Air conditioner

Owner´s Manual

Ducted Type Air Conditioner

Thank you for choosing our product. Please read this Owner´s Manual carefully before operation and retain it for future reference. If you have lost the Owner´s Manual, please contact the local agent or visit www.nipon-coolair.com ,or send email to geral@nipon-coolair.com for the electronic version.

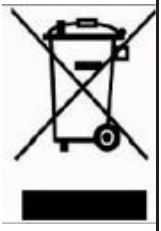
Models:

MD09 GA
MD12 GA
MD18 GA
MD24 GA

Contents

Advertências Gerais

- The total capacity of the indoor units which runs at the same time can not exceed 150% of that of the outdoor units; otherwise, the cooling (heating) effect of each indoor unit would be poor.
- Switch the main power on 8 hours before start the unit, helpful for a successful startup.
- It is a normal phenomenon that the indoor unit fan will still run for 20~70 seconds after the indoor unit receives the “stop” signal so as to make full use of after-heat for the next operation.
- When the running modes of the indoor and outdoor units conflict, it will be indicated on the display of the wired controller in five seconds and then the indoor unit will stop. In this case, they can back to the normal condition by harmonizing their running modes: the cooling mode is compatible with the dehumidifying mode and the fan mode can go with any other mode. If the supply power fails when the unit is running, then the indoor unit will send the “start” signal to the outdoor unit three minutes later after power recovery
- During installation, the communication cable and the power cord must not be twisted together but instead separated with an interval of at least 2cm; otherwise the unit is likely to run abnormally.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- This appliance shall be installed in accordance with national wiring regulations.

	Correct Disposal of this product
	This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prov ent possible harm to the enviroment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for enviromental safe recycling.

Please notice that the uni tis filled with flammble gas R32. Inappropriate treatment of the unit envolves the risk of severe damanges of people and material. Details to this refrigerant are found in chapter “refrigerant”.
R32:675

Before use the appliance, read the owner`s manual first.

Before install the appliance, read the installation manual firts.

Before repair the appliance, read the service manual first.

The Refrigerant

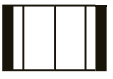
- To realize the function of the air conditioner unit, a special refrigerant circulates in the system. The used refrigerant is the fluoride R32, which is specially cleaned. The refrigerant is flammable and inodorous. Furthermore, it can lead to explosion under certain conditions. But the flammability of the reftigerant is very low. It can be ignited only bu fire.
- Compared to common refrigerants, R32 is a nonpolluting refrigerant with no harm to the ozonosphere. The influence upon the greenhouse effect i salso lower. R32 has got very good thermodynamic features which lead to a really high energy efficiency. The units therefore need a less filing.

WARNING:

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacture. Should repairs be necessary, contact your nearest authorized Service Centre. Any repairs carried out by unqualified personnel may be dangerous. The appliance shall be stored in room without continuously operating ignition sources. (for exemple: open flames, an operating gas appliance or na operating electric heater.) Do not pierce or burn.

Appliance shall be instaled, operated and stored in a room with a floor área larger than X m^2. (Please refer to table “a” in section of “Safety operation of flammable refrigerant “for Space X.)

Appliance filled with flammable gas R32. For repairs, strictly follow manufacture´s instructions only. Be aware that refrigerants may not contain na odour. Read specialist´s manual.



1 Safety Precautions

Please read this manual carefully before use and operate correctly as instructed in this manual.

Please especially take notice of the following two symbols:

⚠ **Warning!** It indicates improper operation which will lead to human casualty or sever injury.

⚠ **Caution!** It indicates improper operation which will lead to injury or property damage.

⚠ Warning!

◆ The installation should be committed to the apppoined service center; otherwise it all cause water leakage, electric shock or fire etc.

◆ Please install the unit where is strong enough to withstand the weight of the unit; otherwise, the unit would fall down and cause injury or death.

◆ The drain pipe should be installed as instructed in the manual to guarantee the proper drainage; meanwhile it shouls be insulated to prevent condensing; otherwise the improper installation would cause water leakage and then wet the household wares in the room.

◆ Do not use or place any inflammable or explosive substance near the unit.

◆ Under the occurrence of an error (like burning smell etc.), please cut off the main power supply of the unit.

◆ Keep good ventilation in the room to avoid oxygen deficit.

◆ Never insert your finger or any other object into the air outlet/inlet grille.

◆ Please take notice of the supporting frame of the unit to see if it is damaged over the long time period of use.

◆ Never refit the unit and contact the sales agent or the professional installation personnel for the repair or relocation of the unit.

◆ Na all-pole disconnection switch having a contact separation of at least 3 mm in all poles should be connected in fixed wiring.

⚠ Caution!

◆ Before installation, please check if the power suplly corresponds with the requirement specified on the nameplate and also check its security.

◆ Before use, please check if the piping and wiring are correct to avoid water leakage, refrigerant leakage, electric shock, fire etc.

◆ The main power supply must be earthed to avoid the hazard of electric shock and never connect this earth wire to the gas pipe, running water pipe, lightening rod or phone cable's earth lead.

◆ Turn off the unit after it runs at least five minutes; otherwise its service life will be shortened.

◆ Do not allow children operate this unit.

◆ Do not operate this unit with wet hands.

◆ Cut off the main power supply prior to the cleaning of the unit or the replacement of the air filter.

◆ When the unit is not to be used for a long time, please cut off the main power supply of the unit.

◆ Do not expose the unit to the moist or corrosive circumstances.

◆ After the electric installation, please take an electric leakage test.

2 Wired Remote Controller (NPGA/19)

2.1 Symbols on LCD

Outside View of the Wired Remote Controller

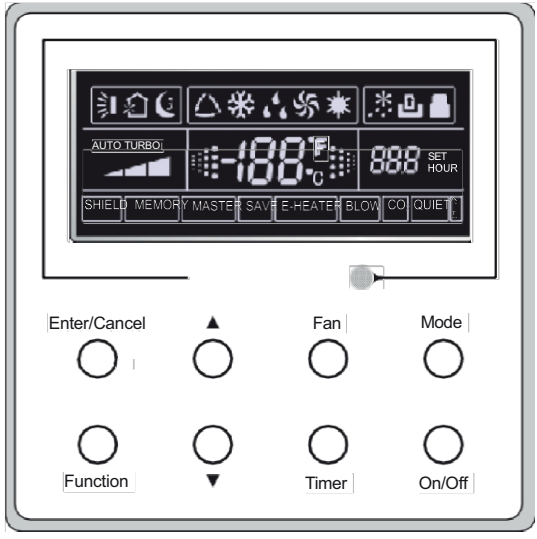


Fig.1 Outside View of the Wired Remote Controller

LCD of the Wired Remote Controller

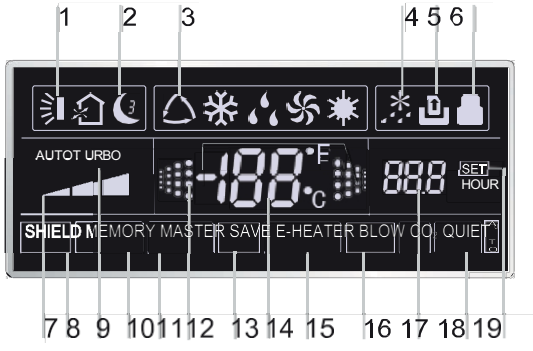


Fig.2 LCD of the Wierd Remote Controller

Table 1

No.	Symbols	Description
1		Swing function.
2		Sleep function (Only sleep 1).
3		Running modes of the indoor unit (Cooling, Dry, Fan and Heating).
4		Defrosting function for the outdoor unit.
5		Gate-control function (this function is yet unavailable for this unit)
6		Lock function..
7		High, middle, low or auto fan speed of the indoor unit.
8	SHIELD	Shield functions (buttons, temperature, On/Off or Mode is shielded by the remote monitor.
9	TURBO	Turbo function.
10	MEMORY	Memory function (The indoor unit resumes the original setting state after power failure and then power recovery).
11	MASTER	Master wired remote controller (this function is yet unavailable for this unit).
12		It blinks under on state of the unit without operation of any button.
13	SAVE	Energy-saving function (this function is yet unavailable for this unit).
14	-188	Ambient/preset temperature value.
15	E-HEATER	Electric auxiliary heating function.
16	BLOW	Blow function.
17	88.8	Timing value
18	QUIET	Quiet function (two types: quiet and auto quiet) (this function is yet unavailable for this unit).
19	SET	It will be displayed under the debugging mode.

2.2 Buttons

Buttons on the Wired Remote Controller

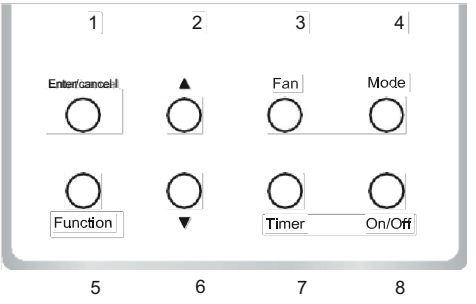


Fig. 3 Buttons on the Wired Remote Controller

Function of the Buttons

Table 2

No.	Name	Function
1	Enter/Cancel	Function selection and cancellation.
2	▲	①Running temperature setting of the indoor unit, range:16 ～ 30℃. ②Timer setting, range:0.5-24 hr.
6	▼	
3	Fan	Setting of the high/middle/low/auto fan speed.
4	Mode	Setting of the Cooling/Heating/Fan/Dry/Auto mode of the indoor unit
5	Function	Switchover among the functions of Turbo/Save/E-heater/Blow etc.
7	Timer	Timer setting
8	On/Off	Turn on/off the indoor unit
4+2	▲+Mode	Press them for 5s under off state of the unit to Enter/Cancel the Memory function(If memory is set, indoor unit after power failure and then power recovery willresume the original setting state. If not, the indoor unit is defaulted to be off after power recovery. Memory off is default before delivery.).
3+6	Fan+▼	By pressing them at the same time under off state of the unit, ❄ will be displayed on the wired remote controller for the cooling only unit, while ❄ will be displayed on the wired remote controller for the cooling and heating unit.
2+6	▲+▼	Upon startup of the unit without malfunction or under off state of the unit,press them at the same time for 5s to enter the lock state, in which case, any other buttons won't respond the press. Repress them for 5s to quit this state.
4+6	Mode+▼	Under OFF state, the Celsius and Fahrenheit scales can be switched by pressing "Mode" and "▼" for five seconds.
5+7	Function+Timer	Under OFF state, it is available to go to the commissioning status by pressing "Function" and "Timer" for five seconds, and let "00" displayed on the temperature display area by pressing "Mode", then adjust the options which is shown on the timer area by pressing "▲" and "▼". There are totally four options, as follows: ①Indoor ambient temperature is sensed by the return air temperature sensor (01 displayed on the timer area). ②Indoor ambient temperature is sensed by the wired controller (02 displayed on the timer area). ③The return air temperature sensor is selected under the cooling, dry, or fan mode; while the wired controller temperature sensor is selected under the heating or auto mode. (03 is displayed on the timer area). ④The wired controller temperature sensor is selected under the cooling, dry, or fan mode; while the return air temperature sensor is selected under the heating mode. (04 is displayed on the timer display area).
5+7	Function+Timer	Under OFF state, it is available to go to the commissioning status by pressing "Function" and "Timer" for five seconds. Press "Mode" button to until "01" icon is shown at the temperature display area. The setting status will be shown at timer area. Press "▲" and "▼" button to adjust and two options are available: ① Three low levels (01) ; ② Three high levels (02).

