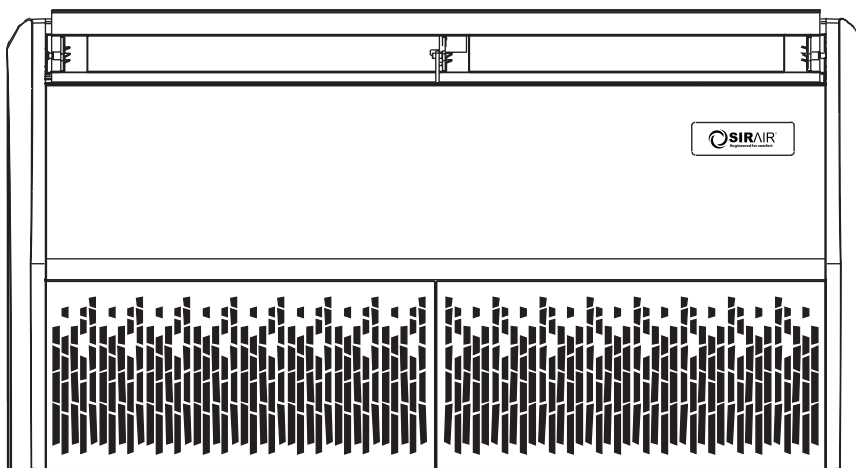




## Operation Manual & Installation

# Underceiling Airconditioner



### Model

GS-UNC18ID-INV/1P  
GS-UNC24ID-INV/1P  
GS-UNC36IDINV/1P  
GS-UNC48ID-INV/3P  
GS-UNC60ID-INV/3P

Thank you for purchasing our product, please keep and read this manual carefully before you install.

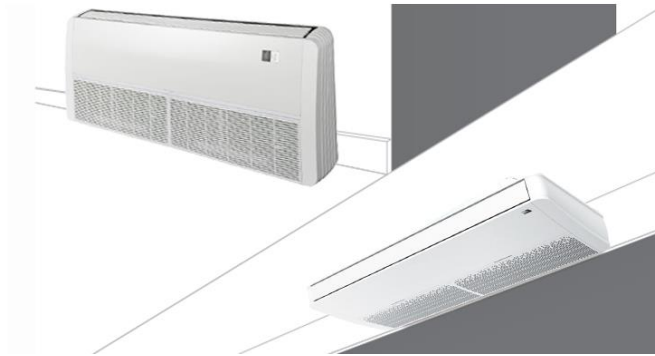
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# Floor & Ceiling

1.Features .....	82
2.Specifications .....	85
3.Dimensions.....	89
4.Service Space .....	90
5.Wiring Diagrams .....	91
6.Capacity Table.....	95
7.Electric Characteristics .....	99
8. Exploded View.....	100
9.Accessories .....	106
10.The Specification of Power .....	107
11.Field Wiring.....	108
12.Troubleshooting .....	108

# 1 Features

1. Flexible installation, ceiling suspended and floor standing.



2. Adopting centrifugal fans, higher ESP and longer air flow distance.



3. Two way auto-swing function, built-in two louver motor, vertical and horizontal air-flow adjustment.



4. Washable air filter

5. LED display optional.

6. New upper and lower buckle type wheel case, the upper plastic wheel case can be removed alone, which is convenient adjust the wheel motor.



7. Water pump optional, pumping head is up to 1200mm.

8. Adopting waterproof plastic film on water collector, avoiding water leakage.



9. Self-diagnostic function and multi protection; Auto-restart function.



10. Standard for wireless controller; option for wired controller



Standard



Optional

## 2 Specifications

Model			GS-UNC18ID-INV/1P	GS-UNC24ID-INV/1P
Indoor unit code			821039700060	821023700035
Indoor power supply		V/Ph/Hz	220~240/1/50	220~240/1/50
Cooling	Capacity	Btu/h	18000	24000
		kW	5.3	7
	Power input	kW	1.7	2.26
	Rated current	A	7.8	10.6
EER	W/W	3.1	3.1	
Heating	Capacity	Btu/h	18000	24000
		kW	5.3	7
	Power input	kW	1.51	2
	Rated current	A	6.8	9.4
COP	W/W	3.5	3.5	
Indoor fan motor	Model		YSK110-59LD-4P17	YSK110-59LD-4P17
	Power Output	W	59	59
	Capacitor	μF	3	3
	Speed(Hi/Me/Lo)	r/min	1310/1139/1016	1310/1139/1016
Indoor coil	Number of rows		3	3
	Tube pitch(a)x row pitch(b)	mm	21x13.37	21x13.37
	Fin spacing	mm	1.4	1.4
	Fin type		Hydrophilic	Hydrophilic
	Tube outside dia. and type	mm	Φ7	Φ7
			inner grooved	inner grooved
	Coil length x height x width	mm	680x252*40.11	680x252x40.11
Number of circuits		4	4	
Indoor air flow(High speed)		m <sup>3</sup> /h	1100	1200
Indoor noise level		dB(A)	49~53	48~52
Indoor unit	Dimension(W*H*D)		mm	1050x675x235
	Packing(W*H*D)		mm	1130x765x330
	Net/Gross weight		kg	26.5/31
Max pressure		MPa	4.2	4.2
Refrigerant type			R410A	R410A
Refrigerant piping	Liquid side/Gas side	mm	6.35/12.7	9.52/15.88
Drainage pipe		mm	DN25	DN25
Standard controller			Wireless controller	
Operation temp.		°C	16~32	16~32

**Technical Manual**

Model			<b>GS-UNC36ID-INV/1P</b>	<b>GS-UNC48ID-INV/3P</b>
Indoor unit code			<b>821039700053</b>	<b>821039700052</b>
Indoor power supply		V/Ph/Hz	220~240/1/50	220~240/1/50
Cooling	Capacity	Btu/h	36000	48000
		kW	10.5	14
	Power input	kW	3.4	4.5
	Rated current	A	15	18
EER	W/W	2.6	2.5	
Heating	Capacity	Btu/h	36000	48000
		kW	10.5	14
	Power input	kW	2.8	4
	Rated current	A	12.5	17.5
COP	W/W	3.4	2.8	
Indoor fan motor	Model		YSK110-180LD-4P2	2*YSK110-59LD-4P17
	Power Output	W	180	2*59
	Capacitor	μF	5	2*3
	Speed(Hi/Me/Lo)	r/min	1310/1210/1110	1310/1139/1016
Indoor coil	Number of rows		3	3
	Tube pitch(a)x row pitch(b)	mm	21×13.37	21×13.37
	Fin spacing	mm	1.4	1.4
	Fin type		Hydrophilic	Hydrophilic
	Tube outside dia. and type	mm	Φ7	Φ7
			inner grooved	Inner grooved
	Coil length x height x width	mm	948×252×40.11	1300×252×40.11
Number of circuits		4	5	
Indoor air flow(High speed)		m <sup>3</sup> /h	1600	2100
Indoor noise level		dB(A)	51~57	46~55
Indoor unit	Dimension(W*H*D)	mm	1250×675×235	1670×675×235
	Packing(W*H*D)	mm	1380×765×325	1750×770×325
	Net/Gross weight	kg	32/37	40/46
Max pressure		MPa	4.2	4.2
Refrigerant type			R410A	R410A
Refrigerant piping	Liquid side/Gas side	mm	9.52/15.88	9.52/15.88
Drainage pipe		mm	DN25	DN25
Standard controller			Wireless controller	
Operation temp.		°C	16~32	16~32

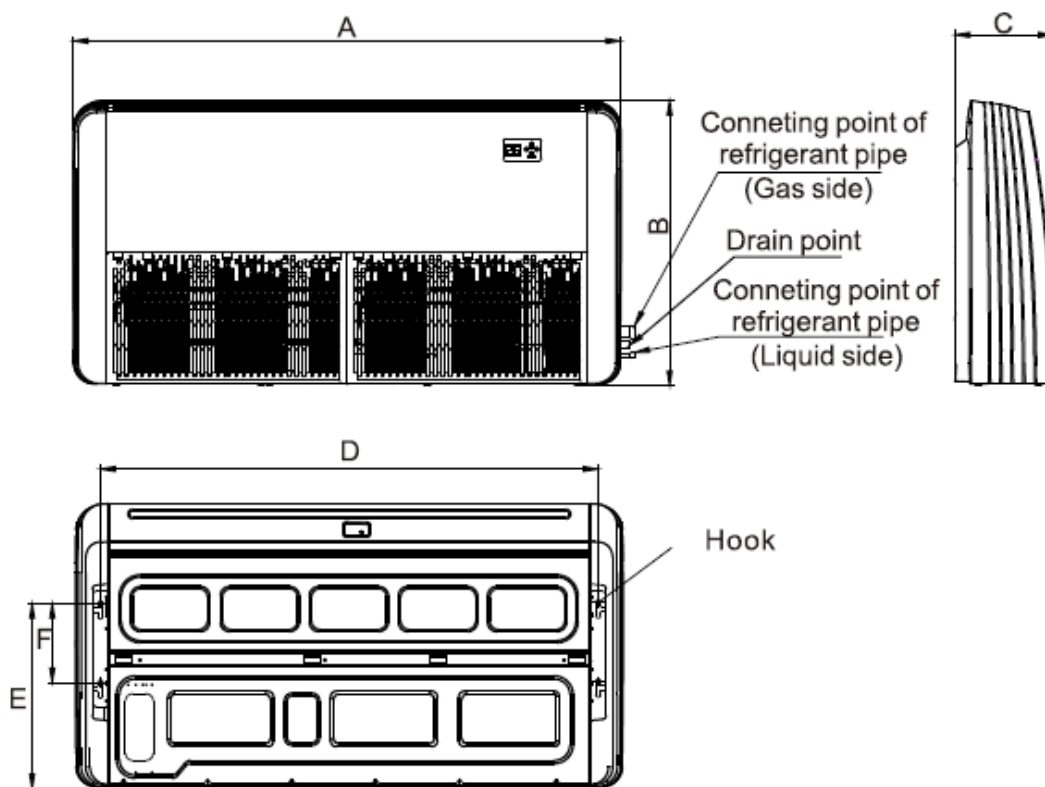
Model		GS-UNC60ID-INV/3P	
Indoor power supply		V/Ph/Hz	220~240V/1Ph/50Hz
Cooling	Capacity	KW	16
	Power input	W	280
	Current input	A	1.15
	EER	W/W	2.91
Heating	Capacity	KW	17.6
	Input	W	280
	Rated current	A	1.15
	COP	W/W	3.31
Energy rate		Cooling	C
Energy rate		Heating	C
Max. power input		W	300
Max. current input		A	1.35
Indoor fan motor	Model		YSK110-85LD-4P2
	Brand		YONGAN/KANGBAO
	Power output	W	85
	Capacitor	μF	5
	Speed	r/min	1560/1430/1300
	Insulation class		B
Indoor coil	Number of rows		4
	Tube pitch(a) x row pitch(b)	mm	22x19.1
	Fin spacing	mm	1.7
	Fin type		Hydrophilic
	Tube outside dia. and type	mm	Φ7.94 inner grooved
	Coil length x height x width	mm	1382x242x76.2
	Number of circuits		4
Indoor air flow (High speed)		m <sup>3</sup> /h	2000
Indoor noise level	power level	dB(A)	52
	pressure level		45-52
Indoor unit	Dimension (W*H*D)	Body(mm)	1670x680x244
	Packing (W*H*D)	Body(mm)	1750x765x330
	Net/Gross weight	Body(Kg)	49/55.5
Max pressure		MPa	4.5
Refrigerant type			R410A
Refrigerant piping	Liquid side/Gas side	mm	Φ9.52/Φ15.88
Drainage pipe		mm	DN25
Standard controller			Standard for remote controller(wired controller for option)
Operation temp		°C	16~32
Ambient temp	cooling	°C	-15~50
	heating	°C	-15~30



**Notes:**

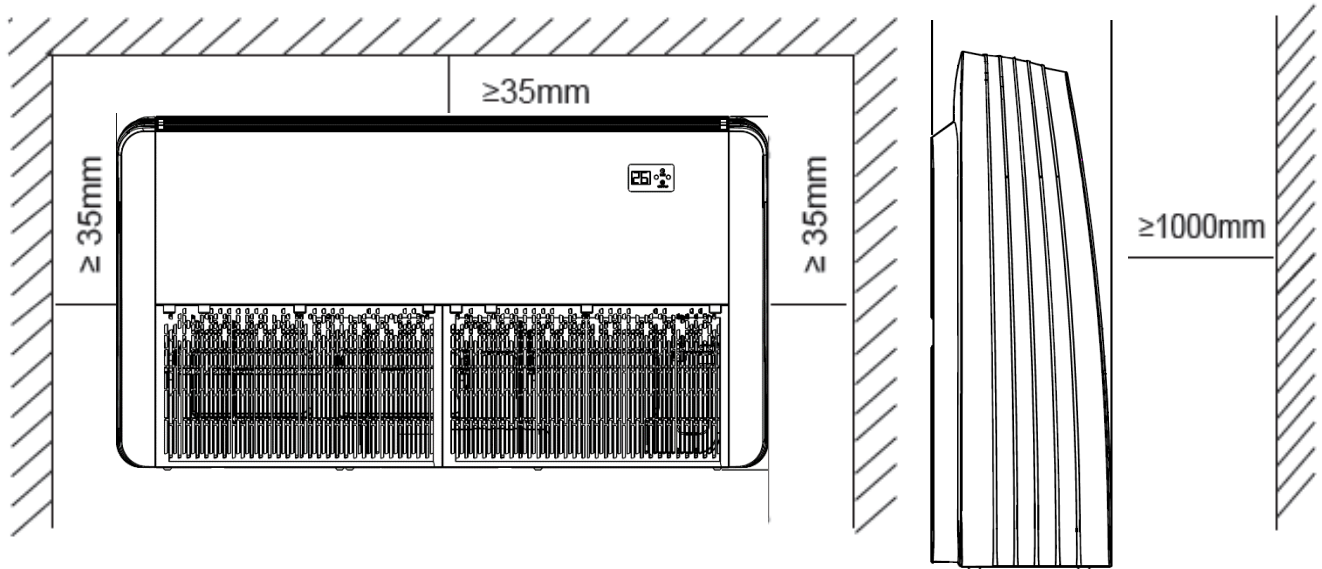
1. Nominal cooling capacities are based on the following conditions:  
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 5m (horizontal)
2. Nominal heating capacities are based on the following conditions:  
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

### 3 Dimensions



Model(kBtu/h)	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)
18/24	1050	675	235	933	440	188
36	1250	675	235	1185	440	188
48/55	1670	675	235	1553	440	188

## 4 Service Space

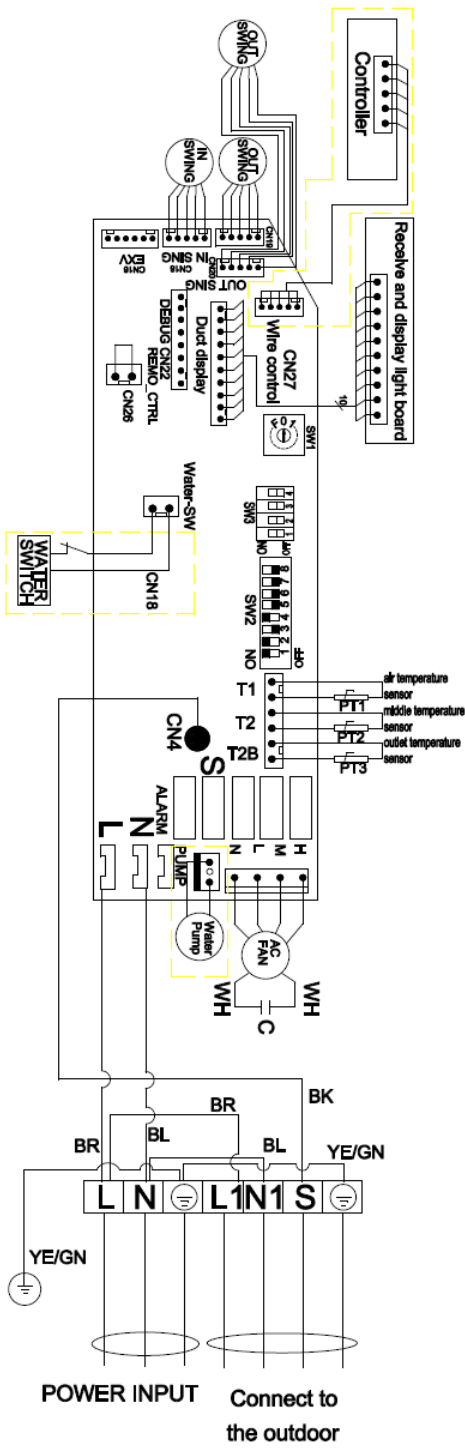


# 5 Wiring Diagrams

## 5.1 GS-UNC18ID-INV/1P,GS-UNC24ID-INV/1P

### Electrical wiring diagram

802039790160 V.0



**NOTE:**

ON	That DIP to ON
OFF	That DIP to OFF

**FACTORY DEFAULT**

ON	SW2	SW3
OFF	1 2 3 4	1 2 3 4

**Note 1:** if there is no water pump, CN18 need to short answer.  
 The power (HP) of indoor units can be set through DIP switch SW1 (16-bit disc DIP) on the indoor control panel before delivery, the detailed information is as follows:

HP	Reserved	0.8	1.0	1.5	1.7	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	Reserved
MODEL	Reserved	21	26	35	47	53	70	80	90	105	125	140	150	160	180	Reserved
POWER	Reserved	7K	9K	12K	16K	18K	24K	27K	30K	36K	42K	48K	52K	55K	60K	Reserved
SW1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

ON	SW2 NO.4	Display light board
OFF	LED	
ON	SW2 NO.5	power-down memory
OFF	No power-down memory	

ON	SW2 NO.1,2	Indoor models
OFF	Low static pressure duct unit	
ON	SW2 NO.3	High static pressure duct unit
OFF	Standard static pressure duct unit	
ON	SW2 NO.6	Floor/Ceiling Unit
OFF	Reserved	

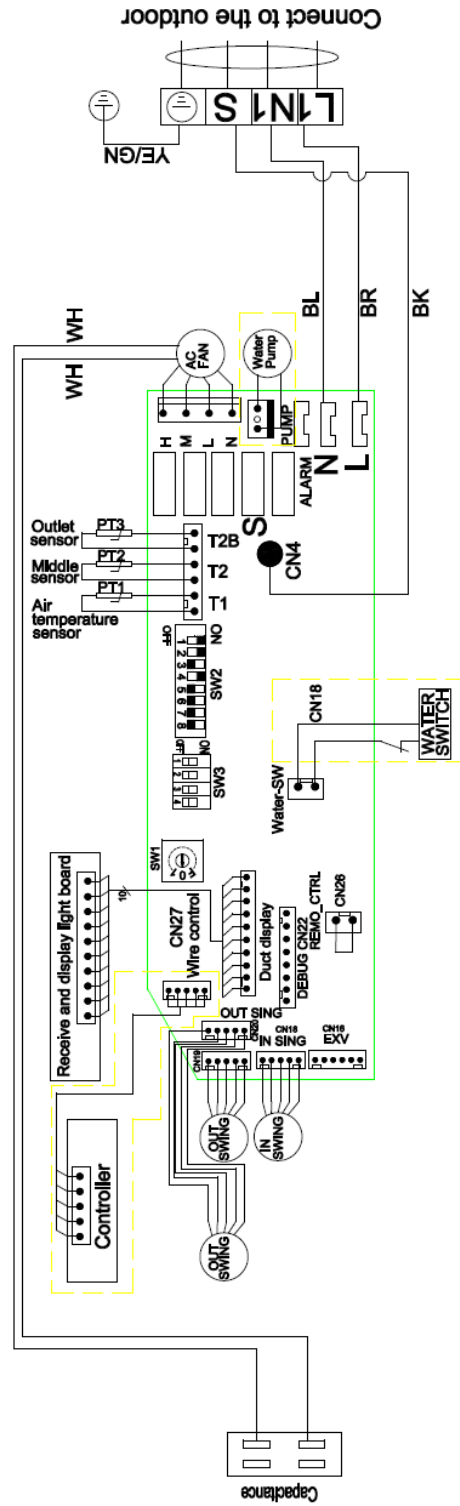
ON	SW2 NO.8	Room temp. sensor T1 for
OFF	Electric control panel	
ON	SW2 NO.7	Wire controller
OFF	Reserved	

ON	SW2 NO.3	Reserved
OFF	Reserved	
ON	SW2 NO.6	Reserved
OFF	Reserved	
ON	SW2 NO.7	Reserved
OFF	Reserved	
ON	SW3 NO.1-4	Reserved
OFF	Reserved	

# 5.2GS-UNC36ID-INV/1P

Electrical wiring diagram

802039790157 V.0



**NOTE:**

<input type="checkbox"/> ON	<input type="checkbox"/> OFF	That DIP to ON
<input type="checkbox"/> ON	<input type="checkbox"/> OFF	That DIP to OFF

**FACTORY DEFAULT**

<input type="checkbox"/> ON	<input type="checkbox"/> OFF	SW2
-----------------------------	------------------------------	-----

Note: If there is no water pump, CN18 need to short answer.  
 The power (HP) of indoor units can be set through DIP switch SW1 (16-bit disc DIP) on the indoor control panel before delivery, the detailed information is as follows:

HP	Reserved	0.8	1.0	1.5	1.7	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	Reserved
MODEL	Reserved	21	26	35	47	53	70	80	90	105	125	140	150	160	180	Reserved
POWER	Reserved	7K	9K	12K	16K	18K	24K	27K	30K	36K	42K	48K	52K	55K	60K	Reserved
SW1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

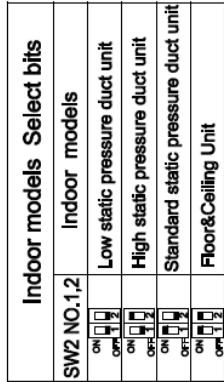
SW2 NO.4	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	LED
	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	Digital tube

SW2 NO.5	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	power-down memory
	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	power-down memory
	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	No power-down memory

SW2 NO.8	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	Room temp. sensor T1 for
	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	Electric control panel
	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	Wire controller

SW2 NO.1,2	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	Indoor models
	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	Low static pressure duct unit
	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	High static pressure duct unit
	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	Standard static pressure duct unit
	<input type="checkbox"/> ON	<input type="checkbox"/> OFF	Floor&Ceiling Unit

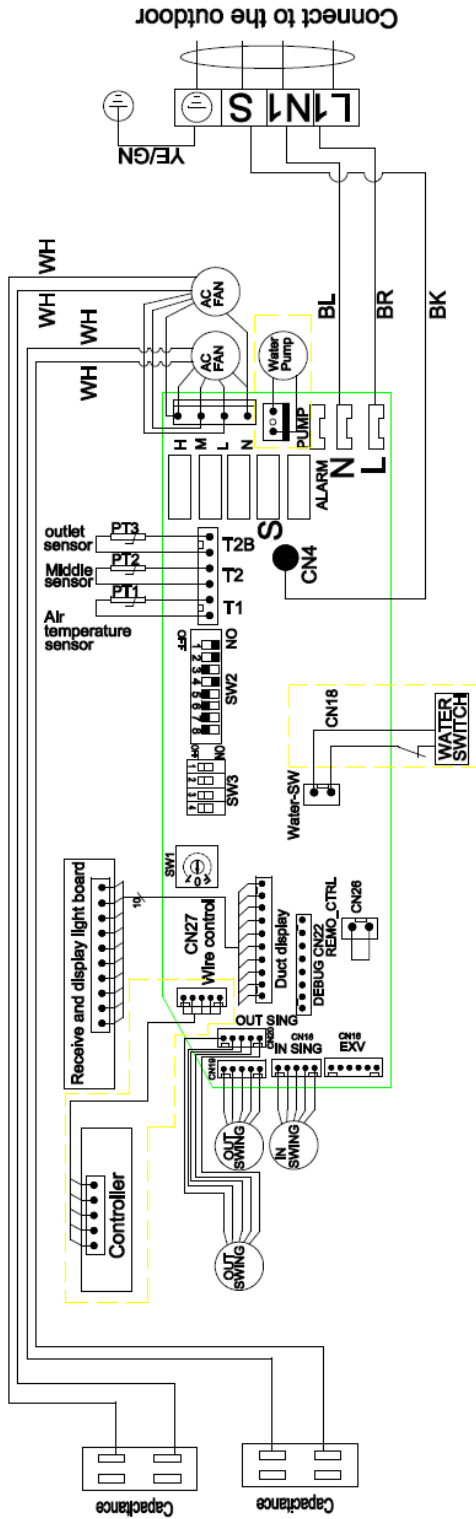
SW2 NO.3	Reserved
SW2 NO.6	Reserved
SW2 NO.7	Reserved
SW3 NO.1-4	Reserved



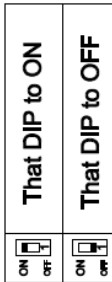
# 5.3GS-UNC48ID-INV/3P

802039790154 V.0

Electrical wiring diagram



**NOTE:**



Note1: If there is no water pump, CN18 need to short answer.

