

SERVICE MANUAL



Model

HBU-18/28/42HF03 HBU-28CF03
HDU-18/28CF03 HDU-18/28HF03
HDU-42HF03/H

● Features

- Long distribution pipe and high drop
- Auto-check function
- Flexible and easy installation
- Fresh air hole, more natural, more healthy
- Infrared remote controller & wired controller
- Optional safety devices and much more precision control device

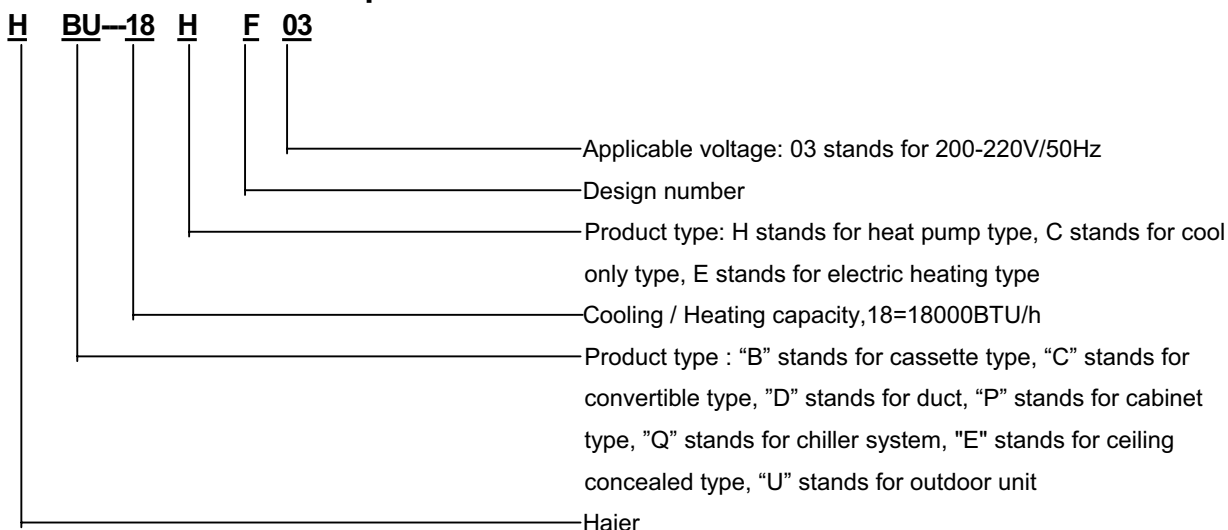


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1. DESCRIPTION OF PRODUCTS & FEATURES

1.1. Products code explanation



1.2 Brief Introduction for T1、T2、T3 working condition

Type of Air Conditioner	Climate type		
	T1	T2	T3
Cooling Only	18 °C~43°C	10°C~35°C	21°C~52°C
Heat pump	-7°C~43°C	-7°C~35°C	-7°C~52°C
Electricity Heating	~43°C	~35°C	~52°C

1.3 Operating Range of Air Conditioners

Temp.	Mode	Rated	Maximum	Minimum	
					DB °C
Cooling	Indoor	DB °C	27	32	18
		WB °C	19	23	14
	Outdoor	DB °C	35	43	10
		WB °C	24	26	6
Heating	Indoor	DB °C	20	27	15
		WB °C	14.5	---	--
	Outdoor	DB °C	7	24	-7
		WB °C	6	18	---

1.4 Products line up

1.4.1 Outdoor unit

		
<p>HBU-18HF03 HDU-18CF03 HDU-18HF03</p>		
	<p>HBU-28HF03 HDU-28CF03 HDU-28HF03</p>	<p>HDU-42HF03/H</p>

1.4.2 Indoor unit

		
<p>HBU-18HF03</p>	<p>HBU-28CF03 HBU-28HF03</p>	<p>HBU-42HF03</p>

		
<p>HDU-18CF03 HDU-18HF03</p>	<p>HDU-28CF03 HDU-28HF03</p>	<p>HDU-42HF03/H</p>

1.5 Product features

1.5.1 Outdoor unit .

Flexible and easy installation

The outdoor can meet the higher request of installation. From the specifications, you will find for each unit, how long and how high the piping will be, which will be convenient for design and installation.

Optional safety devices and much more precision control device

- a. Ambient **temperature sensor**, coil temperature sensor and compressor temperature sensor make the temperature control and defrosting control more precise.
- b. **High/low pressure switch** can feel the discharging pipe pressure and suction pipe pressure on time and precisely. If the pressure is too low or too high, it will stop the compressor to prevent it being damaged for the sake of pressure.
- c. **3 minutes delay protection** for the compressor, the device can protect the compressor from some damages and make the compressor have a long life.

Silent operation

New design of long piping length and large drop

1.5.2 Indoor unit

1.5.2.1 Noblest cassette indoor unit

Compact indoor unit body

The dimension of indoor unit is 570×570×260, convenient for installation in the ceiling, perfectly match with the decor of indoor decoration and be in accordance with the standard of aesthetics.

Fresh air inlet hole

The cassette indoor unit is equipped with a fresh air hole, from which you can get the fresh air from the outdoor, to improve the indoor air quality. More natural and more healthier.

Convenient infrared remote controller

The newly designed infrared remote controller YR-H71 can be used for all indoor units of single type,

multi split type, and H-MRV type except for the cabinet unit. This controller can be compatible with all old remote controllers except for that of cabinet units.

Auto-check function

The unit can display the malfunction codes on the control board by using advanced auto-check technology, convenient for user find and dwell with the abnormal running.

Built-in high head drain water pump

Due to the internal float switch, built-in drain water pump can drain water automatically when the condensation is full enough and necessary to be cleaned, the standard head height can be up to 600mm, realizing the most effective water drainage.

Quiet operation

The unit is equipped with the greatly powerful, smooth, and ultra quiet multi-blade fan, which has the irregular helix, and can run in silence.

1.5.2.2 Elegant duct indoor unit

Space saving design

With the minimum thickness of only 225mm, the unit almost can be installed into any ducted space. It needs not the very big space, and will not effect the exterior decoration, only leave people comfortable air not feeling its existence.

High efficiency filter

The unit adopts G3 grade filter, can efficiently filter the dirt etc, and improve the room air quality, at the same time, the filter can pull out from downside, convenient for maintenance and cleaning.

Multi-mode for installation

The indoor unit can be installed with or without an air return duct according to the installation need.

Free setting of air discharging duct

The number of the airflow outlet and its installation position can be freely selected according to the environment of the room, sufficiently considering the load of the room and the uniform temperature of the room to realize more perfect comfort.

High esp design

Max. external static pressure of 196 Pa brings the quick temperature adjustment to the room. Adopts high pressure fan to provide quick speed of air blowing while keeping a low sound level and ensuring a good air circulation of the whole indoor space.

Ultra high head water drain up

The duct unit adopt the water pump, which can be up to 600mm.

1.5.2.3 Ceiling concealed type

 **Multi choice of control method between wired or infrared remote controller**

 **Compatible with the indoor décoration**

The indoor unit is placed in the ceiling, only the inlet and outlet grill can be seen. The most suited grill can be used to fit with the indoor decoration.

 **Compact design**

Ultra thick design makes all the models have only 225mm height, it is more convenient for installation and maintenance. Also the unit has two drainage pipes on each side for an easier installation.

 **High efficiency air filter adopted for strong air purifying**

 **Medium static pressure 30Pa for long distance air supply**

2. SPECIFICATION

Item	Model			HBU-18HF03		
Function				cooling	heating	
Capacity			BTU/h	17000	18700	
Capacity			kW	5	5.5	
Sensible heat ratio				75%	/	
Total power input			W	1780	1900	
Max. power input			W	2400	2400	
EER or COP			W/W	2.81	2.89	
Dehumidifying capacity			10 ⁻³ ×m ³ /h	1.6		
Power cable			section	3×2.5mm ²		
Signal cable			section	3×2.0mm ² +2×0.75mm ²		
Connecting cable			section			
Wired control cable	for wired control unit		section	/	/	
Power source			N, V, Hz	1, 220-230, 50		
Running /Max.Running current			A / A	cooling 8.2/11.0 heating 9.0/11.0		
Start Current			A	40		
Class of anti electric shock				I	/	
Circuit breaker			A	/	30	
Max. operating pressure of heat side			Mpa	2.94		
Max. operating pressure of cold side			Mpa	2.94		
Indoor unit	Unit model (color)			HBU-18HF03(INDOOR) (WHITE)		
	Fan	Type × Number			Centrifugal × 1	
		Speed(H-M-L)		r/min	750±20/650±30/520±30	
		Fan motor output power		kW	0.055	
		Air-flow(H-M-L)		m ³ /h	670	
	Heat exchanger	Type / Diameter		mm	/	
		Total Area		m ²	/	
		Temp. scope		°C	cooling: 43~60 heating: 6~7	
	Dimension	External	(L×W×H)	mm×mm×mm	570×570×260	
		Package	(L×W×H)	mm×mm×mm	718×680×380	
	Air sending angle				/	/
	Drainage pipe (material , I.D./O.D.)			mm	/	
	Control type (Remote /wired /model)				REMOTE	
	Fresh air hole dimension			mm	/	
	Outlet distribution hole dimension			mm	/	
	Electricity Heater			kW	/	
Noise level (H-M-L)			dB(A)	45/40/32		
Weight (Net / Shipping)			kg / kg	25/27		
Panel	Dimension	External	(L×W×H)	mm×mm×mm	700×700×60	
		Package	(L×W×H)	mm×mm×mm	740×750×115	
	Weight (Net / Shipping)			kg / kg	2.8/4.8	
Outdoor unit	Unit model (color)			HBU-18HF03(OUTDOOR) (WHITE)		
	Compressor	Model / Manufacture			TH338VEEC MITSUBISHI	
		Oil model			DIAMOND MS-56	
		Oil type			/	
		Oil charging			520	
		Type			ROTARY	
		Protection type			Inner thermal protection	
	Starting method			hard startup		
	Fan	Type × Number			Axial × 1	
		Speed		r/min	860±30	
		Fan motor output power		kW	0.03	
		Air-flow(H-M-L)		m ³ /h	2500	
	Heat exchanger	Type / Diameter		mm	TP2M / 9.52x0.36	
		Row / Fin pitch			/	
		Temp. scope		°C	cooling: 43~60 / heating: 6~7	
	Dimension	External	(L×W×H)	mm×mm×mm	815×290×680	
		Package	(L×W×H)	mm×mm×mm	960×410×765	
	Drainage pipe (material , I.D./O.D.)			mm	/	
	Refrigerant control method			mm/mm	Capillary tube	
Defrosting				Automatic		
Volume of Accumulator			L	/		
Noise level			dB(A)	56		
Type of Four way valve				/		
material of reduce noise				/		
crankcase heater power			W	/		
Weight (Net / Shipping)			kg / kg	53/56		
PIPING	Refrigerant	Type / Charge	g	R22/1750		
		Recharge quantity	g/m	/		
	Pipe	Liquid	mm	6.35		
		Gas	mm	12.7		
	Connecting Method			Flared		
Between I.D & O.D	MAX.Drop		m	5		
	MAX.Piping length		m	15		

Normal condition: indoor temperature (cooling): 27 °C DB/19 °C WB, indoor temperature (heating): 20 °C DB

Outdoor temperature(cooling): 35 °C DB/24 °C WB, outdoor temperature(heating): 7 °C DB/6 °C WB

The noise level will be measured in the third octave band limited values, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level. The detailed method please refer to the following information:

item	Model			HDU-18CF03		
Function				cooling	heating	
Capacity			BTU/h	17000	/	
Capacity			kW	5	/	
Sensible heat ratio				75%	/	
Total power input			W	1850	/	
Max. power input			W	2300	/	
EER or COP			W/W	2.7	/	
Dehumidifying capacity			10 ⁻³ ×m ³ /h	2.0		
Power cable			section	3G×2.5mm ²		
Signal cable			section	3G×2.0mm ²		
Connecting cable			section	3G×2.0mm ²		
Wired control cable	for wired control unit		section	/	4×0.33mm ² shield wire	
Power source			N, V, Hz	1, 220-230, 50		
Running /Max.Running current			A / A	8.5/10.5		
Start Current			A	40		
Class of anti electric shock				I	/	
Circuit breaker			A	/	30	
Max. operating pressure of heat side			Mpa	2.8		
Max. operating pressure of cold side			Mpa	2.8		
Indoor unit	Unit model (color)			HDU-18HF03(INDOOR) (WHITE)		
	Fan	Type × Number			Centrifugal × 1	
		Speed(H-M-L)		r/min	700±30/550±30/390±30r/min	
		Fan motor output power		kW	0.02	
		Air-flow(H-M-L)		m ³ /h	780	
	Heat exchanger	Type / Diameter		mm	TP2M / 9.52×0.36	
		Total Area		m ²	/	
		Temp. scope		°C	cooling: 43~60 heating:6~7	
	Dimension	External	(L×W×H)	mm×mm×mm	1090×500×218	
		Package	(L×W×H)	mm×mm×mm	1170×545×295	
	Air sending angle				/	/
	Drainage pipe (material , I.D./O.D.)			mm	/	
	Control type (Remote /wired /model)				WIRED	
	Fresh air hole dimension			mm	/	
	Outlet distribution hole dimension			mm	/	
	Electricity Heater			kW	/	
Noise level (H-M-L)			dB(A)	46/44/40		
Weight (Net / Shipping)			kg / kg	24/27		
Panel	Dimension	External	(L×W×H)	mm×mm×mm	/	
		Package	(L×W×H)	mm×mm×mm	/	
	Weight (Net / Shipping)			kg / kg	/	
Outdoor unit	Unit model (color)			HDU-18CF03(OUTDOOR) (WHITE)		
	Compressor	Model / Manufacture			TH310VEEC MITSUBISHI	
		Oil model			DIAMOND MS-56	
		Oil type			/	
		Oil charging			520	
		Type			/	
		Protection type			Inner thermal protection	
		Starting method			hard startup	
	Fan	Type × Number			Axial × 1	
		Speed		r/min	860±30	
		Fan motor output power		kW	0.03	
		Air-flow(H-M-L)		m ³ /h	2500	
	Heat exchanger	Type / Diameter		mm	TP2M / 9.52×0.36	
		Row / Fin pitch			/	
		Temp. scope		°C	cooling: 43~60 / heating: 6~7	
	Dimension	External	(L×W×H)	mm×mm×mm	815×290×680	
		Package	(L×W×H)	mm×mm×mm	960×410×765	
	Drainage pipe (material , I.D./O.D.)			mm	/	
	Refrigerant control method			mm/mm	Capillary tube	
	Defrosting				Automatic	
Volume of Accumulator			L	/		
Noise level			dB(A)	56		
Type of Four way valve				/		
material of reduce noise				/		
crankcase heater power			W	/		
Weight (Net / Shipping)			kg / kg	59/66		
PIPING	Refrigerant	Type / Charge	g	R22/1930		
		Recharge quantity	g/m	/		
	Pipe	Liquid	mm	6.35		
		Gas	mm	12.7		
	Connecting Method			Flared		
	Between I.D & O.D	MAX.Drop	m	5		
MAX.Piping length		m	15			
Normal condition: indoor temperature (cooling): 27 °C DB/19 °C WB, indoor temperature (heating): 20 °C DB						
Outdoor temperature(cooling): 35 °C DB/24 °C WB, outdoor temperature(heating): 7 °C DB/6 °C WB						
The noise level will be measured in the third octave band limited values, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level. The detailed method please refer to the following information:						

item		Model		HDU-18HF03		
Function				cooling	heating	
Capacity			BTU/h	17000	18700	
Capacity			kW	5	5.5	
Sensible heat ratio				75%	/	
Total power input			W	1800	1850	
Max. power input			W	2200	2400	
EER or COP			W/W	2.78	2.97	
Dehumidifying capacity			10 ⁻³ ×m ³ /h	2.0		
Power cable			section	3G×2.5mm ²		
Signal cable			section	3G×2.0mm ² +2×0.75mm ²		
Connecting cable			section			
Wired control cable	for wired control unit		section	/	4×0.33mm ² shield wire	
Power source			N, V, Hz	1, 220-230, 50		
Running /Max.Running current			A / A	Cooling8.0/10.0 heating8.5/11.0		
Start Current			A	40		
Class of anti electric shock				I	/	
Circuit breaker			A	/	30	
Max. operating pressure of heat side			Mpa	2.8		
Max. operating pressure of cold side			Mpa	2.8		
Indoor unit	Unit model (color)			HDU-18HF03(INDOOR) (WHITE)		
	Fan	Type × Number			Centrifugal × 1	
		Speed(H-M-L)		r/min	700±30/550±30/390±30r/min	
		Fan motor output power		kW	0.02	
		Air-flow(H-M-L)		m ³ /h	780	
	Heat exchanger	Type / Diameter		mm	TP2M / 9.52x0.36	
		Total Area		m ²	/	
		Temp. scope		°C	cooling: 43~60 heating:6~7	
	Dimension	External	(L×W×H)	mm×mm×mm	1090×500×218	
		Package	(L×W×H)	mm×mm×mm	1161×536×269	
	Air sending angle				/	/
	Drainage pipe (material , I.D./O.D.)			mm	/	
	Control type (Remote /wired /model)				WIRED	
	Fresh air hole dimension			mm	/	
	Outlet distribution hole dimension			mm	/	
	Electricity Heater			kW	/	
	Noise level (H-M-L)			dB(A)	48/44/40	
Weight (Net / Shipping)			kg / kg	25/29		
Panel	Dimension	External	(L×W×H)	mm×mm×mm	/	
	Package	(L×W×H)	mm×mm×mm	mm×mm×mm	/	
Weight (Net / Shipping)			kg / kg	/		
Outdoor unit	Unit model (color)			HDU-18HF03(OUTDOOR) (WHITE)		
	Compressor	Model / Manufacture			TH310VEEC MITSUBISHI	
		Oil model			DIAMOND MS-56	
		Oil type			/	
		Oil charging			520	
		Type			/	
		Protection type			Inner thermal protection	
		Starting method			hard startup	
	Fan	Type × Number			Axial × 1	
		Speed		r/min	860±30	
		Fan motor output power		kW	0.03	
		Air-flow(H-M-L)		m ³ /h	2500	
	Heat exchanger	Type / Diameter		mm	TP2M / 9.52x0.36	
		Row / Fin pitch			2 1.85	
		Temp. scope		°C	cooling: 43~60 / heating: 6~7	
	Dimension	External	(L×W×H)	mm×mm×mm	815×290×680	
		Package	(L×W×H)	mm×mm×mm	960×410×765	
Drainage pipe (material , I.D./O.D.)			mm	/		
Refrigerant control method			mm/mm	Capillary tube		
Defrosting				Automatic		
Volume of Accumulator			L	/		
Noise level			dB(A)	58		
Type of Four way valve				/		
material of reduce noise				/		
crankcase heater power			W	/		
Weight (Net / Shipping)			kg / kg	59/66		
PIPING	Refrigerant	Type / Charge	g	R22/1700		
		Recharge quantity	g/m	/		
	Pipe	Liquid	mm	6.35		
		Gas	mm	12.7		
	Connecting Method			Flared		
Between I.D & O.D	MAX.Drop		m	5		
	MAX.Piping length		m	15		

Normal condition: indoor temperature (cooling): 27 °CDB/19 °CWB, indoor temperature (heating): 20 °CDB
Outdoor temperature(cooling): 35 °CDB/24 °CWB, outdoor temperature(heating): 7 °CDB/6 °CWB
The noise level will be measured in the third octave band limited values, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level. The detailed method please refer to the following information:

item	Model			HBU-28CF03		
Function				cooling	heating	
Capacity			BTU/h	24000	/	
Capacity			kW	7.1	/	
Sensible heat ratio				75%	/	
Total power input			W	2850	/	
Max. power input			W	3600	/	
EER or COP			W/W	2.49	/	
Dehumidifying capacity			10 - ³×m³/h	3.0		
Power cable			section	3G×4.0mm2		
Signal cable			section	4×0.75mm2		
Connecting cable			section			
Wired control cable	for wired control unit		section	/	/	
Power source			N, V, Hz	1, 220-230, 50		
Running /Max.Running current			A / A	cooling 13.5/17		
Start Current			A	60		
Class of anti electric shock				I	/	
Circuit breaker			A	40	/	
Max. operating pressure of heat side			Mpa	2.8	/	
Max. operating pressure of cold side			Mpa	0.8	/	
Indoor unit	Unit model (color)			HBU-28CF03(INDOOR) (WHITE)		
	Fan	Type × Number			Centrifugal × 1	
		Speed(H-M-L)		r/min	700±30/590±40/470±50	
		Fan motor output power		kW	0.028	
		Air-flow(H-M-L)		m³/h	1200	
	Heat exchanger	Type / Diameter		mm	TP2M / 9.52x0.36	
		Total Area		m²		
		Temp. scope		°C	cooling: 43~60	
	Dimension	External (L×W×H)		mm×mm×mm	840×840×240	
		Package (L×W×H)		mm×mm×mm	920×920×340	
	Air sending angle				/	/
	Drainage pipe (material , I.D./O.D.)			mm	/	
	Control type (Remote /wired /model)				REMOTE	
	Fresh air hole dimension			mm	/	
	Outlet distribution hole dimension			mm	/	
	Electricity Heater			kW	/	
	Noise level (H-M-L)			dB(A)	44/40/37	
Weight (Net / Shipping)			kg / kg	28/30		
Panel	Dimension		External (L×W×H)	950×950×80		
			Package (L×W×H)	980×980×110		
	Weight (Net / Shipping)			kg / kg	6/9	
Outdoor unit	Unit model (color)			HBU-28CF03(OUTDOOR) (WHITE)		
	Compressor	Model / Manufacture			THU33WC6-U HITACHI	
		Oil model			SUNISO-4GSI	
		Oil type			/	
		Oil charging			1050	
		Type			ROTARY	
		Protection type			Inner thermal protection	
		Starting method			hard startup	
	Fan	Type × Number			Axial × 1	
		Speed		r/min	1060±50	
		Fan motor output power		kW	0.06	
		Air-flow(H-M-L)		m³/h	3240	
	Heat exchanger	Type / Diameter		mm	TP2M / 9.52x0.36	
		Row / Fin pitch			2	
		Temp. scope		°C	cooling: 43~60 / heating: 6~7	
	Dimension	External (L×W×H)		mm×mm×mm	860×310×730	
		Package (L×W×H)		mm×mm×mm	1005×420×815	
Drainage pipe (material , I.D./O.D.)			mm	/		
Refrigerant control method			mm/mm	Capillary tube		
Defrosting				Automatic		
Volume of Accumulator			L	/		
Noise level			dB(A)	58		
Type of Four way valve				/		
material of reduce noise				/		
crankcase heater power			W	/		
Weight (Net / Shipping)			kg / kg	60/63		
PIPING	Refrigerant		Type / Charge	g	R22/2350	
			Recharge quantity	g/m	/	
	Pipe	Liquid		mm	9.52	
		Gas		mm	15.88	
	Connecting Method				Flared	
Between I.D & O.D	MAX.Drop		m	15		
	MAX.Piping length		m	30		
Nominal condition: indoor temperature (cooling): 27 °CDB/19 °CWB, indoor temperature (heating): 20 °CDB						
Outdoor temperature(cooling): 35 °CDB/24 °CWB, outdoor temperature(heating): 7 °CDB/6 °CWB						
The noise level will be measured in the third octave band limited values, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level. The detailed method please refer to the following information:						

item		Model		HBU-28HF03		
Function				cooling	heating	
Capacity			BTU/h	24000	26600	
Capacity			kW	7.1	7.8	
Sensible heat ratio				75%	/	
Total power input			W	2700	3000	
Max. power input			W	3500	3400	
EER or COP			W/W	2.63	2.6	
Dehumidifying capacity			10 ⁻³ m ³ /h	3.0		
Power cable			section	3G×4.0mm2		
Signal cable			section	6×0.75mm2		
Connecting cable			section			
Wired control cable	for wired control unit		section	/	/	
Power source			N, V, Hz	1, 220-230, 50		
Running /Max.Running current			A / A	cooling 12.8/17.0	heating 13.5/16.0	
Start Current			A	60		
Class of anti electric shock				I	/	
Circuit breaker			A	40	/	
Max. operating pressure of heat side			Mpa	2.94	2.94	
Max. operating pressure of cold side			Mpa	2.94	2.94	
Indoor unit	Unit model (color)			HBU-28HF03(INDOOR) (WHITE)		
	Fan	Type × Number			Centrifugal × 1	
		Speed(H-M-L)		r/min	700±30/590±40/470±50	
		Fan motor output power		kW	0.028	
		Air-flow(H-M-L)		m ³ /h	1200	
	Heat exchanger	Type / Diameter		mm	TP2M / 9.52x0.36	
		Total Area		m ²	/	
		Temp. scope		°C	cooling: 43~60 heating:6~7	
	Dimension	External	(L×W×H)	mm×mm×mm	840×840×240	
		Package	(L×W×H)	mm×mm×mm	920×920×340	
	Air sending angle				/	/
	Drainage pipe (material , I.D./O.D.)			mm	/	
	Control type (Remote /wired /model)				REMOTE	
	Fresh air hole dimension			mm	/	
	Outlet distribution hole dimension			mm	/	
Electricity Heater			kW	/		
Noise level (H-M-L)			dB(A)	44/40/37		
Weight (Net / Shipping)			kg / kg	28/30		
Panel	Dimension	External	(L×W×H)	mm×mm×mm	950×950×80	
		Package	(L×W×H)	mm×mm×mm	985×985×110	
	Weight (Net / Shipping)			kg / kg	6/9	
Outdoor unit	Unit model (color)			HBU-28HF03(OUTDOOR) (WHITE)		
	Compressor	Model / Manufacture			THU33WC6-U HITACHI	
		Oil model			SUNISO-4GSI	
		Oil type			/	
		Oil charging			1050	
		Type			ROTARY	
		Protection type			Inner thermal protection	
		Starting method			hard startup	
	Fan	Type × Number			Axial × 1	
		Speed		r/min	840±30	
		Fan motor output power		kW	0.06	
		Air-flow(H-M-L)		m ³ /h	3240	
	Heat exchanger	Type / Diameter		mm	TP2M / 9.52x0.36	
		Row / Fin pitch			2	
		Temp. scope		°C	cooling: 43~60 / heating: 6~7	
	Dimension	External	(L×W×H)	mm×mm×mm	948×840×340	
		Package	(L×W×H)	mm×mm×mm	1085×980×410	
	Drainage pipe (material , I.D./O.D.)			mm	/	
Refrigerant control method			mm/mm	Capillary tube		
Defrosting				Automatic		
Volume of Accumulator			L	/		
Noise level			dB(A)	56		
Type of Four way valve				/		
material of reduce noise				/		
crankcase heater power			W	/		
Weight (Net / Shipping)			kg / kg	70/85		
PIPING	Refrigerant	Type / Charge	g	R22/2850		
		Recharge quantity	g/m	/		
	Pipe	Liquid	mm	9.52		
		Gas	mm	15.88		
	Connecting Method			Flared		
Between I.D & O.D	MAX.Drop		m	15		
	MAX.Piping length		m	30		

Normal condition: indoor temperature (cooling): 27 °CDB/19 °CWB, indoor temperature (heating): 20 °CDB
Outdoor temperature(cooling): 35 °CDB/24 °CWB, outdoor temperature(heating): 7 °CDB/6 °CWB
The noise level will be measured in the third octave band limited values, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level. The detailed method please refer to the following information:

Item		Model		HDU-28CF03		
Function				cooling	heating	
Capacity			BTU/h	24000	/	
Capacity			kW	7.1	/	
Sensible heat ratio				75%	/	
Total power input			W	2500	/	
Max. power input			W	3000	/	
EER or COP			W/W	2.84	/	
Dehumidifying capacity			10 - ³ ×m ³ /h		3.0	
Power cable			section	3G×4.0mm2		
Signal cable			section	4×0.75mm2		
Connecting cable			section			
Wired control cable	for wired control unit		section	/	/	
Power source			N, V, Hz	1, 220-230, 50		
Running /Max.Running current			A / A	12/14.8		
Start Current			A	/		
Class of anti electric shock				I	/	
Circuit breaker			A	/	/	
Max. operating pressure of heat side			Mpa	2.8		
Max. operating pressure of cold side			Mpa	2.8		
Indoor unit	Unit model (color)			HDU-28CF03(INDOOR) (WHITE)		
	Fan	Type × Number		Centrifugal × 1		
		Speed(H-M-L)		1120±30/970±40/840±50		
		Fan motor output power		0.08		
		Air-flow(H-M-L)		1200		
	Heat exchanger	Type / Diameter		/		
		Total Area		/		
		Temp. scope		cooling: 43~60 heating:6~7		
	Dimension	External (L×W×H)	mm×mm×mm	1090×500×218		
		Package (L×W×H)	mm×mm×mm	1170×545×295		
	Air sending angle			/	/	
	Drainage pipe (material , I.D./O.D.)			mm	/	
	Control type (Remote /wired /model)				WIRED	
	Fresh air hole dimension			mm	/	
	Outlet distribution hole dimension			mm	/	
	Electricity Heater			kW	/	
	Noise level (H-M-L)			dB(A)	47/45/43	
Weight (Net / Shipping)			kg / kg	25.5/28		
Panel	Dimension	External (L×W×H)	mm×mm×mm	/		
		Package (L×W×H)	mm×mm×mm	/		
	Weight (Net / Shipping)			kg / kg	/	
Outdoor unit	Unit model (color)			HDU-28CF03(OUTDOOR) (WHITE)		
	Compressor	Model / Manufacture		LH45VBAC MITSUBISHI		
		Oil model		DIAMOND MS-32(N-1)		
		Oil type		/		
		Oil charging		900		
		Type		/		
		Protection type		Inner thermal protection		
	Starting method		hard startup			
	Fan	Type × Number		Axial × 1		
		Speed	r/min	840±50		
		Fan motor output power	kW	0.06		
		Air-flow(H-M-L)	m ³ /h	3500		
	Heat exchanger	Type / Diameter	mm	TP2M / 9.52x0.36		
		Row / Fin pitch		/		
		Temp. scope	℃	cooling: 43~60 / heating: 6~7		
	Dimension	External (L×W×H)	mm×mm×mm	948×840×340		
		Package (L×W×H)	mm×mm×mm	1085×980×410		
Drainage pipe (material , I.D./O.D.)			mm	/		
Refrigerant control method			mm/mm	Capillary tube		
Defrosting				Automatic		
Volume of Accumulator			L	/		
Noise level			dB(A)	56		
Type of Four way valve				/		
material of reduce noise				/		
crankcase heater power			W	/		
Weight (Net / Shipping)			kg / kg	71/85		
PIPING	Refrigerant	Type / Charge	g	R22/2800		
		Recharge quantity	g/m	/		
	Pipe	Liquid	mm	9.52		
		Gas	mm	15.88		
	Connecting Method			Flared		
Between I.D & O.D	MAX.Drop	m	15			
	MAX.Piping length	m	30			
Normal condition: indoor temperature (cooling): 27 °CDB/19 °CWB, indoor temperature (heating): 20 °CDB						
Outdoor temperature(cooling): 35 °CDB/24 °CWB, outdoor temperature(heating): 7 °CDB/6 °CWB						
The noise level will be measured in the third octave band limited values, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level. The detailed method please refer to the following information:						

item	Model			HDU-28HF03		
Function				cooling	heating	
Capacity			BTU/h	24000	26600	
Capacity			kW	7.1	8	
Sensible heat ratio				75%	/	
Total power input			W	2450	2600	
Max. power input			W	3000	2900	
EER or COP			W/W	2.9	3.08	
Dehumidifying capacity			10 ⁻³ ×m ³ /h	1.7		
Power cable			section	3G×4.0mm ²		
Signal cable			section	6×0.75mm ²		
Connecting cable			section			
Wired control cable	for wired control unit		section	/	/	
Power source			N, V, Hz	1, 220-230, 50		
Running /Max.Running current			A / A	cooling 11.5/14.8	heating 12.5/14.5	
Start Current			A	/		
Class of anti electric shock				1	/	
Circuit breaker			A	/	/	
Max. operating pressure of heat side			Mpa	2.8		
Max. operating pressure of cold side			Mpa	2.8		
Indoor unit	Unit model (color)			HDU-28HF03(INDOOR) (WHITE)		
	Fan	Type × Number			Centrifugal × 1	
		Speed(H-M-L)		r/min	1120±50/970±50/840±50	
		Fan motor output power		kW	0.08	
		Air-flow(H-M-L)		m ³ /h	1200	
	Heat exchanger	Type / Diameter		mm	/	
		Total Area		m ²	/	
		Temp. scope		°C	cooling: 43~60 heating:6~7	
	Dimension	External	(L×W×H)	mm×mm×mm	1090×500×218	
		Package	(L×W×H)	mm×mm×mm	1170×545×295	
	Air sending angle				/	/
	Drainage pipe (material , I.D./O.D.)			mm	/	
	Control type (Remote /wired /model)				WIRED	
	Fresh air hole dimension			mm	/	
	Outlet distribution hole dimension			mm	/	
	Electricity Heater			kW	/	
Noise level (H-M-L)			dB(A)	49/45/43		
Weight (Net / Shipping)			kg / kg	25.5/28.5		
Panel	Dimension	External	(L×W×H)	mm×mm×mm	/	
		Package	(L×W×H)	mm×mm×mm	/	
	Weight (Net / Shipping)			kg / kg	/	
Outdoor unit	Unit model (color)			HDU-28HF03(OUTDOOR) (WHITE)		
	Compressor	Model / Manufacture			LH45VBAC MITSUBISHI	
		Oil model			DIAMOND MS-32(N-1)	
		Oil type			/	
		Oil charging			900	
		Type			/	
		Protection type			Inner thermal protection	
	Fan	Starting method			hard startup	
		Type × Number			Axial × 1	
		Speed		r/min	840±50	
		Fan motor output power		kW	0.06	
	Heat exchanger	Air-flow(H-M-L)		m ³ /h	/	
		Type / Diameter		mm	TP2M / 9.52x0.36	
		Row / Fin pitch			/	
	Dimension	Temp. scope		°C	cooling: 43~60 / heating: 6~7	
		External	(L×W×H)	mm×mm×mm	948×340×840	
	Package	(L×W×H)	mm×mm×mm	1085×410×980		
	Drainage pipe (material , I.D./O.D.)			mm	/	
	Refrigerant control method			mm/mm	Capillary tube	
Defrosting				Automatic		
Volume of Accumulator			L	/		
Noise level			dB(A)	56		
Type of Four way valve				/		
material of reduce noise				/		
crankcase heater power			W	/		
Weight (Net / Shipping)			kg / kg	70/85		
PIPING	Refrigerant	Type / Charge	g	R22/2800		
		Recharge quantity	g/m	/		
	Pipe	Liquid	mm	9.52		
		Gas	mm	15.88		
	Connecting Method			Flared		
Between I.D & O.D	MAX.Drop		m	15		
	MAX.Piping length		m	30		
Normal condition: indoor temperature (cooling): 27 °C DB/19 °C WB, indoor temperature (heating): 20 °C DB Outdoor temperature(cooling): 35 °C DB/24 °C WB, outdoor temperature(heating): 7 °C DB/6 °C WB The noise level will be measured in the third octave band limited values, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level. The detailed method please refer to the following information:						

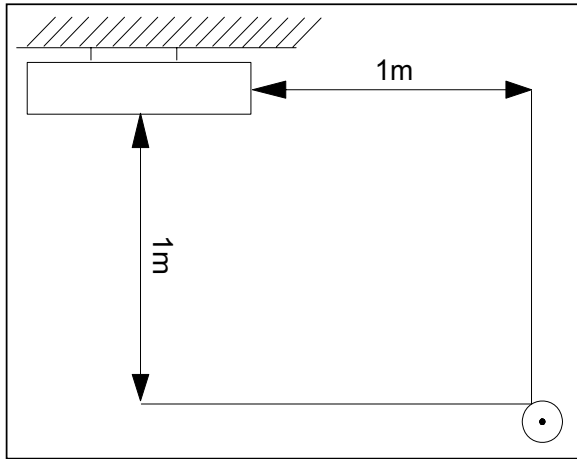
Item	Model			HBU-42HF03		
Function				cooling	heating	
Capacity			BTU/h	41000	42600	
Capacity			kW	12	12.5	
Sensible heat ratio				75%	/	
Total power input			W	4500	4200	
Max. power input			W	5600	5600	
EER or COP			W/W	2.67	2.98	
Dehumidifying capacity			10 ⁻³ ×m ³ /h	4.5		
Power cable			section	5×2.5mm ²		
Signal cable			section	6×0.75mm ²		
Connecting cable			section			
Wired control cable	for wired control unit		section	/	/	
Power source			N, V, Hz	3, 380-400, 50		
Running /Max.Running current			A / A	cooling 8.5/10 heating 8.0/10		
Start Current			A	/		
Class of anti electric shock				I	/	
Circuit breaker			A	/	/	
Max. operating pressure of heat side			Mpa	2.94	/	
Max. operating pressure of cold side			Mpa	2.94	/	
Indoor unit	Unit model (color)			HBU-42HF03(INDOOR) (WHITE)		
	Fan	Type × Number			Centrifugal × 1	
		Speed(H-M-L)		r/min	710±30/600±50/500±50	
		Fan motor output power		kW	/	
		Air-flow(H-M-L)		m ³ /h	1700	
	Heat exchanger	Type / Diameter		mm	/	
		Total Area		m ²	/	
		Temp. scope		°C	cooling: 43~60	
	Dimension	External	(L×W×H)	mm×mm×mm	840×840×290	
		Package	(L×W×H)	mm×mm×mm	965×930×375	
	Air sending angle				/	/
	Drainage pipe (material , I.D./O.D.)			mm	/	
	Control type (Remote /wired /model)				REMOTE	
	Fresh air hole dimension			mm	/	
	Outlet distribution hole dimension			mm	/	
	Electricity Heater			kW	/	
Noise level (H-M-L)			dB(A)	56/51/46		
Weight (Net / Shipping)			kg / kg	38/45		
Panel	Dimension	External	(L×W×H)	mm×mm×mm	950×950×80	
		Package	(L×W×H)	mm×mm×mm	985×985×115	
	Weight (Net / Shipping)			kg / kg	6/9	
Outdoor unit	Unit model (color)			HBU-42HF03(OUTDOOR) (WHITE)		
	Compressor	Model / Manufacture			JT160GABY1L DAKIN	
		Oil model			DAPHNE SE56P	
		Oil type			/	
		Oil charging			1400cm ³	
		Type			SCROLL	
		Protection type			Inner thermal protection	
		Starting method			hard startup	
	Fan	Type × Number			Axial × 1	
		Speed		r/min	740±50	
		Fan motor output power		kW	/	
		Air-flow(H-M-L)		m ³ /h	6000	
	Heat exchanger	Type / Diameter		mm	TP2M / 9.52x0.36	
		Row / Fin pitch			/	
		Temp. scope		°C	cooling: 43~60 / heating: 6~7	
	Dimension	External	(L×W×H)	mm×mm×mm	1008×830×410	
		Package	(L×W×H)	mm×mm×mm	1130×930×490	
	Drainage pipe (material , I.D./O.D.)			mm	/	
	Refrigerant control method			mm/mm	Capillary tube	
	Defrosting				Automatic	
Volume of Accumulator			L	/		
Noise level			dB(A)	64		
Type of Four way valve				/		
material of reduce noise				/		
crankcase heater power			W	/		
Weight (Net / Shipping)			kg / kg	80/90		
PIPING	Refrigerant	Type / Charge		g	R22/3150	
		Recharge quantity		g/m	/	
	Pipe	Liquid		mm	9.52	
		Gas		mm	19.05	
	Connecting Method				Flared	
Between I.D & O.D	MAX.Drop		m	30		
	MAX.Piping length		m	50		
Normal condition: indoor temperature (cooling): 27 °CDB/19 °CWB, indoor temperature (heating): 20 °CDB						
Outdoor temperature(cooling): 35 °CDB/24 °CWB, outdoor temperature(heating): 7 °CDB/6 °CWB						
The noise level will be measured in the third octave band limited values, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level. The detailed method please refer to the following information:						

Item	Model			HDU-42HF03/H		
Function				cooling	heating	
Capacity			BTU/h	42600	47700	
Capacity			kW	12.5	14	
Sensible heat ratio				75%	/	
Total power input			W	4900	4900	
Max. power input			W	6100	5800	
EER or COP			W/W	2.55	2.86	
Dehumidifying capacity			10 ⁻³ ×m ³ /h	5.0		
Power cable			section	5×2.5mm ²		
Signal cable			section	6×0.75mm ²		
Connecting cable			section			
Wired control cable	for wired control unit		section	/	4×0.33mm ² shield wire	
Power source			N, V, Hz	3, 380-400, 50		
Running /Max.Running current			A / A	cooling 8.0/12.0 heating 8.2/10.5		
Start Current			A	50		
Class of anti electric shock				I	I	
Circuit breaker			A	/	30	
Max. operating pressure of heat side			Mpa	2.8		
Max. operating pressure of cold side			Mpa	2.8		
Indoor unit	Unit model (color)			HDU-42HF03/H(INDOOR) (WHITE)		
	Fan	Type × Number			Centrifugal × 1	
		Speed(H-M-L)		r/min	1070±30/860±40/690±50	
		Fan motor output power		kW	0.27	
		Air-flow(H-M-L)		m ³ /h	1560-2580	
	Heat exchanger	Type / Diameter		mm	/	
		Total Area		m ²	/	
		Temp. scope		°C	cooling: 43~60 heating:6~7	
	Dimension	External (L×W×H)		mm×mm×mm	1197×828×355	
		Package (L×W×H)		mm×mm×mm	1385×965×418	
	Air sending angle				/	/
	Drainage pipe (material , I.D./O.D.)			mm	/	
	Control type (Remote /wired /model)				WIRED	
	Fresh air hole dimension			mm	/	
	Outlet distribution hole dimension			mm	/	
	Electricity Heater			kW	/	
	Noise level (H-M-L)			dB(A)	55/52/47	
Weight (Net / Shipping)			kg / kg	62/77		
Panel	Dimension		External (L×W×H)	mm×mm×mm	/	
	Weight (Net / Shipping)		Package (L×W×H)	mm×mm×mm	/	
Outdoor unit	Unit model (color)			HDU-42HF03/H(OUTDOOR) (WHITE)		
	Compressor	Model / Manufacture			C-SB373H8F SANYO	
		Oil model			4GSD/SAY56T	
		Oil type			/	
		Oil charging			1700	
		Type			SCROLL	
		Protection type			Inner thermal protection	
	Starting method			hard startup		
	Fan	Type × Number			Axial × 1	
		Speed		r/min	840±50	
		Fan motor output power		kW	0.016	
		Air-flow(H-M-L)		m ³ /h	6000	
	Heat exchanger	Type / Diameter		mm	TP2M / 9.52x0.36	
		Row / Fin pitch			/	
		Temp. scope		°C	cooling: 43~60 / heating: 6~7	
	Dimension	External (L×W×H)		mm×mm×mm	1250×340×948	
		Package (L×W×H)		mm×mm×mm	1350×410×1090	
	Drainage pipe (material , I.D./O.D.)			mm	/	
	Refrigerant control method			mm/mm	Capillary tube	
	Defrosting				Automatic	
	Volume of Accumulator			L	/	
Noise level			dB(A)	64		
Type of Four way valve				/		
material of reduce noise				/		
crankcase heater power			W	/		
Weight (Net / Shipping)			kg / kg	106/111		
PIPING	Refrigerant		Type / Charge	g	R22/4200	
	Pipe		Recharge quantity	g/m	/	
			Liquid	mm	9.52	
			Gas	mm	19.05	
	Connecting Method				Flared	
Between I.D & O.D		MAX.Drop		m	30	
		MAX.Piping length		m	50	
Nominal condition: indoor temperature (cooling): 27 °CDB/19 °CWB, indoor temperature (heating): 20 °CDB Outdoor temperature(cooling): 35 °CDB/24 °CWB, outdoor temperature(heating): 7 °CDB/6 °CWB The noise level will be measured in the third octave band limited values, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level. The detailed method please refer to the following information:						

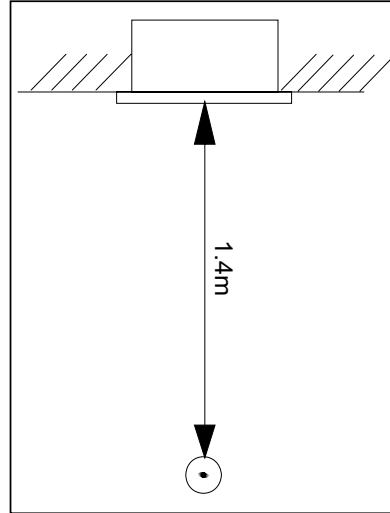
Installation state: the unit should be placed on the flat floor or be mounted in horizontal direction.

Testing method:

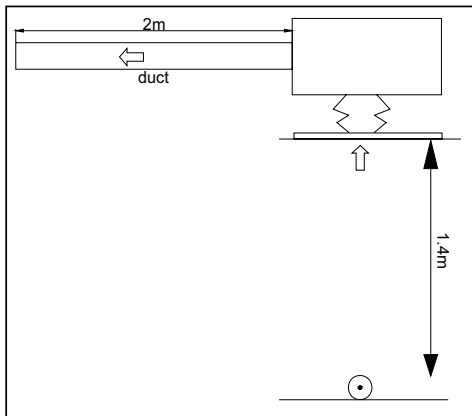
mounting-on-ceiling unit:



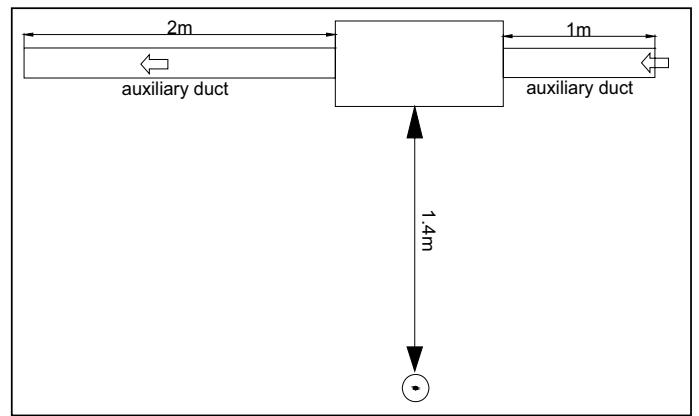
built-in-ceiling unit:



duct unit without auxiliary duct:



duct unit with auxiliary duct:



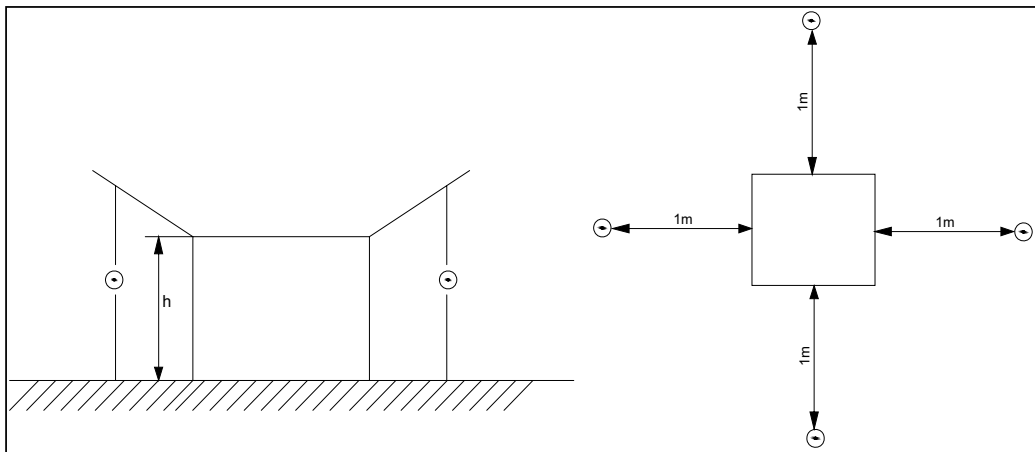
outdoor unit:

- 1.air outlet from side: the noise level is the average sound pressure level measured from front, left, right directions.
- 2.air outlet from top: the noise level is the average sound pressure level measured from front, back, left, right directions.

measured point:

H (height to the ground) = $(h$ (unit height) + 1m) / 2

and, it is 1m to each side.



