlet from withstanding extra force.

② If multi-discharge hoses converge, please follow the steps below.

I－joints for joined discharge hose
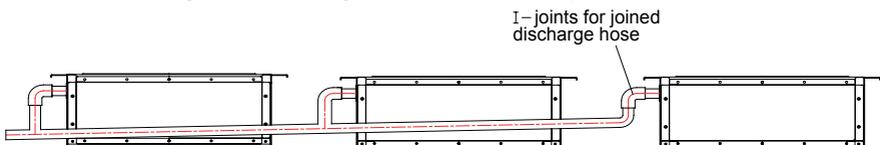
Selected joints for joined discharge hose should be suitable for running capacity of the unit

discharge hose ①
(accessories)

3.14 Test of the Drainage System

(1) Please test the drainage system after installation of electric appliances.

(2) During the test, check if the water correctly flows through the pipeline and observe the joints to make sure that there is no leak. If the unit installs in new house, it is advised to execute the test before decoration of the ceiling.
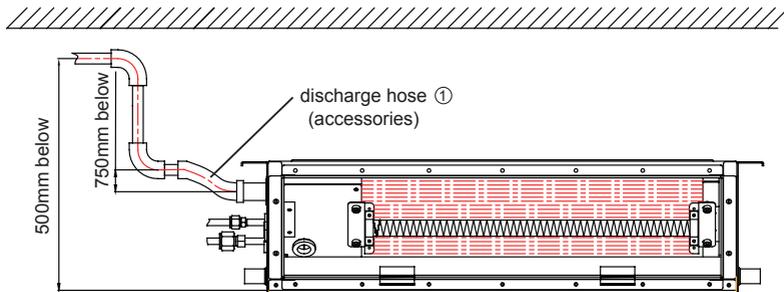
3.15 Testing on the Drainage System

◆ Upon completion of the installation of the electric appliances, the testing on the drainage system should be performed.

◆ During the testing, it should be made sure that the water flows through the pipeline in the correct direction. Careful observations should be made on the joints to ensure that there is no leakage of water at the joints.

◆ In the case that the unit is to be installed in a new building, it is recommended that the testing be made prior to the decoration of the ceiling.

3.16 Functional DIP switch S7 and Introduction to the Address Code

◆ Introduction to the Functional DIP Switch S7 and the Setting.

⚠ **Caution!** The functional DIP switch S7 locates on the mainboard of the indoor unit. Only when the revision of default setting is required by users, it can be operated or its original position should be maintained.

See the following statement for the functions and setting of the DIP switch S7.
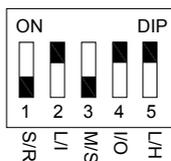
⚠ NOTE!

The DIP switch should be set correctly and properly. It's not allowed to set the toggle in the middle. (Black part means toggles of DIP switch.).In the figure, number "5,4,3,2,1"respectively represents "ON,ON,OFF,ON, OFF".

Functional DIP switch S7			
DIP switch	Description	Code Setting	
		0(ON)	1
1(S/R)	Memory mode setting	Energized standby(S)	Energized recovery (R)
2(L/ I)	Control method setting	Wired control (L)	Remote control (I)
3(M/S)	Master/slave indoor unit setting	Master indoor unit(M)	Slave indoor unit(S)
4(I/O)	Collection point setting for ambient temp.	Return air inlet (I)	receiver(O)
5(L/H)	High-low static setting of fan	Low static pressure(L)	High static pressure(H)

Specific function of each function DIP switch is as follows:

◆ DIP switch 1(S/R)——Memory mode setting: it includes both the energized standby mode and energized recovery mode. Energized standby mode is that: after the unit resumes power supply, the previous setting parameters will be maintained but cannot automatically run and such setting is factory setting (dialing the DIP switch to "ON" position).For example, setting parameters of a indoor unit are high fan speed before de-energization and 24°C and after resuming power supply, the unit will be in standby status. Then manually turn on the unit and its parameters are still high fan speed and 24°C. Energized recovery mode is that: after the unit resumes power supply, not only it will keep the previous setting but also can automatically run. But if the unit is in turnoff status before de-energization, it will still be that status after resuming power supply.

◆ DIP switch 2(L/I)——Control mode: it includes both the wired control mode and remote control mode. Wired control mode is that: control the running of the indoor unit by wired controller, which is factory setting (dialing the DIP switch to "ON" position). When the setting is wired control mode, "Memory mode setting" and "Master/slave indoor unit setting" of S7 are invalid which can be directly set on the wired controller. Remote control mode is that: control the running of indoor unit by remote controller. when the setting is remote control mode, its functional code must be set in S7.

◆ DIP switch 3(M/S)——Master/slave indoor unit setting: it is master/slave setting of indoor unit running mode, which is mainly used for people' priority requirements (such as leaders, patients, etc.). The factory setting is master indoor unit (dialing the DIP switch to "ON" position). When settings of all indoor units are slave indoor units, outdoor unit will run in the mode of firstly started slave indoor unit. If the mode of later started slave indoor unit and mode of firstly started slave indoor unit conflict, the conflict modes error will be warned by the system and later started indoor unit cannot run. In that case, the running of the unit is decided by firstly started slave indoor unit.

When there is only one indoor unit that is set to be the master indoor unit, in that case, no matter if the master indoor unit is firstly started, the conflict mode error will be warned by the slave indoor unit once the mode of slave indoor unit and the mode of master indoor unit conflict (except for turnoff mode of master/slave indoor unit). And the unit will firstly run at the mode of the master indoor unit.