The power (HP) of indoor units can be set through DIP switch SW1 (16-bit disc DIP) on the indoor control panel before delivery, the detailed information is as follows:

HP	Reserved	0.8	1.0	1.5	1.7	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	Reserved
MODEL	Reserved	21	26	35	47	53	70	80	90	105	125	140	150	160	180	Reserved
POWER	Reserved	7K	9K	12K	16K	18K	24K	27K	30K	36K	42K	48K	52K	55K	60K	Reserved
SW1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

SW2 NO.4	ON	OFF	ON	OFF
Display light board	LED	Digital tube		

SW2 NO.5	ON	OFF	ON	OFF
power-down memory	power-down memory	No power-down memory		

SW2 NO.8	ON	OFF	ON	OFF
Room temp. sensor T1 for	Electric control panel	Wire controller		

SW2 NO.1,2	ON	OFF	ON	OFF
Indoor models	Low static pressure duct unit	High static pressure duct unit	Standard static pressure duct unit	Floor&Ceiling Unit

SW2 NO.3	Reserved
SW2 NO.6	Reserved
SW2 NO.7	Reserved
SW3 NO.1-4	Reserved

# 5.4 GS-UNC60ID-INV/3P-C

**NOTE:**

ON OFF	That DIP to ON
ON OFF	That DIP to Digital
<b>FACTORY DEFAULT</b>	
ON OFF	SW2 1 2 3 4 5 6 7 8

ON OFF	Indoor models	Select bits
ON OFF	SW2 NO.1,2	Indoor models
ON OFF	SW2 NO.4	Floor&Ceiling Unit
ON OFF	SW2 NO.4	LED
ON OFF	SW2 NO.4	Digital tube

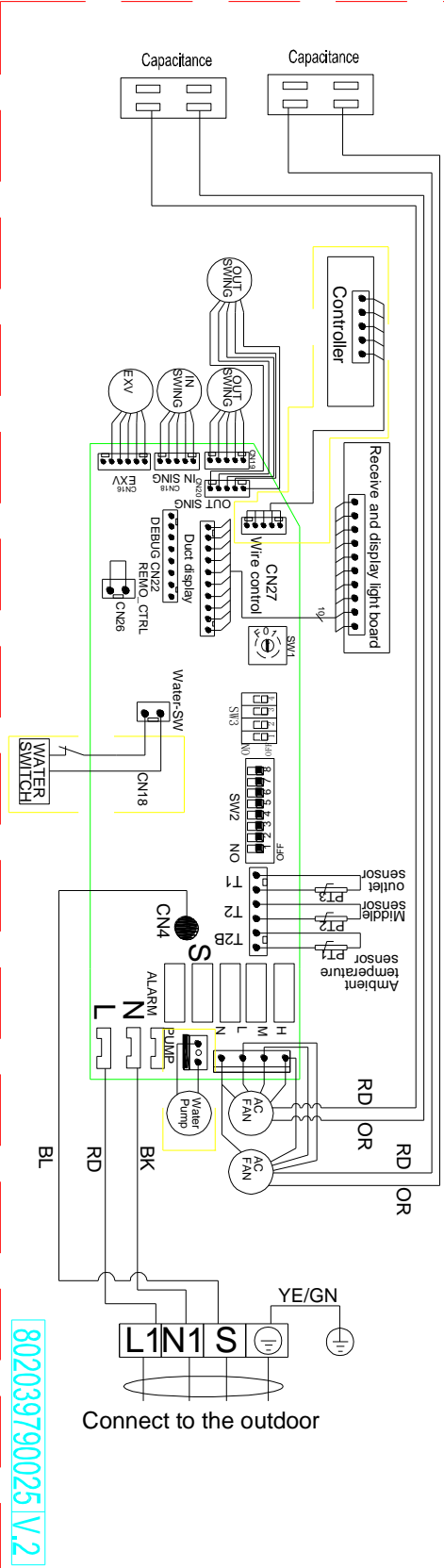
ON OFF	SW2 NO.5	power-down memory
ON OFF	SW2 NO.6	No power-down memory
ON OFF	SW2 NO.6	Heating temperature compensation
ON OFF	SW2 NO.6	6i æ
ON OFF	SW2 NO.6	2i æ

ON OFF	SW2 NO.7	Anti-cold wind off the fan temperature selection bit
ON OFF	SW2 NO.7	15i æ
ON OFF	SW2 NO.7	24i æ
ON OFF	SW2 NO.8	Heating fan stop time
ON OFF	SW2 NO.8	4MIN
ON OFF	SW2 NO.8	8MIN

**Note1:**When there is no water pump installation, WATER-SW needs to be short circuit. The power (PH) of indoor units can be set throughDIP switch SW1(16- bit disc DIP ) on the indoor control panel before delivery, the detailed information is as follows:

HP	4	5	6
MODEL	36K	ERP48K	ERP60K
SW1	7	9	A
POWER	105	140	160

## Electrical wiring diagram



802039790025 V.2

## 6. Capacity Table

### Cooling

#### 6.1 GS-UNC18ID-INV/1P

MODEL		GS-UNC18ID-INV/1P						
COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	49°C
21°C D	Total capacity Kw	5.09	5.06	5.03	4.99	4.95	4.91	4.88
15°C W	Input kW.	1.51	1.52	1.54	1.56	1.61	1.67	1.72
24°C D	Total capacity kW	5.25	5.22	5.18	5.15	5.10	5.06	5.03
17°C W	Input kW.	1.53	1.54	1.56	1.58	1.64	1.69	1.74
27°C D	Total capacity kW	5.41	5.38	5.34	5.30	5.26	5.22	5.18
19°C W	Input kW.	1.55	1.56	1.58	1.60	1.66	1.72	1.76
29°C D	Total capacity kW	5.48	5.44	5.40	5.36	5.32	5.28	5.24
21°C W	Input kW.	1.57	1.59	1.61	1.63	1.68	1.74	1.79
32°C D	Total capacity kW	5.58	5.55	5.51	5.47	5.42	5.38	5.34
23°C W	Input kW.	1.58	1.59	1.61	1.63	1.69	1.75	1.80

#### 6.2 GS-UNC24ID-INV/1P

MODEL		GS-UNC24ID-INV/1P						
COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	49°C
21°C DB	Total capacity kW	6.82	6.78	6.73	6.68	6.63	6.58	6.53
15°C WB	Input kW.	2.03	2.05	2.07	2.10	2.17	2.25	2.31
24°C DB	Total capacity kW	7.04	7.00	6.95	6.89	6.84	6.78	6.74
17°C WB	Input kW.	2.05	2.07	2.10	2.12	2.20	2.28	2.34
27°C DB	Total capacity kW	7.25	7.21	7.15	7.00	7.04	6.99	6.94
19°C WB	Input kW.	2.08	2.10	2.12	2.15	2.23	2.31	2.37
29°C D	Total capacity kW	7.34	7.29	7.24	7.19	7.13	7.07	7.03
21°C W	Input kW.	2.11	2.13	2.16	2.19	2.26	2.34	2.41
32°C DB	Total capacity kW	7.48	7.43	7.38	7.32	7.26	7.21	7.16
23°C WB	Input kW.	2.121	2.14	2.17	2.19	2.27	2.35	2.42

#### 6.3 GS-UNC36ID-INV/1P

MODEL		GS-UNC36ID-INV/1P						
COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	49°C
21°C DB	Total capacity kW	10.09	10.03	9.96	9.88	9.80	9.73	9.66
15°C WB	Input kW.	3.09	3.12	3.15	3.19	3.31	3.42	3.52
24°C DB	Total capacity kW	10.41	10.35	10.27	10.19	10.11	10.03	9.97
17°C WB	Input kW.	3.13	3.16	3.19	3.23	3.35	3.47	3.57
27°C DB	Total capacity kW	10.72	10.66	10.58	10.50	10.42	10.33	10.27
19°C WB	Input kW.	3.17	3.20	3.24	3.28	3.39	3.51	3.61
29°C D	Total capacity kW	10.85	10.79	10.71	10.63	10.54	10.46	10.39
21°C W	Input kW.	3.22	3.25	3.29	3.33	3.45	3.57	3.67
32°C DB	Total capacity kW	11.06	10.99	10.91	10.83	10.74	10.66	10.59
23°C WB	Input kW.	3.23	3.26	3.30	3.34	3.46	3.59	3.69

#### 6.4 GS-UNC48ID-INV/3P



MODEL		GS-UNC48ID-INV/3P						
COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	49°C
21°C D	Total capacity Kw	13.45	13.37	13.29	13.18	13.08	12.97	12.89
15°C W	Input kW.	4.59	4.62	4.68	4.74	4.89	5.07	5.22
24°C D	Total capacity kW	13.87	13.79	13.68	13.60	13.47	13.37	13.29
17°C W	Input kW.	4.65	4.68	4.74	4.80	4.98	5.13	5.29
27°C D	Total capacity kW	14.29	14.21	14.11	14	13.89	13.79	13.68
19°C W	Input kW.	4.71	4.74	4.80	4.86	5.04	5.22	5.35
29°C D	Total capacity kW	14.48	14.37	14.26	14.16	14.05	13.95	13.84
21°C W	Input kW.	4.77	4.83	4.89	4.95	5.10	5.29	5.44
32°C D	Total capacity kW	14.74	14.66	14.55	14.45	14.32	14.21	14.11
23°C W	Input kW.	4.80	4.83	4.89	4.95	5.13	5.32	5.47

## 6.5 GS-UNC60ID-INV/3P

MODEL		GS-UNC60ID-INV/3P						
COOLING		OUTDOOR TEMPERATURE DRY						
Indoor Conditions		21°C	25°C	30°C	35°C	40°C	45°C	49°C
21°C D	Total capacity Kw	15.37	15.28	15.18	15.06	14.94	14.82	14.73
15°C W	Input kW.	5.12	5.16	5.23	5.29	5.46	5.67	5.84
24°C D	Total capacity kW	15.85	15.76	15.64	15.55	15.40	15.28	15.18
17°C W	Input kW.	5.19	5.23	5.29	5.36	5.57	5.74	5.91
27°C D	Total capacity kW	16.33	16.24	16.12	16	15.88	15.76	15.64
19°C W	Input kW.	5.26	5.29	5.36	5.43	5.63	5.84	5.97
29°C D	Total capacity kW	16.54	16.42	16.30	16.18	16.06	15.94	15.82
21°C W	Input kW.	5.33	5.40	5.46	5.53	5.70	5.91	6.07
32°C D	Total capacity kW	16.85	16.75	16.63	16.51	16.36	16.24	16.12
23°C W	Input kW.	5.36	5.40	5.46	5.53	5.74	5.94	6.11

## Heating

### 6.6 GS-UNC18ID-INV/1P

MODEL		GS-UNC18ID-INV/1P						
HEATING		OUTDOOR CONDITIONS						
Indoor Conditions		24°C D 18°C W	15°C D 14°C W	7°C D 6°C W	3°C D 2°C W	-5°C D -6°C W	-7°C D -8°C W	-14°C D -15°C W
15°C	Capacity kW	6.05	6.00	5.98	5.81	5.55	5.47	4.86
	Input kW.	1.51	1.37	1.34	1.32	1.29	1.28	1.22
18°C	Capacity kW	5.99	5.96	5.94	5.77	5.52	5.43	4.90
	Input kW.	1.54	1.40	1.36	1.34	1.31	1.30	1.24
20°C	Capacity kW	5.96	5.92	5.90	5.73	5.48	5.40	4.86
	Input kW.	1.56	1.42	1.39	1.37	1.34	1.33	1.27
22°C	Capacity kW	5.93	5.88	5.86	5.69	5.44	5.36	4.83
	Input kW.	1.59	1.45	1.41	1.39	1.36	1.35	1.29
27°C	Capacity kW	5.80	5.84	5.82	5.65	5.40	5.32	4.79
	Input kW.	1.62	1.47	1.43	1.41	1.39	1.38	1.31

### 6.7 GS-UNC24ID-INV/1P

MODEL		GS-UNC24ID-INV/1P						
HEATING		OUTDOOR CONDITIONS						
Indoor Conditions		24°C D 18°C W	15°C D 14°C W	7°C D 6°C W	3°C D 2°C W	-5°C D -6°C W	-7°C D -8°C W	-14°C D -15°C W
15°C	Capacity kW	7.95	7.83	7.81	7.58	7.25	7.14	6.43
	Input kW.	2.10	1.99	1.94	1.91	1.87	1.86	1.77
18°C	Capacity kW	7.90	7.78	7.75	7.53	7.20	7.09	6.39
	Input kW.	2.13	2.03	1.97	1.94	1.90	1.89	1.80
20°C	Capacity kW	7.86	7.73	7.70	7.47	7.15	7.04	6.35
	Input kW.	2.19	2.06	2.00	1.98	1.94	1.92	1.83
22°C	Capacity kW	7.82	7.67	7.65	7.42	7.10	6.99	6.30
	Input kW.	2.23	2.10	2.04	2.01	1.97	1.96	1.86
27°C	Capacity kW	7.73	7.62	7.59	7.37	7.05	6.94	6.26
	Input kW.	2.28	2.14	2.08	2.05	2.01	1.99	1.90

### 6.8 GS-UNC36ID-INV/1P

MODEL		GS-UNC36ID-INV/1P						
HEATING		OUTDOOR CONDITIONS						
Indoor Conditions		24°C D 18°C W	15°C D 14°C W	7°C D 6°C W	3°C D 2°C W	-5°C D -6°C W	-7°C D -8°C W	-14°C D -15°C W
15°C	Capacity kW	12.11	11.70	11.66	11.32	10.83	10.67	9.61
	Input kW.	3.24	3.04	2.95	2.91	2.85	2.83	2.70
18°C	Capacity kW	12.08	11.62	11.58	11.24	10.75	10.59	9.54
	Input kW.	3.28	3.09	3.01	2.97	2.90	2.88	2.75
20°C	Capacity kW	12.04	11.54	11.50	11.16	10.68	10.52	9.48
	Input kW.	3.33	3.15	3.05	3.02	2.96	2.94	2.80
22°C	Capacity kW	12.00	11.46	11.42	11.09	10.60	10.44	9.41
	Input kW.	3.39	3.20	3.11	3.07	3.01	2.99	2.84
27°C	Capacity kW	11.73	11.38	11.34	11.01	10.53	10.37	9.35
	Input kW.	3.48	3.26	3.17	3.13	3.06	3.04	2.90

## 6.9 GS-UNC48ID-INV/3P

MODEL		GS-UNC48ID-INV/3P						
HEATING		OUTDOOR CONDITIONS						
Indoor Conditions		24°C D 18°C W	15°C D 14°C W	7°C D 6°C W	3°C D 2°C W	-5°C D -6°C W	-7°C D -8°C W	-14°C D -15°C W
15°C	Capacity kW	15.59	15.46	15.41	14.97	14.30	14.09	12.52
	Input kW.	4.68	4.25	4.15	4.09	4.00	3.97	3.78
18°C	Capacity kW	15.43	15.35	15.30	14.87	14.22	13.99	12.62
	Input kW.	4.78	4.34	4.22	4.15	4.06	4.03	3.84
20°C	Capacity kW	15.35	15.25	15.2	14.76	14.12	13.91	12.52
	Input kW.	4.84	4.40	4.31	4.25	4.15	4.12	3.94
22°C	Capacity kW	15.28	15.15	15.10	14.66	14.01	13.81	12.44
	Input kW.	4.93	4.50	4.37	4.31	4.22	4.19	4.00
27°C	Capacity kW	14.94	15.05	14.99	14.56	13.91	13.71	12.34
	Input kW.	5.02	4.56	4.43	4.37	4.31	4.28	4.06

## 6.10 GS-UNC60ID-INV/3P

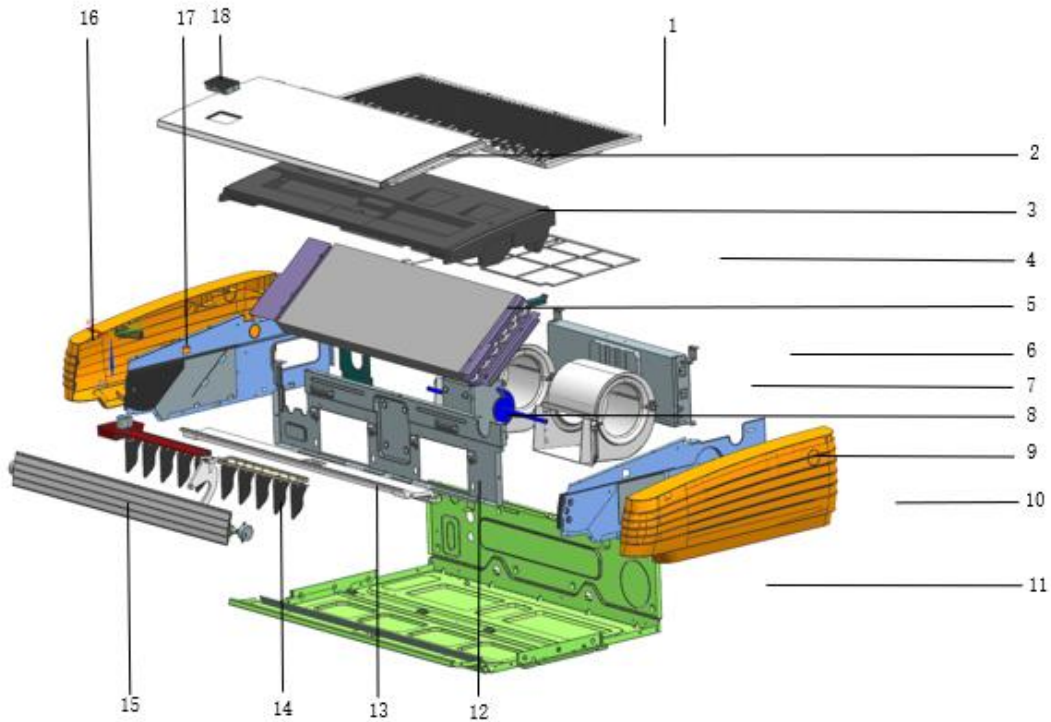
MODEL		GS-UNC60ID-INV/3P						
HEATING		OUTDOOR CONDITIONS						
Indoor Conditions		24°C D 18°C W	15°C D 14°C W	7°C D 6°C W	3°C D 2°C W	-5°C D -6°C W	-7°C D -8°C W	-14°C D -15°C W
15°C	Capacity kW	18.05	17.90	17.84	17.33	16.56	16.32	14.50
	Input kW.	5.50	4.99	4.88	4.81	4.70	4.66	4.44
18°C	Capacity kW	17.87	17.78	17.72	17.21	16.47	16.20	14.62
	Input kW.	5.61	5.10	4.95	4.88	4.77	4.73	4.51
20°C	Capacity kW	17.78	17.66	17.6	17.09	16.35	16.11	14.50
	Input kW.	5.68	5.17	5.06	4.99	4.88	4.84	4.62
22°C	Capacity kW	17.69	17.54	17.48	16.97	16.23	15.99	14.41
	Input kW.	5.79	5.28	5.13	5.06	4.95	4.91	4.70
27°C	Capacity kW	17.30	17.42	17.36	16.85	16.11	15.87	14.29
	Input kW.	5.90	5.35	5.21	5.13	5.06	5.02	4.77

## 7 Electric Characteristics

Model	Indoor Units				Indoor Fan Motor
	Hz	Voltage	Min.	Max.	kW
GS-UNC18ID-INV/1P	50	220-240V	198	254	0.059
GS-UNC24ID-INV/1P	50	220-240V	198	254	0.059
GS-UNC36ID-INV/1P	50	220-240V	198	254	0.180
GS-UNC48ID-INV/3P	50	220-240V	198	254	0.118
GS-UNC60ID-INV/3P	50	220-240V	198	254	0.17

