11. Operating Instruction and Installation

11-1 Operation Modes and Function

1.1 Performance Index

No.	Item	Index
1	Applicable Voltage Range	175～253V
2	A/C Frequency	60Hz/50Hz
3	Working environment temperature	-7℃~+43℃(19.4℉~109.4℉)

1.2 Main Parts Introduction

※ Cooling only：21～43℃(Outdoor temp)

1.2.1 Indoor Fan

Indoor fan has three speeds: high/ middle /low/ auto.

Breeze speed only for anti-cold air in heating mode.

1.2.2 Buzzer

2.2.1 It will buzz 2 times when electrifying the machine.

2.2.2 It will buzz once for 0.3 second when receiving the remote signal or other valid signal.

1.2.3 Indicator

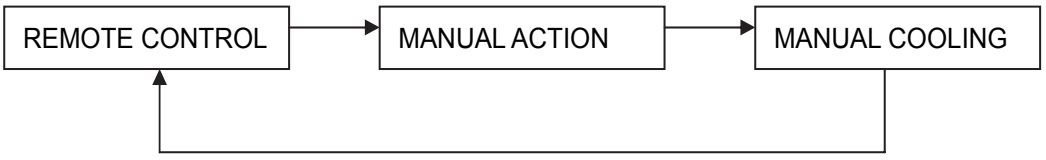
2.3.1 There are 4 indicators: operating indicator, timer indicator, warning indicator, defrosting/pre-heating indicator (fan only indicator for cooling-only A/C).

2.3.2 LED indicates errors when protection is effective.

1.3. Operation Modes and Functions

1.3.1 Manual Operation

1.3.1.1 The manual operation mode is controlled through “manual” pad in the display panel, including such two modes as manual action and manual cooling. Push the manual pad for each switchover, the order for which is shown below:



1.3.1.2 Manual Cooling.

1.3.1.2.1 Under this mode, no remote control signal will be received.

1.3.1.2.2 The compressor is started up unconditionally and the indoor fan speed is set to be in low and forced cooling operation, meanwhile the wind grille is forced to swing open.

1.3.1.2.3 The mode will be switched over to manual action mode in 30 minutes automatically. In the process of switchover to manual action mode, the buzzer buzzes once for 0.3 second.

1.3.1.2.4 Under this mode, the corresponding protections are effective (3- minute delayed start-up, over current, outdoor protection and evaporator low temperature protection).

1.3.1.2.5 Push “manual” pad once to end this mode and enter the remote control pending status.

1.3.1.3 Manual Action

1.3.1.3.1 Under this mode, the remote signal will be received and corresponding actions will be taken according to the receipt of the remote signal.

1.3.1.3.2 The system will operate under the auto mode of which the temperature is set to 24°C and the wind grille swings automatically at the same time.

1.3.1.3.3 Under this mode, corresponding protections are effective.

1.3.1.3.4 Push “manual” pad to end this mode and switch over to manual cooling mode.

1.3.2 Cooling Mode

1.3.2.1 Four-way valve is closed.

1.3.2.2 Conditions for the compressor and outdoor fan action (Ts = set temperature, Ta=room temperature)

	Condition	Compressor	Outdoor fan
Room temp. up	Ta > Ts+1	On	On
	Ta <Ts+1	Off	Off
Room temp. down	Ta > Ts	On	On
	Ta <Ts	Off	Off

1.3.2.3 Action of Indoor Fan

1.3.2.3.1 High/Middle/Low/Auto fan can be switched over for your comfort.

1.3.2.3.2 Auto fan under cooling mode.

	Condition (T=Indoor Temp.-Setting Temp.)	Indoor fan speed
Temp. up	T>4°C	High
	4°C >T>3°C	Middle
	T<3°C	Low
Temp. down	T> 3°C	High
	3°C > T>1°C	Middle
	T<1°C	Low

Remark:

If currently indoor fan is in high speed, when Ta-Ts≤3°C,the fan will change to middle speed;

If currently indoor fan is in middle speed, when Ta-Ts≤1°C , the fan will change to low speed;

If currently indoor fan is in low speed, when Ta-Ts＞3°C, the fan will change to middle speed;

If currently indoor fan is in middle speed, when Ta-Ts＞4°C, the fan will change to high speed.

1.3.3 Heating Mode (This function is not avaluable in cooling only models)

1.3.3.1 Four-way valve is open under heating mode, while closed in the defrosting process.

1.3.3.2 Condition for the compressor action: (Ts = set temperature, Ta = room temperature)

	Condition	Compressor	Outdoor fan
Room temp. up	Ta> Ts+4℃	Off	Off
	Ta <Ts+4℃	On	On
Room temp. down	Ta < Ts+3℃	On	On
	Ta >Ts+3℃	Off	Off

1.3.3.3 Indoor Fan Action

1.3.3.3.1 Fan speed among high/middle/low/auto(anti-cold air function takes priority).

1.3.3.3.2 Anti-cold air:

Anti-cold air function is to prevent from blowing cold air by controlling the on/off of indoor unit, breeze running and fan speed operation according to the evaporator temperature.