Note: ⊙ is the real time analyser position

3. Safety precaution of indoor and outdoor

Carefully read the following information in order to operate the air conditioner correctly.

Below are listed three kinds of Safety Cautions and Suggestions.

WARNING! Incorrect operations may result in severe consequences of death or serious injuries.

CAUTION! Incorrect operations may result in injuries or machine damages; in some cases may cause serious consequences.

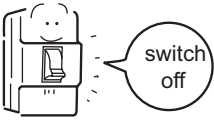


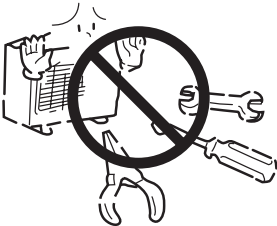
INSTRUCTIONS: These information can ensure the correct operation of the machine.

Be sure to conform with the following important Safety Cautions.

The Safety Cautions should be at hand so that they can be checked at any time when needed.

If the conditioner is transferred to the new user, this manual should be as well transferred to the new user.

WARNING!

<ul style="list-style-type: none"> • If any abnormal phenomena is found (e. g. smell of firing), please cut off the power supply immediately, and contact the dealer to find out the handling method. In such case, to continue using the conditioner will damage the conditioner, and may cause electrical shock or fire hazard. <div style="text-align: center; margin: 10px 0;">  </div> <ul style="list-style-type: none"> • After a long time use of air-conditioner the base should be checked for any damages. If the damaged base is not repaired, the unit may fall down and cause accidents <div style="text-align: center; margin: 10px 0;">  </div>	<ul style="list-style-type: none"> • Don't dismantle the outlet of the outdoor unit. The exposure of fan is very dangerous which may harm human beings. <div style="text-align: center; margin: 10px 0;">  </div> <ul style="list-style-type: none"> • When need maintenance and repairment, call dealer to handle it. Incorrect maintenance and repairment may cause water leak, electrical shock and fire hazard. <div style="text-align: center; margin: 10px 0;">  </div>
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WARNING!

- **Installed electrical-leaking circuit breaker.**

It easily cause electrical shock without circuit breaker.

- **Air-conditioner can't be installed in the environment with inflammable gases because the inflammable gases near to air-conditioner may cause fire hazard.**

- **Please let the dealer be responsible for installing the conditioner.**

Incorrect installation may cause water leak, electrical shock and fire hazard.

- **Call the dealer to take measures to prevent the refrigerant from leaking.**

If conditioner is installed in a small room be sure to take every measure in order to prevent suffocation accident even in case of refrigerant leakage.

- **When conditioner is deinstalled or reinstalled dealer should be responsible for them.**

Incorrect installation may cause water leaking, electrical shock and fire hazard.

- **Connect earthing wire.**

Earthing wire should not be connected to the gas pipe, water pipe, lightning rod or phone line, in-correct earthing may cause shock.



Earthing

- **No goods or nobody is permitted to placed on or stand on outdoor unit.**

The falling of goods and people may cause accidents.



- **Don't operate the air-conditioner with damp hands.**

Otherwise will be shocked.



- **Only use correctly-typed fuse.**

May not use wire or any other materials replacing fuse, other-wise may cause faults or fire accidents.



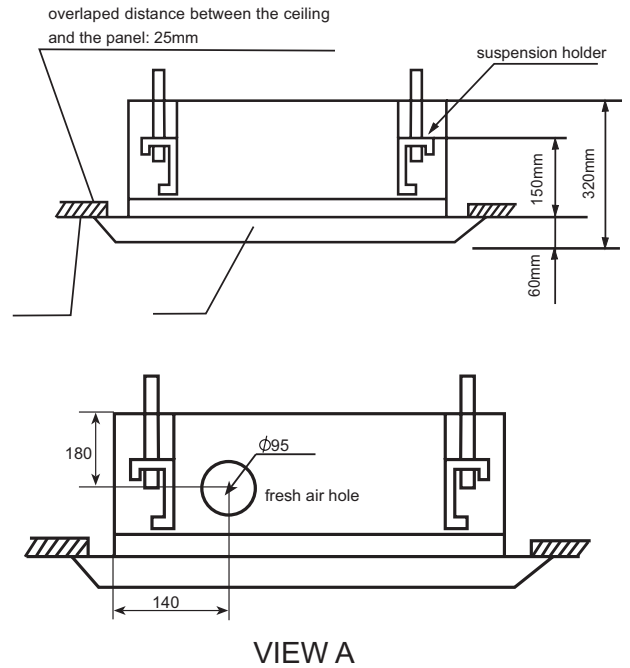
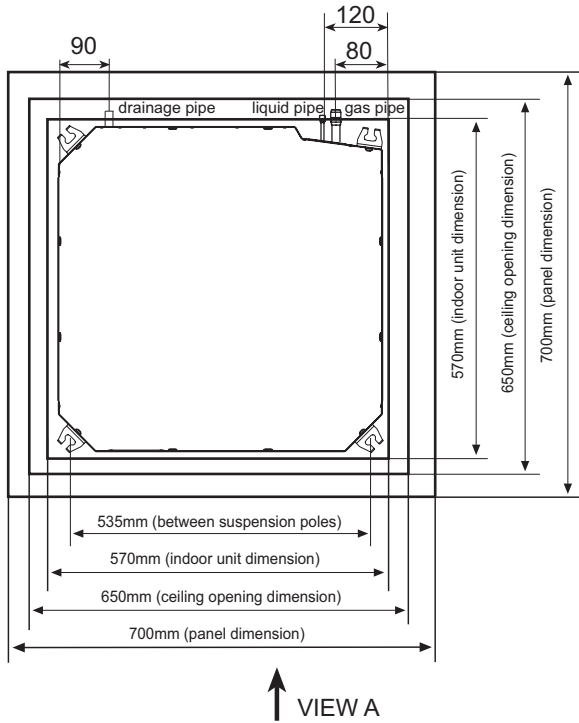
- **Use discharge pipe correctly to ensure efficient discharge.**

Incorrect pipe use may cause water leaking.

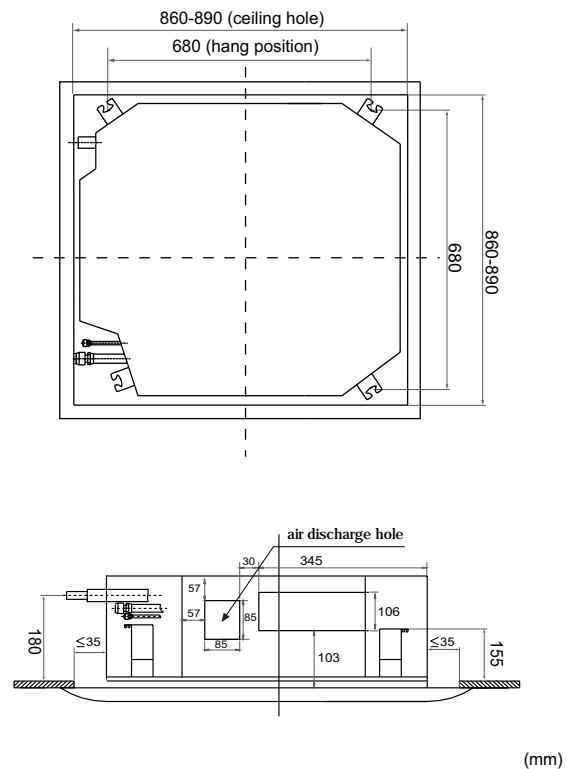
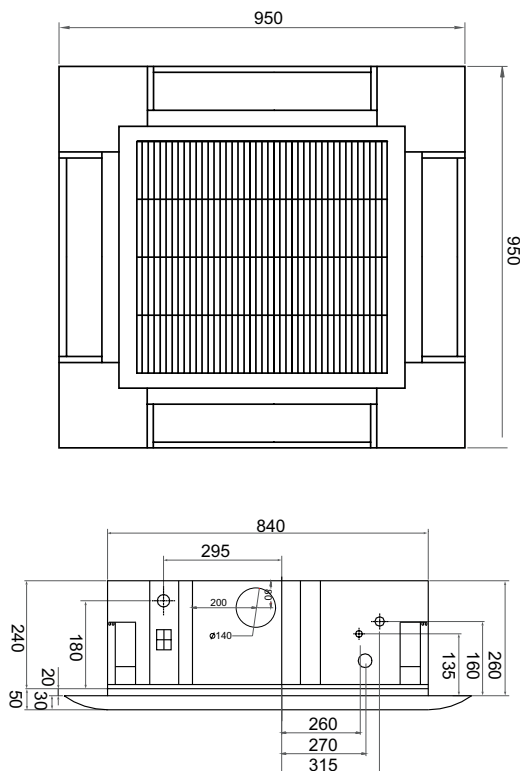
4. Net dimension of indoor and outdoor

4.1 Indoor unit

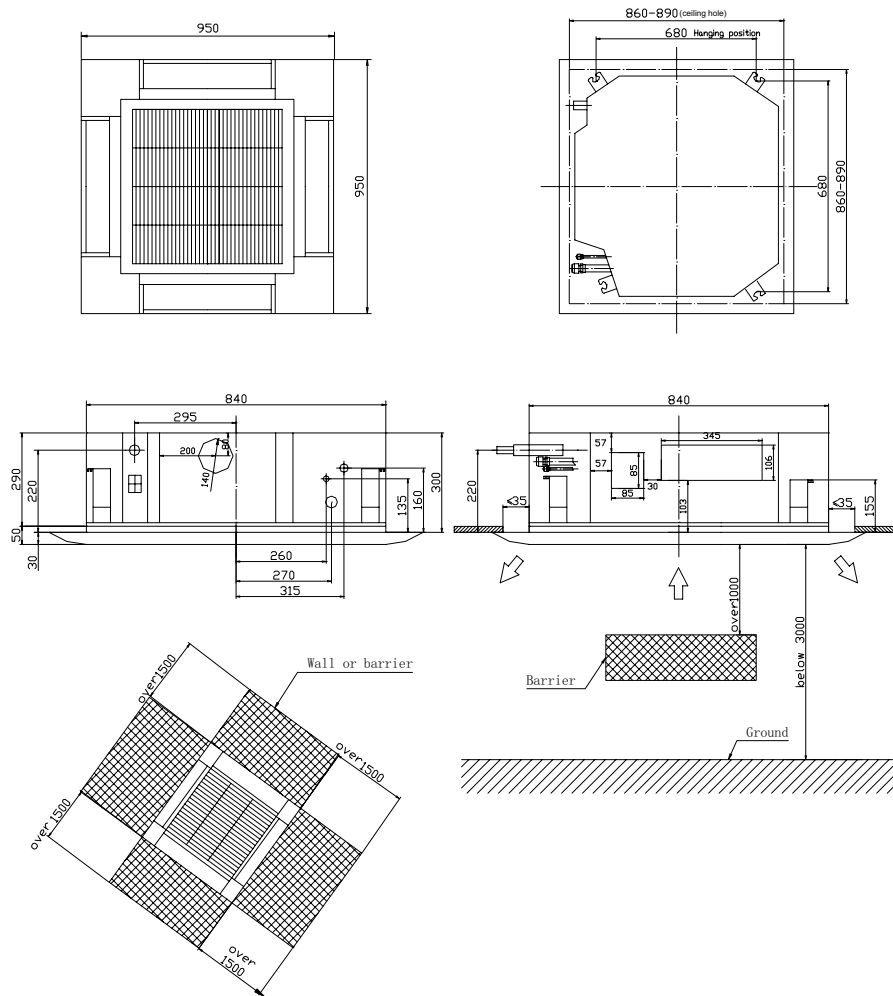
1) HBU-18HF03



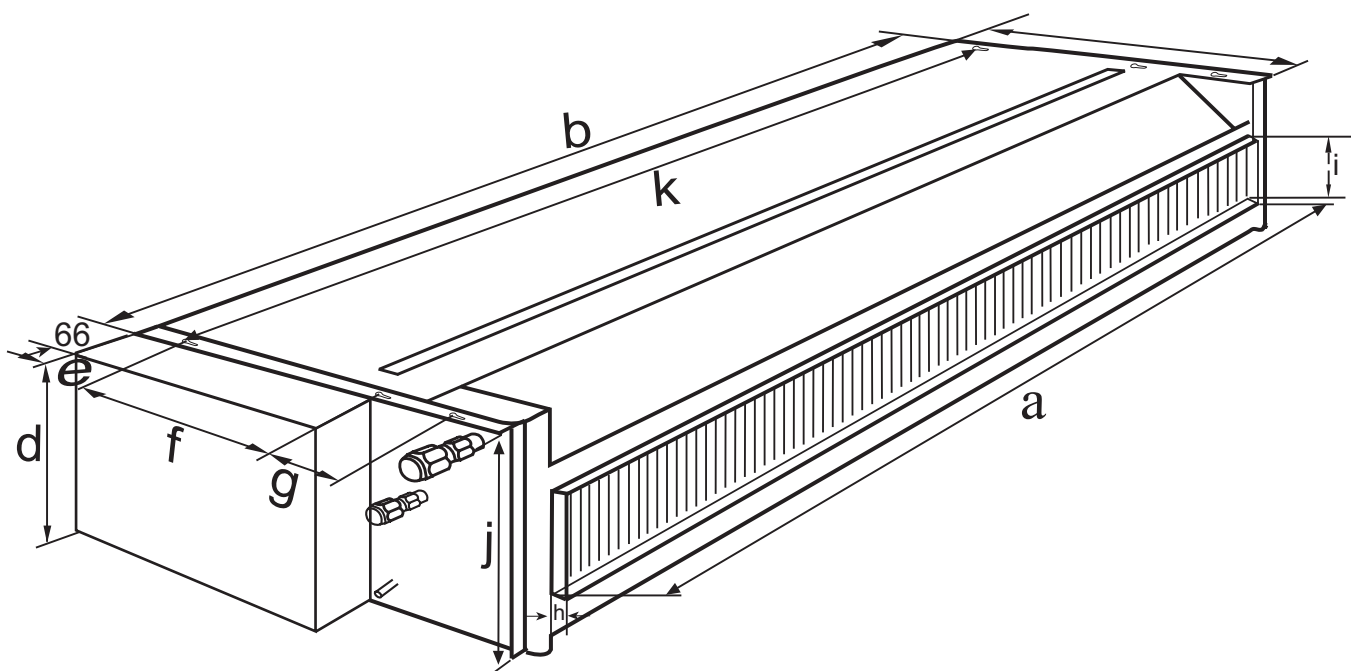
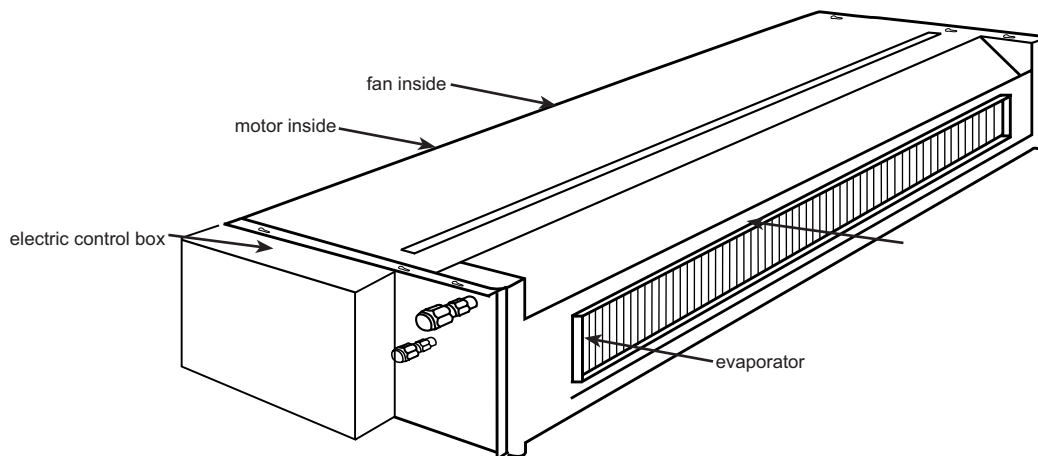
2) HBU-28CF03 HBU-28HF03



3) HBU-42HF03



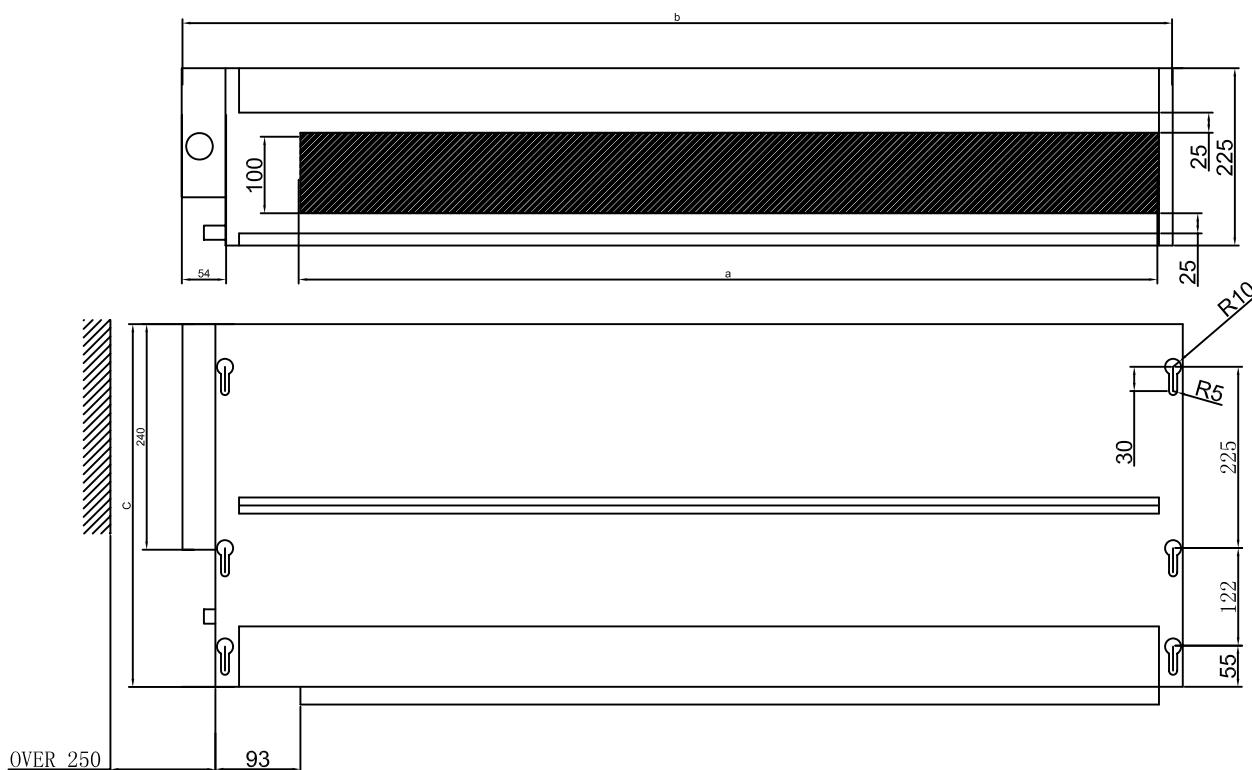
4) HDU-18CF03 HDU-18HF03



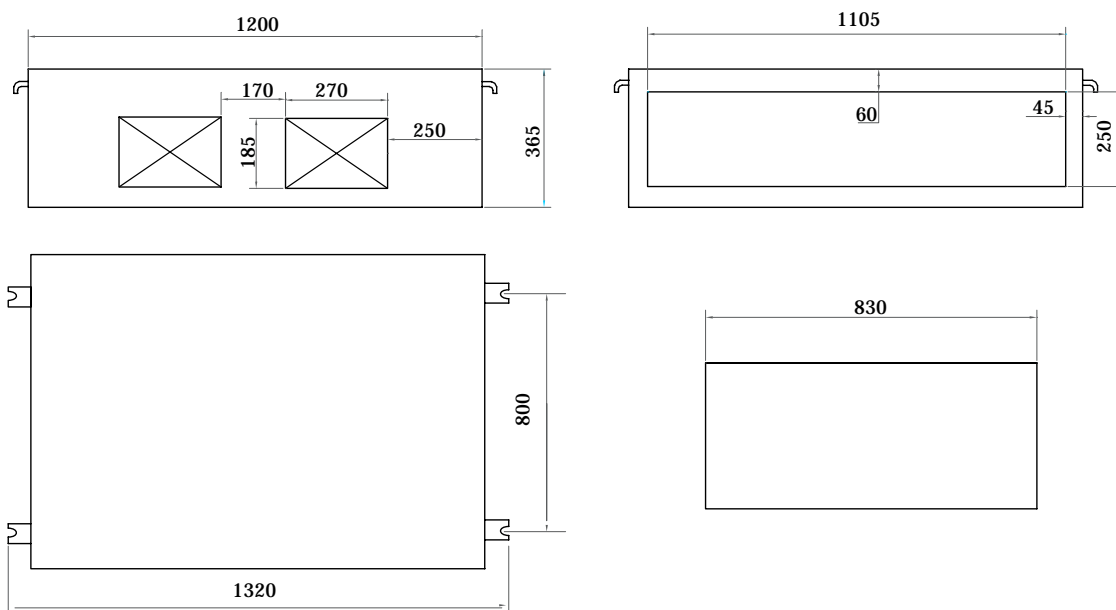
Installation dimension: (Unit: mm)

TYPE	a	b	c	d	e	f	g	h	i	j	k
HDU-18C(H)F03	1062	1124	450	218	48	227	123	22	97	220	1097

3) HDU-28CF03 HDU-28HF03



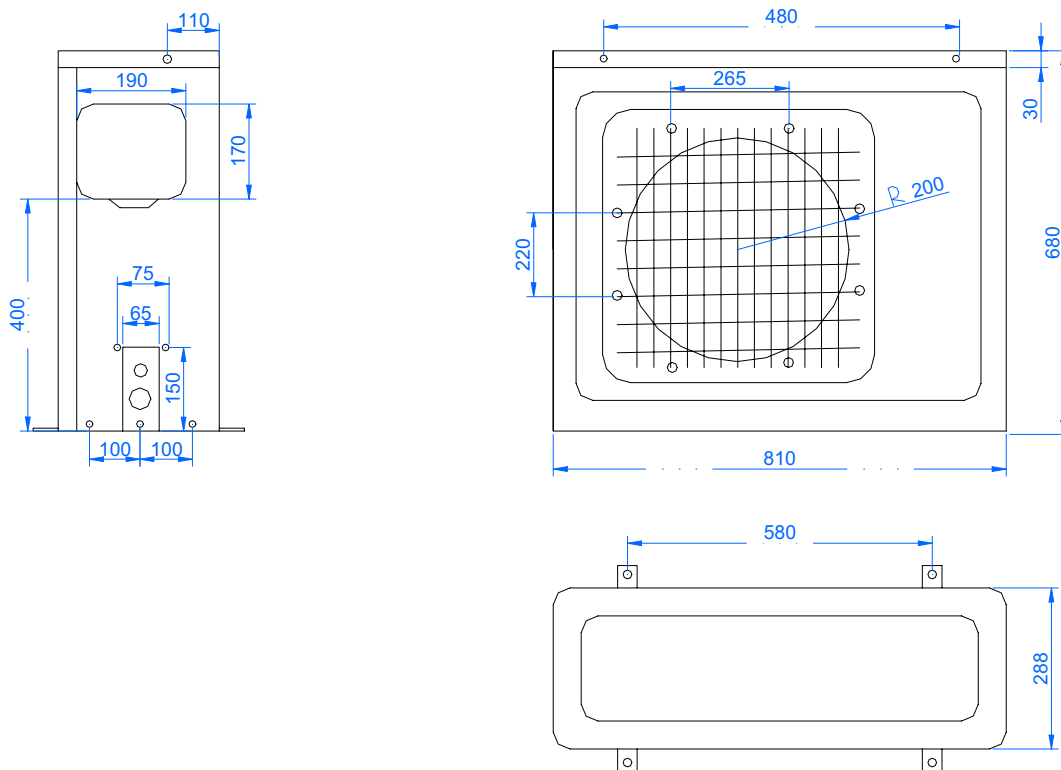
4) HDU-42HF03/H



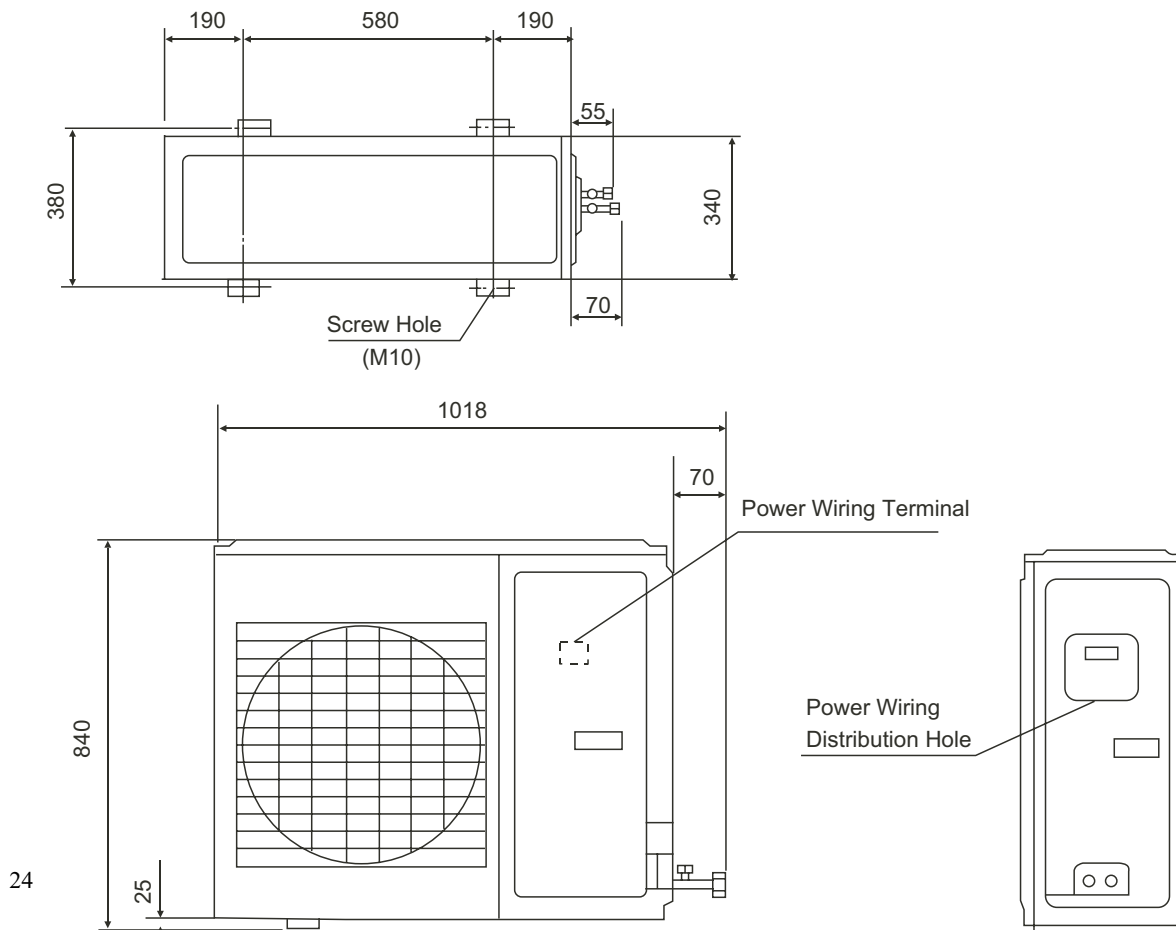
(mm)

4.2 Outdoor unit Models

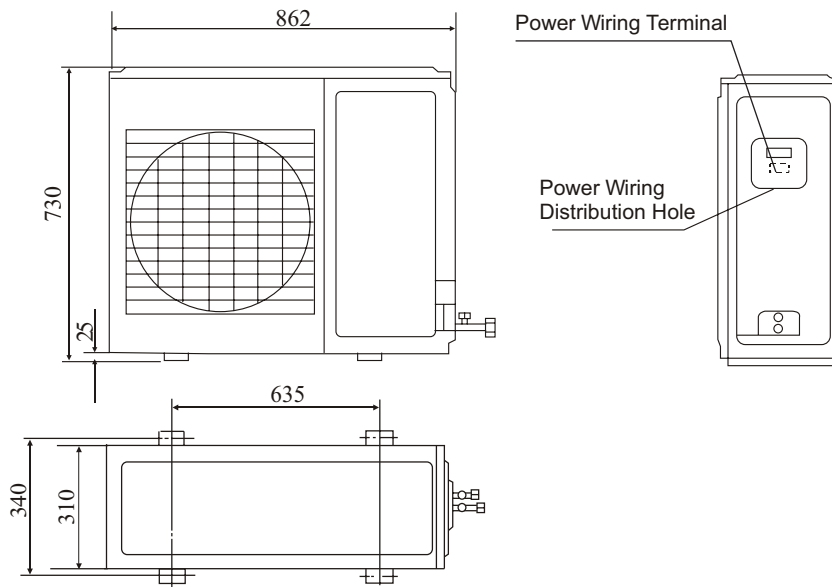
1) HBU-18HF03 HDU-18CF03 HDU-18HF03



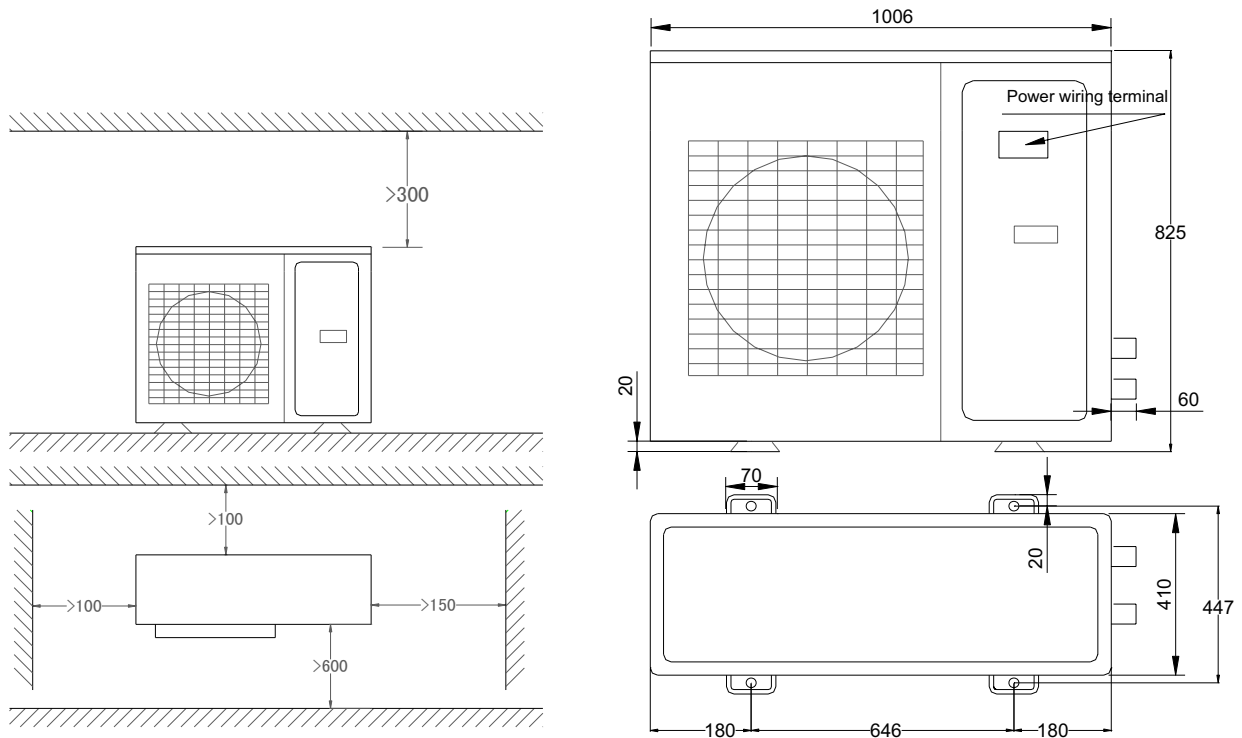
2) HBU-28HF03 HDU-28CF03 HDU-28HF03



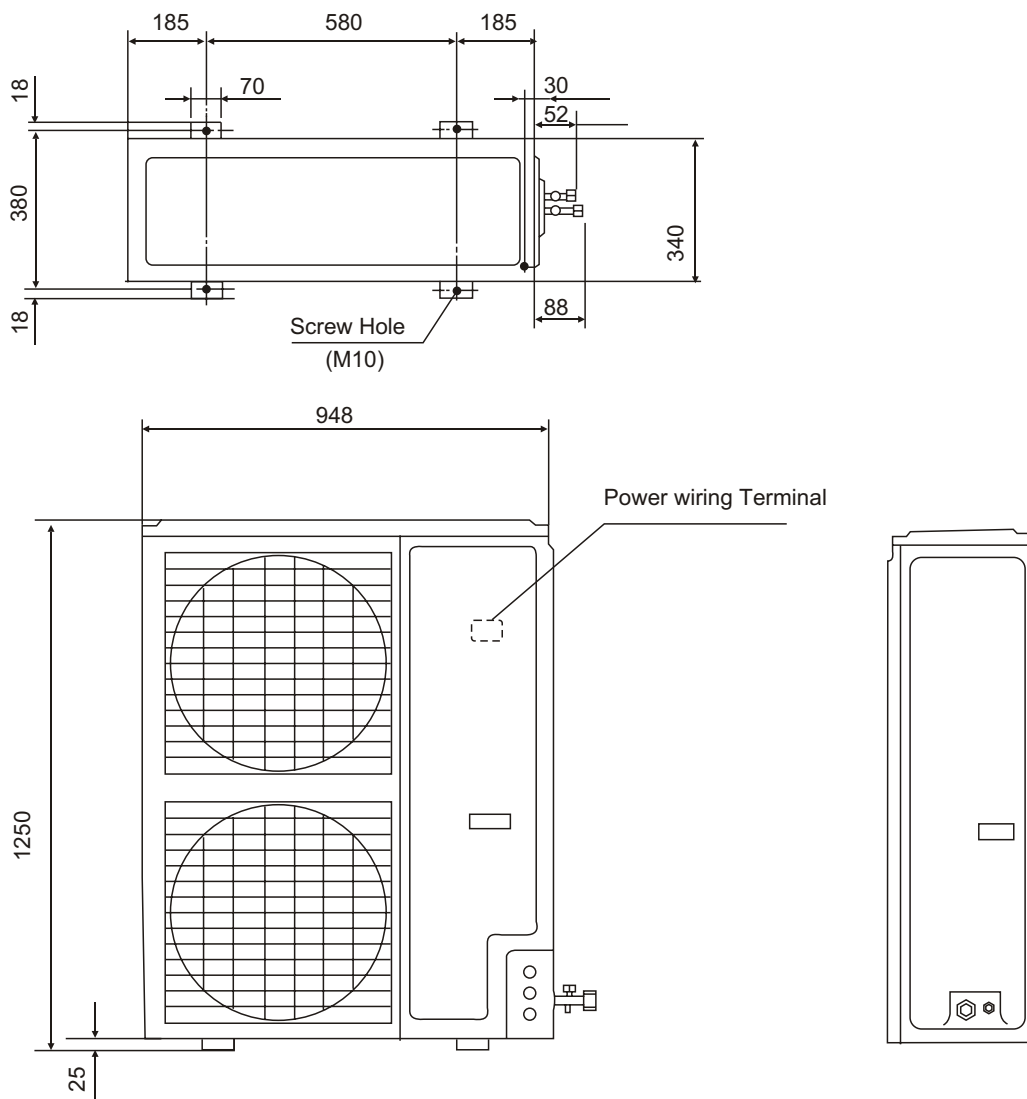
3) HBU-28CF03



4) HBU-42HF03



5) HDU-42HF03/H

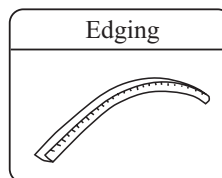


5. Installation Instructions

5.1 Outdoor unit installation

5.1.1 Accessories

"Edging" for protection of electric wires from an opening edge.

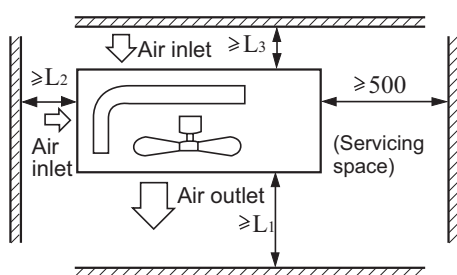


5.1.2 Selection of the place of installation

Select the place of installation satisfying the following conditions and, at the same time, obtain a consent from the client or user.

- Place where air circulates.
- Place free from heat radiation from other heat sources.
- Place where drain water may be discharged.
- Place where noise and hot air may not disturb the neighborhood.
- Place where there is not heavy snowfall in the winter time.
- Place where obstacles do not exist near the air inlet and air outlet .
- Place where the air outlet may not be exposed to a strong wind.
- Place surrounded at four sides are not suitable for installation. A 1m or more of overhead space is needed for the unit.
- Mount guide-louvers to place where short-circuit is a possibility.
- When installing several units, secure sufficient suction space to avoid short circuiting.

(1) Open space requirement around the unit

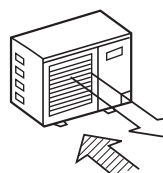


Note :

- (1). Fix the parts with screws
- (2). Don't intake the strong wind directly to the outlet air-flow hole.
- (3). A one meter distance should be kept from the unit top
- (4). Don't block the surroundings of the unit with sundries

Unit: mm

Case	I	II	III
Distance			
L ₁	open	open	500
L ₂	300	0	open
L ₃	150	300	150



Wind direction



(2) Installation where the area with strong winds.

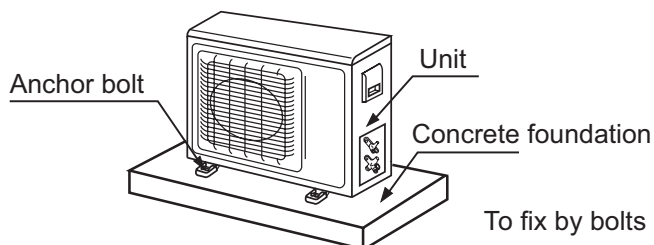
Install the unit so that the air outlet section of the unit must NOT be faced toward wind direction.

5.1.3 Installation of outdoor unit

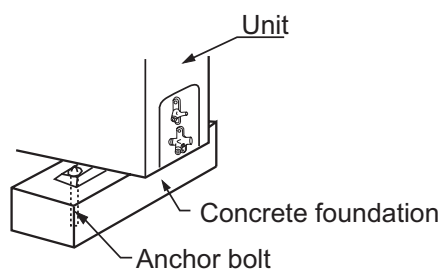
(1) Installation

Fix the unit in a proper way according to the condition of a place where it is installed by referring to the following .

(a) Concrete foundation



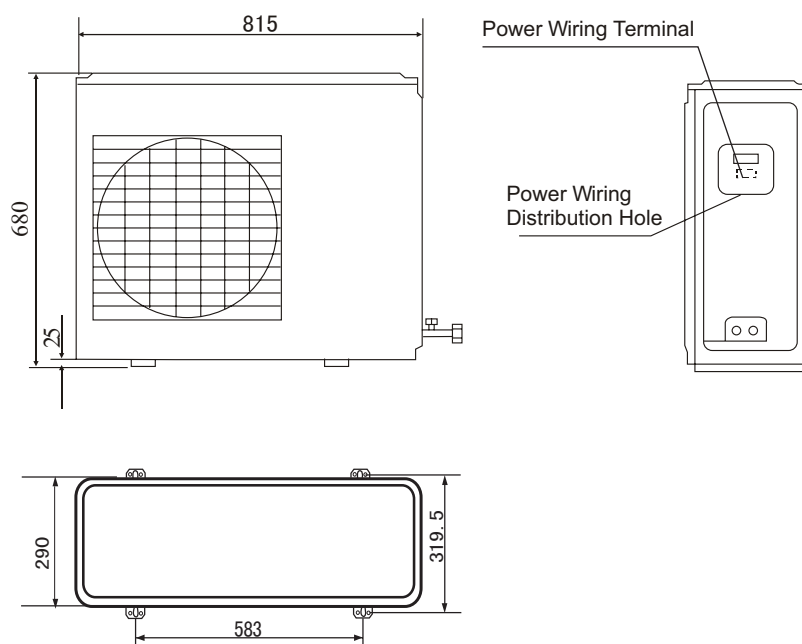
(b) Foundation anchor



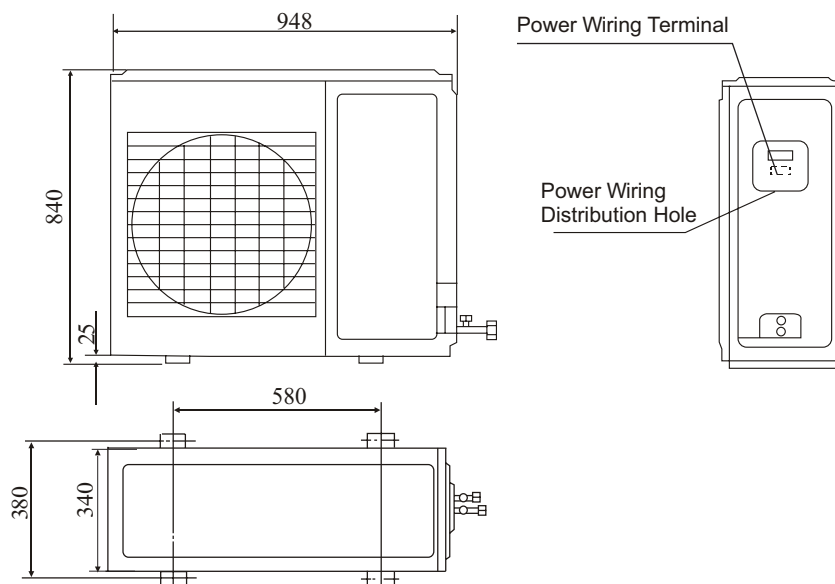
(2) Installation sketch of outdoor unit

HBU-18HF03

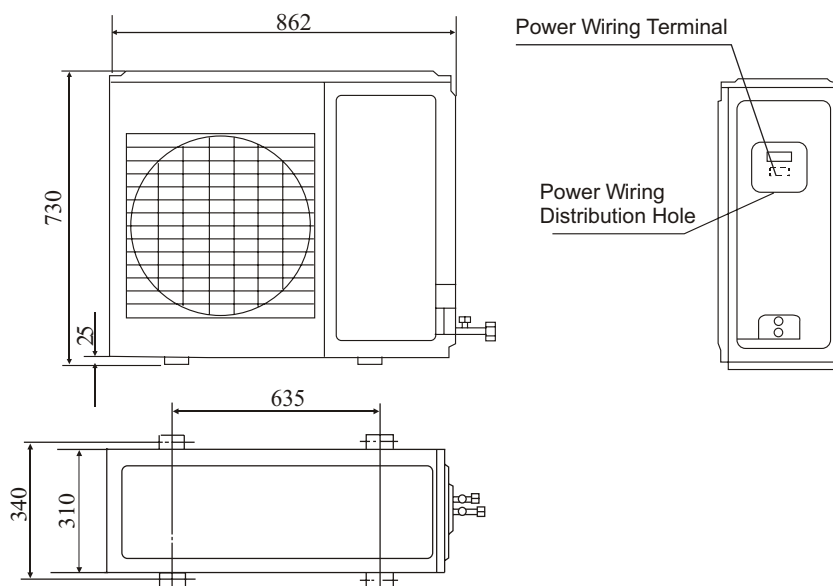
HDU-18CF03 HDU-18HF03



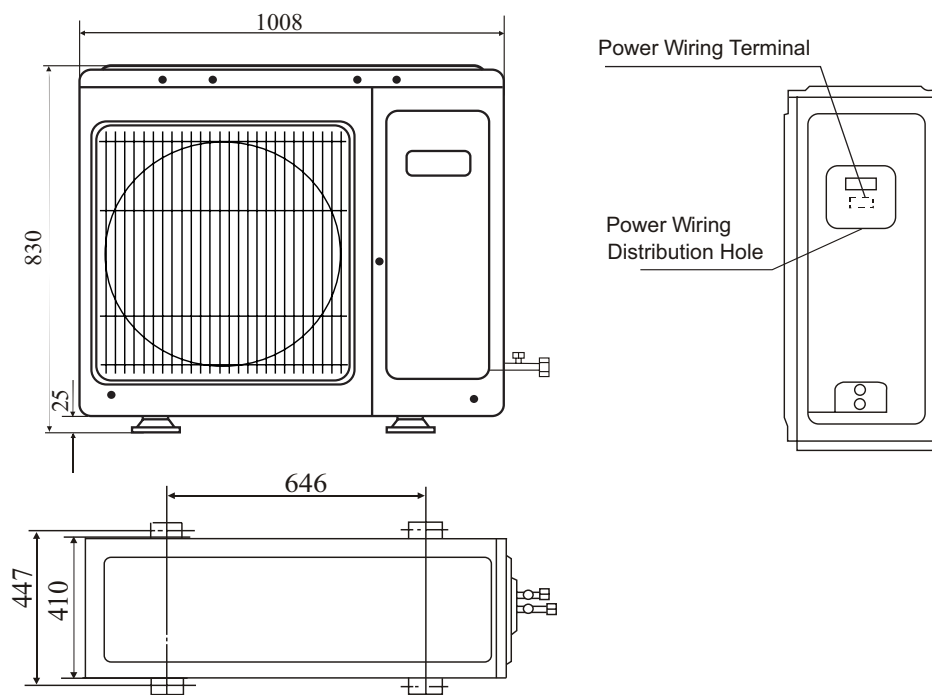
HBU-28HF03 HDU-28HF03 HDU-28CF03



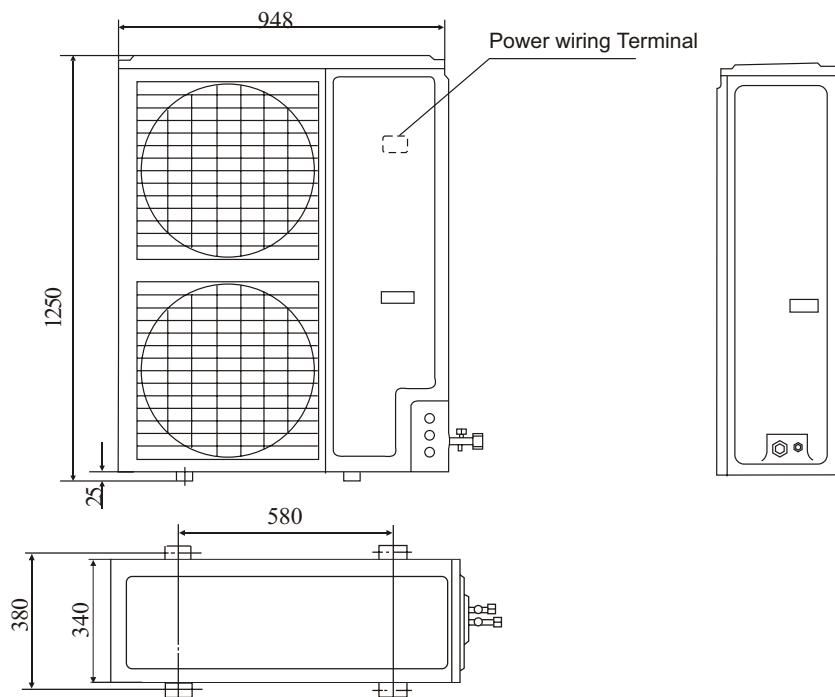
HBU-28CF03



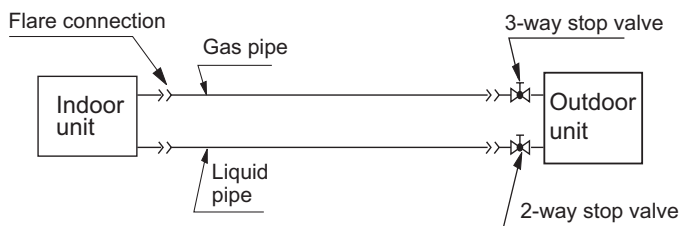
HBU-42HF03



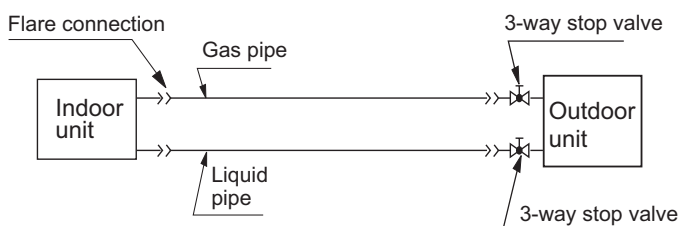
HDU-42HF03/H



5.1.4 Refrigerant piping



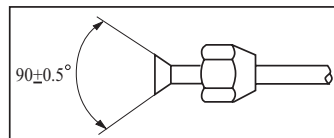
HBU-28CF03 HDU-28CF03
 HBU-18HF03 HDU-18CF03 HDU-18HF03
 HDU-42HF03/H



HDU-28CF03 HDU-28HF03 HBU-28HF03

Piping size

HBU-18HF03 HDU-18CF03 HDU-18HF03	Liquid pipe	Φ 6.35x0.8mm
	Gas pipe	Φ 12.7x1.0mm
HDU-28CF03 HDU-28HF03	Liquid pipe	Φ 9.52x0.8mm
	Gas pipe	Φ 15.88x1.0mm
HBU-28CF03 HBU-28HF03	Liquid pipe	Φ 9.52x0.8mm
	Gas pipe	Φ 15.88x1.0mm
HBU-42HF03 HDU-42HF03/H	Liquid pipe	Φ 9.52x0.8mm
	Gas pipe	Φ 19.05x1.0mm



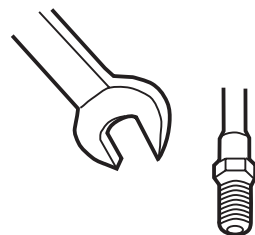
- Install the removed flare nuts to the pipes to be connected, then flare the pipes.