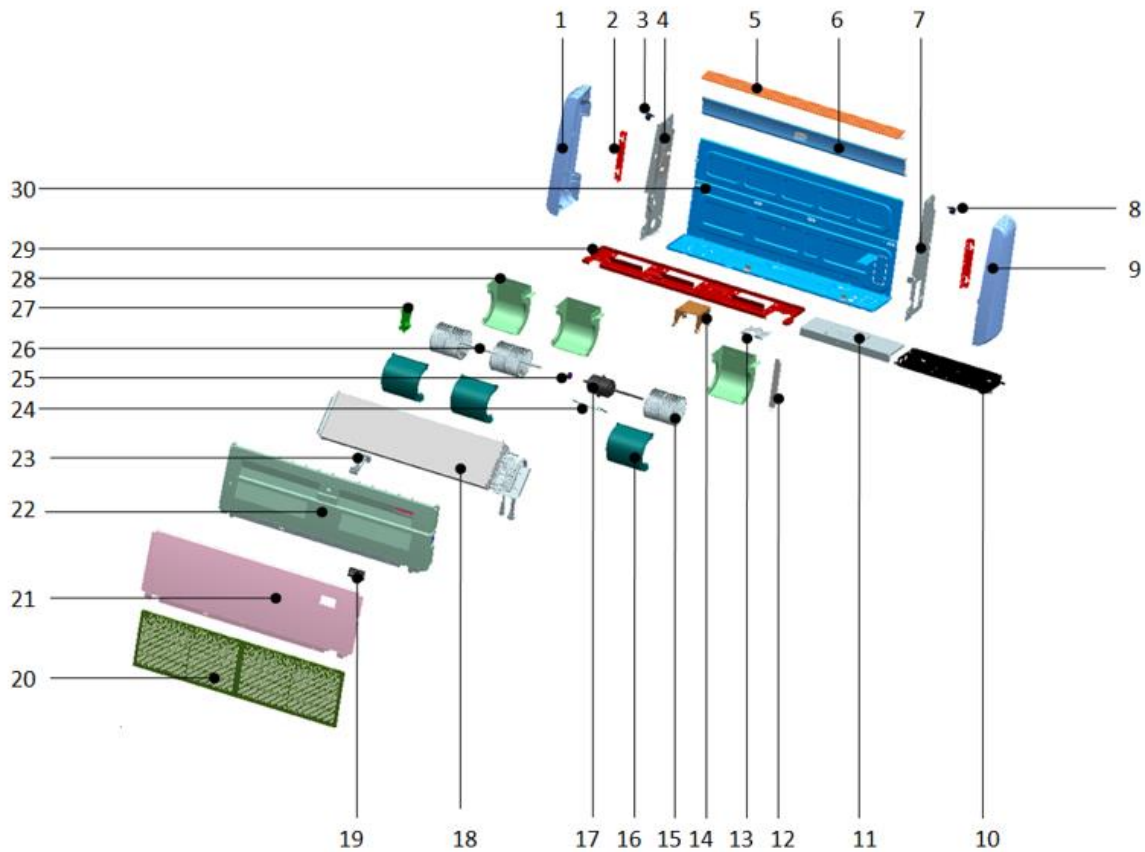
## 8. Exploded View

### 8.1 GS-UNC18ID-INV/1P, GS-UNC24ID-INV/1P



No.	Part Name	No.	Part Name
1	Air inlet grille	11.2	Rear cover
2	Top Cover assembly	11.3	Install lifting lugs
3	Water drain pan	12	Middle beam welded parts
4	Dust filter	13	Chassis foam assembly
5	Evaporator component	14.1	step motor
6	Indoor E-part box assembly	14.2	Louver bracket
7.1	Centrifugal fan blade	14.3	Horizontal swing leaf active lever
7.2	Upper Wheel volute	14.4	Louver connecting rod
7.3	Lower Wheel volute	14.5	Louver
8.1	Indoor fan motor	15	horizontal louver
8.2	Motor holder	16	Left cover
9	Right separating board	17	Lelf separating board
10	Right cover	18	Display panel assembly
11.1	Chassis assembly		

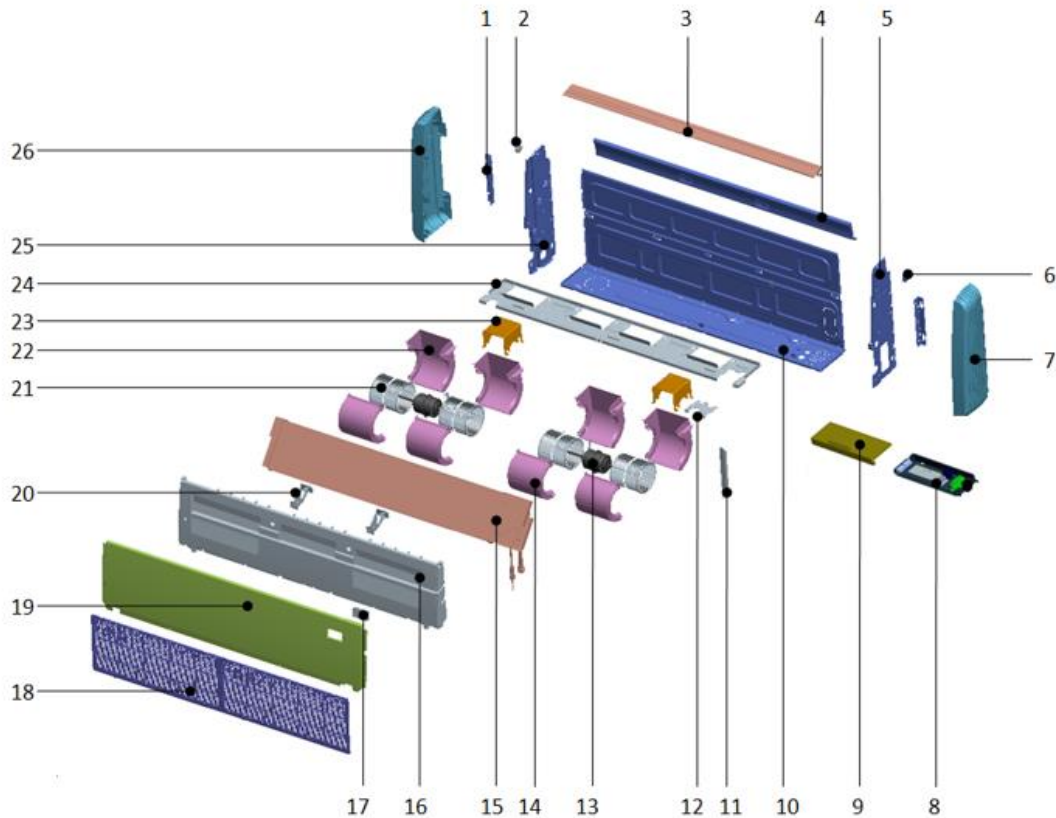
### 8.2 GS-UNC36ID-INV/1P



No.	Part Name	No.	Part Name
1	Left cover	19	Display panel component
2	Right mounting plate of evaporator	19.1	Display board component
3	Horizontal step motor	19.2	Display board mounting box
4	Left side board assembly	19.3	Display mask
5	Wind guide assembly	20	Back style assembly
6	Rear cover with cotton	20.1	Back style
7	Right side board assembly	20.2	Filter
8	Horizontal step motor	20.3	Grille buckle
9	Right cover	20.4	Grille screw cover
10	Indoor PCB assembly	21	Top cover assy
10.1	Internal board assy	22	Water pans components
10.2	E-part box	22.1	Water tray foam
10.3	temperature sensor	22.2	Mounting seat of horizontal pendulum blade 1
10.4	Terminal	22.3	Mounting seat of horizontal pendulum blade 2
10.7	Blade fan capacitor	22.4	Horizontal swinging blade driving rod
10.9	Buckle	22.5	Horizontal swing rod 1
11	Electric box cover	22.6	Wind guide blade
12	Support bar	22.7	step motor
13	Pipe plate	23	Wind guide bracket
14	Motor bracket	24	Motor coaming
15	Centrifugal fan blade	25	coupling
16	Upper volute	26	Connecting shaft
17	Indoor fan motor	27	Motor support assembly
18	Evaporator assy	28	Lower volute
18.1	evaporator pre-welded assembly	29	Middle beam welding assembly
18.1.1	Evaporator assembly	30	Chassis assembly

18.1.2	Evaporator output pipe assembly		
18.1.3	Evaporator input pipe assembly		
18.2	temperature sensor		
18.3	Evaporator right lower mounting plate		
18.4	Evaporator left lower mounting plate		
18.5	Evaporator right mounting plate		
18.6	Evaporator left mounting plate		

### 8.3 GS-UNC48ID-INV/3P

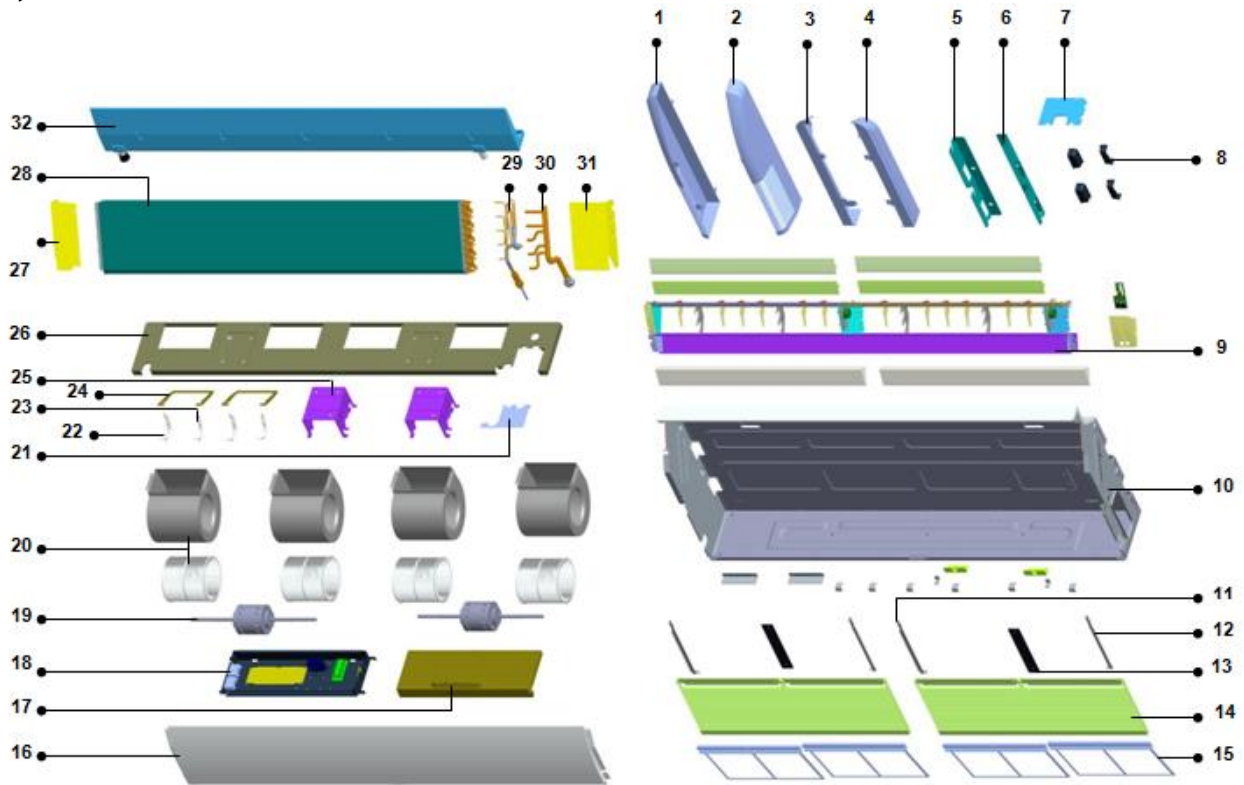


No.	Part Name	No.	Part Name
1	Right mounting plate of evaporator	16	Water tray assy
2	Horizontal step motor	16.1	Water tray foam assembly
3	Wind guide assembly	16.2	Horizontal swing leaf mount 1
4	Rear cover with cotton	16.3	Horizontal swing leaf mount 2
5	Right side board assembly	16.4	Horizontal swing leaf active rod
6	Horizontal step motor	16.5	Horizontal swing leaf connecting rod 1
7	Right cover	16.6	Horizontal swing leaf connecting rod 2
8	Indoor PCB assembly	16.7	Wind guide blade
8.1	E-part box	16.8	Vertical stepper motor
8.2	Indoor PCB	17	Display panel assembly
8.3	Terminal	17.1	Display board assembly
8.5	Blade fan capacitor	17.2	Show mask
9	Electric box cover	17.3	Display board mounting box
10	Chassis assembly	18	Back style assembly
11	Support bar	18.1	Back style
12	Pipe plate	18.2	Filter
13	Indoor fan motor	18.3	Grille buckle
14	Upper volute	18.4	Grille screw cover
15	Evaporator assy	19	Top cover assy
15.1	Evaporator assembly	20	Wind guide bracket
15.2	Evaporator return header assembly	21	Centrifugal fan blade
15.3	Evaporator input pipe assembly	22	Lower volute
15.4	Evaporator right mounting plate	23	Motor bracket
15.5	Evaporator left mounting plate	24	Middle beam welding assembly
15.6	Evaporator right lower mounting plate	25	Left side board assembly









15.7	Evaporator left lower mounting plate	26	Left cover
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## 8.2 ,GS-UNC60ID-INV/3P



No.	Part Name	No.	Part Name
1	Right cover	12	right retaining plate
2	Left cover	13	filter snap-gauge
3	Right seal plate	14	air inlet grille
4	Left seal plate	15	Filter
5	Right hoisting plate	16	top cover assembly
6	Left hoisting pate	17	electric box cover
7	Rat guard	18	indoor PCB assembly
8	Handle	18.1	electric box
9	Air out frame assy	18.2	indoor PCB
9.1	Upper horizontal louver	18.3	terminal
9.2	Down horizontal louver	19	indoor fan motor
9.3	Display panel component	20	wheel volute for slim type
9.4	Installing box for display panel	21	pipe clamp
9.5	Foam for air outlet frame	22	left gland for motor shaft sleeve
9.6	vertical step motor	23	right gland for motor shaft sleeve
9.7	horizontal step motor	24	Motor separating board
9.8	display film	25	Holder for fan motor
9.9	endbearing of louver	26	weld assembly for intermediate transverse girder
9.10	intermediate bearing of louver	27	right mounting plate of evaporator
9.11	driving lever for louver	28	evaporator assembly
9.12	follower lever for louver	29	shunt capillary assembly
9.13	Louver holder	30	air inlet header pipe assembly of evaporator
9.14	Guard vane	31	left mounting plate of evaporator
10	Chassis	32	weld assembly of Water drain pan
11	left retaining plate	32.1	water outlet rubber cover

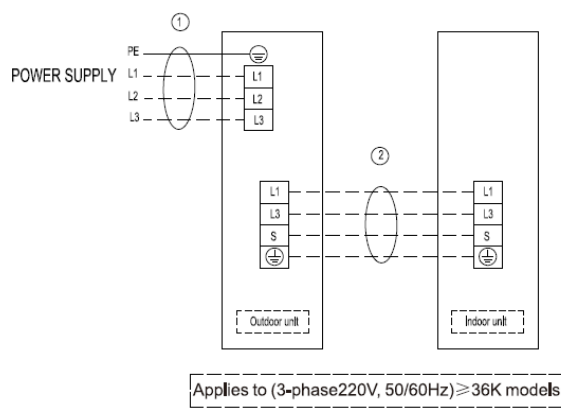
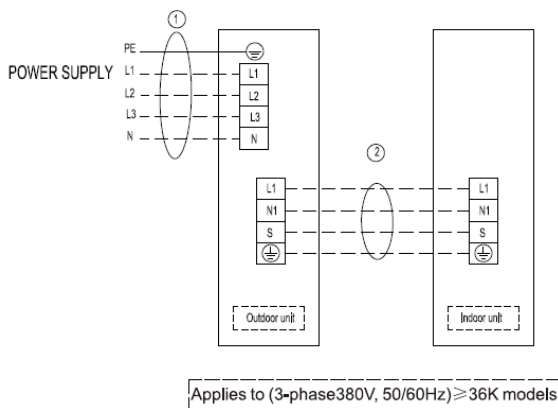
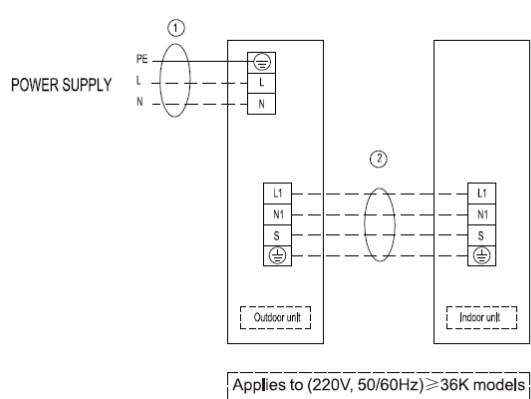
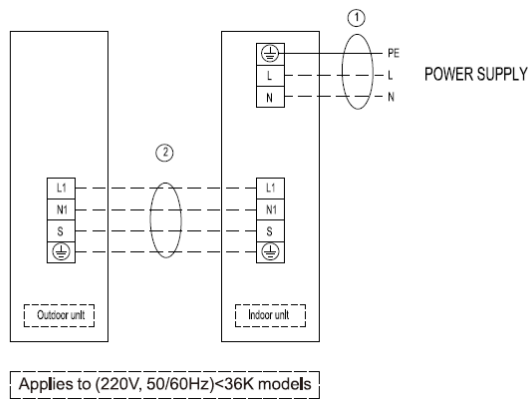
## 9 Accessories

	Name	Shape	Quantity
Installation fittings	1.Hanging arm		2
	2. Remote controller		1
Controller	3. Remote controller holder (optional)		1
	5. Mounting screw (ST2.9x10-C-H)		2
	6. Alkaline dry batteries (AM4)		2
Others	7. Installation & operation instruction manual		1

## 10 The Specification of Power

Model \ Name	Outdoor power supply line (quantity, diameter) H05RN-F	Indoor power supply line (quantity, diameter) H05VV-F	Indoor /outdoor connection line (quantity, Diameter)	Power supply method
Single phase 12K model	/	3×12AWG	4×14AWG	Indoor Power Supply
Single phase 18K model	/	3×12AWG	4×14AWG	Indoor Power Supply
Single phase 24K mode	/	3×12AWG	4×14AWG	Indoor Power Supply
Single phase 36K mode	3×12AWG	/	4×14AWG	outdoor Power Supply
3-phase 380V $\geq$ 36K mode	5×12AWG	/	4×14AWG	outdoor Power Supply
3-phase 220V $\geq$ 36K mode	4×12AWG	/	4×14AWG	outdoor Power Supply

# 11 Field Wiring



## 12 Troubleshooting

### Fault code table

Table 1: Indoor unit (digital display)

When unit is standby after first time power on, running light flash slowly, after operation, all the lights off when the unit is off or standby.

When unit is running, running light ON, digital tube shows setting temperature in cooling and heating mode, digital tube shows indoor temperature in fan only mode; defrost light turns on when defrosting, timer light turns on when in timer mode.

LED Display	Display	Error Description
Time light flash	E2	Room temperature T1 sensor error
Defrost, run, protection light flash	E3	LED timer flash quickly
Defrost light flash	E4	LED timer flash slowly
Protection light flash	EE	LED run flash
Run, defrost light flash	E9	LED protection flash
Run, time light flash	E7	LED defrost flash
Defrost, time light flash	E8	LED protection flash slowly
	F4	LED defrost flash slowly

## Technical Manual

Defrost warning lights flash	F5	Discharge temperature T5 sensor error
	P9	Outdoor fan motor protection
Defrost warning lights flash	E6	Outdoor unit error
	FE	Outdoor EEPROM error
	F6	Condenser temperature T3 sensor error
	P5	Condenser temperature T3 too high protection
	PA	Anti-typhoon protection
	L1	DC side over-voltage
	PE	DC side over-current
	EF	Mode conflict
	P6	Inverter 1PM protection
	H6	3 times P4 protection (Reserved)
	H5	3 times P2 protection (Reserved)
Timing warning lights flash	E1	Communication error between indoor and outdoor unit
Running defrost timing lights flash	P1	High pressure protection
Defrost timing warning lights flash	P2	Low pressure protection
Running timing warning lights flash	P4	Outdoor discharge temperature too high protection
Running defrost timing	E0	Three phase sequence error

Table 2 Wired controller

NO.	Description
1	Indoor unit capacity HP
2	Indoor unit capacity demand (Reserved)
3	Indoor unit capacity demand after T4 amendment (Reserved)
4	Indoor unit capacity demand after T2 amendment (Reserved)
5	Room temperature T1 value
6	Middle of evaporator temperature T2 value
7	Out of evaporator temperature T2B value
8	Condenser temperature T3 value
9	Out ambient temperature T 4 value
10	Discharge temperature T5 value (Max 99°C displayed)
11	EXV opening degree
12	Frequency of compressor
13	AC side voltage value/4 (Reserved)

# Outdoor Units

1.Specification.....	130
2.Dimensions .....	134
3.Service Space.....	136
4.Wiring Diagrams .....	138
5.Electric Characteristics .....	142
6.Operation Limits.....	143
7.Sound Levels .....	144
8.Exploded View .....	144
9.Troubleshooting .....	150

# 1 Specification

Model			GS-180D-INV/1P	GS-240D-INV/1P	
Outdoor power supply		V/Ph/Hz	220~240/1/50	220~240/1/50	
Cooling	Capacity	KW	5.3	7.0	
Heating	Capacity	KW	5.3	7.0	
Max. input consumption		W	2200	3220	
Max. current		A	9.6	14	
Compressor	Model		KSN98D22UFZ	KSN140D21UFZ	
	Type		DC/Rotary	DC/Rotary	
	Brand		GMCC	GMCC	
	Frequency range	Hz	10-120	10-120	
	Capacity	W	3095	4370	
	Input	W	790	1135	
	Refrigerant oil	ml	370	440	
Outdoor fan motor	Model		YDK-40-6P3-AL-04	YDK-40-6P3-AL-02	
	Brand		Lvzhi	Lvzhi	
	Power output	W	40	40	
	Speed	r/min	890	890	
	Insulation class		B	B	
Outdoor coil	Number of rows		2	2	
	Tube pitch(a)xrow pitch(b)	mm	22x19.4	21x21.65	
	Fin spacing	mm	1.5	1.4	
	Fin type		Hydrophilic	Hydrophilic	
	Tube outside dia. and type	mm	7	9.52	
			inner grooved	inner grooved	
	Coil lengthxheightxwidth	mm	761x462x38.8	815x500x43.3	
	Number of circuits		4	4	
Outdoor air flow(High speed)		m <sup>3</sup> /h	1600	1950	
Outdoor noise level dB(A)		Power Level	≤51	≤54	
Outdoor unit	Dimension(W*H*D)		mm	804x304x496	880x345x555
	Packing(W*H*D)		mm	850x350x550	915x380x605
	Net/Gross weight		kg	30/28.2	36.7/34.2
Refrigerant type/quantity		g	R410A/1150	R410A/1400	
Throttle part			Capillary	Capillary	
Design pressure		MPa	4.2/1.6	4.2/1.6	
Max pressure		MPa	4.2	4.2	
Connection wire	Power wiring	mm <sup>2</sup>	3x4	3x4	
	Signal wiring	mm <sup>2</sup>	4x2.5	4x2.5	
Refrigerant piping	Liquid side/Gas side	mm	φ6.35/φ12.7	φ9.52/φ15.88	
	Max. pipe length	m	15	20	
	Max. high drop	m	8	10	
Ambient temp	cooling	°C	-15~50	-15~50	
	heating	°C	-15 ~ 30	-15 ~ 30	