2.3 Operation Instrutuctions

On/Off

Press On/Off to turn on the unit and turn it off by another press.

Note: The state shown in Fig.4 indicates the “Off” state of the unit after power on. The state shown in Fig.5 indicates the “On” state of the unit after power on.

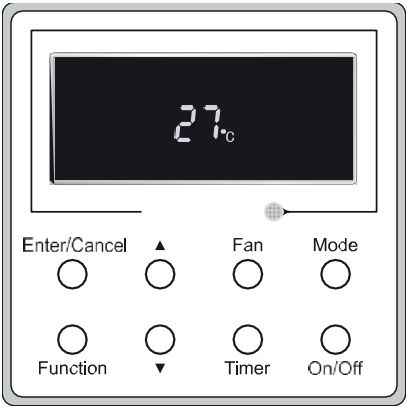


Fig. 4 “Off” State

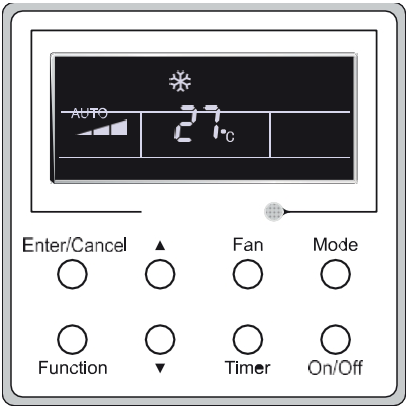


Fig. 5 “On” State

Mode Setting

Under the “On” state of the unit, press Mode to switch the operation modes as the following sequence:Auto-Cooling-Dry-Fan-Heating.

Temperature Setting

Press ▲or ▼ to increase/decrease the preset temperature. If press either of them continuously, the temperature will be increased or decreased by 1℃ every 0.5s, as shown in Fig.6.

In the Cooling, Dry, Fan or Heating mode, the temperature setting range is 16℃～ 30℃.
In the Auto mode, the setting temperature is unadjustable.

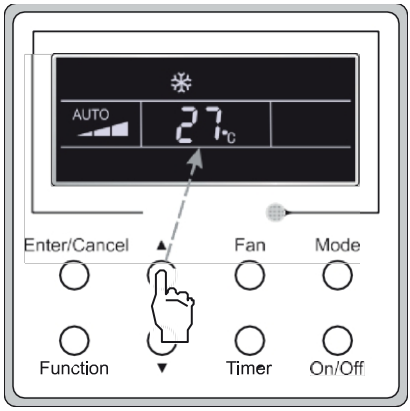


Fig.6

Fan Setting

Under the “On”/”Off” state of the unit, press Fan and then fan speed of the indoor unit will change circularly as shown in Fig.7.

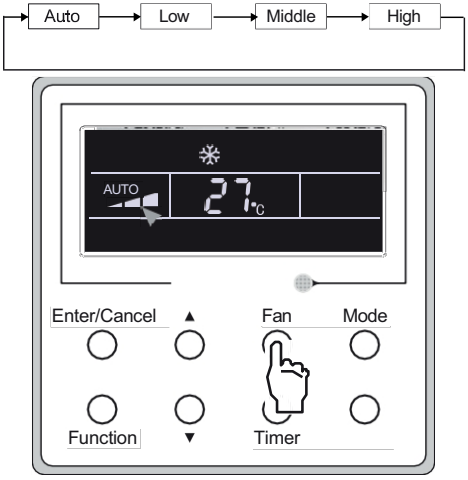


Fig.7

Timer Setting

Under the “On”/”Off” state of the unit, press Timer to set timer off/on.

Timer on setting: press Timer, and then LCD will display “xxx hour”, with “hour” bliking. In this case, press ▲or ▼ to adjust the timing value. Then press Enter/Cancel to confirm the setting.

Timer off setting: press Timer, if LCD won´t display xxx hour, and then it means the timer setting is canceled.

Timer off setting under the “On” state of the unit is shown as Fig.8.

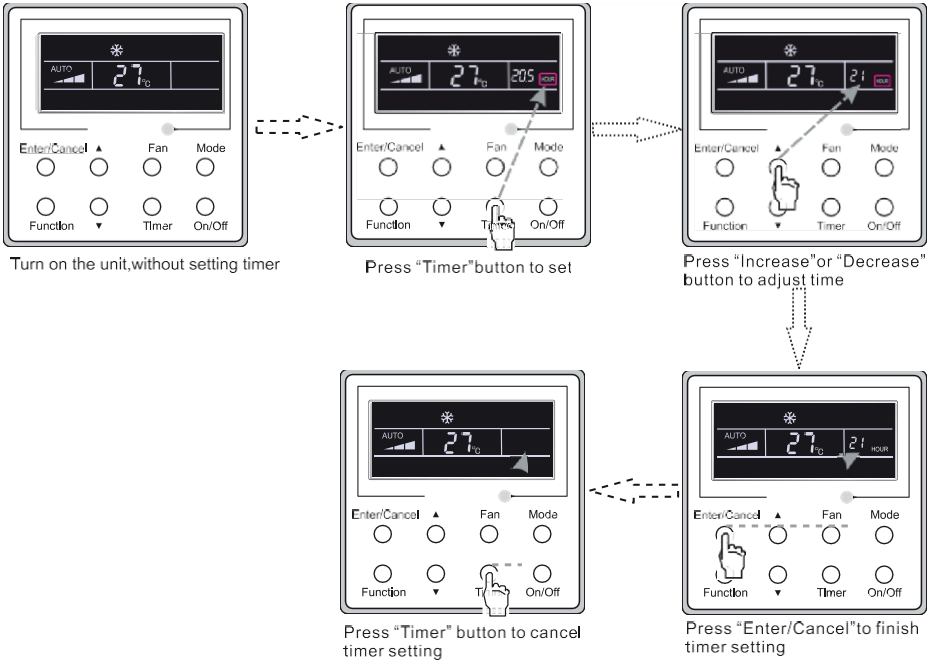


Fig. 8 Timer off setting under the “On “ State of the Unit

Timer range: 0.5-24hr. Every press of ▲or ▼ will make the set time increased or decreased by 0.5hr. If either of them is pressed continuously, the set time will increase/ decrease by 0.5hr every 0.5s.

Sleep Setting

Sleep on: Press Function under on state of the unit til the unit enters the Sleep setting interface. Press Enter/Cancel to confirm the setting.

Sleep off: When the Sleep function is activated, press Function to enter the setting interface. After that, press Enter/Cancel to can this funciton.

In the Cooling or Dry mode, the temperature will increase by 1℃ after the unit runs under Sleep 1 for 1hr and 1℃ after another 1hr.After that, the unit will run at this temperature.

In the Heating mode, the temperature will decrease by 1ºC after the unit runs under Sleep 1 for 1hrs and 1ºC after another 1hr. After that, the unit will runa t this temperature.

Sleep setting is shown as Fig.10.

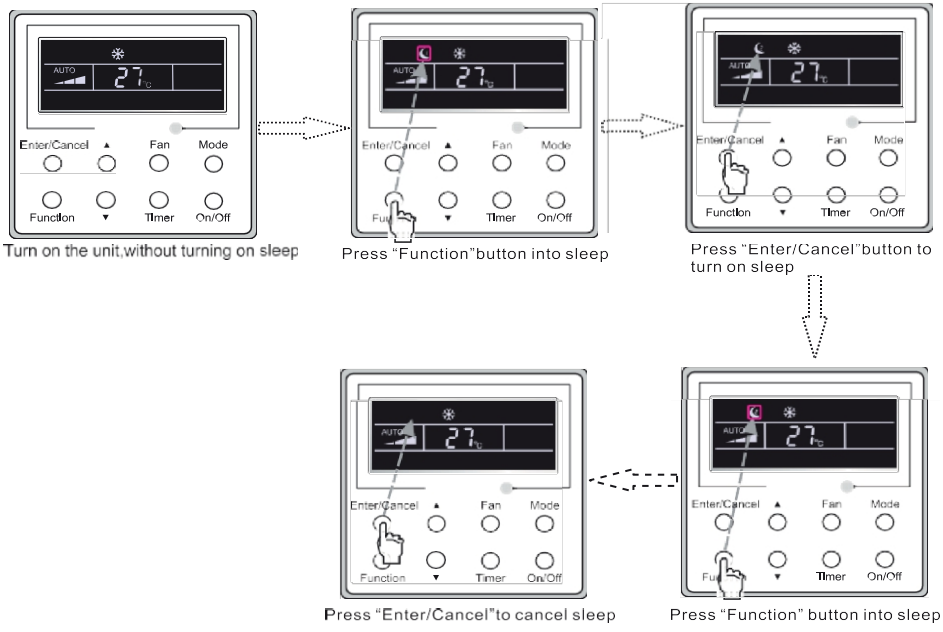


Fig. 10 Sleep Setting

Turbo Settting

Turbo function: The unit at the high fan speed can realize quick cooling or heating so that the room temperature can quickly approach the setting value.