Limitations for one way piping length and vertical height difference.

Model	One way piping length	Vertical height difference (between indoor and outdoor)
HDU-18CF03 HBU-18HF03 HDU-18HF03	less than 15 m	less than 5 m
HDU-28HF03 HDU-28CF03 HBU-28CF03 HBU-28HF03	less than 40 m	less than 15 m
HBU-42HF03 HDU-42HF03/H	less than 50 m	less than 30 m

Precautions for refrigerant piping

- Do not twist or crush piping.
- Be sure that no dust is mixed in piping.
- Bend piping with as wide angle as possible.
- Keep insulating both gas and liquid piping.
- Check flare-connected area for gas leakage.



Piping connection

- Connecting method (indoor unit)
 Apply refrigerant oil at half union as large and flare nut.
 To bend a pipe, give the roundness as possible not to crush the pipe.
 When connecting pipe, hold the pipe centre to centre then screw nut on by hand, refer to Fig.
 Be careful not to let foreign matters, such as sands enter the pipe.

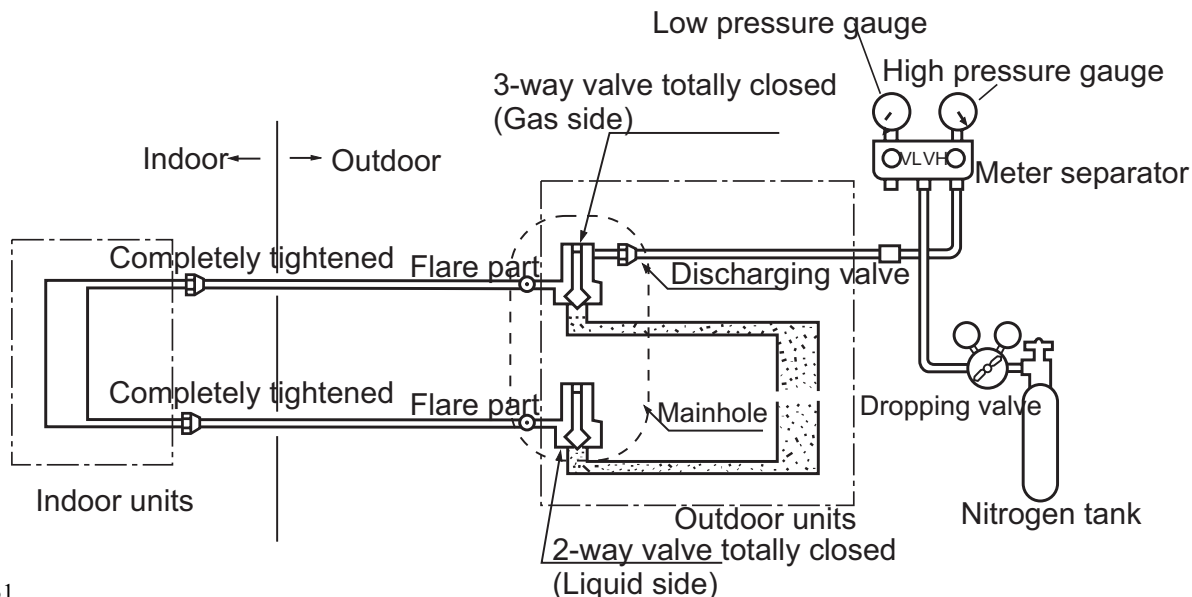


Forced fastening without centering may damage the threads and cause a gas leakage.

Pipe diameter	Fastening torque
Liquid pipe 6.35mm	14.2-17.2N·m
Liquid pipe 9.52mm	32.7-39.9N·m
Gas pipe 12.7mm	49.5-60.3N·m
Gas pipe 15.88mm	61.8-75.4N·m
Gas pipe 19.05mm	97.2-118.6N·m

Air discharging method

- After finishing connection of refrigerant pipe, it shall perform air tightness test.
- The air tightness test adopts nitrogen tank to give pressure according to the pipe connection mode as the following figure shown.
 The gas and liquid valve are all in close state. In order to prevent the nitrogen entering the circulation system of outdoor unit, tighten the valve rod before giving pressure (both gas and liquid valve rods).



First step: 0.3MPa (3.0kg/cm²g) pressurize over 3 minutes.

Second step: 1.5Mpa (15kg/cm²g) pressurize over 3 minutes. Large leakage will be found.

Third step: 3.0 MPa (30kg/cm²g) pressurize about 24 hours. Little leakage will be found.

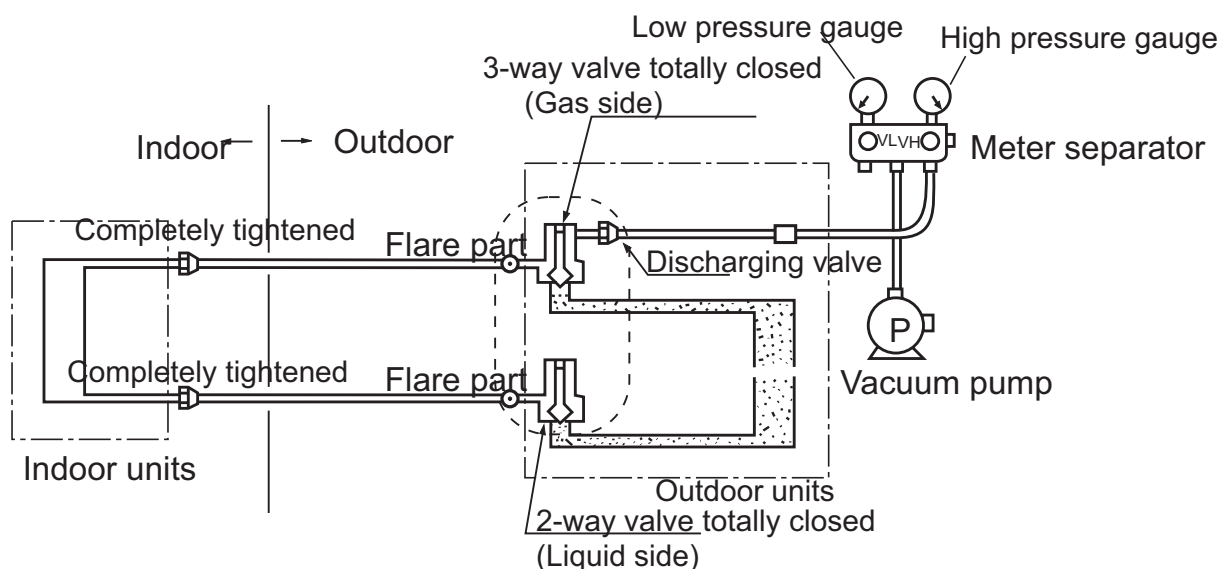
- Check if the pressure drops
 If the pressure does not drop, the unit is passed
 If the pressure drops, please check the leaking point.

After pressurizing for 24 hours, each 1°C difference of ambient temperature will result in 0.01MPa(0.1kg/cm²g) pressure change. It shall be corrected during test.

- Checking the leaking point
 From the first to third steps, if the pressure drops, check the leakage in each joint by the sense of hearing, feeling or soap water, etc. to find the leaking point.
 After confirming the leaking point, welding it again or tighten the nut tightly again.

Piping and indoor unit vacuumizing

- Use vacuum pump to perform vacuumizing. It is strictly forbidden to use the refrigerant to remove the air inside the system.
- After air tightness test and discharging all the nitrogen, connect the vacuum pump as the following figure shown.



- It shall use the vacuum pump of (lower than -755mmHg) high vacuum degree and large air discharging (over 40l/min).
- The vacuumizing time depends on the length of the connecting pipe, generally is 1~2 hours. When vacuumizing, it shall be confirmed both gas and liquid side valves are closed.
- If after 2 hours vacuumizing, it cannot reach the vacuum degree below -755mmHg, it can be vacuumized for other 1 hour.
- If after 3 hours vacuumizing, it still cannot reach the vacuum degree below -755mmHg, check if there is any leaking point and repair the them.

- If after over 2 hours vacuumizing, the vacuum degree is below -755mmHg, close the VL and VH on the meter separator and stop vacuumizing. 1 hour later to confirm if the vacuum degree changes. If changes, it indicates there is leaking point in the system. Check the leaking point and repair.
- After finishing the above vacuumizing, change the vacuum pump into refrigerant pump to charge the refrigerant.

Charging amount of refrigerant

When the total length (L) of the two indoor units' connecting pipe is less than 5m, it is unnecessary to charge additional refrigerant.

If the connecting pipe (L) exceeds 5m, it shall charge Mg additional refrigerant per meter.

That is: Refrigerant charging amount = (L-5) x M (g)

For the unit with liquid pipe 6.35mm, M=30

For the unit with liquid pipe 9.52mm, M=65

Only in COOLING operation can charge the additional refrigerant.

- When charging, the refrigerant shall be charged from the charging nozzle of low pressure vavle.
- Be carefull when charging refrigerant, do not let the air mix into the system,and must charge the additional refrigerant in liquid condition.

Electric wiring

⚠ WARNING

DANGER OF BODILY INJURY OR DEATH

TURN OFF ELECTRIC POWER AT CIRCUIT BREAKER OR POWER SOURCE BEFORE MAKING ANY ELECTRIC CONNECTIONS. GROUND CONNECTIONS MUST BE COMPLETED BEFORE MAKING LINE VOLTAGE CONNECTIONS.

(1) Selection of size of power supply and interconnecting wires.

Precautions for Electric wiring

- Electric wiring work should be conducted only by authorized personnel.
- Do not connect more than three wires to the terminal block. Always use round type crimped terminal lugs with insulated grip on the ends of the wires.
- Use copper conductor only.

Select wire sizes and circuit protection from table below. (This table shows 20 m length wires with less than 2% voltage drop.)

Item Model	Phase	Circuit breaker		Power source wire size (minimum)	Earth leakage breaker	
		Switch breaker (A)	Overcurrent protector rated capacity (A)		Switch breaker	Leak current
HBU-18HF03 HDU-18CF03 HDU-18HF03	1	30	20	2.5mm ²	30	30mA
HBU-28CF03 HBU-28HF03 HDU-28CF03 HDU-28HF03	1	40	36	4.0mm ²	40	30mA
HBU-42HF03 HDU-42HF03/H	3	30	20	2.5mm ²	30	30mA

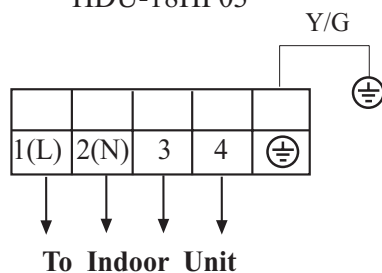
(2) Wiring connection

Make wiring to supply power to the outdoor unit, so that the power for the indoor unit is supplied by terminals.

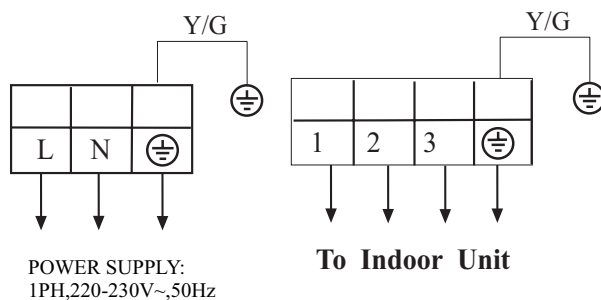
For the detailed wiring connection with the indoor units, see the corresponding indoor operation and instruction manual.

HBU-18HF03 HDU-18CF03

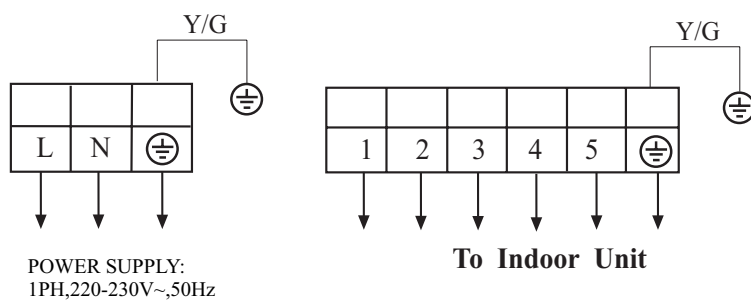
HDU-18HF03



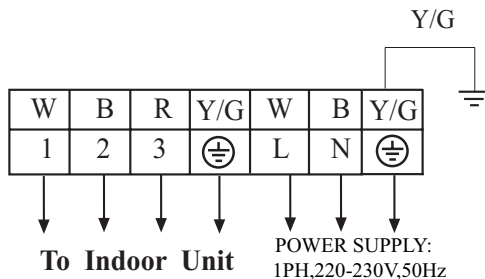
HDU-28CF03



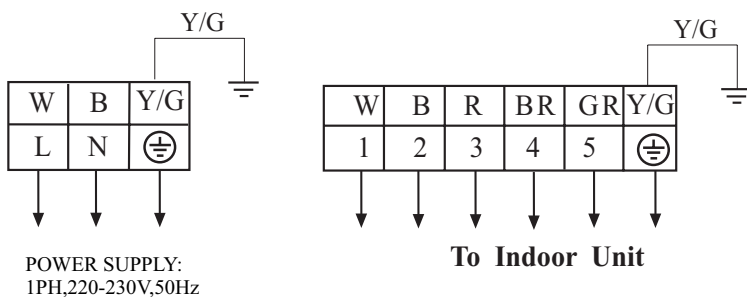
HDU-28HF03



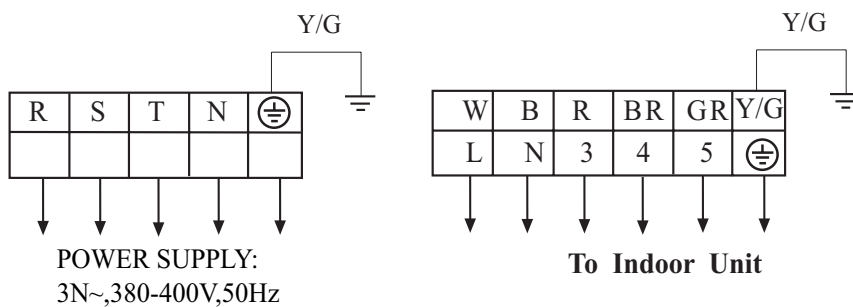
HBU-28CF03



HBU-28HF03



HBU-42HF03 HDU-42HF03/H



5.2 Indoor unit installation

5.2.1 Cassette indoor unit





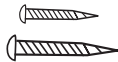
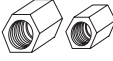
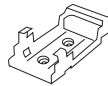
Installation tools

The installation tools listed in the following sheet can be used as required.

1. Screw driver
2. Hacksaw
3. Drill with a diameter of 60mm
4. Inner hexagon spanner, shifting spanner
5. Spanner (14, 17, 19, 24, 27mm)
6. Pipe cutter
7. Pipe expander
8. Knife
9. Pincers
10. Leakage detector or soapy water
11. Band tape
12. Scraper
13. Refrigerant oil

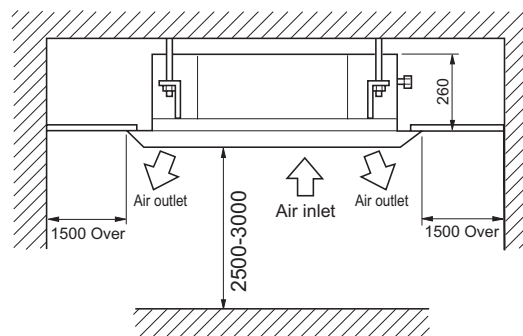
Standard accessories

The following parts mentioned in this manual are the installation accessories we prepared.

No.	Accessory parts	Qty.
①	 Remote controller	1
②	 Battery	2
③	 Wire clamp	4
④	 Heat preservation sleeve	1+1
⑤	 Screw	2+4
⑥	 Screw cap	1+1
⑦	 Remote controller bracket	1

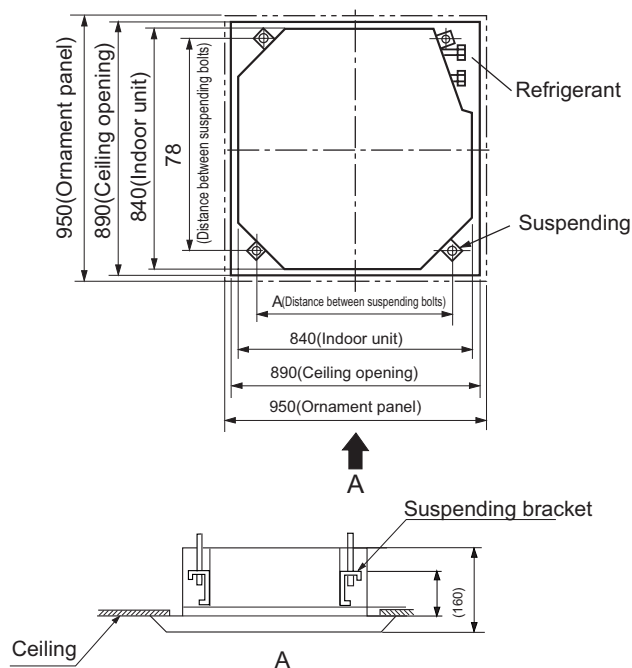
5.2.1.1 Selection of Installation Place

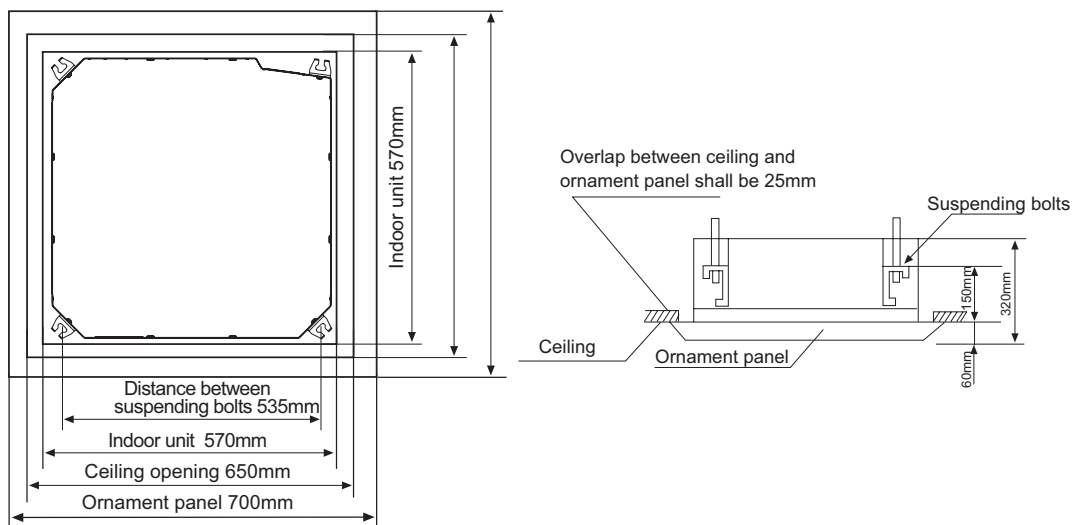
- (1) Place above the ceiling where have enough space to arrange the unit.
- (2) Place where the drainage pipe can be arranged well.
- (3) Place where inlet and outlet air of indoor and outdoor unit will not be blocked.
- (4) Do not expose the unit to the place with heavy oil or moisture (e.g. kitchen and workshop).
- (5) Do not set the unit in the place where destructive gas (such as sulfuric acid gas) or pungent gas (thinner and gasoline) concentrates and retains.
- (6) Place strong enough to support the unit weight.
- (7) No expensive articles such as television and piano below indoor unit.
- (8) Enough space for maintenance.
- (9) Place more than 1m away from television and radio to avoid disturbing television and radio.
- (10) Easy for maintenance.



5.2.1.2 Installation Preparation

- (1) Position of ceiling opening between unit and suspending bolt (front view of unit).

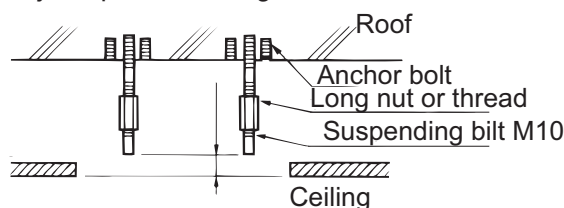




(2) Prepare all piping (refrigerant, water drainage) and wires (connection wire of remote controller, indoor unit connection wires) to the indoor unit before installation in order to connect indoor unit immediately after installation.

(3) Install a suspending bolt

To support the unit weight, anchor bolt should be used in the case of already exists ceiling. For new ceiling, use flush-in type bolt, built-in type bolt or parts prepared in the field. Before going on installing, adjust space to ceiling.



Note: All the above mentioned parts shall be prepared in field, the diameter of suspending bolt is M10

<Installation Example>

5.2.1.3 Installation of indoor unit

In case of no ceiling

Install unit temporarily

Put suspending bracket on the suspending bolt to hang the unit up. Be sure to use nut and washer at both end of the bracket to secure firmly.

After installation on the ceiling

(1) Adjust unit to its right position (Refer to preparation for installation-(1))

(2) Check that unit is horizontal.

Water pump and floating switch is installed inside indoor unit, check four corners of the unit for its level using horizontal comparator or PVC tube with water. (If unit is tilting against the direction of water drainage, problem may occur on floating water leakage.)

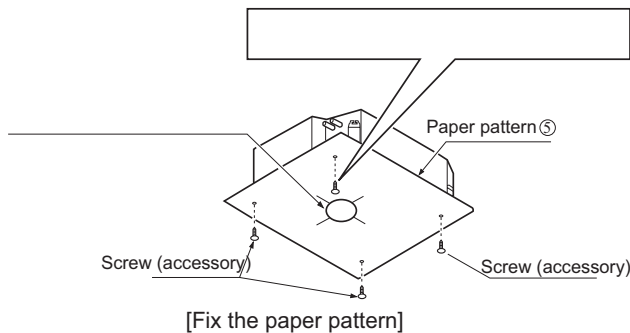
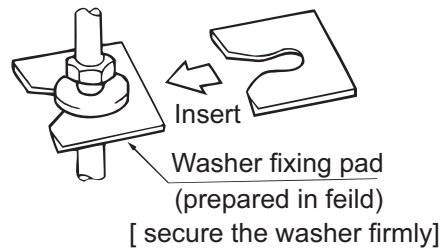
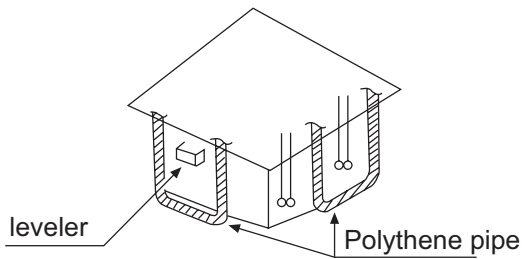
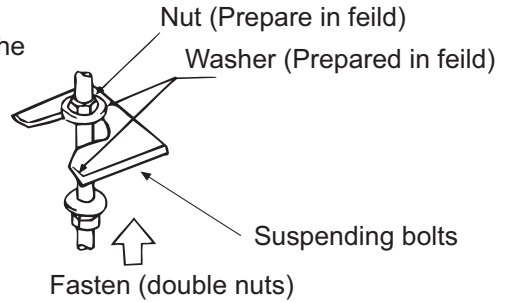
In the case of ceiling already exists

(1) Install unit temporarily

Put suspending bracket on the suspending bolt to hang the unit up. Be sure to use nut and washer at both end of the bracket to secure it firmly.

(2) Adjust the height and position of the unit.

(3) Proceed with procedure (4) of " In the case of no ceiling "



5.2.1.4 REFRIGERANT PIPING

- Outdoor is precharged with refrigerant.
- Be sure to see the Fig.1, when connecting and removing piping from unit.
- For the size of the flare nut, please refer to Table 1.
- Apply refrigerant oil at both inside and outside of flare nut. Tighten it band tight 3-4 turns then tighten it.
- Use torque specified in Table 1. (Too much force may damage flare nut, causing gas leakage).
- Check piping joints for gas leakage. Insulate piping as shown in Fig. below.
- Cover joint of gas piping and insulator ⑦ with seal.

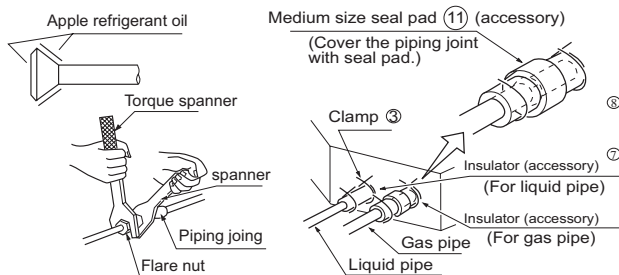


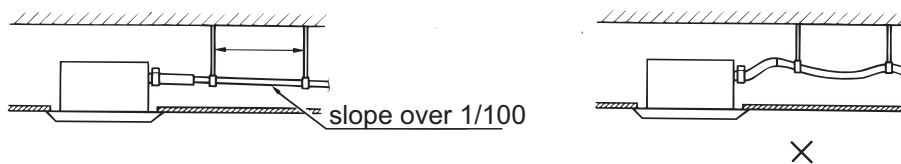
Table 1

Pipe size	Tighten torque	A(mm)	Flare shape
Φ6.35	1420~1720N·cm (144~176kgf·cm)	8.3~8.7	
Φ9.52	3270~3990N·cm (333~407kgf·cm)	12.0~12.4	
Φ15.88	6180~7540N·cm (630~770kgf·cm)	18.6~19.0	
Φ19.05	9720~11860N·cm (990~1210kgf·cm)	22.9~23.3	

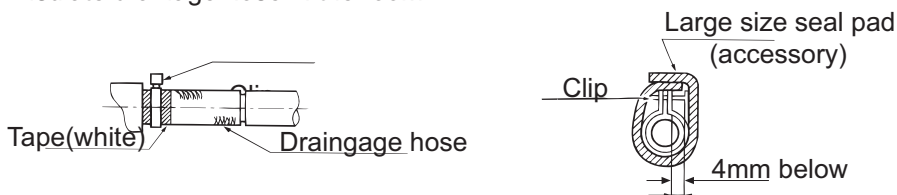
5.2.1.5 Installation of water drainage pipe

(1) Install water drainage pipe

- Pipe diameter shall be equal or larger than that of connecting pipe (Pipe of polythene; size:25mm; O.D.: 32mm)
- Drainpipe should be short, with a downward slope at least 1/100 to prevent air bag from forming.
- If downward slope of drainpipe cannot be made, lifting pipe shall be installed.
- Keep a distance of 1-1.5m between suspending bolts, to make water hose straight.

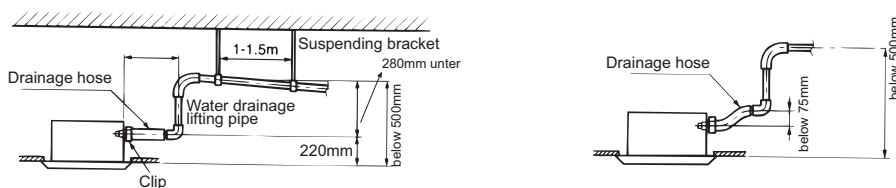


- Use the drainage hose and clip provided with unit.
 Insert water pipe into water plug until it reaches the white tape.
 Tighten the clip until head of the screw is less than 4mm from hose.
- Wind the drainage hose to the clip using seal pad for heat insulation.
- Insulate drainage hose in the room.



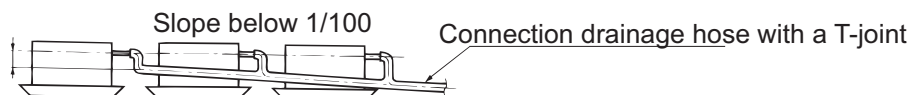
Cautions for the water drainage lifting pipe

- Installation height of water drainage lifting pipe shall be less than 280mm
- There should be a right angle with unit ,300mm from unit.



< Note >

- The slope of water drainage hose shall be within 75mm , make the drainage plug not to bear excessive force.
- If several water hoses join together, of as per following procedures.



Specifications of the selected drainage hoses shall meet the requirements for the unit running

5.2.1.6 Installation of Ornament Panel

Install ornament panel on indoor unit

- (1) Check whether indoor unit is horizontal with leveler or polythene pipe filled with water , and check that the dimension of the ceiling opening is correct. Take off the lever gauge before install the ornament panel.
- (2) Fasten the screws to make the height difference between the two sides of indoor unit less than 5mm.
- (3) First fix it with screws temporarily.
- (4) Fasten the two temporarily fixing screws and other two, and tighten the four screws.
- (5) Connect the wires of synchro-motor.
- (6) Connect the wire of signal.
- (7) If no response of remote controller, check whether the wiring is correct, restart remote controller 10 seconds after shut off power supply.

5.2.1.7 Check if water drainage is smooth after installation.

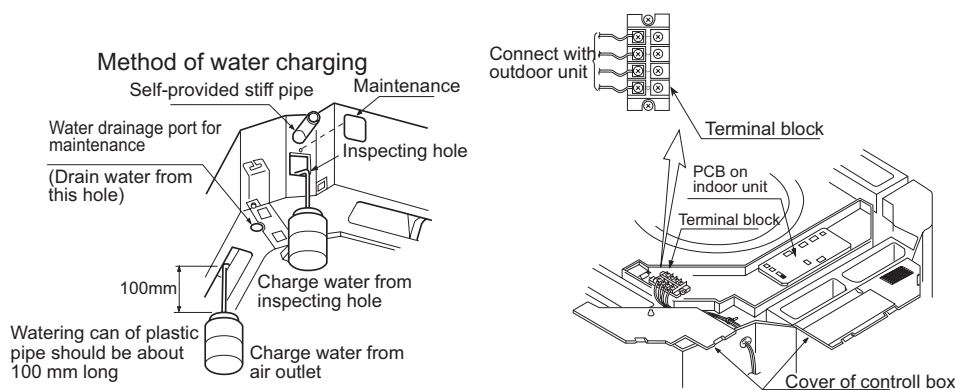
- Charge, through air outlet or inspecting hole, 1200ccd water to see water drainage.

After wiring

Check water drainage in cooling operation.

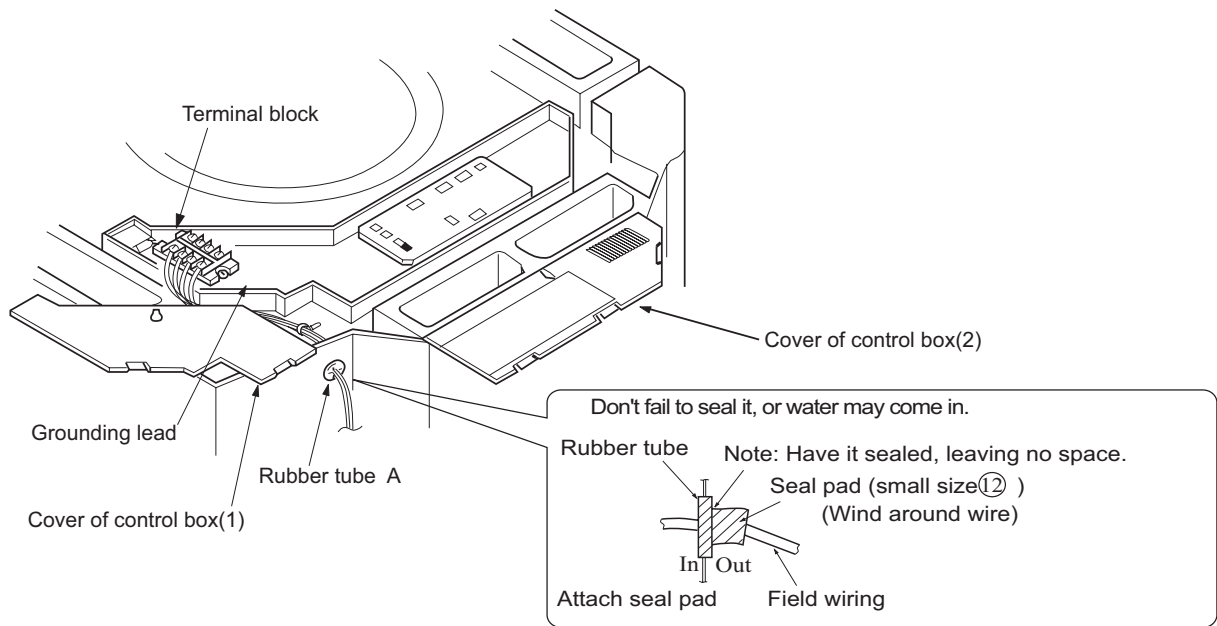
When wiring is not complete

- Remove cover of control box, short connect "CHECK" terminal of the indoor unit, which is on the upper part of indoor unit PCB. Connect 1PH power to terminal 1 and 2 on terminal block.
- Note, in this operation, fan will be running.
- Upon confirmation of a smooth water drainage, be sure to cut off power supply and remove short connection of "CHECK" terminal.



5.2.1.8 WIRING

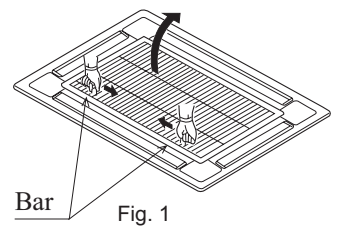
- All supplied parts, materials and wiring operation must in appliance with local code and regulations.
 - Use copper wire only.
 - When make wiring, please refer to wiring diagram also.
 - All wiring work must be done by qualified electricians.
 - A circuit breaker must be installed, which can cut power supply to all system.
See Installation Manual of outdoor unit for specifications of wires, circuit breaker, switches and wiring etc.
 - Connecting of unit
 - Remove cover of switch box (1) , drag wires into rubber tube A, then, after proper wiring with other wires, tighten clamp A. Connect wires of correct pole to the terminal block inside.
 - Wind seal 12 around wires. (Be sure to do that, or, dew may occur).
- 40 Upon connecting, replace control box cover (1) and (2).



5.2.1.9 Installation of ornament panel

Cautions for the installation

- Be sure to show customers Operation Manual and guide them how to operate unit correctly. Before installation, read also the Installation Manual of indoor unit.
 - With this ornament, 2 or 3 air flow direction is not available.
- Suitable height is 3 m.

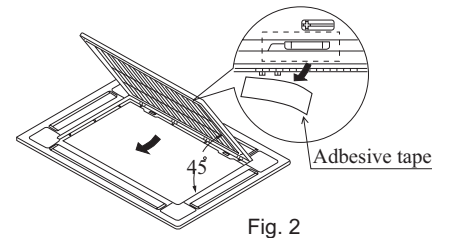


1. Prepare ornament panel Handling of ornament panel

- Ornament panel shall not be placed face down or against wall, neither on an uneven object.
- Don't bend carelessly the swing flap, or, problem may occur.

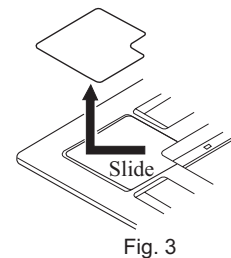
(1) Remove air inlet grill from ornament panel

- ① Push in the bar on inlet grill and lift it up. (Refer to Fig. 1)
- ② Lift it up for about 45 degree and remove it from ornament. Tear off adhesive tape fixing air filter on the back of the air inlet grill. (Refer to Fig. 2)



(2) Remove cover plate at corner

Tear off the adhesive tape, and slide it off. (Refer to Fig. 3)



2. Mounting on high ceiling

- (1) Ornament panel can be mounted on ceiling as high as 3 m.
- (2) Please install pad as accessory.
 - ① Cut open the pad along cutting line. Use part (a) only and discard part (b). (Refer to Fig. 4)
 - ② Install part a of the pad on the place shown in Fig. 5. Refer to Fig. 6.

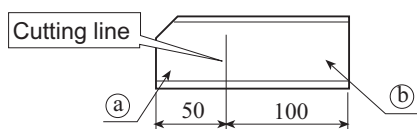


Fig. 4

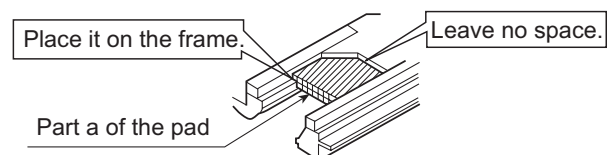


Fig. 6

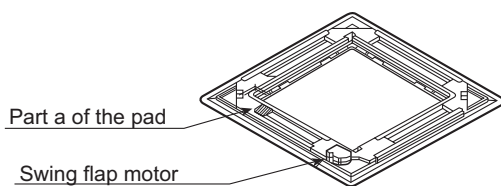


Fig. 5

- (3) Wiring on ornament panel
 Connecting of wiring of the swing flap motor on ornament panel. (2 places)
 (Refer to Fit . 10)

If connecting is not made, error code (A7) appears on remote controller. So, make proper connecting.

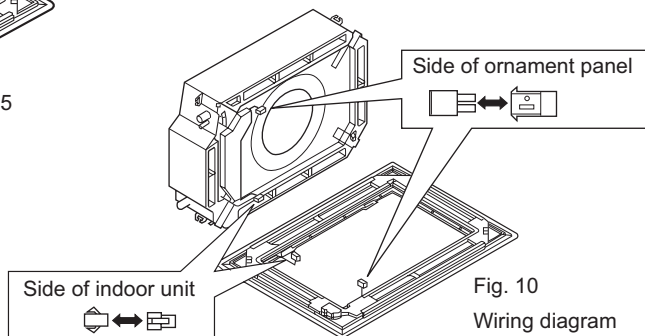


Fig. 10
 Wiring diagram

3. Install ornament panel on indoor unit.

- (1) As shown in Fig . 7, match the position of swing flap motor with that of the indoor unit piping hole , so that ornament panel can be placed on to indoor unit.
- (2) Installation of ornament panel
 - ① Place the holding ring on swing flap motor side temporarily on hooks of the indoor unit. (2 pcs)
 - ② Put the other two holding rings on the hooks at both side of the indoor unit. (Care should be taken not to push wiring of swing flap motor into seals).
 - ③ Screw in all 4 screws under holding ring for about 15mm. (Panel will rise).
 - ④ Adjust the ornament panel as per Fig. 7 to cover opening on the ceiling.
 - ⑤ Tighten screws to reduce the thickness of seals between ornament and indoor unit to 5-8mm.

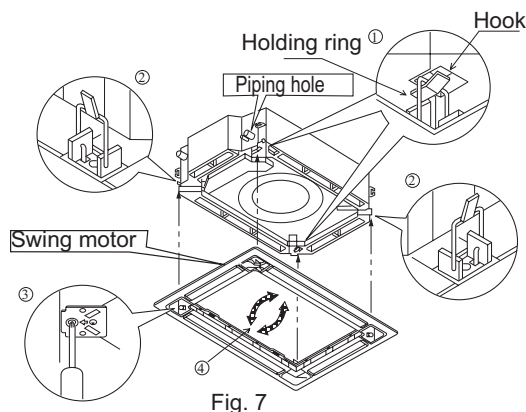


Fig. 7

If screws are not tighten tight, problems in Fig. 8 might occur. Tighten screws properly.

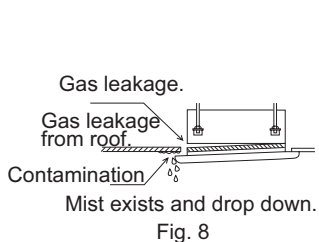


Fig. 8

Caution

If there are still space after tightening of screws, please readjust the height of indoor unit. (Refer to Fig. 9)

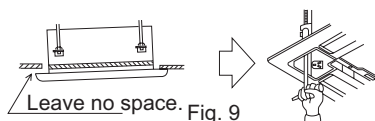
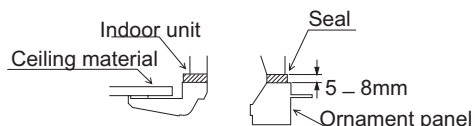


Fig. 9



If indoor unit is at horizontal level and water drainage is smooth, then, indoor unit height can be adjusted through holes at corners of ornament panel.

4. Installation of inlet grill and cover plate

- (1) Installation of inlet grill
 Install in reversed order of "Prepare ornament panel".
 Inlet grill can be adjusted into four directions by turning inlet grill. Inlet grill position can be adjusted as per customers request.

When installing inlet grill, take care not to twist wiring of swing flap motor.

- (2) Install cover plate on the corner
 - ① As shown in Fig. 11 tie the cover plate onto the bolt on ornament plate.
 - ② Install cover plate onto ornament plate. (Refer to Fig. 12)

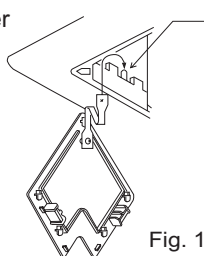
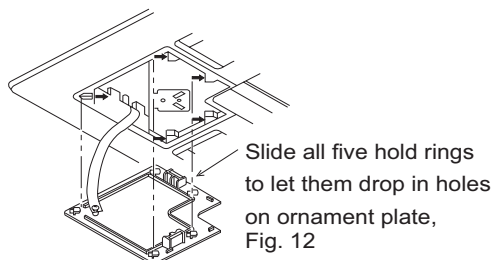


Fig. 11



Slide all five hold rings to let them drop in holes on ornament plate, Fig. 12

5.2.2 Ceiling concealed indoor unit

Installation space

The indoor unit shall be installed at locations where cold and hot air could evenly circulated.

The following locations should be avoided:

- Places with rich salt (seaside area).
- Places with plenty of gas sulfides (mainly in warm spring areas where the copper tube and braze weld is easy to corrosion).
- Locations with much oil (including mechanical oil) and steam.
- Locations using organic solvents.
- Places where there are machines generating HF electromagnetic waves.
- Positions adjacent to door or window in contact with high-humidity external air. (Easy to generate dew).
- Locations frequently using special aerosols.

The following points should be taken care of:

1. Select suitable places the outlet air can be sent to the entire room, and convenient to lay out the connection pipe, connection wire and the drainage pipe to outdoor.
2. The ceiling structure must be strong enough to support the unit weight.
3. The connecting pipe, drain pipe and connection wire shall be able to go through the building wall to connect between the indoor and outdoor units.
4. The connecting pipe between the indoor and outdoor units as well as the drain pipe shall be as short as possible. (See Figure 1)
5. If its necessary to adjust the filling amount of the refrigerant, please refer to the installation manual attached with the outdoor unit.
6. The connecting flange should be provided by the user himself.
7. The indoor unit has two water outlets one of which is obstructed at the factory (with a rubber cap). Only the outlet not obstructed (liquid inlet and outlet side) will be generally used during installation. If applicable, both the outlets should be used together.

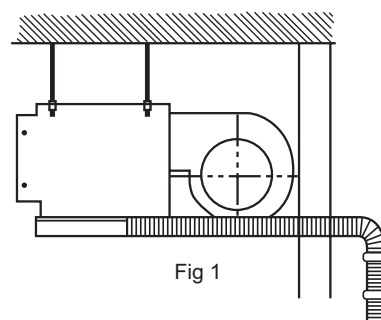


Fig 1

Note: The access hole must be provided during installation of indoor unit for maintenance.

After selecting the installation space, proceed the following steps:

1. Drill a hole in the wall and insert the connecting pipe and wire through a PVC wall-through tube purchased locally. The wall hole shall be with a outward down slope of at least 1/100. (See Figure 2)
2. Before drilling check that there is no pipe or reinforcing bar just behind the drilling position. Drilling shall avoid at positions with electric wire or pipe.
3. Mount the unit on a strong and horizontal building roof. If the base is not firm, it will cause noise, vibration or leakage.
4. Support the unit firmly.
5. Change the form of the connection pipe, connection wire and drain pipe so that they can go through the wall hole easily.

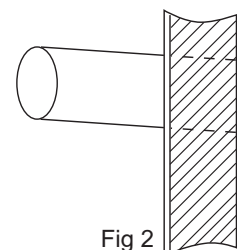
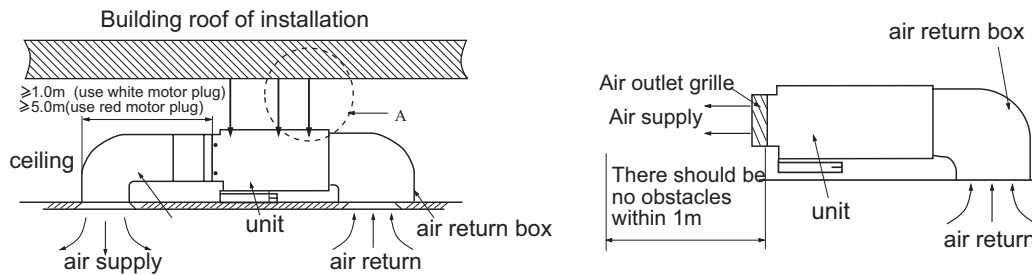
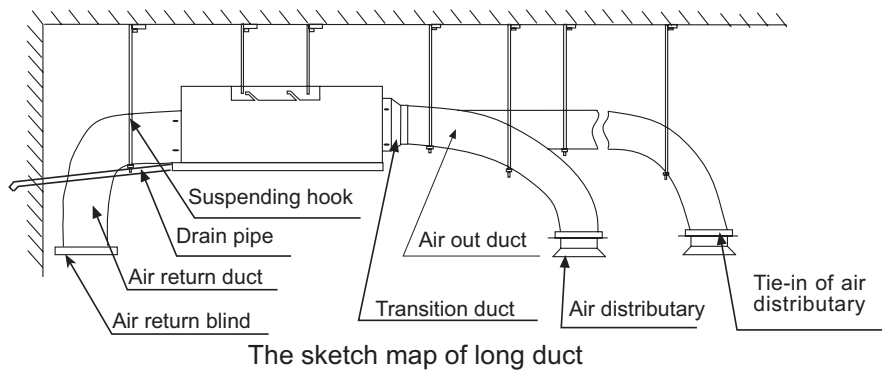


Fig 2

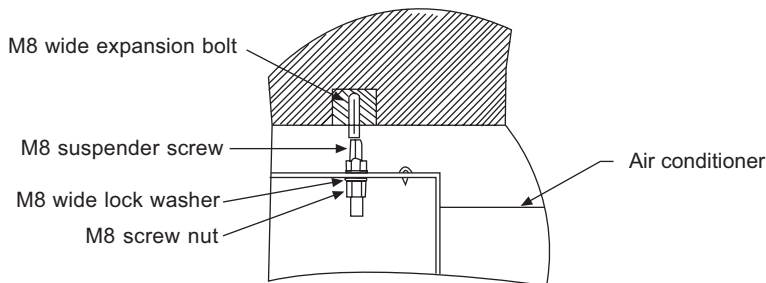
- Each of the air sending duct and air return duct shall be fixed on the prefabricated panel of the floor by the iron bracket.
- The recommended distance between the edge of the air return duct and the wall is over 150mm.
- The gradient of the condensate water pipe shall keep over 1%.
- The condensate water pipe shall be thermal insulated.
- When installing the ceiling Concealed type indoor unit, the air return duct must be designed and installed (as figure shown).



