

Installation and Operation Manual

Multi Variable Air Conditioners Ducted Type Indoor Unit

Models			
GMV-R22P/NaB-K	GMVL-R22P/NaB-K	GMV-R22P/HB-K	GMVL-R22P/HB-K
GMV-R28P/NaB-K	GMVL-R28P/NaB-K	GMV-R28P/HB-K	GMVL-R28P/HB-K
GMV-R36P/NaB-K	GMVL-R36P/NaB-K	GMV-R36P/HB-K	GMVL-R36P/HB-K
GMV-R45P/NaB-K	GMVL-R45P/NaB-K	GMV-R45P/HB-K	GMVL-R45P/HB-K
GMV-R56P/NaB-K	GMVL-R56P/NaB-K	GMV-R56P/HB-K	GMVL-R56P/HB-K
GMV-R71P/NaB-K	GMVL-R71P/NaB-K	GMV-R71P/HB-K	GMVL-R71P/HB-K
GMV-R90P/NaB-K	GMVL-R90P/NaB-K	GMV-R90P/HB-K	GMVL-R90P/HB-K
GMV-R112P/NaB-K	GMVL-R112P/NaB-K	GMV-R112P/HB-K	GMVL-R112P/HB-K
GMV-R140P/NaB-K	GMVL-R140P/NaB-K	GMV-R140P/HB-K	GMVL-R140P/HB-K
GMV-R22PS/NaB-K	GMVL-R22PS/NaB-K	GMV-R22PS/HB-K	GMVL-R22PS/HB-K
GMV-R28PS/NaB-K	GMVL-R28PS/NaB-K	GMV-R28PS/HB-K	GMVL-R28PS/HB-K
GMV-R36PS/NaB-K	GMVL-R36PS/NaB-K	GMV-R36PS/HB-K	GMVL-R36PS/HB-K
GMV-R45PS/NaB-K	GMVL-R45PS/NaB-K	GMV-R45PS/HB-K	GMVL-R45PS/HB-K
GMV-R56PS/NaB-K	GMVL-R56PS/NaB-K	GMV-R56PS/HB-K	GMVL-R56PS/HB-K
GMV-R71PS/NaB-K	GMVL-R71PS/NaB-K	GMV-R71PS/HB-K	GMVL-R71PS/HB-K
GMV-R90PS/NaB-K	GMVL-R90PS/NaB-K	GMV-R90PS/HB-K	GMVL-R90PS/HB-K
GMV-R112PS/NaB-K	GMVL-R112PS/NaB-K	GMV-R112PS/HB-K	GMVL-R112PS/HB-K
GMV-R140PS/NaB-K	GMVL-R140PS/NaB-K	GMV-R140PS/HB-K	GMVL-R140PS/HB-K
GMV-R22P/NaB-D	GMVL-R22P/NaB-D	GMV-R71P/NaB-D	GMVL-R71P/NaB-D
GMV-R28P/NaB-D	GMVL-R28P/NaB-D	GMV-R90P/NaB-D	GMVL-R90P/NaB-D
GMV-R36P/NaB-D	GMVL-R36P/NaB-D	GMV-R112P/NaB-D	GMVL-R112P/NaB-D
GMV-R56P/NaB-D	GMVL-R56P/NaB-D	GMV-R140P/NaB-D	GMVL-R140P/NaB-D

GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI

Please read this manual carefully before using this product and keep it properly for future reference.

USER NOTICES

- ◆ When the unit is 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 switch, 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, then to unify the running modes of the indoor unit and outdoor unit, the unit will get right. There is no conflict in the COOL mode and DRY mode, and the FAN mode will not conflict with any other modes.
 - ◆ The appliance shall not be installed in the laundry
- ◆ An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring

CONTENTS

1 Safety Precautions	1
2 The selection of installation place and notice of the air conditioner unit	2
3 Installation of the ducted type indoor unit	3
4 Name and Function of Each Part of Ducked Type Indoor Unit	17
5 Working Temperature Range	17
6 Wired Remote Controller Operation Procedure	18
7 Ambient Temp Sensor Mode Setting of Indoor Unit	23
8 Remote controller operation procedure	24
9 Trouble Shooting	27
10 Care and Maintenance	27

1 Safety Precautions

- A. Before using the appliance, read this manual thoroughly and operate it under its direction.
- B. "WARNING" and "ATTENTION" have the following meanings in these instructions:
- ⚠ WARNNING! : 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.