In the Cooling or Heating mode, press Function til the unit enters the Turbo setting interface and then press Enter/Cancel to confirm the setting.

When the Turbo function is activated, press Function to enter the Turbo setting interface and then press Enter/Cancel ti cancel this function.

Turbo function setting is as shown in Fig.11.

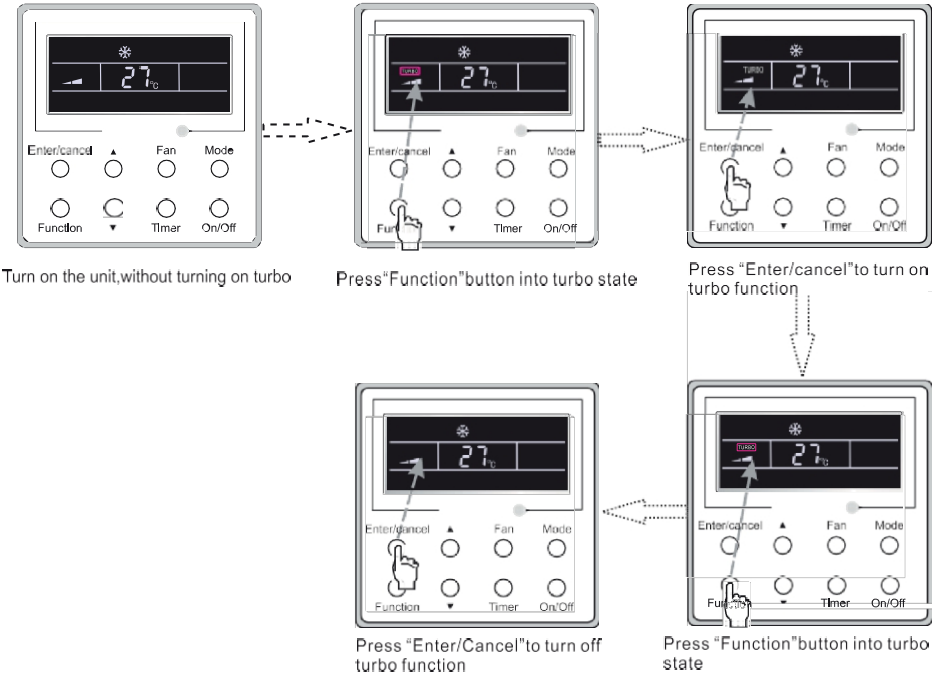


Fig.11Turbo Setting

E-HEATER Setting

E-heater (auxiliary electric heating function): In the Heating mode, E-heater is allowedto be turned on for improvament of efficiency.

Once the wired remote controller or the remote controller enters the Heating mode, this function will be turned on automatically.

Press Function in the Heating mode to enter the E-heater setting interface and then press Enter/Cancel to cancel this function.

Press Function to enter the E-heater setting interface, if the E-heater function is not activated, and then press Enter/Cancel to turn it on

The setting of this function is shown as Fig.12 below

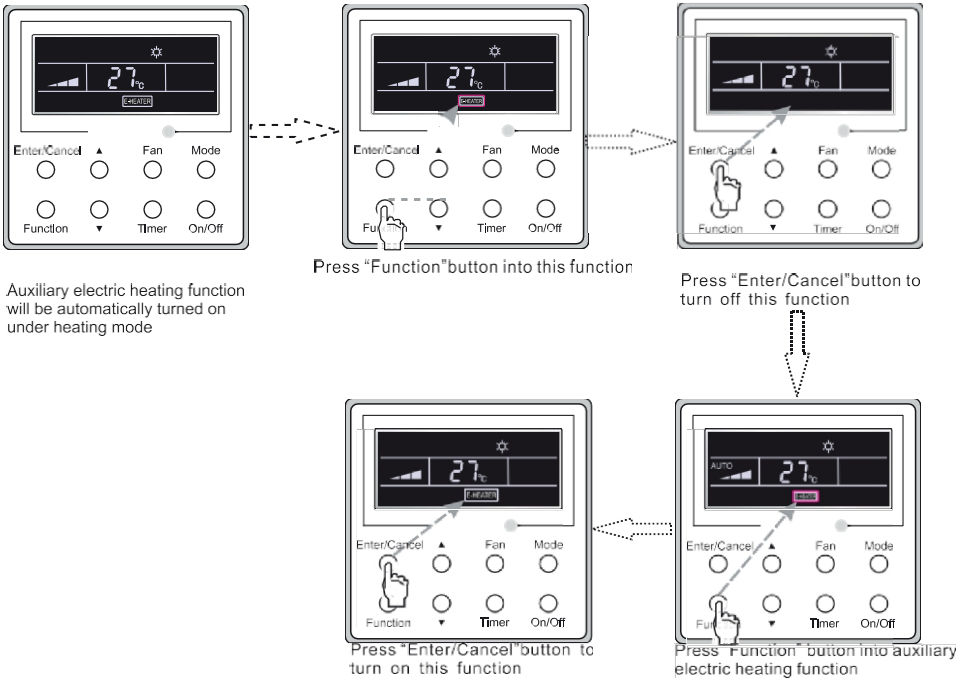


Fig.12 Função E-HEATER

1.1 Blow Setting

Blow function: After the unit is turned off, the water in evaporator of indoor unit will be automatically evaporated to avoid mildew.

In the Cooling or Dry mode, press Function till the unit enters the Blow setting interface and then press Enter/Cancel to active this function.

When the Blow function is activated, press Function to the Blow setting interface and then press Enter/Cancel to cancel this function.

Blow function setting is as shown in Fig.13

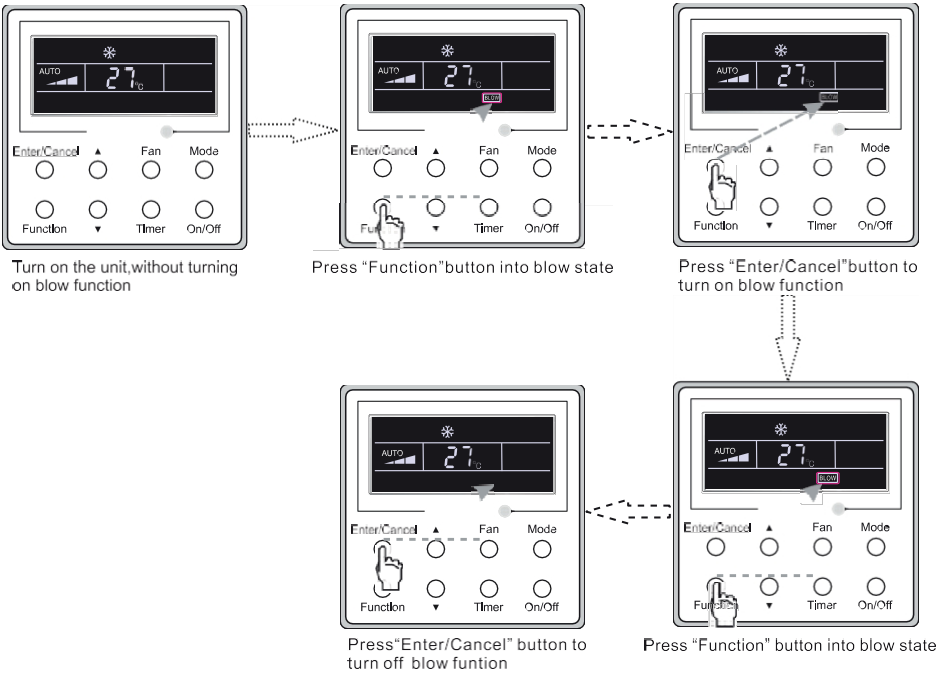


Fig.13 Blow Setting

Notas:

①. When the Blow function is activated, if turning off the unit by pressing On/Off or by the remote controller, the indoor fan will run at the low fan speed for 2 min, with "BLOW" displayed on the LCD. While, if the Blow function is deactivated, the indoor fan will be turned off directly.

②. Blow function is unavailable in the Fan or Heating mode.

1.2 Other Functions

(1). Lock

Upon startup of the unit without malfunction or under the “Off” state of the unit, press ▲ and ▼ at the same time for 5s till the wired remote controller enters the Lock function. In this case, LCD displays 🔒. After that, repress these two buttons at the same time for 5s to quit this function.

Under the Lock state, any other button press won’t get any response.

(2). Memory

Memory switchover: Under the “Off” state of the unit, press Mode and ▲ at the same time for 5s to switch memory states between memory on and memory off. When this function is activated, Memory will be displayed. If this function is not set, the unit will be under the “Off” state after power failure and then power recovery.
Memory recovery: If this function has been set for the wired remote controller, the wired remote controller after power failure will resume its original running state upon power recovery. Memory contents: On/Off, Mode, set temperature, set fan speed and Lock function.

(3). Selection of the Temperature Sensor

Under OFF state of the unit, press both “Function” and “Timer” for five seconds to go the commissioning status. Under this status, adjust the display in the temperature display area to “00” through the button “Mode”, and then adjust the option of the temperature sensor in the timer display area through the button ▲ or ▼.

① Indoor ambient temperature is sensed at the return air inlet(01 in the timer display area).

② Indoor ambient temperature is the sensed at the wired controller(02 in the timer display area).

③ Select the temperature sensor at the return air inlet under the cooling, dry and fan modes, while select the temperature sensor at the wired controller under the heating and auto modes.(03 in the timer display area).

④ Select the temperature sensor at the wired controller under the cooling, dry and fan modes, and select the temperature sensor at the return air inlet under the heating mode and auto modes (04 displayed in the timer display area).

The factory defaulted setting is ③.

After the setting, press “Enter/Cancel” to make a confirmation and quit this setting status.

Pressing the button “On/Off” also can quit this commissioning status but the set data won’t be memorized.

Under the commissioning status, if there is no any operation in 20 seconds after the last button press, it will back to the previous state without memorizing the current data.

