Technical Sales Guide

Ducted Type Split Air-Conditioner Units

(GC202006-I)

TECHNICAL SALES GUIDE 50Hz
CAPACITY RANGE: 50/60kW
SUPER HIGH AMBIENT OPERATION TO 48°C

GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI

CONTENTS

1 PRODUCTS

1.1 Models List

Units Series	Mode	Capacity (kW)		Ref	Appearance	
		Cooling	Heating		Outdoor	Indoor
Duct Type	FGR50Pd/D(2)Na-M	50	53	R410A		
	FGR60Pd/D(2)Na-M	60	64			

1.2 Nomenclature

FG	R	50	Pd	/	D	(2)	Na	-	M	(I)
1	-	2	3	4	5	6	7	8	9	10

Name	Description	Options
FG	Ducted Type Air Conditioner	-
R	Unit Type	Heat Pump
50	Cooling capacity	Nominal Cooling Capacity (kW)
Pd	Frequency Conversion System	Frequency Conversion
D	Design No.	Arranged Based On A, B, C, D,And So On
(2)	Number Of Compressor	-
Na	Refrigerant	R410A
M	Power type	380-415V 3Ph ~ ,50Hz
(I)	Indoor Or Outdoor Unit Code	Outdoor Unit-(O)
		Indoor Unit-(I)
		The Entire Unit Is Not Expressed

1.3 Features

1.3.1 Outdoor Unit

This series unit adopts side air discharge design, with compact size, decreasing installation environment limit greatly. Features for the complete unit system are as below:

(1) High Efficiency

1). High-efficient magnetic reluctance inverter compressor: High-efficient magnetic reluctance compressor is adopted to take advantage of the magnetic reluctance torque of compressor. Under the same output capacity, the efficiency can be improved by 5%.

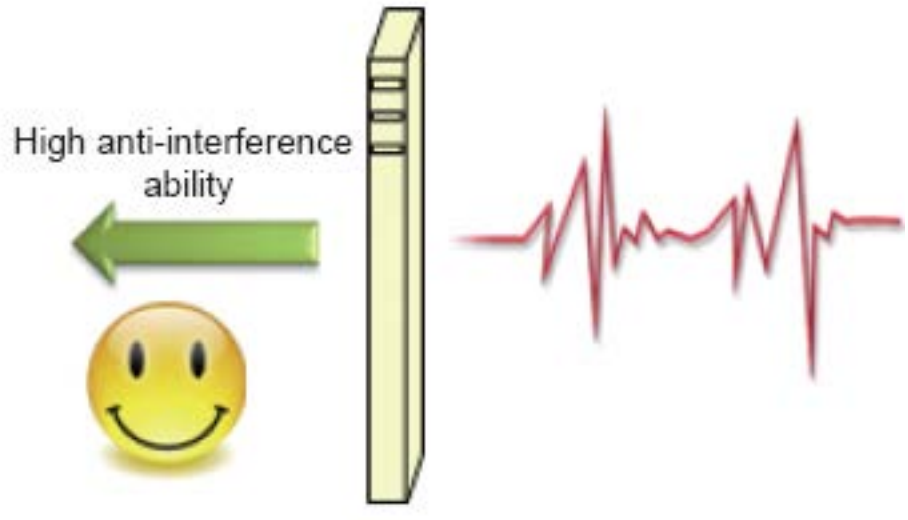
2). Advanced torque control technology: minimum current and maximum torque control technology adopts the most optimized control principle to realize maximum torque output with minimum current and reduce loss of motor winding and intelligent power module for higher energy efficiency.

3). Closed-loop start-up technology of compressor: Self-innovative closed-loop start-up control is applied to enable output torque follow with load torque, whose start-up current is small and start-up is more reliable.

4). 180° sine wave DC variable speed technology: 180° current output waveform is smooth sine wave with small harmonic wave content, small torque pulsation, wide adjustable range and stable operation of motor, which can satisfy the temperature requirement in various occasion, save electricity greatly and ensure user's comfort in maximum.

(2) Latest CAN Bus Communication

The latest communication way-CAN bus communication is adopted, which greatly improves anti-interference ability, precisely controls the indoor unit and improves the reliability of system. Conventional communication wire can be used to increase the flexibility of project installation.



(3) Long Connection Pipe and Big Height Difference

The connection pipe between indoor unit and outdoor unit can be as long as 70m. Project installation condition is wider while the limitation of installation distance is smaller. The max allowable height difference between indoor unit and out-

door unit is 30m.

(4) Wide Operation Range

The system can operate constantly and reliably in a wide temperature range(cooling: -7~48℃ , heating: -15~24℃), which is not affected by atrocious environment.

(5) PID Intelligent Capacity Adjustment

The system applies the original technology of PID intelligent capacity adjustment, which quickly and precisely controls indoor ambient temperature according to set temperature, with small temperature fluctuation and great comfort.

1.3.2 Indoor Unit

High static pressure design

Static pressure can reach up to 160Pa, especially suitable for places in need of long distance airflow.

1.4 Operation Range

Test condition	Indoor side		Outdoor side	
	DB(°C)	WB(°C)	DB(°C)	WB(°C)
Nominal Cooling	27	19	35	24
Nominal Heating	20	--	7	6
Maximum Cooling	32	23	48	26
Low Temp Cooling	21	15	-7	--
Maximum Heating	27	--	24	18
Low Temp Heating	20	--	-15	--

2 PRODUCT DATA

2.1 Product Data at Rated Condition

Model(Indoor/Outdoor)			FGR50Pd/D(2)Na-M(I)×1 FGR25Pd/DNa-M(O)×2
Combination Mode			FGR50Pd/D(2)Na-M
Refrigeration Capacity		HP	20
Cooling Capacity		kW	50
Heating Capacity		kW	53
Power Supply			3N~/380-415V/(50Hz)
Power Input	Cooling	kW	21.7
	Heating	kW	18.9
Current Input	Cooling	A	32.97
	Heating	A	28.92
Sound Pressure Level(Indoor/Outdoor)		dB(A)	60/63
Air Flow Volume		m^3/h	9000
ESP		Pa	160
Refrigerant		-	R410A
Refrigerant Charge		kg	8.00×2

Dimension of Outline	Indoor unit	mm	(1900×1100×700)×1
	Outdoor unit	mm	(940×460×1615)×2
Gas Pipe		inch	7/8"
Liquid Pipe		inch	3/8"
Oil Pipe		inch	/
Net Weight (Indoor/ Outdoor)		kg	255×1/(155×2)