M WARNNING!

- ★ 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 firstly.
 - ★ 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 electrified the electric leakage should be tested.

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

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

- ★ The installation must accord with the national and local safe criterion.
- ★ 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 installation personnel according to the installation instruction instead of by themselves.
 - ★ Only connect the power after all the installation works are finished.

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 has corrosive gas and serious dust, saline fog, lampblack or huge humidity.

↑ 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 Gree Electric Appliances, Inc. Of Zhuhai.

- 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);
- 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 law, 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 earthing should reliably connected with the specific earthing 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 Earthing requirement

- ★ The air conditioner is class I appliance, so please do take the reliable measurement to earthing.
- ★ The yellow and green cord in the air conditioner unit is earthing cord which cannot be used for other

Multi Variable Air Conditioners Ducted Type Indoor Unit

purpose, and cut off, as well as fixed up with screw. Otherwise, it would lead to a electric shock.

- ★ The earthing resistance should fit the requirement of the national standard GB17790.
- ★ The reliable earthing terminal must be offered by the user. And please don't connect the earthing cord to the following place:
- ① Tap water pipe; ② Coal gas pipe; ③ Ejection pipe; ④ The place that is consider to be not reliable by the professional personnel.

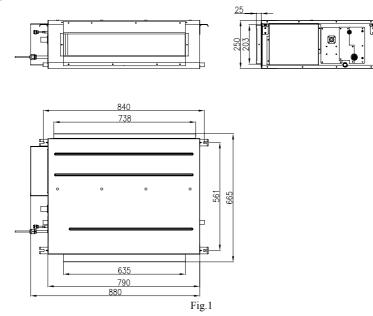
2.5 The accessories used for installation

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 units:GMV(L)-R22P/NaB-K, GMV(L)-R28P/NaB-K, GMV(L)-R28P/NaB-K, GMV(L)-R28PS/NaB-K, GMV(L)-R28PS/NaB-K, GMV(L)-R28PS/NaB-K, GMV(L)-R28PS/NaB-K, GMV(L)-R22PS/HB-K, GMV(L)-R28PS/HB-K, GMV(L)-R28PS/HB-K, GMV(L)-R28PS/HB-K, GMV(L)-R28PS/NaB-D, GMV(L)-R28PS/NaB-D, GMV(L)-R28PS/NaB-D, GMV(L)-R36PS/NaB-D.



The following figure is applicable to the indoor units:GMV(L)-R45P/NaB-K, GMV(L)-R56P/NaB-K, GMV(L)-R71P/NaB-K, GMV(L)-R90P/NaB-K, GMV(L)-R112P/NaB-K,GMV(L)-R140P/NaB-K, GMV(L)-R45PS/NaB-K, GMV(L)-R56PS/NaB-K, GMV(L)-R71PS/NaB-K, GMV(L)-R90PS/NaB-K, GMV(L)-R112PS/NaB-K, GMV(L)-R140PS/NaB-K, GMV(L)-R45P/HB-K, GMV(L)-R56P/HB-K, GMV(L)-R71P/HB-K, GMV(L)-R71P/HB-K, GMV(L)-R71P/HB-K, GMV(L)-R71PS/HB-K, GMV(L)-R71PS/HB-L, GMV(L)-R71P

$GMV(L)\text{-}R90P/NaB\text{-}D,\ GMV(L)\text{-}R112P/NaB\text{-}D,\ GMV(L)\text{-}R140P/NaB\text{-}D$

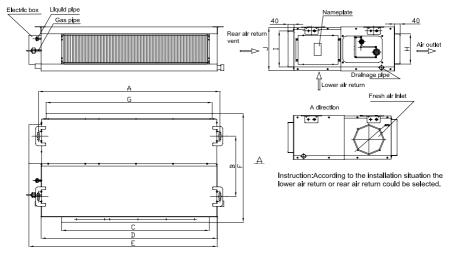


Fig.2

- 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.