Note: When connecting the short ducts, use the low static terminals, which color is white.
 The distance L from the air outlet of the duct to the air outlet of the air conditioner shall be no more than 1 m.



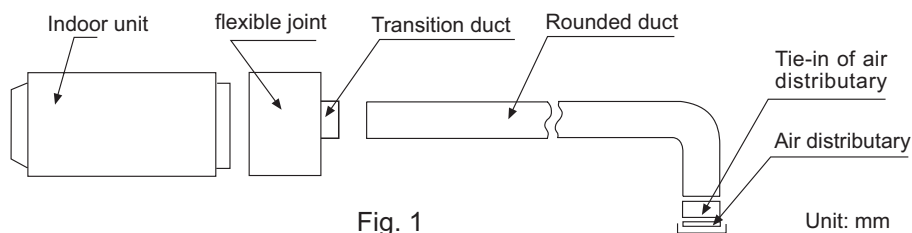
Note: When connecting the long ducts, use the middle static terminals, which color is red.
 The distance L from the air outlet of the duct to the air outlet of the air conditioner shall be no more than 5 m.



Installation of indoor unit duct

1. Installation of air sending duct

- This unit uses rounded duct, the diameter of the duct is 180mm.
- The round duct needs to add a transition duct to connect with the air-sending duct of indoor unit, then connect with respective separator. As Fig. 1 shown, all the fan speed of any of the separator's air outlet shall be adjusted approximately the same to meet the requirement for the room air conditioner.



2. Installation of air return duct

- Use rivet to connect the air return duct on the air return inlet of the indoor unit, then connect the other end with the air return blind. As Fig. 2 shown.

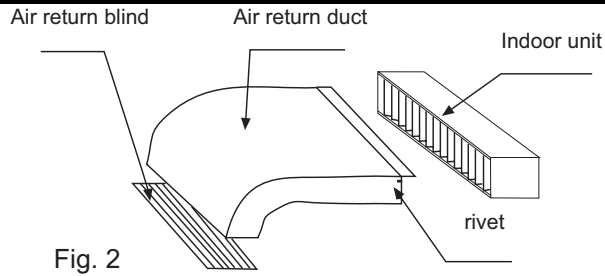


Fig. 2

3 Thermal insulation of duct

- Air-sending duct and air return duct shall be thermally insulated. First stick the gluey nail on the duct, then attach the heat preservation cotton with a layer of tinfoil paper and use the gluey nail cap to fix. Finally use the tinfoil adhesive tape to seal the connected part. As Fig. 3 shown.

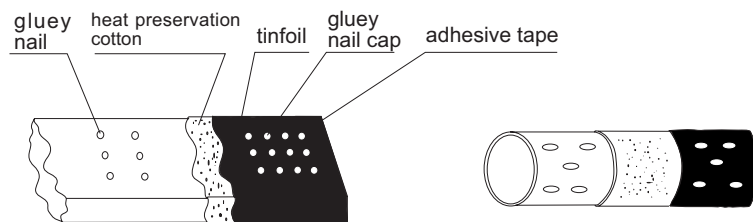


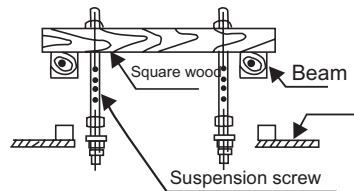
Fig. 3

Installing the suspension screw:

Use M8 or M10 suspension screws (4, prepared in the field) (when the suspension screw height exceeds 0.9m, M10 size is the only choice). These screws shall be installed as follows with space adapting to air conditioner overall dimensions according to the original building structures.

Wooden structure

A square wood shall be supported by the beams and then set the suspension screws.



New concrete slab

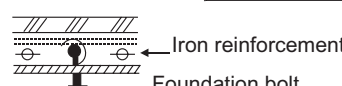
To set with embedded parts, foundation bolts etc.



Knife embedded part



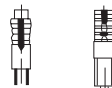
Guide plate embedded part



Pipe suspension foundation bolt

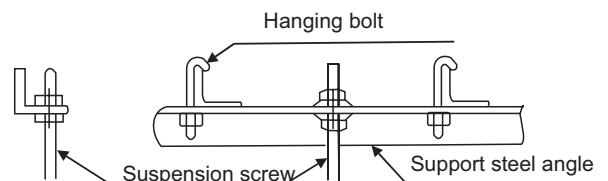
Original concrete slab

Use hole hinge, hole plunger or hole bolt.



Steel reinforcement structure

Use steel angle or new support steel angle directly.



Hanging of the indoor unit

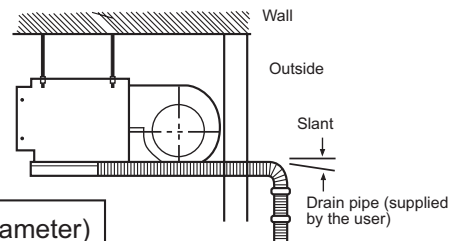
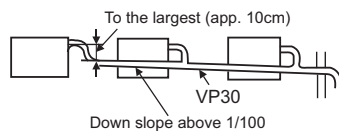
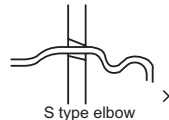
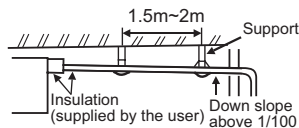
Fasten the nut on the suspension screw and then hang the suspension screw in the T slot of the suspension part of the unit. Aided with a level meter, adjust level of the unit within 5mm.

⚠ Caution

In order to drain water normally, the drain pipe shall be processed as specified in the installation manual and shall be heat insulated to avoid dew generation. Improper hose connection may cause indoor water leakage.

Requirements

- The indoor drain pipe shall be thermal insulated.
- The connection part between the drain pipe and the indoor unit shall be insulated so as to prevent dew generation.
- The drain pipe shall be slant downwards (greater than 1/100). The middle part shall not be of S type elbow, otherwise abnormal sound will be produced.
- The horizontal length of the drain pipe shall be less than 20 m. In case of long pipe, supports shall be provided every 1.5 – 2 m to prevent wavy form.
- Central piping shall be laid out according to the following figure.
- Take care not to apply external force onto the drain pipe connection part.



Pipe and insulation material

Pipe	Rigid PVC pipe VP31.5mm (internal diameter)
Insulation	Foamed PE with thickness above 7 mm

Hose

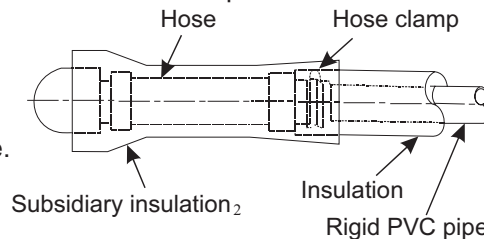
Drain pipe size: (3/4") PVC pipe

The hose is used for adjusting the off-center and angle of the rigid PVC pipe.

- Directly stretch the hose to install without making any deformation.
- The soft end of the hose must be fastened with a hose clamp.
- Please apply the hose on horizontal part

Insulation treatment:

- Wrap the hose and its clamp until to the indoor unit without any clearance with insulating material, as shown in the figure.



Drain confirmation

During trial run, check that there is no leakage at the pipe connection part during water draining even in winter.

Allowable pipe length and drop

These parameters differ according to the outdoor unit. See the instruction manual attached with the outdoor unit for details.

Pipe material and size

Pipe material	Phosphorus deoxidized copper seamless pipe (TP2) for air conditioner	
Pipe size (mm)	Gas side	Ø12.70
	Liquid side	Ø6.35

Recharge of refrigerant

The refrigerant recharge shall be performed as specified in the installation instructions. The adding procedure shall be aided with a measuring meter for a specified amount of supplemented refrigerant.

Requirement

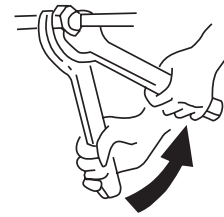
More or less refrigerant will cause compressor fault. The mount of the added refrigerant shall be as specified in the instructions.

Connection of refrigerant pipe

Conduct flared connection work to connect all refrigerant pipes.

- The connection of indoor unit pipes must use double spanners.
- The installing torque shall be as given in the following table.

Connecting pipe O.D.(mm)	Installing torque (N-m)
Ø6.35	11.8 (1.2kgf-m)
Ø12.70	49.0 (5.0 kgf-m)



Double-spanner operation

Vacuum pumping

With a vacuum pump, create vacuum from the stop valve of the outdoor unit.

Emptying with refrigerant sealed in the outdoor unit is absolutely forbidden.

Open all valves

Open all the valves on the outdoor unit.

Gas leakage detection

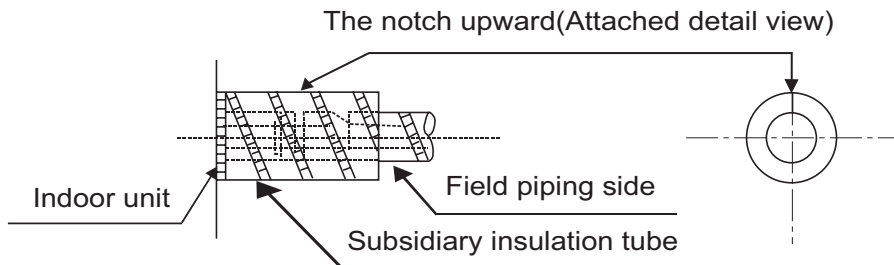
Check with a leakage detector or soap water that if there is gas leakage at the pipe connections and bonnets.

Insulation treatment



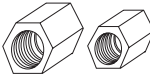
Operate insulation treatment on both the gas side and liquid side of pipes respectively.

During cooling operation, both the liquid and gas sides are cold and thus shall be insulated so as to avoid dew generation.

- The insulating material at gas side shall be resistant to a temperature above 120 degree.
- The indoor unit pipe connection part shall be insulated.



Accessory as follow:







No.	Accessory parts	Qty.
①	 Wire clamp	2
②	 Heat insulation sheathing	1+1
③	 Screw cap	1+1







5.2.3 Duct indoor unit(HDU-42HF03/H)

5.2.3.1 Installation tools

- 1 Cross screwdriver 2 Metal saw 3 70mm drill 4 Spanner(17,27mm diameter) 5 Spanner(14,17,19,27mm diameter) 6 Pipe cutter
 7 Pipe expander 8 Knife 9 Pliers 10 Leak detector or soap liquor
 11 Measuring tape 12 Scraper 13 Refrigeration oil
 14 Vacuum pump 15 Flat screwdriver

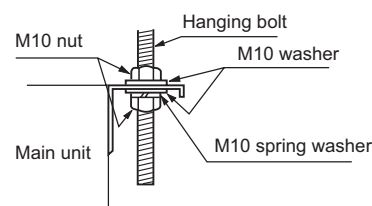
5.2.3.2 Standard accessories

Remarks	①	②	③	④	⑤	⑥
Shape, name	Wire remote controller 	Small clip 	Big clip 	Heat insulator 	Non-cohesive tape 	Screw 5X25 
Quantity	1	6	2	2	1	4

Remarks	⑦	⑧	⑨	⑩	⑪	⑫
Shape, name	Steel nail 	Sealing pad 	Rubber gasket 	Washer 	Cooling oil 	Plastic clamp 
Quantity	12	4	4	8	1	6

(1) Installation of indoor unit

- Fix the indoor unit to the hanger bolts.
 If required, it is possible to suspend the unit to the beam, etc.
 Directly by use of the bolts without using the hanger bolts.



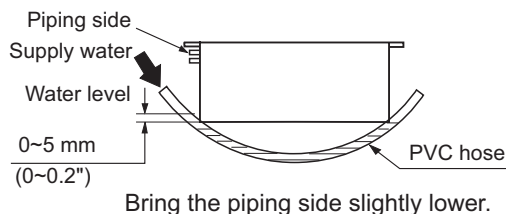
Note

When the dimensions of main unit and ceiling holes does not match, it can be adjusted with the slot holes of hanging bracket.

Adjusting to the levelness

(a) Adjust the out-of-levelness using a level or by the following method.

- Make adjustment so that the relation between the lower surface of the unit proper and water level in the hose becomes as given below.



(b) Unless the adjustment to the levelness is made properly, malfunctioning or failure of the float switch may occur.

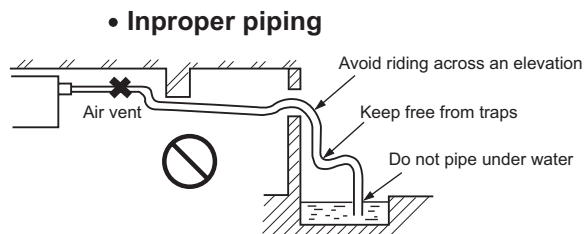
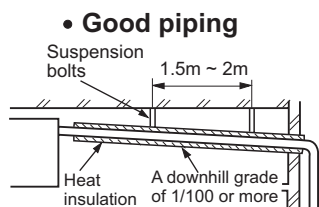
Tap selection on blower unit (When the high performance filter is used.)

Taps of blower unit are set at the standard selection at the shipping from factory. Where the static pressure is raised by employing such option as the high performance filter, etc., change the connection of connectors provided at the flank of control box as shown below.

Standard tap (at shipping)				High speed tap			
Control box side	White	Connector white	White	Moter side	White	Connector white	Black
	Blue		Blue		White		
	Yellow		Yellow		Blue		
	Red		Red		Red		
					Red		

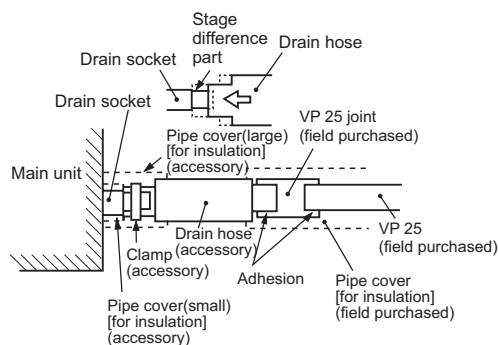
(2) Drain Piping

(a) Drain piping should always be in a downhill grade (1/50~1/100) and avoid riding across an elevation or making traps.

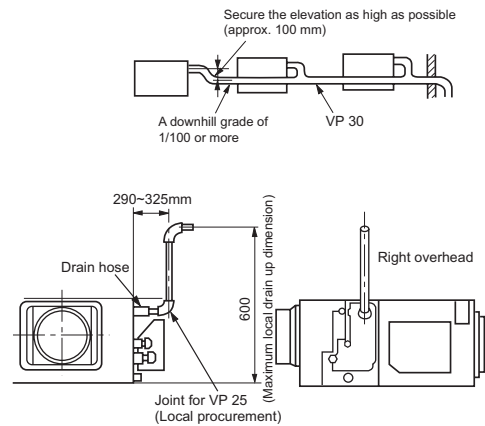


(b) When connecting the drain pipe to unit, pay sufficient attention not to apply excess force to the piping on the unit side. Also, fix the piping at a point as close as possible to the unit.

(c) For drain pipe, use hard PVC general purpose pipe VP-25(I.D.1") which can be purchased locally. When connecting, insert a PVC pipe end securely into the drain socket before tightening securely using the attached drain hose and clamp. Adhesive must not be used connection of the drain socket and drain hose (accessory).



- (d) When constructing drain piping for several units, position the common pipe about 100 mm below the drain outlet of each unit as shown in the sketch. Use VP-30(11/4") or thicker pipe for this purpose.
- (e) Be sure to provide heat insulation to hard PVC pipes of indoor placement.
- (f) Do not ever provide an air vent.
- (g) The height of the drain head can be elevated up to a point 500 mm above the ceiling, and when an obstacle exists in the ceiling space, elevate the piping to avoid the obstacle using an elbow or corresponding gadget. When doing this, if the stretch for the needed height is higher than 500 mm, the back-flow quantity of drain at the event of interruption of the operation gets too much and it may cause overflow at the drain pan. Therefore, make the height of the drain pipe within the distance given in the sketch below.
- (h) Avoid positioning the drain piping outlet at a place where generation of odor may be stimulated. Do not lead the drain piping direct into a sewer from where sulfur gas may generate.

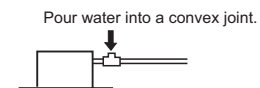
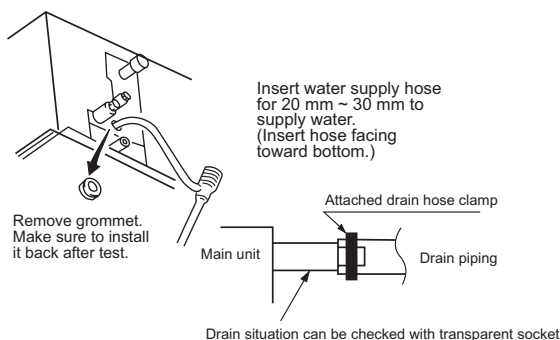


Drainage Test

- ① Conduct a drainage test after completion of the electrical work.
- ② During the trial, make sure that drain flows properly through the piping and that no water leaks from connections.
- ③ In case of a new building, conduct the test before it is furnished with the ceiling.
- ④ Be sure to conduct this test even when the unit is installed in the heating season.

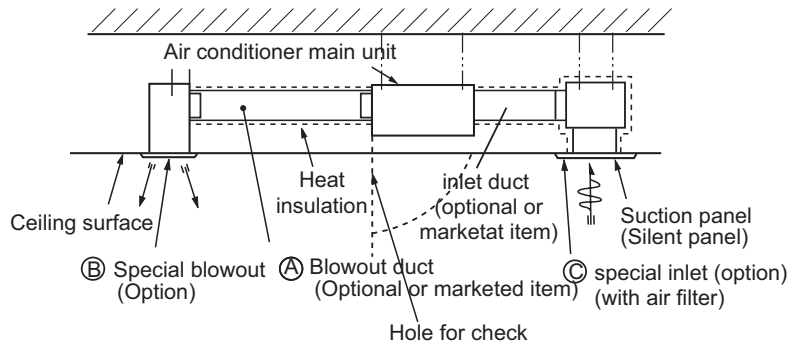
Procedures

- ① Supply about 1000 cc of water to the unit through the air outlet using a feed water pump.
- ② Check the drain while cooling operation.



(In the electrical work has not been completed, connect a convex joint in the drain pipe connection to provide a water inlet. Then, check if water leaks from the piping system and that drain flows through the drain pipe normally.)

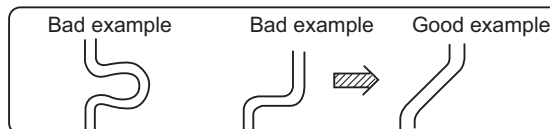
(3) Installation work for air outlet ducts



Calculate the draft and external static pressure and select the length, shape and blowout.

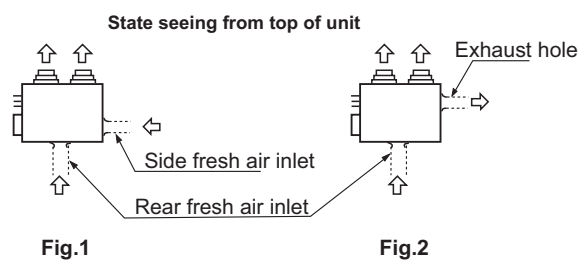
(A) Blowout duct

- 2-spot, 3-spot and 4-spot with 200 type duct are the standard specifications. Determine the number of spots based on following table.
- Note (1) Shield the central blowout hole for 2-spot.
- (2) Shield the blowout hole around the center for 3-spot.
- Limit the difference in length between spots at less than 2:1.
- Reduce the length of duct as much as possible.
- Reduce the number of bends as much as possible. (Corner R should be as larger as possible.)



- Use a band, etc. to connect the main unit and the blowout duct flange.
- Conduct the duct installation work before finishing the ceiling.

(4) Connection of suction, exhaust ducts



Duct connection position

i) Fresh air inlet

- Inlet can be selected from the side or rear faces depending on the working conditions.
- Use the rear fresh air inlet when the simultaneous intake and exhaust is conducted. (Side inlet cannot be used.)

ii) Exhaust (Make sure to use also the suction.)

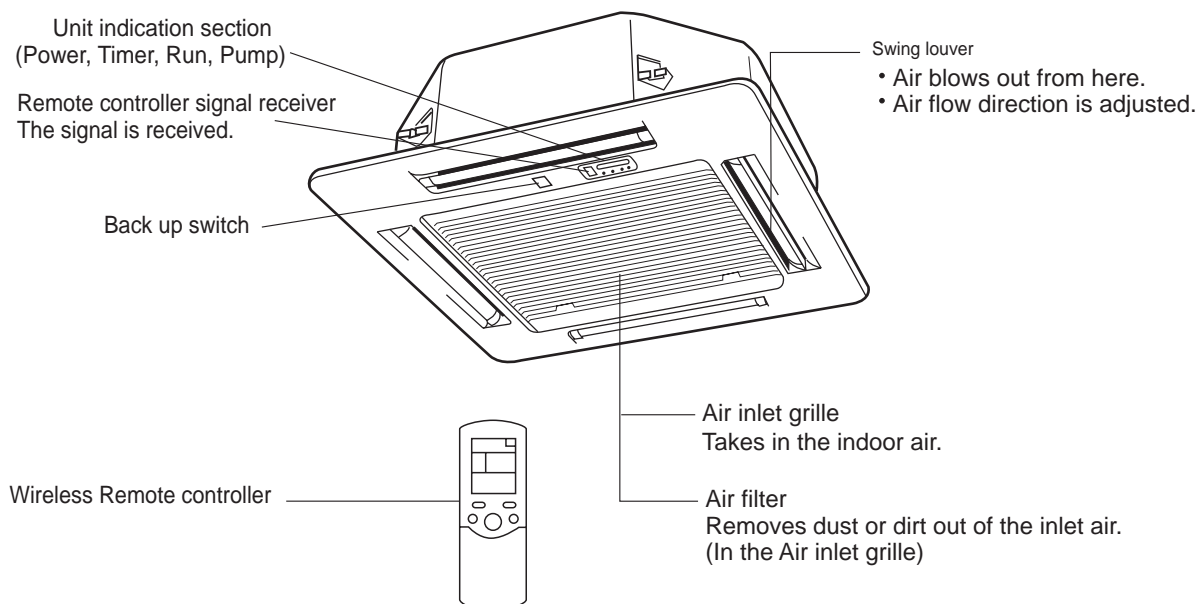
Use the side exhaust port.

5.2.3.3 Check after installation:

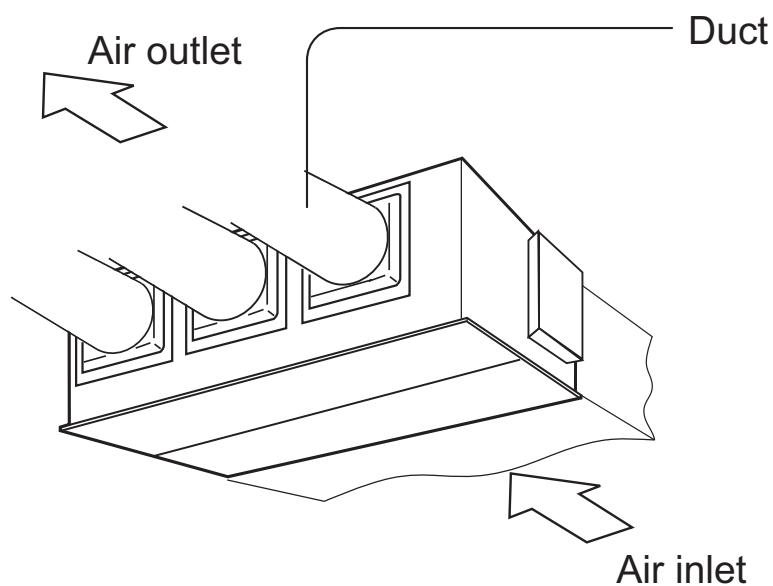
- a. If the indoor unit is installed reliably
- b. If the gas leakage test is performed
- c. If the thermal insulation of the unit is complete
- d. If the drainage is smooth
- e. If the voltage of the power supply is in accordance with the nameplate of the product
- f. If the wiring and pipeline are installed properly
- g. If the unit is earthed safely
- h. If the wire model is in accordance with the stipulation
- i. If there are obstacles at the air outlet and inlet of the indoor /outdoor unit
- j. If the length of the cooling medium pipe and the filling amount of the cooling medium are recorded

6. Parts and Functions

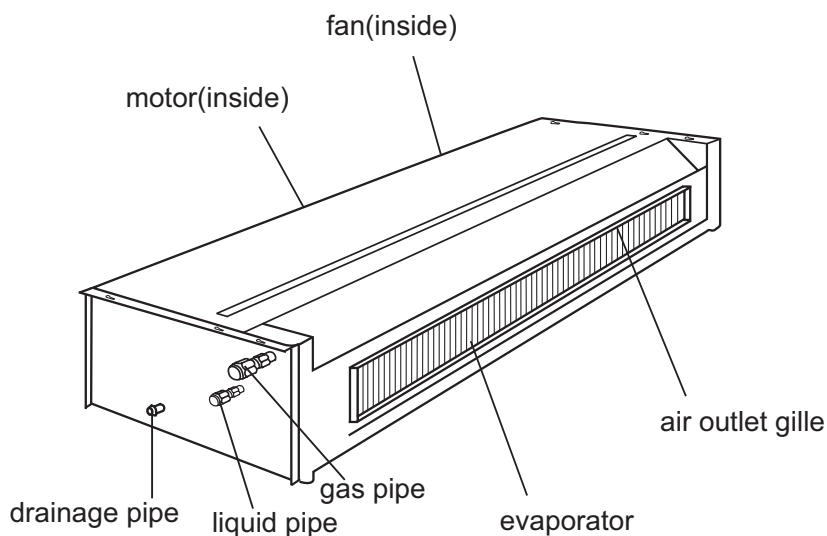
6.1 Cassette type



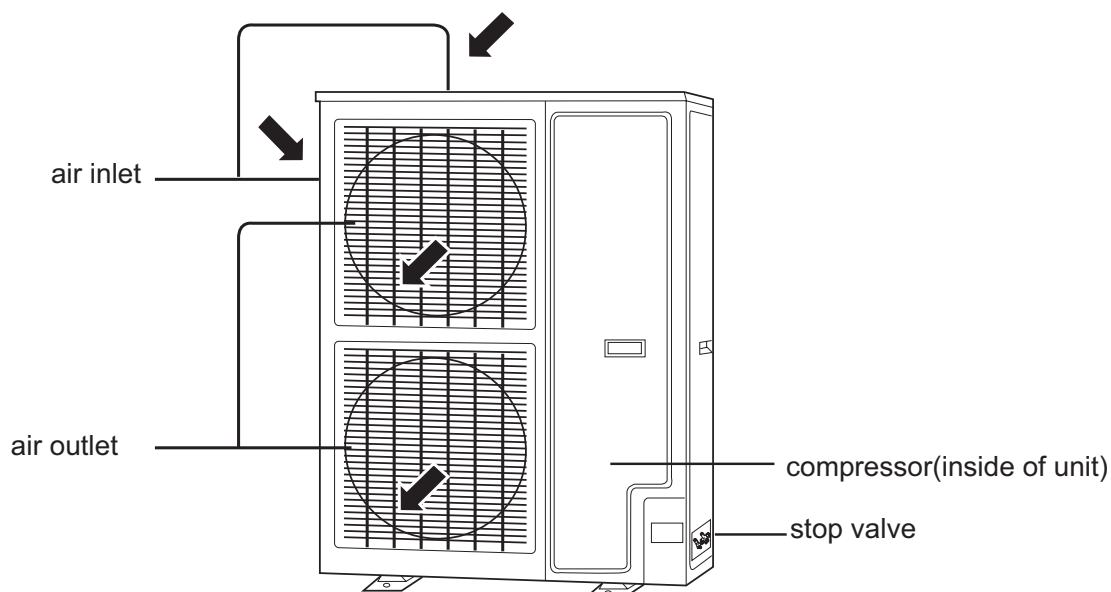
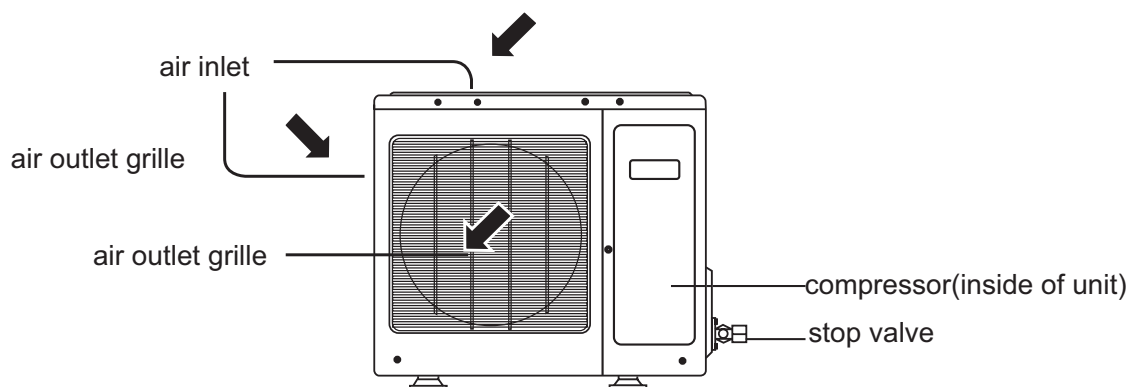
6.2 Duct type



6.3 Ceiling concealed type

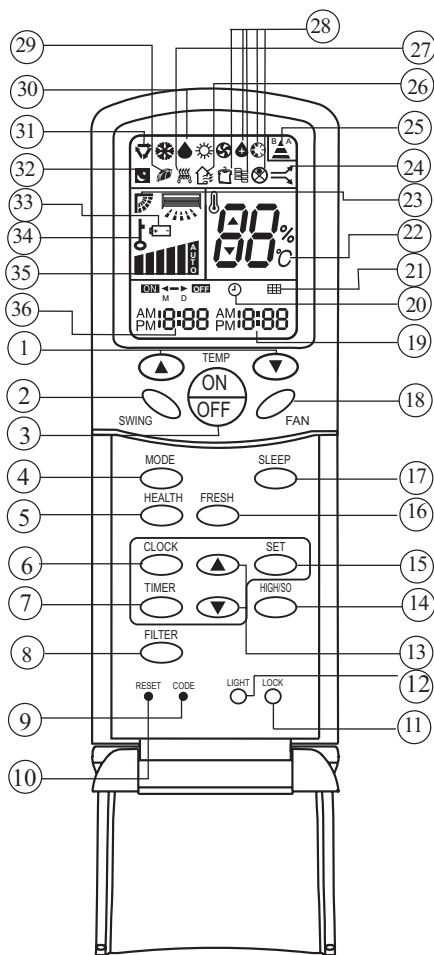


6.4 Outdoor unit



7. Remote controller functions

7.1 Remote controller YR-H71



1. TEMP Setting Button

(Used to set temperature. Setting ranges: 16°C to 30°C)

In Up/Down function, for controlling up and down filter.

2.SWING Button

If you press this button once, auto swing will be activated.

If you press this button again, the louver will fix in the present position.

3.Power ON/OFF Button

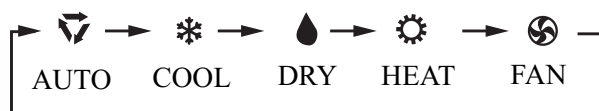
Used for unit start and stop

After power on, the LCD of remote controller will display the previous operation state (except for TIMER,SLEEP and SWING state).

4.Operation MODE

Used to select operation mode.

Every time you press MODE button, operation mode changes according to following sequence:



5.HEALTH Button

Used to set health mode, if the unit has the negative ion function and oxygen bar function.

6.CLOCK Button

Used to set correct time.

7.CLOCK Button

Used to select TIMER ON, TIMER OFF.

(Note: if time of TIMER ON is the same as TIMER OFF, TIMER ON/OFF cannot be set)

8. FILTER Button

Used to set up/down function of filter.

9. CODE Button

Used to select code A or B, for this unit, the code is A.

10.RESET Button

Press this button by using a sharp article to resume the correct operation of the remote controller in case of need, i.e. for example in case of malfunctions due to electromagnetic noise.

11.LOCK Button

Used to lock operation button and LCD display contents: by pressing this button, other buttons comes out of function and lock state display appears; if you press it again, lock state will be no more active and lock state display will disappear.

12.LIGHT Button

Used to light the control panel (only for cabinet unit)

13.Up and down Button

Used to set TIMER and CLOCK up or down.

14.HIGH/SO Button

Used to select HIGH or SOFT operation.

15.SET Button

Used to confirm TIMER and CLOCK settings.

16.FRESH Button

Used to set fresh mode, the unit will draw in fresh air.

17.SLEEP Button

(The clock must be corrected before setting sleep function)

Used to set sleep mode.

NOTE: 1.Cooling only air conditioner does not have the displays and functions related to heating.

2.HIGH/SO button

This button is activated in Cooling/Heating mode, the fan speed is in AUTO mode after pressing it and "high function" will be cancelled automatically after 15 minutes running.

18.FAN Button

Used to select fan speed:LOW,MID,HIGH,AUTO.

19.TIMER OFF Display

20.CLOCK Display

21.FILTER Display

22.TEMPERATURE Display

23.AUTO SWING Display

24.HIGH/SO Display

25.SIGNAL SENDING Display

26.FRESH AIR Display

27.ELECTRICAL HEATING Display

28.Some other buttons

All these functions are not available now.

29.HEALTH Display

Displays when healthy run function is set.

30.DEHUMIDIFICATION Display

31.Operation MODE Display

AUTO RUN	COOL RUN	DRY RUN	HEAT RUN	FAN RUN

32.SLEEP State Display

33.BATTERY Energy Display

Notify the user when it is time to change the batteries.

34.LOCK State Display

35.FAN SPEED Display

LO		
MID		
HI		
AUTO		

36.TIMER ON Display

Remote Controller' Operation

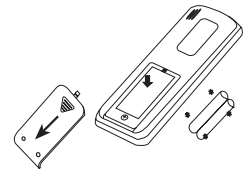
- When in use, direct signal transmission head to the receiver placed on the indoor unit

- The distance between the remote controller and the receiver should be max 7m and there should be no obstacle between them.
- Do not throw the remote controller; prevent it from being damaged.
- When operating the remote controller in an area where electronically controlled lights are installed or wireless handsets are used, please move closer to the indoor unit as the function of the remote controller might be affected by signals emitted by the above mentioned equipments.

Battery loading

Battery loading

Batteries are fitted as follows:



Remove the battery compartment lid

Slightly press and disengage the battery compartment lid marked with and then hold the remote controller by the upper section and then remove the battery compartment lid by pressing in the direction of the arrow as shown in the figure above.

Loading the battery

Ensure that batteries are correctly placed in the compartment as required for positive and negative terminals.

Replacing the battery compartment lid

The battery compartment lid is reinstalled in the reverse sequence.

Display review

Press the button to see if batteries are properly fitted. If no display appears, refit the batteries.

Confirmation indicator

If no indication is displayed after press ON/OFF button, reload the batteries.

Caution:

If the remote controller does not operate as designed after fitting new batteries of the same type, press the Reset button (marked) with a pointed article.

Note:

It is recommended that the batteries be removed from the compartment if the remote controller is not used for an extended period.

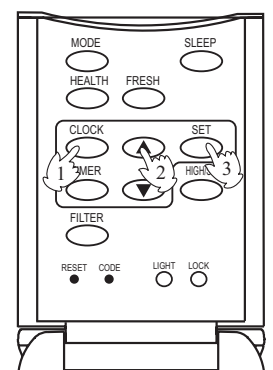
The remote controller is programmed for automatic test of operation mode after the batteries are replaced. When the test is conducted, all icons will appear on the screen and then disappear if the batteries are properly fitted.

Clock Set

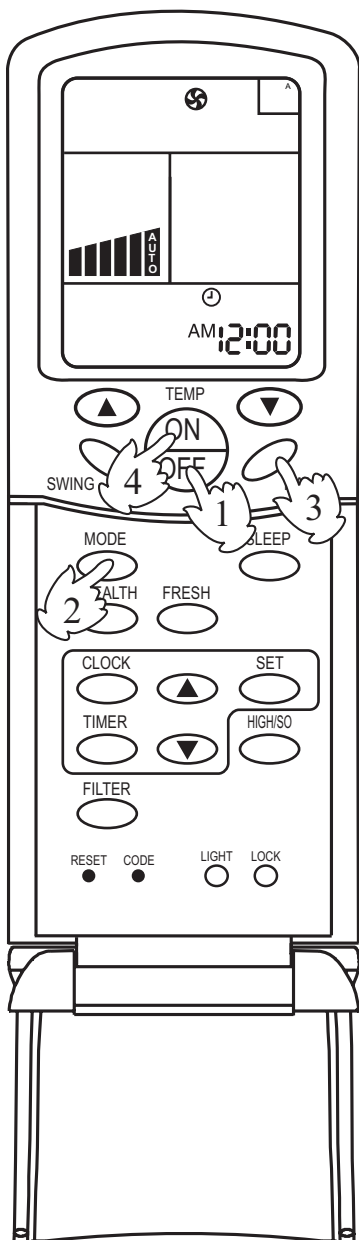
When unit is started for the first time and after replacing batteries in remote controller, clock should be adjusted as follows:

- 1.Press CLOCK button, clock indication of " AM " or " PM " flashes.
- 2.Press or to set correct time. Each press will increase or decrease 1 min. If the button is kept pressed, time will increase or decrease quickly.
- 3.After time setting is confirmed, press "SET" : AM or PM stop flashing, while clock starts working.

Note:AM means morning and PM means afternoon.



Fan Operation

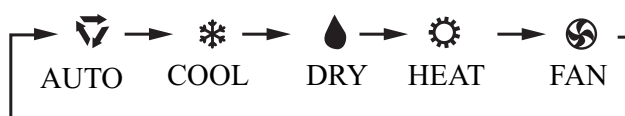


1. Unit start

Press ON/OFF button to start your air conditioner. Previous operation status appears on LCD (except for TIMER, SLEEP, and SWING setting).

2. Select operating mode

Press MODE button. At each press, operation mode changes as follows:



Then select FAN

3. Adjust fan speed

Press FAN button. At each press, fan speed changes as follows:



Air conditioner will run at the selected fan speed. When in AUTO mode, unit will adjust fan speed according to room temperature automatically.

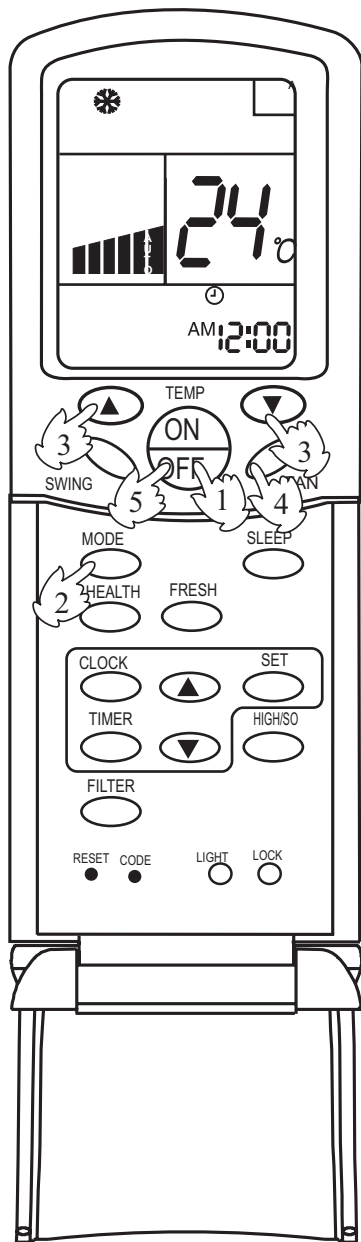
4. Unit stop

Press ON/OFF button to stop unit.

About FAN mode

When the air conditioner runs in FAN mode, it is not possible to select AUTO FAN or to set temperature.

AUTO, COOL, HEAT and DRY Operation



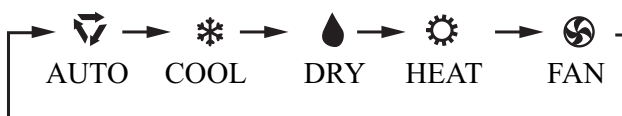
1. Unit start

Press ON/OFF button, unit starts.

Previous operation status appears on LCD (except for TIMER, SLEEP and SWING setting)

2. Select operation mode

Press MODE button. At each press, operation mode changes as follows:



Then select AUTO run or select COOL operation or select DRY operation or select HEAT operation

3. Temperature setting

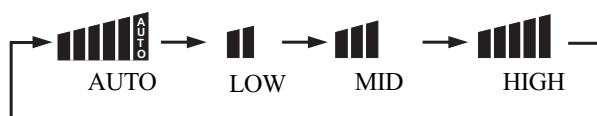
Press TEMP button.

- ▲ Every time the button is pressed, temp. setting increases 1 °C; if the button is kept pressed, temp. setting will increase quickly.
- ▼ Every time the button is pressed, temp. setting decreases 1 °C, if the button is kept pressed, temp. setting will decrease quickly.

Set proper temperature

4. Adjust FAN button

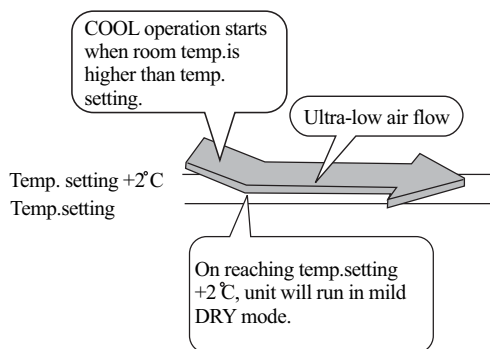
Press FAN button. At each press, fan speed changes as follows:



Air conditioner will run at the selected fan speed.

5. Unit stop

Press ON/OFF button, unit stops.



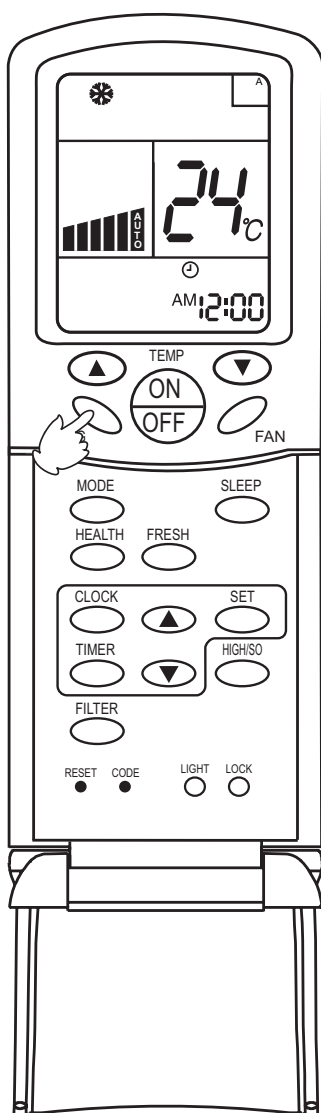
In ATUO mode, the temperature setting is not displayed on LCD. In this mode, during running air conditioner will select COOL, HEAT or FAN mode automatically according to the room temperature.
 In DRY mode, when room temperature becomes 2 °C higher than temperature setting, unit will run intermittently at LOW speed regardless of FAN setting. When room temperature is lower than temperature setting, unit will only run FAN operation.
 In HEAT mode, warm air will blow out after a short period of time due to cold-draft prevention function.

Adjusting air flow direction

AUTO SWING

Press SWING button.

Up and down airflow varies upwards and downwards. Left and right airflow varies left and right sides.



AUTO SWING

When the automatic swing louver moves to the proper angle, press SWING button can fix the airflow direction.

- Always use SWING button on the remote controller to adjust flaps. Adjusting them by hand may result in air conditioner's abnormally running.
- In COOL or DRY mode, do not leave the louver in downward position for a long time, as the water vapor close to the grille may condense and water may drop from the air conditioner.
- Please carefully set temperature when children, old or infirm people use the air conditioner.
- In case of great humidity, if the vertical flaps are completely turned towards left or right, the louver will drop water.
- Never adjust the louver directly by hand, as this could make it work abnormally. If the louver works abnormally, stop unit, restart and adjust the louver by remote controller.

After unit stops:

Displays on the LCD disappear.

All indicators on the indoor unit go out.

Swing louver automatically close the air outlet.

Hints:

As in COOL mode air flows downwards, adjusting airflow horizontally will be much more helpful for a better air circulation

As in HEAT mode air flows upwards, adjusting airflow downward will be much more helpful for a better air circulation.

Be careful not to catch a cold when cold air blows downward directly.

Sleep Function

Before going to bed you can press down the SLEEP button and the air conditioner will run so as to make you sleep more comfortably.

Before using this function, the clock must be set.

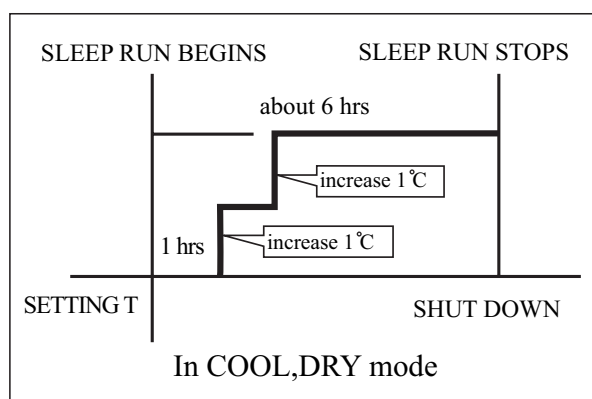
Use of SLEEP function

After the unit's start, set running mode and then press SLEEP button once to make the air conditioner have the previous-set sleep time (first power-on is "1h"). The sleep symbol will appear. Press time button ▲/▼: you can choose the time in 1~8 hours. Each time the button is pressed, the time increases/decreases 1 hour: "xh" and "OFF" indications appear on the display.

Operation Mode

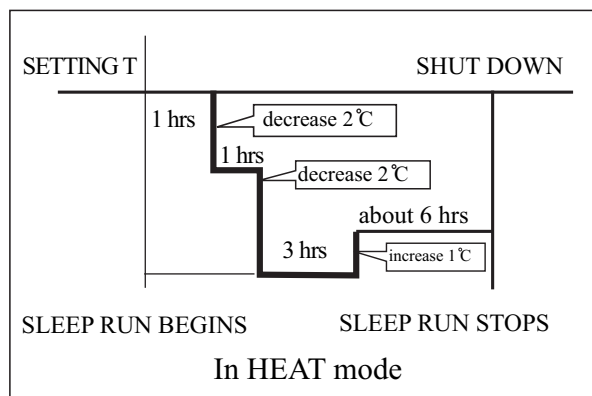
1. In COOL, DRY mode

One hour after sleeping operation start, the temperature is 1°C higher than the setting one. After another hour, temperature rises 1°C: sleep run continuously for another 6 hours and then stops. The actual temperature is higher than the setting one which is to prevent from being too cold to your sleep.



2. In HEAT mode

One hour after sleeping operation start, the temperature is 2°C lower than the setting one. After another hour, temperature decreases by 2°C more. Temperature will automatically rise by 1°C after another 3 hours' continuous operation. The actual temperature is lower than the setting one which is to prevent from being too hot to your sleep.