**Technical Manual**

Model			GS-360D-INV/1P	GS-360D-INV/3P
Outdoor power supply		V/Ph/Hz	220~240/1/50	380~415/3/50
Cooling	Capacity	KW	10.5	10.5
Heating	Capacity	KW	10.5	10.5
Max. input consumption		W	3800	3800
Max. current		A	16.5	6
Compressor	Model		KTM240D43UMT	KTM240D43UMT
	Type		DC/Twin-rotary	DC/Twin-rotary
	Brand		GMCC	GMCC
	Frequency range	Hz	12-120	12-120
	Capacity	W	7760	7760
	Input	W	2055	2055
	Refrigerant oil	ml	620	620
Outdoor fan motor	Model		YDK-100-6P3-2	YDK-100-6P3-2
	Brand		Sinjun	Sinjun
	Power output	W	100	100
	Speed	r/min	850	850
	Insulation class		B	F
Outdoor coil	Number of rows		2	2
	Tube pitch(a)xrow pitch(b)	mm	21×19.4	21×19.4
	Fin spacing	mm	1.6	1.6
	Fin type		Hydrophilic	Hydrophilic
	Tube outside dia. and type	mm	7	7
			Inner grooved	Inner grooved
	Coil lengthxheightxwidth	mm	1002×756×38.8	1002×756×38.8
Number of circuits		4	4	
Outdoor air flow(High speed)		m <sup>3</sup> /h	3900	3900
Outdoor noise level dB(A)		Power Level	57	57
Outdoor unit	Dimension(W*H*D)	mm	1032×445×807	1032×445×807
	Packing(W*H*D)	mm	1075×495×875	1075×495×875
	Net/Gross weight	kg	64.5/60.5	64.5/60.5
Refrigerant type/quantity		g	R410A/2300	R410A/2300
Throttle part			Capillary	Capillary
Design pressure		MPa	4.2/1.6	4.2/1.6
Max pressure		MPa	4.2	4.2
Connection wire	Power wiring	mm <sup>2</sup>	3×4	5×4
	Signal wiring	mm <sup>2</sup>	4×2.5	4×2.5
Refrigerant piping	Liquid side/Gas side	mm	Φ9.52/Φ15.88	Φ9.52/Φ15.88
	Max. pipe length	m	50	50
	Max. high drop	m	20	20
Ambient temp	cooling	°C	-15~50	-15~50
	heating	°C	-15 ~ 30	-15 ~ 30

**Technical Manual**

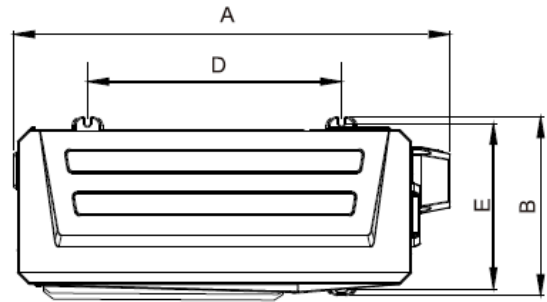
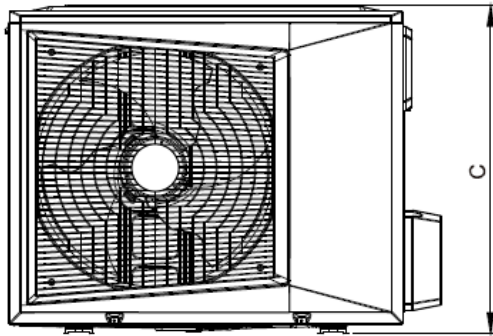
Model			GS-480D-INV/1P	GS-480D-INV/3P
Outdoor power supply		V/Ph/Hz	380~415/3/50	380~415/3/50
Cooling	Capacity	KW	14	16
Heating	Capacity	KW	14	17.6
Max. input consumption		W	4900	6800
Max. current		A	7.7	12.8
Compressor	Model		KTM240D43UMT	MNB40FEQMC
	Type		DC/Twin-rotary	DC/Twin-rotary
	Brand		GMCC	Mitsubishi
	Frequency range	Hz	12-120	10-120
	Capacity	W	7760	12900
	Input	W	2055	3960
	Refrigerant oil	ml	620	1100
Outdoor fan motor	Model		YDK-100-6P3-2	YDK-80-6P3-1
	Brand		Sinjun	WEILING
	Power output	W	100	80
	Speed	r/min	850	780
	Insulation class		B	F
Outdoor coil	Number of rows		3	2
	Tube pitch(a)xrow pitch(b)	mm	25x21.65	22x19.05
	Fin spacing	mm	1.6	1.6
	Fin type		Hydrophilic	Hydrophilic
	Tube outside dia. and type	mm	9.52	7.94
			Inner grooved	Inner grooved
	Coil lengthxheightxwidth	mm	1003x750x64.95	802x1280x38.1
Number of circuits		5	7	
Outdoor air flow(High speed)		m <sup>3</sup> /h	3900	5500
Outdoor noise level dB(A)		Power Level	58	58
Outdoor unit	Dimension(W*H*D)	mm	1032x445x807	907x400x1330
	Packing(W*H*D)	mm	1075x495x875	964x402x1445
	Net/Gross weight	kg	70.6/67.3	106.5/98.5
Refrigerant type/quantity		g	R410A/3250	R410A/3600
Throttle part			Capillary	EXV
Design pressure		MPa	4.2/1.6	4.2/1.6
Max pressure		MPa	4.2	4.5
Connection wire	Power wiring	mm <sup>2</sup>	5x4	5x4
	Signal wiring	mm <sup>2</sup>	4x2.5	4x2.5
Refrigerant piping	Liquid side/Gas side	mm	Φ9.52/Φ15.88	Φ9.52/Φ15.88
	Max. pipe length	m	50	50
	Max. high drop	m	20	20
Ambient temp	cooling	°C	-15~50	-15~50
	heating	°C	-15 ~ 30	-15 ~ 30

**Technical Manual**

Model		GS-600D-INV/3P	
Outdoor power supply		V/Ph/Hz	380~415/3/50
Cooling	Capacity	KW	16
Heating	Capacity	KW	17.6
Max. input consumption		W	6800
Max. current		A	12.8
Compressor	Model		MNB40FEQMC
	Type		DC/Twin-rotary
	Brand		Mitsubishi
	Frequency range	Hz	10-120
	Capacity	W	12900
	Input	W	3960
	Refrigerant oil	ml	1100
Outdoor fan motor	Model		YDK-80-6P3-1
	Brand		WEILING
	Power output	W	80
	Speed	r/min	780
	Insulation class		B
Outdoor coil	Number of rows		2
	Tube pitch(a)xrow pitch(b)	mm	22x19.05
	Fin spacing	mm	1.6
	Fin type		Hydrophilic
	Tube outside dia. and type	mm	7.94 Inner grooved
	Coil lengthxheightxwidth	mm	802x1280x38.1
	Number of circuits		7
Outdoor air flow(High speed)		m <sup>3</sup> /h	5500
Outdoor noise level dB(A)		Power Level	58
Outdoor unit	Dimension(W*H*D)	mm	907x400x1330
	Packing(W*H*D)	mm	964x402x1445
	Net/Gross weight	kg	106.5/98.5
Refrigerant type/quantity		g	R410A/3600
Throttle part		EXV	
Design pressure		MPa	
Max pressure		MPa	
Connection wire	Power wiring	mm <sup>2</sup>	5x4
	Signal wiring	mm <sup>2</sup>	4x2.5
Refrigerant piping	Liquid side/Gas side	mm	Φ9.52/Φ15.88
	Max. pipe length	m	50
	Max. high drop	m	20
Ambient temp	cooling	°C	-15~50
	heating	°C	-15 ~ 30

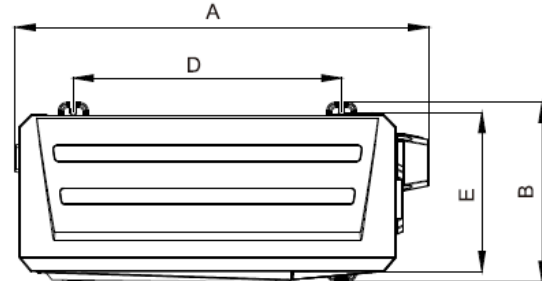
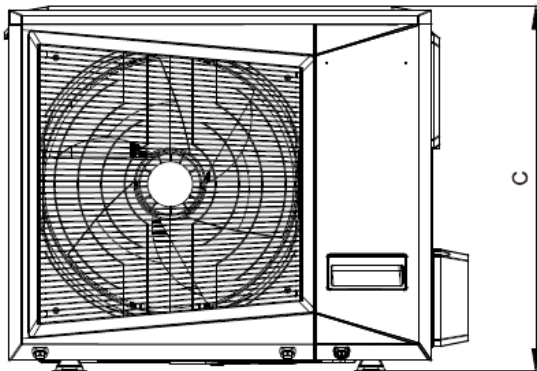
## 2 Dimensions

### 2.1 GS-180D-INV/1P, GS-240D-INV/1P



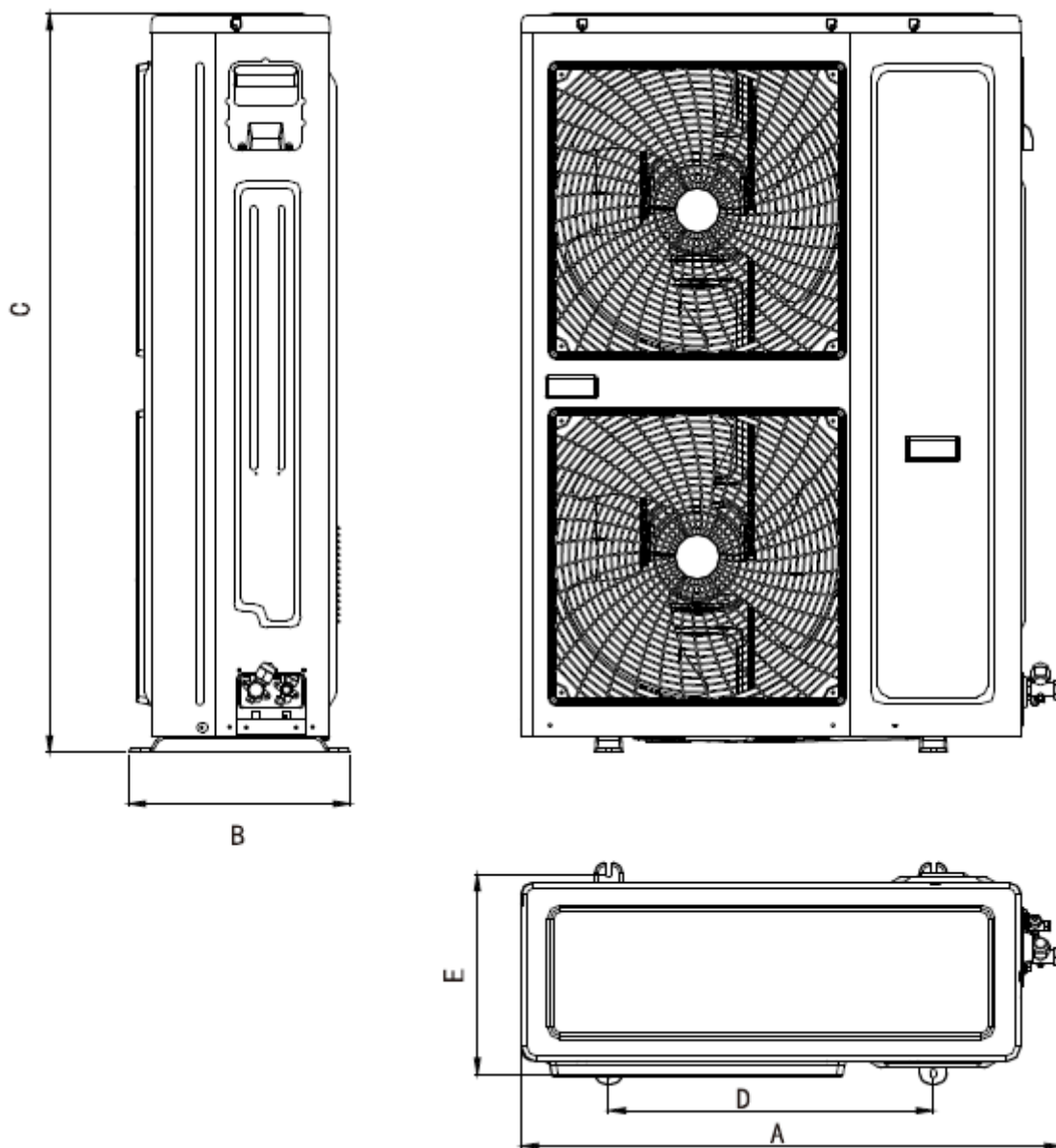
Machine capacity	Project	A	B	C	D	E	F
12K/18K		804	304	496	452	280	-
24K		880	345	555	508	314	-

### 2.2 GS-360D-INV/1P, GS-360D-INV/3P, GS-480D-INV/3P GS-480D-INV/1P



Machine capacity	Project	A	B	C	D	E	F
36K/48K		1032	445	807	670	399	-
60K		1100	528	870	635	485	-

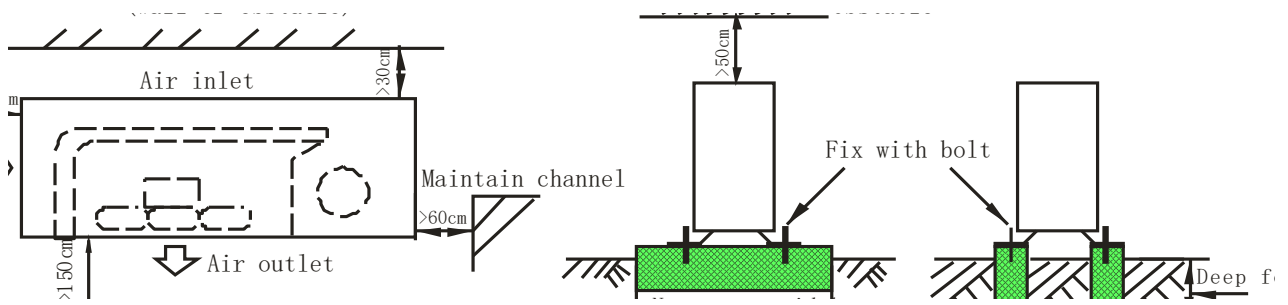
### 2.3 GS-600D-INV/3P



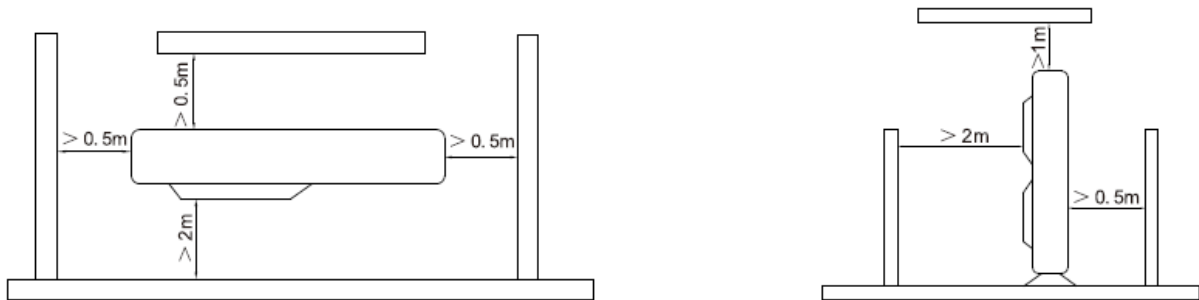
Machine capacity \ Project	A	B	C	D	E	F
48K/60k	972	400	1330	585	360	-

Machine capacity \ Project	A	B	C	D	E	F
14KW	1030	432	788	707	389	370

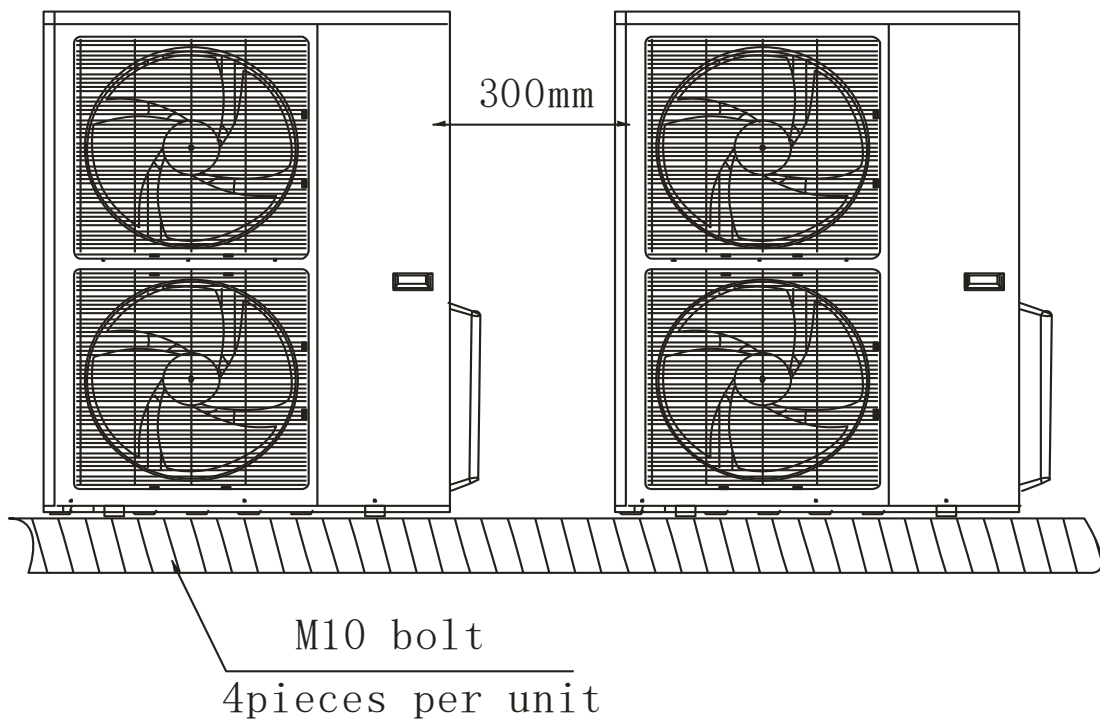
### 3 Service Space



Install dimension requirements for outdoor unit



300mm is necessary between 2 outdoor units

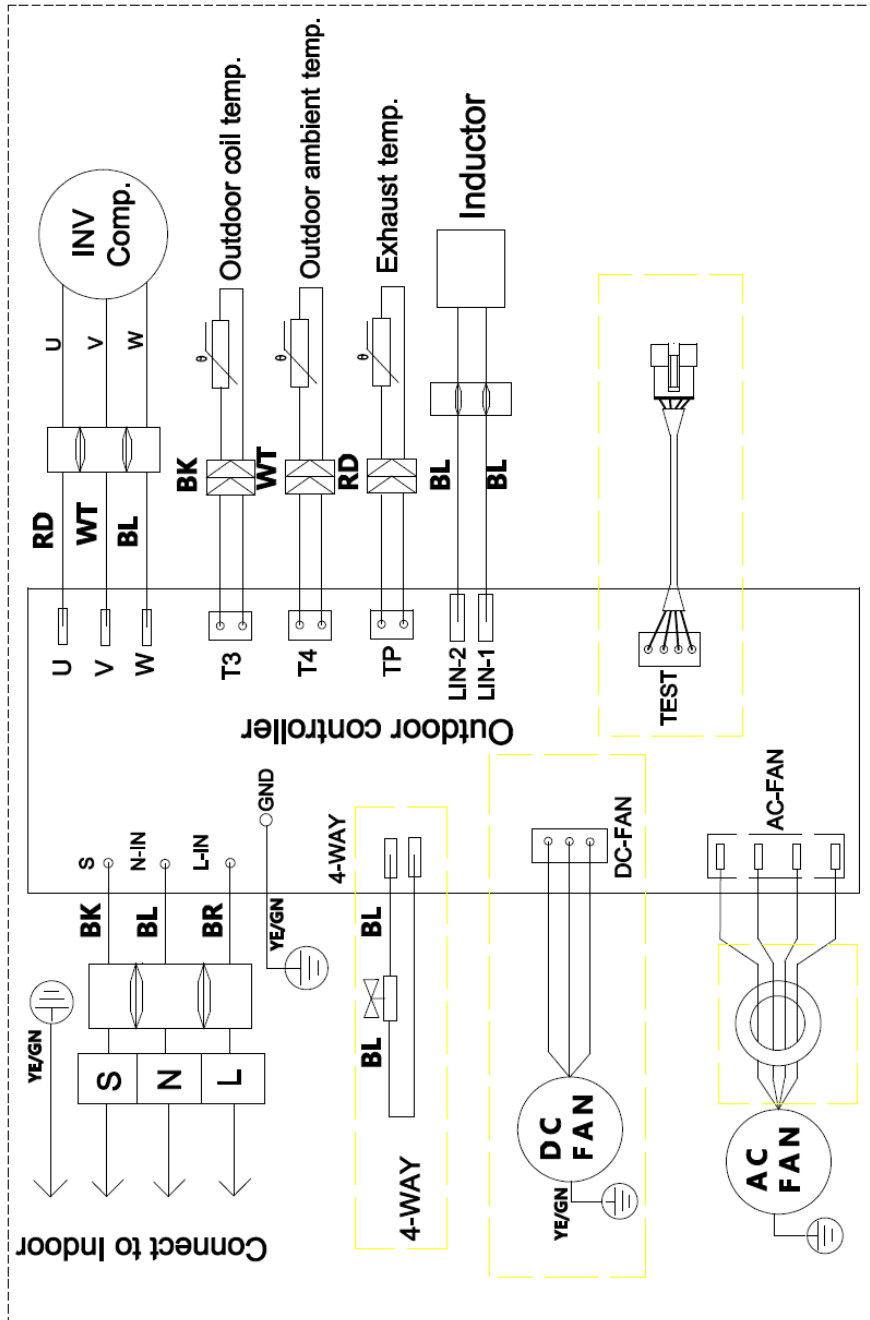


In order to ensure the unit to run well, in the choice of installation location, the following guidelines must be followed:

1. Upon installation of the outdoor unit, the air discharged outdoor should not return, and enough space for maintenance must be remained around the machine.
2. The ventilation must be excellent in mounting points, so that the machine can intake and discharge sufficient air. Make sure there are no obstacles for air inlet and outlet; if exist, remove obstacles which block the air flow.
3. The installation location is strong enough to withstand the weight of the outdoor unit, and has the effect of sound insulation and vibration reduction. And to ensure that outlet air and noise of the unit will not affect the neighbors.
4. Avoid direct sunlight, it's best to put up an sunshade for protection.
5. In the mounting position, rain and defrost water must be drained.
6. In the installation position, it must be ensured that the machine will not be buried in the snow, and not subject to the effects from garbage and mists.
7. In the installation position, it must be ensured that the air outlet is not facing the strong wind.