Product model	A	В	С	D	Е	F	G	Н	I	J
GMV(L)-R45P/NaB-K										
GMV(L)-R45PS/NaB-K	932	430	738	892	980	721	738	125	203	266
GMV(L)-R45P/HB-K	932	430	/38	892	980	/21	/38	123	203	200
GMV(L)-R45PS/HB-K										
GMV(L)-R56P/NaB-K										
GMV(L)-R71P/NaB-K										
GMV(L)-R56PS/NaB-K										
GMV(L)-R71PS/NaB-K										
GMV(L)-R56P/HB-K	1114	420	918	1074	1159	736	1010	207	207	300
GMV(L)-R71P/HB-K										
GMV(L)-R56PS/HB-K										
GMV(L)-R71PS/HB-K										
GMV(L)-R56P/NaB-D										
GMV(L)-R90P/NaB-K										
GMV(L)-R112P/NaB-K										
GMV(L)-R90PS/NaB-K										
GMV(L)-R112PS/NaB-K										
GMV(L)-R90P/HB-K	1382	420	1155	1340	1425	736	1280	207	250	300
GMV(L)-R112P/HB-K										
GMV(L)-R90PS/HB-K										
GMV(L)-R112PS/HB-K										
GMV(L)-R90P/NaB-D										
GMV(L)-R140P/NaB-K										
GMV(L)-R140PS/NaB-K										
GMV(L)-R140P/HB-K	1382	420	1155	1340	1425	736	1280	207	250	300
GMV(L)-R140PS/HB-K										
GMV(L)-R140P/NaB-D										

3.2 Schematic diagram of installation spaces

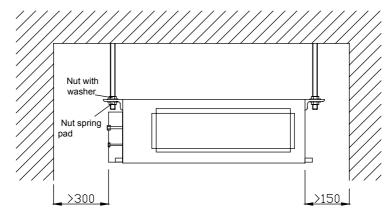


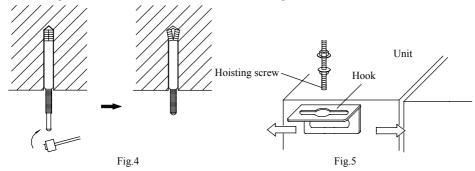
Fig.3

3.3 Schematic diagram of installation spaces

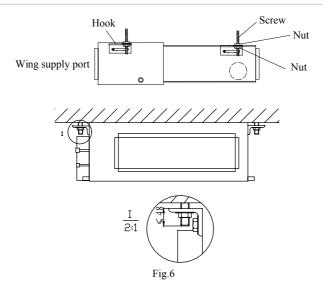
- A. Ensure that the latches at top are firm enough to stand the weight of unit.
- B. Convenience to drain by the drain hose.
- C. There is no obstacle around intake and outlet vent to keep good ventilation.
- D. Ensure the installation distance of the indoor unit as shown in fig.3 and also the necessary space for care and maintenance.
 - E. Keep it far from the heater, leakage of combustible gas and place with fume.
 - F. This unit is the cassette type (hided in the ceiling), as shown in fig.6.
- G. 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.)

3.4 Install the indoor unit

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



- B. Install the hook on the unit, as shown in fig.5.
- C. Install the indoor unit to the ceiling as shown in fig.6.

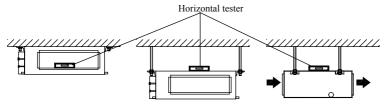


↑ Note!

- 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.

3.5 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.



3.6 Installation of the air supply pipe

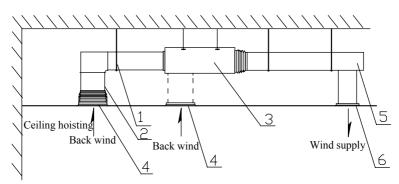


Fig.7 Sketch of install ducted type unit

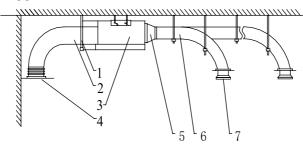
Multi Variable Air Conditioners Ducted Type Indoor Unit

No.	1	2	3	4	5	6
Nama	TT : 4:	Return	Ducted type	Return	Air supply	Air
Name	Hoisting	air pipe	indoor unit	air vent	bent	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 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.