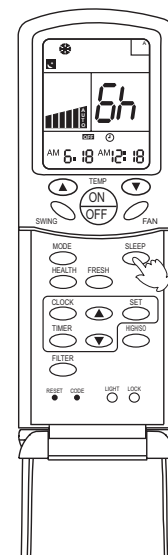


3. In AUTO mode.

The air conditioner will run in corresponding sleep operation according to the automatically selected operation mode.

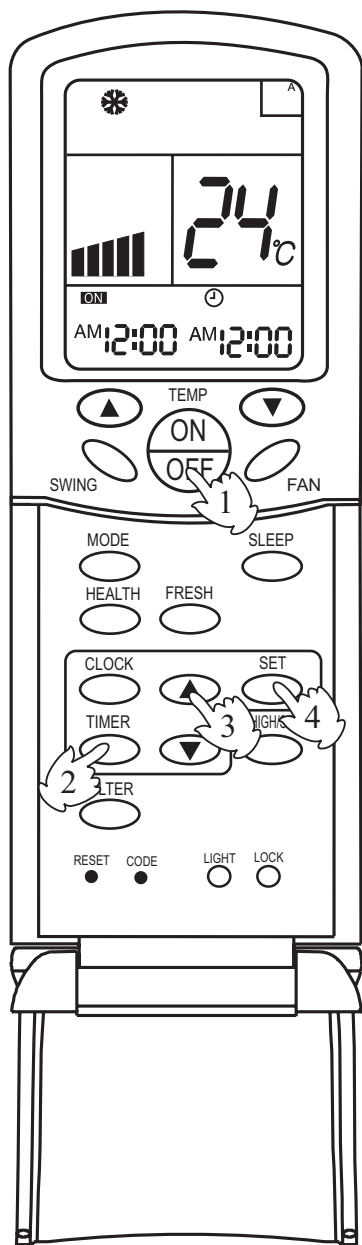
Notes:

- After setting SLEEP function, it is not possible to set clock.
- If set-sleep time does not reach 8 hours, unit will automatically stop operation after set time is reached.
- Set "TIMER ON" or "TIMER OFF" in COOL, DRY mode function first, then set SLEEP. After set SLEEP function, the TIMER function cannot be set.



Timer ON/OFF Function

Set clock correctly before starting TIMER operation



1. Unit start

After unit start, select your desired operation mode (operation mode will be displayed on LCD)

2. TIMER mode selection

Press TIMER button on the remote controller to change TIMER mode. Every time the button is pressed, display of TIMER mode changes as follows:



Then select TIMER mode as needed (TIMER ON or TIMER OFF). Now **ON** or **OFF** will flash.

3. TIMER setting (press time adjust buttons \blacktriangle \blacktriangledown)

- \blacktriangle Every time the button is pressed, time increases 10 mins. If the button is kept pressed, time changes quickly.
- \blacktriangledown Every time the button is pressed, time decreases 10 mins. If the button is kept pressed, time changes quickly. It can be adjusted within 24 hours at will.

4. Confirm setting

After setting correct time, press SET button to confirm time. Now **ON** or **OFF** stop flashing.

Time displayed: unit starts or stops at X hour X min (TIMER ON or TIMER OFF)

5. Cancel TIMER mode

Just press TIMER button several times until TIMER mode disappears.

Hints:

After replacing batteries or if a power failure occurs, TIMER setting must be reset.

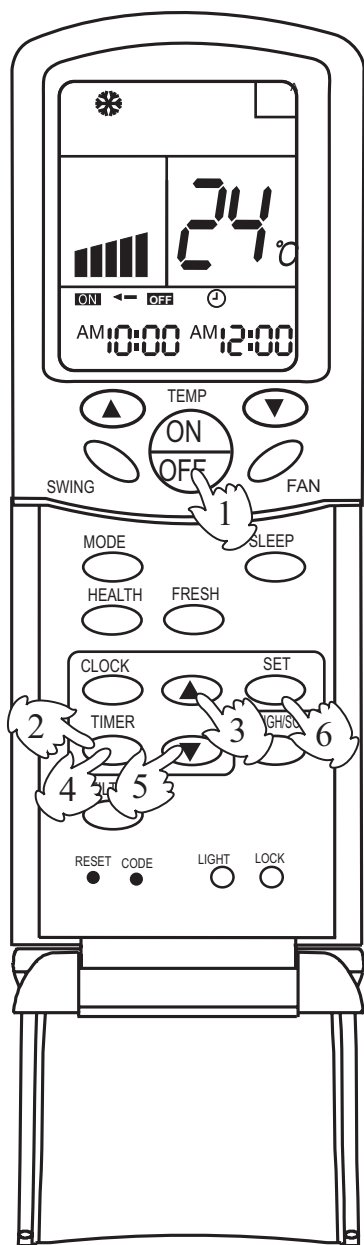
Remote controller has memory function. When you use TIMER mode next time, just press SET button after mode selection if timer setting is the same as the previous one.

Note:

After setting TIMER function, the remote controller displays TIMER time. If you want to see clock time, just press CLOCK button once: clock time will be displayed (if you press the button again continuously, you can adjust clock). 5 seconds later, the display will show TIMER time again.

Timer ON-OFF Function

Set clock correctly before starting TIMER operation



1. Unit start

After unit start, select your desired operation mode (operation mode will be displayed on LCD)

2. TIMER mode selection

Press TIMER button on the remote controller to change TIMER mode. Every time the button is pressed, display of TIMER mode changes as follows:



Then select TIMER ON-OFF mode. **ON** will flash.

3. Time setting for TIMER ON

Press time button \blacktriangle

\blacktriangle Every time the button is pressed, time increases 10 minutes. If the button is kept pressed, time will change quickly.

\blacktriangledown Every time the button is pressed, time decreases 10 minutes. If the button is kept pressed, time will change quickly. It can be adjusted within 24 hours at will.

AM refers to morning and PM refers to afternoon.

4. Timer confirming for TIMER ON

After setting correct time, press TIMER button to confirm time. Now **ON** stops to flash, while **OFF** starts flashing.

Time displayed : unit starts at X hour X min.

5. Timer setting for TIMER OFF

Press time buttons \blacktriangle and follow the same procedures in " Time setting for TIMER ON"

6. Time confirming for TIMER OFF

After time setting, press SET button to confirm time. **OFF** stops to flash.

Time displayed: unit starts at X hour X min.

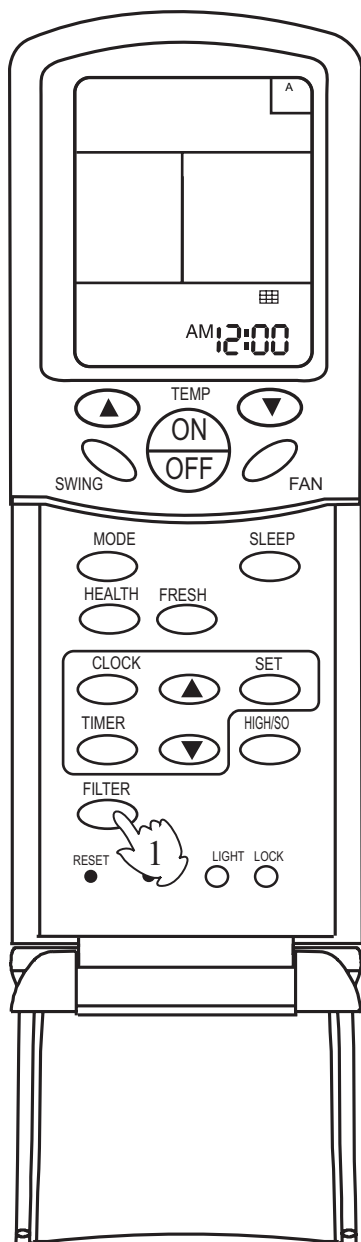
7. Canel TIMER mode

Just press TIMER button several times until TIMER mode disappears.

According to the time setting sequence of TIMER ON and TIMER OFF, either start-stops or stops-start can be realized.

If the time setting of TIMER ON is the same as TIMER OFF, TIMER ON-OFF function cannot be set.

Filter Up/Down (Optional)



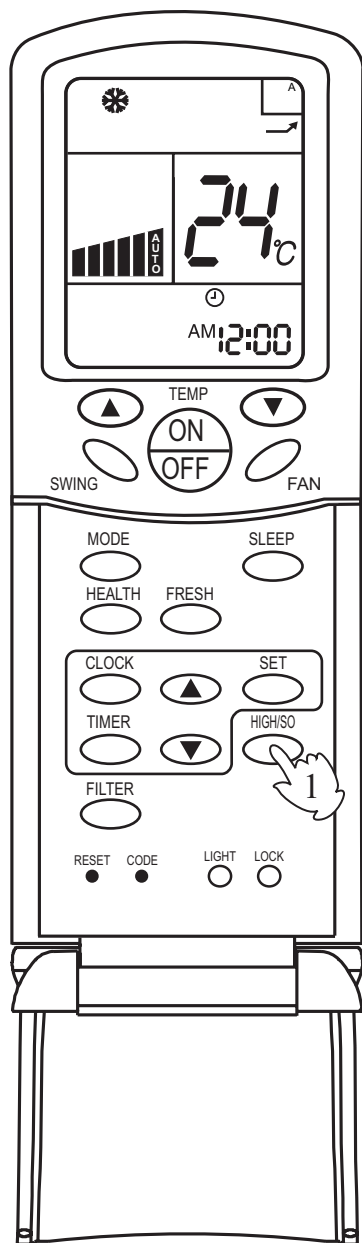
After the air conditioner has operated for a certain period, dust has accumulated on the filter, and the filter up/down function can be used to clean it.

1. Whether unit starts or stops, continuously press FILTER button for 3 seconds, and enter the filter up/down waiting status (when unit stops, the yellow TIMER indicator flashes, and filter and clock indication are displayed on the remote controller. Only the FILTER button, the temperature buttons "Δ" "▽" and time buttons ▲ are active).
2. Press temperature "▽" button or time "▼" button in filter up/down waiting status: the up/down mechanism makes the filter moving downward and does not stop until it has reached the maximum limit.
3. Press temperature "Δ" button or time "▲" button in filter up/down waiting status: the up/down mechanism makes the filter to moving upward till near the surface board and then automatically adjusts it to reset (when adjusting to reset, it will not be controlled by the remote controller till the adjustment is finished).
4. During moving downward, press temperature "Δ" button or time "▲" button: moving stops.
5. During moving downward, press temperature "▽" button or time "▼" button: moving stops.
6. Continuously press FILTER button 3 seconds again to cancel the filter up/down waiting mode (unit stops, the yellow timer indicator stops flashing, the filter goes back to the original position, the remote controller goes back to off status and only clock is displayed).

Note:

If the filter does not thoroughly go back to the original position, only needs to operate several times repeatedly.

" High mode " Operation




Outline of operation in "High Mode"

This function is suitable when the set temperature must be reached in the shortest delay.

The button "HIGH/SO", referred to this function, is effective in Cooling/Heating mode (not in Auto/Dry/Fan modes).

ON


Press the HIGH/SO button once

The indication  appears on the display of the remote controller and operation in "High Mode" starts.

The AUTO fan speed is automatically set and the corresponding indication is also displayed.

OFF

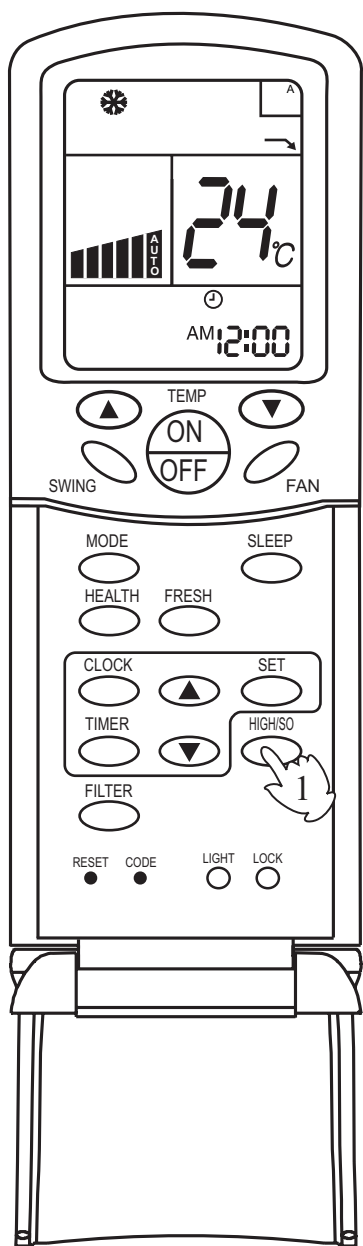
Press the HIGH/SO button twice

If the button is pressed once, the indication  is displayed on the remote controller. If you press the button once again, the indication disappears, regular operation is restored and fan speed goes back to the mode set before "High Mode" operation.

NOTICE:

- When the air conditioner is operating in " High Mode " , unevenness of room air temperature may occur due to the intensive operation in a short time.
- Anyway, operation in "High Mode", does not last for more than 15 minutes, then regular operation is automatically restored.

" Soft mode " Operation




Outline of operation in "Soft Mode"

Operation in "Soft Mode", more silent, is suitable when noises should be reduced, e.g.. for reading or sleeping. The button "HIGH/SO", referred to this operation, is effective in Cooling/Heating mode (not in Auto/Dry/Fan modes).


ON

Press the HIGH/SO button twice

The indication  appears on the display of the remote controller and operation in "Soft Mode" starts. The AUTO fan speed is automatically set and the corresponding indication is also displayed.

OFF

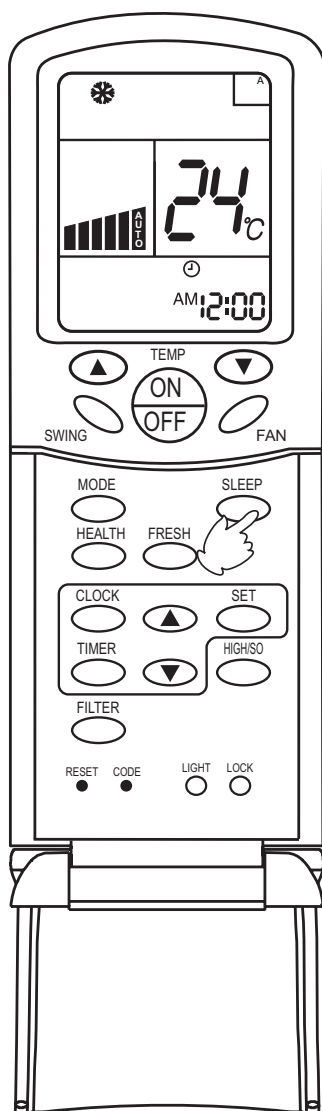
Press the HIGH/SO button twice

If the button is pressed once, the indication  is disappears from the remote controller's display. If you press the button once again, regular operation is restored and fan speed goes back to the mode set before "Soft Mode" operation.

NOTICE:

- When the air conditioner is operating in " High Mode " , unevenness of room air temperature may occur due to the intensive operation in a short time.
- Anyway, operation in "High Mode", does not last for more than 15 minutes, then regular operation is automatically restored.

Auto restart function setting



Setting method (to be applied for a necessary situation) :

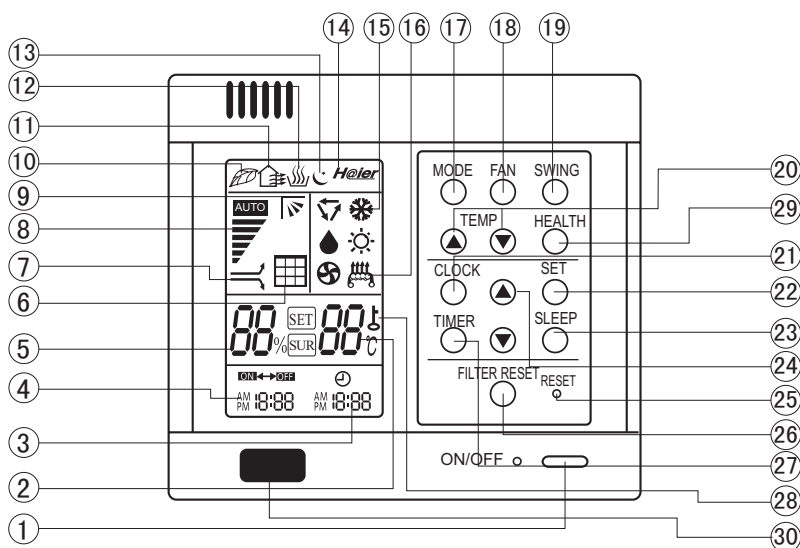
After the power failure compensation is set, if power failure suddenly occurs while the air conditioner is working, it will resume the previous working state when the power is supplied again.

Setting Method: When the remote controller is on (excluding timer mode and fan mode), press the "Sleeping" button on the remote controller 10 times within 5 seconds, and after the buzzer rings 4 times, the air conditioner will enter the state of power failure compensation.

Cancel Method: Press the "Sleeping" button on the remote controller 10 times within 5 seconds, and after the buzzer rings 2 times, the power failure compensation mode will be cancelled.

Notes: When a power failure suddenly occurs during the air conditioner is working after the power failure compensation is set, if the air conditioner will not be used for a long time, please cut off the power supply to prevent its operation from being resumed after the power is supplied again, or press the "Switch On/Off" button after the power comes again.

7.2 Wired controller



1.ON/OFF button

Used to turn on/off unit

2.Temperature display

3.Clock display

4.Timer ON/OFF display

5.Humidity display

6.Air filter cleaning display

When there is too much dust collected on the air inlet, the wire controller will show this display to remind the user to clean the air inlet. After cleaning and installation, just press the air filter reset button.

7.Super/Soft operation display

8.Fan speed display



9.Auto Swing display

10.Health state display

11.Fresh air state display

12.Humidifying state display

13.Sleep state display

14.Network control display

15.Working mode display

Working mode	Auto operation	Cooling operation	Dehumidifying operation	Heating operation	Fan operation
Wire controller					

16.Electric heating display

17.Operation mode button

Used to set working mode: Auto, Cooling, Dehumidifying, Heating, Fan

18.Fan speed button

Used to set fan speed: Low Fan, Med Fan, High Fan, Auto

19.Swing button

Used to set Auto Swing or Fixed air sending direction

20.Temperature Setting button

Used to set temperature, temperature range: 16 C~30 C

21.Clock button

Used to calibrate the time of timer and clock

22.Setting button

Used to confirm the time of timer and clock

23.Sleep button

Used to set Sleep state

24.Time Adjusting button

Used to adjust the time of timer and clock

25.Reset button

When the wire controller appears abnormal condition, use a sharp-pointed article to press this button to make the wire controller resume normal

26.Air Filter Reset button

After cleaning the air inlet, press this button, the unit can start to operate

27.Timer button

Used to set the mode of timer

28.Lock state display

29.Health

Used to control the generating oxygen function and negative ion-function

30.Remote control window

Used to receive the remote control signal

Note: 1.This model does not have the following related display and function (5)(6)(7)(9)(11)(12)(14)(16)(26)
 2.The outdoor unit no oxygen-bar function or no negative ion unit no (10)(29) health function and health display.

Calibration of clock

When turning on the unit for the first time, the clock should be calibrated. The method of calibration is:

- 1.Press "Clock" button, the Clock display " AM" " PM" will flash.
- 2.Press ▲ or ▼ to adjust time. For each press, the time will increase or decrease 1 minute. If depressing the button, the time will increase or decrease rapidly.
- 3.After confirming the time, press " Set" button, " AM" or " PM" will stop flashing, the clock will begin to work.

Recommendations

- Use COOL in summer.
- Use HEAT in winter.
- Use DRY in spring, autumn and in damp climate.

(1) Unit

Press ON/OFF button, unit starts.
 Previous operation status appears on display
 (Not Timer setting). Power indicator lights up.

(2) Select operation

Press MODE button. For each press, operation mode changes as follows:



Unit will run in operation mode displayed on LCD. Stop display at your desired mode.

(3) Select temp.

Press TEMP button

- ▲ Every time the button is pressed, temp. setting increases 1°C.
 If button is kept depressed, temp. setting will increase quickly.
- ▼ Every time the button is pressed, temp. setting decreases 1°C.
 If button is kept depressed, temp. setting will decrease quickly.
 Unit will start running to reach the temp. setting on LCD.

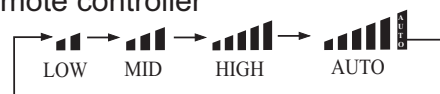
(4) Fan speed

Press FAN button. For each press, fan speed changes as follows:

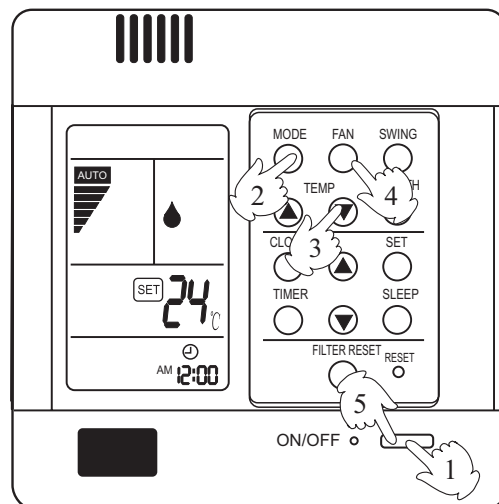
Wire controller



Remote controller



- Auto running: During the Auto running mode, air conditioning running and can auto-select the cooling, heating, fan mode according to the room temperature.
- Fan running: The AC only have air supply running no cooling and heating running at the condition, AC can't have auto air supply running, and can't display the setting temperature value on the LCD.
- During the heating running, after start the AC, in order to prevent cooled air, AC can stop for a while before send heat air.
- During the dehumidification running, when the room temp. setting temp., not setting condition according to the air speed.



Unit runs at the speed displayed on LCD. In HEAT mode, warm air will blow out after a short period of time due to cold-draft prevention function.

In DRY mode, when room temp. becomes 2°C higher than temp. setting, unit will run intermittently at LOW speed regardless of FAN setting.

(5) Unit stop

Press ON/OFF button.
 Only time and room temp remains on LCD.
 All indicators go out.
 Vertical flap closes automatically.

Hint

Wire controller can memorize each operation status.
 When starting it next time, just press ON/OFF button and unit will run in previous status.

Set Clock correctly before starting Timer operation.

You can let unit start or stop automatically at following time: Before you wake up in the morning, or get back from outside or after you fall asleep at night.

TIMER

(1)After unit start, select your desired operation mode.

Operation mode will be displayed on LCD.Power indicator lights up.

(2)TIMER mode selection

Press TIMER button to change TIMER mode.Every time the button is pressed, display changes as follows:



Select your desired TIMER mode (ON or OFF)

(3)Timer setting

Press TIME ▲/▼ button.

- ▲ Every time the button is pressed, time increases 10min.If button is kept depressed, time will change quickly.
 - ▼ Every time the button is pressed, time decreases 10min.If button is kept depressed, time will change quickly.
- Time will be shown on LCD. It can be adjusted within 24hours.

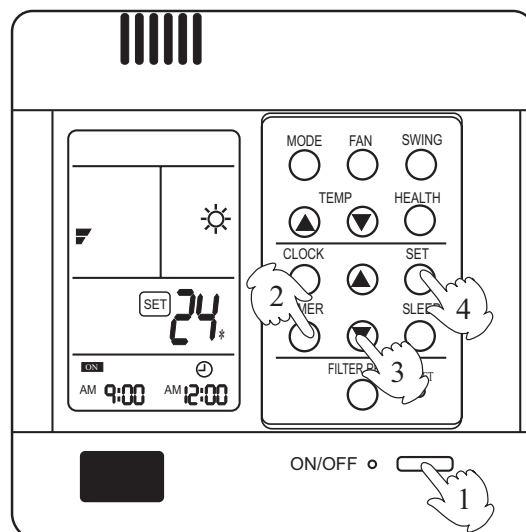
(4)Confirming your setting

After setting correct time, press SET button to confirm "ON" or "OFF" stops flashing. Time displayed: Unit starts or stops at x hour x min (ON or OFF). Timer mode indicator lights up.

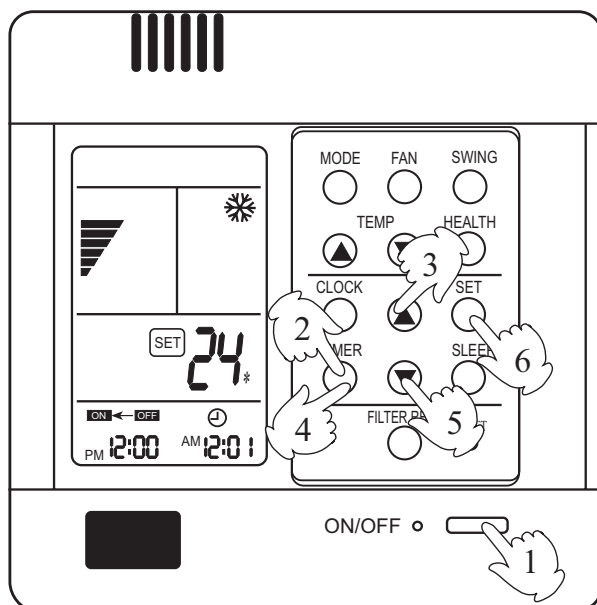
To cancel TIMER

Just press TIMER button several times until TIMER mode disappears.

- According to the seting timing open, close sequence, can realize first open then colse the unit or first close then open the unit.



- Hints:**
- Wire controller possesses memory function, when use TIMER mode next time, just press SET button after mode selecting if timer setting is the same as previous one.
 - Wire remote controller or remote controller can memorize each working condition. Next time open the unit, only need to press the ON/OFF key, the AC can work according to last time working condition.(Timing, Sleeping and Swing mode not included.)
 - From Timing close to timing open, can setting sleep mode.
 - Please close health function first before setting Timer, then you can do the TIMER ON operation.Please do not use the health function when in TIMER ON state.



TIMER ON-OFF

(1) After unit start, select your desired operation mode

Operation mode will be displayed on LCD. Power indicator lights up.

(2) Press TIMER button to change TIMER mode

Every time the button is pressed, display changes as follows:



Select ^{ON}/_{OFF}.

(3) Time setting for TIMER ON

Press TIME button.

- ▲ Every time the button is pressed, time increases 10min. If button is kept depressed, time will change quickly.
- ▼ Every time the button is pressed, time decreases 10min. If button is kept depressed, time will change quickly. Time will be shown on LCD. It can be adjusted within 24 hours.

AM refers to morning and PM to afternoon.

(4) Time confirming for TIMER

After time setting, press TIMER button to confirm. "ON" stops blinking, While "OFF" starts blinking. Time displayed: Unit starts at X hour X min.

(5) Time setting for TIMER OFF

Follow the same procedures in "Time setting for TIMER ON".

(6) Time confirming for TIMER OFF

After time setting, press SET button to confirm "OFF" stops flashing. Time displayed: Unit stops at X hour X min.

To cancel TIMER mode

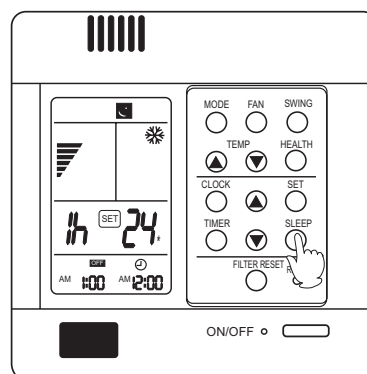
- Just press TIMER button several times until TIMER mode disappears.
- According to the Time setting sequence of TIMER ON or TIMER OFF, either Start-Stop or Stop-Start can be achieved.

Note: Before using this function, must adjust the clock, or the sleep function will be disordered.

Comfortable Sleep

At night, before going to bed you can press down the SLEEP button on the controller and the air-conditioner will run by the comfortable sleeping mode to make you sleep more comfortable.

Press SLEEP button once to make the air conditioner have the pre-set sleep time (first power-on is "1h"), the sleep symbol will appear. Press time button ▲/▼, you can choose the time in 1~8 hours. Each press of ▲/▼, the time increases/reduces 1hour and "xh" appear in the humidity setting area, "OFF" appears in "TIMER OFF" display area and timer-off time; press SLEEP button again to cancel sleep function, the sleep symbol disappears.



In cooling, dehumidifying mode

One hour after sleeping operation start, the temp. is 1°C higher than the setting one. After another hour the temp. rises 1°C and then run continuously for another 6hrs' and then close. The actual temp. is higher than the setting one which is to prevent from being too cool to your sleep.

In heating mode

One hour after start up, the temp. decrease 2°C lower than the setting one. After another hour decrease by more 2°C.

The temperature will automatically rise by 1°C after another 3hrs' operation, and then automatically close after 3hrs' continuous operation. The actual temperature is lower than the setting one which is to prevent from being too hot to your sleep.

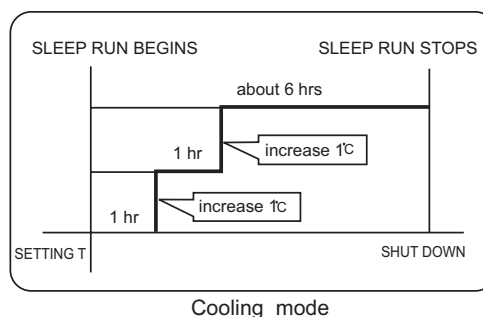
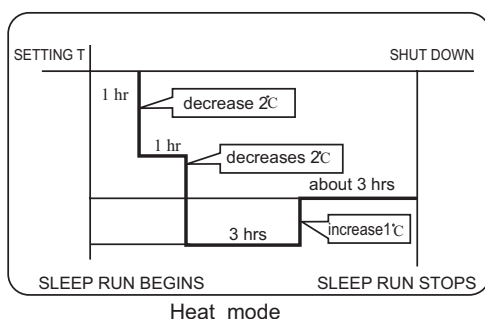
Note: In AUTO mode, unit will run in SLEEP function according to the operation mode.

After setting SLEEP function, it is forbidden to calibrate clock.

If the set sleep-time does not reach 8 hours, the unit will stop operation automatically after set time is complete.

Set "TIMER-OFF" function first, then set SLEEP, and the sleep-set is performance; set TIMER-ON function first, the sleep function can only be set before TIMER-ON; if set the SLEEP function first, the TIMER function can not be set.

- After setting sleep function, not allowed to adjust the clock. Can't use the remote controller operate the AC. If so, please cancel the sleep function first.
- After setting sleep function, can't set the timing function.



Auto restart function (to be applied for a necessary situation) :

After the auto-restart function is set, if power failure suddenly occurs while the air conditioner is working, it will resume the previous working state when the power is supplied again.

Setting Method: When the remote controller is on (excluding timer mode and fan mode), press the "SLEEP" button on the remote controller 10 times within 5 seconds, and after the buzzer rings 4 times, the air conditioner will enter the state of auto-restart function.

Cancel Method: Press the "Sleeping" button on the remote controller 10 times within 5 seconds, and after the buzzer rings 2 times, the power failure compensation mode will be cancelled.

Notes: When a power failure suddenly occurs during the air conditioner is working after the power failure compensation is set, if the air conditioner will not be used for a long time, please cut off the power supply to prevent its operation from being resumed after the power is supplied again, or press the "Switch On/Off" button after the power comes again. If the controller no sleep key, use the "swing" key instead the "sleeping" on setting the auto restart function.

Concerning MRV Auto Restart function for H-MRV models

Haier Auto Restart function when the unit power drops down suddenly, the unit microprocessor will store the previous working condition and when the power is on again, the unit will run as this memory.

Auto Restart function is designed basically on the MRV whole system, but it is suitable for each indoor unit individually.

If some of indoor units power cut down, but the outdoor unit and the other indoor units still work, maybe problems will happen such as freezing at cooling mode and overload protection at heating mode on those indoor units without power.

Reason

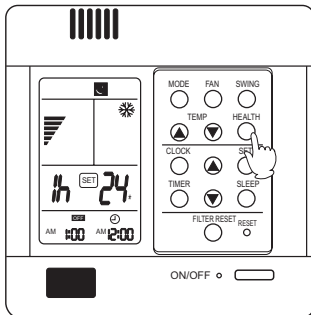
When one or some indoor units power drops down and the other indoor units are still work, the indoor units without the power, will keep the previous working condition before the power is off. And expansion valve keeps open at a kind of opening rate condition as the previous requirement, so there is refrigerant flowing in the exchanger, but the indoor fan stops working. If the units work at cooling mode, the indoor units without the power will maybe make freezing. If the unit works at heating mode, maybe the outdoor unit compressor will stop because of the pressure or temperature protection. This is our design basically on Auto Restart function currently.

Haier, Herewith, solemnly informs our customers, installers, distributors, etc. **when making installation, please make sure when the power is shut down whether artificially or accidentally, the whole system including outdoor unit and all the indoor units must be off. If you do not make the installation as our indication, Haier will not be responsible for any problem resulting from this.**

User Caution

About the remote control operation, above only take wired remote controller and remote controller as an example about the remote controller and remote receiver use method, it is the same remote controller, please use refer to above method.
 No sleep function when use remote and remote receiver.

About health function



- On the "Health" mode, if you want to setting timing open mode, should close the health first: On the timing open mode, please don't use health function.

1. How to use the health function (only for units with this function)
 After set the right function mode, press health button, remote controller or wire controller displays "🌿", oxygen pump or negative ion generator starts up to apply oxygen or negative ion to indoor unit. Press the button again, the sign "🌿" disappeared and negative ion generator stops working. After all health function of the indoor unit being fully canceled, oxygen pump stopped.

CAUTION:

When the temperature of the outdoor unit is lower than 4°C , oxygen pump is automatically stopped, if press health button just then, oxygen pump could not start up. But if the air conditioner has the negative ion function simultaneous, when press the health button, negative ion function could still be operated. When the temperature of the outdoor unit is higher than 6°C , oxygen pump could automatically resume to oxygen-make function.

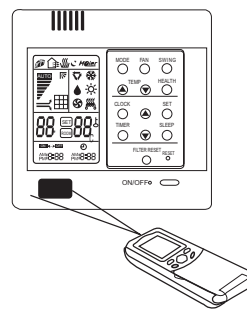
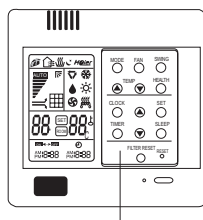
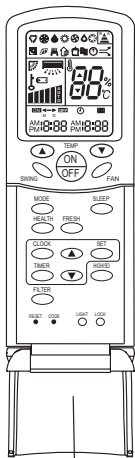
For H-MRV wired type indoor unit, the wired controller can be matched with the remote controller YR-H71 to realize the remote control function.

Left picture is a wired remote controller, which can be used on Series wired control units ,The remote controller can be purchased extrally.

Wired remote Controller using method:

1. Use one wired remote controller. See fig (1)
2. Also can buy a remote controller extrally, realize wired remote control + remote control dual control modes.

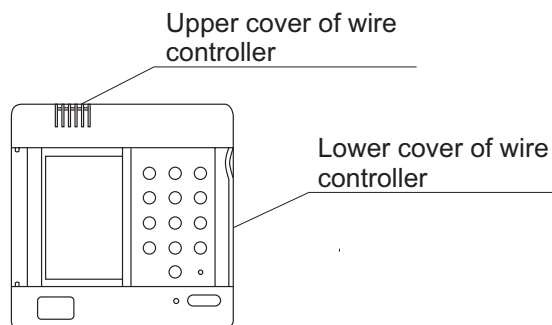
3. When the remote controller can be used on series wired remote controller units , than please press the botton "CODE" to choose the program of code "A"



1. Remove upper cover of wire controller

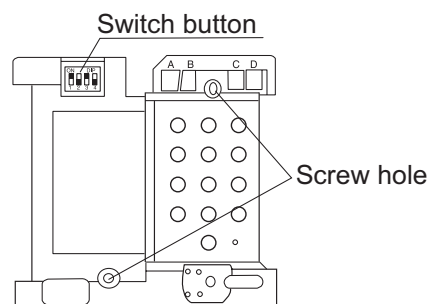
Remove upper part of wire controller by press.

PCB is mounted on lower part of wire controller, be careful not to damage it.



2. Install the wired remote controller

Please drill two holes on the wall according to the back cover screw hole position of the wire remote controller, then strike the wood block to the holes respectively, then align the 2 screw hole of the wire controller back cover to the wood block, fasten the wire remote controller to the wall use wood screws.



3. Switch setting

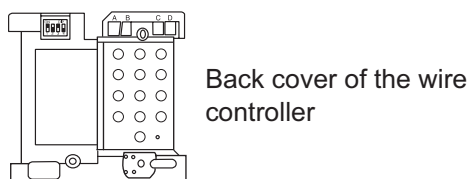
The switches setting as follows: 1.ON 2.OFF 3.ON 4.OFF

Note

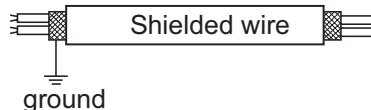
Try as far as possible a flat surface for installation. Don't use excessive force when tightening screws, or lower part might get deformed.

4. Connecting method as the following chart

No	Symbol	colour	contents
1	A	White or Green	12V
2	B	Red	Gnd
3	C	Yellow	COM
4	D		



- Use shielded wires for telecommunication between wire controller and indoor unit; indoor unit and outdoor unit. Ground the shield on one side.
- Otherwise misoperation because of noise may occur.
- Signal wire is self-provided by user.



5. Replace the upper cover of wire controller

Be careful not to hold down the wiring.

Hint 1. Power supply switch and signal wire should be prepared by the user.
 2. Don't touch PCB with hand.

7.3 Remote controller YR-H71

If the unit is wired type and it is without the remote receiver, you can use the remote receiver RE-01 and the remote controller YR-H71 to realize the remote function. The installation of remote receiver and usage function are as follows:

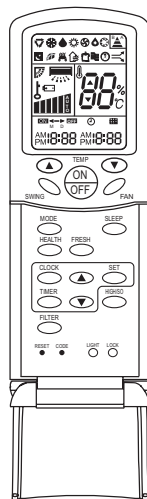
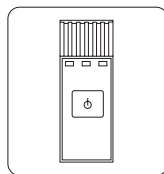
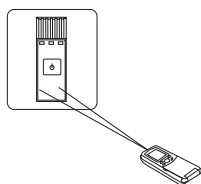
The right figure is a remote controller, which can be used on series remote control units and the matching remote control receiver

1. Remote control receiver using method :

Use remote controller control the remote control window of the remote control receiver.

2. Series remote controller units

please press the button "CODE" to choose the program of code "B"



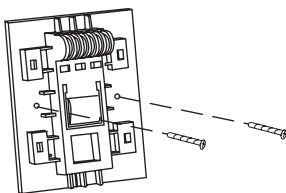
Remote receiver Remote controller

Installation of receive display

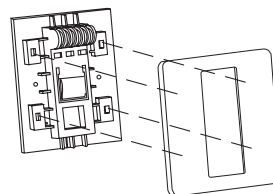
Because of the temperature sensitive device, do not install the receive display at straight sunlight place, either in front of air outlet grill, for it is effected greatly from cool air and heat air, the receive display is at least 20mm distance to the air outlet grill.

Since there is light sensitive device which receives wireless remote signal, so do not installed behind the window curtain or other obstacles, in order not to obstruct the signal.

Must fix the remote control wire far from strong electricity (such as the wiring of electric light, air conditioner, etc.) and weak electricity (such as the wiring of telephone, interphone, etc.).



1. Fix the receive display with screws on the selected place

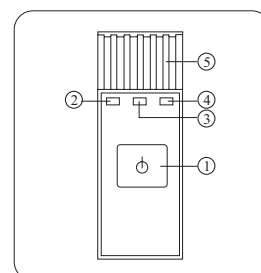


2. Place the panel onto the fixed frame, pay attention that the four claws must be placed into the corresponding four poles on the frame

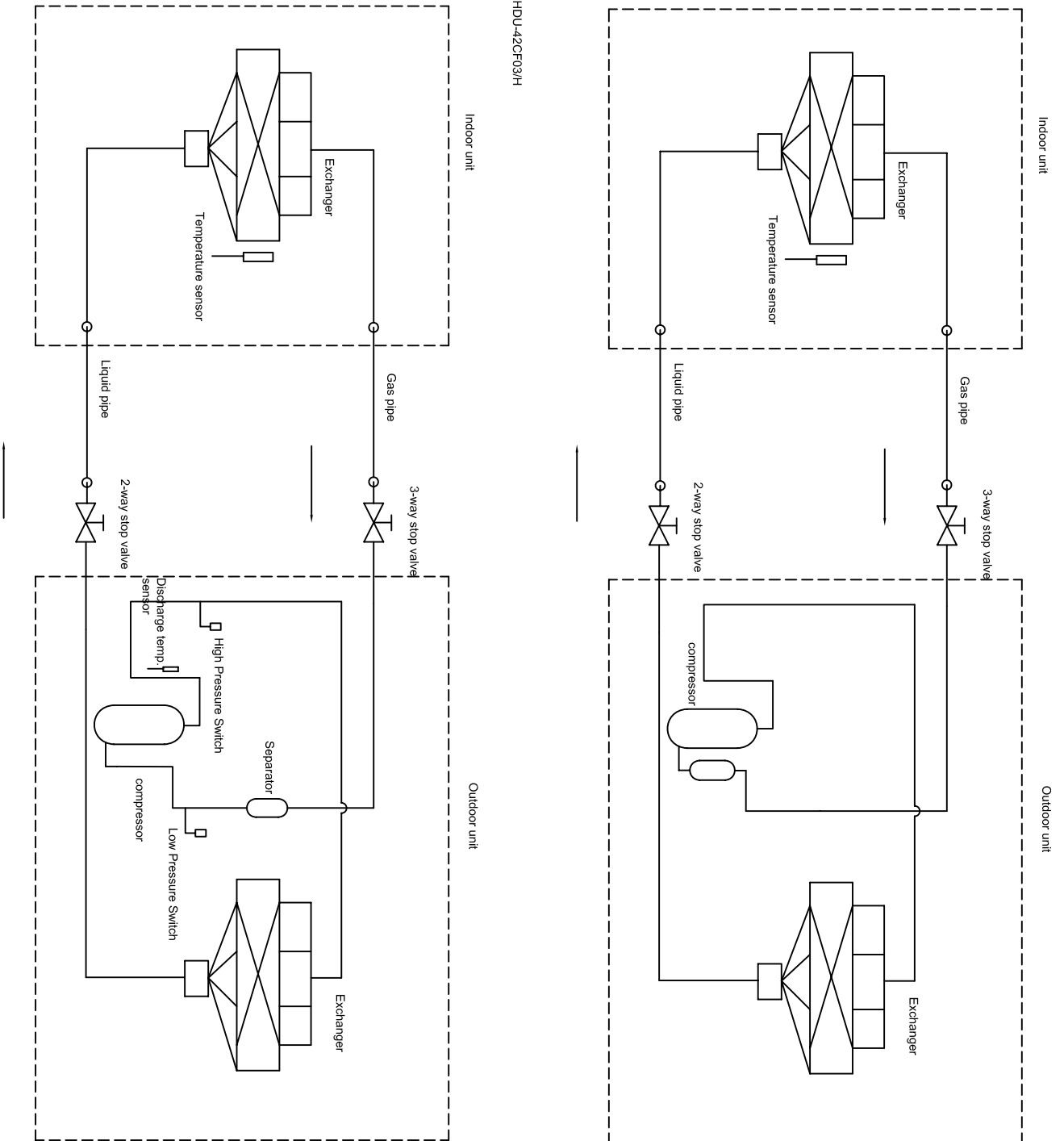
Connecting wiring method of receiver :

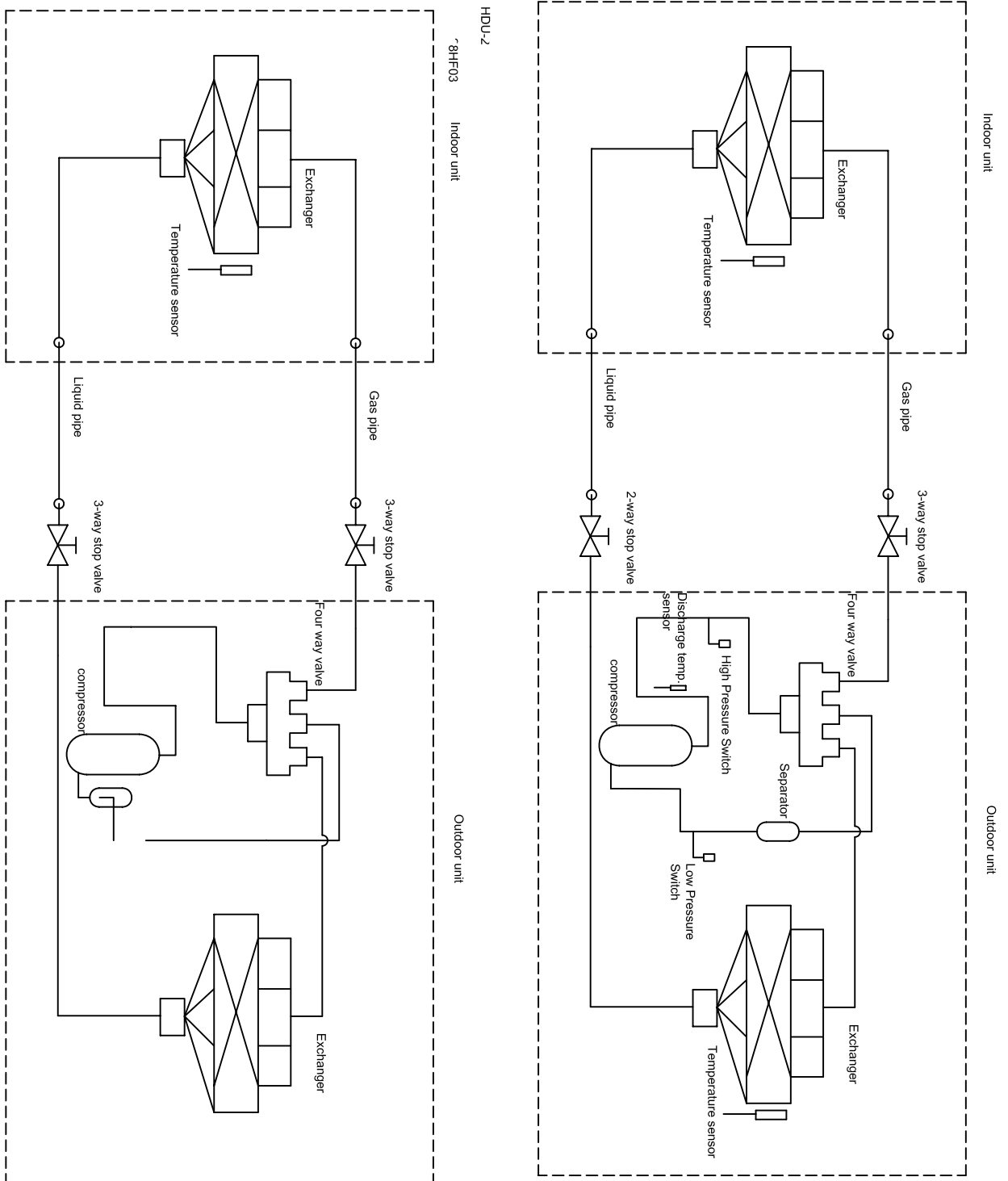
Refer the indoor unit wiring diagram .
 Safety cautions see the electrical wiring part .