1.3.3.3.3 Auto fan of indoor fan under heating mode.

	Condition (T=Indoor Temp.-Setting Temp.)	Indoor fan speed
Temp. up	T≤2℃	High
	2℃<T<3°C	Middle
	T> 3°C	Low

Temp. down	T> 2°C	Low
	2°C > T>1°C	Middle
	T<1°C	High

Remark:

If currently indoor fan is in low speed, when Ta-Ts≤2°C, the fan will change to middle speed;

If currently indoor fan is in middle speed, when Ta-Ts≤1°C, the fan will change to high speed;

If currently indoor fan is in high speed, when Ta-Ts＞2°C, the fan will change to middle speed;

If currently indoor fan is in middle speed, when Ta-Ts＞3°C, the fan will change to high speed.

1.3.4 Defrost (only available to heating mode)

1.3.4.1 Defrosting Conditions

1.3.4.1.1 Low temperature defrosting condition:

Accumulated operating time reaches up to over 40 minutes when temperature of outdoor heat exchanger coil T3 is below -2°C.

1.3.4.1.2 High temperature defrosting condition:

During high temperature protection of evaporator, the accumulated time is up to 90 minutes since last defrosting ended when outdoor fan is shut down but compressor is not.

It is considered that defrosting is performed when either 3.4.1.1 or 3.4.1.2 is met.

1.3.4. 2 Defrosting Action

Compressor keeps on continuously. Four-way valve and outdoor fan are shut down. The pre-heating/defrosting lamp is on. Indoor fan operates according to anti-cold air function.

1.3.4. 3 Ending Of Defrosting Condition

It is considered that defrosting condition is ended when any of the conditions as below is met:

1.3.4. 3.1Time of defrosting reaches 10 minutes.

1.3.4. 3.2 Temperature of outdoor coil T3 is up to 20°C.

1.3.4.4 Ending Action of Defrosting

1.3.4. 4.1 Outdoor fan and four-way valve are open.

1.3.4. 4.2 Compressor keeps on continuously.

1.3.4.4.3 Indoor fan acts according to anti-cold air function.

1.3.4.4.4 Defrosting/pre-heating lamp continues to be on until indoor fan starts up.

1.3.5 Dehumidifying Mode

1.3.5.1 Dehumidifying mode is the cooling operation, under which the indoor fan speed is low and can't be changed.

1.3.5.2 Protective functions are the same as the cooling mode.

1.3.6 Fan Only Mode

1.3.6.1 Under this mode, four-way valve, compressor and outdoor fan are shut down.

1.3.6.2 High/middle/Low/Auto fan can be switched over through remote control.

1.3.6.3 Auto fan will be controlled in line with cooling auto fan.

1.3.7 Auto Mode

1.3.7.1 Selected by remote control. Under this mode, the indoor fan is set to be auto (refer to auto fan under cooling, heating), and the temperature can be set between 17 and 30°C.

1.3.7.2 When entering auto mode, the heating, fan only or cooling operation will be chosen according to the room temperature Ta and the set temperature Ts automatically.

1.3.7.2.1When Ta≤Ts-1°C, it performs the heating operation with a set temperature of Ts (refer to the

heating mode). However the cooling only mode will be in fan only mode.

1.3.7.2.2When Ts+2°C≥Ta>Ts-1°C, it performs the fan only operation.
1.3.7.2.3 When Ta＞Ts+2°C, it performs the cooling operation with a set temperature of Ts (refer to the cooling mode).
1.3.7.2.4When one mode is selected, operation mode will be re-chosen according to the Ta and Ts in 15 minutes. But if the set temperature Ts is changed, operation mode will be re-chosen immediately.

1.4. Other Functions

1.4.1 LED Display

There are four lamps: operation lamp, timer lamp, defrosting/pre-heating lamp(fan only lamp), and alarm lamp.

No.	condition	content	LED
1	normal	standby	Operation lamp flashing at 0.5Hz.
2	normal	Power off	All lamps off
3	normal	Power on	Operation lamp on
4	normal	constraint cooling	Operation lamp flashing at 5Hz，timer lamp on
5	normal	Fan only	fan only indicator on (for cooling-only A/C)
6	protection	Defrosting or anti-cold air	Operation lamp on defrosting/pre-heating lamp on
7	error	Indoor temp. sensor check abnormal	timer lamp flashing at 5Hz
8	error	evaporator temp. sensor check abnormal	Operation lamp flashing at 5Hz
9	error	condenser temp. sensor check abnormal	defrosting/pre-heating lamp flashing at 5Hz
10	error	EEPROM error	Operation lamp and timer lamp flashing at 5Hz
11	error	Outdoor unit protection	All the lamps flashing at 5Hz

1.4.2 Timer

Refer to remote controller manual for detail operation.