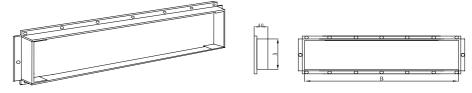


No.	1	2	3	4	5	6	7
Name	Screw	Return air pipe	Ducted type indoor unit	Air vent	Transitional air pipe	Air supply pipe	Air outlet pipe

3.7 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.

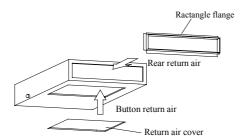
3.8 Type and dimension of the return air and the air supply vent



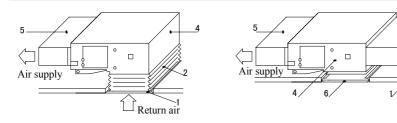
	Dimention of w	ind supply port	Dimention of back air port			
Product model	A	В	Α	В		
GMV(L)-R22,28,36P(S)/HB-K GMV(L)-R22,28,36P(S)/NaB-K GMV(L)-R22,28,36P(S)/NaB-D	125	635	203	738		
GMV(L)-R45P(S)/HB-K GMV(L)-R45P(S)/NaB-D	125	738	203	738		
GMV(L)-R56,71P(S)/HB-K GMV(L)-R56,71P(S)/NaB-K GMV(L)-R56,71P(S)/NaB-D	207	918	250	1010		
GMV(L)-R90,112,140P(S)/HB-K GMV(L)-R90,112,140P(S)/NaB-K GMV(L)-R90,112,140P(S)/NaB-D	207	1155	250	1280		

3.9 Installation of the return air pipe

- A. 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.
- B. When the button return air vent is needed to be adopted, change the position of the rectangle flange and the back air cover.



- C. 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.8a, and fig.8b.



Install the return air pipe (a)

Install the return air pipe (b)

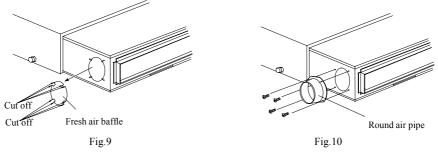
Return air

Fig.8 Installation of the back air pipe

No.	Name	No.	Name
1	Return air vent (with filter)	4	Indoor unit
2	Canvas air pipe	5	Air supply pipe
3	Return air pipe	6	Test grill

3.10 Installation the fresh air pipe

- A. 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.
 - B. Install the round flange so that the fresh air pipe can be connected as fig. 10.



- C. Sealing and heat preservation should be done for both the air pipe and round flange pipe.
- D 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).

3.11 Installation of Condensed Water Pipes

- ◆ 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)
- ◆ 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.

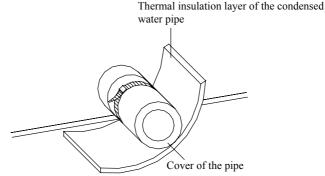


Fig.11: Thermal insulation of the condensed water pipe

◆ 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.

3.12 Designing of the Drainage Pipelines

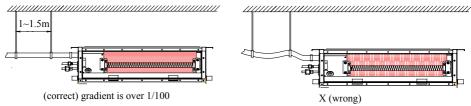
- ◆ The drainage pipes should be kept at a certain gradient (1/50—1/100) so as to avoid bulges of pipes where there might be water bends.
- ◆ When connecting the drainage pipes with the unit, care must be taken not to exert too much force on the pipelines of either side of the unit, and the pipes should be fixed as close to the unit as possible.
- ♦ 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.
- 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.

3.13 Installation of Drainage Pipeline

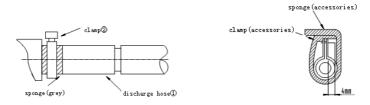
- A. Diameter of the drainage pipe should not be less than that of connecting pipe.(PE pipes: size: outer diameter 255mm; wall thickness ≥1.5mm)
- B. The drain pipe should be as short as possible and its gradient should be at least 1/100 in order to avoid forming air pockets.
 - C. If there is no enough gradient for discharge hose, the riser pipe for drainage should be installed.
 - D. In order to prevent the discharge hose from bending, mutual distance of hanger brackets should be at

Multi Variable Air Conditioners Ducted Type Indoor Unit

least 1.0-1.5m.