Model(Indoor/Outdoor)			FGR60Pd/D(2)Na-M(I)×1 FGR30Pd/DNa-M(O)×2
Combination Mode			FGR60Pd/D(2)Na-M
Refrigeration Capacity		HP	24
Cooling Capacity		kW	60
Heating Capacity		kW	64
Power Supply			3N~/380-415V/(50Hz)
Power Input	Cooling	kW	27.0
	Heating	kW	20.8
Current Input	Cooling	A	41.02
	Heating	A	31.60
Sound Pressure Level(Indoor/Outdoor)		dB(A)	62/65
Air Flow Volume		m^3/h	10800
ESP		Pa	160
Refrigerant		-	R410A
Refrigerant Charge		kg	9.50×2
Dimension of Outline	Indoor unit	mm	(1900×1100×850)×1
	Outdoor unit	mm	(940×460×1615)×2
Gas Pipe		inch	1"
Liquid Pipe		inch	1/2"
Oil Pipe		inch	/
Net Weight (Indoor/ Outdoor)		kg	270×1/(188×2)

Nominal capacities are based on the follow conditions:

	Indoor	Outdoor
Cooling	DB: 27°C (80.6 °F) WB: 19℃ (66.2 °F)	DB: 35℃ (95 °F) WB: /°C (/ °F)
Connection Pipe Length	7.5m	

2.2 Cooling Capacity Correction

FGR50Pd/D(2)Na-M							
Outdoor air temp (°C DB)	Indoor air temp						
	20.0°C DB 14.0°C WB	23.0°C DB 16.0°C WB	26.0°C DB 18.0°C WB	27.0°C DB 19.0°C WB	28.0°C DB 20.0°C WB	30.0°C DB 22.0°C WB	32.0°C DB 24.0°C WB
	kW	kW	kW	kW	kW	kW	kW
10	37	42	47.7	50	52.3	58	60.7
12	37	42	47.7	50	52.3	58	59.7

DUCTED TYPE SPLIT AIR-CONDITIONER UNITS

FGR50Pd/D(2)Na-M							
Outdoor air temp（°C DB）	Indoor air temp						
	20.0°C DB 14.0°C WB	23.0°C DB 16.0°C WB	26.0°C DB 18.0°C WB	27.0°C DB 19.0°C WB	28.0°C DB 20.0°C WB	30.0°C DB 22.0°C WB	32.0°C DB 24.0°C WB
	kW	kW	kW	kW	kW	kW	kW
14	37	42	47.7	50	52.3	58	59.3
15	37	42	47.7	50	52.3	57.7	58.7
18	37	42	47.7	50	52.3	57	58
20	37	42	47.7	50	52.3	56.3	57
21	37	42	47.7	50	52.3	56	57
23	37	42	47.7	50	52.3	55.3	56
25	37	42	47.7	50	52.3	54.7	55.7
27	37	42	47.7	50	52.3	54	55
29	37	42	47.7	50	52	53.3	54.3
31	37	42	47.7	50	51.7	52.7	53.7
33	37	42	47.7	50	51	52	53
35	37	42	47.7	50	50.3	51.3	52.7
37	37	42	47.7	49	50	51	52
39	37	42	47.7	48.7	49	50	51
41	37	42	47.7	48.7	49	50	50.7
43	37	42	47.7	48.7	48.7	49.7	50.3
45	37	42	47	48	48.3	49.3	50
47	37	42	47	47	47.7	49	49.3
48	37	42	46.3	47	47.3	48.7	49

FGR60Pd/D(2)Na-M							
Outdoor air temp（°C DB）	Indoor air temp						
	20.0°C DB 14.0°C WB	23.0°C DB 16.0°C WB	26.0°C DB 18.0°C WB	27.0°C DB 19.0°C WB	28.0°C DB 20.0°C WB	30.0°C DB 22.0°C WB	32.0°C DB 24.0°C WB
	kW	kW	kW	kW	kW	kW	kW
10	47	52	57.7	60	62.3	68	70.7
12	47	52	57.7	60	62.3	68	69.7
14	47	52	57.7	60	62.3	68	69.3
15	47	52	57.7	60	62.3	67.7	68.7
18	47	52	57.7	60	62.3	67	68
20	47	52	57.7	60	62.3	66.3	67
21	47	52	57.7	60	62.3	66	67
23	47	52	57.7	60	62.3	65.3	66
25	47	52	57.7	60	62.3	64.7	65.7
27	47	52	57.7	60	62.3	64	65
29	47	52	57.7	60	62	63.3	64.3
31	47	52	57.7	60	61.7	62.7	63.7
33	47	52	57.7	60	61	62	63

FGR60Pd/D(2)Na-M							
Outdoor air temp（°C DB）	Indoor air temp						
	20.0°C DB 14.0°C WB	23.0°C DB 16.0°C WB	26.0°C DB 18.0°C WB	27.0°C DB 19.0°C WB	28.0°C DB 20.0°C WB	30.0°C DB 22.0°C WB	32.0°C DB 24.0°C WB
	kW	kW	kW	kW	kW	kW	kW
35	47	52	57.7	60	60.3	61.3	62.7
37	47	52	57.7	59	60	61	62
39	47	52	57.7	58.7	59	60	61
41	47	52	57.7	58.7	59	60	60.7
43	47	52	57.7	58.7	58.7	59.7	60.3
45	47	52	57	58	58.3	59.3	60
47	47	52	57	57	57.7	59	59.3
48	47	52	56.3	57	57.3	58.7	59

2.3 Heating Capacity Correction

FGR50Pd/D(2)Na-M							
Outdoor air temp		Indoor air temp					
		16.0°C DB	18.0°C DB	20.0°C DB	22.0°C DB	24.0°C DB	26.0°C DB
°C DB	°C WB	kW	kW	kW	kW	kW	kW
-20	-20.2	33.6	33.6	33.6	33.6	33.6	33.6
-15	-15.3	37.2	37.2	37.2	37.2	37.2	37.2
-13	-13.4	38.9	38.9	38.9	38.9	38.9	37.2
-11	-11.4	40.7	40.7	40.7	40.7	40.7	40.7
-9	-9.5	40.7	40.7	40.7	40.7	40.7	40.7
-7	-7.5	42.4	42.4	42.4	42.4	42.4	40.7
-5	-5.6	44.2	44.2	44.2	44.2	44.2	44.2
-2	-2.7	46	46	46	46	46	44.2
0	-0.7	47.7	47.7	47.7	47.7	46	44.2
2	1.2	51.2	51.2	51.2	49.5	46	44.2
4	3.1	51.2	51.2	51.2	49.5	46	44.2
7	6	53	53	53	49.5	46	44.2
9	7.9	54.8	54.8	53	49.5	46	44.2
11	9.8	56.5	56.5	53	49.5	46	44.2
13	11.8	58.3	56.5	53	49.5	46	44.2
15	13.7	60	56.5	53	49.5	46	44.2
17	15.6	61.8	56.5	53	49.5	46	44.2
19	17.5	61.8	56.5	53	49.5	46	44.2
21	19.5	61.8	56.5	53	49.5	46	44.2
24	22.3	61.8	56.5	53	49.5	46	44.2