(4). Selection of the Fan Speed

Under OFF state of the unit, press both the buttons “Function” and “Timer” for five seconds to go to the commissioning status, and then adjust the display in the temperature display area to 01 through the button “Mode” and adjust the setting of the fan speed, which comes to two options.

01: Three low fan speeds; 02: Three high fan speeds

After the setting, press “Enter/Cancel” to make a confirmation and quit this setting status.

Pressing the button “On/Off” also can quit this commissioning status but the set data won’t be memorized.

Under the commissioning status, if there is no any operation in 20 seconds after the last button press, it will back to the previous state without memorizing the current data.

2.4 Installation and Dismantlement

Connection of the Signal Line of the Wired Remote Controller

- Open the cover of the electric control box of the indoor unit.
- Let the single line of the wired remote controller through the rubber ring.
- Connect the signal line of the wired remote controller to the 4-pin socket of the indoor unit PCB.
- Tighten the signal wire with ties.
- The communication distance between the main board and the wired remote controller can be up to 20 meters (the standard distance is 8 meters)

Installation of the Wired Remote Controller

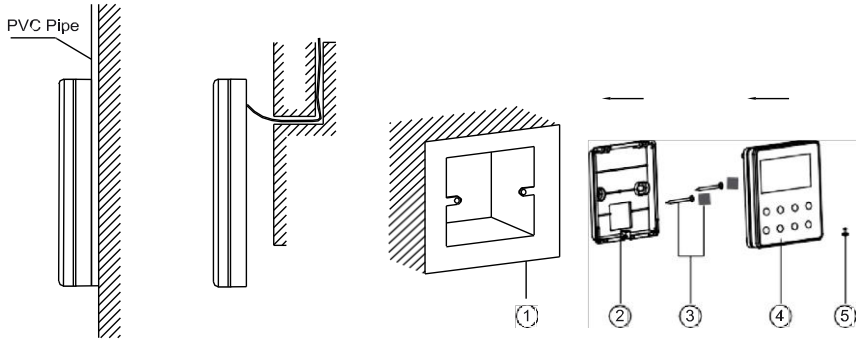


Fig.14 Accessories for the Installation of the Wired Remote Controller

Table 3

No.	1	2	3	4	5
Nome	Socket box embedded in the wall	Soleplate of the Wired Remote Controller	Sponge 20×20×2 Screw M4X25	Front Panel of the Wired Remote Controller	Screw ST2.9X6

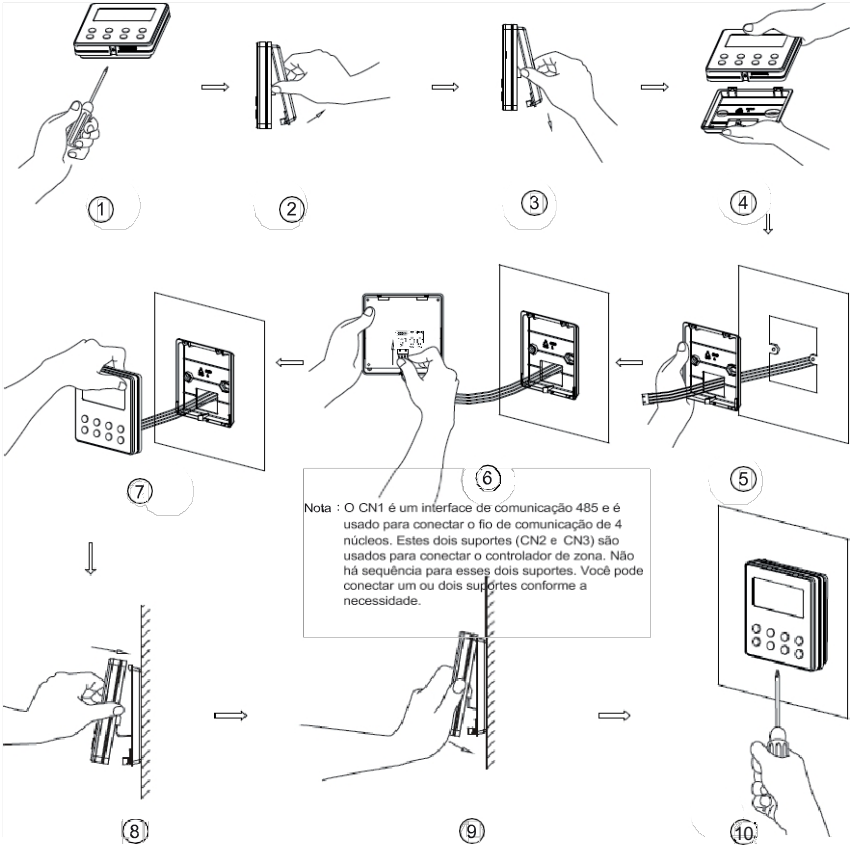


Fig.15

A Fig.15 shows the installation steps of the wired remote controller, but there are some issues that need your attention.

(1). Prior to the installation, please firstly cut off the power supply of the wire buried in the installation hole, that is, no operation is allowed with electricity during the whole installation.

(2). Pull out the four-core twisted pair line from the installation holes and then let it go through the rectangular hole behind the soleplate of the wired remote controller.

(3). Stick the soleplate of wired controller on the wall and then use srew M4x25 to fix soleplate and installation hole on wall together, attach the sponge 20x20x2 at the srew hole and then press it with fingers to make sure it´s attached firmly.

(4). Insert the four-core twisted pair line into the slot of the wired remote controller and then buckle the front panel and the soleplate of the wired remote controller together.

(5). Finally, fix the front panel and the soleplate of the wired remote controller tightly by srews ST2.9X6.

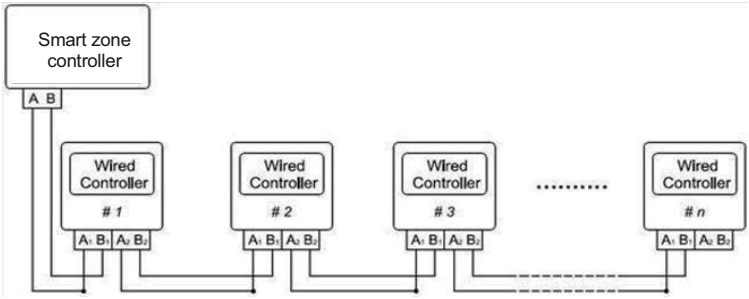


Fig.16 Shows the shematic diagram of control system connection.

O NPGA/19 can connect the smart zone controller (integrated control system). “n” indicates the number of communication node address (programmable wired controller NPGA/19). The complete system is composed of the smart zone controller, wired controller XK19 and communication cable. The wired controller NPGA/19 can support 16 communication node addresses at the most (n≤16).

Terminal A and terminal B of the smart zone controller are respectively connected to the corresponding communication needle stand terminal of the #1wired controller by the communication cable; the other needle stand of #1 wired controller is connected to the #2 wired controller through the telecommunication cable and so forth until connect to the #n wired controller. Except the last wired controller in the control system (only use CN2 or CN3, and the other one will not be connected), there’s no the sequence and the importance for the wired controller. The series number in the figure is only for the sake of clarity.

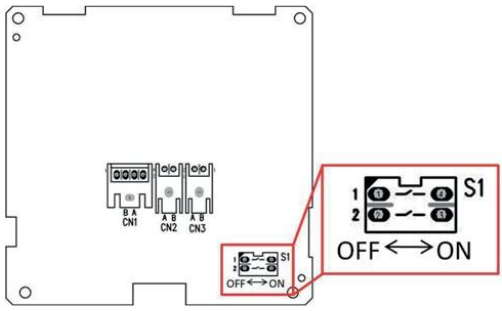


Fig.17 Shows schematic diagram of DIP switch

There is a 2-bit DIP switch on the main board of wired controller XK19. As for the last #n wired controller in the control system, the 1-bit and the 2-bit of the DIP switch should be manually pulled to position “on” and position “off” respectively. The DIP switches of other wired controllers should be kept at the initial ex-factory status (1-bit and 2-bit are set at position “off”).

⚠ **CAUTION!**

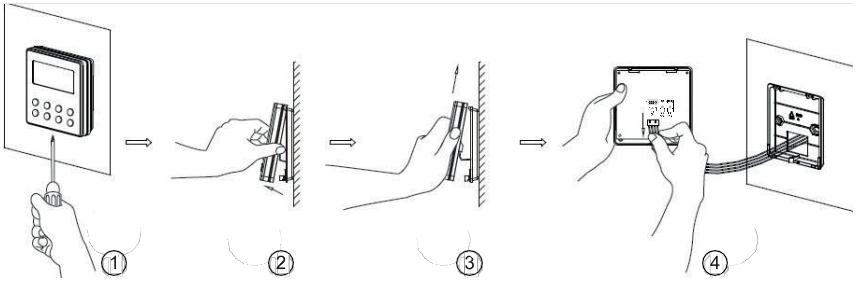
Please pay special attention to the followings during the connection to avoid the malfunction of the air conditioning unit due to electromagnetic interference.

①. Separate the signal and communication lines of the wired remote controller from the power

cord and connection lines between the indoor and outdoor unit, with a minimum interval of 20cm, otherwise the communication of the unit will probably work abnormally.

② If the air conditioning unit is installed where is vulnerable to electromagnetic interference, then the signal and communication lines of the wired remote controller must be the shielding twisted pair lines.

Dismantlement of the Wired Remote Controller



2.5 Errors Display

If there is an error occurring during the operation of the system, the error code will be displayed on the LCD, as show in Fig.18. If multi errors occur at the same time, their codes will be displayed circularly.

Note: In event of any error, please turn off the unit and contact the professionally skilled personnel.