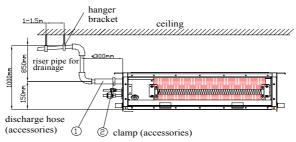


- E. Insert the discharge hose to the drain outlet and then screw the pipe clamp up.
- F. For heat insulation, wrap the clamp of the discharge hose with sponge.
- G. Execute heat insulation to the indoor discharge hose.



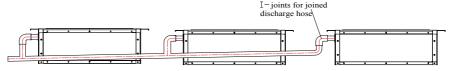
3.14 Cautions of the Riser Pipe for drainage

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.

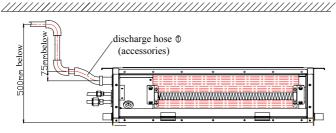


↑ Note:

- 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.



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



3.15 Test of the Drainage System

- A. Please test the drainage system after installation of electric appliances.
- B. 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.

3.16 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.

3.17 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.

	Functional DIP switch S7										
DIP switch	Description	Code Setting									
DIF SWITCH	Description	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.

Multi Variable Air Conditioners Ducted Type Indoor Unit

- ★ 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.

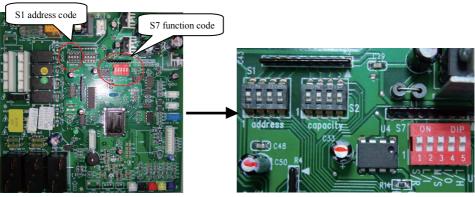
When there is only one indoor unit that is set to be the master indoor unit, in that case, no matter if the master indoor unit is firstly started, the conflict mode error will be warned by the slave indoor unit once the mode of slave indoor unit and the mode of master indoor unit conflict (except for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

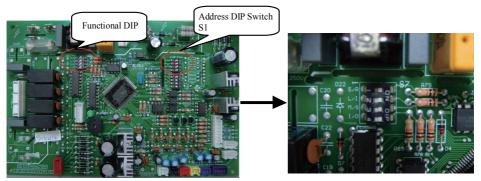
- ★ DIP switch 4(I/O)——Collection point setting of ambient temp.: the setting is mainly used when there is high differential between temperatures of air conditioning area and return air of the unit. The setting is valid only when there is receiver including collection points setting of temperatures of 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 GMV 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-bit functional DIP switch



Mainboard of 4-bit Functional DIP Switch

3.18 Installation Instruction 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:





Address

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. 1 is

low level bit. The "4" switch is the first digit while "1" is the last one.

Address Value			1			2	2			3	3			4	4				5			(5			1	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		Ģ)			1	0			1	1			1	2			1	3			1	4			1	5			1	6	
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:



ON DIP

Address 8, Code 0111

Address Address 11, Code1010

- ◆ Connection between the electric wires and the terminals on the terminal plate: (As shown in Fig.12)
- A. Connection of single-strand wires
- a. Use a wire stripper to strip off about 25mm of the insulation layer at the end of the single-strand wire;
- b. Remove the screws on the wiring board of the air conditioner unit;
- c. Use the pliers to bend the end of the wire into a ring shape corresponding to the size of the screw;
- d. Pass the screw through the wire ring and fix it onto the wiring board.
- B. Connection of multiple-strand wires
- a. Use the wire stripper to strip off about 10mm of the insulation layer of the stranded wires;
- b. Remove the screws on the wiring board of the air conditioner unit;
- c. Use the wire pressing pliers to press the ends of the multi-strand wires onto the terminals corresponding to the size of the screws;
- d. Pass the screws through the terminals of the multiple-strand wires and fixes them onto the wiring board.

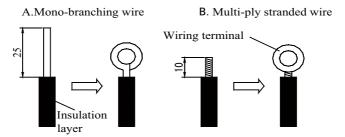


Fig.12



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;
 - ②. Do not allow the power cord to contact the pipelines or any moving parts like the compressor or fan;
- ® . 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

- A. Remove the cover of the electric box of the indoor unit;
- B. Pass the power supply cord through the rubber gasket;
- C. Connect the power cord to the L and N terminals as well as the grounding screw;
- D. Bind the cord and wires firmly together and fix them properly.
- ◆ Connection of Remote controller Signal Wire:
- A. Open the cover of the electric box of the indoor unit;
- B. Pass the signal line of the remote controller through the rubber ring;
- C. Insert the signal line of the remote controller into the four-positioned pin stands on the electric circuit board of the indoor unit;
 - D. Bind the signal lines of the remote controller firmly together and fix them.