FGR60Pd/D(2)Na-M							
Outdoor air temp		Indoor air temp					
		16.0°C DB	18.0°C DB	20.0°C DB	22.0°C DB	24.0°C DB	26.0°C DB
°C DB	°C WB	kW	kW	kW	kW	kW	kW
-20	-20.2	44.6	44.6	44.6	44.6	44.6	44.6
-15	-15.3	48.2	48.2	48.2	48.2	48.2	48.2
-13	-13.4	49.9	49.9	49.9	49.9	49.9	48.2
-11	-11.4	51.7	51.7	51.7	51.7	51.7	51.7
-9	-9.5	51.7	51.7	51.7	51.7	51.7	51.7
-7	-7.5	53.4	53.4	53.4	53.4	53.4	51.7
-5	-5.6	55.2	55.2	55.2	55.2	55.2	55.2
-2	-2.7	57	57	57	57	57	55.2
0	-0.7	58.7	58.7	58.7	58.7	57	55.2
2	1.2	62.2	62.2	62.2	60.5	57	55.2
4	3.1	62.2	62.2	62.2	60.5	57	55.2
7	6	64	64	64	60.5	57	55.2
9	7.9	65.8	65.8	64	60.5	57	55.2
11	9.8	67.5	67.5	64	60.5	57	55.2
13	11.8	69.3	67.5	64	60.5	57	55.2
15	13.7	71	67.5	64	60.5	57	55.2
17	15.6	72.8	67.5	64	60.5	57	55.2
19	17.5	72.8	67.5	64	60.5	57	55.2
21	19.5	72.8	67.5	64	60.5	57	55.2
24	22.3	72.8	67.5	64	60.5	57	55.2

3 ELECTRICAL SPECIFICATIONS

Model	Power supply	Circuit breaker capacity (A)	Number of ground wire × Min sectional area (mm^2)	Number of power cord × Min sectional area (mm^2)
FGR25Pd/DNa-M(O)	380-415V 3N~ 50Hz	25	1×2.5	4×2.5
FGR30Pd/DNa-M(O)	380-415V 3N~ 50Hz	32	1×4.0	4×4.0
FGR50Pd/D(2)Na-M(I)	380-415V 3N~ 50Hz	10	1×1.5	4×1.5
FGR60Pd/D(2)Na-M(I)	380-415V 3N~ 50Hz	10	1×1.5	4×1.5

4 FAN CHARACTERISTICS

When this unit is installed, select the static pressure according to the actual air volume.

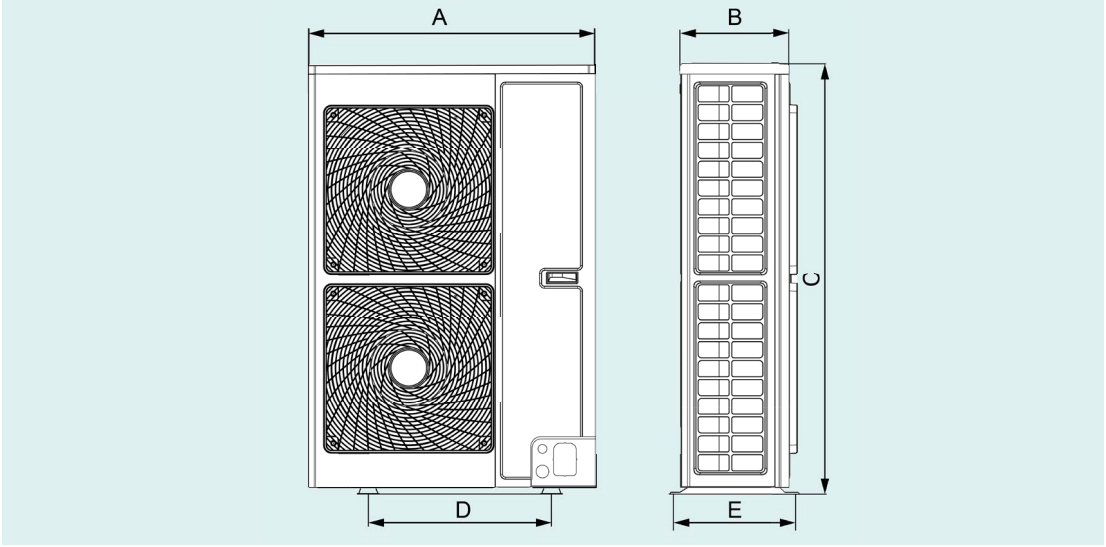
Model	Volume(m^3/h)	Static Pressure(Pa)
FGR50Pd/D(2)Na-M	9000	160
FGR60Pd/D(2)Na-M	10800	160

5 DIMENSIONAL DATA AND UNIT INSTALLATION SPACE REQUIREMENTS

5.1 Dimensional Data

The outdoor unit:

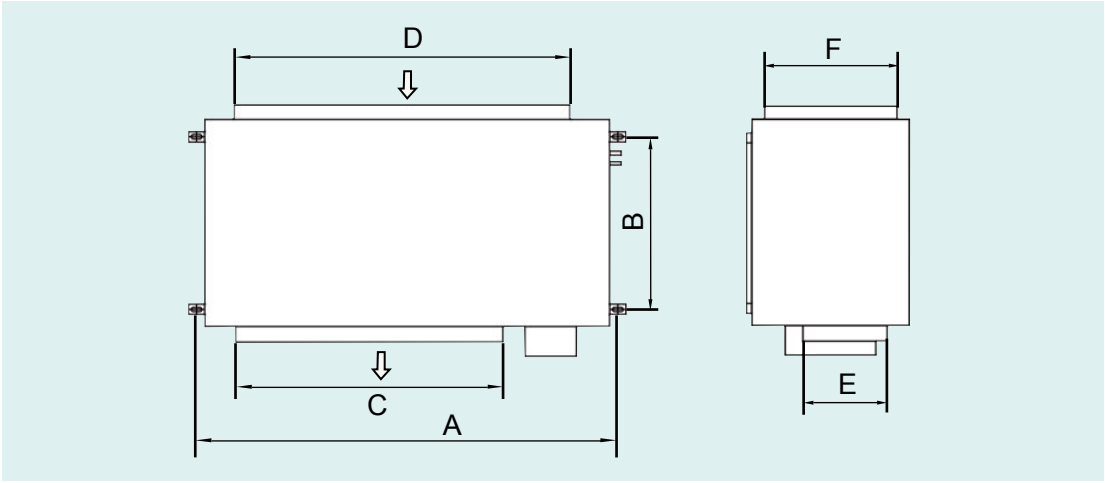
Unit: mm



Model	A	B	C	D	E
FGR25Pd/DNa-M(O)	940	460	1615	610	486
FGR30Pd/DNa-M(O)	940	460	1615	610	486

The indoor unit:

Unit: mm



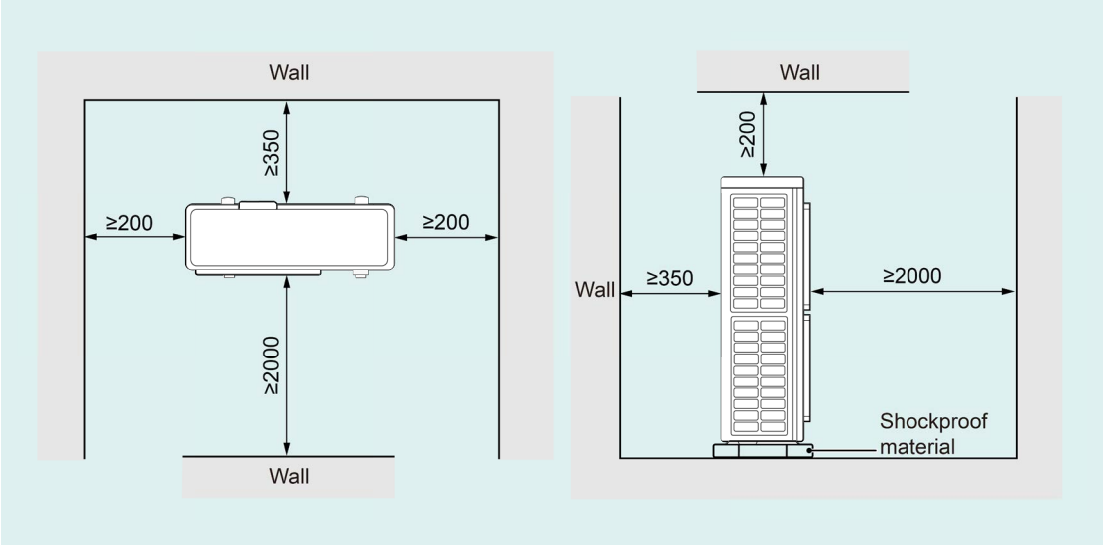
Below are dimensions of A, B, C, etc. for different models:

Model	A	B	C	D	E	F
FGR50Pd/D(2)Na-M(I)	1980	1040	1120	1650	347	600
FGR60Pd/D(2)Na-M(I)	1980	1040	1120	1650	347	755

5.2 Installation space requirements

Installation dimension of outdoor unit:

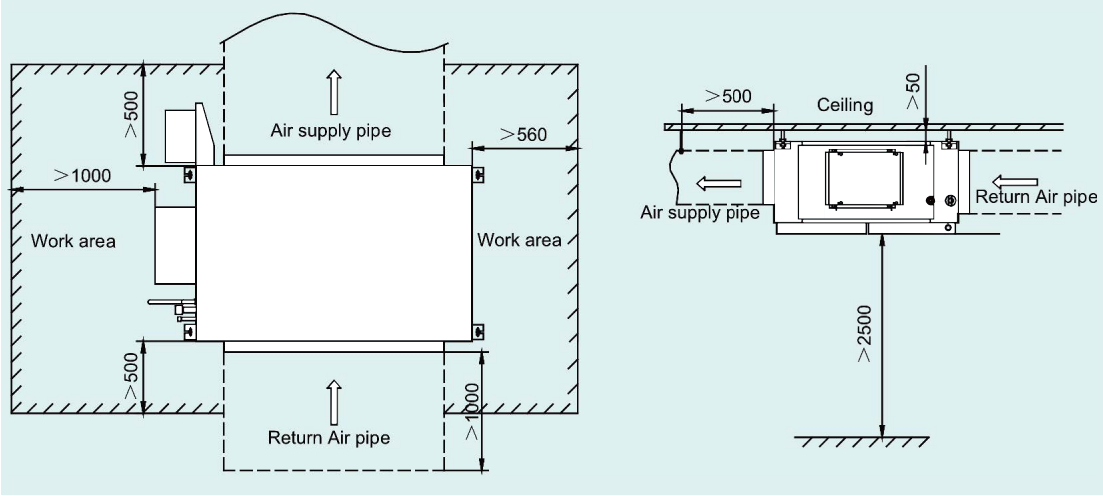
Unit: mm



Model
FGR25Pd/DNa-M(O)、FGR30Pd/DNa-M(O)

Installation dimewnsion of indoor unit:

Unit: mm



Model
FGR50Pd/D(2)Na-M(I)、FGR60Pd/D(2)Na-M(I)