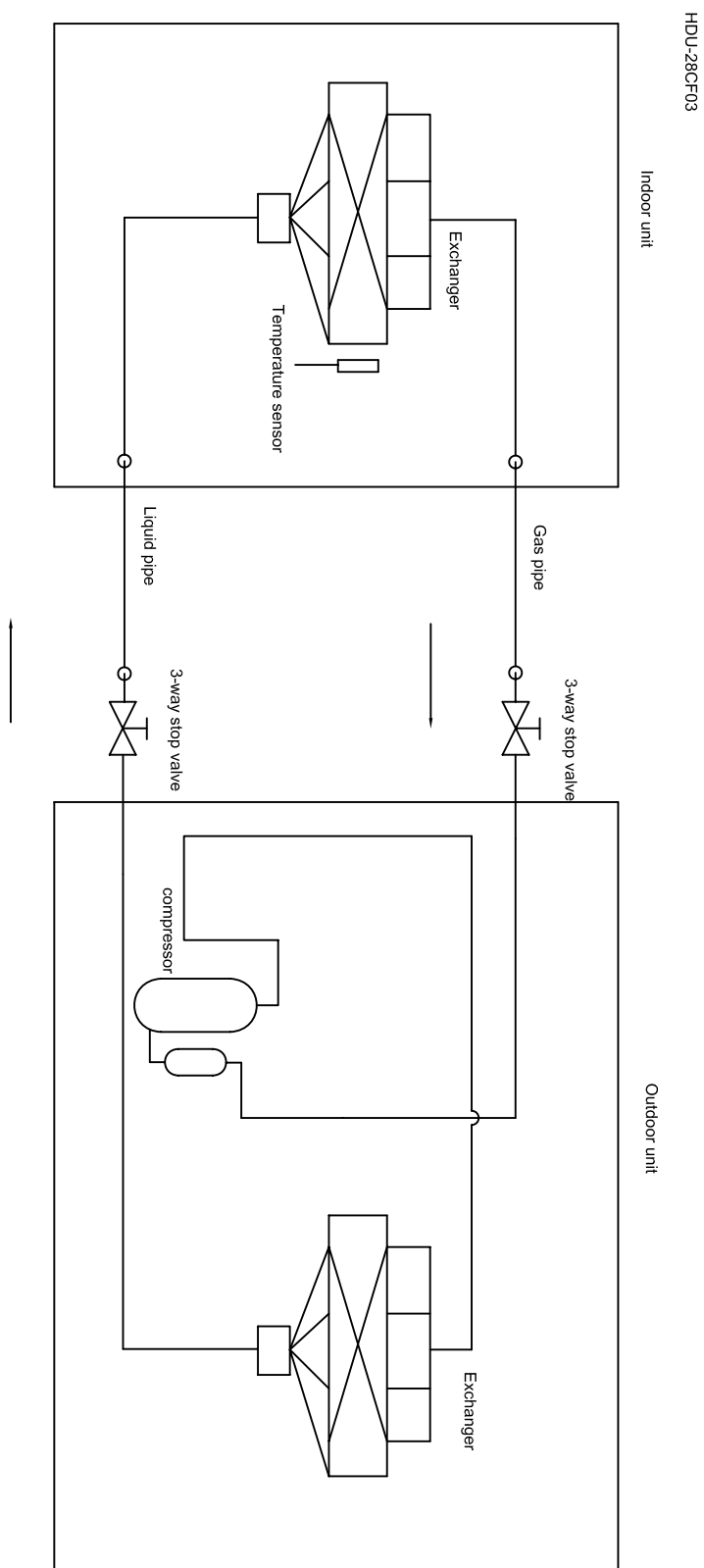
- ①. Emergency switch
- ②. Running lamp: When the compressor working, this lamp bright.
- ③. Timing lamp: When the unit been setting Timing running, this lamp bright.
- ④. Power lamp: After open the unit, this lamp bright when the unite enter health running, the lamp change from orange to blue lamp.
- ⑤. Indoor temp. sensor: Test the room temperature.



8. Refrigerant Diagram







9. Electrical Control Functions

9.1 Control Features

The brief introduction includes those for each item of various types of air conditioners and their electric control functions.

9.1.1 Brief introduction of electric control

(1) Automatic run

a. Cooling-heating type

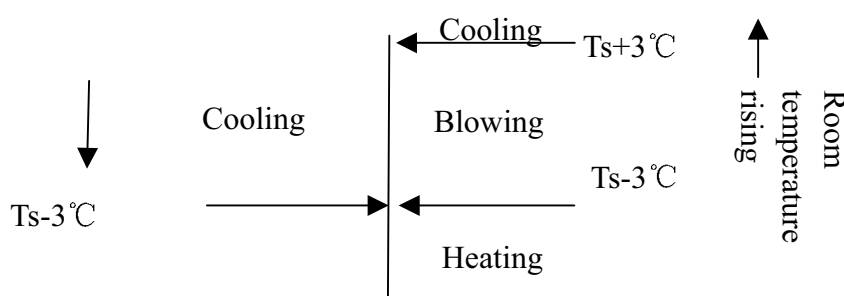
After the machine being started and running mode changes to AUTO, the system will decide running mode according to difference between the present room temperature and setting temperature, then runs as the decided mode. In the following selections, T_r means room temperature and T_s means setting temperature.

Select running mode according to the following conditions at the first time to enter Auto mode:

- $T_r \geq T_s - 3^\circ\text{C}$ to select cooling mode (with setting temperature being $T_s + 3$)
- $T_r < T_s - 3^\circ\text{C}$ to select heating mode (with setting temperature being T_s)

After the system entering auto run mode, the running mode can convert automatically according to variation of room temperature between cooling, blowing and heating in the way shown as the chart below:

Room temperature rising



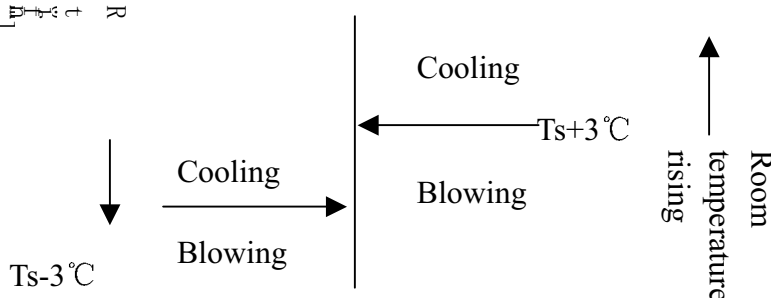
b. Single Cooling Type

Select running mode according to the following conditions at the first time to enter Auto mode:

- $T_r \geq T_s + 3^\circ\text{C}$ to select cooling mode
- $T_r < T_s + 3^\circ\text{C}$ to select blowing mode

After the system entering auto run, the running mode can convert automatically according to variation of room temperature between cooling and blowing functions in the way shown as the chart below:

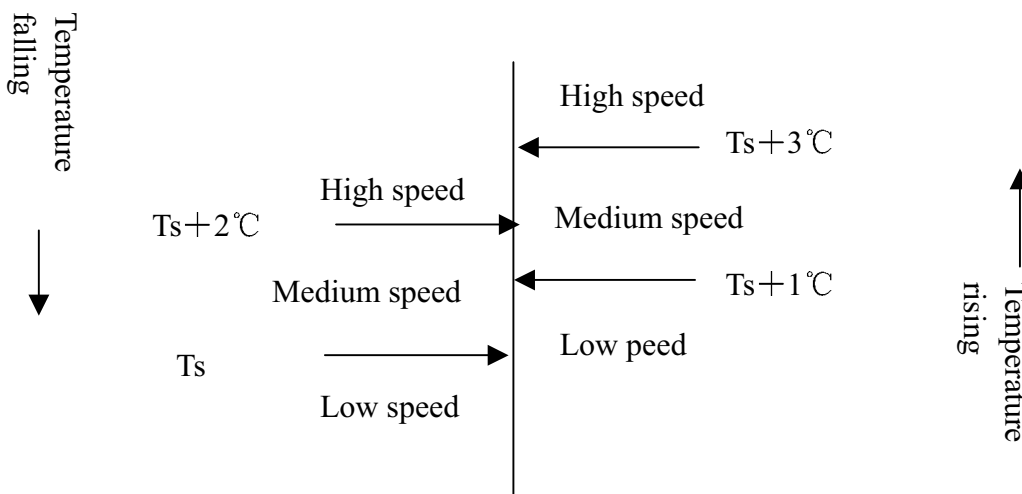
Room temperature rising



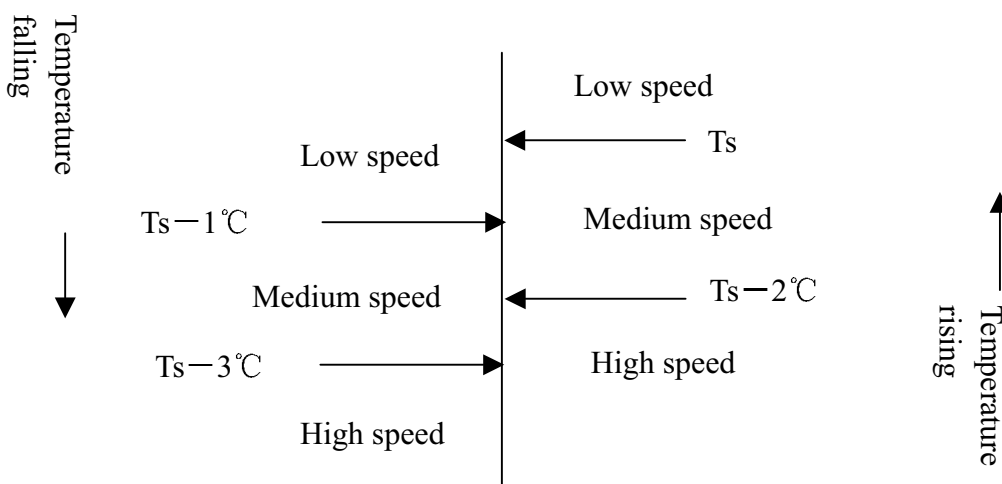
(2) Auto Selection of Wind Speed

In the following, T_r means room temperature while T_s means setting temperature.

a. During cooling program, conversion of wind speed from the low to high won't work until the present speed has continued for 3 minutes while conversion from the high to low needs no time delay. The chart below is the sketch map of conversion:



b. During heating program (applicable for cooling-heating type), conversion of wind speed from the low to high won't work until the present speed has continued for 3 minutes while conversion from the high to low needs no time delay. The chart below is the sketch map of conversion:



(3) Dehumidifying program

In the following, T_r means room temperature while T_s means setting temperature.

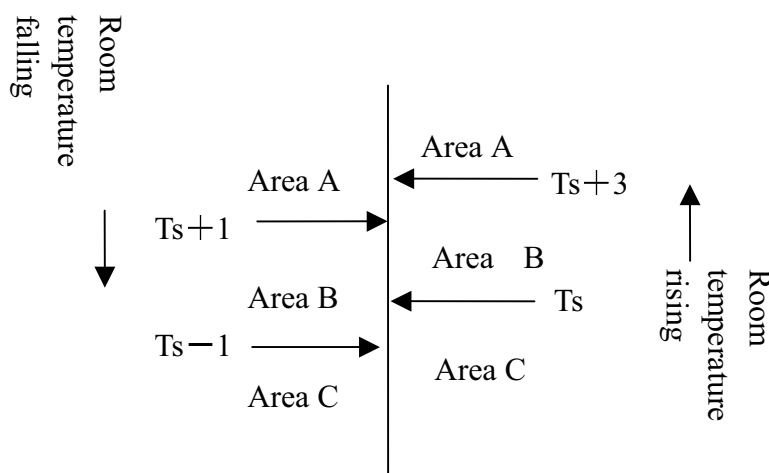
a. After the system entering dehumidifying program, the compressor, outdoor and indoor blowing fans run according to the following rules:

(1) $T_r > T_s + 2^\circ\text{C}$, the compressor and outdoor blowing fan run continuously while indoor

blowing fan runs at setting wind speed. This working area is defined as area A.

- (2) $T_s \leq T_r \leq T_s + 2^\circ\text{C}$, the compressor and outdoor blowing fan run for 10 minutes then pause for 6 minutes, while indoor blowing fan runs at low wind speed. This working area is defined as area B.
- (3) $T_r < T_s$, the compressor and outdoor blowing fan stop working while outdoor blowing fan runs at low wind speed. This working area is defined as area C.

a. After dehumidifying program starting, the system converts between A, B and C areas according to variations of room temperature with running mode being shown as the chart below:



- (4) Cutoff protection against overload and overheat

During heating program, if the indoor blowing fan has been started and the compressor has been running more than 2 minutes, and the **temperature of indoor coil pipe (Ticp)** $> 64^\circ\text{C}$, the outdoor blowing fan will stop running; If $Ticp \leq 50^\circ\text{C}$ and the outdoor blowing fan has kept stop state for 45 seconds, then it will restore rotation; If $Ticp > 67^\circ\text{C}$ and such temperature has last for 10 seconds, the compressor will stop running and indoor blowing fan run according to conditions as it reaches setting temperature. When $Ticp < 58^\circ\text{C}$, and the compressor has kept stop state over 3 minutes, then the compressor and outdoor blowing fan will restore normal running.

Cutoff protection for heating current

After 60 seconds from the compressor being started, if CT current exceeds I1 (9.2A) and such case has kept 5 seconds, the outdoor blowing fan will stop. If 45 seconds has passed after the outdoor blowing stops and the current of the compressor is less than I2 (7.5A), the blowing fan will restore running. If CT current exceeds I3 (14.3A) and such case lasts for 3 seconds, the compressor and outdoor blowing fan will stop. The compressor will not restore running until 3 minutes passes with CT current less than 12A.

- (5) Cool wind prevention during heating program

At the first time entering heating program or after ending the latest frost removal, if the **temperature of indoor coil pipe (Ticp)** $< 28^\circ\text{C}$, the indoor blowing fan will stop running; If $28^\circ\text{C} \leq Ticp < 38^\circ\text{C}$, the indoor blowing fan will run at low speed; If $Ticp > 38^\circ\text{C}$ or the compressor has been running for more than 4 minutes, the indoor blowing fan will run at

setting wind speed.

(6) Afterheat blowing during heating program

During heating program, the compressor will stop running (except overheat protection or frost removal) while the indoor blowing fan will firstly run for 50 seconds at low speed then stop.

(7) Frost removal control (applicable for cooling-heating type)

(1) Starting conditions for frost removal:

- A. The indoor unit is in overload protection and outdoor blowing fan stops. The outdoor blowing fan does not enter overheat mode in 10 minutes after it is restarted, the compressor has run over 45 minutes totally while 20 minutes continuously, and the temperature of indoor coil pipe is lower than 43°C;
- B. After the compressor continuously running for 20 minutes, the temperature of indoor coil pipe falls 1°C every 6 minutes and such case continuously appears three times, and the temperature of indoor coil pipe is less than 40°C, and 5 minutes have passed after the compressor is restarted;
- C. The compressor has run totally over 3 hours while 20 minutes continuously, and the temperature of indoor coil pipe is less than 40°C;
- D. The difference between room temperature and the one of indoor coil pipe is less than 16 °C and the compressor has totally run over 45 minutes while 20 minutes continuously;

Frost removal will start if any one of the above conditions is satisfied.

(2) Ending conditions for frost removal:

- 1) Time of frost removal has exceeded 9 minutes;
- 2) CT current exceeds I4(8.2A);

(3) Actions of each load after the frost removal starts:

The compressor and outdoor blowing fan stop, and indoor blowing fan also stops. 55 seconds later the reversal valve is closed and next 5 seconds later the compressor is started.

(4) Actions of each load after the frost removal ends:

The compressor stops running while outdoor blowing fan immediately runs at high speed, 55 seconds later the reversal valve is opened and next 5 seconds later the compressor restores running and indoor blowing fan runs as conditions for cool wind prevention.

(8) Freeze protection

After the compressor has run for 9 minutes, the system will check **temperature of indoor coil pipe (Ticp)**. If Ticp is less than -1°C, the compressor and outdoor blowing fan will stop. They will run again after the compressor stops if both the following conditions are satisfied:

- 1) 3 minutes have passed since compressor stops.
- 2) Ticp exceeds 7°C.

(9) 3 minutes protection for compressor

After compressor stops, it cannot be started until 3 minutes later. During the machine's running, if time after losing power not exceeds 3 minutes, the compressor cannot be

restarted until 3 minutes later after it is reenergized.

(10) Power breakdown memory

If the machine suddenly loses power while running, or stops for maintenance or trouble shooting, it will restart running as the status when it stops after the power is restored.

Note: 1. Function setting: Continuously press sleep button on the remote controller 10 times in 5 seconds and buzzer on control panel shall beep 4 times.

2. Memory content: Running mode, wind speed setting, temperature setting, swing status.

3. Cancel: Press sleep button on the remote controller 10 times and buzzer on control panel beeps 2 times.

(11) Control of water pump

a. In cooling (including automatic cooling mode) and dehumidifying modes, the water pump works if the compressor runs while stops 5 minutes later after the compressor stops.

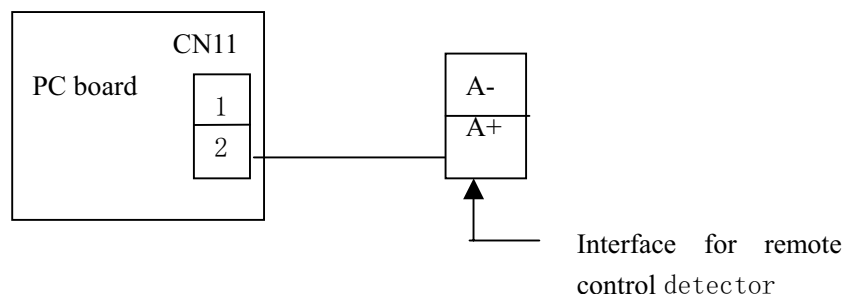
b. When water tank is fully filled, the float switch will be off. The water pump will start to work after a controller has detected this signal and it will continue working for 5 minutes after the float restores to normal state.

c. If the full water signal is detected continuously over 5 minutes, the water pump indicator lamp will flash to alarm and compressor stops running. The water pump will run 5 minutes, then pause for 5 seconds before next 5 minutes' running, ... until the float restores to normal state, after which the pump will run for 5 minutes then stop.

(12) Monitoring of remote network

Through preset interface, the air conditioner is connected to remote control detector (made by Haier) with 2-core cables for wire communication, to execute instructions sent from computer or centralized controller via remote control detector and meanwhile send present running status and trouble information of the machine to remote control detector.

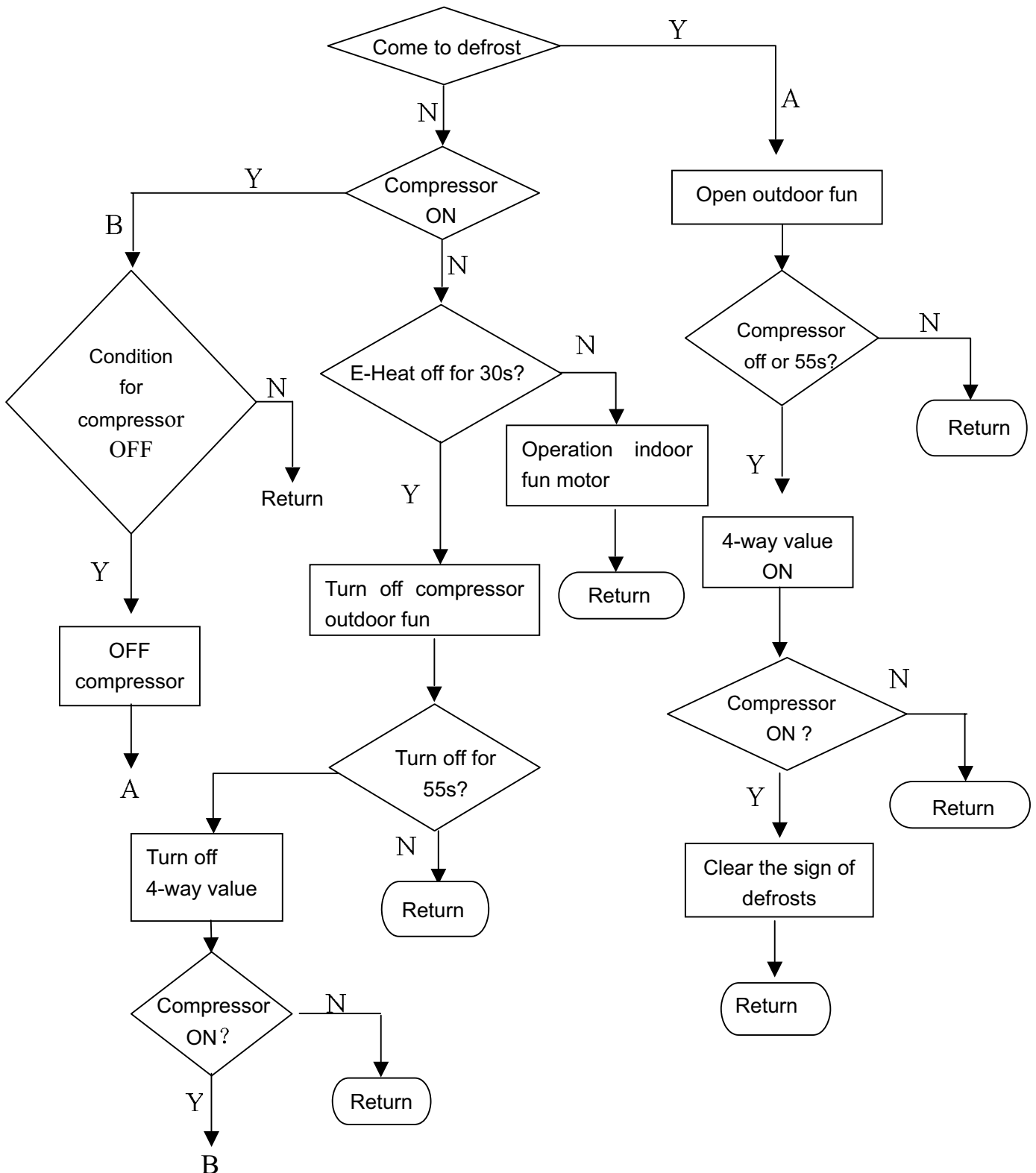
Connection between air conditioner and remote control detector:



(13) Trial run

Under shut-down state, hold pressing mandatory button. The buzzer will beep once, then twice after 5 seconds. Release the button to enter mandatory cooling mode, under which the indoor blowing fan runs at high speed with both the compressor and outdoor blowing fan working. Press the mandatory button again can end the mandatory mode.

9.2 Defrost operation flow chart



10. Diagnostic information (troubleshooting)

10.1 System failure

If the refrigerant in the system cannot flow fluently or the airflow circles more slowly, please check due to the following procedures.

Cooling:

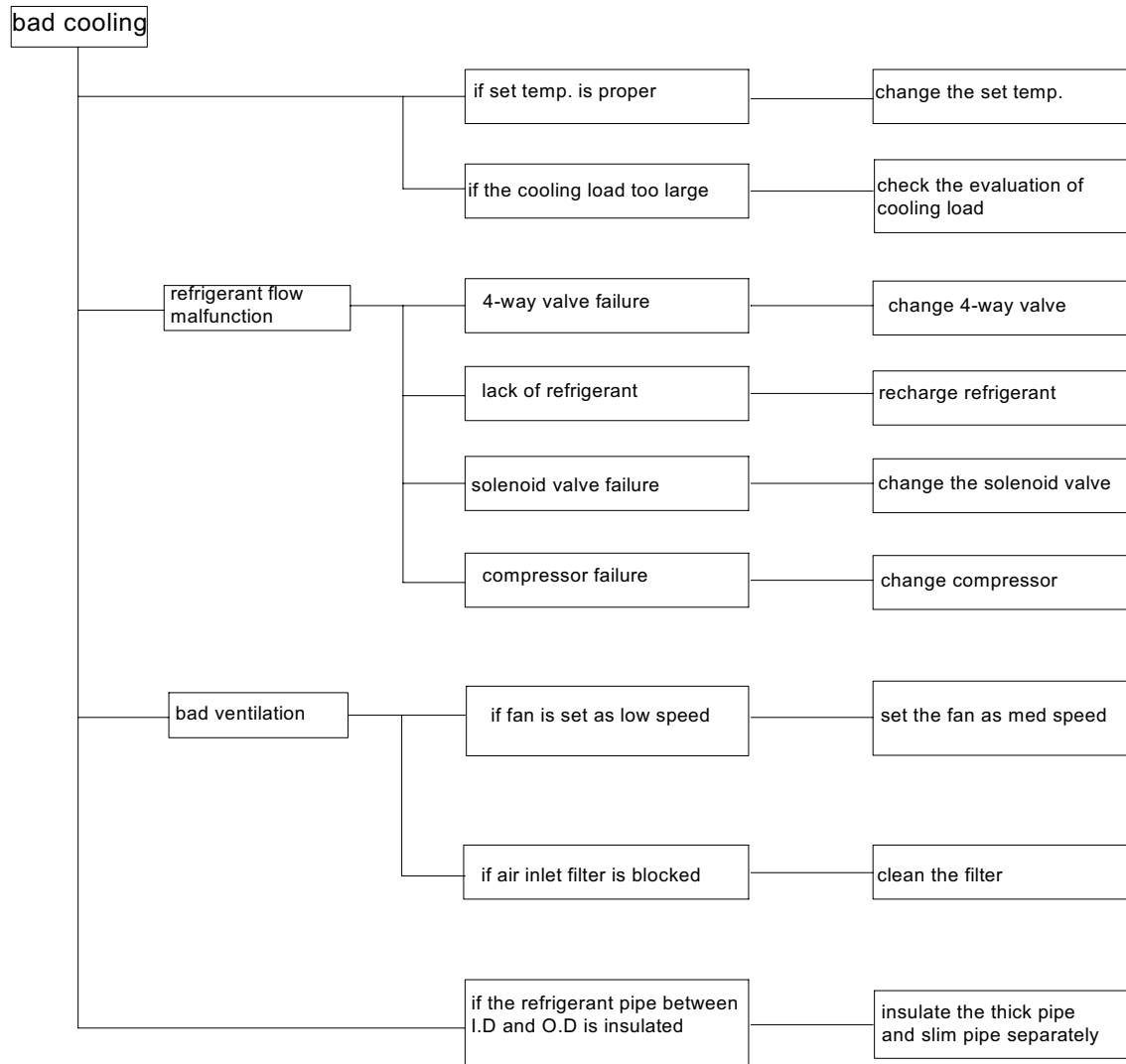


Figure 1

10.2 Failure code

The remote receiver, wired controller and indoor PCB indicator all can indicate the failure code.

10.2.1 Failure code list

Failure code on wired controller	Power lamp flash times/LED on PCB flash times	failure description	reasons	treatment
E1	1	Indoor ambient temp. sensor failure	sensor broken down or short circuit for more than 2m continuously	due to the signal, resumable
E2	2	Indoor pipe temp. sensor failure	sensor broken down or short circuit for more than 2m continuously	due to the signal, resumable
E4	4	Outdoor pipe temp. sensor failure	sensor broken down or short circuit for more than 2m continuously	due to the signal, resumable
E5	5	overcurrent	Detected current is above the limit when run	Need to be checked, reset
E8	8	Communication failure between panel and indoor unit	communication abnormal for more than 4m continuously	due to the signal, resumable
E0	10	Fault in drain system	Float switch is open	due to the signal, resumable
E6	16	Low pressure malfunction	low pressure switch acts for 30m	Need to be checked, reset

10.2.2 Sensor malfunction

If indoor ambient temp. sensor and indoor pipe temp. sensor are valid, there is no outdoor sensor, in the following conditions, the unit will confirm the sensor is failure:

Mainboard checks that the sensor is in open circuit, short circuit or close to short circuit continuously for 2 minutes, the mainboard will confirm that sensor is failure, the system will stop running, alarm occurs; If the signal is resumed, the system will resume automatically.

If indoor ambient temp. sensor and indoor pipe temp. sensor is valid, also there is outdoor sensor, in the following conditions, the unit will confirm the sensor is failure:

Mainboard checks that the outdoor pipe temp. sensor is in open circuit, short circuit or close to short circuit continuously for 2 minutes, the mainboard will confirm that sensor is failure, the system will stop running, alarm occurs; If the signal is resumed, the system will resume automatically.

10.2.3 dial switch on PCB

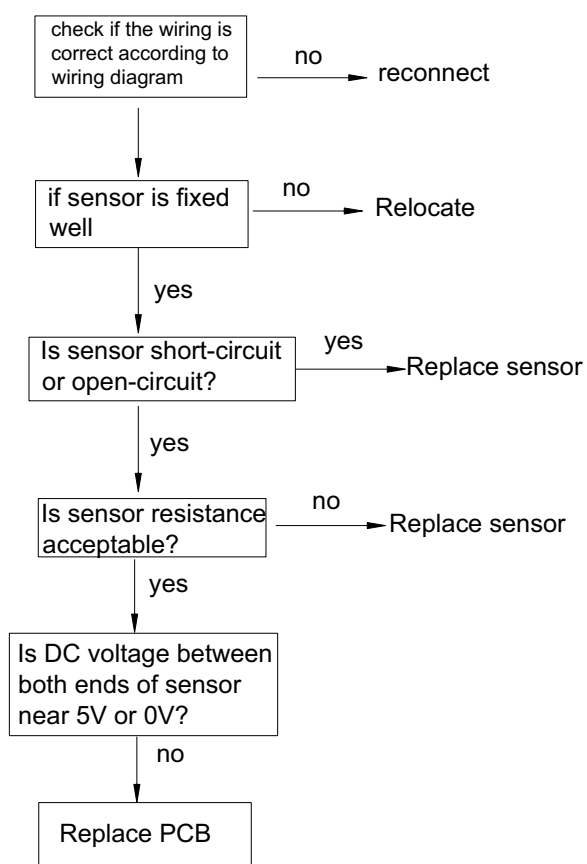
There is a dial switch on the PCB of HBU-42, HDU-28, HDU-42 and HPU-42, which is BW in the Printed diagram, definition as follow table:

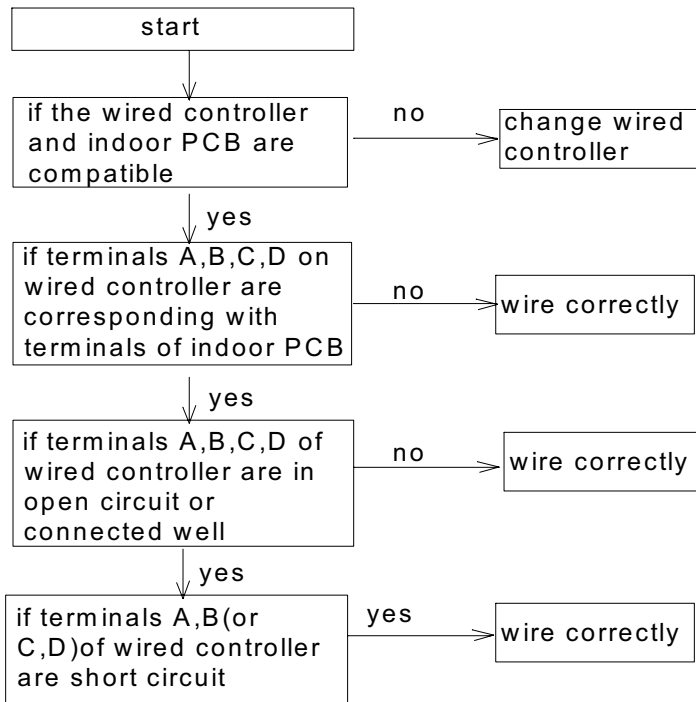
BM	1	2	3	4
Have/no defrost sensor	ON/OFF	*	*	*
Have/no pressure switch	*	ON/OFF	*	*
Have/no outdoor PCB	*	*	ON/OFF	*
No/have outdoor PCB	*	*	*	ON/OFF

Notes: For the dial switch of all above units, the BW-3 should be at “OFF”, the BW-4 should be at “ON”, couldn't be changed. The codes of SW-1 and SW-2 are decided by the unit and functions you choice. All the codes are setup and couldn't be changed.

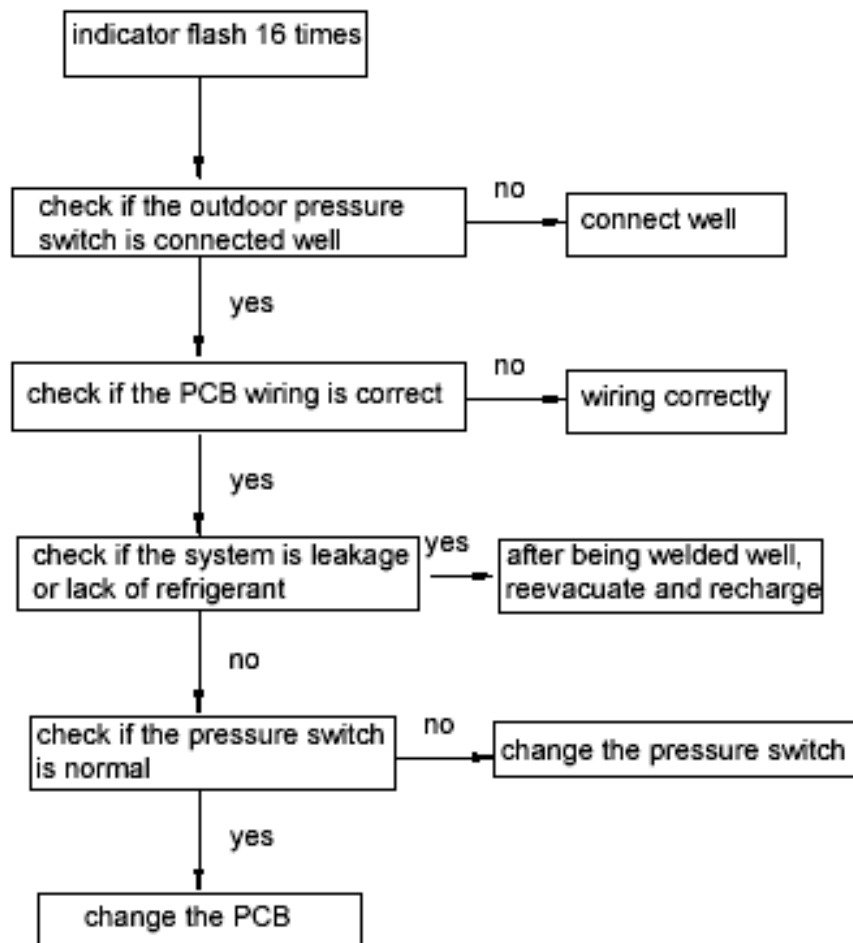
Diagnose and troubleshooting:

1) Sensor failure





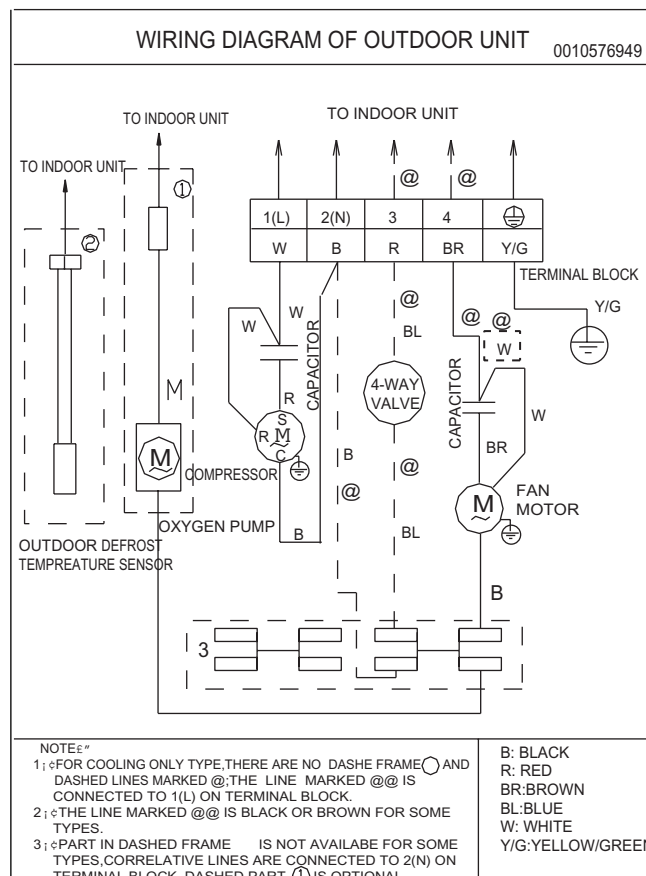
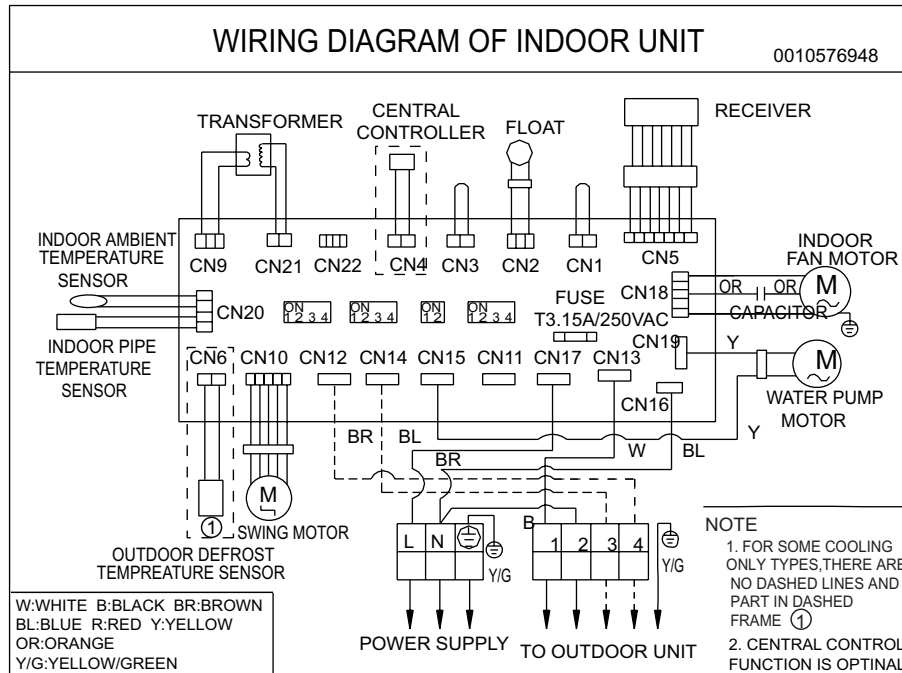
3) Low pressure abnormal



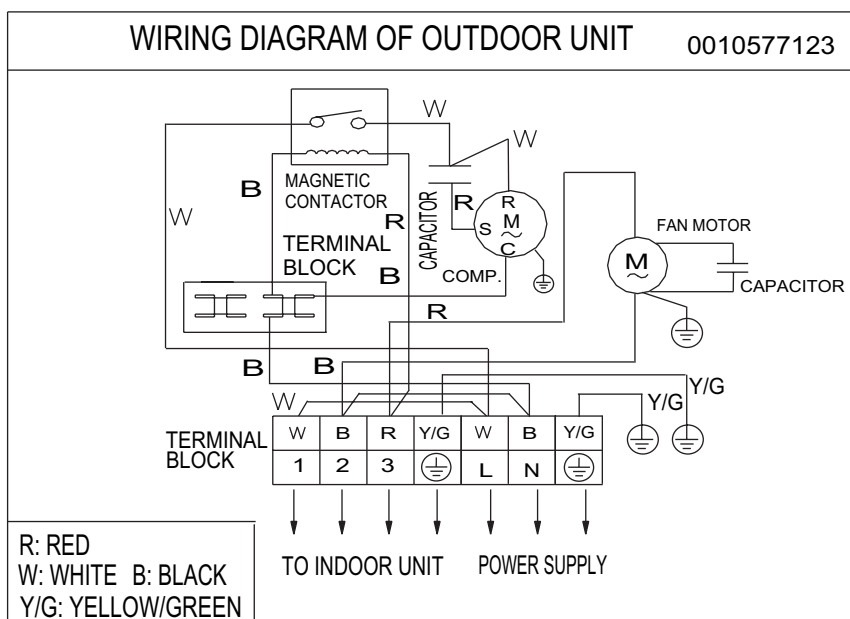
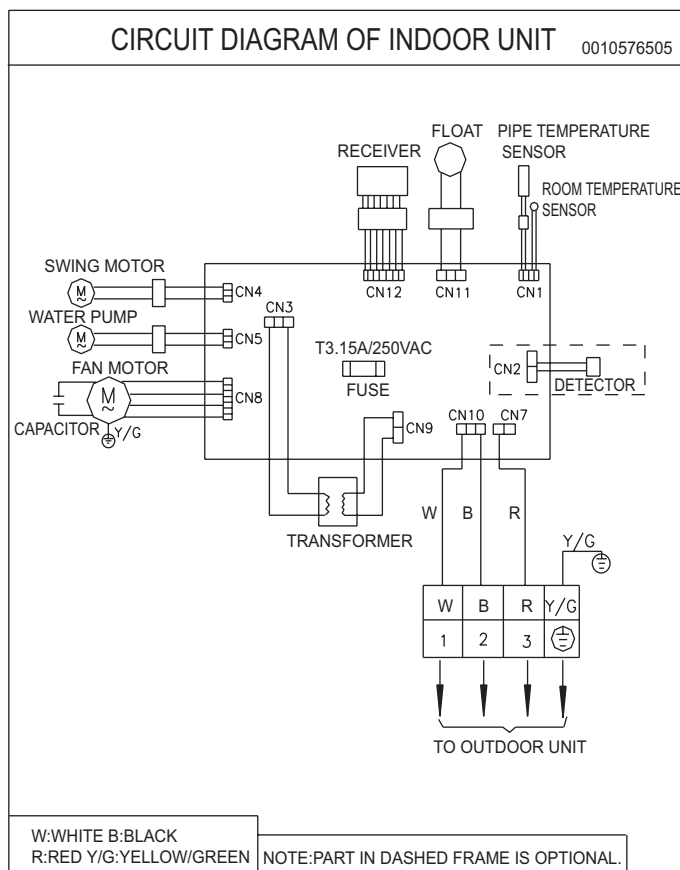
11. Electric data

11.1 Wiring diagram

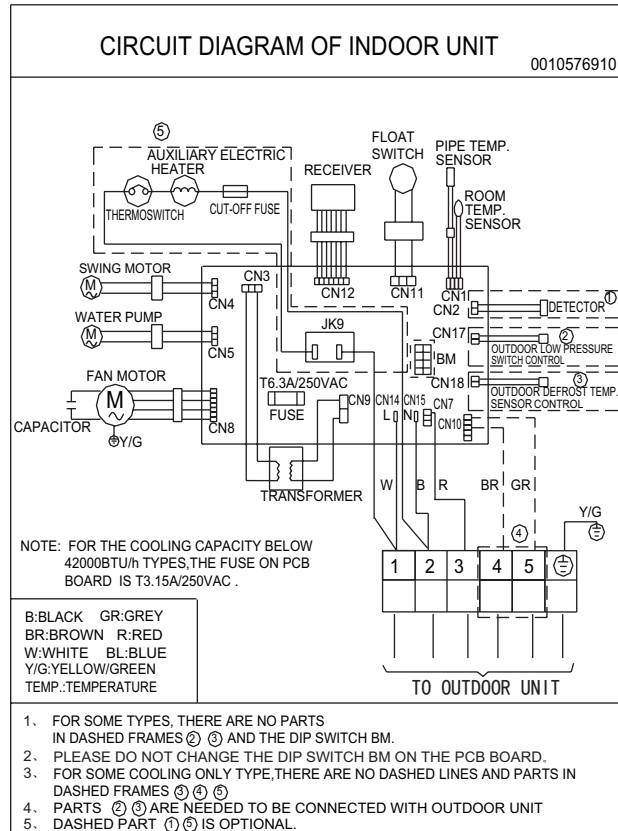
HBU-18HF03



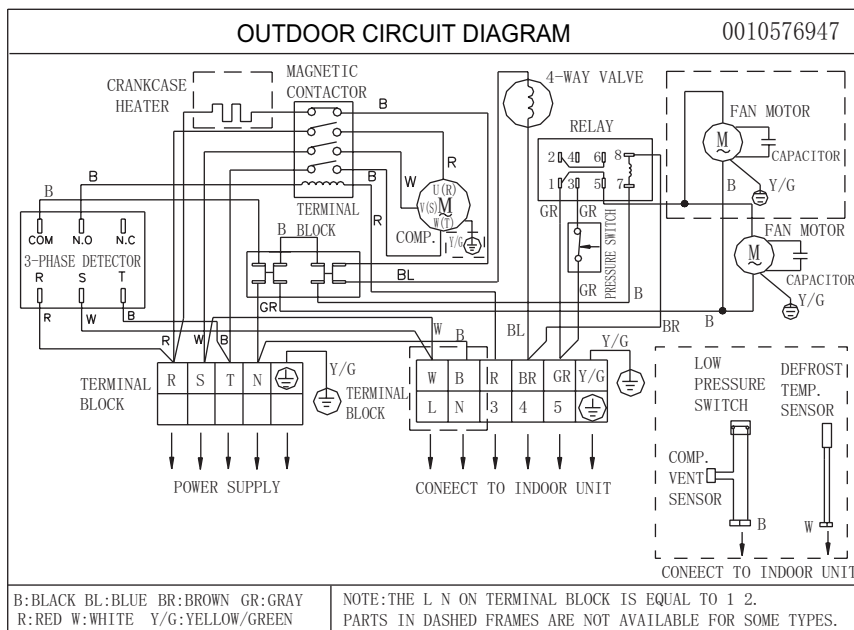
HBU-28CF03



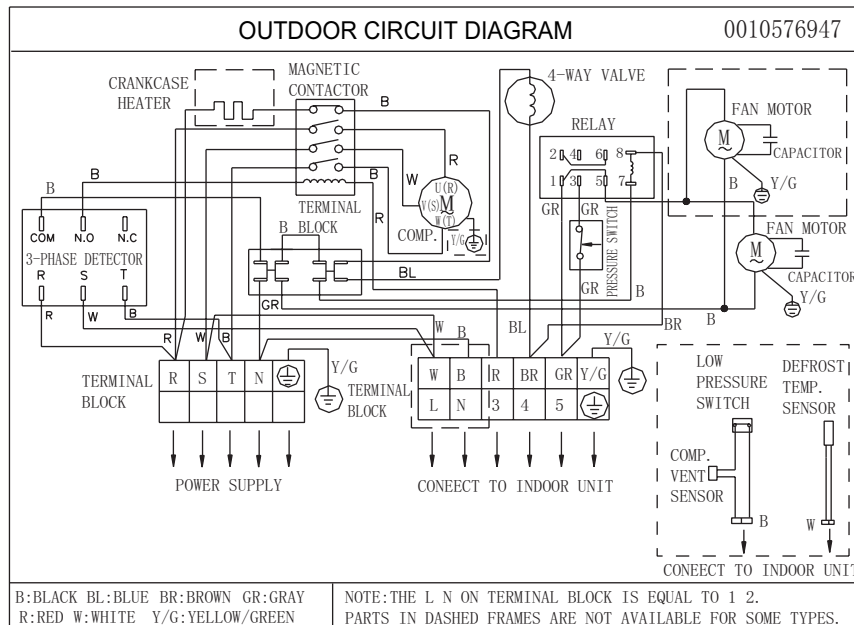
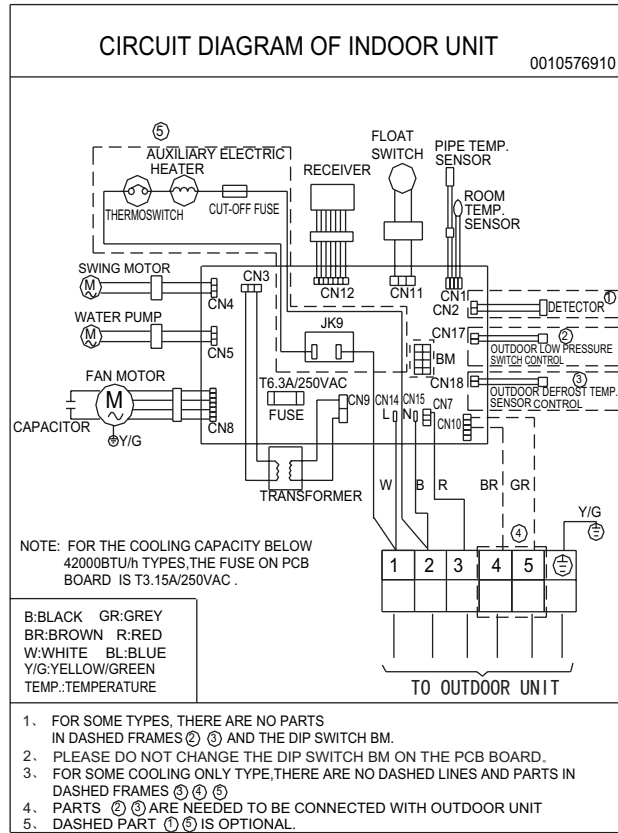
HBU-28HF03



