(03/2009 - VA1)

Service Manual of XRV Systems

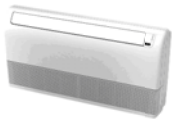
HCSU 2501 XRV
HCSU 3001 XRV
HCSU 3501 XRV
HCSU 4001 XRV
HCSU 4501 XRV

Part 1
General Information

Sommario

1. XRV Systems Lineup

1.1 Indoor Units

XRV Indoor Unit	Refrigerant	2.2kW	2.8Kw	3.6kW	4.5kW	5.6kW	7.1kW	8.0kW	9.0kW	10.0kW	11.2kW	14.0kW
Four-way cassette compact 	R410A		√	√	√							
Low static pressure duct 	R410A	√	√	√								
Duct 	R410A				√	√	√	√	√		√	√
Ceiling & floor unit 	R410A			√	√	√	√	√	√		√	
Wall mounted unit 	R410A	√	√	√	√	√						
Exposed Floor-standing 	R410A	√	√	√	√	√	√	√				
Concealed Floor-standing 	R410A	√	√	√	√	√	√	√				
New Four-way Cassette 	R410A					√	√	√	√	√	√	

1.2 Outdoor Units

8 ~ 10HP	12 ~ 16HP
	
18 ~ 20HP	**22 ~ 26HP**
	
28 ~ 32HP	**34 ~ 36HP**
	

38 ~ 42HP	44 ~ 48HP
	
50 ~ 52HP	**54 ~ 58HP**
	
60 ~ 64HP	
	

2. Combinations of Outdoor Units

Modello			Potenzialità Kw	HP	Combinazione (HP)	N° max unità interne collegabili
Mini XRV		HCNU 1101 XRV	11			5
		HCSU 1101 XRV				
		HCNU 1401 XRV	14			6
		HCSU 1401 XRV				
		HCSU 1551 XRV	15,5			7
XRV		HCSU 2501 XRV	25	8		13
		HCSU 3001 XRV	30	10		16
		HCSU 3501 XRV	35	12		
		HCSU 4001 XRV	40	14		
		HCSU 4501 XRV	45	16		20
			55	18	8+10	
			60	20	10+10	24
			65	22	10+12	
			70	24	10+14	28
			75	26	10+16	
			80	28	12+16	
			85	30	14+16	32
			90	32	16+16	
			100	34	10+10+14	36
			105	36	10+10+16	
			110	38	10+12+16	
			115	40	10+14+16	42
			120	42	10+16+16	
			125	44	12+16+16	
			130	46	14+16+16	48
			135	48	16+16+16	
			145	50	12+12+12+14	54
			150	52	12+12+12+16	
			155	54	12+12+14+16	
			160	56	12+12+16+16	58
			165	58	10+16+16+16	
			170	60	12+16+16+16	
			175	62	14+16+16+16	64
			180	64	16+16+16+16	

Caution: The system enables the connection of indoor units with a total capacity of between 50 % to 130% of that of the corresponding outdoor unit but when this capacity ratio exceeds 100% then the actual capacity of each indoor unit will decrease compared to rated capacity when all the units operated simultaneously.

3. Features

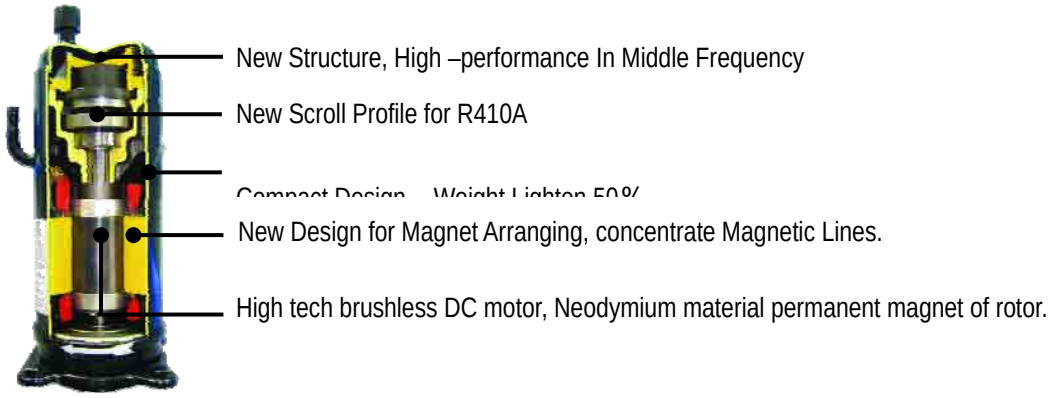
3.1 Environment friendly

3.1.1 Environmental-friendly refrigerant R410A will not destroy the ozonosphere.

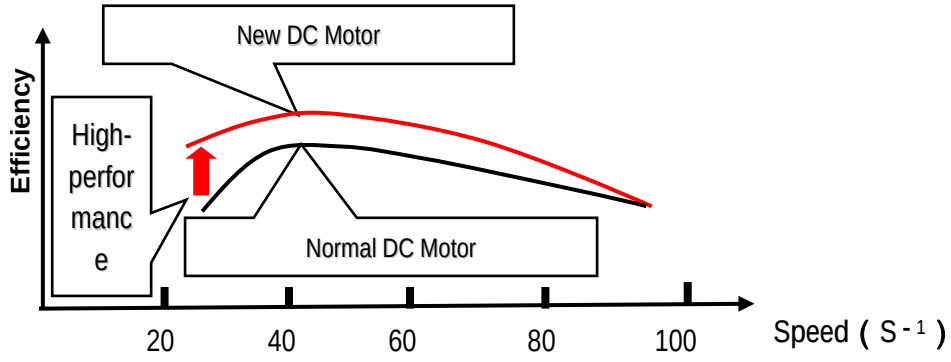
3.1.2 Full compliance with EU ROHS direction.

3.2 DC Variable-Speed technology

DC Inverter Smart adopts High tech brushless DC motor, Neodymium material permanent magnet of rotor, New Design for Magnet Arranging, concentrate Magnetic Lines, reduce the consuming of energy, DC Variable-Speed 25％Energy Savings Compared AC variable-speed type.



New DC Motor central winding motor owns high efficiency comparing with normal DC motor.



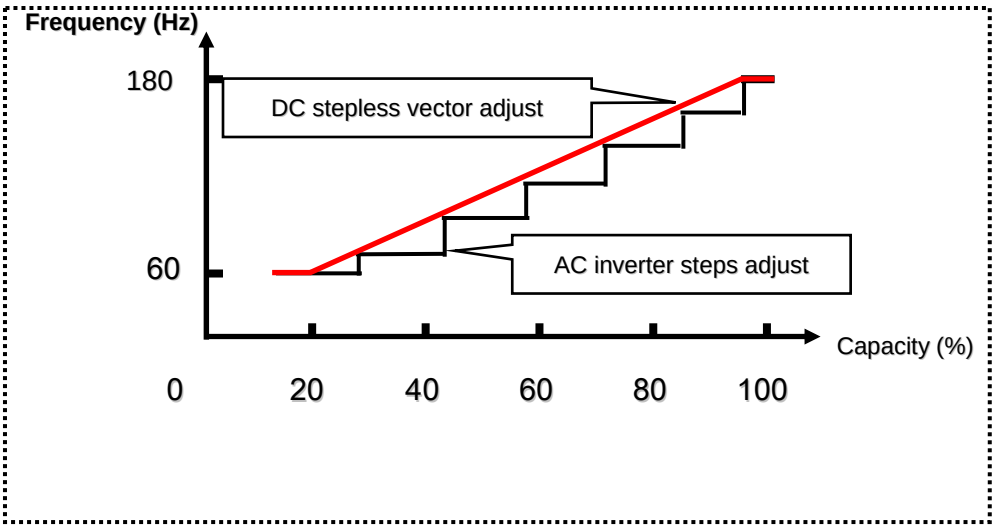
3.3 Vector Control Technology

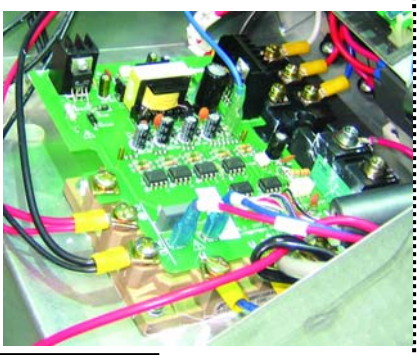
System stepless Vector Adjust Vector Drive Technology:

1. The units can adjust capacity according the ambient temperature.

2. The system can be stepless adjusted with vector driving tech in the operation range from 60Hz to 180Hz; it means the output can actually meet your requirement to make you feel more comfortable.

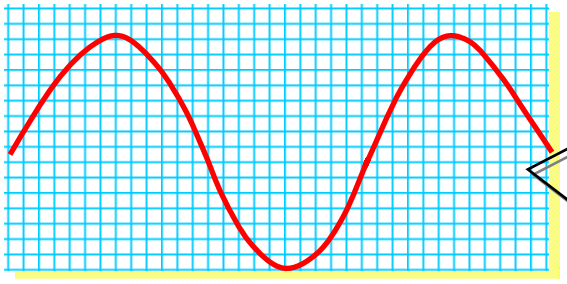
Capacity——Frequency curve:





Vector drive tech make the motor lower sound levels , operate more smooth

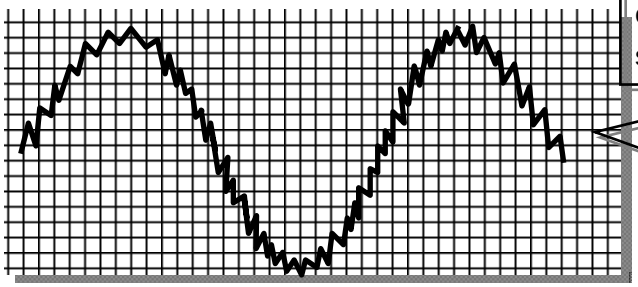
Smooth sine wave DC inverter



The motor of compressor adopt 180°sine wave driving tech , ensure the current output of converter with smooth sine wave curve ,Also improved motor running efficiency after testing the speed accurately.

DC variable-speed drive unit

General wave



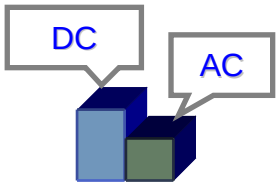
General variable-speed motor just output saw-tooth wave, and can' test the motor speed accurately. So the efficiency is lower.