Attention:

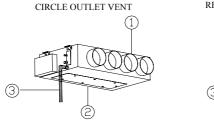
Special precaution must be taken when doing the following connections so as to prevent from the failure of the air conditioner unit due to EMI (electromagnetic interference).

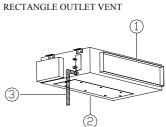
- ① . The signal lines and the distribution (communication) wires should be separated from the power supply cord and the connection lines between the indoor and the outdoor units;
- ② . In the case that the air conditioner unit has to be installed at the places subject to the EMI, it is advised to use shielded and double-strand wires for the signal lines and distribution (communication) wires.
 - Others

To models of GMV(L)-R22P/NaB-K,GMV(L)-R28P/NaB-K,GMV(L)-R36P/NaB-K, GMV(L)-R45P/NaB-K,GMV(L)-R56P/NaB-K,GMV(L)-R71P/NaB-K,GMV(L)-R90P/NaB-K,GMV(L)-R112P/NaB-K,

GMV(L)-R140P/NaB-K,GMV(L)-R22PS/NaB-K,GMV(L)-R28PS/NaB-K,GMV(L)-R36PS/NaB-K,GMV(L)-R36PS/NaB-K,GMV(L)-R45PS/NaB-K,GMV(L)-R56PS/NaB-K,GMV(L)-R71PS/NaB-K,GMV(L)-R90PS/NaB-K,GMV(L)-R112PS/NaB-K,GMV(L)-R140PS/NaB-K,GMV(L)-R22P/HB-K,GMV(L)-R28P/HB-K,GMV(L)-R36P/HB-K,GMV(L)-R36P/HB-K,GMV(L)-R36P/HB-K,GMV(L)-R36P/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-K,GMV(L)-R36PS/HB-L,GMV(L

4 Name and Function of Each Part of Ducked Type Indoor Unit





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

NOTE:

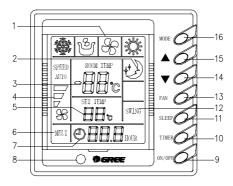
- 1. Connection pipe and Air pipe are not included in this air conditioner
- 2. Products are set for the rectangle outlet vent.

5 Working Temperature Range

Working Temperature Range

	Indoor s	ide 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.

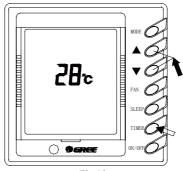


Fig.13

6.2 Timer setting

(Fig. 14, hereinafter will be displayed according to the function of the wired remote controller.)

- ★ At stopping, press the TIMER ON button, set ON TIME, at operating, press TIMER OFF button, set OFF TIMER.
- ★ When it is not timed (i.e. there is display in the timing display field), press TIMER ON, the LCD will display " \bigcirc " xx.x hour", " \bigcirc " and "HOUR" will flash in every 0.5 second, at this time, press " \blacktriangle " or " \blacktriangledown " button to set the time. After using " \blacktriangle " or " \blacktriangledown " button, adjust to the desired temperature, then press the TIMER button, at this time, " \bigcirc " 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" 0.0 HOUR", The sign of "O" and "HOUR" will twinkle, when repress the TIMER button, the LCD will not display the sign, which shows the TIMER ON has been canceled.

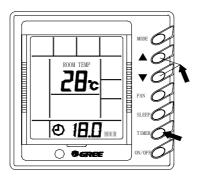
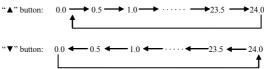


Fig.14

- ★ 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 " \blacktriangle " or " \blacktriangledown " button for each time, the set time will be increased or decreased 0.5hour, hold the press " \blacktriangle " or " \blacktriangledown " button, it will increase 0.5hour or decrease 0.5hour every other 0.5second. The setting range of " \blacktriangle " and " \blacktriangledown " is from 0 to 24, and they are circulatory.