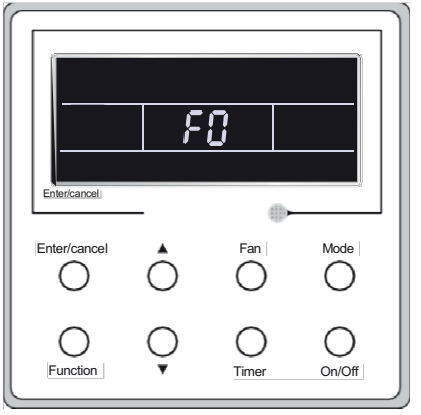


Fig. 18

Table 4 Meaning of Each Error

Error	Error Code	Error	Error Code
Return air temperature sensor open/short circuited	F1	Drive board communication error	P6
Evaporator temperature sensor open/short circuited	F2	Compressor overheating protection	H3
Indoor unit liquid valve temperature sensor open/short circuited	b5	Indoor and outdoor units unmatched	LP
Indoor gas valve temperature sensor open/ short circuited	b7	Communication line misconnected or expansion valve error	dn
IPM temperature sensor open/short circuited	P7	Running mode conflict	E7
Outdoor ambient temperature sensor open/ short circuited	F3	Pump-down	Fo
Outdoor unit condenser mid-tube temperature sensor open/short circuited	F4	Defrost or oil return	
Indoor and outdoor communication error	E6	Compressor startup failure	Lc
DC bus under-voltage protection	PL	High discharge temperature protection	E4
DC bus over-voltage protection	PH	Overload protection	E8
Compressor phase current sensing circuit error	U1	Whole unit over-current protection	E5
Compressor demagnetization protection	HE	Over phase current protection	P5
PFC protection	Hc	Compressor desynchronizing	H7
Proteção temperatura IPM	P8	Proteção corrente do IPM	H5
Over-power protection	L9	Compress or phas e loss/ rev ers a l protection	Ld
System charge shortage or blockage protection	F0	Frequency restricted/reduced with whole unit current protection	F8
Capacitor charging error	PU	Frequency restricted/reduced with IPM current protection	En
High pressure protection	E1	Frequency restricted/reduced with high discharge temperature	F9
Low pressure protection	E3	Frequency restricted/reduced with anti-freezing protection	FH
Compressor stalling	LE	Frequency restricted/ reduced with overload protection	F6
Over-speeding	LF	Frequency restricted/reduced with IPM temperature protection	EU
Drive board temperature sensor error	PF	Indoor unit full water error	E9
AC contactor protection	P9	Anti-freezing protection	E2
Temperature drift protection	PE	AC input voltage abnormal	PP
Sensor connection protection	Pd	Whole unit current sensing circuit error	U5
DC bus voltage drop error	U3	4-way valve reversing error	U7
Outdoor fan 1 error protection	L3	Motor stalling	H6
Outdoor fan 2 error protection	LA	PG motor zero-crossing protection	U8

3 Installation location and warnings

The installation of the unit must comply with national and local safety satandards. The quality of the installation directy affects normal use, so the user should not perform the installation. Instead, the installation must be perform the installation must be performed by professional personnel. Only after that can the unit be powered up.

3.1 How to select the installation location for the indoor unit

a) Where there is no direct sunlight
b) Where the structure is strong enough to support the weight of the unit.
c) Where the condensate pipe can be easily connected to the outside.
d) Where the air inlet and outlet are not blocked.
e) Where the refrigerant piping from the indoor unit can be easily routed to the outside.
f) Where there are no flammable or explosive substances or the possibility of leaks.
g) Where there is no corrosive gas, heavy dust, salt mist, pollution, or humidity.

⚠ **NOTICE !**

Units installed in the following locations may not operate properly. If it is absolutely unavoidable, contact a qualified installer or a technician at na outhorized service center.

1. Saline environments;
2. Where sulfuric gas is presente (such as sulfur hot springs)
3. Where high-frequency devices are presente (such as wireless devices, electric welding devices, or medical equipment);
4. Special circumstances.

3.2 Electrical Connections

a. Installation must be carried out in accordance with national regulations.
b. A single power supply cable must be used for the air conditioning power supply circuit.
c. Do not pull on the power cord with force.
d. The electrical installation must be carried out by qualified personnel in accordance with local instructions and regulations, and also in accordance with this manual.
e. The diameter of the power cord must be sized according to the unit's consumption, and once damaged, it must be replaced by qualified personnel.
f. Be sure to connect the ground wire.

3.3 Grounding Requirements

a. Air conditioners are classified as Class I appliances, so they must always be grounded.
b. The yellow-green line of the air conditioner is the ground line and cannot be used for other purposes, cut, or fastened with a self-tapping screw; otherwise, it may cause short circuits.
c. The ground terminal must be provided and the ground wire must not be connected to any of the following locations:

① Water pipe;
② Gas pipe;
③ Sewer pipe;
④ Other places where qualified personnel do not recommend.

3.4 Installation Accessories

Refer to the package list for the accessories for the indoor and outdoor units, respectively.

4 Installation Instructions

4.1 Outline Dimension Drawings of the Indoor Unit

Note: The unit in the followings figure is mm, unless otherwise specified.

Fig.1 is aplicable to: MD09 GA; MD12 GA;

MD18 GA; MD24 GA

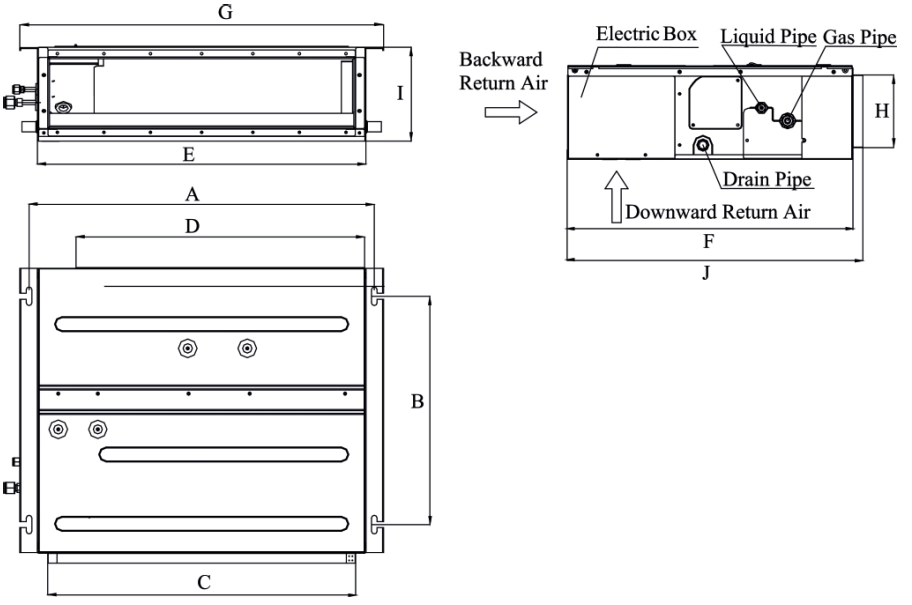


Fig.1

Tabela 1: Outline Dimensions:

Item / Model	A	B	C	D	E	F	G	H	I	J
MD09 GA	742	491	662	620	700	615	782	156	200	635
MD12 GA										
MD18 GA	942	491	862	820	900	615	982	156	200	635
MD24 GA	1142	491	1062	1020	1100	615	1182	156	200	635

4.2 Dimension Requirements on the Installation Space of the Indoor Unit

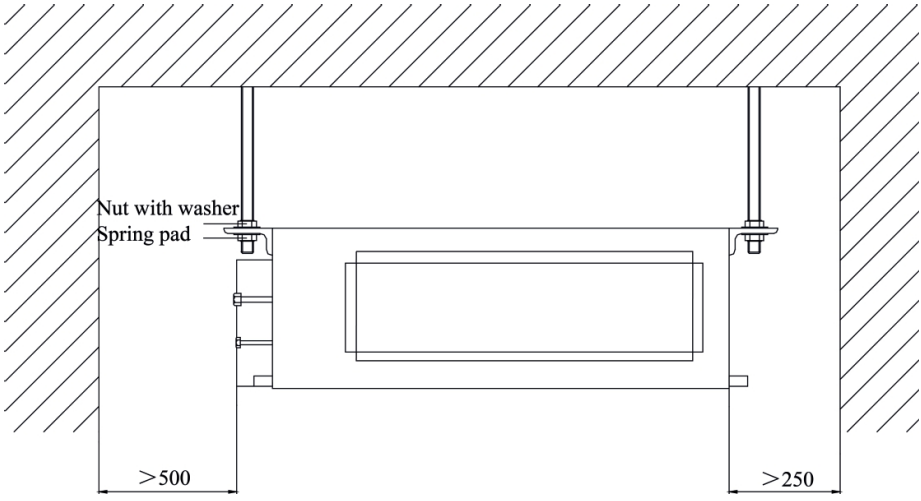


Fig. 2

4.3 Installation of the Indoor Unit

a. Requirement on the Installation Location

1) Ensure the hanger is strong enough to withstand the weight of the unit.

2) The drainage of the drain pipe is easy.

3) No obstacle is in the inlet/outlet and the air circulation is in good condition.

4) Ensure the installation space shown in Fig.2 is left for the access to maintenance.

5) It should be far away from where there is heat source, leakage of inflammable, explosive substance, or smog.

6) The power crods and connection lines of the indoor and outdoor units must be at least 1m away from the TV set radio to avoid the image interference and noise (even if 1m away is kept, the noise may be produced due to the strong electric wave).

b. Installation of the Indoor Unit (concealed in the ceilling).

1) Insert the M10 expansion bolt into the hole, and then knock the nail into the bolt. Refer to the Outline Dimension Drawings of the indoor Unit for the distance between holes and see Fig.3 for the installation of the expansion bolt.

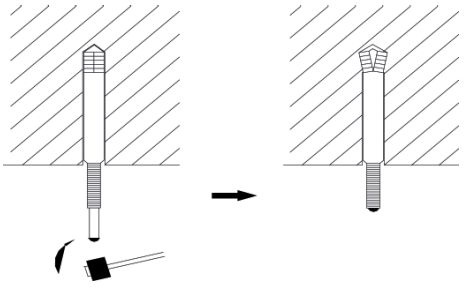


Fig.3

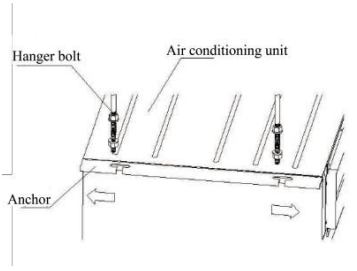


Fig.4

Install the hanger on the indoor unit, as shown n Fig.4.