3.4 High efficiency

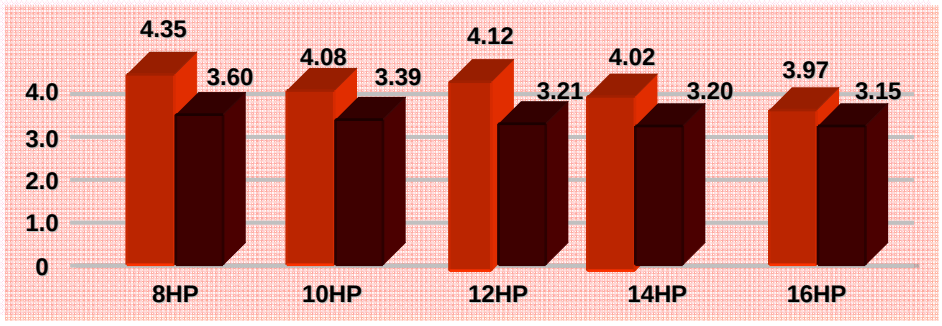
The efficiency of DC Inverter Smart is increased 25% compared with AC Inverter Smart at least.

Cooling EER

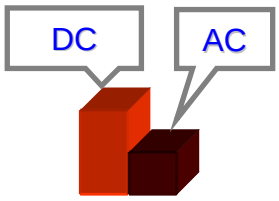
Average EER 3.53



Heating COP

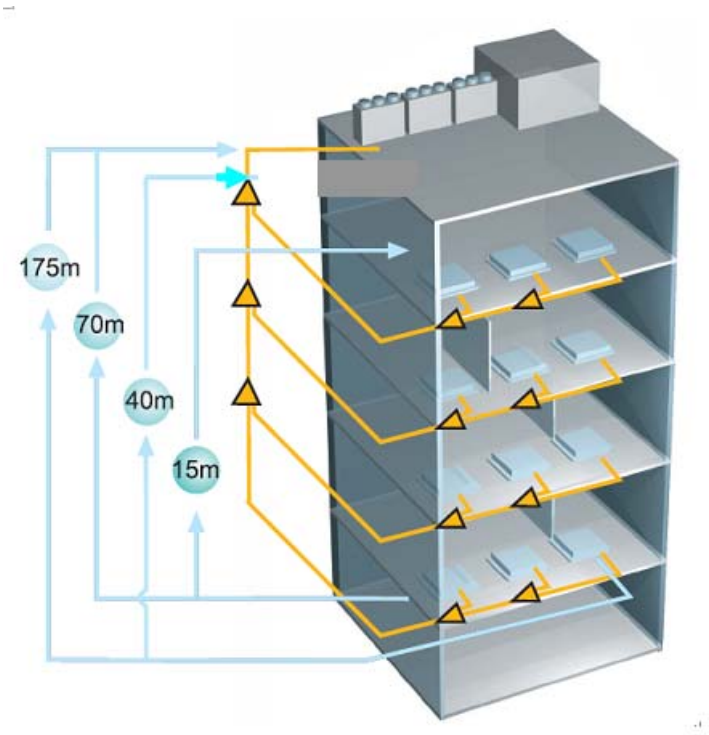


Average COP 4.11



3.5 Long & single piping system

- The max. pipe length between indoor unit and outdoor unit is 175m.
- The max. height difference between indoor unit and outdoor unit is 70m.
- The max. distance between the first branch to the farthest indoor unit is 40m.
- The max. height difference between indoor units is 15m.



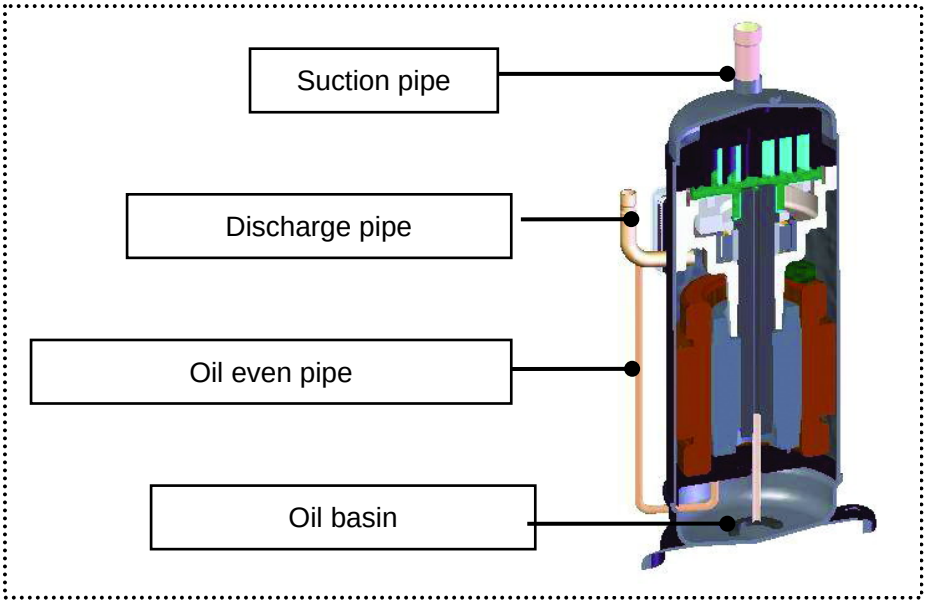
3.6 Free combination, wide capacity range

- 5 basic modules, which can be freely assembled.
- 2HP increments of capacity range, which meets customer’s needs accurately.

Maximum capacity is 64HP, the maximum capacity in air-conditioner refrigeration industry.
5 basic modules: 8HP, 10HP, 12HP, 14HP, 16HP, 2HP increments of capacity range

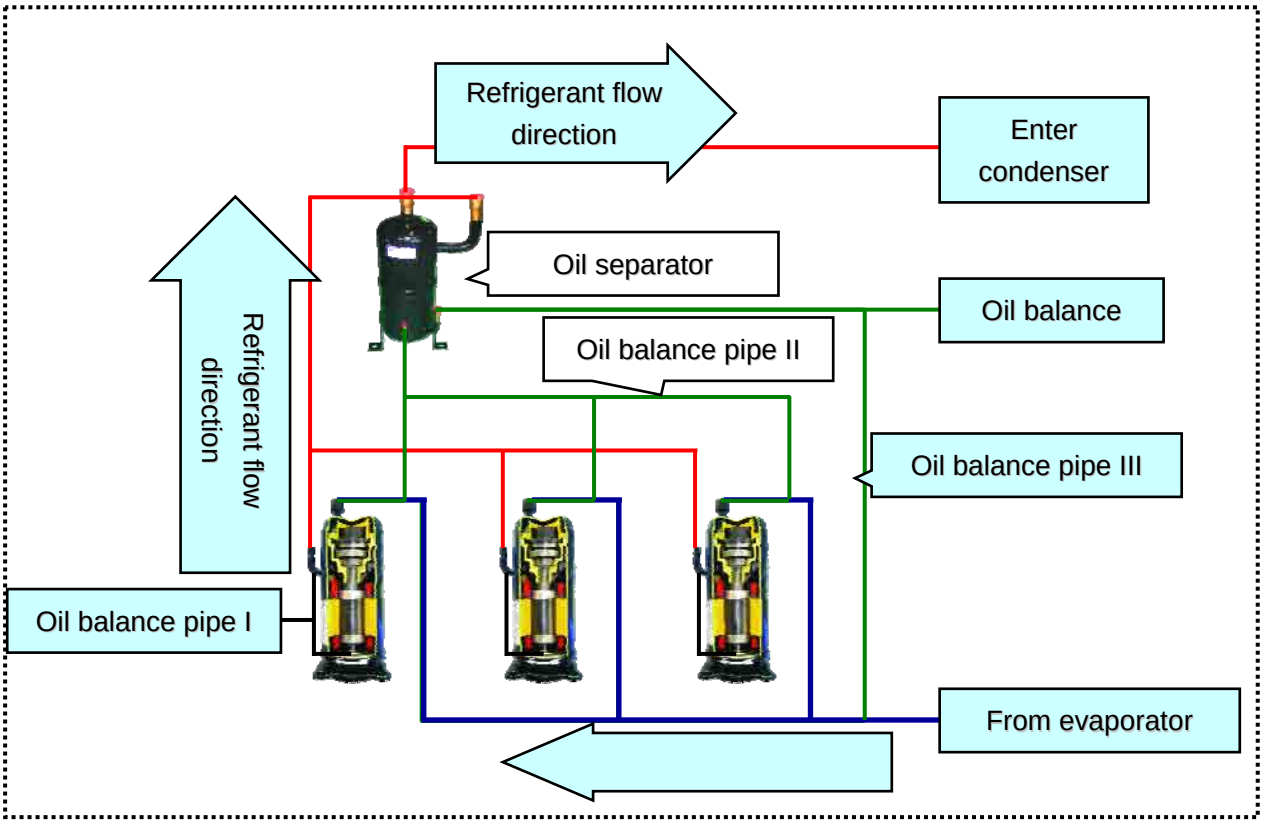
3.7 Patented design, running reliable, and oil return to the system better.

3.7.1 Oil Control technology



Oil balance between modules，special oil balance vector control equipment ensured oil reasonable distribution between modules，and make sure the compressor operate more stable and reliable

Oil balance diagram：



- DC Inverter Smart adopts oil balance technology, which can balance the refrigerant lubricant distribution among different modules.
- Adopts high efficient centrifugal-type oil separator, which separate the lubricant from discharge refrigerant with up to 99% effect to make all the lubricant discharged from compressor can be returned in time.
- New designed low pressure liquid receiver with high efficiency of oil-return effect.
- Oil balance ensures sufficient refrigerant lubricant supply. Elaborately designed oil-return hole, which ensure reliable oil-return for every compressor.

3.7.2 Gas balance

DC Inverter Smart adopts unique gas balance device among compressors, which balancing the gas suction volume among different compressors.

3.8 High air volume & low noise

New designed inner hidden duct circle improve outlet air field，decrease fan noise and boost fan efficiency.

The grille of fan air inlet and fan air outlet has airflow direction adjusting function, which leads to lower pressure. Adopt dual turbo fan which makes bigger airflow volume with lower noise.

3.9 Enhanced Heat-exchanging

Adopt 3-row inner-screw copper heat-exchanger, which creates higher heat transfer efficiency and powerful heating capacity especially in low ambient temperature. Outdoor heat-exchange area can be adjusted by running load. Adopts dual EXV, which achieves up to 960 steps refrigerant adjusting precision to insure precise control of refrigerant and raise system circulation efficiency.