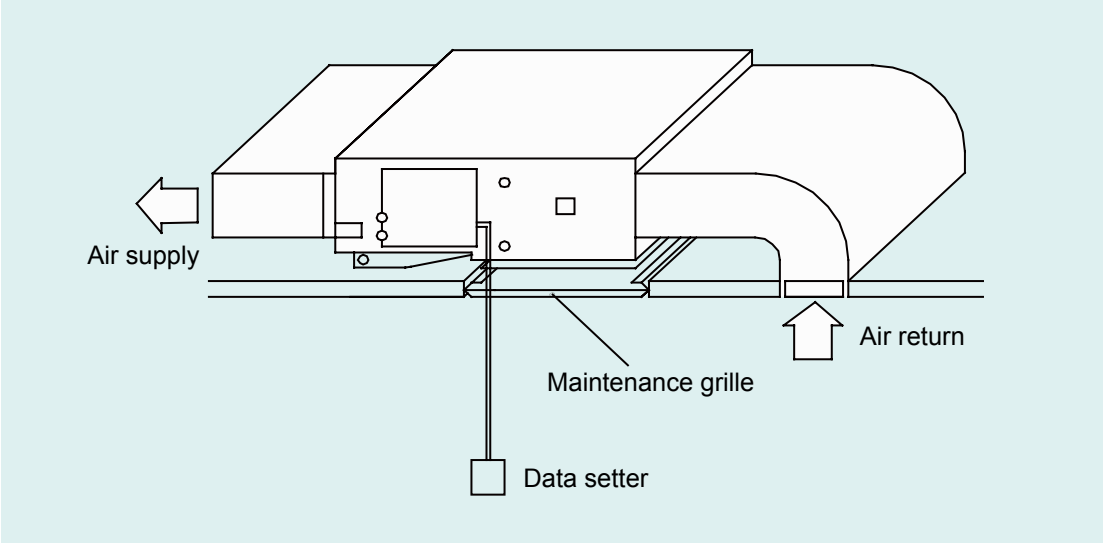
5.3 Precautions on the indoor unit design

The following aspects must be specially noted in consideration of the indoor unit location:

(1) The location should satisfy the optimal airflow organization for air conditioner in the actual project, and implement the most uniform distribution of temperature.

(2) Avoid mixed use of air ducts for air supply and air return in different air conditioning areas.

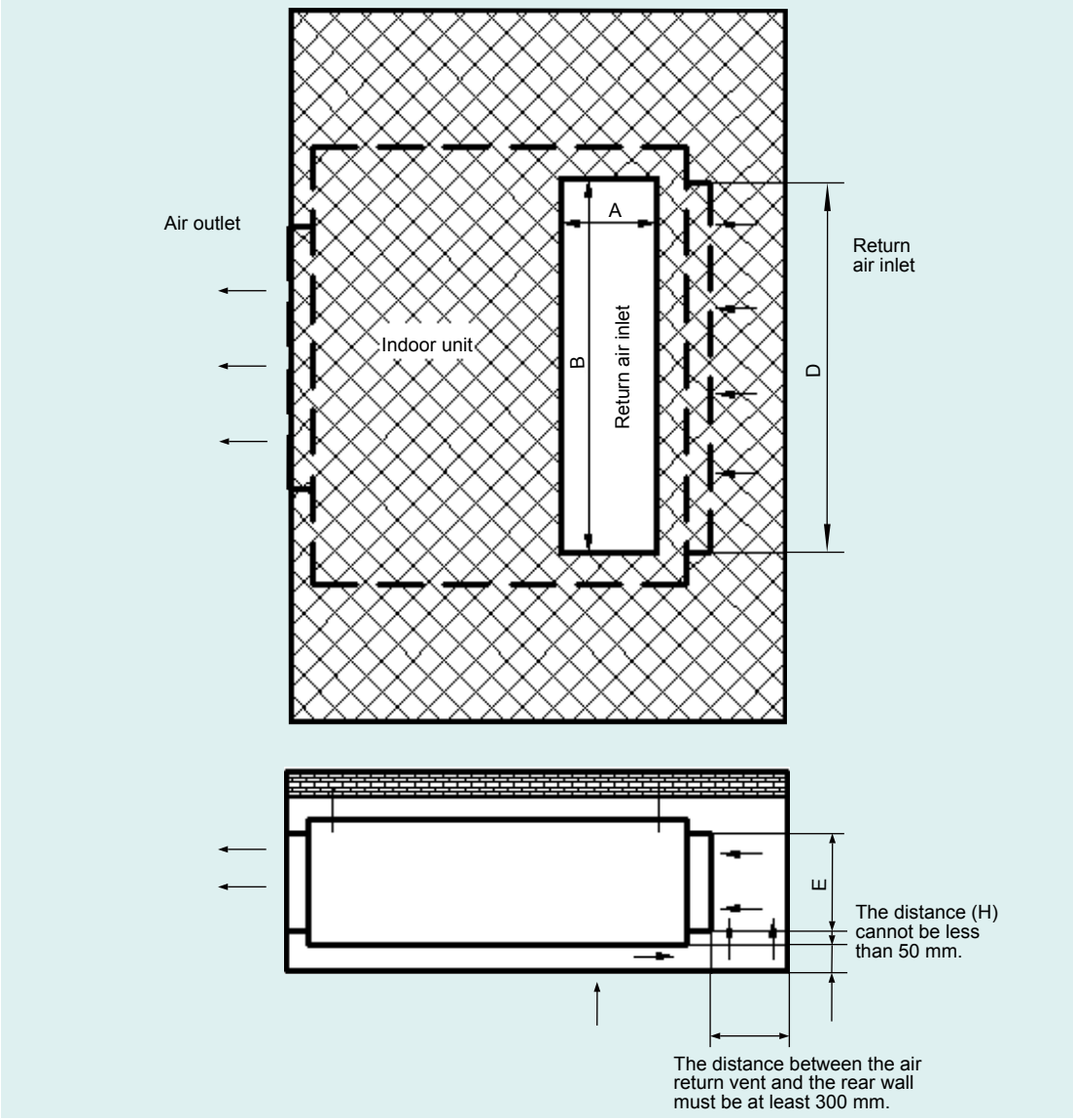
(3) When the indoor unit in the air supply mode of air duct is selected, it is preferred to adopt the rear air return mode for the unit to further efficiently reduce the air return noise of the unit.



(4) In locating, consider whether air return of the unit will be affected. For the indoor unit in the air supply mode of air duct, the air return frame must be more than 300 mm away from the back wall (rear air return mode) or other barriers.

(5) If the unit uses the rear air return mode and the ceiling uses the air return mode directly below the unit, the distance between the unit bottom and the ceiling must be over 50 mm. Meanwhile, the effective circulation area between the unit bottom and the ceiling cannot be smaller than the air return vent area of the unit.

For example:



- Air return area of the unit: S1 = D×E
- Air return vent circumference of the ceiling: L = 2×(A+B)
- Effective air return area of the ceiling: S2 = L×H

S2 cannot be smaller than S1. The distance H between the ceiling and the unit cannot be smaller than 50 mm.

(1) No barrier blocking air flow should exist at the air inlet or outlet of the indoor unit. The indoor unit should be installed at a position 2.3 m higher than the floor.