## 4 Wiring Diagrams

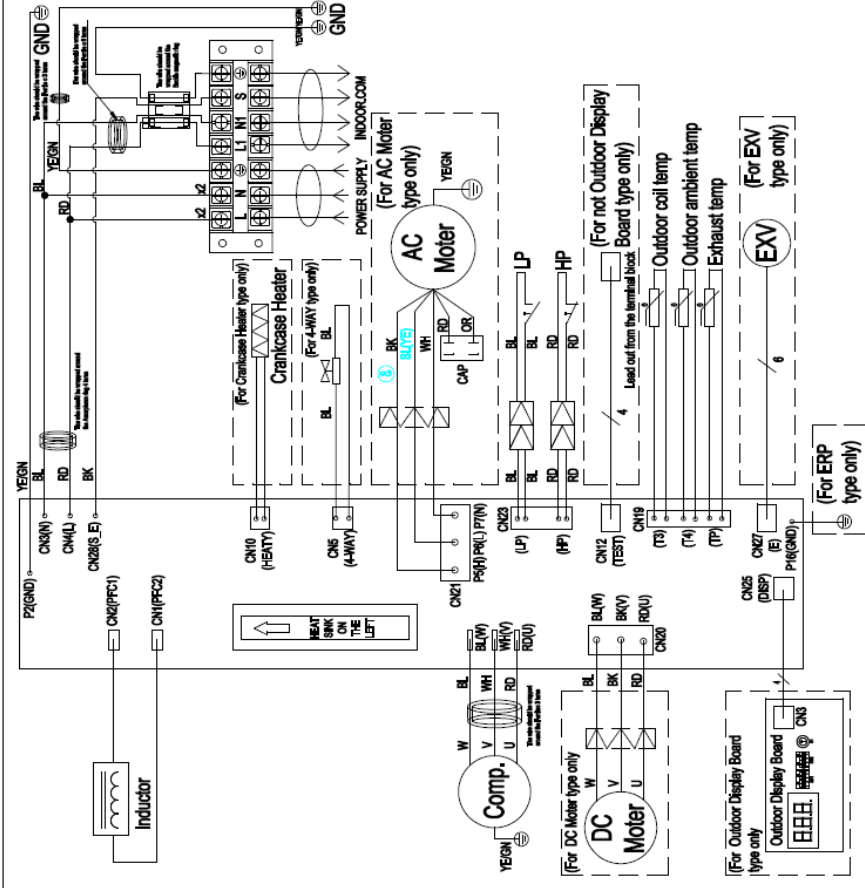
### 4.1 GS-180D-INV/1P, GS-240D-INV/1P





# 4.2 GS-360D-INV/1P, GS-480D-INV/1P

## ELECTRICAL WIRING DIAGRAM



## 802039090227 V.7

### Outdoor Display Board Check Table

NUM	Display content	NUM	Display content
00	Frequency, the number of indoor units, run mode or failure code	09	T4 outdoor ambient temp.
01	Outdoor power	10	T5 exhaust temp.
02	Run mode (0: shutdown; 1:fan ; 2: refrigeration; 3: heating; 4: forced refrigeration)	11	AC current
03	Indoor demand	12	DC current
04	The actual frequency of outdoor units	13	AC voltage
05	The target frequency of compressor	14	DC voltage
06	Fan speed state (0-7)	15	The number of indoor units
07	T2 average temp.	16	The number of limited on indoor units
08	T3 condensing temp.	17	The indoor demand
		18	The T1 temp of indoor
		19	Electronic expansion valve opening

### Outdoor Display Board Failure and Protection

Code	Failure or protection definition	Code	Failure or protection definition
E02	Comm. failure between outdoor unit and indoor unit	P06	IPM modules protection
E04	T4 temperature sensor failure	P07	Anti-freeze protection
E05	T5 temperature sensor failure	P09	Outdoor Motor stalls
E06	T3 temperature sensor failure	P11	Evaporator high temperature protection
E07	Indoor EEPROM failure	L0	DC compressor failure
E09	AC undervoltage protection	L01	DC cable bus low voltage protection
E10	Outdoor EEPROM failure	L02	DC cable bus high voltage protection
E11	Indoor fan motor failure	U04	MCE fault / sync / closed loop
E12	IPM modules temperature sensor protection	U05	Zero speed protection
E16	IPM high temperature protection (Ft)	L07	Compressor phase loss protection ratio protection
E20-E28	Fan motor failure	L08	Compressor stalls
H0	External machine mesh control and drive communication failure	U0A	Frequency limitation by voltage
H21-36	Compressor failure	L09	Evaporator limitation by condenser temp
P01	High pressure protection	L0C	Frequency limitation by condenser temp
P02	Low pressure protection	L0D	Frequency limitation by discharge temp
P03	AC /DC overcurrent flows through protection	L0E	Frequency limitation by IPM modular high temp
P04	Excessive exhaust temperature protection	L0F	Frequency limitation by current
P05	Excessive condensate temperature protection		

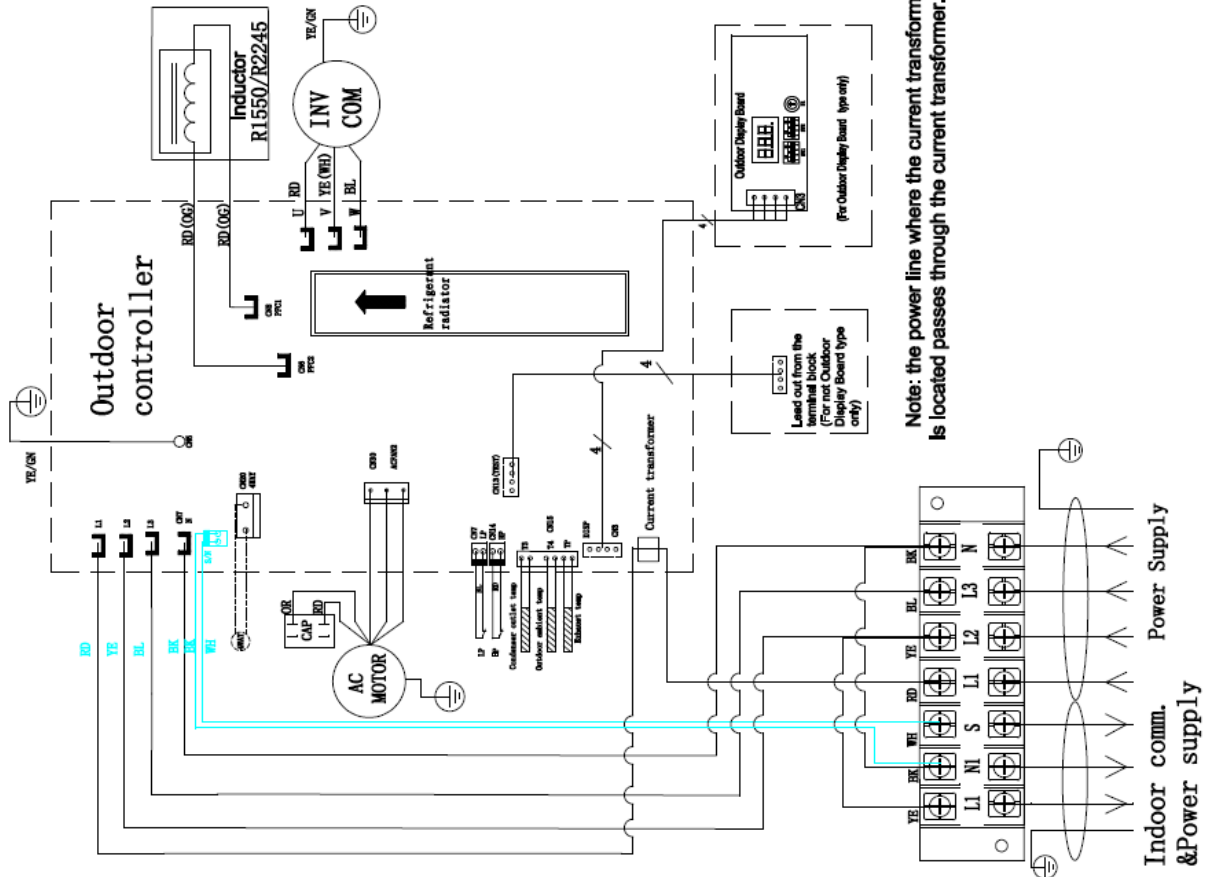
### 4.3 GS-360D-INV/3P, GS-480D-INV/3P

Check Table

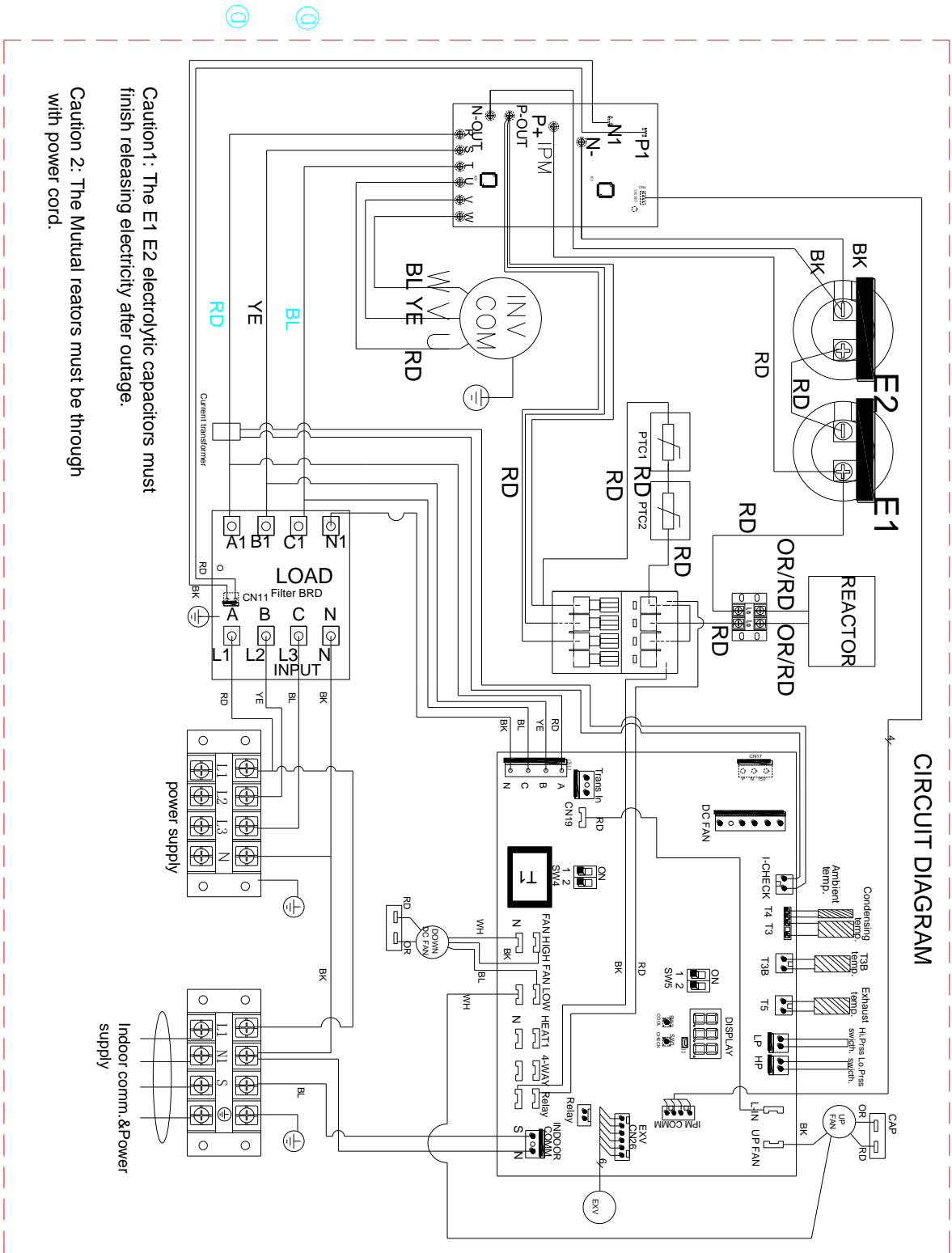
NUM	Display content	NUM	Display content
00	Frequency, the number of indoor units, run mode or failure code	09	T4 outdoor ambient temp.
01	Outdoor power	10	T5 exhaust temp.
02	Run mode (0: shutdown; 1: fan; 2: refrigeration; 3: heating; 4: forced refrigeration)	11	AC current
03	Indoor demand	12	DC current
04	The actual operation status of outdoor units	13	AC voltage
05	The target frequency of compressor	14	DC voltage
06	Fan speed state (0-7)	15	The number of indoor units
07	T2 average temp.	16	The number of turned on indoor units
08	T3 condensing temp.	17	The indoor demand
		18	The T1 temp of indoor
		19	Electronic expansion valve opening

#### Failure and Protection

Code	Failure or protection definition	Code	Failure or protection definition
E02	Comm. failure between outdoor unit and indoor unit	P06	Failure or protection definition
E04	T4 temperature sensor failure	P07	Anti-freeze protection
E05	T5 temperature sensor failure	P09	Outdoor Motor stalls
E06	T3 temperature sensor failure	P11	Evaporator high temperature protection
E07	Indoor EEPROM failure	L0	DC compressor failure
E09	AC undervoltage protection	L01	DC compressor failure
E10	Outdoor EEPROM failure	L02	DC cable bus low voltage protection
E11	Indoor fan motor failure	L04	DC cable bus high voltage protection
E12	IPM high temperature protection (F)	L05	MCE fault / sync / closed loop
E20-E29	Fan motor failure	L06	Compressor phase loss protection ratio protection
H0	H0 External machine main control and drive communication failure	L08	Compressor stalls
H21-38	Compressor failure	L0A	Frequency limitation by voltage
P01	High pressure protection	L0C	Evaporator limitation by condenser temp
P02	Low pressure protection	L0D	Frequency limitation by discharge temp
P03	AC/DC overcurrent flows through protection	L0E	Frequency limitation by IPM modular high temp
P04	Excessive exhaust temperature protection	L0F	Frequency limitation by current
P05	Excessive condense temperature protection		



### 4.4 GS-600D-INV/3P



Caution 1: The E1 E2 electrolytic capacitors must finish releasing electricity after outage.

Caution 2: The Mutual reactors must be through with power cord.

## 5 Electric Characteristics

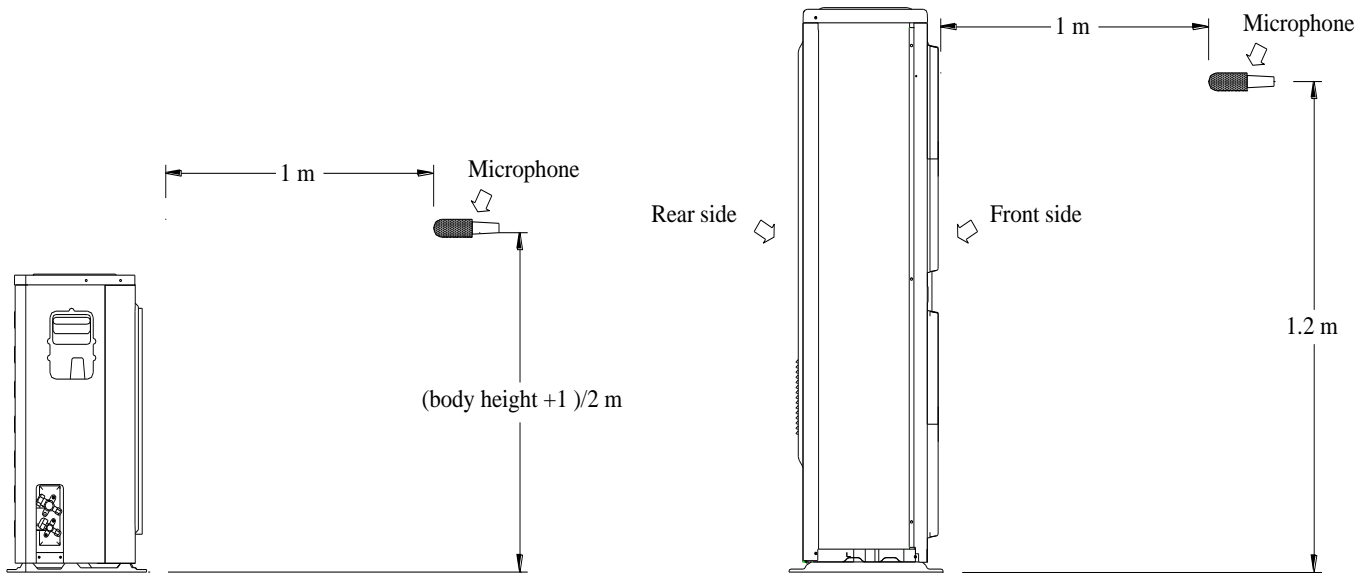
Model	Outdoor Unit				
	Hz	Voltage	Min.	Max.	Outdoor motor (kw)
GS-180D-INV/1P	50	220~240V	198	254	0.04
GS-240D-INV/1P	50	220~240V	198	254	0.04
GS-360D-INV/1P	50	220~240V	198	254	0.1
GS-360D-INV/3P	50	380~415V	342	437	0.1
GS-480D-INV/1P	50	220~240V	198	254	0.1
GS-480D-INV/3P	50	380~415V	342	437	0.1
GS-600D-INV/3P	50	380~415V	342	437	0.08*2

## 6 Operation Limits

Operation mode	Outdoor temperature(°C)	Room temperature(°C)
Cooling operation	-15~50	16~32
Heating operation	-15~30	16~32

## 7.Sound Levels

12kBtu/h-60kBtu/h



Model	Power level dB(A)	Pressure level
GS-180D-INV/1P	51	51
GS-240D-INV/1P	53	54
GS-360D-INV/1P	57	58
GS-360D-INV/3P	57	58
GS-480D-INV/1P	58	58
GS-480D-INV/3P	58	58
GS-600D-INV/3P	58	58

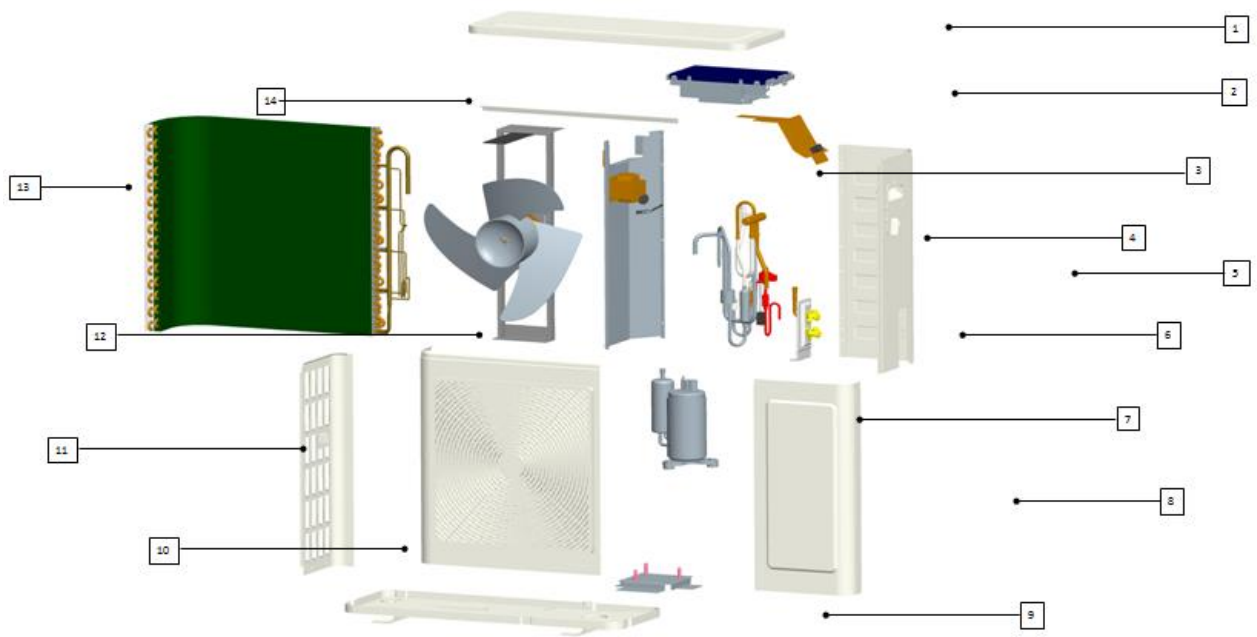
Note: Sound level is measured at a point 1 m in front of the unit, at a height of  $(\text{Unit body height} + 1) / 2$  m.