When there are multi indoor units that are set to be the master indoor units, the unit will run at the mode of the master indoor unit with the min. address code. When the indoor unit with the min. address code changes to the running status from turnoff status, modes of other master indoor units or slave indoor unit should be in the same mode with it, or the conflict mode error will be warned. Therefore, when there are multi master indoor units, set the address code from high to low according to priority.

◆ DIP switch 4(I/O)——Collection point setting of ambient temp.: the setting is mainly used when there is high differential between temperatures of air conditioning area and return air of the unit. The setting is valid only when there is receiver including collection points setting of temperatures of the return air inlet and receiver head. The factory setting is the collection points setting of temperature of return air inlet (set the DIP switch at the "ON" position).

◆ DIP switch 5(L/H)——High-low static pressure setting of the fan: it includes both the high static pressure setting and low static pressure setting of the fan, which should be adjusted according to the project.

Cautions:

① Code setting must be under the off state of power.

② There is 3-bit, 4-bit or 5-bit DIP switch. 4-bit or 5-bit DIP switch is only applicable to the ducted type unit (including Multi VRF ducted type units and ducted type split).

③ When the control setting is "L", the Master/slave and memory setting on the main board is invalid. when the control setting is "I", the code setting is valid.

④ The DIP position shall be at ON which means 0 and means 1 at opposite position. The DIP switch at the middle position is prohibited.

⑤ After the setting is finished, please record the address code of the unit (√).
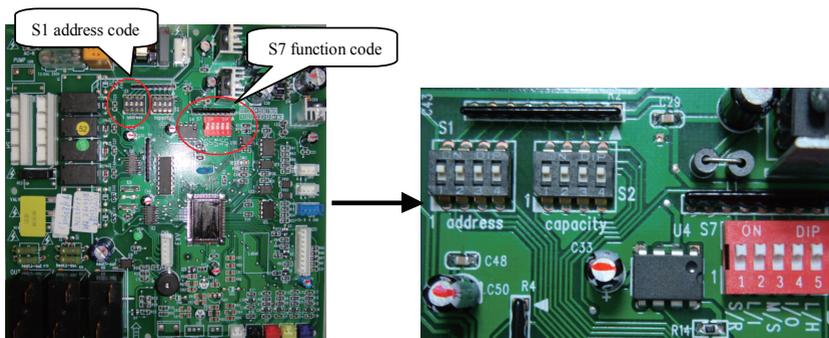
5-bit functional DIP switch
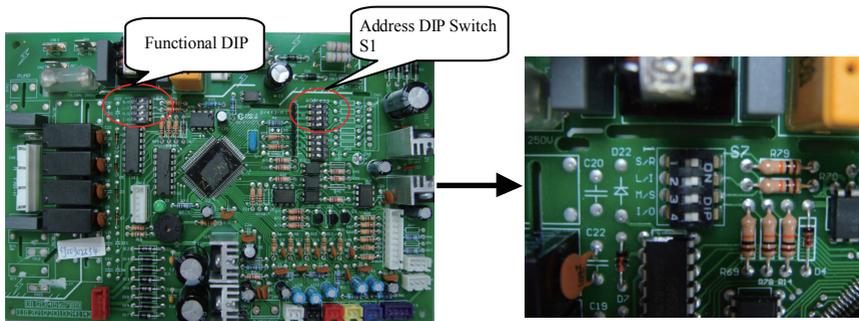
Mainboard of 4-bit Functional DIP Switch

3.17 Installation Instructions of the Unit

◆ Address Code

The address code must be set for multi VRF indoor units to ensure normal communication. The address code is 4-bit. The highest value is 16 and the lowest value is 1.

Notice! If multiple indoor units are used at the same time, address setting must be modified before installation. Different address codes must be set for them. If the wired controller is used for them, the address code of it (DIP switch at the back of it) must accord with the corresponding indoor unit.

Factory setting is as follow:
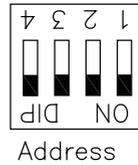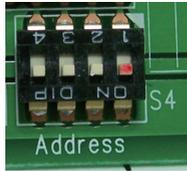
Default setting of the address code is 0000 which means 1 (How to set the DIP method is shown in the above figure.) .
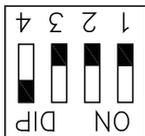
◆ Address value

Binary system is used in the address code setting, and the value is "0" when the switch is dialed to "ON" while the opposite is "1". The four codes 4~1 on the address code, in which No. 4 is high level bit and No. 1is low level bit. The "4" switch is the first digit while "1" is the last one.

Address Value	1				2				3				4				5				6				7				8			
Address Position	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1
Code	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	1	0	1	0	0	0	1	0	1	0	1	1	0	0	1	1	1
Address Value	9				10				11				12				13				14				15				16			
Address Position	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1	4	3	2	1
Code	1	0	0	0	1	0	0	1	1	0	1	0	1	0	1	1	1	1	0	0	1	1	0	1	1	1	1	0	1	1	1	1

Example 1: Code "0111" represents that the address is "8". 1,2,3, of the DIP switch should be set to the number side and 4 should be set to "ON" position.

Example 2: Code is "1010" represents that the address is "11".2,4 of the DIP switch should be set to the number side and 1,3 should be set to the "ON" position as follows:
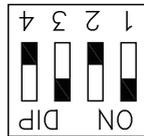
Address 8, Code 0111   Address 11, Code1010

◆ Connection between the electric wires and the terminals on the terminal plate

(1) Connection of single-strand wires

1) Use a wire stripper to strip off about 25mm of the insulation layer at the end of the single-strand wire.