Note: The timer is valid for one operation of the A/C.

1.5. Protection

1.5.1 Three-minute delay for the compressor start-up.

At the beginning of energizing, 1-minute will be needed to start the compressor. If the compressor stops during the operating process (including the switchover between cooling, dehumidifying and heating mode), 3-minute delay will be needed to restart the compressor.

1.5.2 Evaporator protection against high temperature (heating mode)

Only available to heating mode, including heating mode and heating operation under auto mode.

Note: During protection, the indoor fan continues operating at a set speed, while the anti-cold air function

2.1.4 Evaporator Protection against low temperature(cooling mode)

2.1.4.1 When the evaporator pipe temperature ≤ 3°c and this lasts for 3 minutes, the compressor and outdoor fan will be shut off.

2.1.4.2 When the evaporator pipe temperature ≥ 7°c, it recovers.

2.1.4.3 The restart of the compressor shall execute the delay protection.

2.1.5 Anti-cold air protection

Only available to heating mode, including heating mode, heating operation under auto mode.

When the indoor temp. is lower than 25? , the indoor fan stops; when the indoor temp. increase to 25~28? , the indoor fan operate with low speed.

2.1.6 Condenser high temperature protection

2.1.6.1Only available to cooling (incl. cooling mode, cooling operation under auto mode) and dehumidifying mode.

2.1.6.2 Delay protection should be performed when the compressor restarts.

2.1.7 Outdoor protection

When outdoor protection happen, system will stop running and LED display corresponding contents.(as the following part referred)

2.1.8 Power supply electricity sequence protection

1. For 1 phase unit it owns a starting circuit. 1 second before startup, capacitor is switched on and then broken.

2. For 3 phase unit it must have the phase sequence and lacking of phase checking and protecting function. Etc.

3. System precision

1) Temperature sampling precision: ±1?

2) Current sampling precision: ±1.5 amps

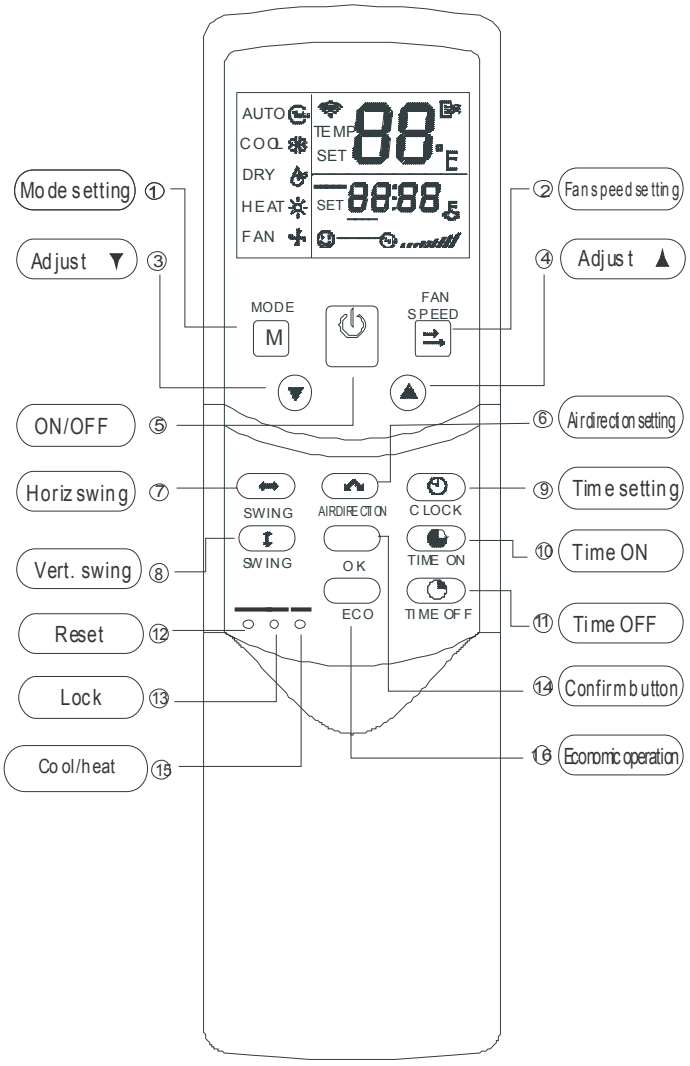
3) Timing sampling precision: ±1min/hour

4) Swing angle sampling precision: 0.7 degree

11-2 Wireless Remote Controller-Buttons and Display

R05-BG/E

The below is R05-BG/E remote controller:



Visualphoto

※ No heating mode for cooling only type unit

MODEL AND SPECIFICATION

Model	R05/BGE
Rated voltage	3.0V(2 pieces of LR03 7# batteries)
Min voltage for sending signal of CPU	2.4V
Effective receiving distance	8m~11m
Operation condition	-5~60℃