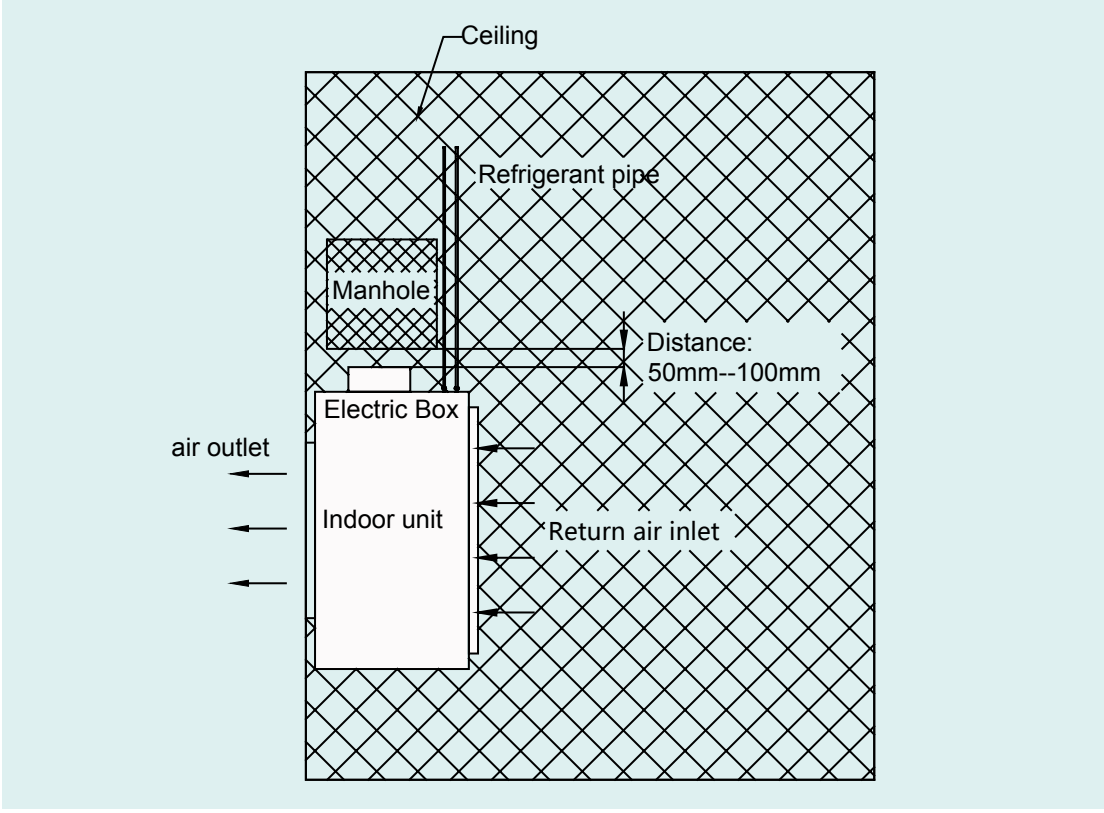
(2) For the indoor unit with the rated Cooling capacity greater than 5.6 kW, an air supply duct should be additionally added, and the air duct and air outlet should be set properly to reduce noises.

(3) A sufficient maintenance space should be reserved in locating the unit.

5.4 Locating the manhole and air return vent

In addition to consideration of the sufficient maintenance space to be reserved during unit locating, it is also important to locate the manhole. If manhole locating is improper, it will also make future maintenance and repair more difficult.

The manhole size can accommodate the shoulder width of a normal adult. It cannot be smaller than 450 mm × 450 mm. Usually the indoor unit in the air supply mode of air duct is located at the electric box side of the unit, the distance from the electric box is 50 mm to 100 mm, and maintenance of the pipeline part must also be considered. The pipeline maintenance position of the pipeline is mainly considered for the air raise type indoor unit, so the manhole can be located at a position that ensures the distance between one edge and the connection pipe is 200 mm to 250 mm. The schematic diagram is shown below:



The air return vent position must also be considered for the indoor unit in the air supply mode of air duct. The air return vent is responsible for air return of the unit, and also used to complete maintenance of the indoor fan motor and filter screen. Therefore, in addition to meeting the air return design requirements mentioned above, there is a must to ensure the requirement for replacing the motor and filter screen.

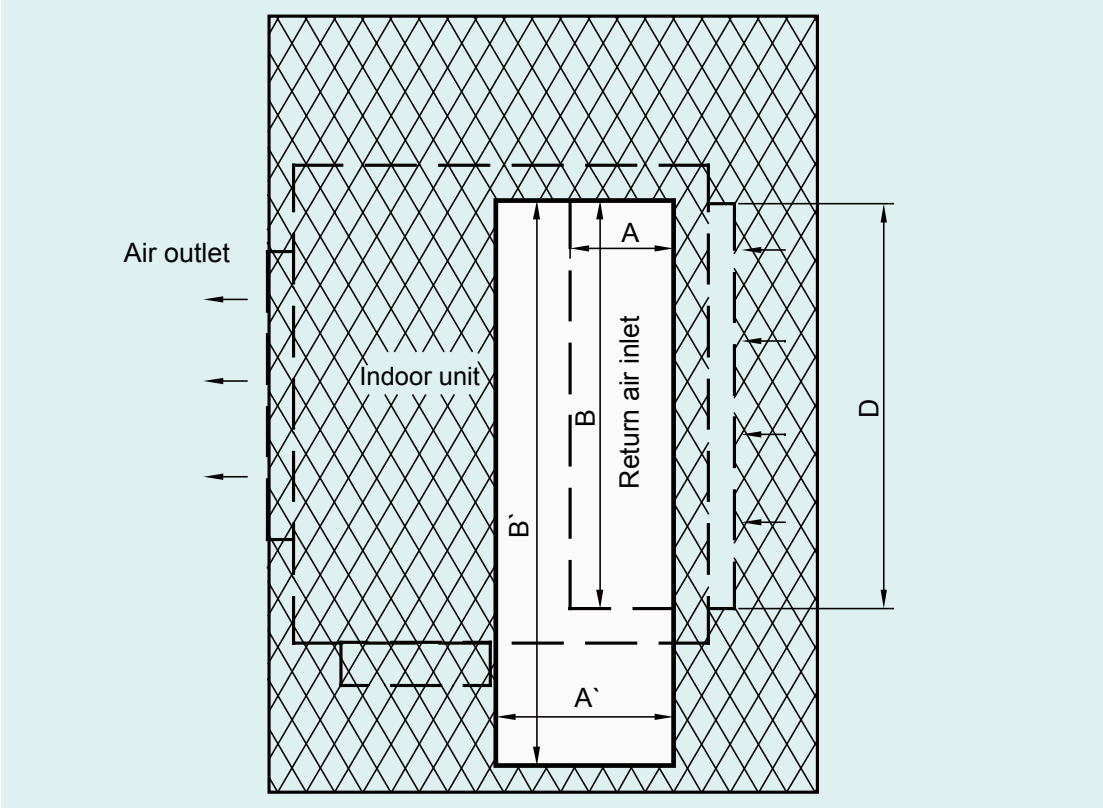
(1) Do not set the air return vent of the unit near the door, toilet or kitchen; otherwise problems such as condensation and peculiar smell may be caused.