2) Remove the screws on the wiring board of the air conditioner unit.

3) Use the pliers to bend the end of the wire into a ring shape corresponding to the size of the screw.

4) Pass the screw through the wire ring and fix it onto the wiring board.

(2) Connection of multiple-strand wires

1) Use the wire stripper to strip off about 10mm of the insulation layer of the stranded wires.

2) Remove the screws on the wiring board of the air conditioner unit.

3) Use the wire pressing pliers to press the ends of the multi-strand wires onto the terminals corresponding to the size of the screws.

4) Pass the screws through the terminals of the multiple-strand wires and fixes them onto the wiring board.
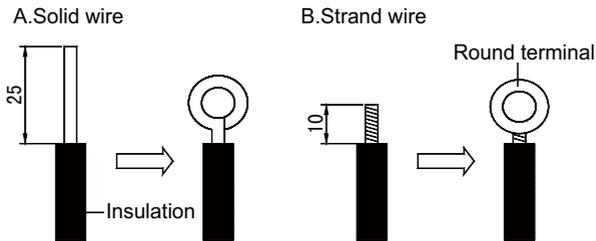

A.Solid wire   B.Strand wire

Round terminal

Insulation

Fig.12

⚠ **WARNING!**

① If the power cord or signal cord of the unit is damaged, special-purpose cords must be used for replacement.

② Please identify the voltages for the components indicated on the nameplate before doing the wire connection, and then connect the wires in accordance with the schematic diagram of wiring.

③ The air conditioner unit should use the special-purpose power cord, and should be equipped with the breaker of air switch so as to handle the occurrence of overloads.

④ The air conditioner unit must be properly grounded to prevent from the damages caused by the failure of insulation.

⑤ All the distribution wires must use the press-connecting terminals or single wires. The direct connection between the multi-ply stranded wires and the terminal board might lead to sparking.

⑥ All the wiring must follow the schematic diagram for the electric circuits. Any erroneous wiring and connection might result in the abnormal operations or damages of the air conditioner unit.

⑦ Do not allow the power cord to contact the pipelines or any moving parts like the compressor or fan.

⑧ The internal wiring of the air conditioner unit should not be altered without authorization. The manufacturer shall not be responsible for any losses or abnormal operations incurred from such unauthorized alterations.

◆ Connection of Distribution (Communication) Wires

Open the cover of the electric box of the indoor unit.

Pass the distribution (communication) wire through the rubber gasket.

Insert the distribution (communication) wire into the three pin stands of CN15, CN17 or CN18 on the electric circuit board of the indoor unit.

Bind the distribution (communication) wires firmly together and fix them.

◆ Connection of Power Supply Lines

Attention: The power supply for various indoor units must be from the unified power supply.

Air conditioner units using single-phase power supply

(1) Remove the cover of the electric box of the indoor unit.

(2) Pass the power supply cord through the rubber gasket.

(3) Connect the power cord to the L and N terminals as well as the grounding screw.

(4) Bind the cord and wires firmly together and fix them properly.

◆ Connection of Remote controller Signal Wire

(1) Open the cover of the electric box of the indoor unit.

(2) Pass the signal line of the remote controller through the rubber ring.

(3) Insert the signal line of the remote controller into the four-positioned pin stands on the electric circuit board of the indoor unit.

(4) Bind the signal lines of the remote controller firmly together and fix them.

⚠ NOTE!

Special precaution must be taken when doing the following connections so as to prevent from the failure of the air conditioner unit due to EMI (electromagnetic interference).

① The signal lines and the distribution (communication) wires should be separated from the power supply cord and the connection lines between the indoor and the outdoor units.

② In the case that the air conditioner unit has to be installed at the places subject to the EMI, it is advised to use shielded and double-strand wires for the signal lines and distribution (communication) wires.
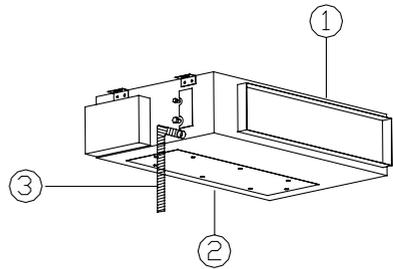
◆ Others

According to requirements of the project, when it is necessary for higher static pressure, you can achieve it by changing indoor wire connection according to the enclosed wiring diagram.

4 Name and Function of Each Part of Ducked Type Indoor Unit
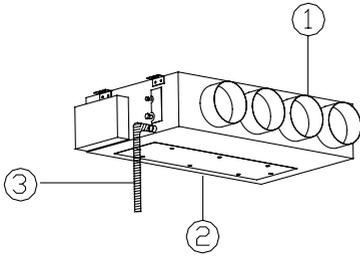
CIRCLE OUTLET VENT   RECTANGLE OUTLET VENT

① —— Outlet vent
② —— Air return vent
③ —— Condensation Pipe

⚠ NOTE!

① Connection pipe and Air pipe are not included in this air conditioner.

② Products are set for the rectangle outlet vent.