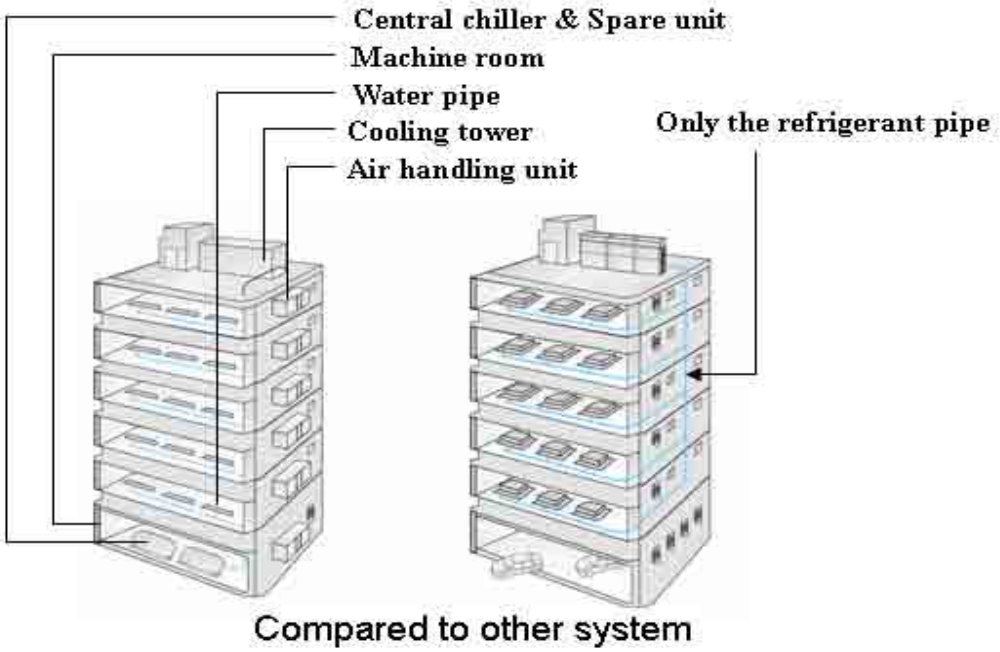
3.10 Patented double four way valve designs.

The combination of one main and one auxiliary four way valve can control the outdoor heat exchanger and outdoor air flow independently. And according to the load adjust the heat exchange volume of outdoor unit accurately and prevent wasting the capacity in part load time.

Main Four Way Valve

Auxiliary Four Way Valve

3.11 Space saving



3.12 Simple installation and easy maintenance

3.12.1 Easy installation

- The structure of the DC Inverter Smart system and the piping work are simple, thus the installation is easy.

3.12.2 Independent system

DC Inverter Smart system can be installed by stages and the owners can install their system at their convenient time. Thus the system has less installation time limit.

- Installation by stages can avoid the no installment for the new project
- Convenient installation is realized for the rebuilt project.

3.12.3 No need special maintenance work

Simple refrigerant piping system without any complicated maintenance work

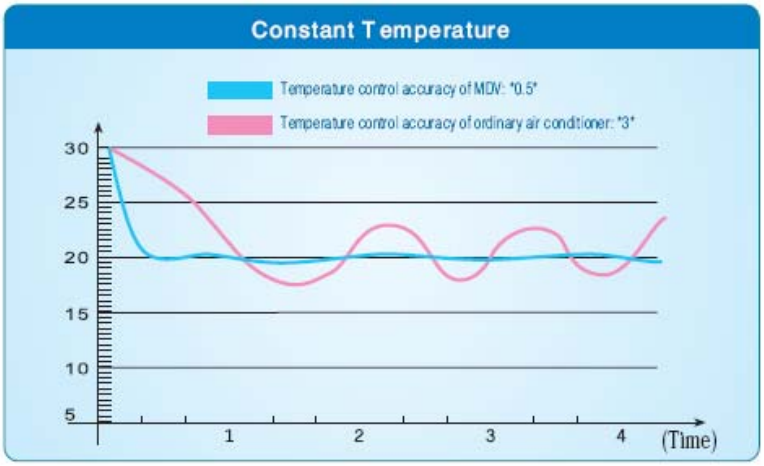
Compared with the water-cooled system:

- Without water-cooled system, there is no need to clean the water pipe
- No full-time person is needed to do the maintenance work
- Module construction enables the system to be free from large-scale repair regularly

3.13 Healthy and more comfortable

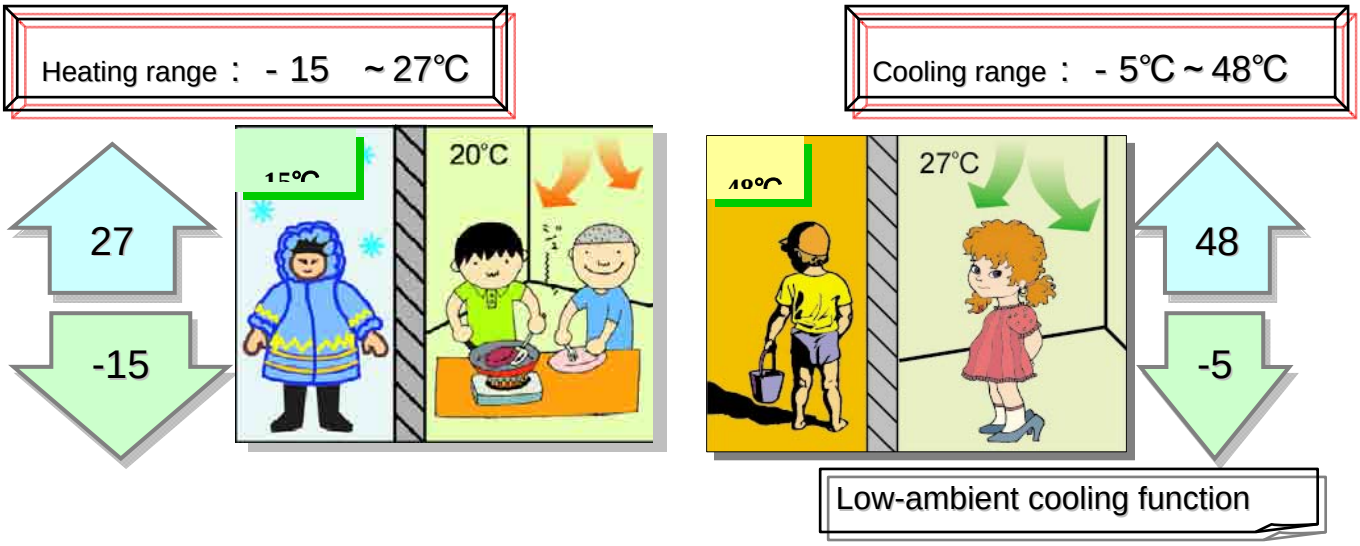
3.13.1 Accurate temperature control

Adopting high speed DSP processing chip and precise control to ensure small temperature fluctuation and feel more comfortable. Heat transfer efficiency is high in refrigerant system，inverter technology and intellectual control ensure fast cooling and heating . Temperature fluctuation is as small as ±0.5 .



3.14 Wide operating range

DC Inverter Smart is cooling and heating type，system operating range is broaden by use of digital technology. The lowest heating temperature can reach -15 ℃. The highest cooling temperature can reach 48 ℃.



Four-way Cassette Compact Type

1. Features

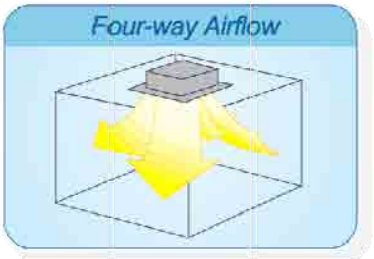
(1) Low operation noise

---Streamline plate ensures quietness

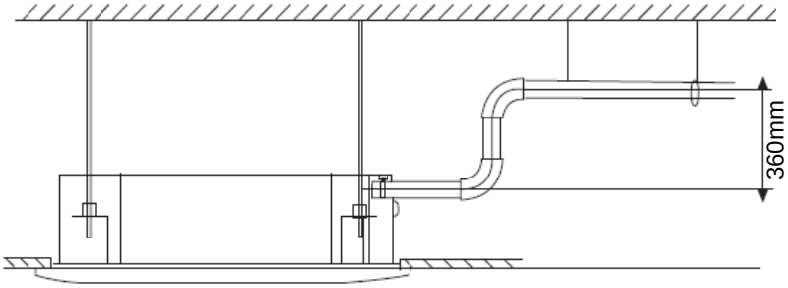
---Creates natural and comfortable environment