## 8. Exploded View

### 8.1 GS-180D-INV/1P

No	Part Name	Quantity	No.	Part Name	Quantity
1	Front panel assembly	1	7	Handle	1
1.1	Panel	1	8	Valve seat plate assembly	1
1.2	Front grille	1	8.1	Valve seat plate	1
1.3	Front net buckle	8	8.2	Gas stop valve	1
2	Left column	1	8.3	Liquid stop valve	1
3	Motor bracket parts	1	9	Right plate	1
3.1	Motor bracket assembly	1	10	Circuit component	1
3.1 .1	Motor bracket	1	10.1	4-way valve component	1
3.2	Motor bracket connection plate	1	10.1.1	4-way valve discharge pipe	1
3.3	Axial fan blade	1	10.1.2	4-way valve connecting pipe B	1
3.4	Fan motor	1	10.1.3	4-way valve connecting pipe C	1
4	Condenser component	1	10.1.4	4-way valve connecting pipe D	1
4.1	Gas collection tube assembly	1	10.1.5	4-way valve	1
4.2	Distributor component	1	10.1.6	4-way valve wire	1
4.3	Condenser	1	10.2	4-way valve suction pipe	1
5	Electronic control board	1	11	Middle insolate plate component	1
5.1	PCB	1	11.1	Middle insolate plate	1
5.2	Terminal board	1	11.2	E-BOX support plate	1
5.3	Terminal	1	12	DC inverter compressor	1
6	Top cover	1	13	Chassis component	1

## 8.2GS-180D-INV/1P

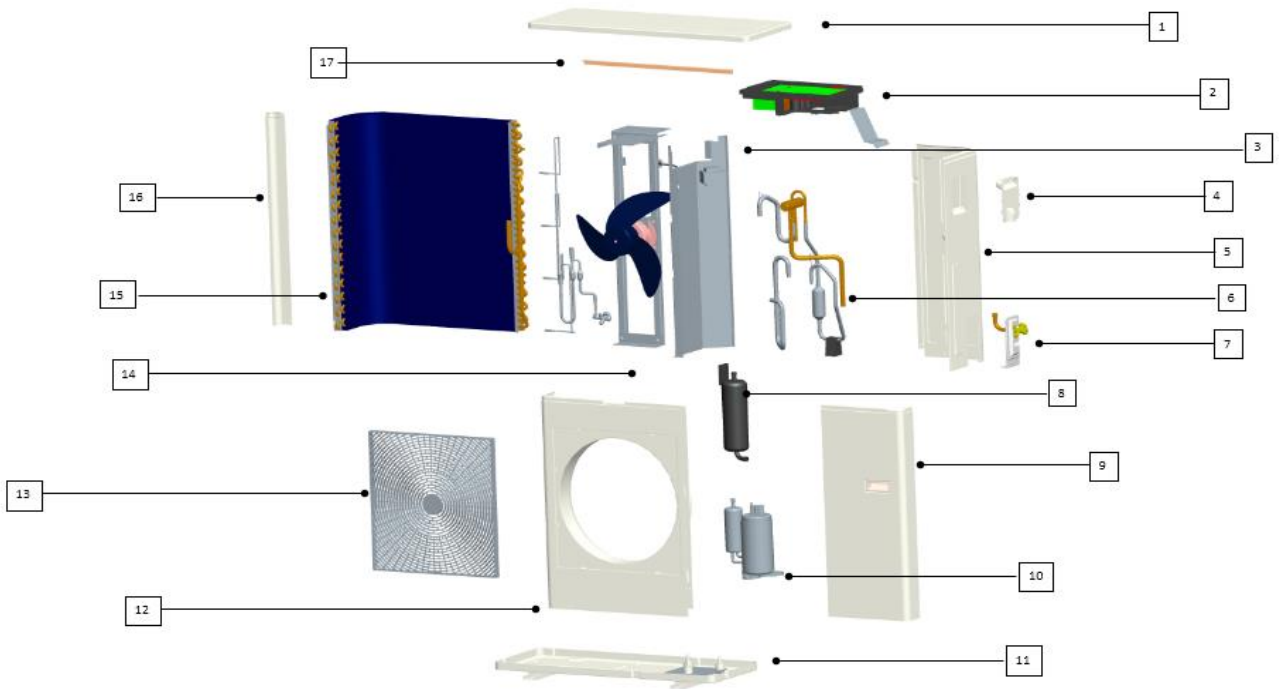




**Technical Manual**

<b>No</b>	<b>Part Name</b>	<b>No.</b>	<b>Part Name</b>
1	Top cover plate parts	8	Repair board (with convex cover) with cotton patch assembly
2	Electronic components	9	Chassis components
2.1	Outdoor inverter module integrated board	10	Front panel (with plastic mesh)
2.2	Terminal bedplate	11	Left side panel
2.3	Terminal	11.1	left side plate
2.4	Line pressing buttons	11.2	Small handle
3	median septum	12	The fan parts
4	Piping components	12.1	Motor support assembly
4.1	4-way valve assembly	12.2	Single shaft outdoor motor
4.2	throttling parts	12.3	Axial-flow fan
4.3	Electronic expansion valve coil	12.4	The fan pressing plate
5	Right side panel	13	Condenser unit
5.1	Right board pasted cotton component	13.1	Condenser assembly
5.2	Large hand-drawn cotton patch assembly	13.2	Manifold assembly
6	The seat plate	13.3	Shunt capillary assembly
7	DC inverter compressor	14	Back mesh connection Angle

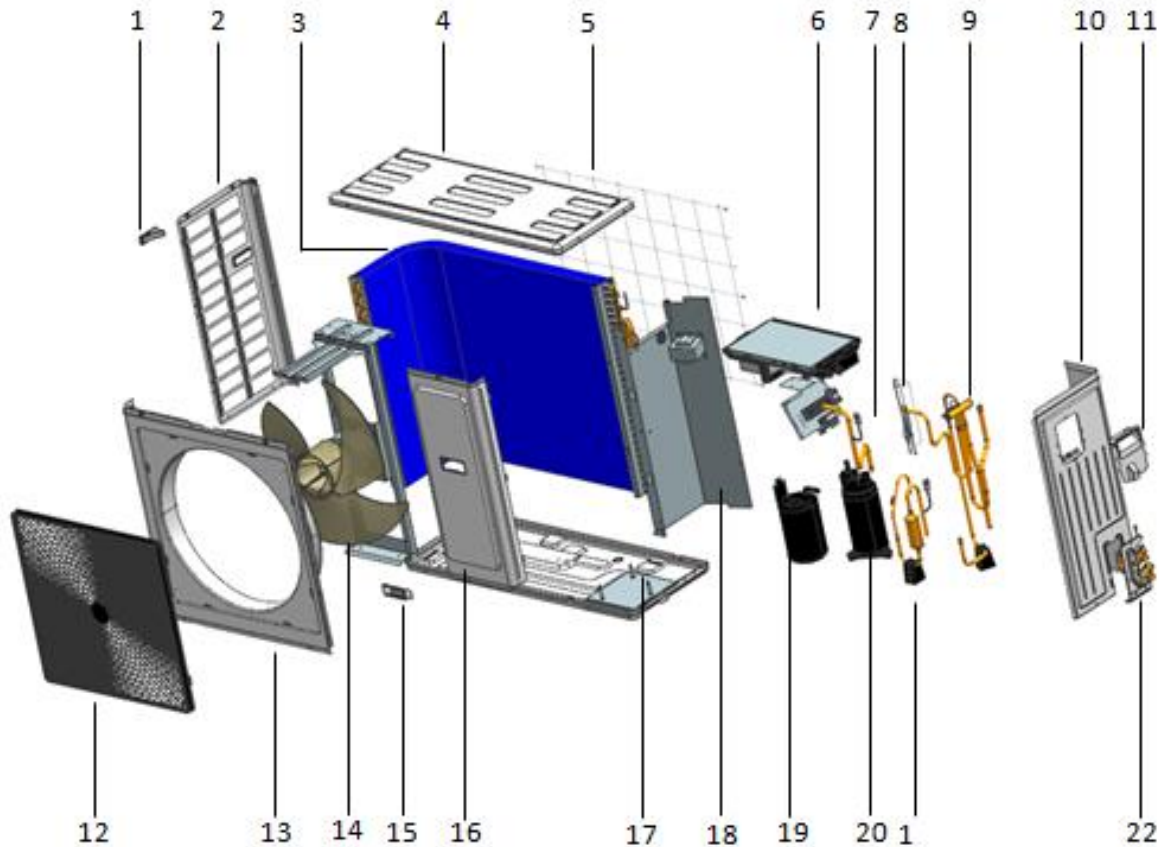
### 8.3GS-240D-INV/1P



## Technical Manual

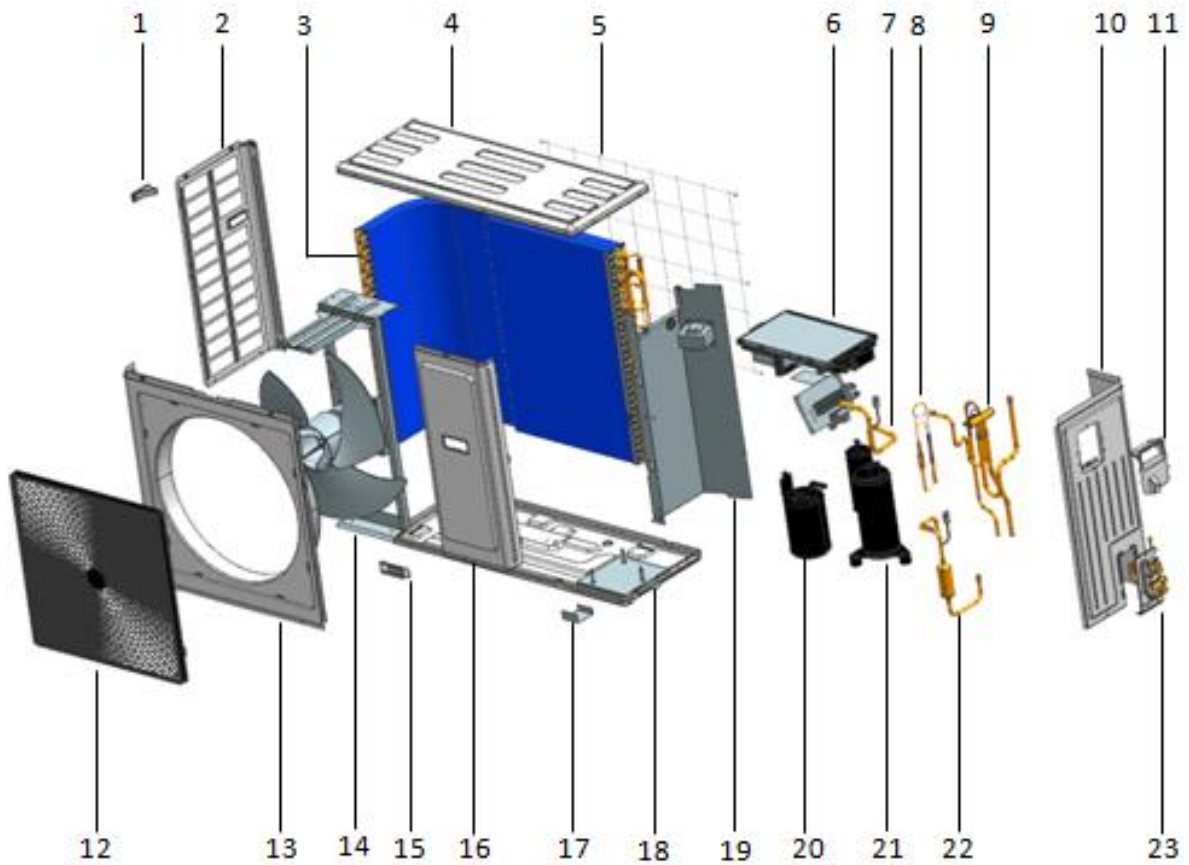
No.	Part Name	No.	Part Name
1	Top cover pasted with cotton components	7.1	Seat plate
2	Electronic components	7.2	stop valve
2.1	Integrated panel of outdoor inverter module (explosion proof)	7.3	stop valve
2.2	Terminal bedplate	8	liquid accumulator
2.3	Terminal	9	maintenance panel
2.4	Line pressing buttons	10	DC inverter compressor
3	Middle partition unit	11	Chassis components
3.1	medium septum	12	Front panel (with plastic mesh)
4	Large handle cotton patch assembly	13	Plastic front cover
5	right side cover	14	Motor support part
6	Piping components	15	Condenser welded components
6.1	4-way valve assembly	15.1	Condenser
6.2	Exhaust pipe assembly	15.2	Manifold welding assembly
6.3	Return pipe assembly	15.3	Shunt components
7	Seat plate assembly	16	left side plate
		17	Back border

## 8.4GS-360D-INV/1P, GS-360D-INV/3P



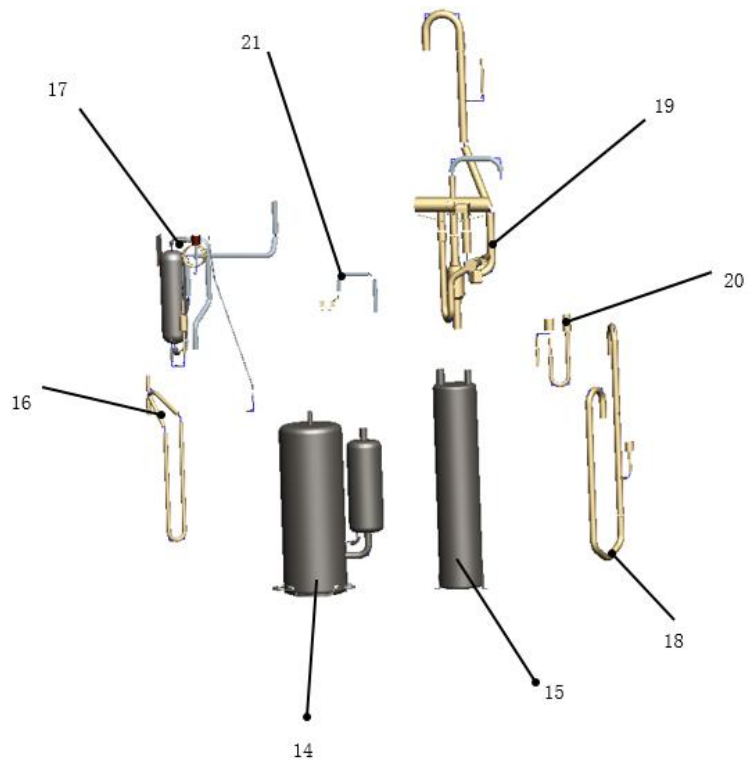
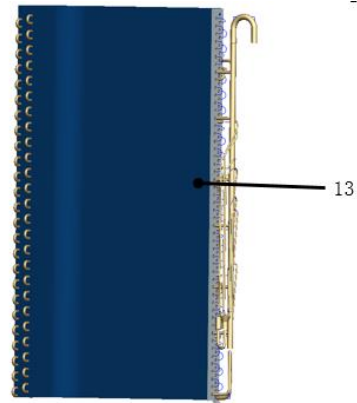
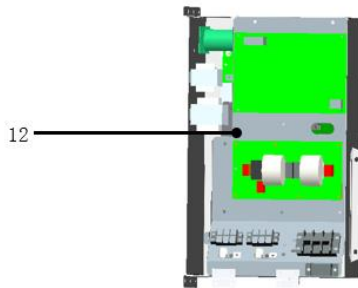
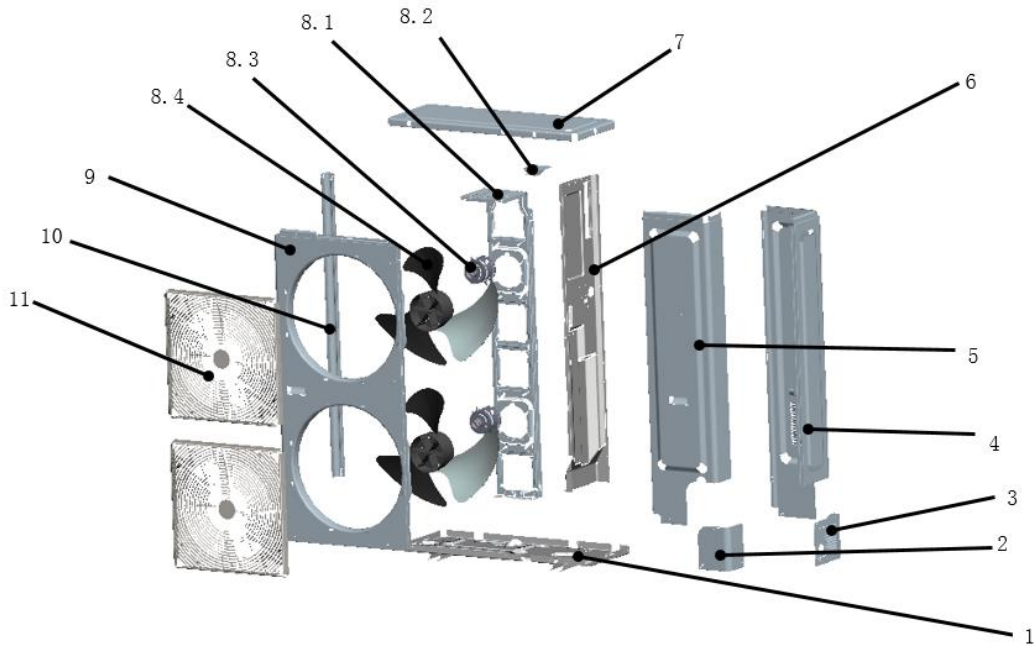
No.	Part Name	Quantity	No.	Part Name	Quantity
1	Small Handle	1	13	panel	1
2	Left side board	1	14	Motor bracket component	1
3	Condenser assy	1	14.1	Axial flow blade	1
3.1	Condenser	1	14.2	Motor bracket assembly	1
3.2	Gas collection tube assembly	1	14.3	fan motor	1
3.3	Split capillary assembly	1	15	Handle	1
3.4	Connecting pipe	1	16	Maintenance board	1
4	Roof cover	1	17	Chassis assy	1
5	Back net	1	17.1	Chassis body	1
6	E-parts assy	1	17.2	foot	2
6.1	Outdoor inverter module integrated board	1	17.3	Compressor mounting plate assembly	1
6.2	Insert fan capacitor	1	18	Middle partition part	1
6.3	Terminal block	1	18.1	Reactor	1
6.4	Terminal block board	1	18.2	Over the apron	1
7	Return air pipe assembly	1	18.3	Middle partition welding assembly	1
8	Capillary throttling component	1	19	Vapor-liquid separator	1
9	Four-way valve assembly	1	20	Inverter compressor	1
10	Right side panel	1	21	Exhaust pipe assembly	1
11	Large hand cotton component	1	22	Seat plate component	1
12	Plastic front grille	1			

## 8.5 GS-480D-INV/1P, GS-480D-INV/1P



No.	Part Name	Quantity	No.	Part Name	Quantity
1	Small Handle	1	13	panel	1
2	Left side board	1	14	Motor bracket component	1
3	Condenser assy	1	14.1	Axial flow blade	1
3.1	Condenser	1	14.2	Motor bracket assembly	1
3.2	Gas collection tube assembly	1	14.3	fan motor	1
3.3	Split capillary assembly	1	15	Handle	1
3.4	Connecting pipe	1	16	Maintenance board	1
4	Roof cover	1	17	Chassis assy	1
5	Back net	1	17.1	Chassis body	1
6	E-parts assy	1	17.2	foot	2
6.1	Outdoor inverter module integrated board	1	17.3	Compressor mounting plate assembly	1
6.2	Insert fan capacitor	1	18	Middle partition part	1
6.3	Terminal block	1	18.1	Reactor	1
6.4	Terminal block board	1	18.2	Over the apron	1
7	Return air pipe assembly	1	18.3	Middle partition welding assembly	1
8	Capillary throttling component	1	19	Vapor-liquid separator	1
9	Four-way valve assembly	1	20	Inverter compressor	1
10	Right side panel	1	21	Exhaust pipe assembly	1
11	Large hand cotton component	1	22	Seat plate component	1
12	Plastic front grille	1			

## 8.6 GS-600D-INV/3P



## Technical Manual

No.	Part Name	Quantity	No.	Part Name	Quantity
1	Chassis assy	1	12.3	Three phase filter board	1
2	The right side of the valve panel	1	12.4	Contactora	1
3	Rear side of the valve panel	1	12.5	Current Transformer	1
4	After backplane	1	13	Condenser	2
5	Right clapboard	1	13.1	Condenser assy	1
6	Separating board welding assy	1	13.2	Flute shunt components	1
7	Cover board	1	13.3	Confluence components	1
8	Holder for fan motor assy	1	14	Inverter compressor	1
8.1	Holder for fan motor	1	15	Gas-liquid separator	1
8.2	Holder for fan motor connect board	1	16	Discharge pipe assy A	1
8.3	Fan motor	2	17	Discharge pipe assy B	1
8.4	Propeller fan	2	18	Suction pipe assy	1
9	Front panel	1	19	4-Ways valve assy	1
10	Column	1	20	EXV assy	1
11	Top net	2	21	High pressure cut-off valve assy	1
12	E-parts assy	1			
12.1	IPM module board	1			
12.2	Outdoor main control board	1			

## 9 Troubleshooting

### 9.1 Fault display(12-48Kbtu/h)

Display	Error description	Display	Error description
E0	Phase protection	F0	(reserve)
E1	Communication error between outdoor unit and indoor unit	F1	(reserve)
E2	Indoor room temperature (T1) sensor error	F2	(reserve)
E3	Indoor coil middle temperature (T2) sensor error	F3	Outdoor unit current error cannot recover Display P3 error for 3 times within 60 minutes
E4	Indoor coil outlet temperature (T2B) sensor error	F4	Outdoor temperature (T4) sensor error
E5	Outdoor unit error	F5	(reserve)
E6	Zero speed protection	F6	Outdoor unit condenser outlet (T3) sensor error
E7	EERPOM error	F7	Secondary side current protection
E8	Indoor fan motor speed lose protection	F8	Heat T2 temp. protection
E9	Wired controller communication error	F9	Outdoor unit voltage error
EE	Water level alarm error		
EF	EF(reserve)		

Display	Error description	Display	Error description
P0	(reserve)	H0	Communication error between outdoor unit main board and driver board
P1	(reserve)	H1	(reserve)
P2	(reserve)	H2	(reserve)
P3	Primary/secondary overcurrent protection	H3	(reserve)
P4	Exhaust temperature over-high protection	H4	3 times of P6 error within 30 minutes
P5	Outdoor unit condenser outlet (T3) temperature over-high protection	H5	3 times of P2 error within 30 minutes
P6	Compressor driver error or IPM protection	H6	3 times of P4 error within 100 minutes
P7	(reserve)	H7	(reserve)
P8	(reserve)	H8	(reserve)
P9	Outdoor unit DC fan motor error	H9	2 times of P9 error within 10 minutes



**Wired controller:**

<b>Spot check NO.</b>	<b>Content</b>	<b>Spot check NO.</b>	<b>Content</b>
1	Indoor unit capacity	11	Opening of EXV
2	Indoor unit capacity demand	12	Running frequency of compressor
3	Indoor demand after T4 amendment	13	Primary voltage/4
4	Indoor demand after T2 amendment		
5	Indoor room temperature (T1) temperature		
6	Indoor coil middle temperature (T2) temperature		
7	Indoor coil outlet temperature (T2B) temperature		
8	Outdoor unit condenser outlet (T3) temperature		
9	Outdoor temperature (T4) temperature		
10	Compressor top temperature (T5) temperature (maximum 99°C)		

## 9.2 Fault display (36-60Kbtu/h)

Display content	Definition of fault or protection	Remark
E1	Three-phase power phase sequence fault	
E2	Communication fault between the outdoor unit and the mast	Communication is interrupted for more than 2 minutes 20 minutes after the initial power-on or within 20 minutes
E4	Temperature sensor fault	
E6	Condenser tube temperature sensor fault	
E9	AC over-voltage / under-voltage protection	
E10	EEPROM fault	
H0	0513 and DSP communication fault	
H4	Display P6 protection for 3 times within 30 minutes	Unable to restore unless a second power-on
H5	Display P2 protection for 3 times within 30 minutes	Unable to restore unless a second power-on
H6	Display P4 protection for 3 times within 100 minutes	Unable to restore unless a second power-on
H9	Display P9 protection for 2 times within 10 minutes	Unable to restore unless a second power-on
H10	3 times of P3 protection occurs within 60 minutes	Unable to restore unless a second power-on
P1	High pressure protection	
P2	Low pressure protection	Display H5 after 3 times of P2 protection within 30 minutes
P3	Primary / secondary overcurrent protection	
P4	Exhaust overheating protection	3 time of P4 protection appears within 100 minutes and then H6 occurs
P5	High tube temperature protection	
P6	Module protection	3 times of P6 protection appears within 30 minutes and then H4 occurs
P9	DC fan fault	Display H9 after 2 times of P9 protection within 10 minutes
P10	Anti-typhoon protection	
P11	Refrigeration T2 overheating protection	
P12	5 minutes continuous fault on hot air system at area A	
L0	DC compressor module fault	
L1	DC bus low voltage protection	
L2	DC bus high voltage protection	
L4	MCE fault / sync / closed loop	
L5	Zero speed protection	
L7	Phase sequence error protection	
L8	15Hz protection	
L9	Hz Protection	

### 9.3 Parameter table for outdoor unit check and maintenance(36-60Kbtu/h)

No.		Display content	Remark
0	Normal display	Current frequency / Indoor unit quantity	Quantity at power on displayed on standby
1	1-	Outdoor unit local capacity	
2	2-	Total capacity needs of indoor unit	
3	3-	Total capacity of the outdoor unit after correction;	
4	4-	Operation mode (0: Off / air supply; 2: cooling; 3: heating; 4:forced refrigeration);	0: Shutdown / air supply; 2: Cooling; 3 heating; 4: Forced cooling
5	5-	Actual operating capacity of the outdoor unit	
6	6-	Fan status	0-7
7	7-	T2/T2B on average	
8	8-	T3 pipe temperature	
9	9-	T4 environmental temperature	
10	10-	T5 exhaust temperature	
11	11-	Opening of the electronic expansion valve	Actual value= Displayed value on Inspection×8
12	12-	Primary current	
13	13-	Secondary circuit current	
14	14-	Primary voltage	
15	15-	Secondary voltage	Actual value= Displayed value on inspection × 4
16	16-	Sets of indoor units	
17	17-	Number of working indoor units	
18	18-	Last fault or protection code	No protection or fault display __
19	19-	---	Spot check over

## Part 4 Installation

1. Precaution on Installation .....	160
2. Vacuum Dry and Leakage Checking .....	161
3. Additional Refrigerant Charge .....	163
4. Water Drainage .....	164
5. Insulation Work.....	167
6. Test Operation .....	169

# 1. Precaution on Installation

1.1. Measure the necessary length of the connecting pipe, and make it by the following way.

a. Connect the indoor unit at first, then the outdoor unit.