5 Working Temperature Range

Working Temperature Range

	Indoor side state		Outdoor side state	
	Dry bulb temp. °C	Wet bulb temp. °C	Dry bulb temp. °C	Wet bulb temp. °C
Rated Cooling	27	19	35	24
Max. cooling	32	23	43	26
Min. cooling	21	15	18	—
Rated Heating	20	15	7	6
Max. heating	27	—	24	18
Min. heating	20	15	-15	-16

6 Wired Remote Controller Operation Procedure
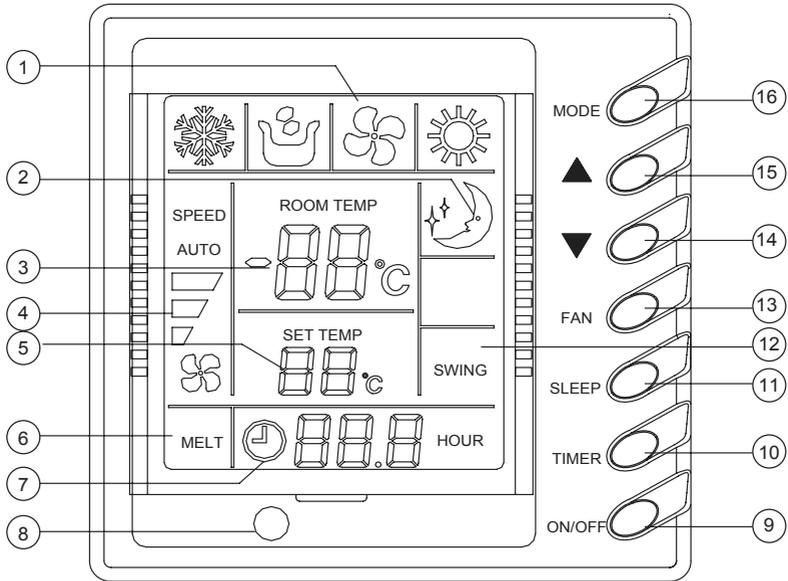
Components of the Wired Remote Controller			
1	Operating mode display (Cool, Dry, Fan, Heat)	9	On/Off button
2	Sleep mode display	10	Timer button
3	Environmental temp. display /Malfunction display	11	Sleep button
4	Fan control display (automatic, high, medium, low)	12	Swing display
5	Set Temp. display	13	Fan control button
6	Defrosting display	14	Temp./ Timer decrease button
7	Timer display	15	Temp./ Timer increase button
8	Signal receiver	16	Mode button

6.1 On/Off

◆ When press the ON/OFF key, the unit will start.

◆ When press the ON/OFF key again, the unit will stop.

NOTE! Fig.13 shows the closedown status after power on. When the communication is normal, both at the running and stopping status will display the environment temp. Here, there is no "graticule line" on the LCD of Fig.14, it shows the unit is closedown.
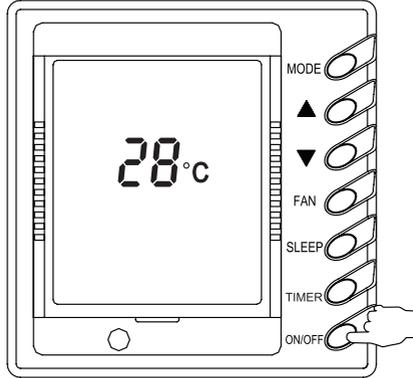

Fig.13

6.2 Timer setting

◆ At stopping, press the TIMER button, set TIMER ON, at operating, press TIMER button, set TIMER OFF.

◆ When it is not timed (i.e. there is display in the timing display field), press TIMER ON, the LCD will display "🕐 xx.x HOUR", "🕐" and "HOUR" will flash in every 0.5 second, at this time, press "▲" or "▼" button to set the time. After using "▲" or "▼" button, adjust to the desired time, then press the TIMER button, at this time, "🕐"and "HOUR" will not flash, which shows the TIMER ON has been set.

◆ After power on, to press the TIMER button once, LCD will display"🕐 0.5 HOUR", The sign of "🕐"and "HOUR" will twinkle, when repress the TIMER button, the LCD will not display the sign, which shows the TIMER ON has been canceled.

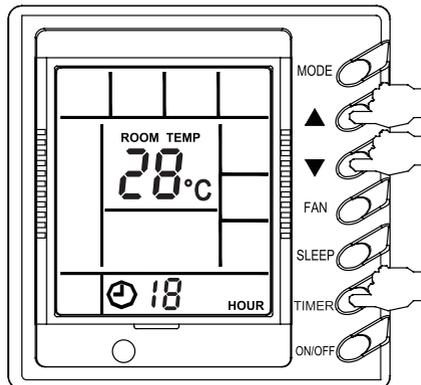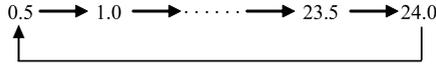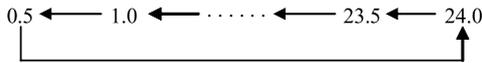
Fig.14

◆ When the TIMER ON has been set, (i.e. the sign of"⏱"and "HOUR" will twinkle continuously), if press the TIMER button once more, LCD will show "⏱ xx.x HOUR" (Note!"xx.x"is the time of last setting, after power on it will be cleared automatically),the sign of"⏱"and "HOUR" will twinkle continuously, at this time could press "▲"or"▼" button for time setting, or press the TIMER button again to confirm the function of time.

◆ The range of TIMER ON and TIMER OFF is from 0.5hour to 24hour. Press "▲" or "▼"button for each time, the set time will be increased or decreased 0.5hour, hold the press "▲" or "▼"button, it will increase 0.5hour or decrease 0.5hour every other 0.5second. The setting range of "▲" and "▼" is from 0.5 to 24, and they are circulatory.