NOTE! The Fig. shows the relevant display area.

6.3 SLEEP mode setting(Fig.15)

- ★ When PCB is running at COOL or DRY mode, after received the SLEEP mode setting and run for 1 hour, the preset temperature Tset will be increased 1°C,2 hours later it will be increased 1°C again, it has been increased 2°C totally within 2 hours, then the unit will run accord to the setting temperature.
- ★ When the PCB is running at HEAT mode, after received the SLEEP mode setting and run for 1 hour, the preset temperature Tset will be decreased 1°C,2 hours later the Tset will be decreased 1°C again, it has been decreased 2°C totally within 2 hours, then the unit will run accord to the setting temperature.
 - ★ There is no SLEEP function in the FAN mode.

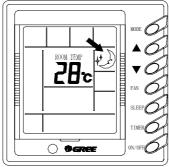
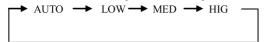


Fig.15

6.4 Fan Speed Control (Fig.16)

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



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

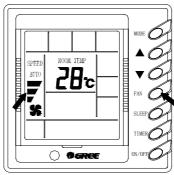


Fig.16

6.5 Temp. adjusting (Fig. 17)

- ★ 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

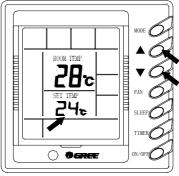
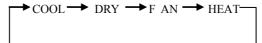


Fig.17

6.6 Setting of the running mode (Fig. 18)

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



★ 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.

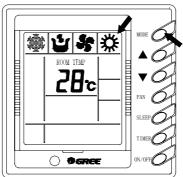


Fig.18

- ★ 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 (Fig.19)

★ 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.

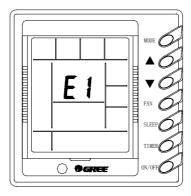


Fig.19

- ★ 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:

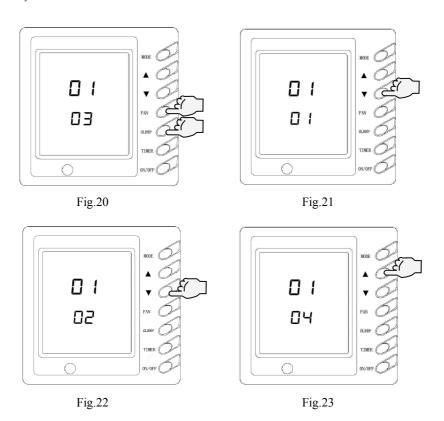
The meaning of error codes as snown below:								
Malfunction code	Malfunction							
E1	High pressure protection of the compressor							
E2	Indoor anti-freezing protection							
E3	Low pressure protection of the compressor							
E4	Discharge temp. protection of the compressor							
E5	Compressor 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:

- A. Indoor ambient temp is air inlet temp and the setting temp area displays 01, as shown in Fig.21.
- B. Indoor ambient temp is wired controller temp and the setting temp area displays 01, as shown in Fig.22.
- C. 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.
- D. 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.23.

Factory default is the third mode.



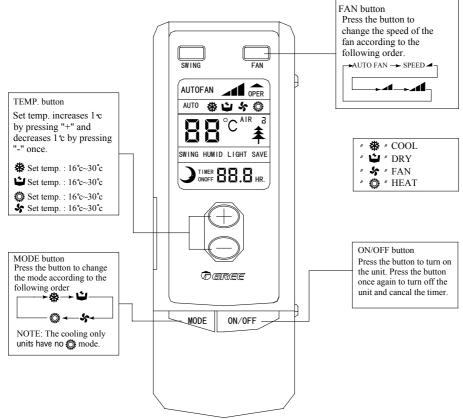
8 Remote controller operation procedure

8.1 Names and functions of every button of the remote controller

The remote controller is an optional part for the duct type indoor unit.

⚠ NOTE!

- Make sure that there is no obstruction between the remote controller and the signal receptor.
- The remote controller signal can be received at the distance of up to about 10m.
- Don't drop or throw the remote controller
- Don't let any liquid flow into the remote controller.
- Don't put the remote control directly under the sunlight or any place where is very hot.