Bend the tubing in proper way. Do not harm them.

## CAUTIONS:

- Daub the surfaces of the flare pipe and the joint nuts with frozen oil, and wrench it for 3~4 rounds
- With hands before fasten the flare nuts.

Be sure to use two wrenches simultaneously when you connect or disconnect the pipes.

Pipe gauge	Tightening torque	Flare dimension A		Flare shape
		Min (mm)	Max	
Φ6.4	15~16N.m (153~163 kgf.cm)	8.3	8.7	
Φ9.5	25~26N.m (255~265kgf.cm)	12.0	12.4	
Φ12.7	35~36N.m (357~367kgf.cm)	15.4	15.8	
Φ15.9	45~47N.m (459~480 kgf.cm)	18.6	19.1	
Φ19.1	65~67N.m (663~684kgf.cm)	22.9	23.3	

b. The stop value of the outdoor unit should be closed absolutely (as original state). Every time you connect it, first loosen the nuts at the part of stop value, then connect the flare pipe immediately (in 5 minutes). If the nuts have been loosened for a long time, dusts and other impurities may enter the pipe system and may cause malfunction later. So please expel the air out of the pipe with refrigerant before connection.

c. Expel the air after connecting the refrigerant pipe with the indoor unit and the outdoor unit. Then fasten the nuts at the repair-points.

## 1.2. Locate the Pipe

a. Drill a hole in the wall (suitable just for the size of the wall conduit), then set on the fittings such as the wall conduit and its cover.

b. Bind the connecting pipe and the cables together tightly with binding tapes. Do not let air in, which will cause water leakage by condensation.

c. Pass the bound connecting pipe through the wall conduit from outside. Be careful of the pipe allocation to do no damage to the tubing.

## 1.3. Connect the pipes.

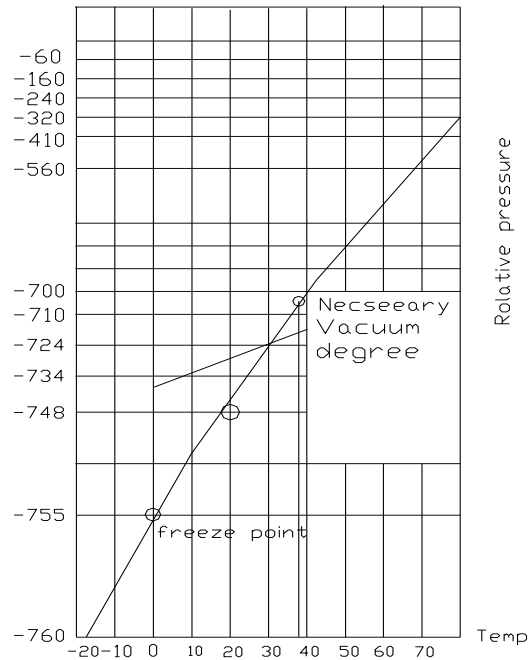
1.4. Then, open the stem of stop values of the outdoor unit to make the refrigerant pipe connecting the indoor unit with the outdoor unit in fluent flow.

1.5. Be sure of no leakage by checking it with leak detector or soap water.

1.6. Cover the joint of the connecting pipe to the indoor unit with the soundproof / insulating sheath (fittings), and bind it well with the tapes to prevent leakage.

## 2 Vacuum Dry and Leakage Checking

2.1 Vacuum Dry: use vacuum pump to change the moisture (liquid) into steam (gas) in the pipe and discharge it out of the pipe to make the pipe dry. Under one atmospheric pressure, the boiling point of water(steam temperature) is 100°C. Use vacuum pump to make the pressure in the pipe near vacuum state, the boiling point of water falls relatively. When it falls under outdoor temperature, the moisture in the pipe will be vaporized.

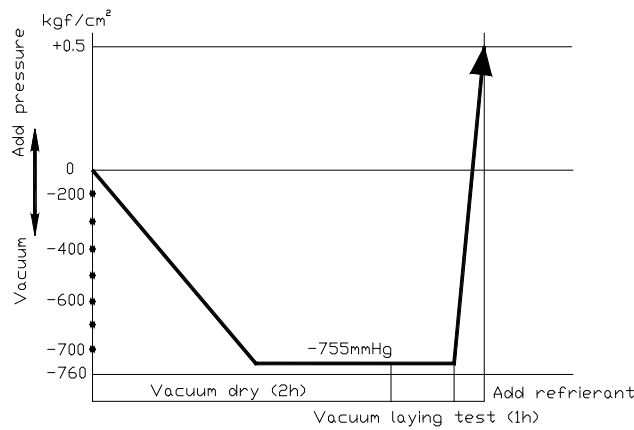


### 2.2 Vacuum dry procedure

There are two methods of vacuum dry due to different construction environment: common vacuum dry, special vacuum dry.

#### ①. Common vacuum dry procedure

- Vacuum dry (for the first time)---connect the all-purpose detector to the inlet of liquid pipe and gas pipe, and run the vacuum pump more than two hours (the vacuum pump should be below -755mmHg)
- If the pump can't achieve below -755mmHg after pumping 2 hours, moisture or leakage point will still exist in the pipe. At this time, it should be pumped 1 hour more.
- If the pump can't achieve -755mmHg after pumping 3 hours, please check if there are some leakage points.
- Vacuum placement test: place 1 hour when it achieves -755mmHg, pass if the vacuum watch shows no rising. If it rises, it shows there's moisture or leakage point.
- Vacuuming from liquid pipe and gas pipe at the same time.
- Sketch map of common vacuum dry procedure.



②. Special vacuum dry procedure

- This vacuum dry method is used in the following conditions:
- There's moisture when flushing the refrigerant pipe.
- Rainwater may enter into the pipe.
- Vacuum dry for the first time ..... 2h pumping

③. Vacuum destroy for the second time ..... Fill nitrogen to 0.5Kgf/cm<sup>2</sup>

Because nitrogen is for drying gas, it has vacuum drying effect during vacuum destroy. But if the moisture is too much, this method can't dry thoroughly. So, please pay more attention to prevent water entering and forming condensation water.

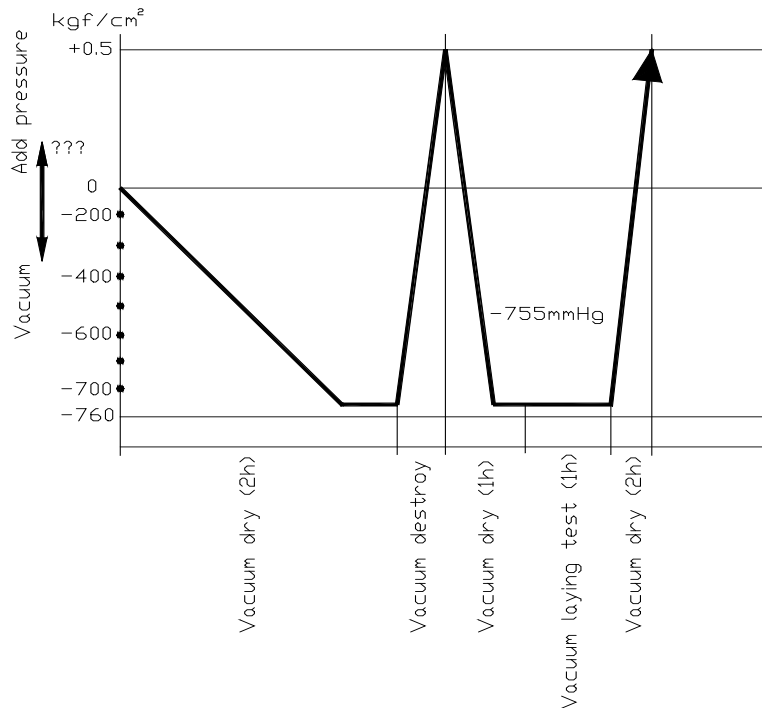
④. Vacuum dry for the second time.....1h pumping

Determinant: Pass if achieving below -755mmHg. If -755mmHg can't be achieved in 2h, repeat procedure

③ and ④.

⑤. Vacuum placing test ..... 1h

⑥. Sketch map of special vacuum dry procedure



### 3 Additional Refrigerant Charge

**Caution**

- Refrigerant cannot be charged until field wiring has been completed.
- Refrigerant may only be charged after performing the leak test and the vacuum pumping.
- When charging a system, care shall be taken that its maximum permissible charge is never exceeded, in view of the danger of liquid hammer.
- Charging with an unsuitable substance may cause explosions and accidents, so always ensure that the appropriate refrigerant is charged.
- Refrigerant containers shall be opened slowly.
- Always use protective gloves and protect your eyes when charging refrigerant.

The outdoor unit is factory charged with refrigerant. Calculate the added refrigerant according to the diameter and the length of the liquid side pipe of the outdoor unit/indoor unit

R(g) \ L(m) \ D(mm)	φ6.4	Φ9.5	Φ12.7
Less than 5m (One-way)	—	—	—
Added Refrigerant When Over 5m(One-way)	30g/m×(L-5)	65g/m×(L-5)	120g/m×(L-5)

**Remark:**

R (g): Additional refrigerant to be charged

L (m): The length of the refrigerant pipe (one-way)

D (mm): Liquid side piping



## 4 Water Drainage

### 4.1 Gradient and Supporting

4.1.1 Keep the drainpipe sloping downwards at a gradient of at least 1/100. Keep the drainpipe as short as possible and eliminate the air bubble.

4.1.2 The horizontal drainpipe should be short. When the pipe is too long, a prop stand must be installed to keep the gradient of 1/100 and prevent bending. Refer to the following table for the specification of the prop stand.

	Diameter	Distance between the prop stands
Hard PVC pipe	25~40mm	1~1.5m

#### 4.1.3. Precautions

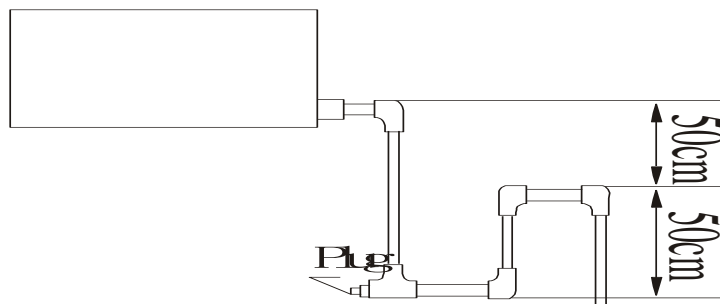
- ① The diameter of drainpipe should meet the drainage requirement at least.
- ② The drainpipe should be heat-insulated to prevent atomization.
- ③ Drainpipe should be installed before installing indoor unit. After powering on, there is some water in water-receiver plate. Please check if the drain pump can operate correctly.
- ④ All connection should be firm.
- ⑤ Wipe color on PVC pipe to note connection.
- ⑥ Climbing, horizontal and bending conditions are prohibited.
- ⑦ The dimension of drainpipe can't less than the connecting dimension of indoor drainpipe.
- ⑧ Heat-insulation should be done well to prevent condensation.
- ⑨ Indoor units with different drainage type can't share one convergent drainpipe.

### 4.2 Drainpipe Trap

4.2.1. If the pressure at the connection of the drainpipe is negative, it needs to design drainpipe trap.

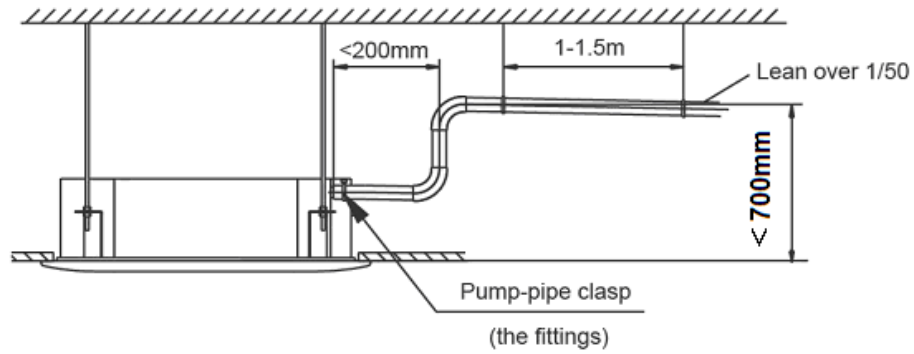
4.2.2. Every indoor unit needs one drainpipe trap.

4.2.3. A plug should be designed to do cleaning.

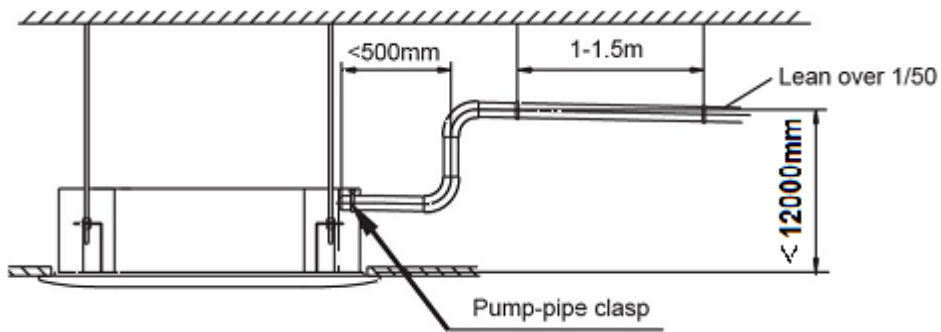


### 4.3 Upwards drainage (drain pump)

For Four-way cassette (compact)

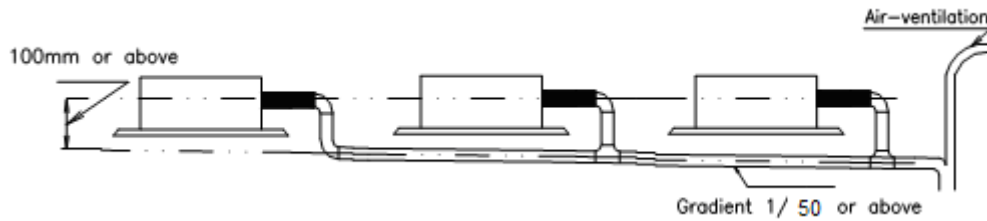


For Four-way cassette



### 4.4 Convergent drainage

- 4.4.1. The number of indoor units should be as small as possible to prevent the traverse main pipe overlong.
- 4.4.2. Indoor unit with drain pump and indoor unit without drain pump should be in different drainage system.



4.4.3. Selecting the diameter

Number of connecting indoor units → Calculate drainage volume → Select the diameter  
 Calculate allowed volume = Total cooling capacity of indoor units(HP)×2 (l/ hr)

	Allowed volume(lean 1/50) (l/ hr)	I.D. (mm)	Thick
Hard PVC	$\leq 14$	∅ 25	3.0
Hard PVC	$14 < \leq 88$	∅ 30	3.5
Hard PVC	$88 < \leq 334$	∅ 40	4.0
Hard PVC	$175 < \leq 334$	∅ 50	4.5
Hard PVC	$334 < \leq$	∅ 80	6.0

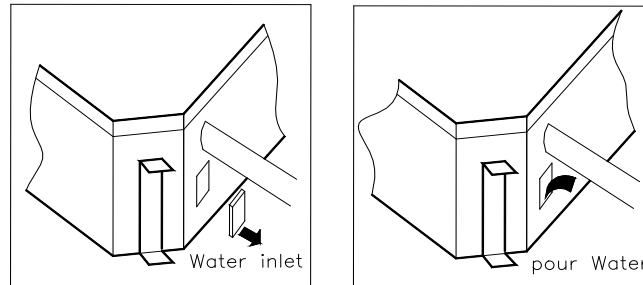
## 4.5 Drainage test

### 4.5.1 Drainage without drain pump

After finishing drainpipe installation, pour some water into the water receiver plate to check if the water flows smoothly.

### 4.5.2 Drainage with drain pump

- ① Poke the Water Level Switch, remove the cover, use water pipe to pour 2000ml water into the water receipt plate through the water inlet.



- ② Turn on the power to Cooling operation. Check the pump's operation and switch on the Water Level Switch. Check the pump's sound and look into the transparent hard pipe in the outlet at the same time to check if the water can discharge normally.

- ③ Stop the air conditioner running, turn off the power, and put back the cover.

- Stop the air conditioner. After 3 minutes, check if it has abnormality. If the collocation of drainpipes is illogical, the water will flow back overfull, which will cause the alarm lamp flashes, even overflow from the water receipt plate.
- Keep on pouring water until it gives an alarm signal for high water level, check if the pump drains water at once. If the water level can't fall below the alarmed water level after 3 minutes, the air conditioner will stop. Turn off the power and drain the remained water, and then turn on the air conditioner.

Note: the drain stuff in the main water receipt plate is for maintenance. Stuff up the drain stuff to prevent water leakage.

## 5 Insulation Work

### 5.1 Insulation material and thickness

#### 5.1.1. Insulation material

Insulation material should adopt the material which is able to endure the pipe's temperature: no less than 70°C in the high-pressure side, no less than 120°C in the low-pressure side (For the cooling type machine, no requirements at the low-pressure side.)

- ◆ Example: Heat pump type----Heat-resistant Polyethylene foam (withstand above 120°C)  
Cooling only type----Polyethylene foam (withstand above 100°C)

#### 5.1.2. Thickness choice for insulation material

Insulation material thickness is as follows:

	Pipe diameter (mm)	Adiabatic material thickness
Refrigerant pipe	Φ6.4—Φ25.4	10mm
	Φ28.6—Φ38.1	15mm
Drainage pipe	Inner diameterΦ20—Φ32	6mm

### 5.2 Refrigerant pipe insulation

#### 5.2.1. Work Procedure

- ① Before laying the pipes, the non-jointing parts and non-connection parts should be heat insulated.
- ② When the gas proof test is eligible, the jointing area, expanding area and the flange area should be heat insulated

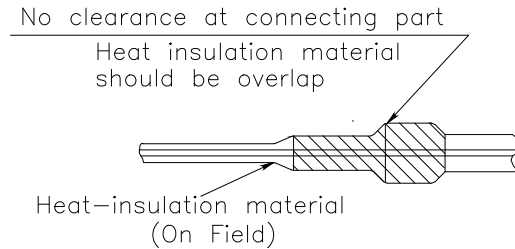
#### 5.2.2. Insulation for non-jointing parts and non-connection parts

wrong	right	
Gas pipe and liquid pipe should not be put together to insulate	Insulate the gas pipe (cooling only)	Insulate the gas pipe and liquid pipe

For construction convenience, before laying pipes, use insulation material to insulate the pipes to be deal with, at the same time, at two ends of the pipe, remain some length not to be insulated, in order to be welded and check the leakage after laying the pipes.

### 5.2.3. Insulate for the jointing area, expanding area and the flange area

- ① Insulate for the jointing area, expanding area and the flange area should be done after checking leakage of the pipes
- ② Make sure there's no clearance in the joining part of the accessorial insulation material and local preparative insulation material.



### 5.3 Drainage pipe insulation

The connection part should be insulated, or else water will be condensing at the non-insulation part.

#### 5.4 Note

5.4.1 The jointing area, expanding area and the flange area should be heat insulated after passing the pressure test

5.4.2 The gas and liquid pipe should be heat insulated individually, the connecting part should be heat insulated individually.

5.4.3 Use the attached heat-insulation material to insulate the pipe connections (pipes' tie-in ,expand nut ) of the indoor unit

## 6. Test Operation

**(1) The test operation must be carried out after the entire installation has been completed.**

**(2) Please confirm the following points before the test operation.**

- The indoor unit and outdoor unit are installed properly.
- Tubing and wiring are correctly completed.
- The refrigerant pipe system is leakage-checked.
- The drainage is unimpeded.
- The ground wiring is connected correctly.
- The length of the tubing and the added stow capacity of the refrigerant have been recorded.
- The power voltage fits the rated voltage of the air conditioner.
- There is no obstacle at the outlet and inlet of the outdoor and indoor units.
- The gas-side and liquid-side stop valves are both opened.
- The air conditioner is pre-heated by turning on the power.

**(3) According to the user's requirement, install the remote controller when the remote controller's signal can reach the indoor unit smoothly.**

**(4) Test operation**

Set the air conditioner under the mode of "COOLING" with the remote controller, and check the following points.

### Indoor unit

- Whether the switch on the remote controller works well.
- Whether the buttons on the remote controller works well.
- Whether the air flow louver moves normally.
- Whether the room temperature is adjusted well.
- Whether the indicator lights normally.
- Whether the temporary buttons works well.
- Whether the drainage is normal.
- Whether there is vibration or abnormal noise during operation.