(2) Efficient cooling

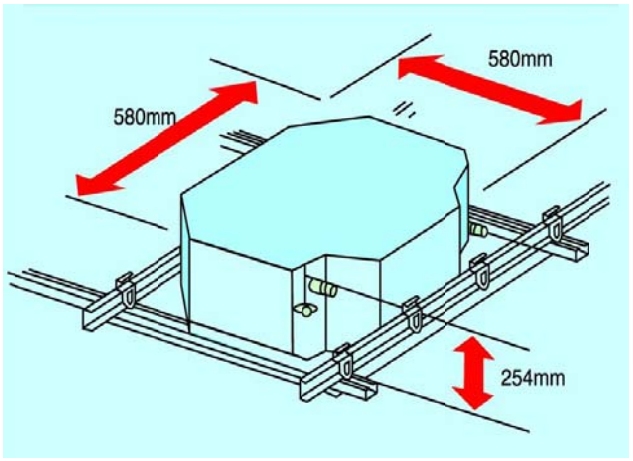
---Equal, fast and wide—range cooling

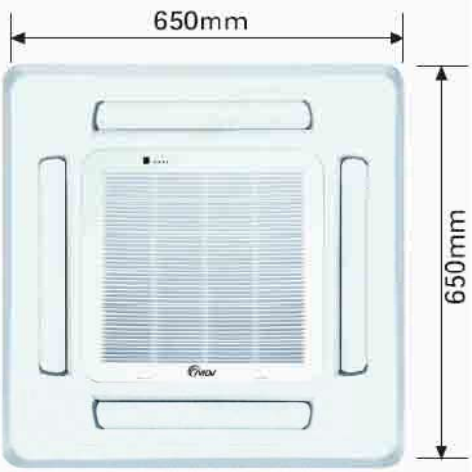


(3) Built-in water pump which pumping head is 360mm up most



(4) Compact design makes it easy for installation and maintenance



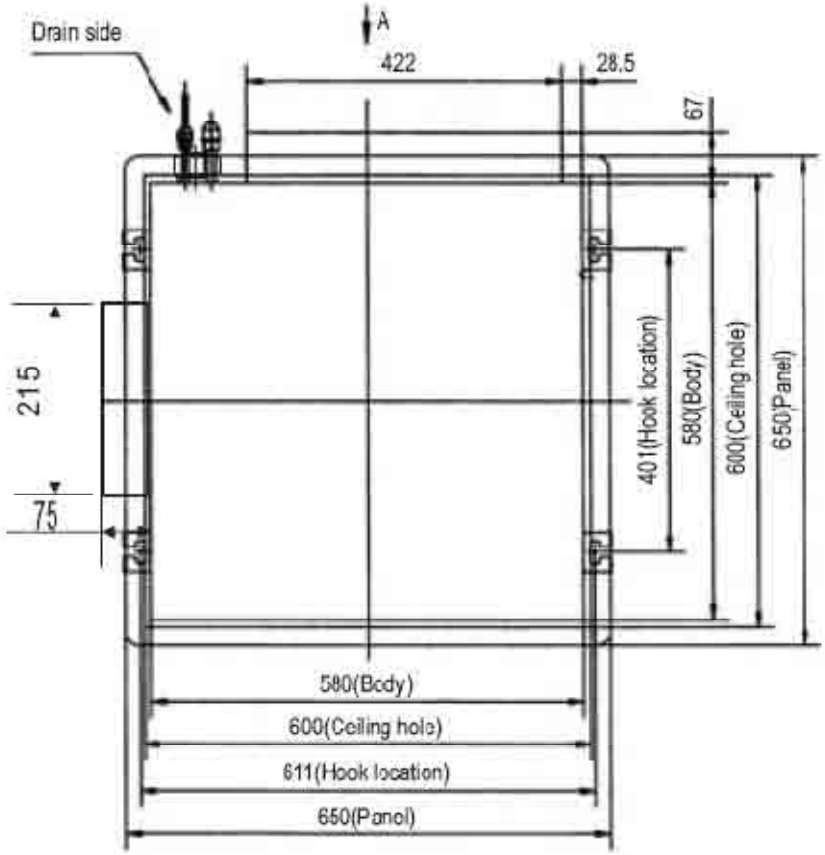


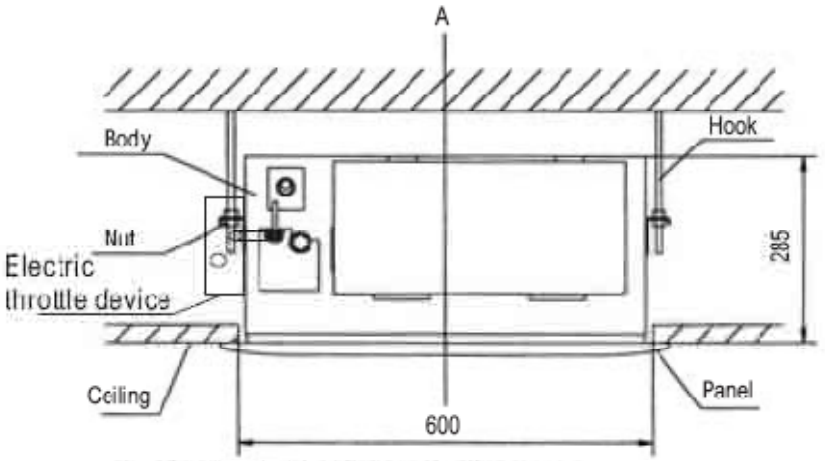
2. Specifications

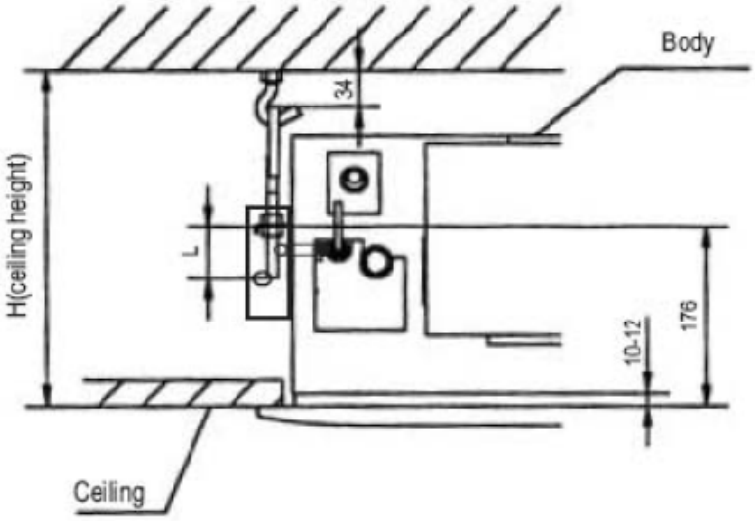
Sale Model				HTFU 281 XRV	HTFU 361 XRV
Power supply			V-ph-Hz	220~240-1-50	220~240-1-50
Cooling	Capacity		kW	2.8	3.6
	Input		W	58	58
	Rated current		A	0.26	0.26
Heating	Capacity		kW	3.2	4.0
	Input		W	58	58
	Rated current		A	0.26	0.26
Indoor fan motor	Model			YDK45-4F-3	YDK45-4F-3
	Type			AC MOTOR	AC MOTOR
	Brand			Welling	Welling
	Input		W	65/59/55	65/59/55
	Capacitor		uF	1.2uF/450V	1.5UF/450V
	Speed(hi/mi/lo)		r/min	930/770	930/770
Indoor coil	a.Number of rows			1	1
	b.Tube pitch(a)x row pitch(b)		mm	21x13.37	21x13.37
	c.Fin spacing		mm	1.4	1.4
	d.Fin type (code)			Hydrophilic aluminum	Hydrophilic aluminum
	e.Tube outside dia.and type		mm	Φ7	Φ7
				Inner groove tube	Inner groove tube
	f.Coil length x height x width		mm	1188x210x13.37	1188x210x13.37
	g.Number of circuits			3	3
Indoor air flow (Hi/Mi/Lo)			m^3/h	570/500/400	570/500/400
Sound level (sound pressure)			dB(A)	38/37/35	38/37/35
Indoor unit	Dimension (W x H x D)		mm	580x254 x580	580x254 x580
	Packing (W x H x D)		mm	750x340 x745	750x340 x745
	Net/Gross weight		kg	18/25	18/25
Panel	Dimension (W x H x D)		mm	650 x30 x650	650 x30 x650
	Packing (W x H x D)		mm	715 x115 x715	715 x115 x715
	Net/Gross weight		kg	3/5	3/5
Refrigerant piping	Type			R410A	R410A
Design pressure			MPa	4.2/2.5	4.2/2.5
Refrigerant piping	Liquid side/ Gas side		mm	Φ6.35/Φ12.7	Φ6.35/Φ12.7
Connection wiring	Power wiring		mm^2	3×2.5(L≤20m); 3×3.5(L≤50m)	3×2.5(L≤20m); 3×3.5(L≤50m)
	Signal wiring		mm^2	3×1.0	3×1.0
Drainage water pipe dia.			mm	Φ25	Φ25
Wireless remote controller				R51/E(standard)	R51/E(standard)
Operation temp			℃	17 ~ 30	17 ~ 30
Application area			m^2	14 ~ 18.6	18 ~ 24

Sale Model			HTFU 451 XRV
Power supply		V-ph-Hz	220~240-1-50
Cooling	Capacity	kW	4.5
	Input	W	63
	Rated current	A	0.28
Heating	Capacity	kW	5.0
	Input	W	63
	Rated current	A	0.28
Indoor fan motor	Model		YDK45-4F
	Type		AC MOTOR
	Input	W	64/57/48
	Capacitor	uF	2.5UF/450V
	Speed(hi/mi/lo)	r/min	930/660
Indoor coil	a.Number of rows		2
	b.Tube pitch(a)x row pitch(b)	mm	21x13.37
	c.Fin spacing	mm	1.4
	d.Fin type (code)		Hydrophilic aluminum
	e.Tube outside dia.and type	mm	Φ7
			Inner groove tube
	f.Coil length x height x width	mm	1247x26.74 x210
	g.Number of circuits		5
Indoor air flow (Hi/Mi/Lo)		m^3/h	570/500/400
Sound level (sound pressure)		dB(A)	39/38/36
Indoor unit	Dimension (W x H x D)	mm	580x 254 x 580
	Packing (W x H x D)	mm	750x 340 x 745
	Net/Gross weight	kg	24/30
Panel	Dimension (W x H x D)	mm	650 x30 x650
	Packing (W x H x D)	mm	715 x115 x715
	Net/Gross weight	kg	3/5
Refrigerant	Type		R410A
Design pressure		MPa	4.4/2.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ6.35/Φ12.7
Connection wiring	Power wiring	mm^2	3×2.5(L≤20m); 3×3.5(L≤50m)
	Signal wiring	mm^2	3×1.0
Drainage water pipe dia.		mm	Φ25
Wireless remote controller			R51/E(standard)
Operation temp		℃	17 ~ 30
Application area		m^2	18