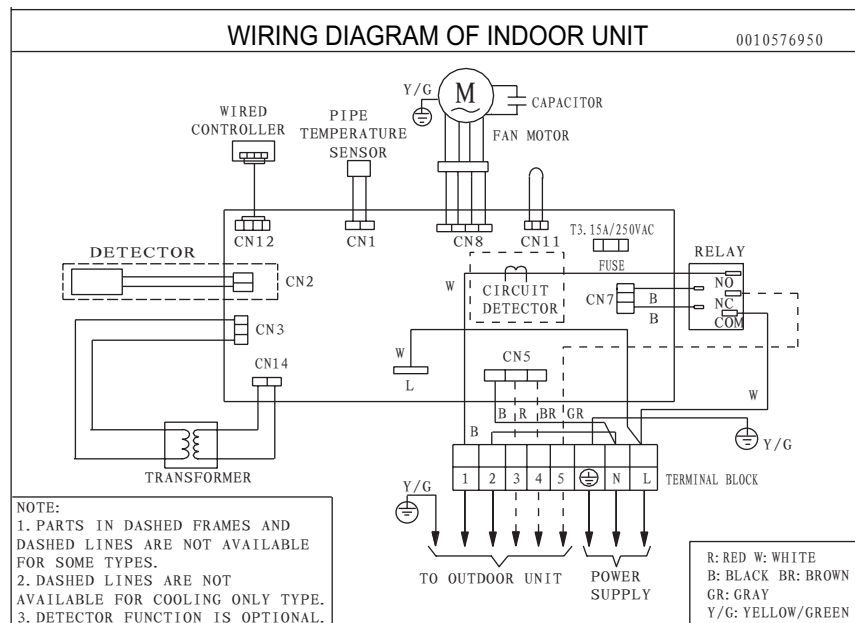
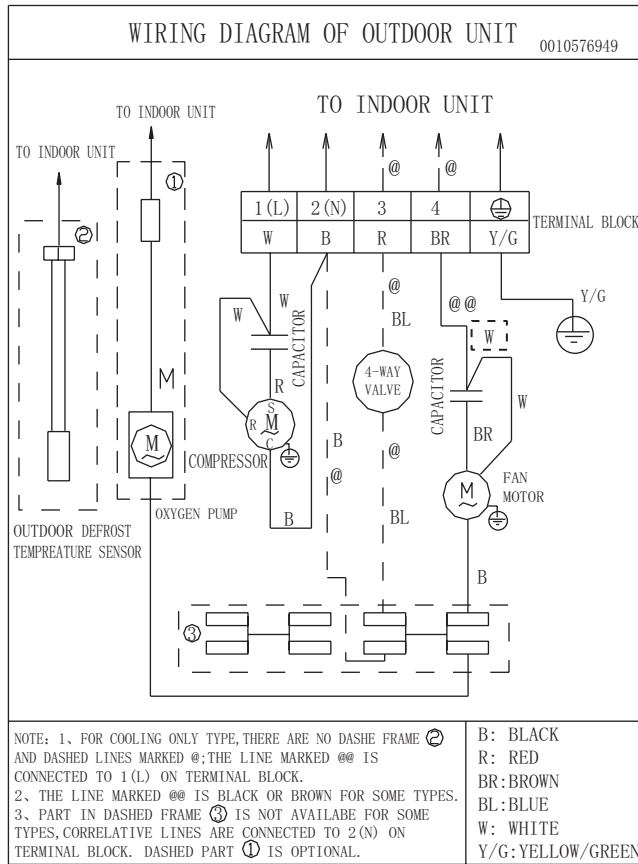
HDU-42HF03/H



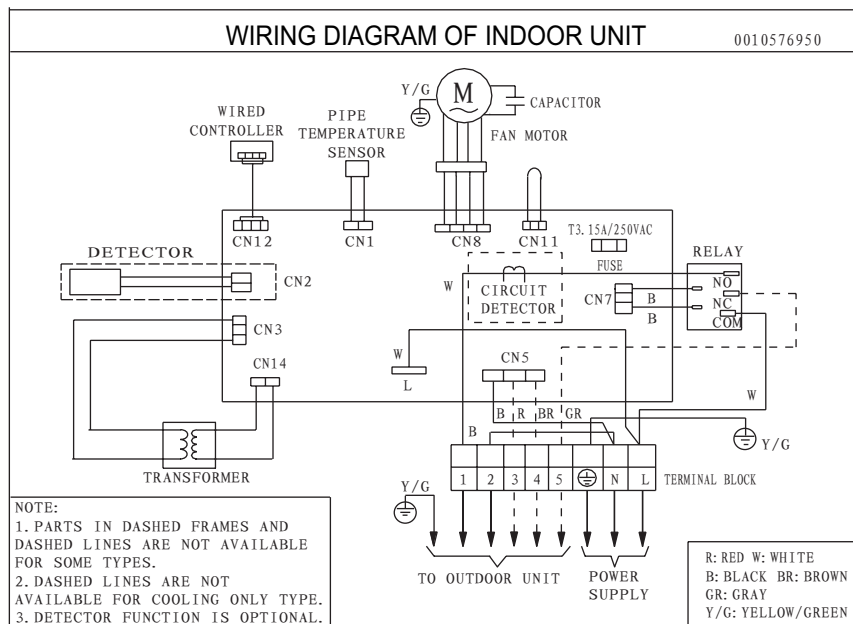
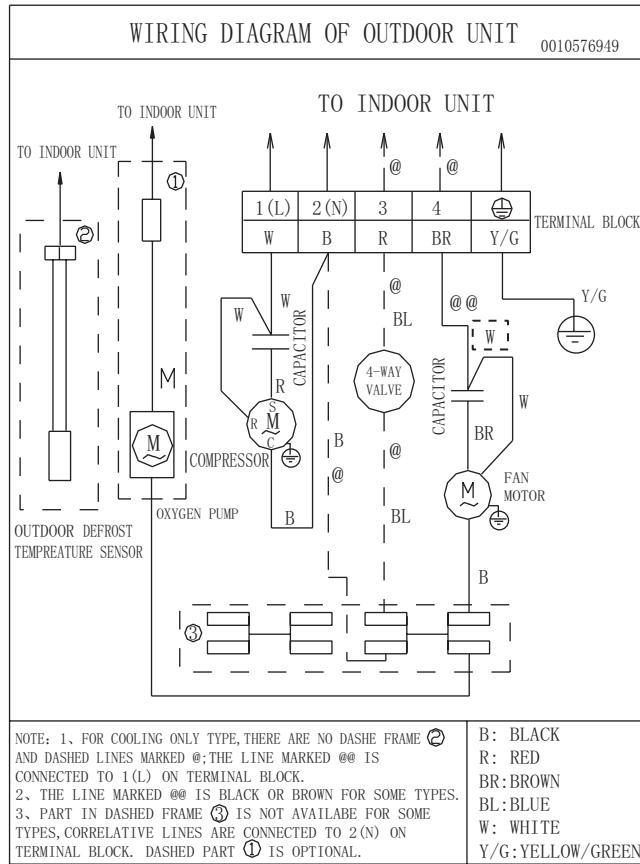
HBU-42HF03



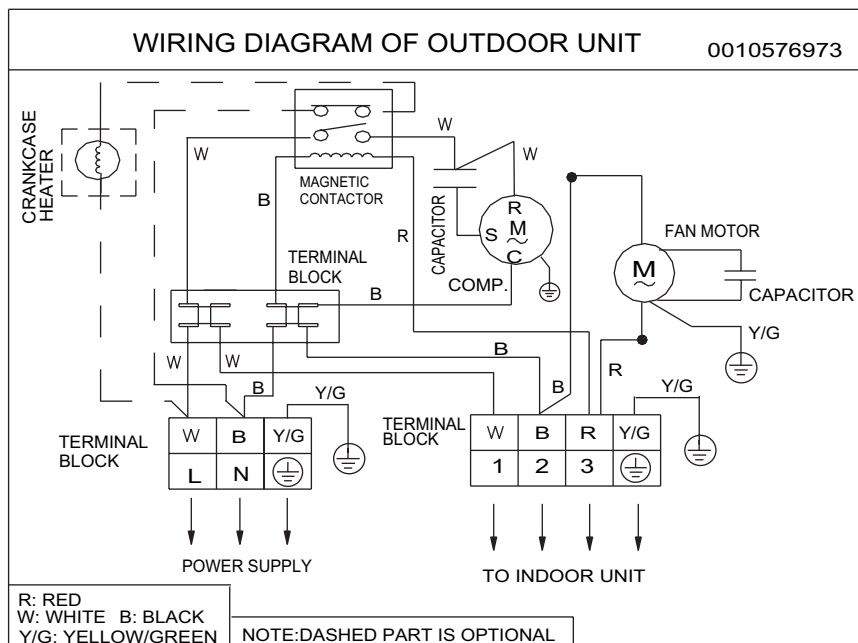
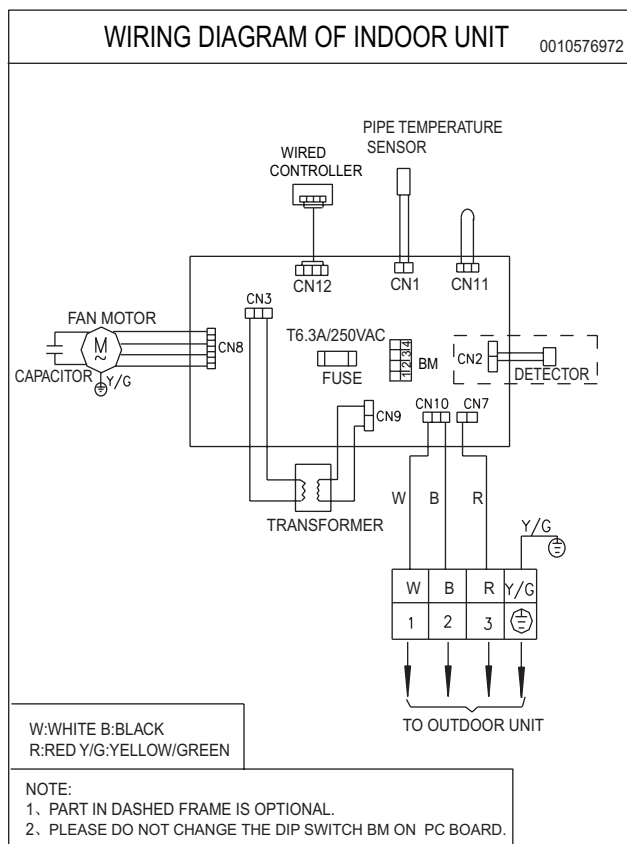
HDU-18CF03



HDU-18HF03

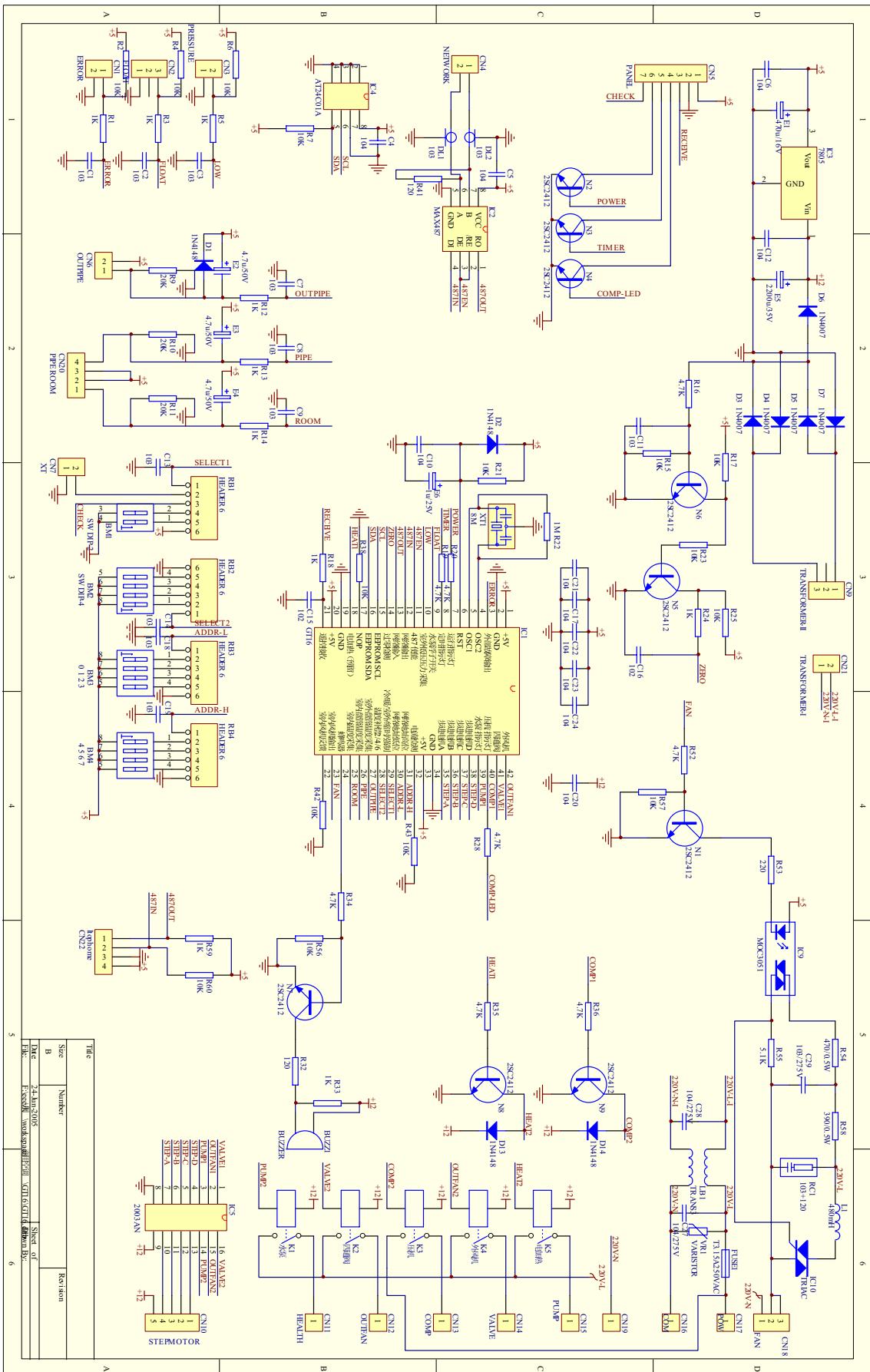


HDU-28CF03

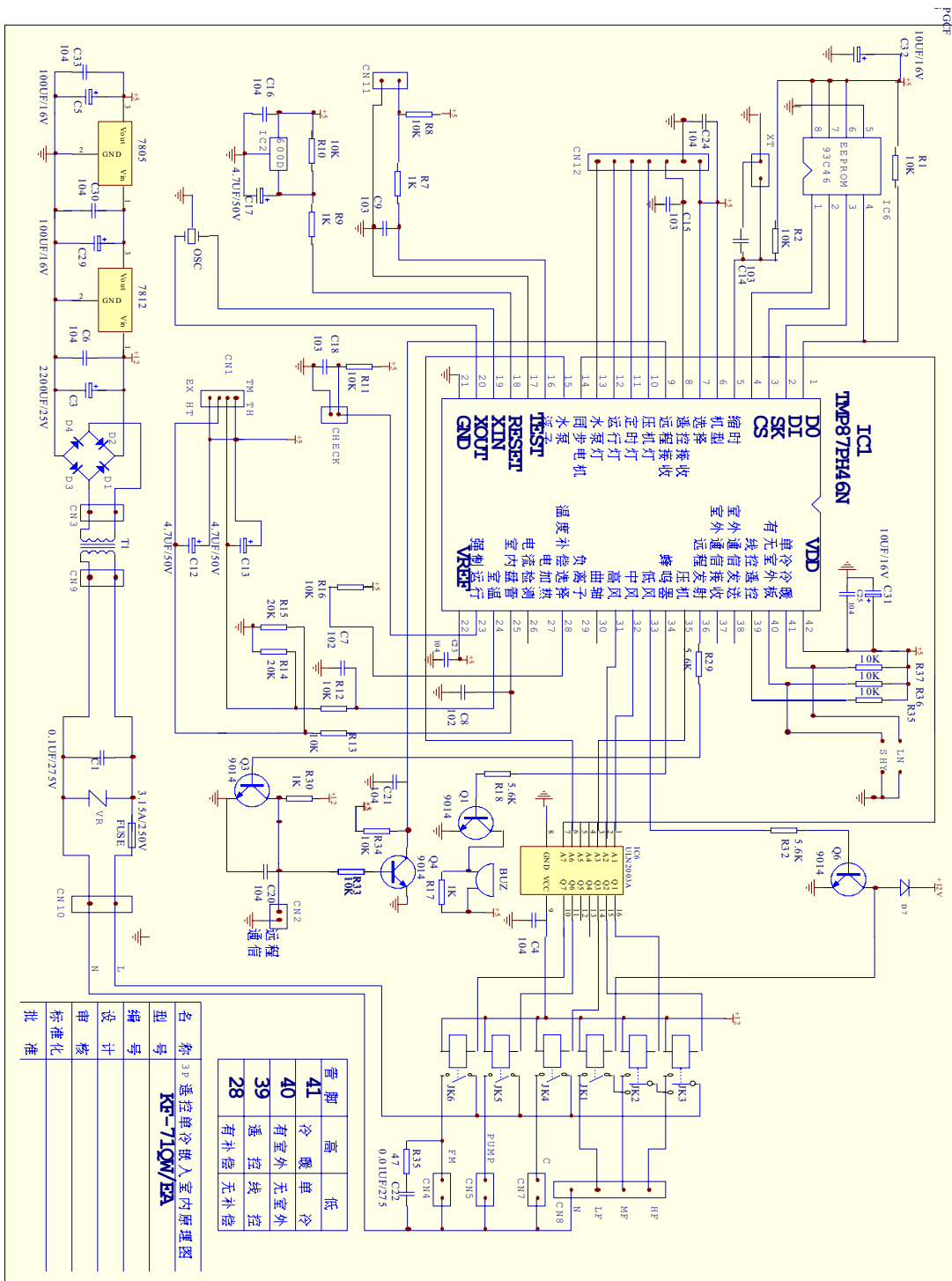


11.2 Circuit diagram

HBU-18HF03



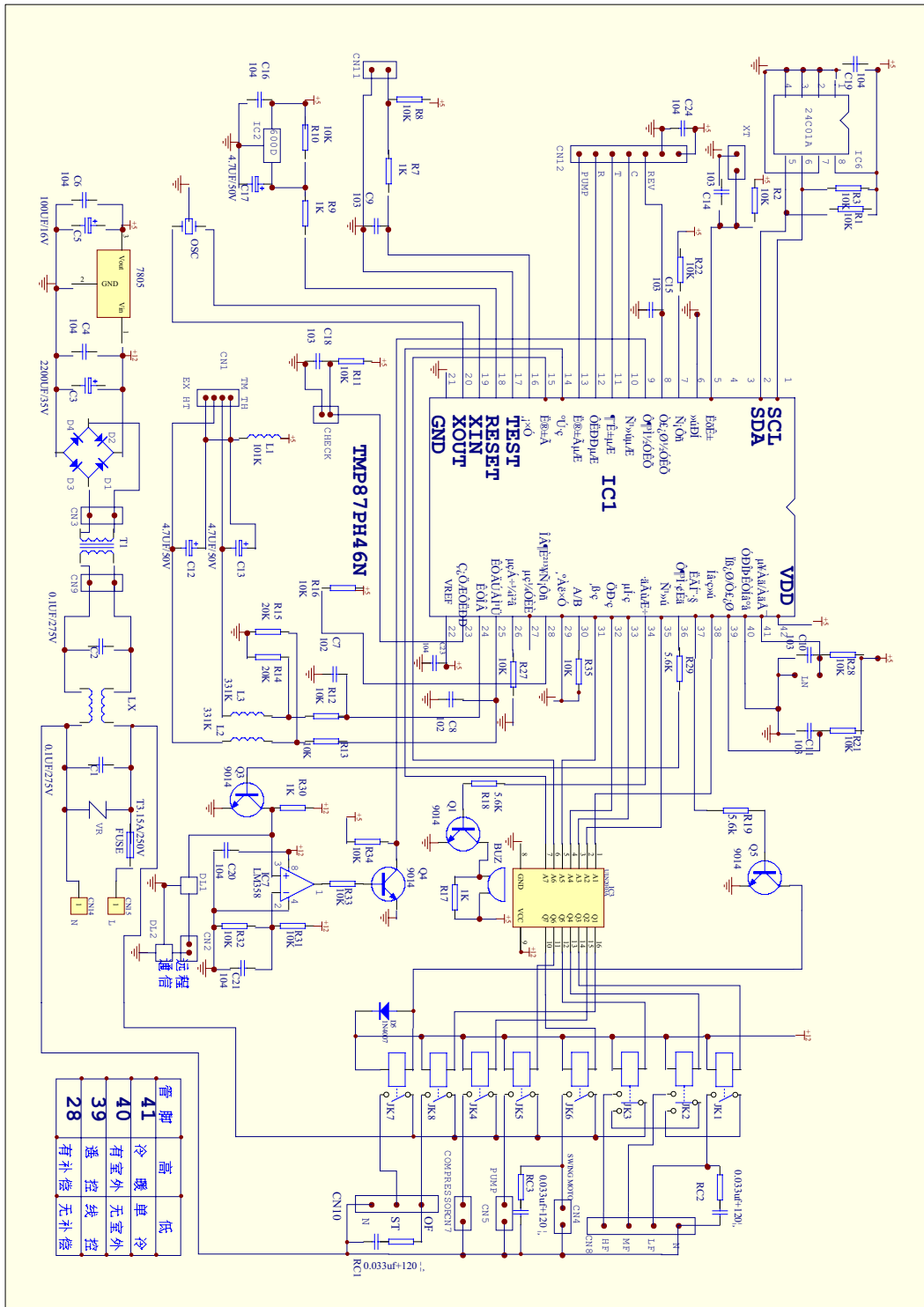
HBU-28CF03



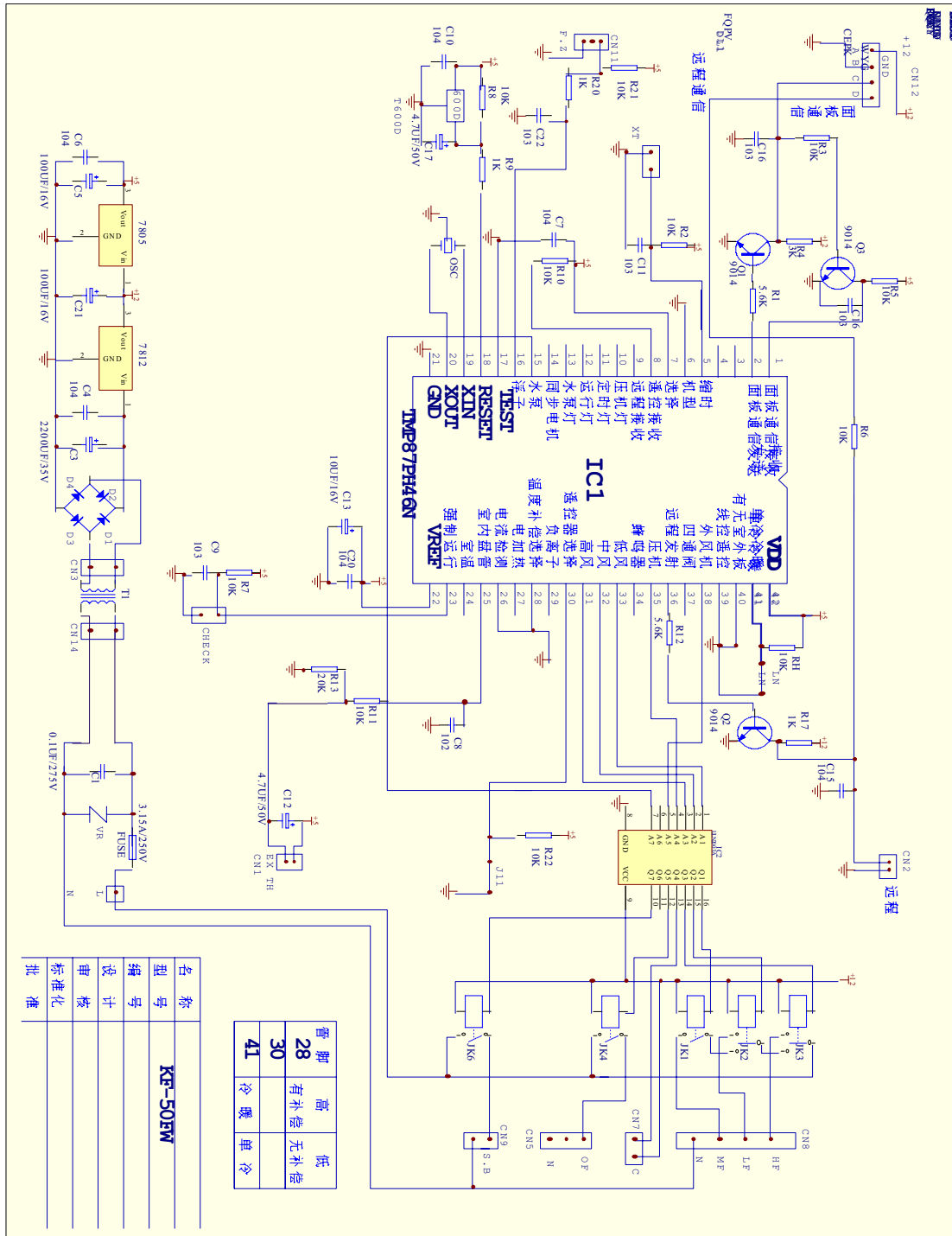
名称	3P-遥控单冷嵌入式室内原理图
型号	KF-71GM/EA
设计	
审核	
标准化	
批准	

管脚	高	低
41	冷	暖
40	有室外	无室外
39	遥控	线控
28	有补偿	无补偿

HBU-28HF03



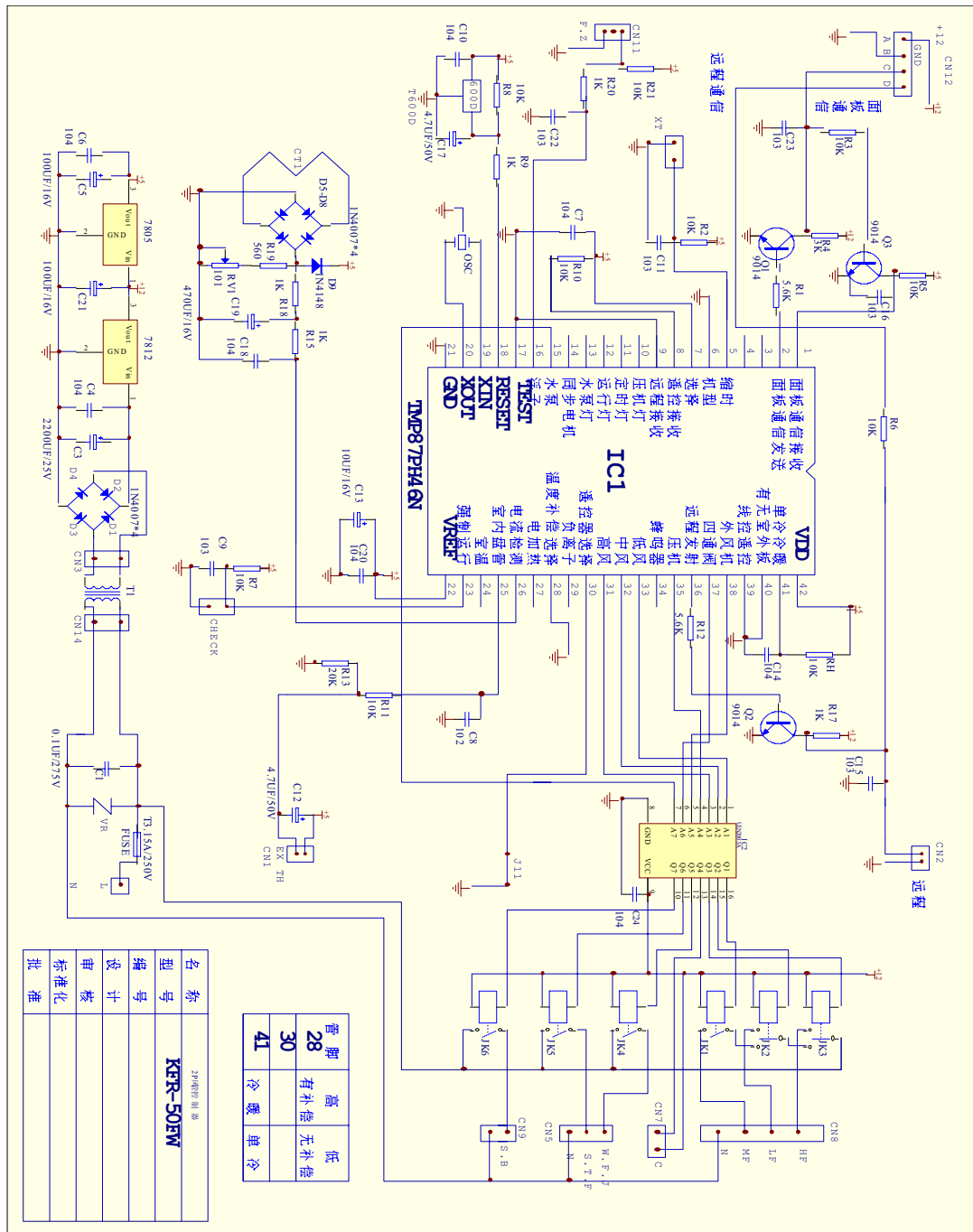
HDU-18CF03



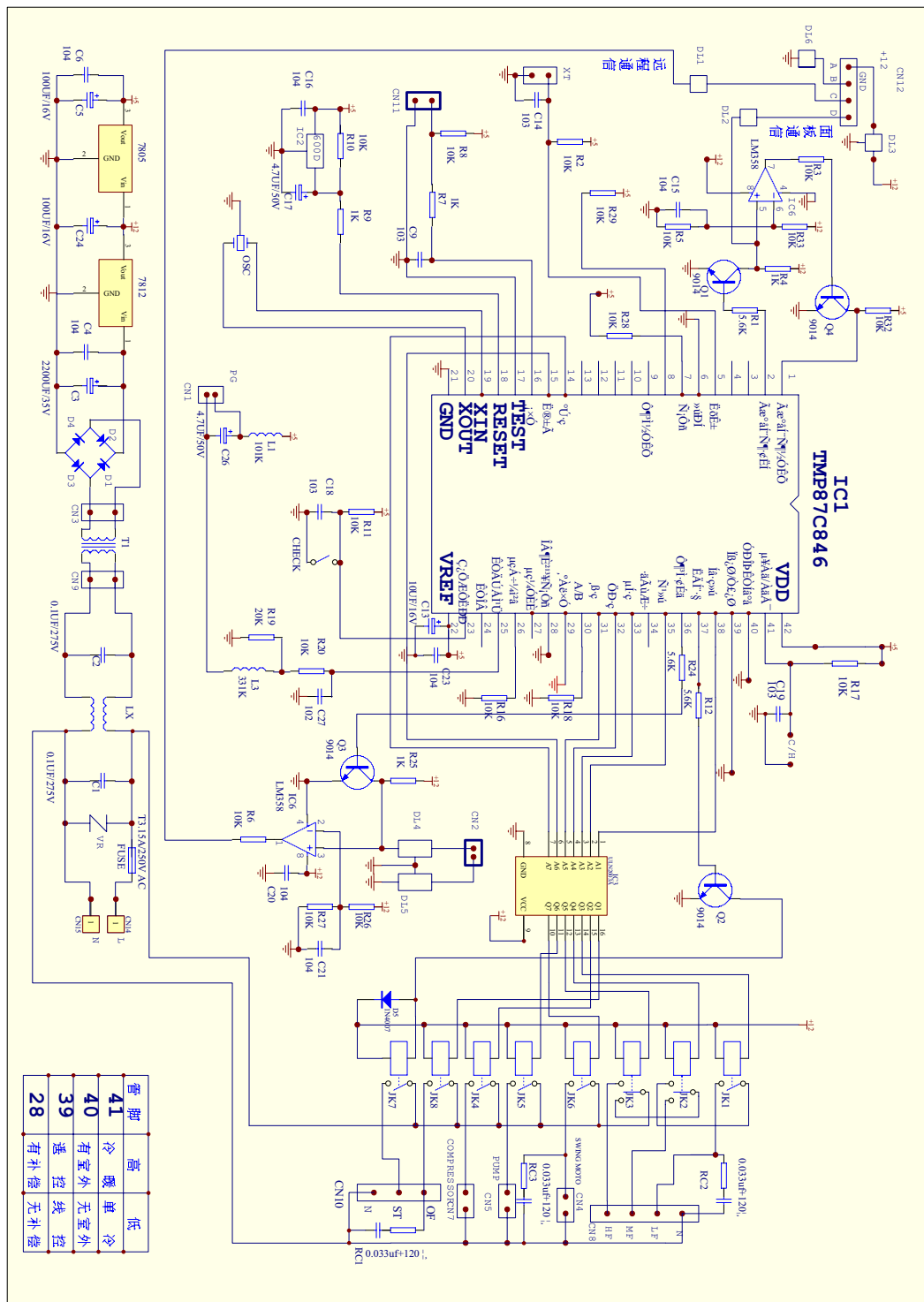
名称	KP-50FW	
型号		
编号		
设计		
审核		
标准化		
批准		

管脚	高	低
28	有补偿	无补偿
30		
41	冷暖	单冷

HDU-18HF03

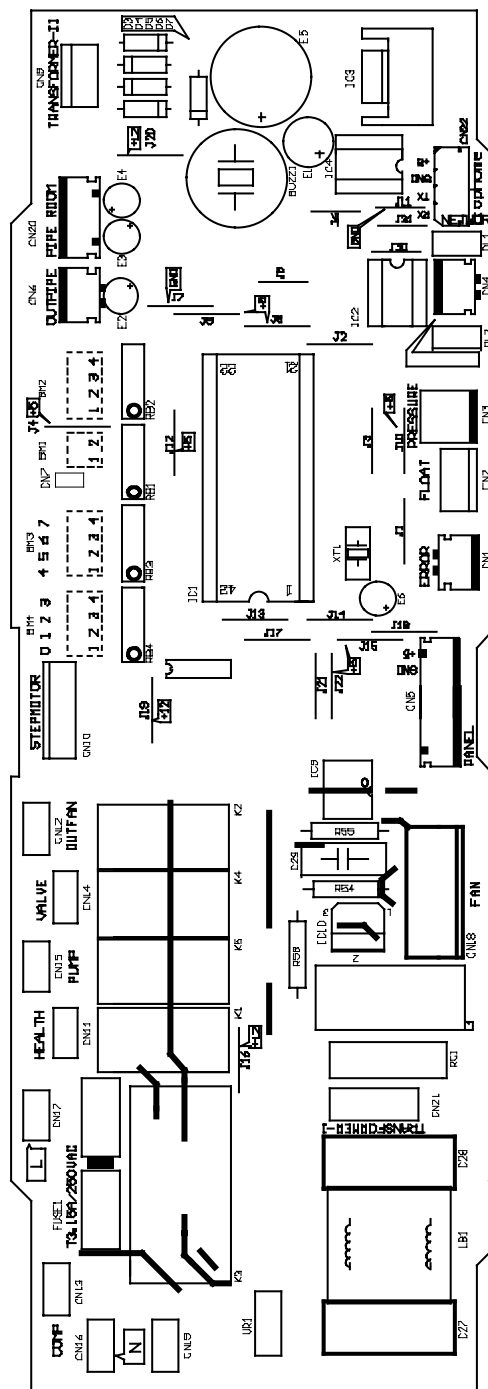


HDU-28CF03 HDU-28HF03 HDU-42HF03/F



11.3 Printed diagram

HBU-18HF03



Port and definition

- CN1: external alarm input
- CN2: control port of float switch
- CN3: control port of low pressure switch
- CN4: central control port
- CN5: remote receiver panel
- CN6: outdoor deforst
- CN7: time-shrink port

- CN9: output port of transformer
- CN10: swing motor port
- CN11: reserved port
- CN12: outdoor fan motor port
- CN13: compressor port
- CN14: control port of 4-way valve
- CN15: water pump port
- CN16: neutral wire port
- CN17: live wire port
- CN18: fan motor port
- CN19: neutral wire port
- CN20: indoor coil temp. sensor
indoor ambient temp. sensor
- CN21: input port of transformer
- CN22: control port of network appliance

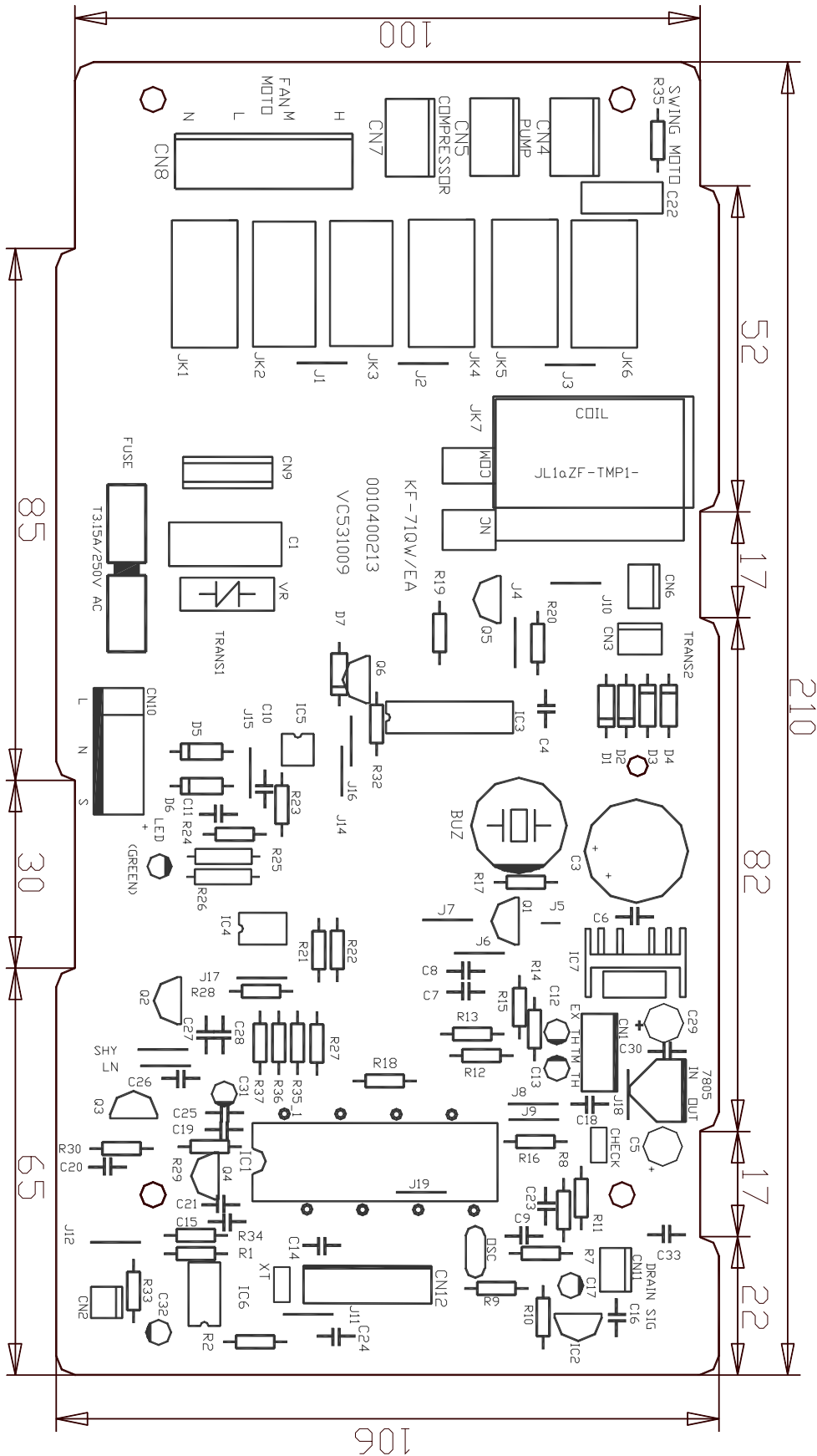
Dip switch state	BM1 (1)	BM1 (2)		Remark
No outdoor PCB	×	×	The PCB of this type have not outdoor PCB	OFF-× ON-√
Unitary free	√	×		
Free multi	×	√		
Unitary inverter	√	√		

Dip switch state	BM2(1)	BM2(2)	BM2(3)	BM2(4)
No temperature compensation	×	×	*	*
Temperature compensation 2°C	√	×	*	*
Temperature compensation 4°C	×	√	*	*
Temperature compensation 6°C	√	√	*	*
Cooling only/heating and cooling	*	*	√/×	*
Have/no defrost sensor	*	*	*	√/×

BM3、BM4: set address when used central control

Address	BM4				BM3				
	1	2	3	4	1	2	3	4	
1	×	×	×	×	×	×	×		× - no network appliance
2	√	×	×	×	×	×	×		
3	×	√	×	×	×	×	×		
4	√	√	×	×	×	×	×		
5	×	×	√	×	×	×	×		√ - have network appliance
6	√	×	√	×	×	×	×		
.....			
126	√	×	√	√	√	√	√		
127	×	√	√	√	√	√	√		
128	√	√	√	√	√	√	√		

HBU-28CF03



Port and definition

CN1: ambient temp. sensor and coil temp. sensor

CN2: connection port of detector

CN3: signal output port of transformer

CN4: swing motor

CN5: water pump

CN7: connection port of compressor

CN8: indoor fan

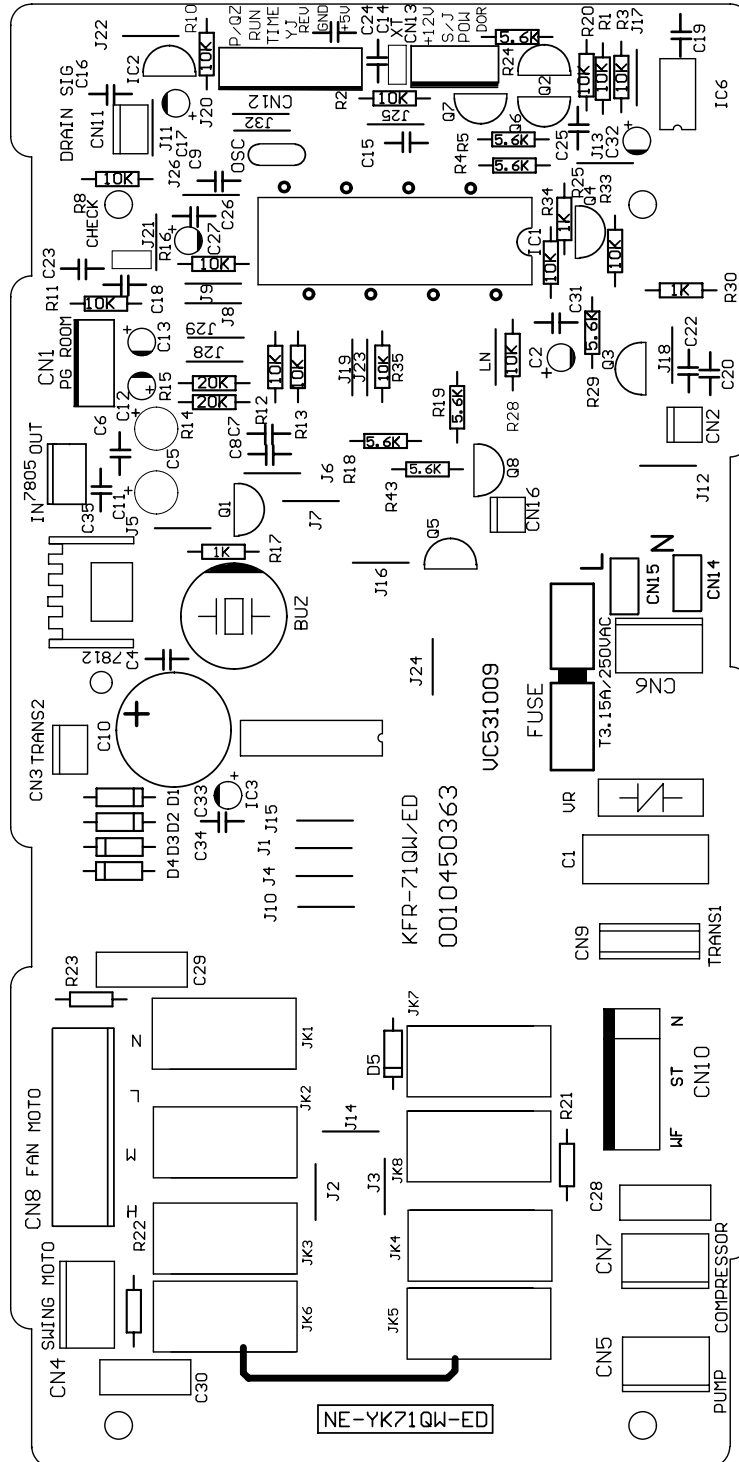
CN9: signal input port of transformer

CN10: signal input port of power L N

CN11: floater switch

CN12: receive port of remote controll

HBU-28HF03



Port and definition

CN1: ambient temp. sensor and coil temp. sensor

CN2: connection port of detector

CN3: signal output port of transformer

CN4: swing motor

CN5: water pump

CN7: connection port of compressor

CN8: indoor fan

CN9: signal input port of transformer

CN10: connection port for 4-way valve and outdoor fan

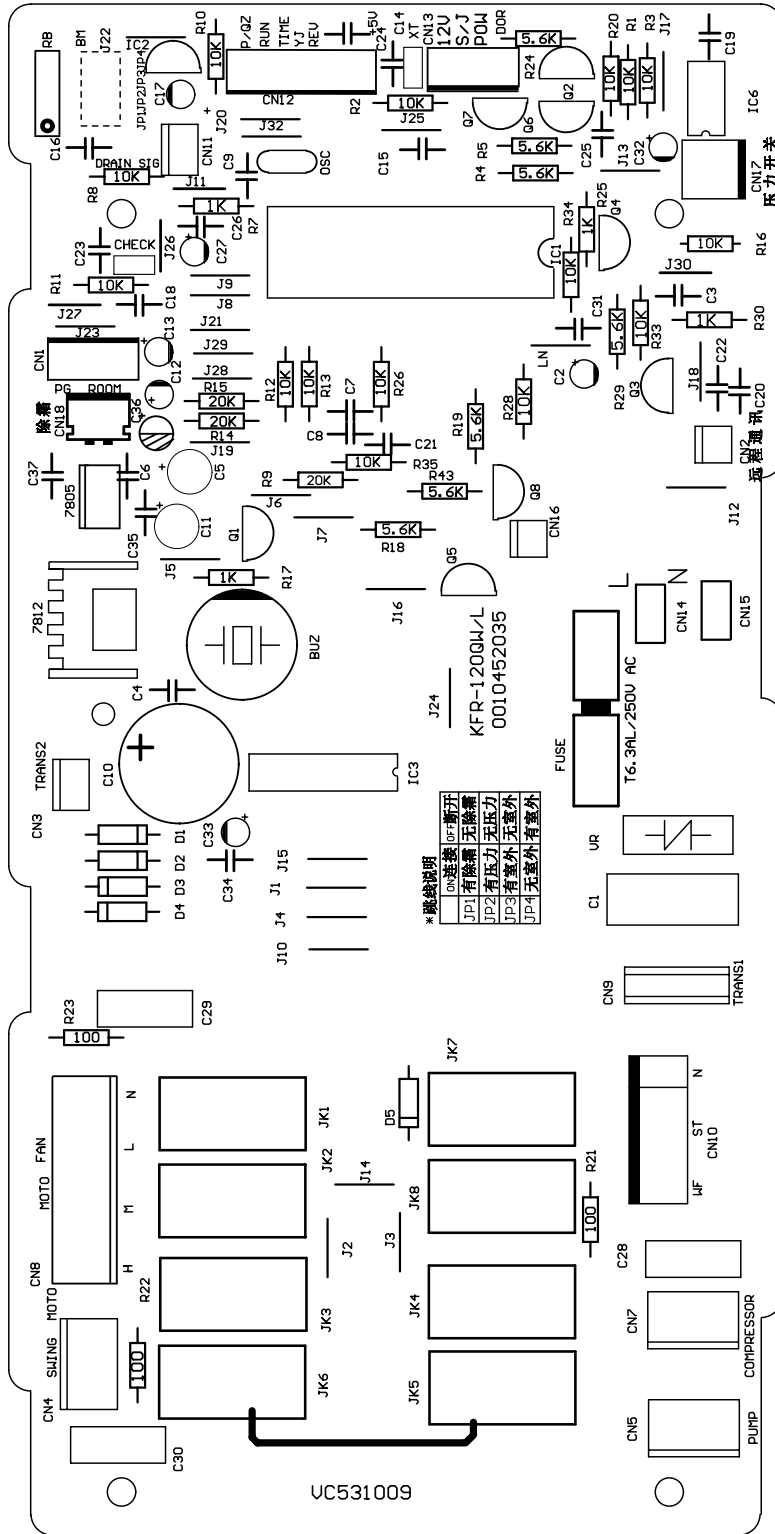
CN11: floater switch

CN12: receive port of remote controll

CN14: connection port of live wire

CN15: connection port of neutral wire

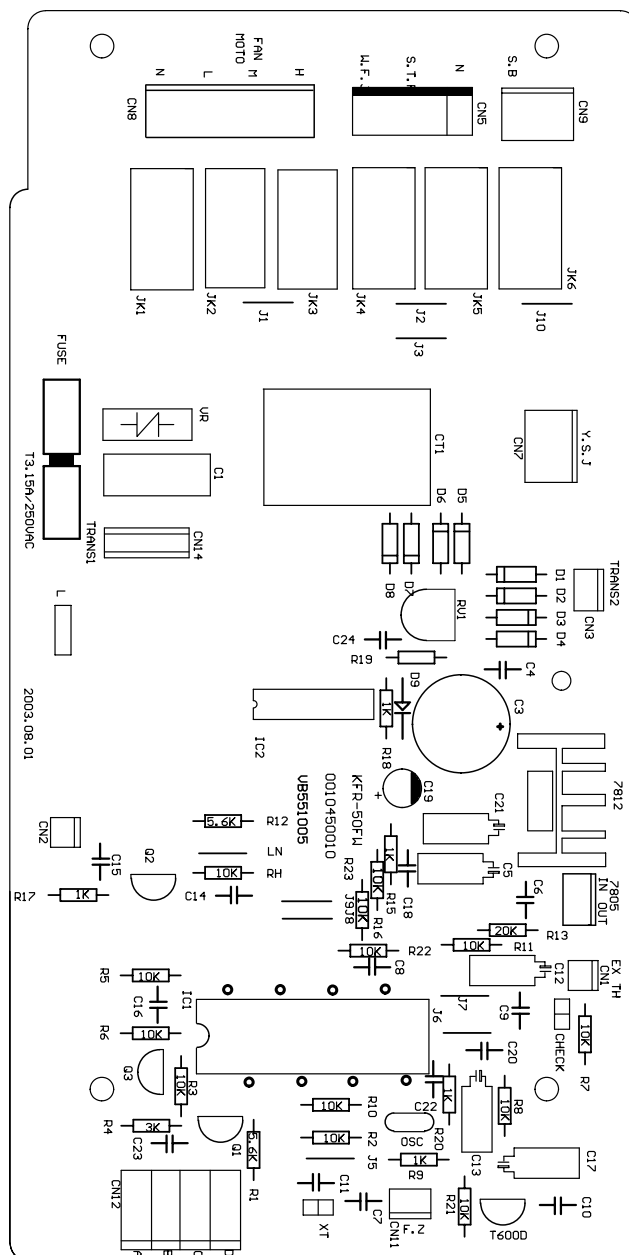
HBU-42HF03



Port and definition

- CN1: ambient temp. sensor and coil temp. sensor
- CN2: connection port of detector
- CN3: signal output port of transformer
- CN4: swing motor
- CN5: water pump
- CN7: connection port of compressor
- CN8: indoor fan
- CN9: signal input port of transformer
- CN10: connection port for 4-way valve and outdoor fan
- CN11: floater switch
- CN12: receive port of remote control
- CN14: connection port of live wire
- CN15: connection port of neutral wire
- CN17: control port of outdoor low pressure switch
- CN18: control port of outdoor defrost sensor