### Outdoor unit

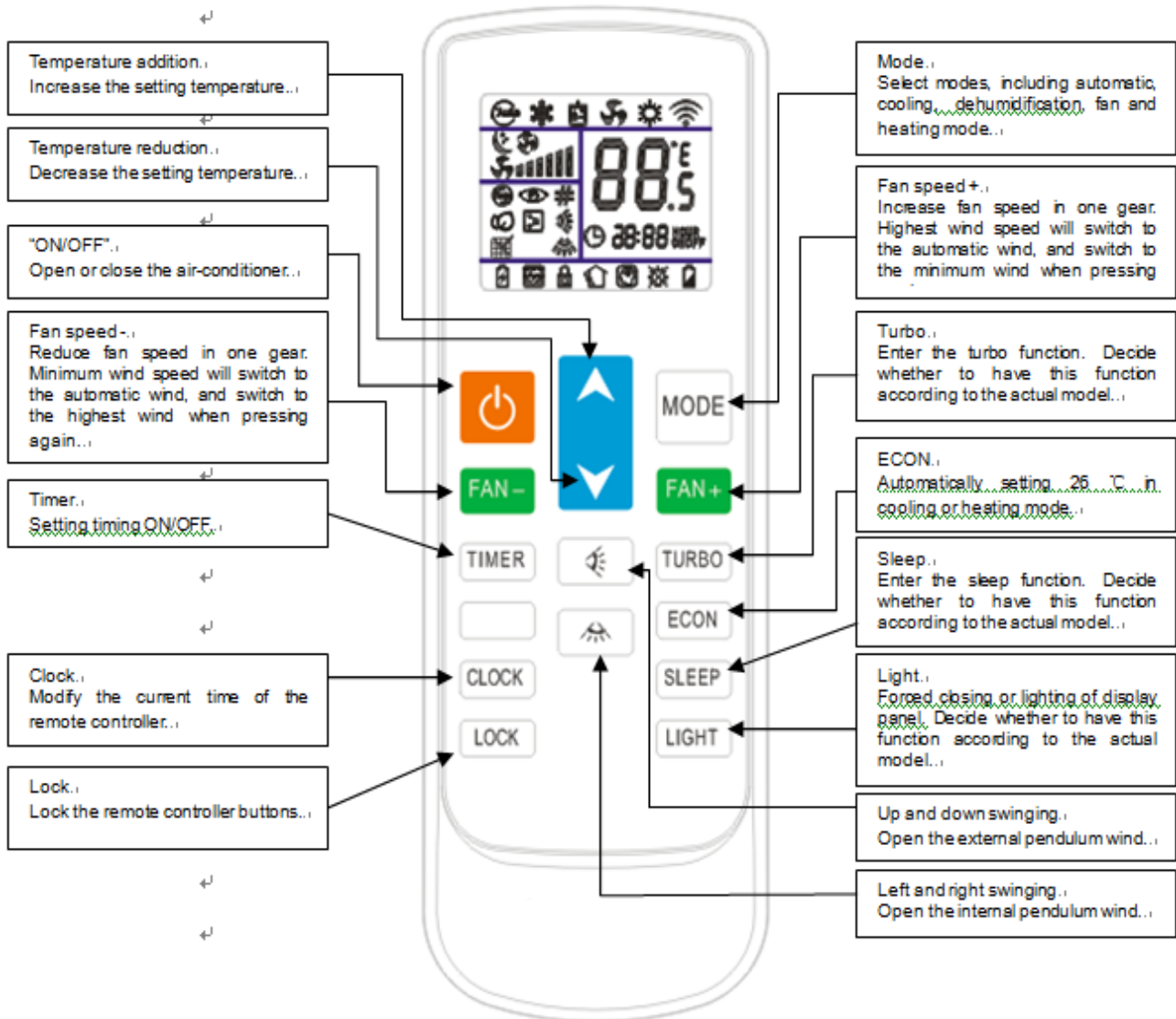
- Whether there is vibration or abnormal noise during operation.
- Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
- Whether any of the refrigerant is leaked.

# Controller

1.Wireless Remote Controller .....	171
2.Wired Controller .....	179

# 1 Wireless Remote Controller

## 1.1 NT-03A





## 1.2 Instructions of remote controller

“HVAC No.2” remote controller (compatibility with wire controller or lamp board): extension code, applicable to most VRV models.

“HVAC No.3” remote controller (compatibility with wire controller or lamp board): general code, applicable to all models (except of Window machine).

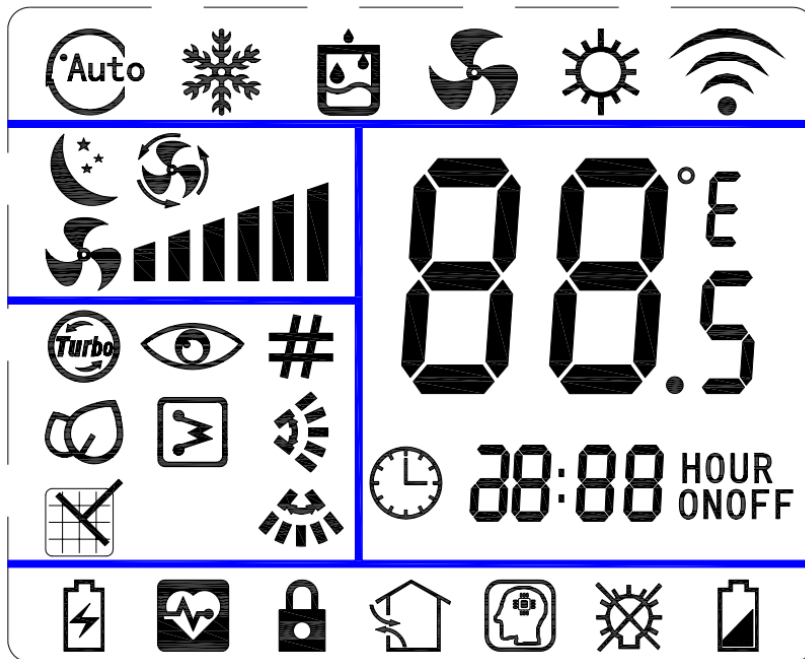
### Warning

- Do not place remote controller near heat sources such as electric blankets or heating furnaces.
- Do not place remote controller in direct sunlight.
- Be careful not to drop, otherwise it may cause damage.
- No obstacle between the signal receiver and the remote controller, so as not to affect the transmission and reception of the signal.
- Do not splash water or other liquids onto the remote controller.

### Warning

- Point the remote controller to the air conditioner, press the button on the remote controller, and send the command signal to the air conditioner.
- If the signal is received correctly, the air conditioner will issue a "beep" prompt.
- If the remote controller is not available, please replace the new battery and try again. But if the problem persists, please contact the seller or our authorized service center.

## 1.3 The icon meaning of remote controller



1) The remote controller is equipped with 15 buttons, and the LCD is newly made. All the icons are kept in touch with the touch-screen remote controller.

2) At the first power on, the LCD of the remote controller displays all the icons first and then enters the standby state, displaying only the clock 12:00 and the light icon.

3) Introduction of LCD screen icon:

- Mode display: automatic 、cooling 、dehumidification 、fan and heating .
- Temperature display: displays temperature, which range between 16 ~ 32°C or 61 ~ 90°F.
- Wind speed display: means wind speed. means automatic wind speed.
- Swinging display: means external pendulum wind. means internal pendulum wind.
- Timer display: means TIME ON. means TIME OFF.
- Other display: means clock. means sleep. means TURBO. means ECON. means cleaning. means electric heating. means address. means lock. means lack of electricity.
- Reservation function: means Auto Config. means power saving. means healthy. means new wind. means intelligence. means lamp light.

## 1.4 Button function of remote controller

### (1) ON/OFF

- ① When pressing this key, the remote controller switches by "on, off, on" circularly.
- ② When the first power on, the working state is set by default: setting temperature 25°C (77°F), automatic mode, automatic fan speed, internal and external pendulum wind, no TURBO, no sleep, no timer, no lock).
- ③ When the power on is not the first time, the state before shutdown is recovered. After shutdown, the sleep, TURBO, ECON and timer functions will be canceled.

### (2) Mode

- ① When pressing this key, the remote controller switches by "automatic, cooling, dehumidification, fan, heating, automatic" circularly.
- ② The dehumidification mode is locked at 25°C and the temperature can not be adjusted. The internal pendulum wind stays unchanged according to the state before switching, but the external pendulum wind is forced to close.

### (3) Temperature reduction ▼

- ① Temperature setting: when pressing this key, the setting temperature will be reduced by 1. The temperature of centigrade model will be reduced progressively by "32°C, 31°C, ……., 17°C, 16°C". The temperature of Fahrenheit model will be reduced progressively by "90°F, 89°F, ……., 62°F, 61°F". When pressing this key in dehumidification and fan mode, the temperature will not change.
- ② In the clock setting state (the clock icon will flicker to show the prompt), this key is used to set the clock time.
- ③ Keep pressing will continuously change the temperature.

### (4) Temperature addition ▲

- ① Temperature setting: when pressing this key, the setting temperature will be added by 1. The temperature of centigrade model will be added progressively by "16°C, 17°C, ……., 31°C, 32°C". The temperature of Fahrenheit model will be added progressively by "61°F, 62°F, ……., 89°F, 90°F". When pressing this key in dehumidification and fan mode, the temperature will not change.
- ② In the clock setting state (the clock icon will flicker to show the prompt), this key is used to set the clock time.
- ③ Keep pressing will continuously change the temperature.

### (5) Up and down swinging (External pendulum wind)

- ① Pressing this key in the dehumidification mode, the external pendulum wind is forced to close.
- ② Pressing this key in the other modes, the external pendulum switches by "swing, fixed wind, swing" circularly.

**(6) Left and right swinging (Internal pendulum wind)**

- ① Pressing this key in the dehumidification mode, the internal pendulum wind stays unchanged according to the state before switching.
- ② Pressing this key in the other modes, the internal pendulum switches by "swing, stop, swing" circularly.

**(7) "FAN -"**

- ① When the first power on, the remote controller is set to the automatic wind speed by default. In dehumidification mode, the wind speed is fixed to low wind and is not adjustable. By pressing the wind speed key, there is no response to the remote controller.
- ② Pressing this key in the other modes, the wind speed switches by "automatic wind speed, high speed, middle speed, low speed, automatic wind speed " circularly.

**(8) "FAN +"**

- ① When the first power on, the remote controller is set to the automatic wind speed by default. In dehumidification mode, the wind speed is fixed to low wind and is not adjustable. By pressing the wind speed key, there is no response to the remote controller.
- ② Pressing this key in the other modes, the wind speed switches by "automatic wind speed, low speed, middle speed, high speed, automatic wind speed " circularly.

**(9) Timer**

- ① Under the shutdown state, press this key to set the opening time, range from 1 hour to 24 hour.
- ② Under the boot state, press this key to set the shutdown time, range from 1 hour to 24 hour.
- ③ The timing time is according to the cycle of "1h, 2h, ·····, 23h, 24h, cancel, 1h".
- ④ Exit timing adjustment after 3 seconds without key pressing.

**(10) TURBO**

- ① Extension code remote controller has the effect. The remote controller is no TURBO by default, and the TURBO key will not work in automatic mode, dehumidification mode and fan mode.
- ② Pressing this key in the cooling or heating mode, the TURBO mode switches between opening and closing. When in the TURBO mode, it does not display the wind speed. Switching mode or entering sleep function will close TURBO mode.

- ③ If the air conditioner has four gear wind speeds, the TURBO icon will light up and the fan will run in the fourth gear wind speed by pressing this key.

**(11) ECON**

- ① The remote controller is no ECON by default, and the ECON key will not work in automatic mode, dehumidification mode and fan mode.
- ② Pressing this key in the cooling or heating mode, the ECON mode switches between opening and closing. When in the ECON mode, the setting temperature is set to 26°C (77°F) and other settings are unchanged. If closing ECON mode, the remote controller will recover to the setting before opening ECON mode. Switching mode will close ECON mode.

**(12) Sleep**

- ① Pressing this key in the modes except of the fan mode, the sleep function switches between opening and closing. Switching mode will cancel sleep function.
- ② When pressing this key, the wind speed is automatically switched to low wind. However, the wind speed can be adjusted according to the wind speed key (except of the dehumidification mode).

**(13) Light**

- ① When the first power on, there is lamplight by default. Pressing this key force to turn off or turn on the lamplight. Decide whether to have this function according to the actual model.

**(14) Clock**

- ① This key is used to set the clock. Pressing enters the hour adjustment state, and the hour digital tube on the LCD is flickering at the same time. The hour can be set by temperature addition or reduction keys, and it ranges from 0 to 23.
- ② When the hour is set, press this key again to enter the minute adjustment state, and the minute digital tube on the LCD is flickering at the same time. The minute can be set by temperature addition or reduction keys, and it ranges from 00 to 59.
- ③ After adjusting, press the clock key again to confirm the setting and the adjustment state exits. If do not press the clock key again to confirm, the time adjustment state will exit after 3 seconds, and recover the clock before the adjustment.

**(15) Lock**

- ① There is no lock by default. Pressing this key, the lock function switches between opening and closing.
- ② When it is locked, the remote controller does not work except the lock key.

**(16) Combinatorial key: “FAN -” + “FAN +”**

- ① Extension code remote controller has the effect. Switch 3 gear wind and 6 gear wind. There is 6 gear wind on the LCD. If the 3 gear wind is switched, the first and second gear wind will be "low wind"; the third and fourth gear wind will be "middle wind"; the fifth and sixth gear wind will be "high wind".

**(17) Combinatorial key: “Mode” + “Lock”**

**① Enter address setting**

- 1) On the shutdown interface, press the combinatorial key on the remote controller for 5 seconds to enter the address setting interface.
- 2) The last address (when the first power on, 00 is displayed) and the"#" icon are displayed and flickering.

**② The step instructions of setting address**

- 1) At the address setting interface, press the temperature addition or reduction to adjust the setting address, and it ranges from 00 to 63.
- 2) When the first time entering the interface or pressing the temperature addition or reduction key, the address display flickers for 3 seconds and then does not flicker.
- 3) Press the ON / OFF key to enter the sending state and send the address setting code.

**③ The step instructions of inquiring address**

- 1) At the address setting interface, press the mode key to send the query code.
- 2) At this time, the"#" icon flickers. 3 seconds later, it normally displays the last setting addresses and the"#" icon does not flicker.

**④ Exit setting**

- 1) Pressing the mode key and lock key at the same time can exit the address setting interface.
- 2) If there is no key pressing associated with address setting for more than 30 minutes, the remote controller will exit the address setting interface.

## 1.5 Battery replacement

- 1) If the air conditioner is unable to receive the signal from the wire controller, or the LCD of wire controller is blurred, it means that the battery is depleted and needs to be replaced.
- 2) Take off the back cover and remove the old batteries. When replacing batteries, please pay attention to the "+" and "-" marking on the battery.
- 3) Install the back cover and set the current time.

### Warning

- Do not mix old and new batteries together.
- When the wire controller is idle for a long time, the battery should be removed.
- In general, the service life of a dry battery that meets the JIS or IEC standard can be up to 6-12 months, but if it exceeds the use time or not in conformity with above specifications, the dry battery may leak and may even cause the wire controller operation to be invalid.

## 2 Wired Controller

### ZKX-C/TE-05

#### I. Use-method

The control panel of wire controller is responsible for controlling the operation status of the system by the button and displaying the working status of the entire system by its LCD screen, and is responsible for communicating with the control board of the system.



Fig1 Appearance of Wire Controller

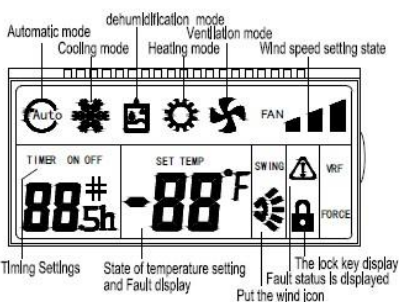


Fig2 LCD display content of Wire Controller

#### Operation and Instruction:

##### "ON/OFF" Button:

- 1) Control the On/Off status of the system.
- 2) Press and hold the On/Off button when the wire controller is powered on, to go into the self-test mode. And then you can release the button.

##### "MODE" Button:

When the air conditioning is powered on, every time you press mode button or the mode button of remote controller, the mode will change in the following sequence.

Auto Mode→Refrigeration→Dehumidification→Heating→Ventilation→Auto Mode

##### "TEMP+" and "TEMP-" Button ("▲", "▼") :

- 1) Boot state, press "▲" and "▼" button, increase/decrease the setting temperature. Refrigeration, Dehumidification, Ventilation and Heating mode Scope of temperature setting: 16 °C ~ 32 °C ;The setting temperature do not adjust in Auto Mode .
- 2) Press the "▲" and "▼" button for 3s simultaneously to lock this button. At this time, It will display the locking icon in LCD. Deactivate this button, and press the "▲" and "▼" button again simultaneously.

##### "TIMER" Button

Set Timing On or Timing Off. The wire controller to set the time range as 1-24h.

- 1) Press the Timer button in the Off status to go into the Timing On for 1 hour, and then press the Timer button plus 1 until it is timing on for 24h. At this time, if you press the Timer button, it will deactivate Timing On.

- 2) Press the Timer button in the On status to go into the Timing Off for 1 hour, and then press the Timer button plus 1 until it is timing off for 24h. At this time, if you press the Timer button, it will deactivate Timing Off.

##### "FAN SPEED" Button:

- 1) The Fan Speed button is valid in the "Cooling mode", "Heating mode" and "Ventilation mode".
- 2) Press the Fan Speed button of the wire controller or the Volume button of the remote controller in the Cooling mode, Heating mode or Ventilation mode, and the volume changes as follows:

High speed → Middle speed → Low speed → Auto wind

- 3) There is no Auto wind in the Ventilation mode.

##### "SWING" Button:

- 1) Press it to display the Swing icon. The Swing icon will swing back and forth.
- 2) Press the Swing button, and the upper and lower wind deflectors will swing within the specified range automatically, and the left and right wind deflectors will swing within the specified range automatically, and press it again to stop the swing.

##### 26°C/CHECK Button Function:

- 1) Short press this button, Enter a state of energy saving of 26 °C, namely the setting temperature is 26 °C. this function under the boot of Refrigeration and Heating mode is effective.
- 2) Long press this button, will enter the query condition; It will exit the query condition, when you press this button again and five seconds is not operating in the condition of the query.

By pressing "▲" and "▼" button to check the temperature in the query condition. 1 is Indoor environment temperature, 2 is Indoor pipe temperature, 3 is outdoor pipe temperature

##### Description of DIP Switch:

	2 ON	2 OFF
3 ON	-4°C	-2°C
3 OFF	2°C	0°C
	ON	OFF
1	The old protocol	The new protocol
4	with power failure memory	without power failure memory

- 1) The second and third bits of the DIP switch will select the compensation value of the indoor temperature. The compensation value is -4°C when the second and third bits are ON, and the

compensation value is 0°C when the second and third bits are OFF. The compensation value is 2°C when the second bit is ON and the third bit is OFF, and the compensation value is -2°C when the second bit is OFF and the third bit is On (for the wire controller sensor only).

- 2) The first bit of the DIP switch indicates to select the new or old protocol. Light commercial units select the new protocol.

- 3) The fourth bit ON of the DIP switch indicates it is With Power Failure Memory function, and the fourth bit OFF indicates it is Without Power Failure Memory.

NOTE: Just need to dial the code when matching the old type. Detailed please see after-sales guidance!



## II. Installation of Wire Controller

### Safety Precautions

- ! Read the safety precautions carefully before installation.
- ! The following is the important content to be paid for the safety, be sure to follow it.
- ! The meaning of each part:

<b>Warning:</b>	Indicate it may cause the death or serious injury for the improper operation.
<b>Note:</b>	Indicate it may cause the death or serious injury for the improper operation.

- Notes:**
- Please do not install the wire controller in damp or direct sunlight places.
  - Please do not hit, throw and frequent disassembling the wire controller.
  - Please do not operate the wire controller with a wet hand; don't make any fluid into the wire controller.
  - Please do not dismantle the wire controller without authorization. Please consult after-sales maintenance personnel if you have a problem.
  - To prevent water and dust from entering the wire controller, affect the wire controller's normal use. Please dismantle the wire controller when the indoor decoration and maintenance is completed.

### Installation and disassembly of the wire controller

#### 1. The installation position and requirements of the wire controller

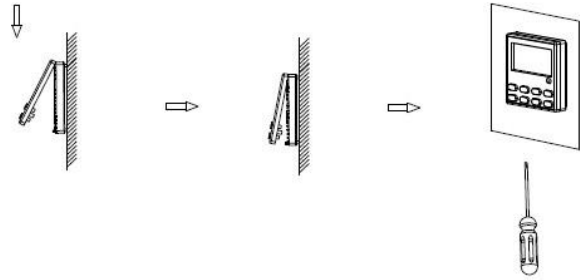
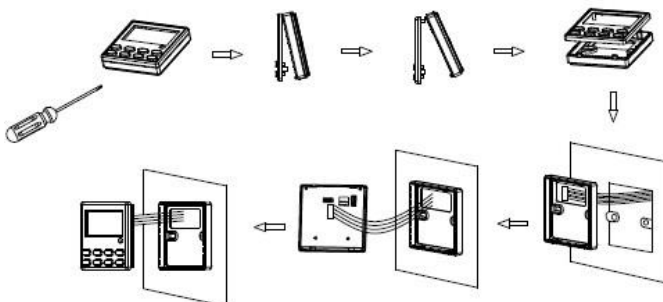
- 1) Please do not install the wire controller in damp or direct sunlight places.
- 2) Please do not install the wire controller in places where is near high temperature or easy to splash water.
- 3) To avoid the interference of the neighbors' remote controller which has the same model, then cause abnormal work. Please do not install the wire controller where the face up to the window.
- 4) Before installation, please cut off the power which is buried in the wall mounting holes. The whole installation process does not allow operation with power.
- 5) In order to avoid the unit by reason of electromagnetic interference caused by abnormal work. When wiring, please pay attention to the following matters.
  - A) Ensure that communication line access is right, otherwise will lead to communication failures.
  - B) If the air conditioning unit is installed on the places, which is influenced by electromagnetic interference, the wire controller signal lines must use shielded twisted-pair cable.
- 6) The standard accessories which are needed for installation are: prepared inside a wall socket bottom box, controller base plate, screw the M4 x 25, control panel.

#### 2. The installation of the wire controller

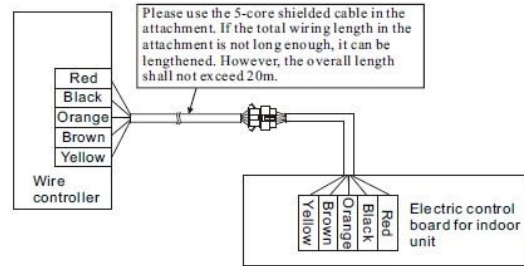
First of all, the wire controller signal line connection mode is as follows:

- 1) Open interior electrical lifted the lid, and the signal wires through the rubber ring;
- 2) Plug the wire controller signal lines within the five-core needle base on the indoor machine circuit boards, and using cable tie line tied tightly fixed.

Next, the wire controller installation steps as shown in the figure below:



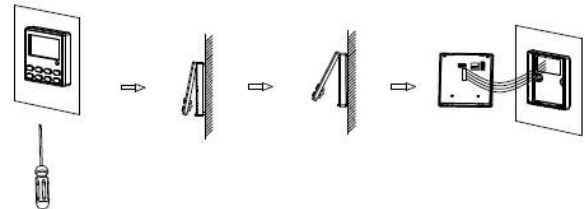
Connect the wire controller in the way as shown in the figure below



Brief description of the installation process is as follows

- 1) The signal lines of short through rectangle hole of the wire controller bottom plate, and then pull out five-core twisted pair from the wall installation hole. Finally connect the line and the other end.
- 2) Use screws M4 x 25 to fix the controller base plate on the mounting holes of the wall.
- 3) Put the wire controller panel and floor buttons together, and this installation is complete. When installation, please reserve a certain length of the line at the bottom of box, to facilitate maintenance later removed.

#### 3. Disassembly of the wire controller



! After the completion of the installation, confirm there is no abnormality for the commissioning, and deliver the instruction to customers for storage.

- Note:**
- It may cause the rear cover deformed if the screw is tightened too much.
  - It is necessary to reserve a certain length for the connecting cable of the wire controller during the installation, so as to take down the wire controller for the maintenance.