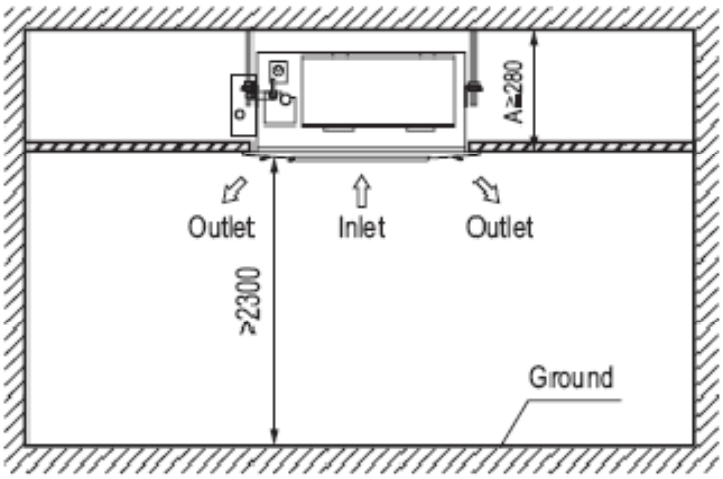
3. Dimensions

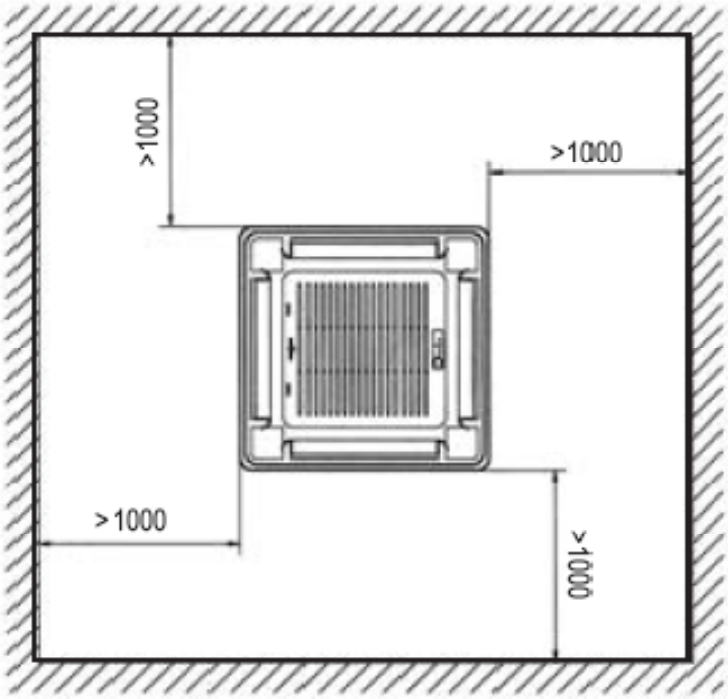






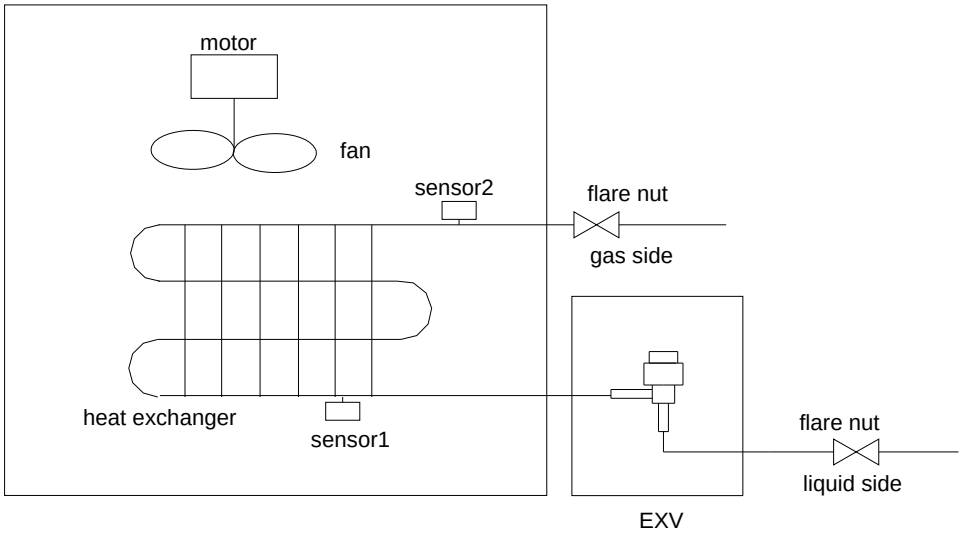
4. Service Space





5. Piping Diagrams

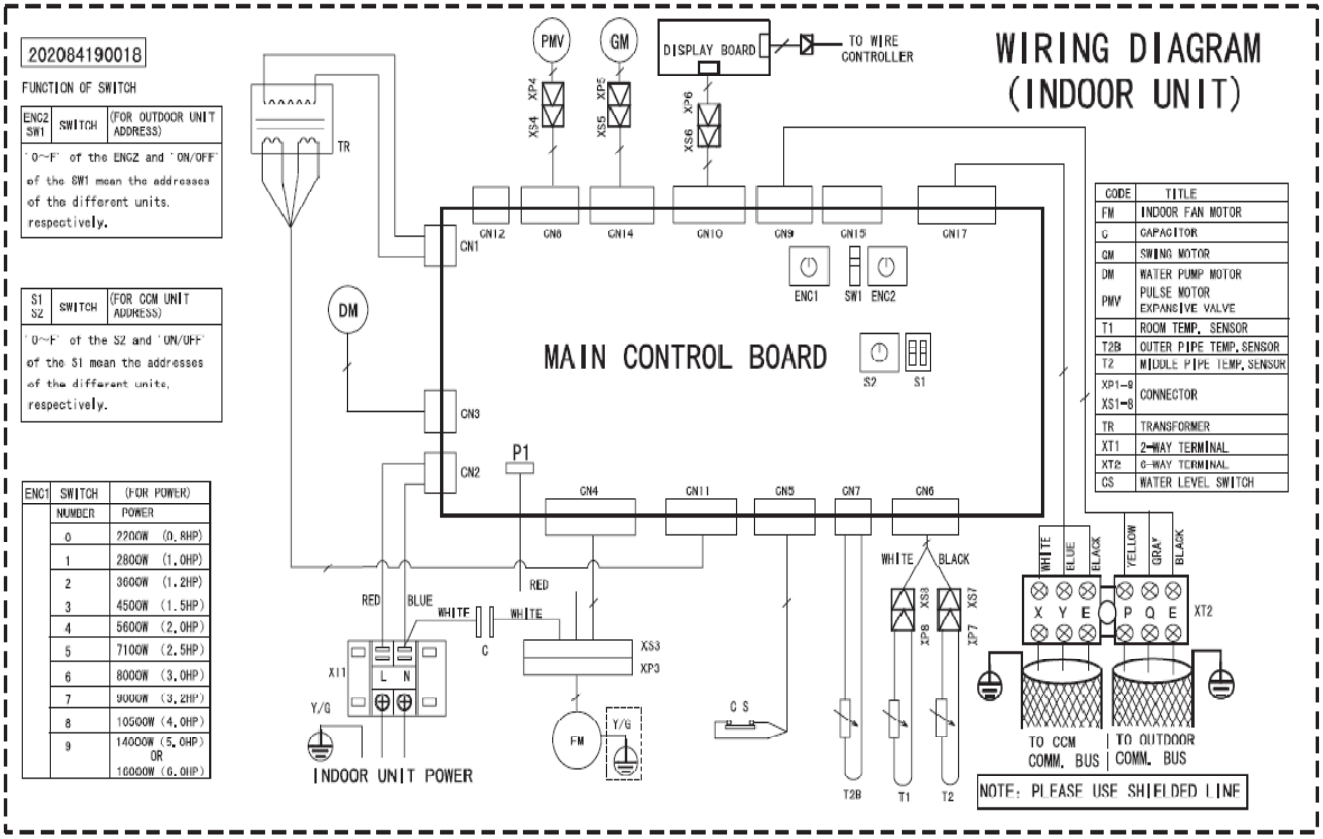
HTFU 281 – 361 – 451 XRV



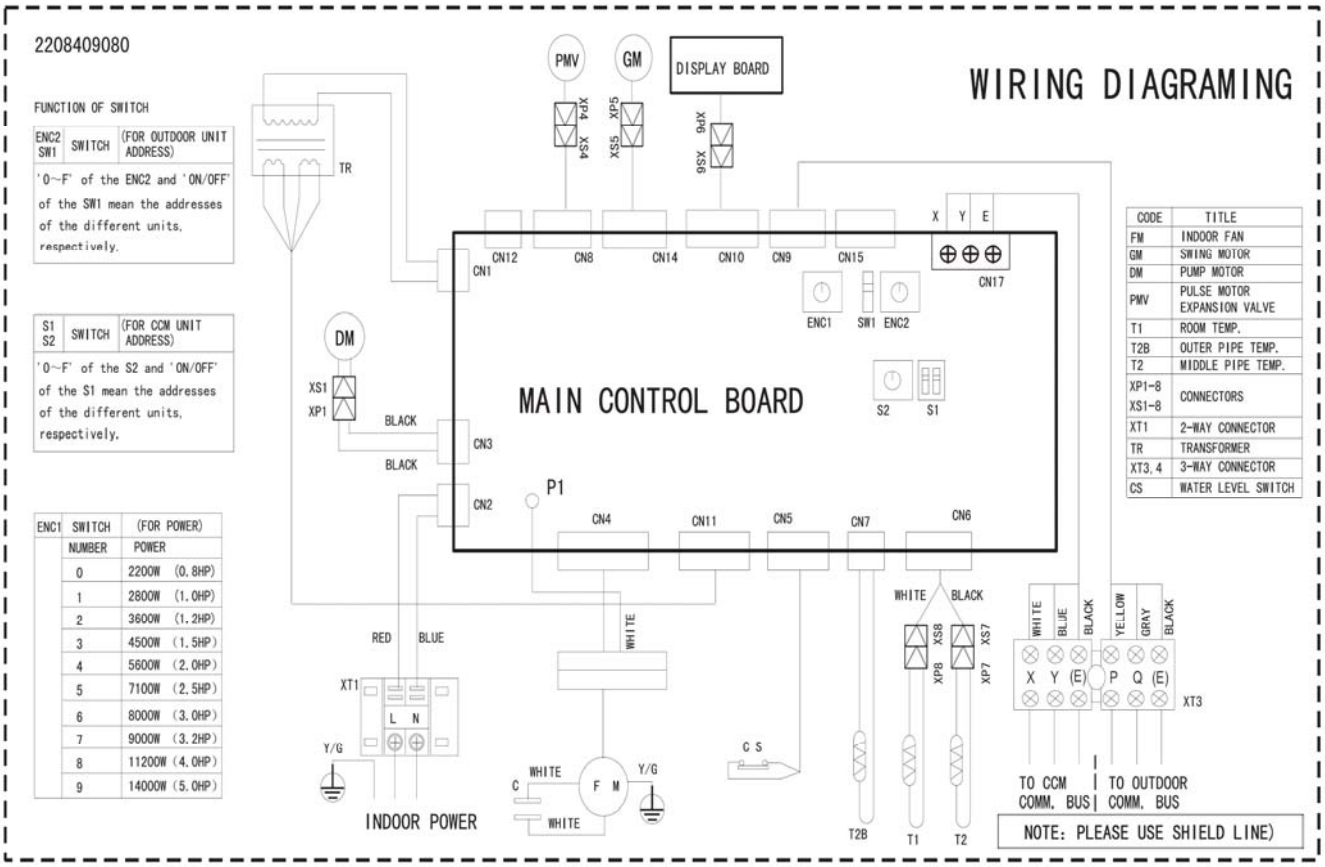
Sensor1: T2
Sensor2: T2B

6. Wiring Diagrams

HTFU 281 – 361 XRV

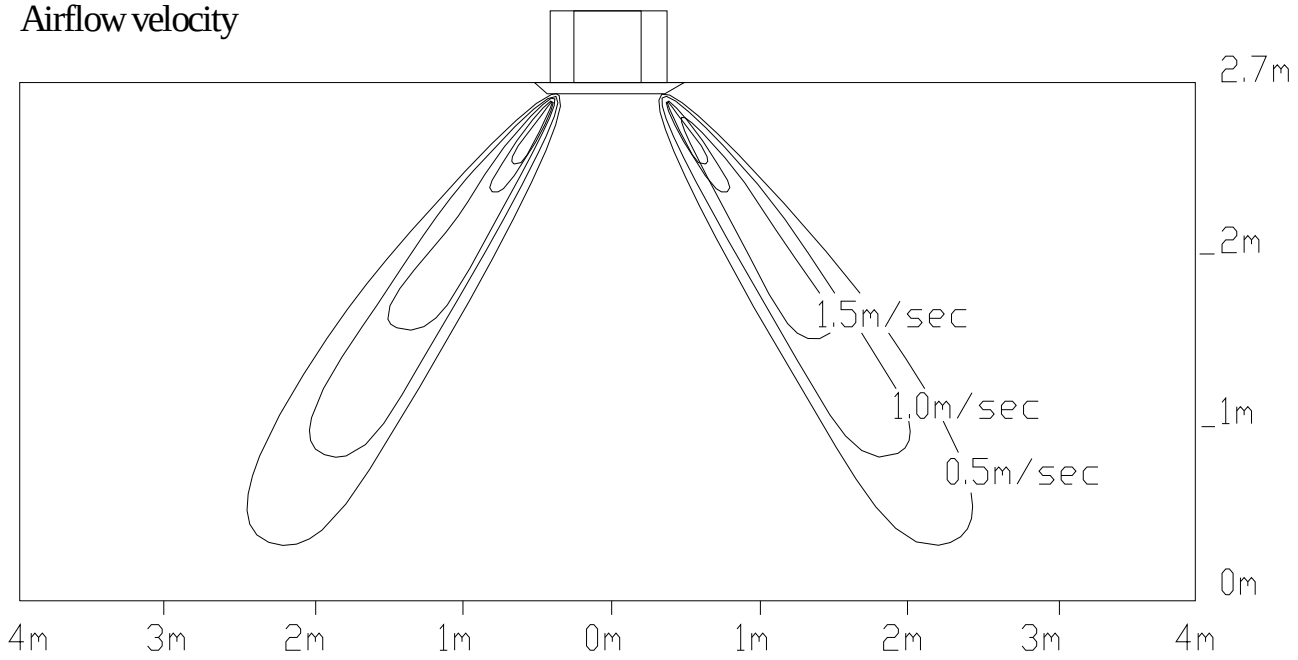


HTFU 451 XRV

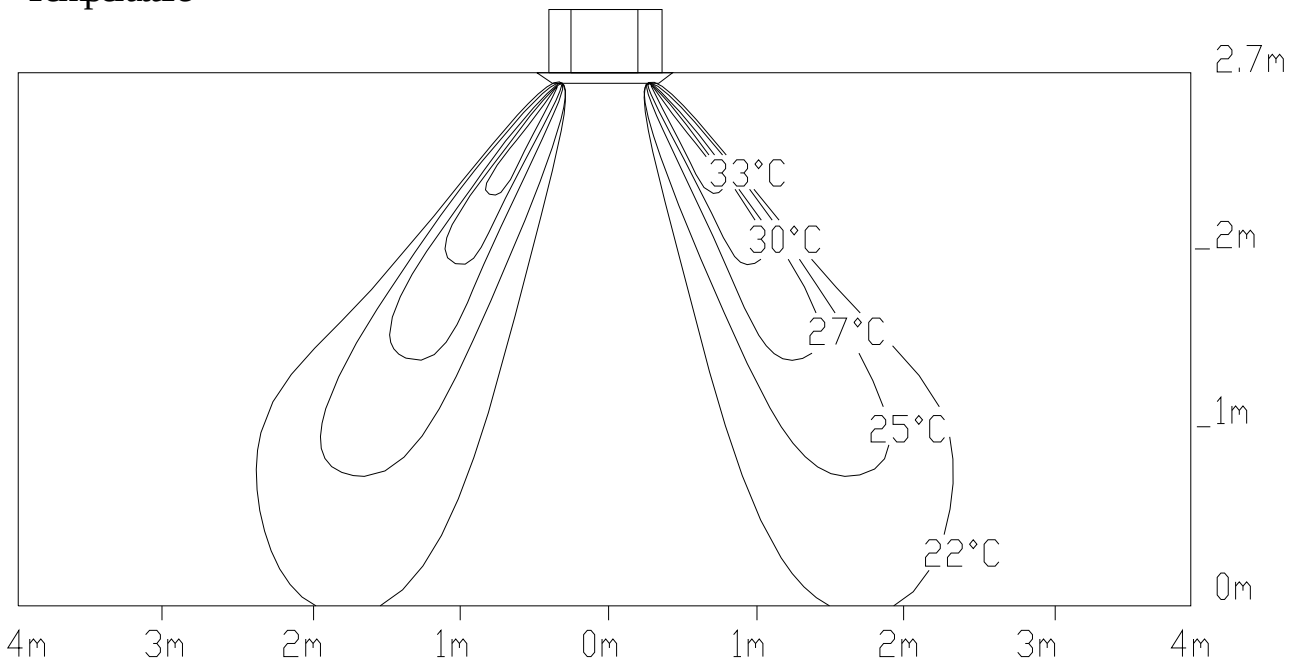


Air Velocity and Temperature Distributions

Airflow velocity



Temperature



7. Capacity Tables

7.1.1 Cooling

TH: total capacity **SH**: sensible capacity

Indoor Unit size (KW)	Outdoor temperature (℃DB)	Indoor temperature (℃WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TC	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
2.2	10	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.9	1.7
	12	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.8	1.6
	14	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.8	1.6
	16	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.8	1.6
	18	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.8	1.6
	20	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.7	1.5
	21	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.7	1.5
	23	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.5	1.6	2.7	1.5
	25	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.5	1.6	2.6	1.5
	27	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.5	1.6	2.6	1.5
	29	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.4	1.5	2.5	1.5
	31	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.4	1.5	2.5	1.5
	33	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.4	1.5	2.4	1.5
	35	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.3	1.5	2.4	1.5
	37	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.3	1.5	2.3	1.5
	39	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.2	1.6	2.3	1.5	2.3	1.5
2.8	10	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.7	2.1
	12	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.6	2.1
	14	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.6	2.1
	16	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.6	2.0
	18	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.5	2.0
	20	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.4	1.9
	21	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.4	1.9
	23	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.2	2.1	3.4	1.9
	25	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.2	2.0	3.3	1.9
	27	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.2	2.0	3.3	1.9
	29	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.1	2.0	3.2	1.9
	31	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.1	2.0	3.2	1.9
	33	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.1	2.0	3.1	2.0
	35	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.1	2.9	1.9	3.1	2.0
	37	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.1	2.9	1.9	2.9	1.9
	39	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.8	2.0	2.9	1.9	2.9	1.9
3.6	10	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.8	2.8
	12	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.6	2.7
	14	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.6	2.7
	16	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.5	2.7