"▲" button

$$0.5 \longrightarrow 1.0 \longrightarrow \cdots \cdots \longrightarrow 23.5 \longrightarrow 24.0$$

"▼" button

$$0.5 \longleftarrow 1.0 \longleftarrow \cdots \cdots \longleftarrow 23.5 \longleftarrow 24.0$$

⚠ NOTE!
The Fig.14 shows the relevant display area.

6.3 SLEEP mode setting

◆ In the Cooling or Dry mode, after the unit receives the Sleep command from the wireless controller (for the duct type or ultra-thin duct type indoor unit, the command is transmitted by the wired controller) and runs for one hour, the preset temperature will increase by 1°C and by 1°C after another two hours. After that, the unit will run at this temperature.

◆ In the Heating mode, after the unit receives the Sleep command from the wireless controller (for the duct type or ultra-thin duct type indoor unit, the command is transmitted by the wired controller) and runs for one hour, the preset temperature will decrease by 1°C and by 1°C after another two hours. After that, the unit will run at this temperature.
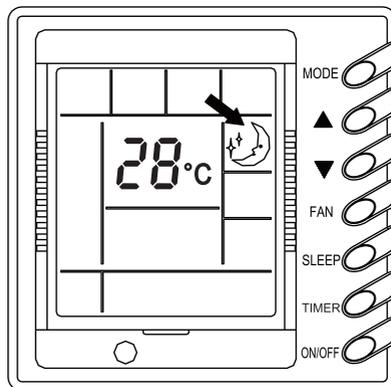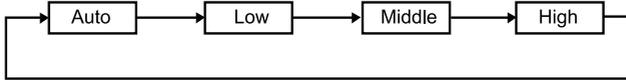
◆ There is no SLEEP function in the FAN mode.

Fig.15

6.4 Fan Speed Control

◆ Press FAN button each time, the fan speed will be changed as following:

```
 → Auto → Low → Middle → High →
```

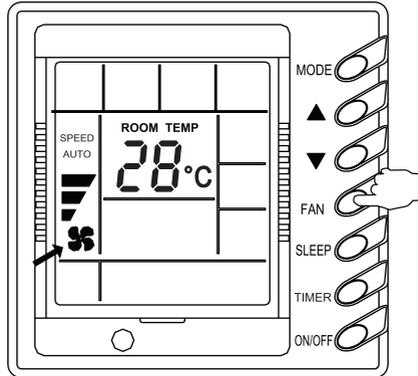◆ At the DRY mode:The fan speed will be set to the LOW speed automatically.

Fig.16

6.5 Temp. adjusting

◆ When not setting the time, press "▲"and"▼" button to adjust the temperature.

▲:For increasing setting temperature.

▼:For decreasing setting temperature.

(When pressing this button, the temperature will be increased or decreased with a increment/decrement of 1°C.).

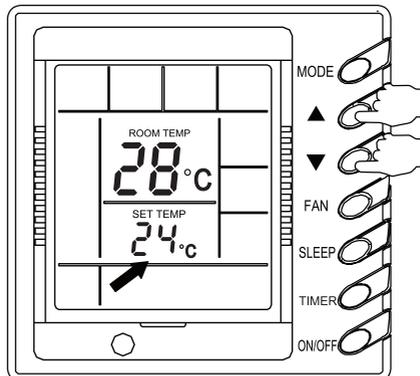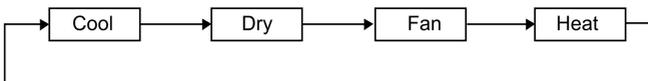◆ The temperature setting range is 16°C~30°C at every kind of modes.

Fig.17

6.6 Setting of the running mode

◆ When pressing MODE button each time, the mode will be changed as following:

```
 → Cool → Dry → Fan → Heat →
```

◆ At the "COOL" mode, the COOL display will be light on, the temperature of setting should be lower than the room temperature. If not, the unit will not run at cool mode operation.
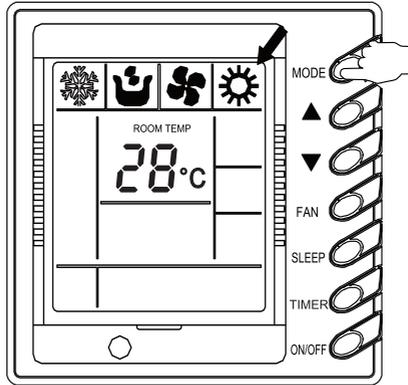

Fig.18

◆ At the "DRY" mode, the DRY display will be light on. Fan motor will run at low fan speed in the definite temperature range. The dehumidifying effect of this mode is better than that in COOL mode and more energy saving.

◆ At the "HEAT" mode, the HEAT display will be light on. The temperature should be set higher than the room temperature.

◆ If the setting temperature is lower than the room temperature, the unit will not run at the HEAT mode operation.

◆ At the "FAN" mode, the FAN display will light on.