↑ NOTE!

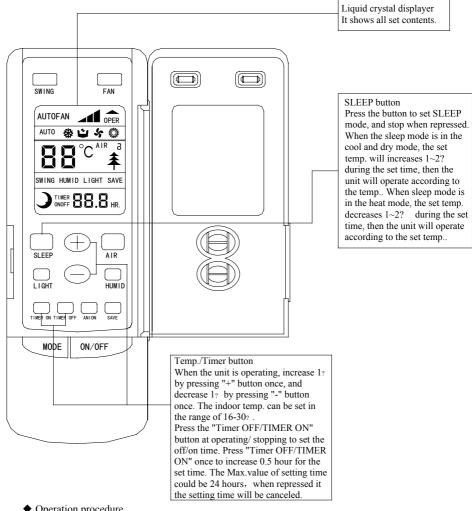
After every indoor unit receives the turn-off signal, the fan and electric inflate valve will continue to work for another 20-70 seconds to make use of the remaining cool or remaining heat for the next operation, which certainly is a normal phenomenon.

8.2 Names and functions of every button of the remote control (with the cover removed)

↑ NOTE!

This type of remote control is a kind of universal remote control that is suitable for several types

(function) of air conditioner units, however, the functions and buttons that are not suitable for this air conditioner will not be introduced herein.



◆ Operation procedure

Normal procedure

- 1. Press ON/OFF button after energization, then the unit is operating.
- 2. Press MODE button to choose the need operation mode.
- 3. Press FAN button to set the fan speed.
- 4. Press +/- button to set the need temp.
- ◆ Selectable procedure
- 5. Press SLEEP mode to set the sleep state.
- 6. Press TIMER OFF button to set the set time.

Note: When the operating mode selected by the indoor unit clashes with the one selected by the outdoor unit, the remote controller will display the operating clash after 5 seconds and the power light will flicker, then

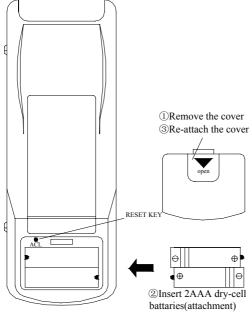
Multi Variable Air Conditioners Ducted Type Indoor Unit

the indoor unit turns off. At this time, the units will become normal after the operating mode of the indoor unit is changed to cooperate with the outdoor unit. Cool mode can cooperate with dry mode, and fan mode can cooperate with any mode.

◆ How to insert batteries

Two batteries (Two AAA dry-cell batteries) are used by the remote control

- 1. Remote the cover from the back of the remote control downward, take out the worn batteries and insert two new ones (Make sure the two poles are correct)
 - 2. Re-attach the cover.



1.All the prints and code no. will be showed on the displayer after the insert of batteries. The remote control can be operated after 10sec. 2. The lifetime of the batteries is about one year. 3.Don't confuse the new and worn or different types of batteries. 4.Remove batteries when the remote control is not in use for a longtime to avoid mal-function caused by liquid leakage. 5. The remote control should be placed about 1m or more from the TV set or any other electric appliances. 6. The remote control should be used in the receivable range (the reception range is 10m) 7. When the remote control can not be controlled in the situation of inserted batteries, please remove the back cover and press "ACL" button to make it normal.

9 Trouble Shooting

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

Phenomenon	Cause
The unit can't start	 The power supply is not connected well. The electrical leakage cause the jump The voltage is too low.
Although the unit can run, after a while it will stop.	① . The inlet vent and outlet vent are blocked
The cooling effect is not good.	 The air filter is dirty or blocked There are heat sources in the air conditioning room or too many people in this room. The door or curtain is opened. There are obstructions in the air inlet or outlet grille. The set temp. is too high that will affect the cooling effect.
The heating effect is not good.	 The air filter is too dirty or blocked. The door or curtain isn't closed well. 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 enough or not, if not enough 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 the professional to maintain it.

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 earthed well or not;
- ★ Check the lines connected well or not;
- ★ After powered 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 extinguished.

Gree Electric Appliances Inc. of Zhuhai

Jin Ji West Road, Qianshan, Zhuhai, Guangdong 519070 P.R. China http://www.gree.com