	18	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.5	2.7
	20	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.4	2.7
	21	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.4	2.7

Indoor Unit size (KW)	Outdoor temperature (℃DB)	Indoor temperature (℃WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TC	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
	23	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.4	2.7
	25	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.1	2.7	4.2	2.6
	27	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.1	2.7	4.2	2.6
	29	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.0	2.6	4.1	2.5
	31	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.0	2.6	4.1	2.4
	33	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.0	2.6	4.0	2.4
	35	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.7	2.6	3.9	2.6	4.0	2.4
	37	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.7	2.6	3.9	2.6	3.9	2.3
	39	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.7	2.6	3.9	2.7	3.9	2.4
4.5	10	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.9	3.4
	12	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.9	3.4
	14	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.8	3.3
	16	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.6	3.2
	18	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.6	3.2
	20	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.5	3.2
	21	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.4	3.1
	23	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.2	3.2	5.4	3.1
	25	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.2	3.2	5.3	3.0
	27	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.0	3.0	5.3	3.0
	29	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.0	3.0	5.1	2.9
	31	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.3	3.5	5.1	3.0
	33	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.3	3.5	4.9	2.9
	35	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.3	3.5	4.8	2.8
	37	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.6	3.2	4.8	3.1	4.8	2.9
	39	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.6	3.2	4.8	3.1	4.8	2.9
5.6	10	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.3	4.1
	12	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.3	4.1
	14	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.2	4.1
	16	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	6.9	4.0
	18	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.1	4.1
	20	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.1	4.1
	21	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.0	4.1
	23	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	6.9	4.0
	25	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.5	4.1	6.8	3.9
	27	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.4	4.0	6.5	3.8
	29	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.3	4.0	6.4	3.7
	31	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.2	3.9	6.3	3.7
	33	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.0	3.8	6.3	3.7
	35	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	5.9	3.7	6.2	3.6
	37	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	5.9	3.9	6.1	3.5
	39	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	5.7	3.8	5.8	3.8	6.0	3.5