6.7 Malfunction display

◆ When a malfunction happen during the operation, the environment temperature display area will show the error code. As shown in Fig.19, it shows the compressor high-pressure protection.
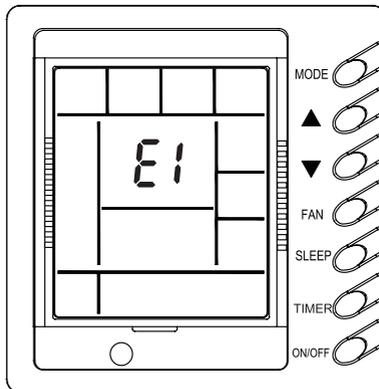

Fig.19

◆ When a malfunction happen except that the FAN mode continues at the mode of COOL, DRY, HEAT, the outdoor unit and fan motor will stop, which will not affect the LCD display.

◆ When the controller displays a malfunction, please turn off the unit and contact the service center.

The meaning of error codes as shown below:

Malfunction code	Malfunction
E1	High pressure protection of the compressor
E2	Indoor anti-freezing protection
E3	Low pressure protection of the compressor
E4	Discharge temp. protection of the compressor
E5	Compressor overload protection
E6	Communication malfunction
E7	Modes conflict
F0	Indoor environment temp. sensor malfunction
F1	Indoor coil inlet temp. sensor malfunction
F2	Indoor coil middle temp. sensor malfunction
F3	Indoor coil outlet temp. sensor malfunction
F4	Outdoor environment temp. sensor malfunction
F5	Outdoor coil inlet temp. sensor malfunction
F6	Outdoor coil middle temp. sensor malfunction
F7	Outdoor coil outlet temp. sensor malfunction
F8	Discharge temp. sensor 1 (rated frequency) malfunction
F9	Discharge temp. sensor 2 (digital) malfunction
FA	Lubricant temp. sensor 1 (rated frequency) malfunction
Fb	Lubricant temp. sensor 2 (digital) malfunction
FC	High pressure sensor malfunction
Fd	Low pressure sensor malfunction

7 Ambient Temp Sensor Mode Setting of Indoor Unit

Under the off state of unit, press the FAN and SLEEP/SWING buttons at the same time for 5s into setting interface, as shown in Fig.20."01" is displayed in ambient temp displaying area and setting mode code is displayed in temp displaying area which can be adjusted by pressing ▲ or ▼. There are 4 kinds of selections:

(1) Indoor ambient temp is air inlet temp and the setting temp area displays 01, as shown in Fig.21.
(2) Indoor ambient temp is wired controller temp and the setting temp area displays 01, as shown in Fig.23.
(3) Under heating mode, select wired controller's temp sensor or under other modes select air inlet's temp sensor and the setting temp area displays 03, as shown in Fig.20.
(4) Under heating mode, select air inlet's temp sensor or under other modes select wired controller's temp sensor and the setting temp area displays 04, as shown in Fig.22.
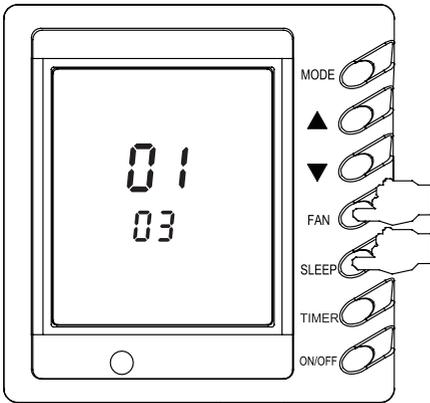
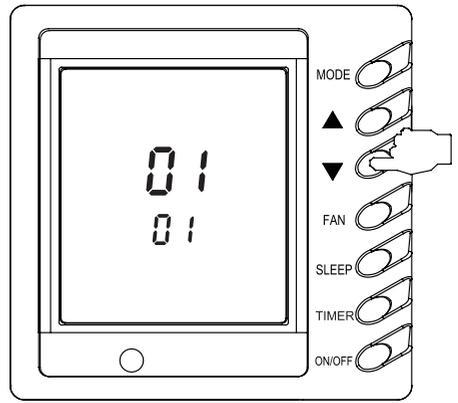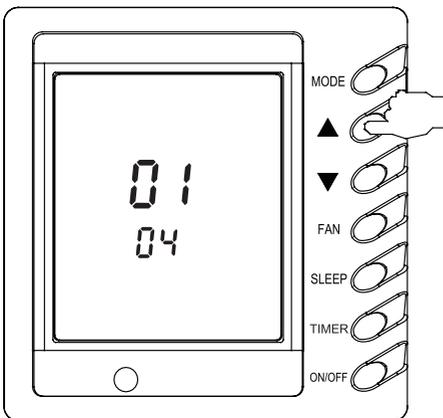Factory default is the third mode.
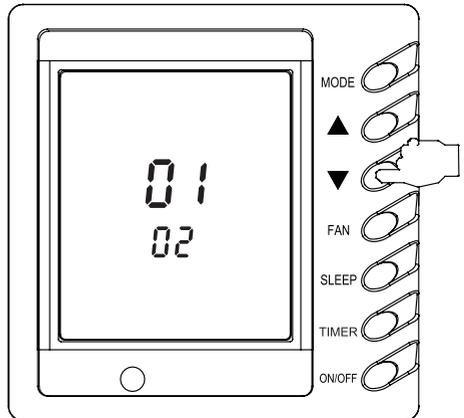

Fig.20

Fig. 21

Fig.22

Fig. 23

8 Wireless Controller

⚠ CAUTION!

- Make sure there is no obstruction between the wireless controller and the signal receiver.
- The signal receiving distance of the wireless controller can be up to 10 metes.
- Never drop or throw the wireless controller randomly.
- Never let any liquid flow into the wireless controller.
- Never expose the wireless controller under the sunlight directly or where it is very hot.
- The wireless controller for the duct type indoor unit is an optional part.