Install the indoor unit on the ceiling, as shown in Fig.5.

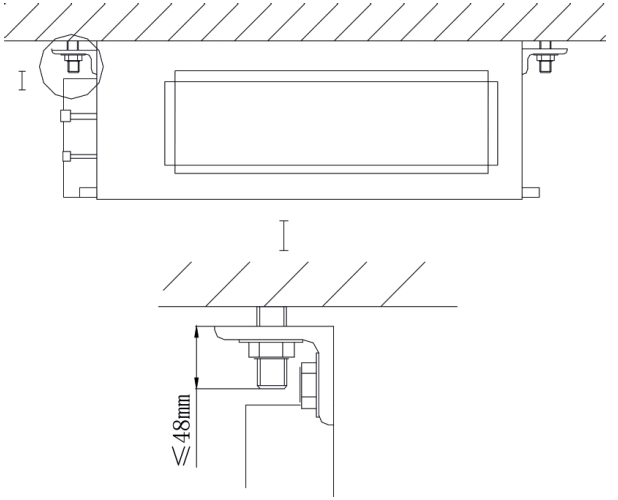


Fig.5

⚠ CAUTION!

①. Prior to the iinstallation, please make a good preparation for all piping (refrigerant pipe, drain pipe) and wiring (wires of wired controller, wires between the indoor and outdoor unit) of the indoor unit to make the further installation much easier.

②. Se a unidade interior não estiver instalada na área a climatizar, isole a unidade para evitar a condensação. A espessura do isolamento depende do ambiente de instalação real.

4.4 Horizontality Check of the Indoor Unit

After the installation of the indoor unit, its horizontality must be checked to make sure the unit keep horizontal fore and aft and keep na inclination of 5º toward the drain pipe right and left, as shown in Fig.6.

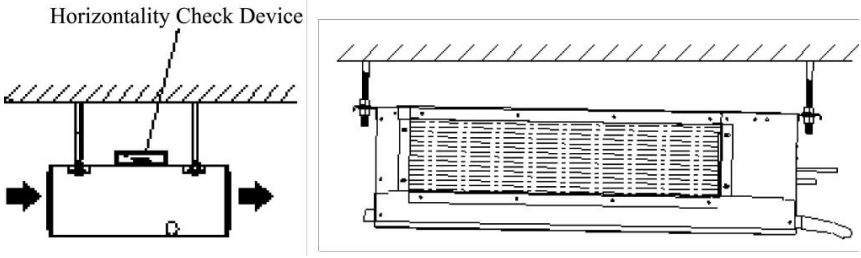


Fig.6

4.5 Installation of the Air Supply Duct

a. Installation of the Rectangular Air Supply Duct

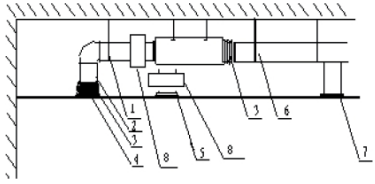


Fig.7

Tabela 2

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

b. Installation of the Round Air Supply Duct

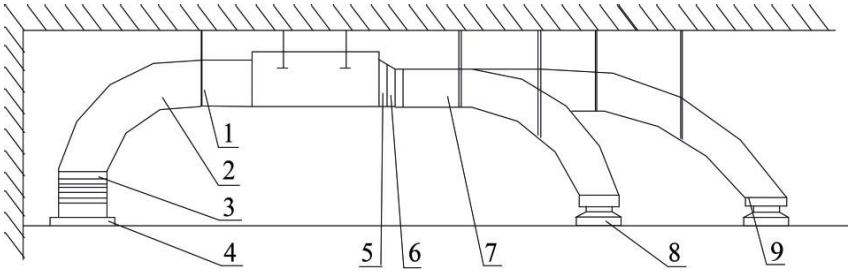


Fig.8

No.	Name	No.	Name
1	Hanger	6	Transition Duct
2	Return Air Duct	7	Air Supply Duct
3	Canvas Duct	8	Diffuser
4	Return Air Louver	9	Diffuser Joint
5	Air Supply Outlet		

Table 3

c. Installation Steps of the Round Air Supply Duct

1) Preinstall the outlet of the round duct on the transition duct and then fix it by the self-tapping screw.

2) Place the transition duct to the air outlet of the unit and fix it with rivet.

3) Connect the outlet to the duct and then tighten them with tape. Other installation details are not covered herein.

⚠CAUTION !

①. The maximum length of the duct means the maximum length of the air supply duct plus the maximum length of the return air duct.

②. The duct is either rectangular or round and connected with the air inlet/outlet of the indoor unit. Among all air supply outlets, at least one should be kept open. As for the round duct, it needs a transition duct, it is the turno f the round duct, which is better to be kept 10 meters far away from the corresponding diffuser.

4.6 Drawings of the Air Supply Outlet and Return Air Inlet

Potência: 2.5~7.1kW

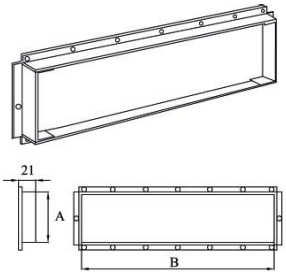


Fig.9 Air Supply Outlet

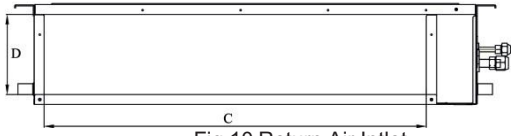


Fig.10 Return Air Intlet

Tabela 4 Dimensions of the Air Supply Outlet and Return Air Inlet (mm)

Model	Air Outlet		Air Input	
	A	B	C	D
MD09 GA MD12 GA	156	662	580	162
MD18 GA	156	862	780	162
MD24 GA	156	1062	980	162

4.7 Installation of the Return Air Duct

a. The default installation location of the rectangular flange is in the back and the retum air cover plate is in the bottom, as shown in Fig.11.

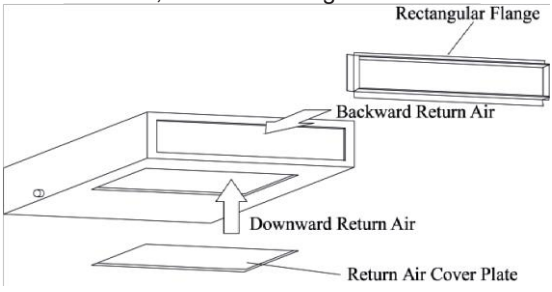


Fig.11

b. Se pretender a instalação da conduta de ar de retorno na parte inferior, então retire a flange da entrada de ar posterior e coloca na entrada de retorno de ar inferior, conforme a fig.11. Para isso remove a tampa da entrada de ar de retorno e coloca aí a flange e de seguida coloca a tampa na parte na entrada de ar posterior.

c. Connect one end of the return air duct to the return air outlet of the unit by rivets and the other to the other to the return air louver. For the sake of the convenience to freely adjust the height, a cutting of canvas duct will be helpful, which can be reinforce and folded by iron wire.

d. More noise is likely to be produced in the downward return air mode than the backward return air mode, so it is suggestive to install a silencer and a plenum box to minimize the noise.

e. The installation method can be chose with considering the conditions of the bulliding and maintenance etc.., as shown in Fig.12.

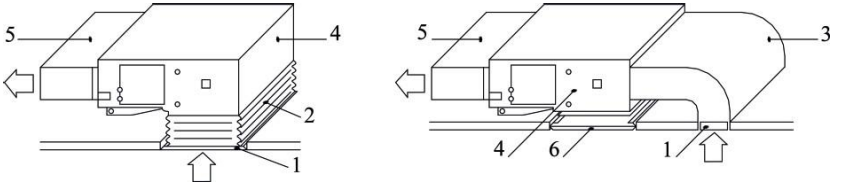


Fig.12

Tabela 5 Parts and Components of the Return Air Duct

No.	Name	No.	Name
1	Return Air Louver(with the filter screen)	4	Indoor Unit
2	Canvas Duct	5	Air Supply Duct
3	Return Air Duct	6	Access Grille

4.8 Installation of the Condensate Pipe

a. The condensate pipe should keep a inclination angle of5～10°, which can facilitate the drainage of the condensate water. And the joints of the condensate pipe should be insulated by the insulation material to prevent condensing(see Fig.13).

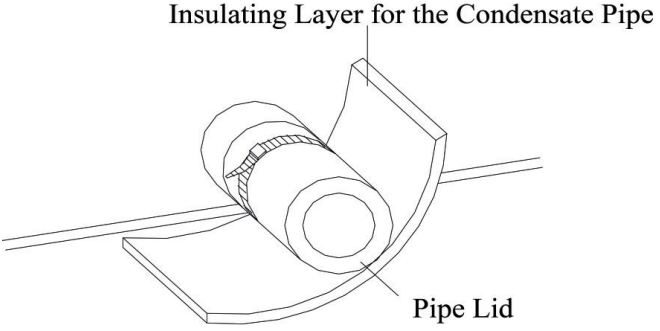


Fig.13 Thermal Insulation of the Condensate Pipe

b. There is a condensate outlet on both left and right sides of the unit. Once one is confirmed to be used, the other should be clogged by a rubber plug, bundled by the binding wire and insulated by the insulation material to avoid water leakage.

⚠AVISO !

No water leakage is allowed on the joint of the condensate pipe.

4.9 Design of the Drain Pipe

a. The drain pipe should always keep an inclination angle(1/50～1/100) to avoid the water gathering in some certain place.

b. During the connection of the drain pipe and device, do not impose too much force on the pipe on one side of the device and the pipe should be fixed as close as to the device.

c. The drain pipe can be the ordinary hard PVC pipe which can be purchased locally. During the connection, inset the end of the PVC pipe to the drain outlet, then tighten it with the drain hose and binding wire but never connect the drain outlet and the drain hose by adhesive.

d. When the drain pipe is used for multiple devices, the public section of the pipe should be 100mm lower than the drain hole of each device and it is better to use the much thicker pipe for such a purpose.