7.1.2 Heating

TC: total capacity

Indoor Unit size (kW)	Outdoor temperature (DB)		Indoor temperature (WB)					
			16.00	18.00	20.00	21.00	22.00	24.00
			TH	TH	TH	TH	TH	TH
	WB	DB	kW	kW	kW	kW	kW	kW
2.20	-15.00	-14.70	1.64	1.64	1.64	1.64	1.64	1.64
	-13.00	-12.60	1.74	1.74	1.74	1.74	1.74	1.74
	-11.00	-10.50	1.82	1.82	1.82	1.82	1.82	1.82
	-10.00	-9.50	1.90	1.90	1.90	1.90	1.90	1.90
	-9.10	-8.50	1.95	1.95	1.95	1.95	1.95	1.95
	-7.60	-7.00	1.98	1.98	1.98	1.98	1.98	1.98
	-5.60	-5.00	2.05	2.05	2.05	2.05	2.05	2.05
	-3.70	-3.00	2.16	2.16	2.16	2.16	2.16	2.16
	-0.70	0.00	2.31	2.31	2.31	2.31	2.31	2.18
	2.20	3.00	2.44	2.44	2.44	2.44	2.39	2.18
	4.10	5.00	2.52	2.52	2.52	2.52	2.39	2.18
	6.00	7.00	2.60	2.60	2.60	2.52	2.39	2.18
	7.90	9.00	2.68	2.68	2.60	2.52	2.39	2.18
	9.80	11.00	2.76	2.76	2.60	2.52	2.39	2.18
	11.80	13.00	2.86	2.81	2.60	2.52	2.39	2.18
	13.70	15.00	2.94	2.81	2.60	2.52	2.39	2.18
2.80	-15.00	-14.70	2.02	2.02	2.02	2.02	2.02	2.02
	-13.00	-12.60	2.14	2.14	2.14	2.14	2.14	2.14
	-11.00	-10.50	2.24	2.24	2.24	2.24	2.24	2.24
	-10.00	-9.50	2.34	2.34	2.34	2.34	2.34	2.34
	-9.10	-8.50	2.40	2.40	2.40	2.40	2.40	2.40
	-7.60	-7.00	2.43	2.43	2.43	2.43	2.43	2.43
	-5.60	-5.00	2.53	2.53	2.53	2.53	2.53	2.53
	-3.70	-3.00	2.66	2.66	2.66	2.66	2.66	2.66
	-0.70	0.00	2.85	2.85	2.85	2.85	2.85	2.69
	2.20	3.00	3.01	3.01	3.01	3.01	2.94	2.69
	4.10	5.00	3.10	3.10	3.10	3.10	2.94	2.69
	6.00	7.00	3.20	3.20	3.20	3.10	2.94	2.69
	7.90	9.00	3.30	3.30	3.20	3.10	2.94	2.69
	9.80	11.00	3.39	3.39	3.20	3.10	2.94	2.69
	11.80	13.00	3.52	3.46	3.20	3.10	2.94	2.69
	13.70	15.00	3.62	3.46	3.20	3.10	2.94	2.69
3.60	-15.00	-14.70	2.52	2.52	2.52	2.52	2.52	2.52
	-13.00	-12.60	2.68	2.68	2.68	2.68	2.68	2.68
	-11.00	-10.50	2.80	2.80	2.80	2.80	2.80	2.80
	-10.00	-9.50	2.92	2.92	2.92	2.92	2.92	2.92
	-9.10	-8.50	3.00	3.00	3.00	3.00	3.00	3.00
	-7.60	-7.00	3.04	3.04	3.04	3.04	3.04	3.04
	-5.60	-5.00	3.16	3.16	3.16	3.16	3.16	3.16
	-3.70	-3.00	3.32	3.32	3.32	3.32	3.32	3.32

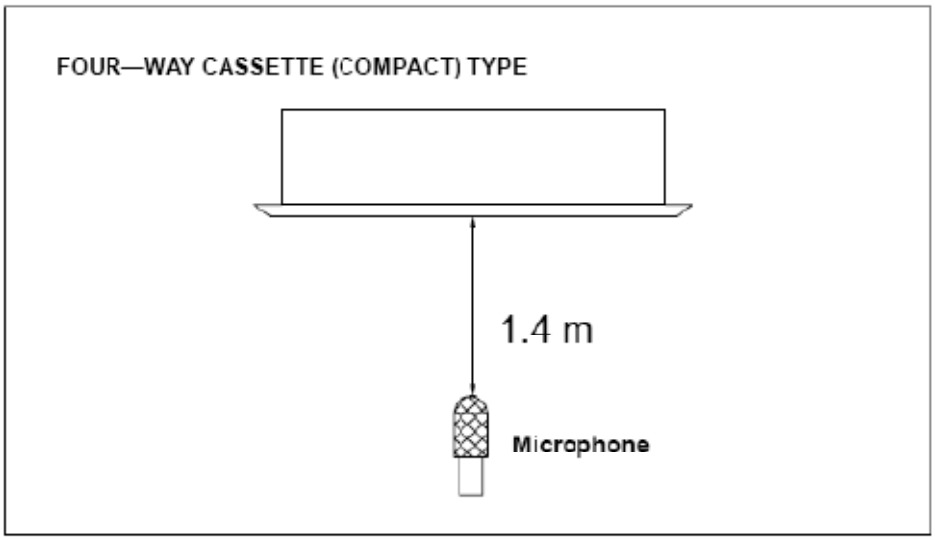
Indoor Unit size (kW)	Outdoor temperature (DB)		Indoor temperature (WB)					
			16.00	18.00	20.00	21.00	22.00	24.00
			TH	TH	TH	TH	TH	TH
	WB	DB	kW	kW	kW	kW	kW	kW
	-0.70	0.00	3.56	3.56	3.56	3.56	3.56	3.36
	2.20	3.00	3.76	3.76	3.76	3.76	3.68	3.36
	4.10	5.00	3.88	3.88	3.88	3.88	3.68	3.36
	6.00	7.00	4.00	4.00	4.00	3.88	3.68	3.36
	7.90	9.00	4.12	4.12	4.00	3.88	3.68	3.36
	9.80	11.00	4.24	4.24	4.00	3.88	3.68	3.36
	11.80	13.00	4.40	4.32	4.00	3.88	3.68	3.36
	13.70	15.00	4.52	4.32	4.00	3.88	3.68	3.36
4.50	-15.00	-14.70	3.15	3.15	3.15	3.15	3.15	3.15
	-13.00	-12.60	3.35	3.35	3.35	3.35	3.35	3.35
	-11.00	-10.50	3.50	3.50	3.50	3.50	3.50	3.50
	-10.00	-9.50	3.65	3.65	3.65	3.65	3.65	3.65
	-9.10	-8.50	3.75	3.75	3.75	3.75	3.75	3.75
	-7.60	-7.00	3.80	3.80	3.80	3.80	3.80	3.80
	-5.60	-5.00	3.95	3.95	3.95	3.95	3.95	3.95
	-3.70	-3.00	4.15	4.15	4.15	4.15	4.15	4.15
	-0.70	0.00	4.45	4.45	4.45	4.45	4.45	4.20
	2.20	3.00	4.70	4.70	4.70	4.70	4.60	4.20
	4.10	5.00	4.85	4.85	4.85	4.85	4.60	4.20
	6.00	7.00	5.00	5.00	5.00	4.85	4.60	4.20
	7.90	9.00	5.15	5.15	5.00	4.85	4.60	4.20
	9.80	11.00	5.30	5.30	5.00	4.85	4.60	4.20
	11.80	13.00	5.50	5.40	5.00	4.85	4.60	4.20
	13.70	15.00	5.65	5.40	5.00	4.85	4.60	4.20
5.60	-15.00	-14.70	3.97	3.97	3.97	3.97	3.97	3.97
	-13.00	-12.60	4.22	4.22	4.22	4.22	4.22	4.22
	-11.00	-10.50	4.41	4.41	4.41	4.41	4.41	4.41
	-10.00	-9.50	4.60	4.60	4.60	4.60	4.60	4.60
	-9.10	-8.50	4.73	4.73	4.73	4.73	4.73	4.73
	-7.60	-7.00	4.79	4.79	4.79	4.79	4.79	4.79
	-5.60	-5.00	4.98	4.98	4.98	4.98	4.98	4.98
	-3.70	-3.00	5.23	5.23	5.23	5.23	5.23	5.23
	-0.70	0.00	5.61	5.61	5.61	5.61	5.61	5.29
	2.20	3.00	5.92	5.92	5.92	5.92	5.80	5.29
	4.10	5.00	6.11	6.11	6.11	6.11	5.80	5.29
	6.00	7.00	6.30	6.30	6.30	6.11	5.80	5.29
	7.90	9.00	6.49	6.49	6.30	6.11	5.80	5.29
	9.80	11.00	6.68	6.68	6.30	6.11	5.80	5.29
	11.80	13.00	6.93	6.80	6.30	6.11	5.80	5.29
	13.70	15.00	7.12	6.80	6.30	6.11	5.80	5.29

8. Electric Characteristics

Model	Indoor Unit				Power Supply	IFM	
	Hz	Voltage	Min.	Max.	MFA	kW	FLA
HTFU 281 XRV	50	220-240	198	254	15	0.045	0.3
HTFU 361 XRV	50	220-240	198	254	15	0.045	0.3
HTFU 451 XRV	50	220-240	198	254	15	0.045	0.29

Remark:
MFA: Max. Fuse Amps. (A)
KW: Fan Motor Rated Output (KW)
FLA: Full Load Amps. (A)
IFM: Indoor Fan Motor

9. Sound Levels



Model	Noise level dB(A)	
	H	L
HTFU 281 XRV	38	35
HTFU 361 XRV	38	35
HTFU 451 XRV	39	36

New Four-way Cassette Type

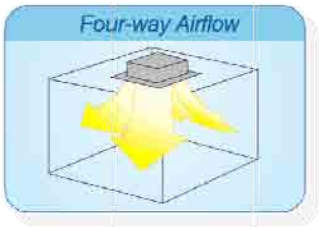
1. Features

(1) Low operation noise

—Streamline plate ensures quietness

—Creates natural and comfortable environment

(2) Efficient cooling——Equal, fast and wide range cooling



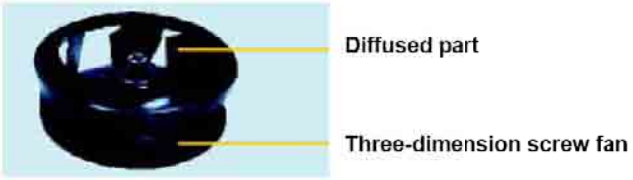
(3) Excellent performance. Fin spacing 1.45mm, higher heat-exchanging efficiency and lower noise. The optimal evaporator & sufficient airflow volume guarantees the excellent capacity

(4) The adoption of the most advanced 3- Dimensional Screw fan

—Reduces the air resistance passing through

—Smoothes the air flow

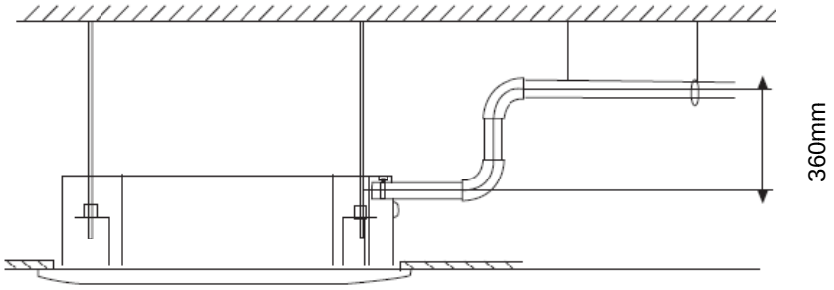
—Makes air speed distribution to the heat exchange uniform



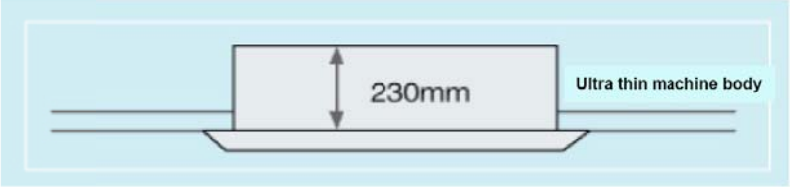
(5) Adding digital tube displaying on the display board. LED can display the Error Code to make the malfunction checking easier.