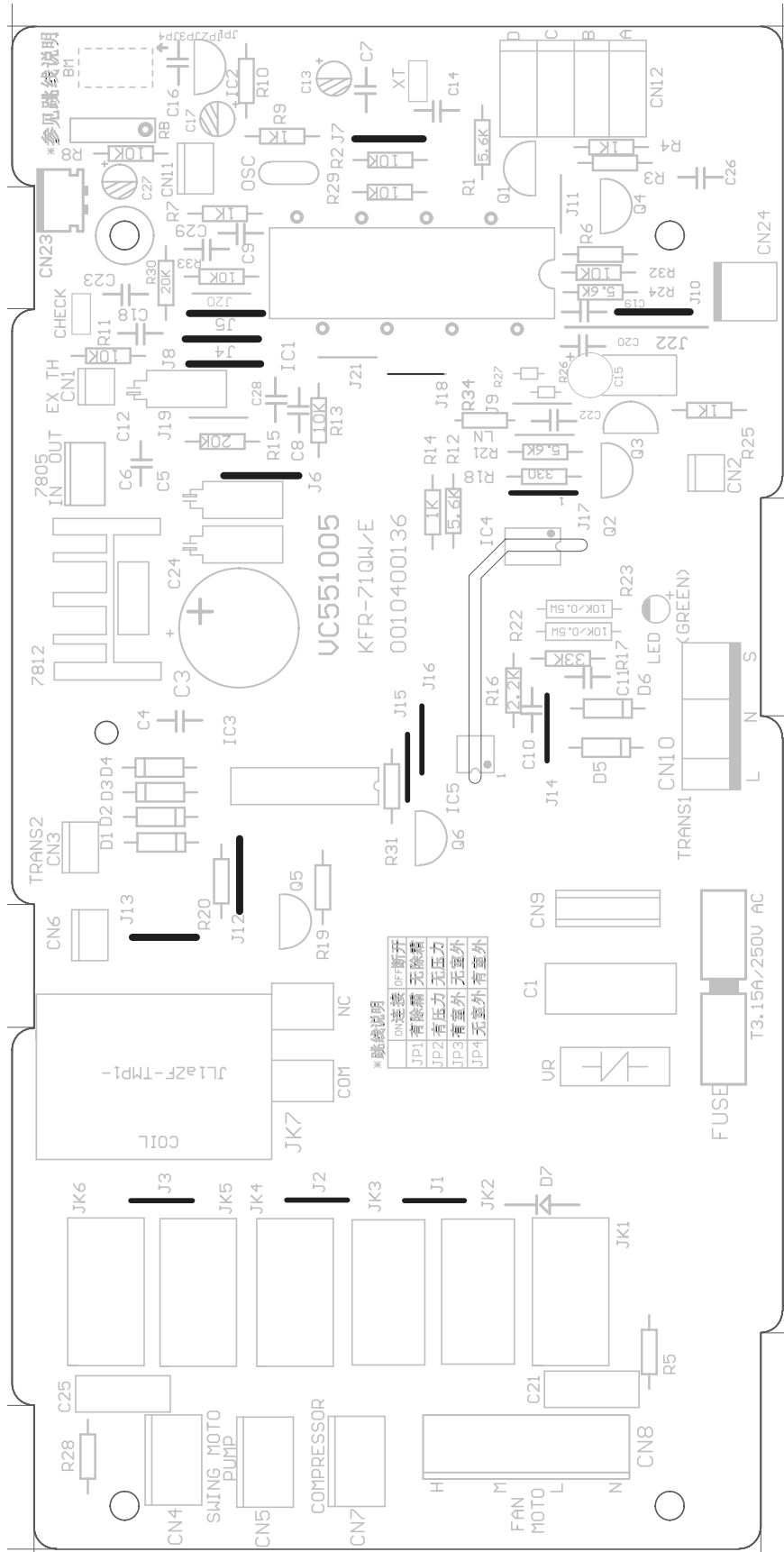
HDU-18CF03 HDU-18HF03



Port and definition

- L: insert port of live wire
- CN1: coil temp. sensor
- CN2: connection port of detector
- CN3: signal output port of transformer
- CN5: control port of neutral wire, 4-way valve and outdoor fan
- CN7: control port for compressor and relay
- CN8: indoor fan
- CN11: port of floater switch (short-connect when normal)
- CN12: wired controller
- CN14: signal input port of transformer

HDU-28CF03



Port and definition

CN1: indoor coil sensor

CN2: connection port of detector

CN3: signal output port of transformer

CN4: swing motor

CN5: water pump

CN7: control port for compressor and fan

CN8: indoor fan

CN9: signal input port of transformer

CN10: power input port of PCB

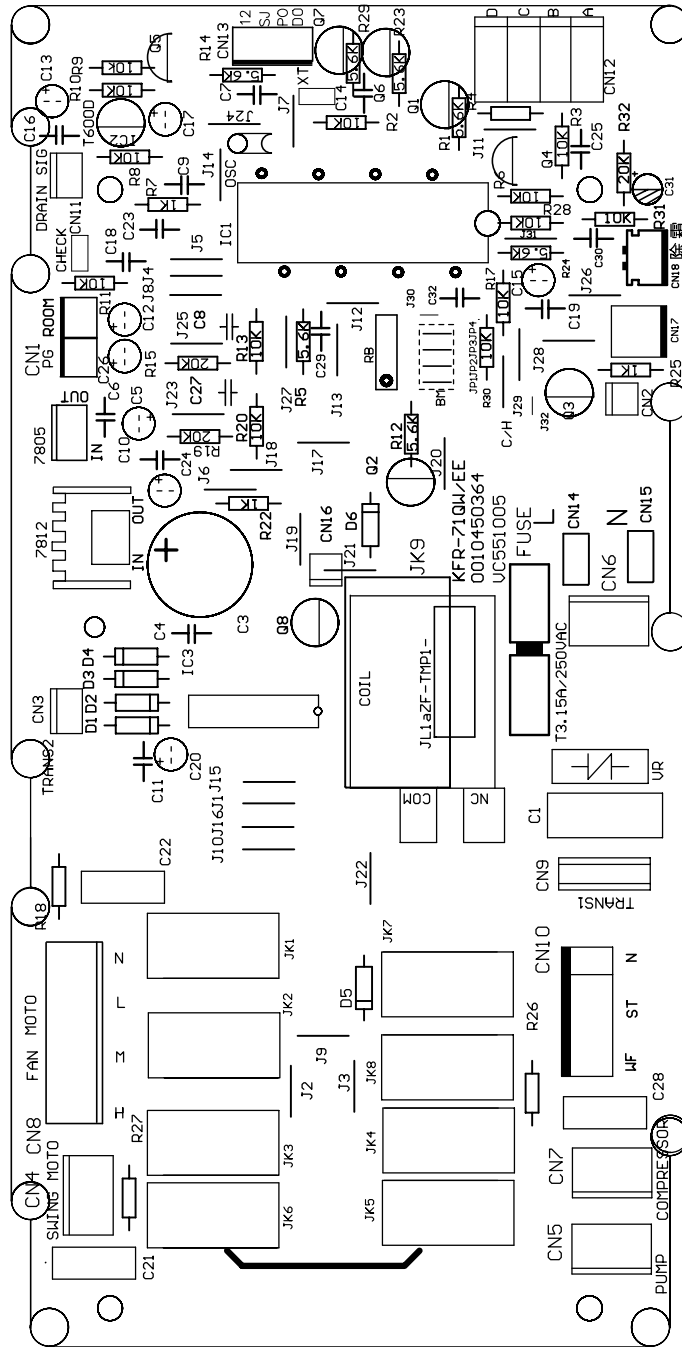
CN11: floater switch

CN12: receive port of remote control

CN23: connection port of outdoor defrost sensor

CN24: control port of outdoor low pressure switch

HDU-28HF03 HDU-42HF03/F



- CN1: ambient temp. sensor and coil temp. sensor
- CN11: floater switch
- CN12: receive port of remote controll
- CN3: signal output port of transformer
- CN9: signal input port of transformer
- CN4: swing motor
- CN5: water pump
- CN8: indoor fan
- CN14: connection port of live wire
- CN15: connection port of neutral wire
- CN7: connection port of compressor
- CN10: connection port for 4-way valve and outdoor fan
- CN18: defrost sensor
- CN17: low pressure switch
- CN2: detector
- JK9: port for electrical heater and live wire

11.4 Sensor characteristic

Model	Name	Code	Sub-part code	characteristic
HBU-18CF03	Indoor ambient temp. sensor	001A3900159	001A3900003	R25=23KΩ±2.5% B25/50=4200K±3%
HBU-18HF03 HBU-28CF03 HBU-28HF03	Indoor coil temp. sensor	001A3900006	001A3900004	R25=10KΩ±3% B25/50=3700K±3%
	Outdoor defrost sensor	0010401922	001A3900004	R25=10KΩ±3% B25/50=3700K±3%
HDU-18CF03 HDU-18HF03 HDU-28CF03 HDU-28HF03	Indoor coil temp. sensor	001A3800128	001A3900004	R25=10KΩ±3% B25/50=3700K±3%
	ambient temp. sensor	/	/	/
HDU-42CF03/H HDU-42HF03/H	Outdoor defrost sensor	0010401922	001A3900004	R25=10KΩ±3% B25/50=3700K±3%
HPU-42CF03 HPU-42HF03 HBU-42CF03 HBU-42HF03	Indoor ambient temp. sensor	001A3800127	001A3900003	R25=23KΩ±2.5% B25/50=4200K±3%
	Indoor coil temp. sensor	0010401922	001A3900004	R25=10KΩ±3% B25/50=3700K±3%
	Outdoor defrost sensor	0010401922	001A3900004	R25=10KΩ±3% B25/50=3700K±3%

R25=23K Ω ±2.5% B25/50=4200K±3%		R25=23K Ω ±2.5% B25/50=4200K±3%	
T(°C)	Rnom(K Ω)	T(°C)	Rnom(K Ω)
-20°C	281.34	24°C	24.12
-19°C	263.56	25°C	23
-18°C	247.04	26°C	21.94
-17°C	231.66	27°C	20.94
-16°C	217.35	28°C	19.99
-15°C	204.02	29°C	19.09
-14°C	191.61	30°C	18.23
-13°C	180.04	31°C	17.42
-12°C	169.24	32°C	16.65
-11°C	159.17	33°C	15.92
-10°C	149.77	34°C	15.22
-9°C	140.99	35°C	14.56
-8°C	132.78	36°C	13.93
-7°C	125.11	37°C	13.34
-6°C	117.93	38°C	12.77
-5°C	111.22	39°C	12.23
-4°C	104.93	40°C	11.71
-3°C	99.04	41°C	11.22
-2°C	93.52	42°C	10.76
-1°C	88.35	43°C	10.31
0°C	83.5	44°C	9.89
1°C	78.94	45°C	9.49
2°C	74.67	46°C	9.1
3°C	70.65	47°C	8.74
4°C	66.88	48°C	8.39
5°C	63.33	49°C	8.05
6°C	60	50°C	7.73
7°C	56.86	51°C	7.43
8°C	53.91	52°C	7.14
9°C	51.13	53°C	6.86
10°C	48.51	54°C	6.6
11°C	46.04	55°C	6.34
12°C	43.72	56°C	6.1
13°C	41.52	57°C	5.87
14°C	39.45	58°C	5.65
15°C	37.5	59°C	5.44
16°C	35.66	60°C	5.24
17°C	33.92		
18°C	32.27		
19°C	30.72		
20°C	29.25		
21°C	27.86		
22°C	26.54		
23°C	25.3		

R25=10K Ω ±3% B25/50=3700K±3%		R25=10K Ω ±3% B25/50=3700K±3%		R25=10K Ω ±3% B25/50=3700K±3%	
T(°C)	Rnom(KΩ)	T(°C)	Rnom(KΩ)	T(°C)	Rnom(KΩ)
-20	90.79	24	10.43	68	2.09
-19	85.72	25	10	69	2.03
-18	80.96	26	9.59	70	1.96
-17	76.51	27	9.21	71	1.9
-16	72.33	28	8.84	72	1.85
-15	68.41	29	8.48	73	1.79
-14	64.73	30	8.15	74	1.73
-13	61.27	31	7.83	75	1.68
-12	58.02	32	7.52	76	1.63
-11	54.97	33	7.23	77	1.58
-10	52.1	34	6.95	78	1.54
-9	49.4	35	6.68	79	1.49
-8	46.86	36	6.43	80	1.45
-7	44.46	37	6.19		
-6	42.21	38	5.96		
-5	40.08	39	5.73		
-4	38.08	40	5.52		
-3	36.19	41	5.32		
-2	34.41	42	5.12		
-1	32.73	43	4.93		
0	31.14	44	4.75		
1	29.64	45	4.58		
2	28.22	46	4.42		
3	26.87	47	4.26		
4	25.61	48	4.11		
5	24.41	49	3.97		
6	23.27	50	3.83		
7	22.2	51	3.7		
8	21.18	52	3.57		
9	20.21	53	3.45		
10	19.3	54	3.33		
11	18.43	55	3.22		
12	17.61	56	3.11		
13	16.83	57	3.11		
14	16.09	58	2.9		
15	15.38	59	2.81		
16	14.71	60	2.72		
17	14.08	61	2.63		
18	13.48	62	2.54		
19	12.9	63	2.49		
20	12.36	64	2.38		
21	11.84	65	2.3		
22	11.34	66	2.23		
23	10.87	67	2.16		

12. Air velocity distribution

Model: HBU-28CF03

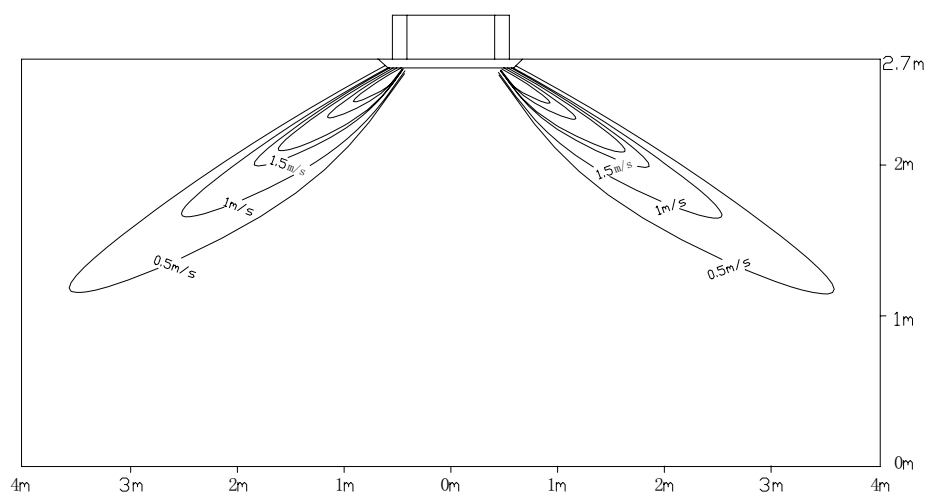
a. Cooling / Air Velocity Distribution

Cooling

Blow angle: 40°

Air Velocity Distribution

3



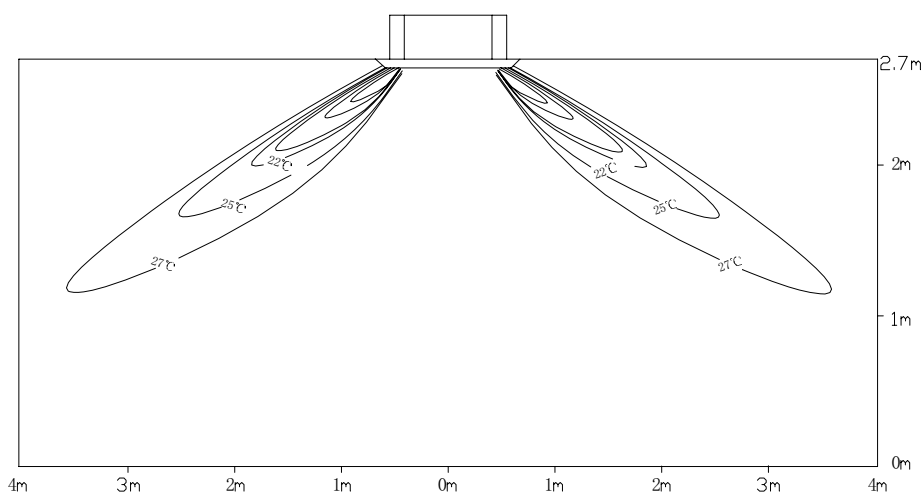
b. Cooling / Temperature Distribution

Cooling

Blow angle: 40°

Temperature Distribution

3



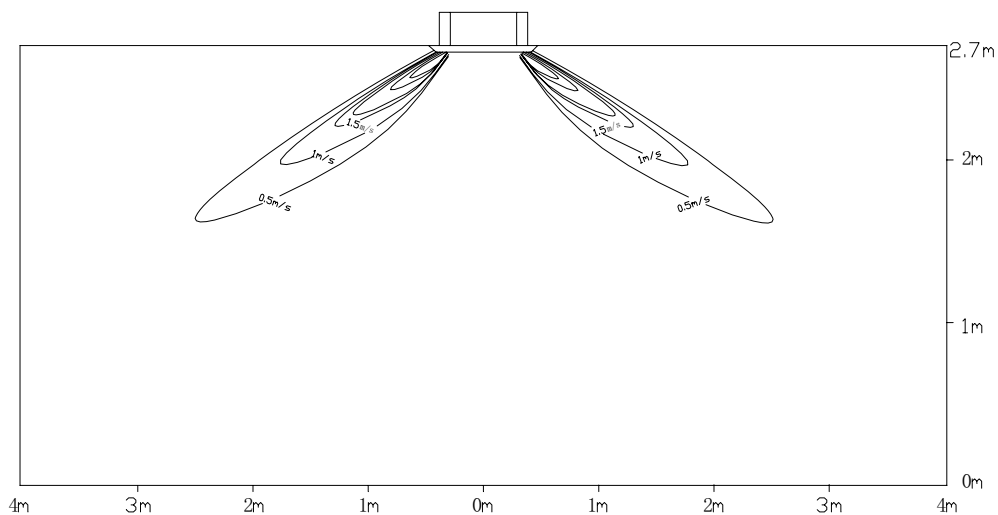
Model: HBU-28HF03

a. Cooling / Air Velocity Distribution

Cooling

Blow angle:40

Air Velocity Distribution

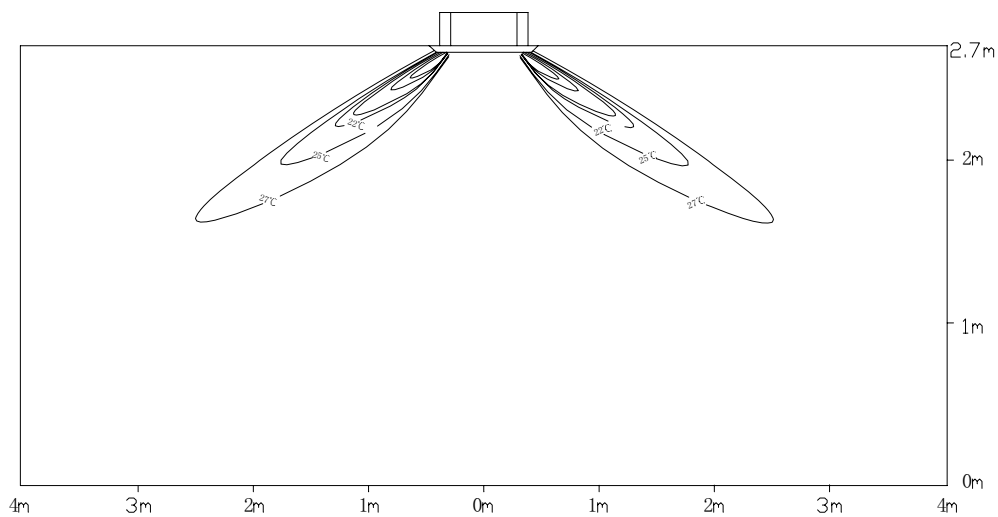


b. Cooling / Temperature Distribution

Cooling

Blow angle:40

Temperature Distribution

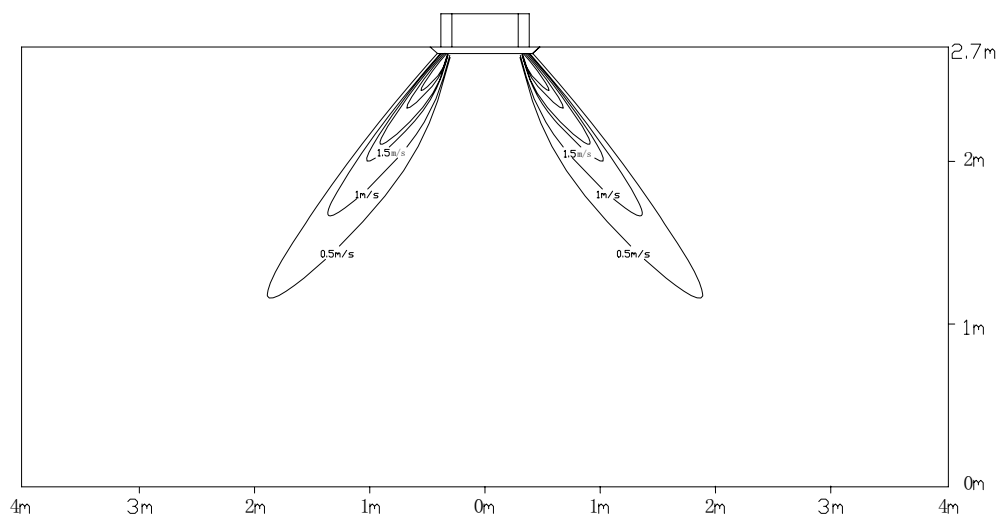


c. Heating / Air Velocity Distribution

Heating

Blow angle: 70

Air velocity Distribution

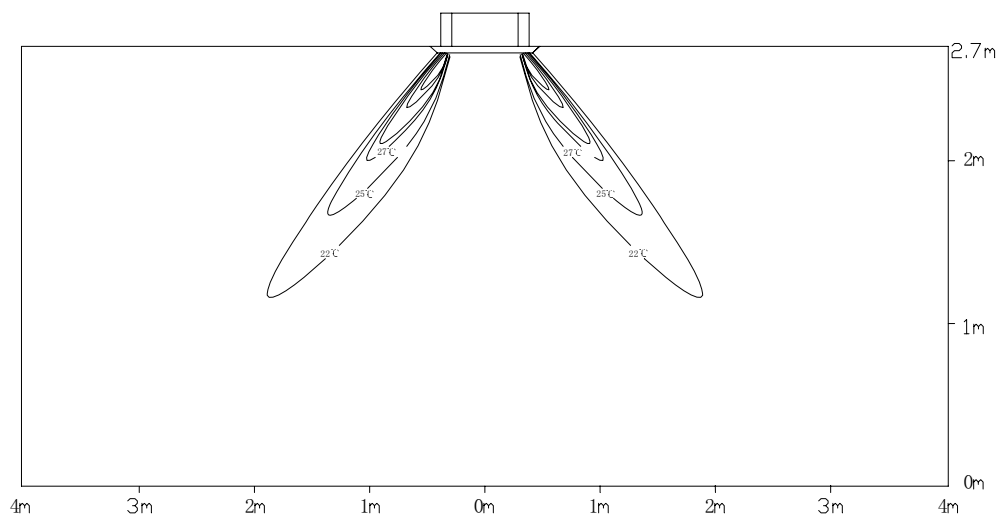


d. Heating / Temperature Distribution

Heating

Blow angle: 70

Temperature Distribution



Model: HDU-18HF03

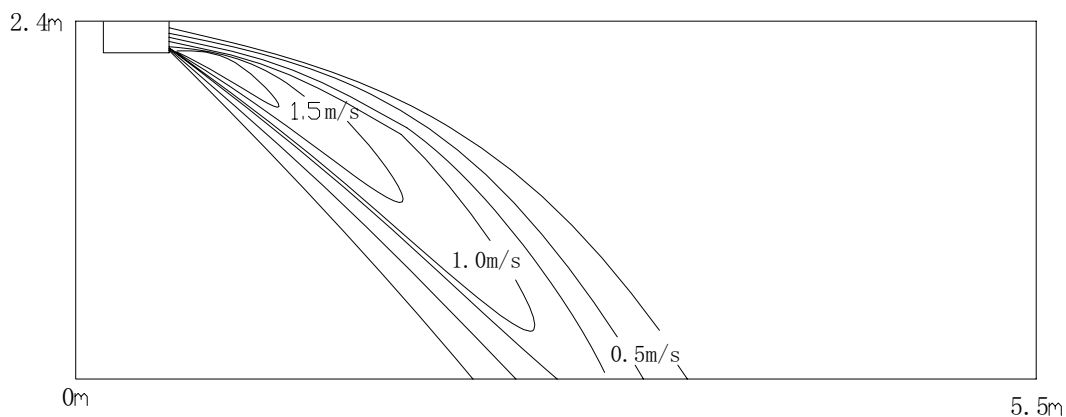
a. Cooling / Air Velocity Distribution

Cooling

Blow angle: 25

Air Velocity Distribution

2



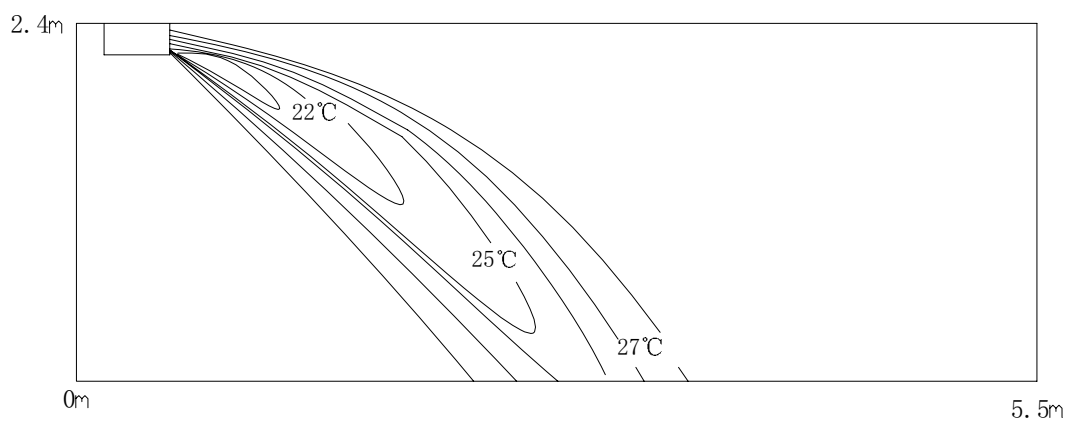
b. Cooling / Temperature Distribution

Cooling

Blow angle: 25

Temperature Distribution

2



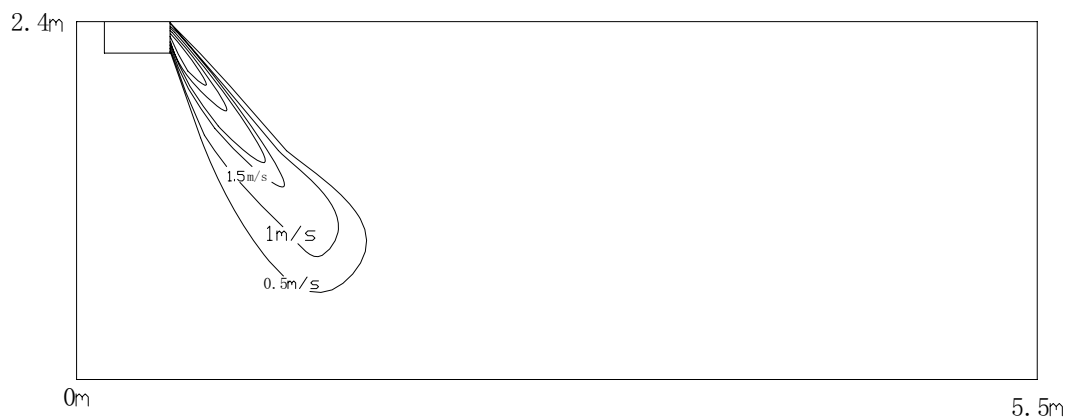
c. Heating / Air Velocity Distribution

Heating

Blow angle: 65

Air velocity Distribution

2



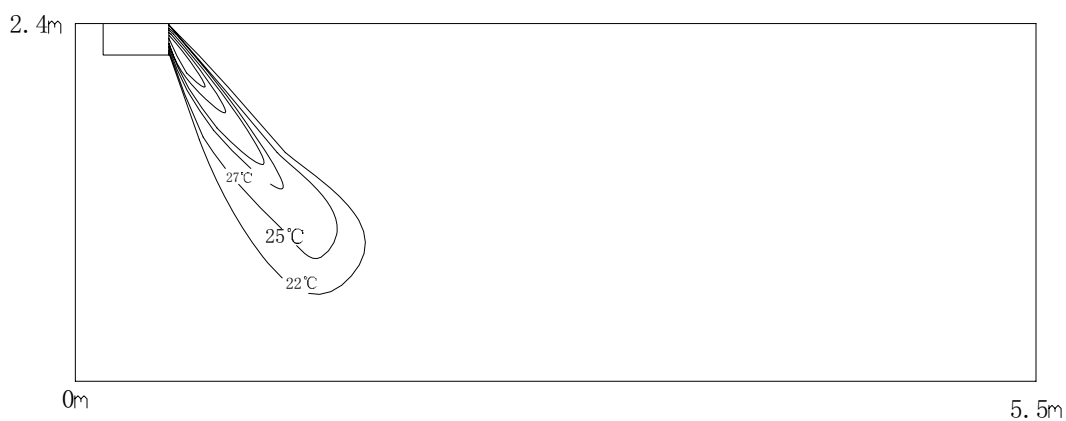
d. Heating / Temperature Distribution

Heating

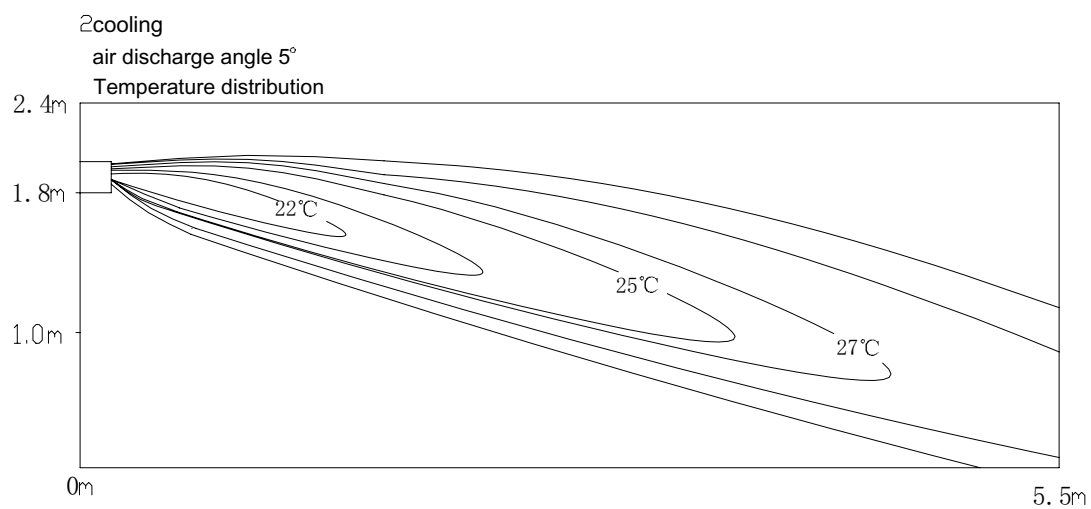
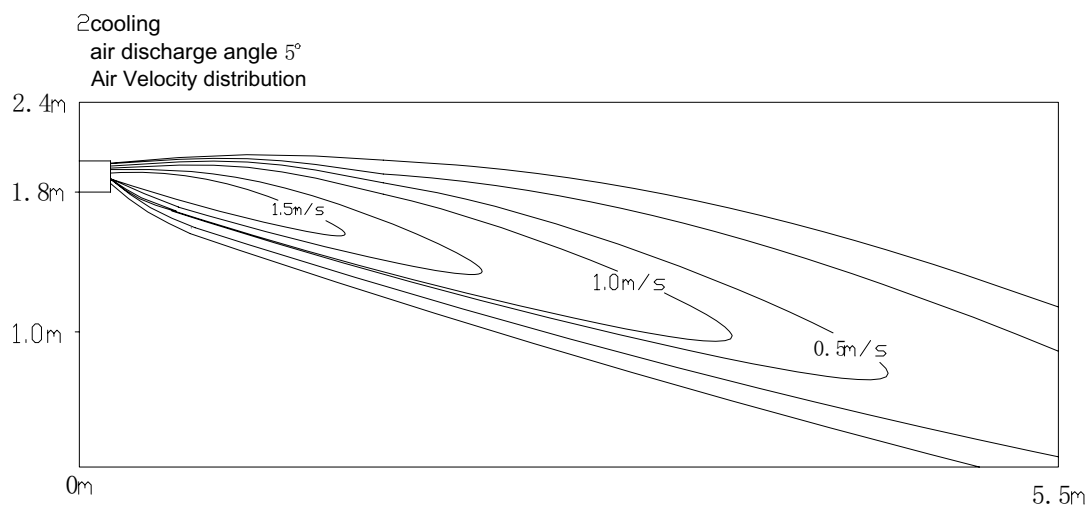
Blow angle: 65

Temperature Distribution

2



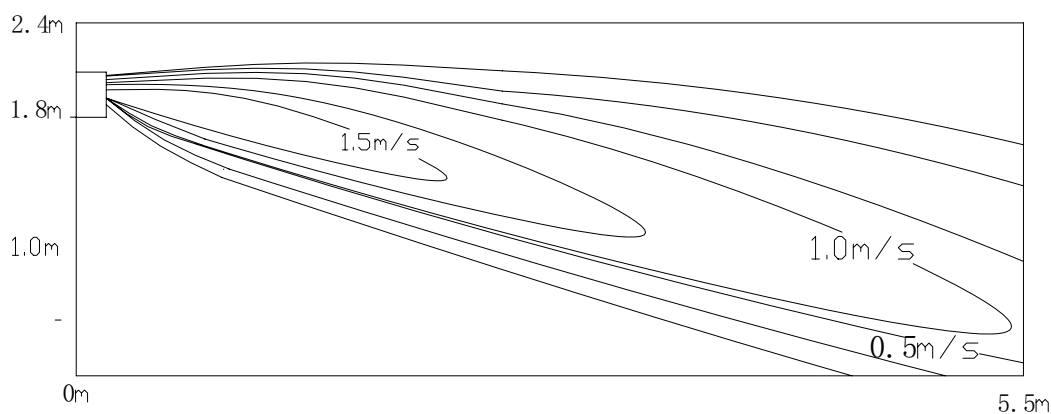
Model: HDU-18CF03



Model: HDU-28HF03

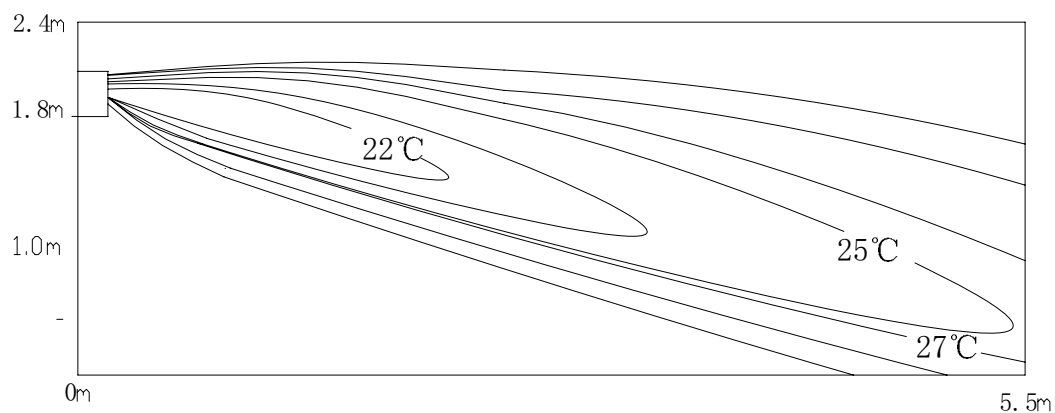
a. Cooling / Air Velocity Distribution

Cooling
Blow angle:5
Air Velocity Distribution



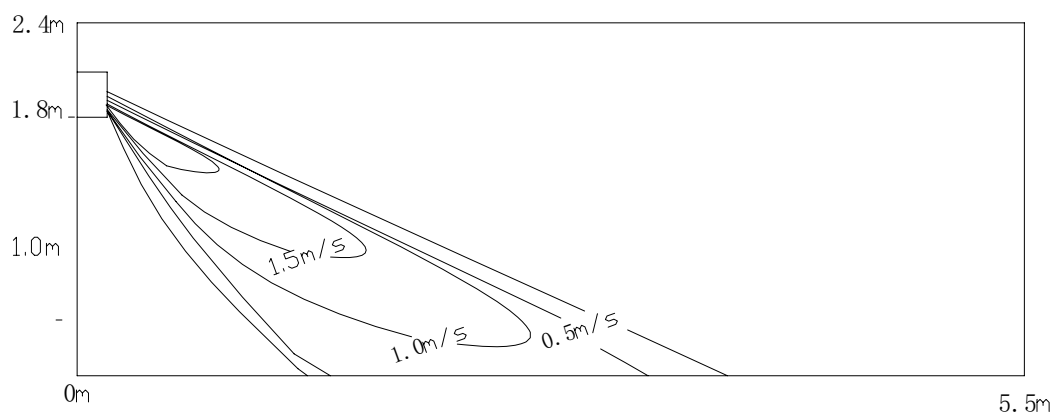
b. Cooling / Temperature Distribution

Cooling
Blow angle:5
Temperature Distribution



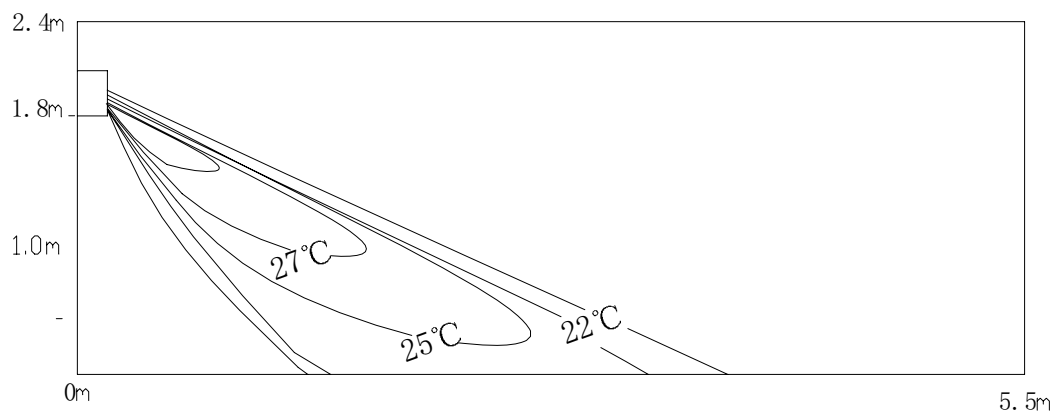
c. Heating / Air Velocity Distribution

Heating
Blow angle: 45
Air velocity Distribution

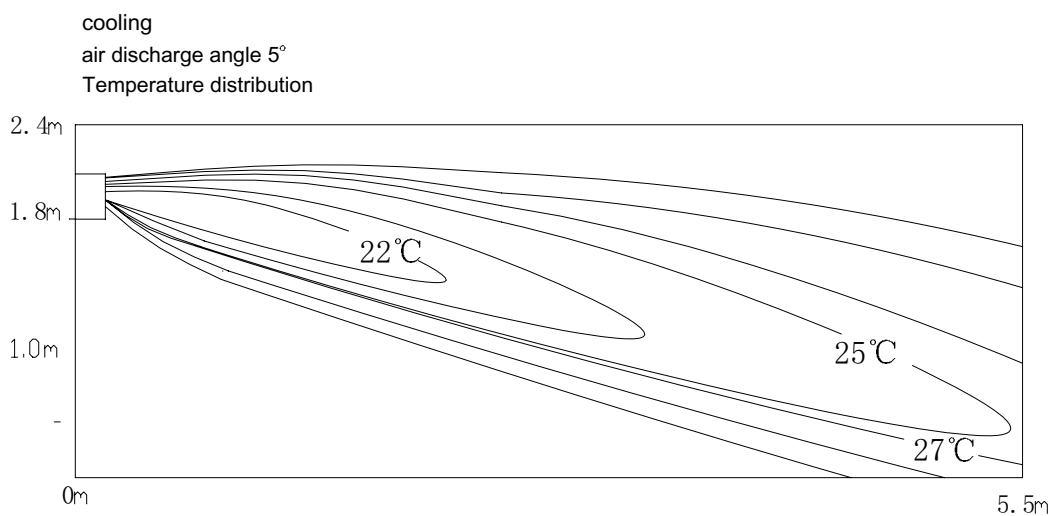
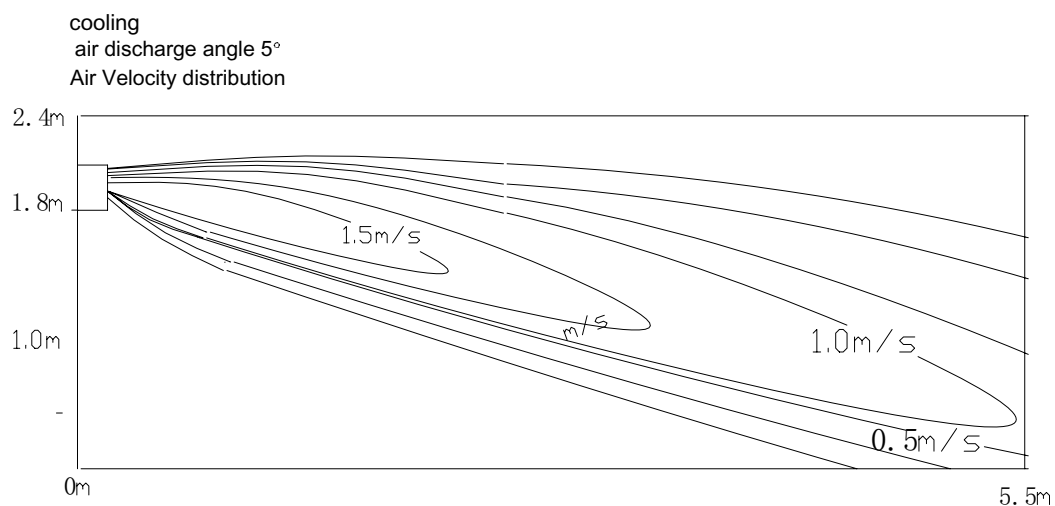


d. Heating / Temperature Distribution

Heating
Blow angle: 45
Temperature Distribution



Model: HDU-28CF03



Haier

Commercial Air Conditioner

Model: HBU-18/28/42HF03
HBU-28CF03 HDU-18/28CF03
HDU-18/28HF03 HDU-42HF03/H

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<http://www.haier.co>



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<https://splitsystema48.ru/instrukcii-po-ekspluatácii-kondicionerov.html>

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