Fig. 24

8.1 Control Panel of the Wireless Controller

Name	Function Description
ON/OFF button	• Press this button, and the unit will be turned on. press it once more, and the unit will be turned off. When turning on or turning off the unit, the Timer, Sleep function will be canceled, but the presetting time is still remained.

26

- button	• Preset temperature can be decreased by pressing this button. Continuous pressing this button for more than two seconds can make the temperature changed quickly until release this button and then transmit this order, in which case,°C (°F) will be displayed all the time. The temperature adjustment is unavailable under the Auto mode, but the order can be sent by pressing this button.
+ button	• The preset temperature can be increased by pressing this button. Continuously pressing this button for more than 2 seconds cam make the temperature changed quickly until release the button and then transimit this order, in which case,°C (°F) is displaying all the time. The temperature adjustment is unavailable under the Auto mode, but the order can be sent by pressing this button. Centigrade setting range: 16-30. Fahrenheit scale setting range 61-86.
X-FAN button	• Pressing X-FAN button in COOL or DRY mode, the icon "�" is displayed and the indoor fan will continue operation for 10 minutes in order to dry the indoor unit even though you have turned off the unit. After energization, X-FAN OFF is defaulted. X-FAN is not available in AUTO, FAN and HEAT mode.
MODE button	• By pressing this button, Auto, Cool, Dry, Fan, Heat mode can be selected circularly. Auto mode is default after power on. Under the Auto mode, the temperature will not be displayed. Under the Heat mode, the initial value is 28°C(82°F).Under other modes, the initial value is 25°C(77°F). △ AUTO . ✳ COOL. DRY. FAN. ☼ HEAT (only for cooling and heating unit)
SWING UP/ DOWN button	• Press this button to set up the swing angle, which circularly changes as below: This is a universal wireless controller. When it receives any of the swing control commands of the swing status keeps at . When the guide louver starts to swing up and down, if SWING funtions is deactivated, the air guide louver will stop and remains at the current position. indicates the guide louver swings up and down among thoese five directions.
FAN button	• By pressing this button, Auto, Low, Middle, High speed can be circularly selected. After power on, Auto fan speed is default. Under the Dry mode, the unit can only run at the low fan speed. AUTO Low fan Middle fan High fan Note: Under the DRY mode, the fan will be kept running at the low speed even though the wireless control displays that the fan speed is changed.
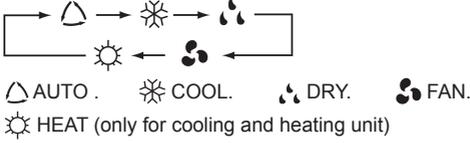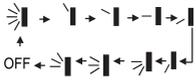
CLOCK button	• By pressing this button, the clock is allowed to be set, ⊕ with blinking, and then press the +/- button to adjust the clock within 5 seconds. If the CLOCK button is pressed down constantly for more than 2 seconds, the clock setting will increase 10 minutes every 0.5 seconds. After that, another press on the CLOCK button will make the symbol indicate the setting time and blink. 12:00 is the default when the wireless controller is energized with the symbol indicating the current clock time.
TIMER ON button	• When TIMER ON is activated, "ON" will blink while the symbol will disappear. Within 5 seconds it is allowed to set the "ON time by pressing the +/- button. Each press will make the time increase or decrease one minute. Besides, the time can also be set by pressing the +/- button constantly. that is, in the early 2.5 seconds, the time will increase/decrease quickly per single minute, and in the late 2.5, the time will increase/decrease per ten minutes. After the desired time value is set, press TIMER ON again to conform the setting within five seconds. After that, another press on TIMER on will cancel the setting. Prior to this setting, the clock shall be set to the actual time.
TIMER OFF button	• By pessing this button it is available to go to the TIMER OFF settting state with the same setting method as that of the TIMER ON, in which case the TIMER OFF symbol will blink.
TEMP button	• By pressing this button it is allowed to select the temperature option, the indoor setting temperature or the indoor ambient temperature. However, when there is no any temperature symbol on the wireless control, the current temperature option will be kept unchanged. • (Indoor setting temperature is default after the indoor unit is energized initially) • By pressing the TEMP button, when the temperature symbol ⌂ is displayed, the wireless controller will show the indoor setting temperature. when ⌂ is displayed, it will show the indoor ambient temperature. when ⌂ is displayed, it will keep the current temperature option.
TURBO button	• In the Cool or Heat mode, pressing this button can activate or deactivate the TURBO function. When the TURBO fucntion is activated, its symbol will be displayed. when the running mode or the fan speed is changed, this function will be canceled automatically.
SLEEP button	• By pressing this button, Sleep On and Sleep Off can be selected. After powered on, Sleep Off is defaulted. Once the unit is turned off, the Sleep function is canceled. When Sleep is set to On, the symbol of SLEEP will display. In this mode, the time of timer can be adjusted. Under the Fan and Auto modes, this function is not available.
LIGHT button	• Press this button to select LIGHT on or off. When the LIGHT is set to on, the icon ☀ will be displayed and the indicating LED in the display will light up. When the LIGHT is set to off, the icon ☀ will be displayed and the indicating LED in the display will light off.

8.2 Introduction to Special Functions

• About X-FAN function

This function indicates that the indoor fan will continue its operation for another 10 minutes after the unit is turned off in order to dry the evaporator of the indoor unit.