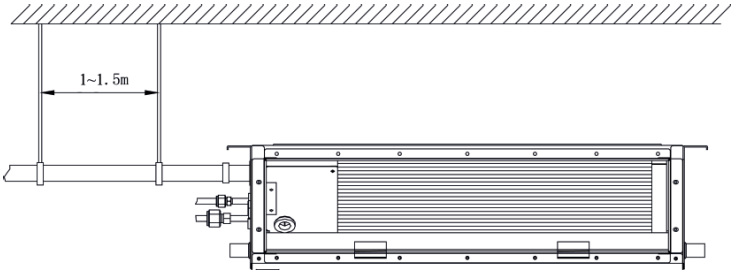
4.10 Installation of the Drain Pipe

a. The diameter of the drain pipe should be larger or equal to that of the refrigerant pipe (PVC pipe, outer dimater:25mm, wall thickness≥1.5mm.

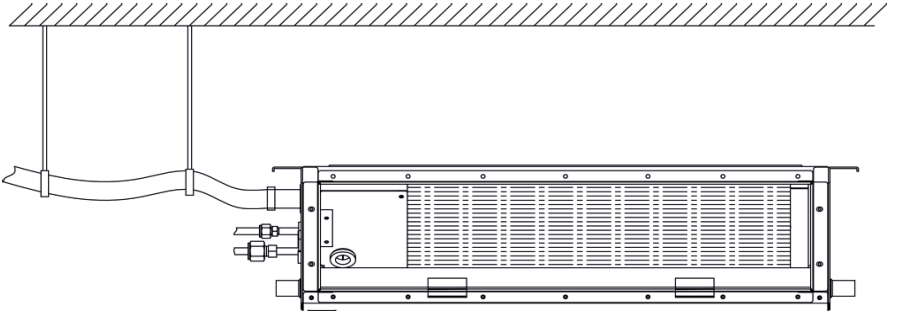
b. The drain pipe should be as short as possible and with at least a 1/100 degree of slope to avoid forming air pockets.

c. If the proper degree of slope of the drain pipe is not allowed, a lift pipe should be installed.

d. A distance 1-1.5m should be kept between the hangers to avoid the drain hose making a turn.



Correcto - Com inclinação mínima de 1 a 2º



Errado

Fig.14

a. Insert the drain hose into the drain hole and tighten it with clamps.

b. Wrap the clamps with large amount of sponge for thermal insulation.

c. The drain hose inside the room also should be insulated.

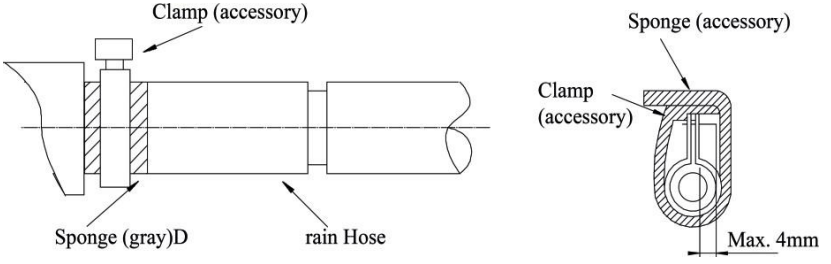


Fig.15

4.11 Precautions for the Lift Pipe

The installation height of the lift pipe should be less than 850mm. It is recommended to set an inclination angle 1°～2° for the lift pipe toward the drainage direction. If the lift pipe and the unit form a right angle, the height of the lift pipe must be less than 800mm.

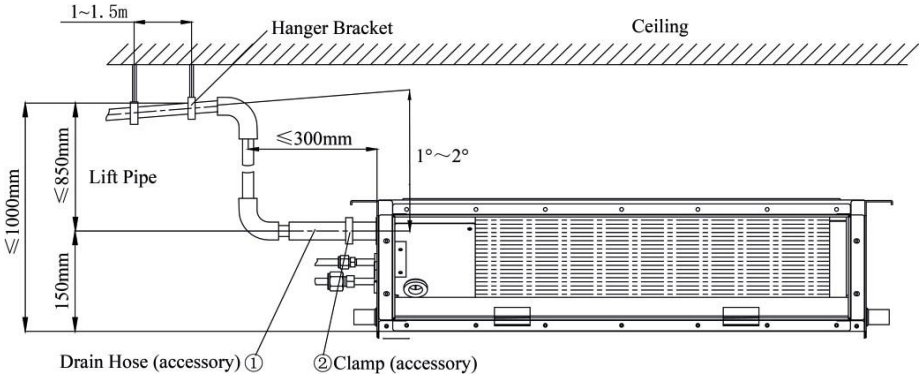
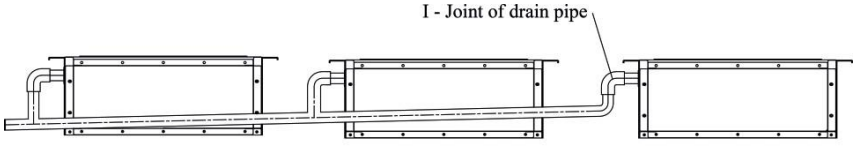


Fig.16

Notas:

①. The inclination height of the drain hose should be within 75mm so that the outlet of the drain hose does not suffer the external force.

②. If multiple drain pipes converge, please follow the installation steps below.



The specification of the joint of the drain pipe should be suitable to the running capacity of the unit

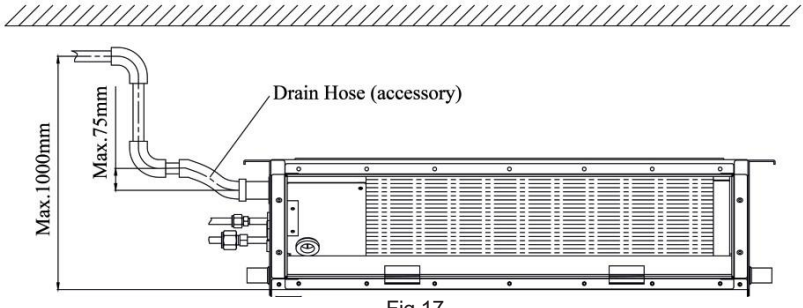


Fig.17

4.12 Test for the drainage system

a. After the electric installation, please take a test for the drainage system.

b. During the test, check if the water flow goes through the pipe correctly and observe carefully the joint to see if it leaks or not. If this unit is installed in the newly built house, it is suggested to take this test prior to the ceiling decoration.

4.13 Piping

a. Left the flare end of the copper pipe point at the screw and then tighten the screw by hand.

b. After that, tighten the screw by the torque wernch unit it clatters (as shown in Fig. 18).

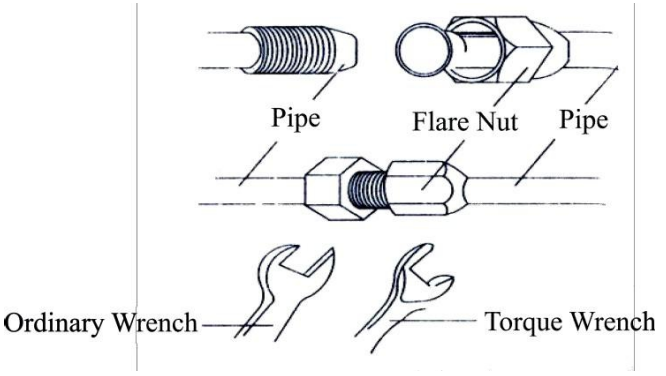


Fig.18

Tabela 6 - Binário de aperto para as porcas

Diâmetro do tubo(mm)	Binário de aperto (N·m)
φ6.35	15-30
φ9.52	35-40
φ12	45-50
φ15.9	60-65

a. The bending degree of the pipe can not be too small; otherwise it will crack. And please use a pipe bender to bend the pipe.

b. Wrap the exposed refrigerant pipe and the joints by sponge and them tighten them with the plastic tape.

⚠CAUTION !

①. During the connection of the indoor unit and the refrigerant pipe, never pull any joints of the indoor unit by force; otherwise the capalliary pipe or other pipe may crack, which then would result in leakage.

②. The refrigerant pipe should be supported by brackets, that is, don´t let the unit withstand the weight of it.

4.14 Insulation for the refrigerant pipe

a. The refrigerant pipe should be insulated by the insulating material and plastic tape in order to prevent condensing and leaking.

b. The joints of the indoor unit should be wrapped with the As juntas da unidade interior devem ser isoladas de forma evitar a entrada de ar para o interior do isolamento, como mostrado na Fig.19.

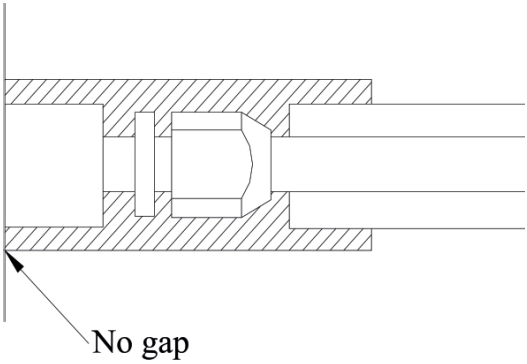


Fig.19

⚠ CAUTION !

After the pipe is protected well enough, never bend it to from a small angle; otherwise it would crack or break.

c. Wrapping the pipe with tape.

1) Bundle the refrigerant pipe and electric wire together with tape, and separate them from the drain pipe to prevent the condensate water overflowing.

2) Wrap the pipe from the bottom of the outdoor unit to the top of the pipe where it enters the wall. During the wrapping, the later circle should cover half of the fomer one.

3) Fix the wrapped pipe on the wall with clamps.

⚠ CAUTION !

①. Do not wrap the pipe too tightly; otherwise the insulation effects would be weakened. Additionally, make sure the drain hose is separated from pipe.

②. After that, fill the hole on the wall with sealing material to prevent wind and rain coming into the room.

4.15 Connecting the Cable to the Terminal

a. Wiring of the Single-Core Wire

- Strip the insulating layer at the end of the wire about 25mm off with a wire stripper.
- Loosen the screww off on the wiring board of the air conditioning unit.
- Shape with the pliers the end of the wire to circle matiching with the size of screw.
- Let the srew go through the circle of the wire and them fix it on the wiring board.

b. Wiring of the Multi-Core Wire

- Strip the insulating layer at the end of the wire about 10mm off with a wire stripper.
- Usando uma chave de fendas, remova o (s) parafuso (s) do terminal na placa de terminais.
- Usando alicate de cravar terminais, prenda firmemente um terminal redondo em cada extremidade de fio descarnado.