(2) The length direction of the air return vent cannot be smaller than 2/3 of the air return vent length of the unit.

(3) If the air return vent is set directly behind the unit, the distance between its position and the unit cannot be greater than 300 mm.The width direction of the air return vent cannot be smaller than 200 mm.

(4) For the design of also using the air return vent as a manhole for the electric box, the maintenance position should also be reserved at the electric box side according to the above principle. At the same

time, it is required to consider whether the position of the air return vent can ensure easy removal and replacement of the fan motor and filter screen. Therefore, the air return vent should be enlarged to 1.5 to 2 times of the original circulation area according to the actual conditions and on the basis of satisfying the air volume design. The schematic diagram is shown below:

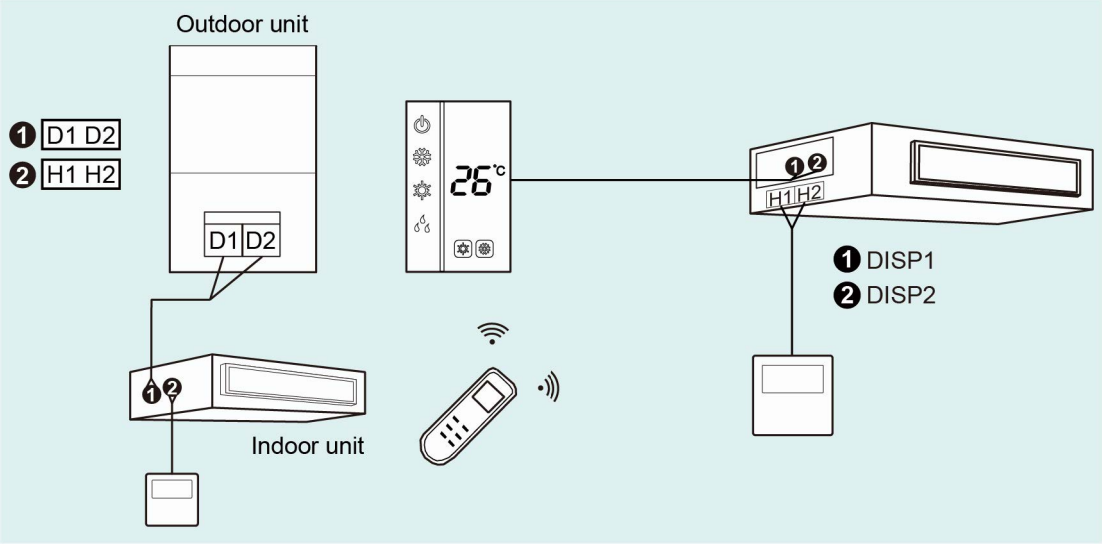


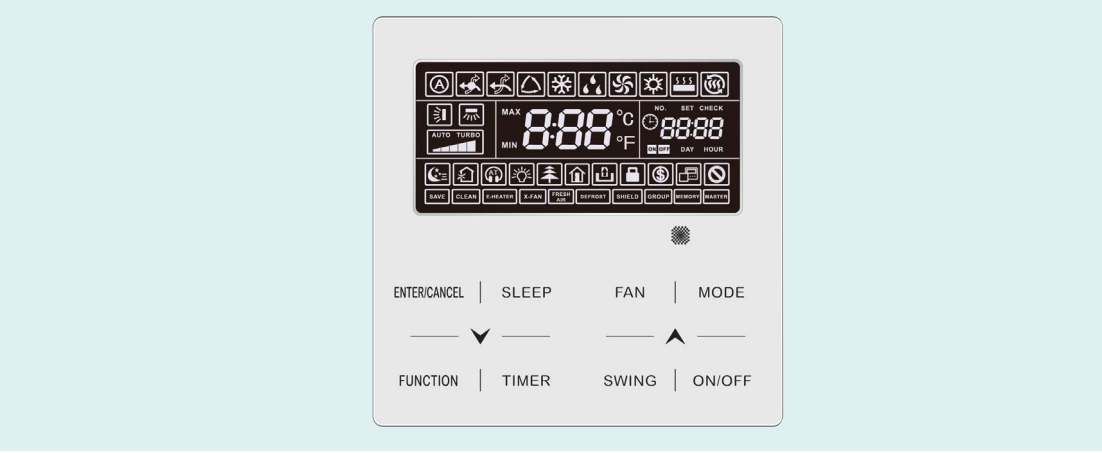
- Original air return vent area: S = A×B
- Currently air return vent area: S' = A' × B'
- S'≥ (1.5~2.0)S