① Having set X-FAN function on: After turning off the unit by pressing ON/OFF button indoor fan will continue running for about 10 min. at low speed. In this period, press X-FAN button to stop indoor fan directly.

② Having set X-FAN function off: After turning off the unit by pressing ON/OFF button, the complete unit will be off directly.

• About TURBO function

If the TURBO function is activated, the unit will run at high fan speed to perform cooling or heating quickly so that the ambient temperature will approach the preset temperature as soon as possible.

• About After-Heat Elimination (This function is applicable to some special models)

When the air conditioner is turned off under the Heat or Auto mode, the compressor and outdoor fan will stop running directly and the upper and lower guide board rotate to the horizontal position, while the indoor fan will run for another 10 seconds at the low speed and then stop.

• About LOCK

Press + and - buttons simultaneously to lock or unlock the keyboard. If the wireless controller is locked, the icon ▬ will be displayed on it, in which case, any press will get no response but with the mark blinking for three times. If the keyboard is unlocked, the mark will disappear.

• About SWING UP/DOWN

① Press the Swing Up/Down button for more than 2 seconds and then the louvre will swing up and down. After releasing the button, the louvre will stop swinging and keep the current status.

② When the louvre starts swinging, by pressing the Swing Up/Down button 2 seconds later, the louvre will stop swinging directly. while, by pressing the Swing Up/Down button within 2 seconds, the louver will keep swinging.

• About Changeover between Fahrenheit and Centigrade

Under the OFF state of the unit, press MODE and - buttons simultaneously to switch between ℃ and ℉ .

8.3 Replacement of Batteries

1) Slightly press the place with [OPEN] along the arrowhead direction and push the back cover of the wireless remote controller. (As shown in the figure)

2) Take out the used batteries. (As shown in the figure)

3) Insert two new AAA 1.5V dry cell batteries and pay attention to their polarity. (As shown in the figure)

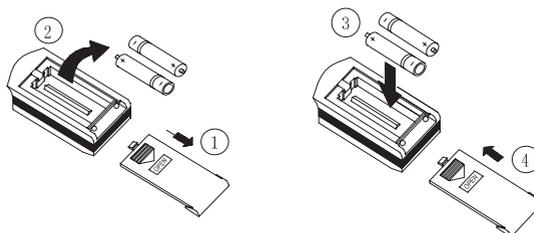4) Put back the cover of the wireless remote controller. (As shown in the figure)

Fig. 25

⚠ NOTE!

① When changing the batteries, do not use any used or different-type batteries, otherwise, it would cause some malfunction of the wireless remote control.

② If the wireless remote control is not to be used for a long period, please take them out, and don't let the possible battery liquid leak damage the wireless remote control.

③ The operation should be within the signal receiving range.

④ It should be placed 1m away from the TV set or stereo sound sets.

⑤ If the wireless remote control can not operate normally, please take them out, after 30s later and reinsert them, if the problem persists, please change them.

9 Trouble Shooting

If a malfunction occurs, please check items shown below before contacting the service center.

Phenomenon	Cause
The unit can't start	① The power supply is not connected well. ② The electrical leakage cause the jump . ③ The voltage is too low.
Although the unit can run, after a while it will stop	The inlet vent and outlet vent are blocked.
The cooling effect is not good	① The air filter is dirty or blocked. ② There are heat sources in the air conditioning room or too many people in this room. ③ The door or curtain is opened. ④ There are obstructions in the air inlet or outlet grille. ⑤ The set temp. is too high that will affect the cooling effect.
The heating effect is not good	① The air filter is too dirty or blocked. ② The door or curtain isn't closed well. ③ The set temp. is too low that will affect the heating effect.
The remote controller can not work	① When replacing batteries or under other conditions, if the remote controller goes crashed, please remove the rear cover, then press "ACL"(reset key), the unit will recover. ② Is it in the receiving range? Or are there any obstructions? ③ For the ducted type indoor unit, the remote controller should be aimed at the wired remote control for the control. ④ To check the voltage of batteries is proper or not, if not please change it.

⚠ NOTE!

After checking the above items, if the unit still can't be operated, please turn off the unit immediately and contact the local service center and ask for service.

10 Care and Maintenance

ATTENTION! Please pay more attention to the following items before cleaning the units.

◆ The general power supply of the indoor units must be powered off before contacting the wiring device.

◆ Only when the unit is turned off and the general power supply is cut off, the unit could be cleaned, otherwise it might cause the electric shock or injury.

◆ Do not use water to clean air conditioners, or it may cause a electric shock.

◆ Make sure the stand is firm enough when cleaning the units.

10.1 Daily Care

◆ Do not disassemble the filter except for cleaning, or it will cause the malfunction.

◆ When there is a lot of dust, the air filter should be cleaned frequently (generally once every two weeks).

10.2 Care and maintenance before the seasonal use

◆ Check the inlet and outlet of the indoor units blocked or not.

◆ Check the wires grounded well or not.

◆ Check the lines connected well or not.

◆ After power is turned on, check the indicator lights of the wired remote controller lights or not.

⚠ NOTE!

If there is any abnormal phenomenon, please operate the unit under the direction of after service.

10.3 Care and maintenance after the seasonal use

◆ When the weather is fine, set the unit in the fan mode and let it run for half a day.

◆ When the unit is not to be used for a long time, please switch off the power supply, and the indicator light of the wired remote control should be off.

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