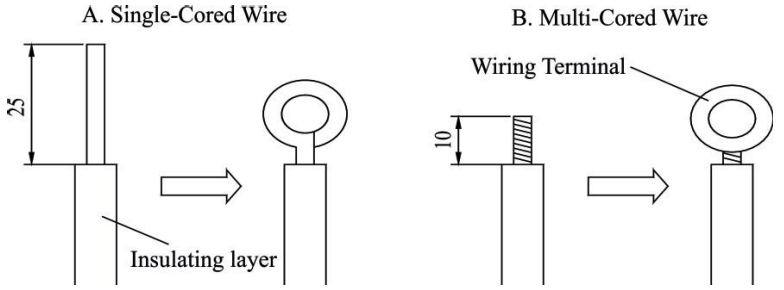


Fig.20

⚠ WARNING!

①. If the power cord is damaged, they must be replaced with the dedicated one.

②. Antes da ligação elétrica, verifique a voltagem marcada na placa de identificação e depois proceda à instalação segundo as regras nacionais de alimentação elétrica.
③. Utilize sempre um circuito elétrico independente e instale um interruptor diferencial para fornecer energia ao ar condicionado.
④. A unidade de ar condicionado deve ser ligada à terra para evitar o perigo causado pela falha de isolamento.
⑤. Durante a ligação, deve utilizar um terminal de ligação, pois no caso de utilização de um cabo multifilar pode causar um curto-circuito e provocar um incêndio.
⑥. Toda a cablagem deve ser feita estritamente de acordo com o esquema eléctrico; caso contrário, a ligação inadequada causaria o funcionamento anormal ou danos no aparelho de ar condicionado.

⑦. Do not let the electric wires electric wires touch the refrigerant pipe, the compressor, the fan or other moving parts.

⑧. Do not modify the wiring inside the indoor unit randomly; otherwise the manufacturer won´t assume any responsibility for the damage or abnormal running of the unit.

4.16 Wiring of the power cord (single-phase)

⚠ CAUTION!

The power supply for each indoor unit must be uniform.

①. Dismantle the cover of the electric box of the indoor unit.

②. Left the power cord go though the rubber ring.

③. Connect the wiring (communication) through the piping hole of the chassis and the bottom of the appliance upward, then connect the brown wire to the Terminal board “3”;black wire(the communication wire) to the Terminal board“2”;blue wire to the Terminal board“N(1)”,and connect the earthing wire to the screw terminal on the electric box. Clamp them with the corresponding wire clamp packed in the chassis.

④. Fix the power cord tightly with the binding wire.

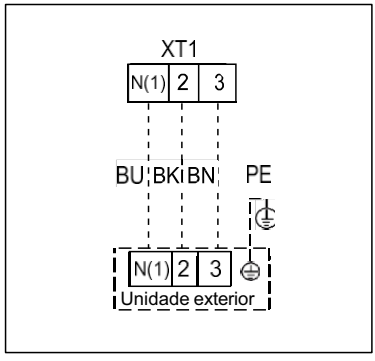


Fig.21

4.17 Connecting the Signal Cable to the Wired Controller

1) Open the electrical box cover of the indoor unit.

2) Let the signal line pass through the rubber grommet.

3) Insira a linha de sinal no terminal de quatro pinos na placa de circuito impresso da unidade interior.

4) Fix the signal line with the jumper wire.

4.18 Installation

Tabela 7

Indoor Unit		Power Cord	Running Current (A)	Input Power (W)		Recommended Power Cord (Sectional Area x Pieces)
Type	Model		Indoor Fan Motor	Cooling	Heating	
Cooling and Heating	MD09 GA	220-240V~ 50Hz	0.406	75	75	1.0×4
	MD12 GA	220-240V~ 50Hz	0.348	65	65	1.0×4
	MD18 GA	220-240V~ 50Hz	0.428	80	80	1.0×4
	MD24 GA	220-240V~ 50Hz	0.588	110	110	1.0×4

Notes : The sectional área listed above is applicable to the power cord with at most a length of 15 meters. For the longer cord, its sectional área should be enlarged to avoid the cord burnning out caused by the over-current.

5 Rated Working Conditions

Tabela 9 Working Temperature Range

	Indoor side state		Outdoor side stae	
	Dry builb temp. ℃	Wet builb temp. ℃	Dry buib temp. ℃	Wet buib temp. ℃
Rated Cooling	27	19	35	24
Max. Cooling	32	23	48	26
Min. Cooling	21	15	18	—
Rated Heating	20	15	7	6
Max. Heating	27	—	24	18
Min. Cooling	20	15	−15	−16

6 Error Analysis

If your conditioning unit runs abnormally, please check the following items before contact the maintenance serviceman.

Tabela 9

Errors	Possible Causes
Failed startup	1. There is no power supply 2. The breaker opens owing to electrical leakage. 3. Voltage is too low.
Stop after a short while of operation	a. TherHá um obstáculo em frente ao condensador. b. A linha de comando não está ligada devidamente. c. A operação de arrefecimento é selecionada quando a temperatura ambiente externa é superior a 48 ° C.
Poor cooling effect	1. The air filter screen is too dirty or clogged. 2. There are too muc heat sources or people in the room. 3. The door or window is open. 4. There are obstacles at the air inlet/ outlet. 5. The set temperature is too high 6. There is a refriferant leak
Low heating capacity	1. A tela do filtro de ar está muito suja ou entupida. 2. A porta ou janela não está totalmente fechada. 3. A temperatura definida é muito baixa.
Uncontrollable controller	If the remote controller crashes even if the batteries have been replaced, please open the back cover of it and press the button “ACL” to let it back to the normal condiction. Is the remorer controller in the signal receiving range? Or is it blocked by obstacles? For the duct type unit, operate the remote controller pointing at the wired controller. Check if the voltage of the batteries of the wired controller is enough or change them.

Nota: After checking the above items and taking appropriate troubleshooting steps, if the air conditioning unit still isn´t working properly, stop using the unit immediately and contact your installer or service technician. Only have the unit inspected and repaired by a qualified technician.

7 Maintenance

⚠ **CAUTION!**

Take notice of the following items before clean your air conditioning unit.

①. Cut off the main power supply before contact any wiring device.

②. Only when the unit is turn off and the main power supply is cut off, can the unit be cleaned; otherwise it would cause an electric shock or injury.

③. Do not wash the unit with water; or it may cause an electric shock.

④. During the cleaning, remember to use the stable standing platform Daily Maintenance.

a. How to clean the filter

1) Never dismantle the air filer except for cleaning; otherwise it may cause some error.

2) When the air conditioning unit is used under the environment with heavy dust, the air filter should be cleaned often (generally once every two weeks).

b. Maintenance before seasonal use

1) Check if the air inlet/outlet of the indoor unit is clogged.

2) Check if the earthing is in good condition.

3) Check if the wiring is in good condition.

4) Check if the indicating lamp of the wired controller blinks after it is energized.

Note: If there is something abnormal, please consult the after-sales serviceman.

c. Maintenance after seasonal use

1) Let the air conditioning unit run for half day under the fan mode to dry the inside of the unit.

2) If the unit is not to be used for a long time, please shut off the main power supply for energy conservation, at the same time, the power indicating lamp of the wired control will go off.

8 Safety operation of flammable refrigerant

Qualification requirement for installation and maintenance man

- All the work men who are engaging in the refrigerantion sytem should bear the valid certification awarded by the authoritative organization and qualification for dealing with the refrigeration system recognized by this industty. If it needs other technical to maintain and repair the appliance, they should be supervised by the person who bears the qualification for using the flammable refrigerant.
- The air conditioner is not allowed to use in a room that has running fire (such as fire source, working coal gas ware, operating heater).
- It is not allowed to drill hole or burn the connection pipe.
- The air conditioner must be installed in room that is larger than the minimum room área. The minimum room área is show on the nameplate or following table a.
- Leak test is a must after installation.

Tabela a – Área minima (m^2)

Minimum room área (m^2)	Charge amount (kg)	≤1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2	2.1	2.2	2.3	2.4	2.5
	Floor location	/	14.5	16.8	19.3	22	24.8	27.8	31	34.3	37.8	41.5	45.4	49.4	53.6
	Window mounted	/	5.2	6.1	7	7.9	8.9	10	11.2	12.4	13.6	15	16.3	17.8	19.3
	Wall mounted	/	1.6	1.9	2.1	2.4	2.8	3.1	3.4	3.8	4.2	4.6	5	5.5	6
	Ceiling mounted	/	1.1	1.3	1.4	1.6	1.8	2.1	2.3	2.6	2.8	3.1	3.4	3.7	4

Maintenance notes

- Check whether the maintenance área or the room área meet the requirement of the nameplate.
- It´s only allowed to be operated in the rooms that meet the requirement of the nameplate.
- Check whether the maintenance are is well-ventilated.
  The continuous ventilation status should be kept during the operation process.
- Check whether there is fire source or potencial fire source in the maintenance área.
- The naked flame is prohibited in the maintenance área; and the “no smoking” warning board should be hanged.

Welding

- If you should cut or weld the refrigerant system pipes in the processo of maintaining please follow the steps as below:

a. Shut down the unit and cut power supply
b. Eliminate the refrigerant
c. Vacuuming
d. Clean it with N2 gas
e. Cutting or welding
f. Carry back to the service spot for welding

The refrigerant must be recycled into a suitable cylinder. Ensure there are no open flames near the vacum pump outlet and that i tis well ventilated.

Filling the Refrigerant

- Use the refrigerant filling appliances specialized for R32. Make sure that diferente kinds of refrigerant won´t contaminate with each other.
- The refrigerant tank should be kept upright at the time of filling refrigerant.
- Stick the label on the system after filing is finished (or haven´t finished).
- After finished, please do the leakage detection before test running; another time of leak detection should be done when it´s removed.

Safety instructions for transportation and storage

- Please use the flammable gas detector to check before unload and open the container.
- No fire source and smoking.
- According to the local rules and laws.

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