6 FREQUIREMENTS FOR COMMUNICATION MODE

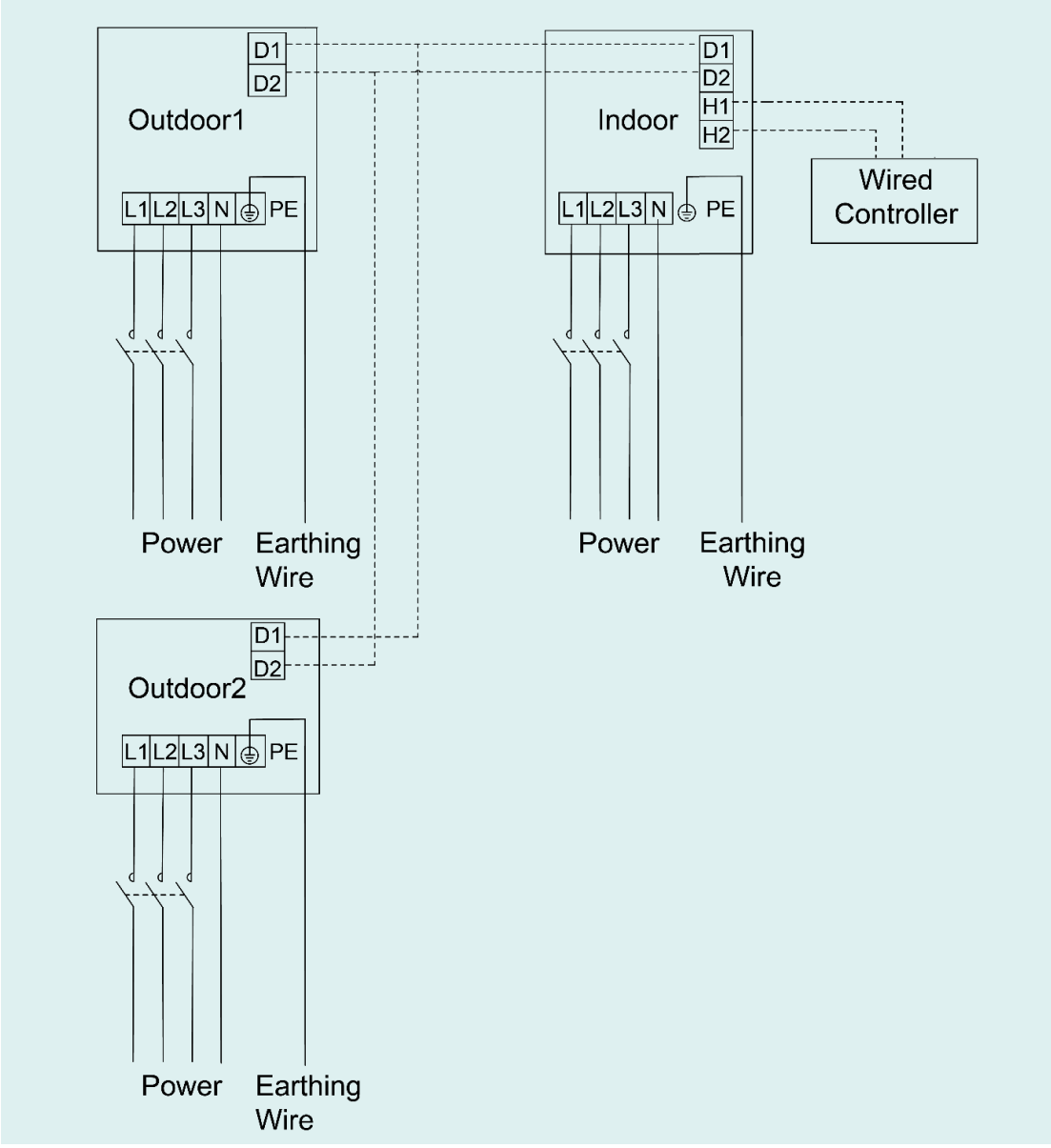
The indoor unit and the wired controller are connected following modes, which are respectively shown in Figure below:

3.2 Features





Separate power supply for IDU and ODU.



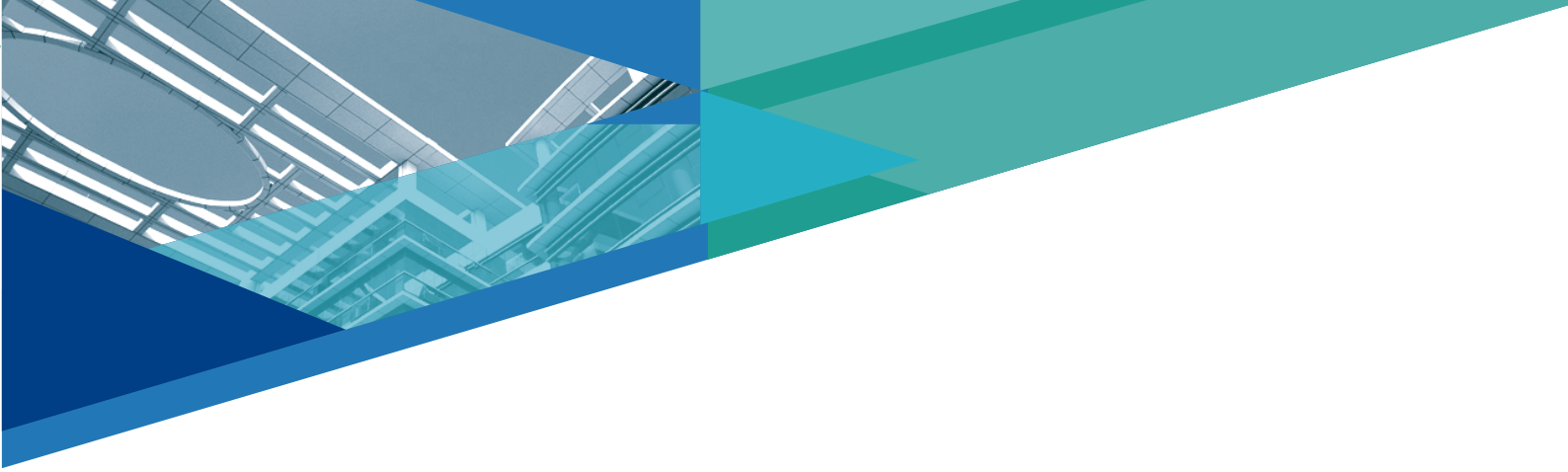
7 ACCESSORIES

Accessories name	Model name	Standard	Optional	Prepared by the user
Wired controller	XK46	√		
Wireless controller	YAP1F		√	
Remote controller for debugging	ME40-00/B		√	
Communication cable				√
Connection wire of the wired controller				√
Power cord				√
Duct pipe and the connector				√
Insulation material for the duct pipe				√
Filter screen		√		
Connecting pipeline between indoor and outdoor units				√
Drain pipe				√

8 SALES AREAS

No.	Product Series	Export to Eastern Europe	Other T1 areas
1	DUCTED TYPE SPLIT AIR-CONDITIONER UNITS	√	×

- √Indicates the product can be exported to this area.
- ×Indicates the product can't be exported to this area.



GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI 519070

Add: West Jinji Rd,Qianshan Zhuhai,Guangdong,China
Tel: (+86-756)8522218
Fax: (+86-756)8669426
E-mail: gree@cn.gree.com www.gree.com
Code : SJ00552106