(6) Fresh air makes life healthier and more comfortable.

(7) Drainage pump can take up the condenser water to 360mm.

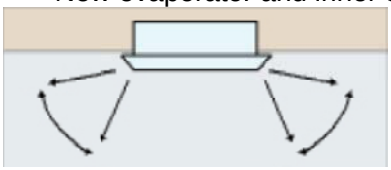


(8) Ultra thin machine body to easy installation and maintenance:
2.8kW ~ 8.0kW = 230mm;
9.0kW~11.2kW = 300mm.

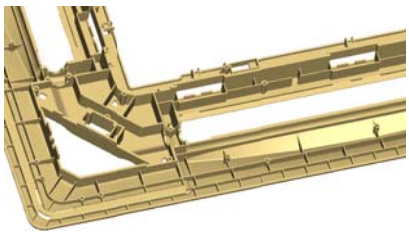


(9) Swing angle of louver

1) Add one more swing motor, one motor driving two louvers. Controlling the interspace of each part, minimizing the angle loss.
2) The swing angle of the first louver are 40~42 degrees and the second louver are 37~38 degrees. New evaporator and inner configuration designed can acquire high heat-exchanger effect.

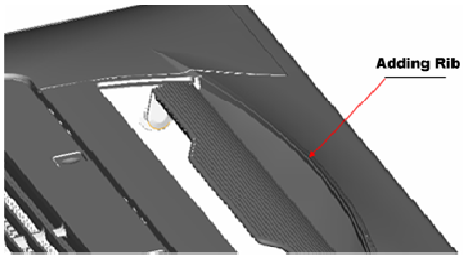


(10) More strengthening rib design around the panel, preventing the distortion for the panel.

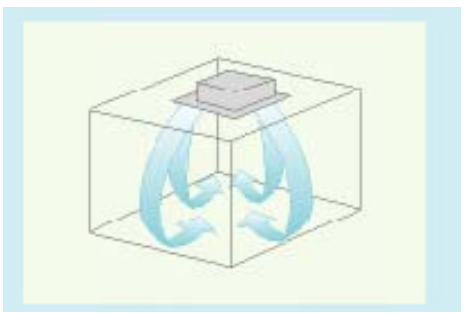


(11) New outlet frame design to make the phenomena of coagulation great improvement: prevent the condensing water from damaging the air guide strip.

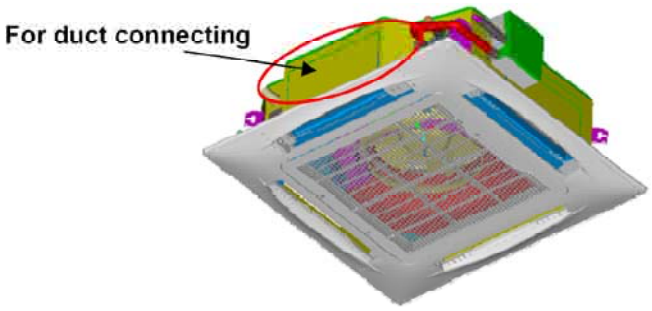
(12) Adding rib on the panel of fan outlet, which can avoid the air outlet direct flow to people.



(14) 4 speeds available, optional super high fan speed design suitable for the large building over 3m high.



(15) Reserve spaces for air side-outlet, it is available to connect duct pipe hence Air supplying from the four sides to nearby small room..



(16) Optimal design, smaller Control Box, Space saving and convenient for wiring,
Using fire resistance galvanized steel for E-box material. Metal box make the control part more stable and prevent damaging

2. Specifications

Model			HTBU 561 XRV	HTBU 711 XRV	HTBU 801 XRV
Power supply		V- Ph-Hz	220-240V, 1Ph, 50Hz		
Cooling	Capacity	kW	5.5	7.1	8.0
	Input	W	90	115	115
	Rated current	A	0.4	0.5	0.5
Heating	Capacity	kW	6.3	8.0	9.0
	Input	W	90	115	115
	Rated current	A	0.4	0.5	0.5
Indoor fan motor	Model		YDK60-6F	YDK80-6E	YDK80-6E
	Type		AC motor	AC motor	AC motor
	Brand		Welling	Welling	Welling
	Input	W	98/85/75/70	120/110/100/90	120/110/100/90
	Capacitor	uF	3	3.5	3.5
	Speed (hi/mid/lo)	r/min	550/480/410	670/550/400	670/550/400
Indoor coil	Number of rows		2	2	2
	Tube pitch(a)x row pitch(b)	mm	21x13.37	21x13.37	21x13.37
	Fin spacing	mm	1.45	1.45	1.45
	Fin type		Hydrophilic Aluminium	Hydrophilic Aluminium	Hydrophilic Aluminium
	Tube outside dia. and type	mm	Φ7 Innergroove Tube	Φ7 Innergroove Tube	Φ7 Innergroove Tube
	Coil length x height x width	mm	1959.4x168x26.74	1959.4x168x26.74	1959.4x168x26.74
	Number of circuits		8	8	8
Indoor air flow (H/M/L)		m^3/h	950/800/650	1220/1010/820	1220/1010/820
Indoor noise level (Hi/Mid/Lo)		dB(A)	42/38/35	48/45/42	48/45/42
Indoor unit	Dimension (WxHxD)	mm	840x230x840	840x230x840	840x230x840
	Packing (WxHxD)	mm	955X247X955	955X247X955	955X247X955
	Net/Gross weight	kg	30/34	30/34	30/34
Panel	Dimension (WxHxD)	mm	950x46x950	950x46x950	950x46x950
	Packing (WxHxD)	mm	1035x90x1035	1035x90x1035	1035x90x1035
	Net/Gross weight	kg	6/9	6/9	6/9
Refrigerant type			R410A	R410A	R410A
Throttle			Electric expansive valve		
Design pressure		MPa	2.5/4.4	2.5/4.4	2.5/4.4
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.53/Φ15.9	Φ9.53/Φ15.9	Φ9.53/Φ15.9
Connecting wiring	Power wiring	$Nb \times mm^2$	3×2.5(L≤20m) ; 3×3.5(L≤50m)		
	Signal wiring	$Nb \times mm^2$	3×1.0	3×1.0	3×1.0
Drainage water pipe dia.		mm	Φ32	Φ32	Φ32
Controller			Wireless remote controller (R05/BGE) (Standard)		
Operation temp			17 ~ 30		
Application area		m^2	15 ~ 56	24 ~ 71	25 ~ 80

Notes:

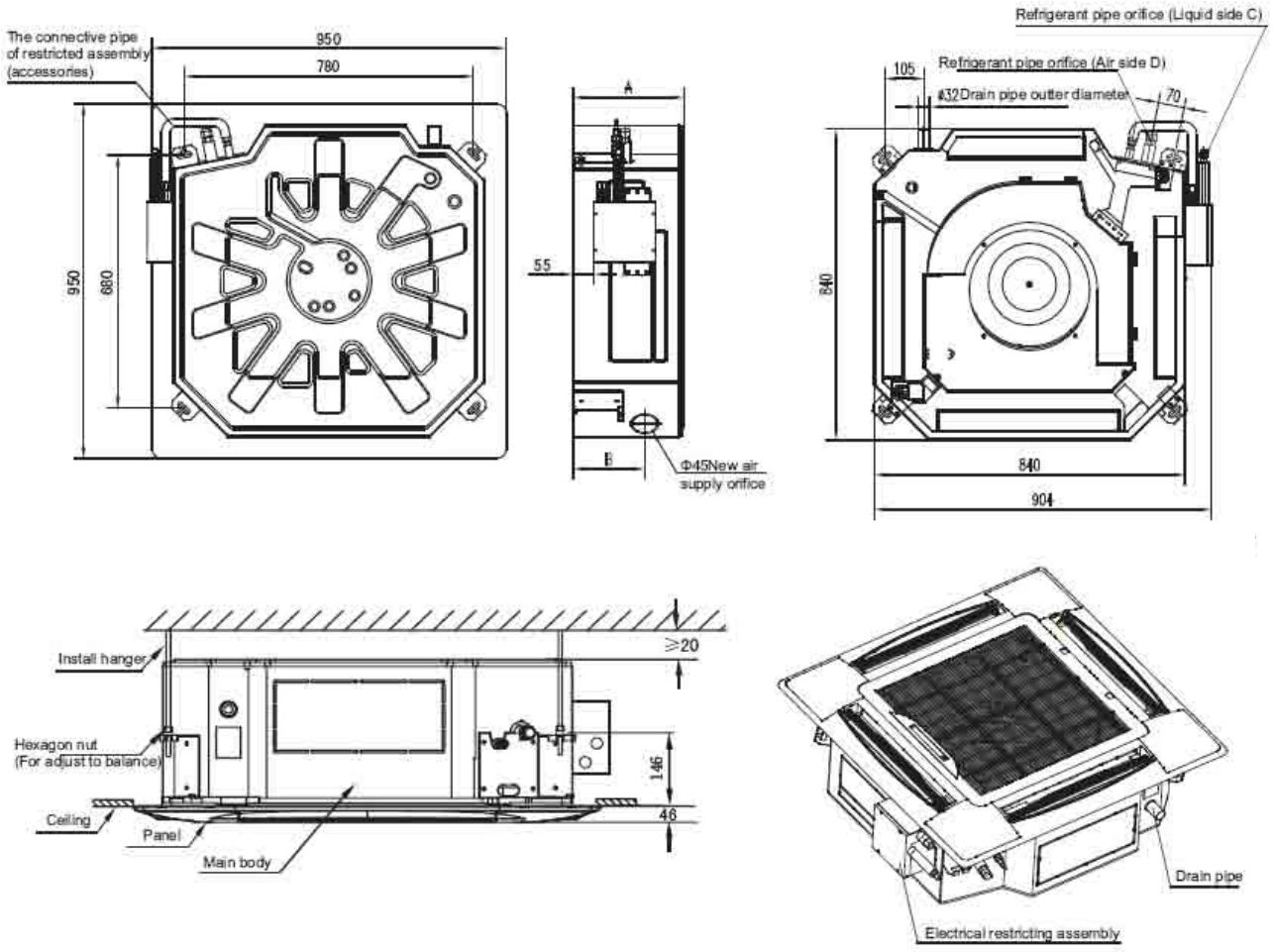
1. Nominal cooling capacities are based on the following conditions: return air temp.: 27°CDB, 19°CWB, and outdoor temp.:35°CDB, equivalent ref. piping: 8m (horizontal)
2. Nominal heating capacities are based on the following conditions: return air temp.: 20°CDB, outdoor temp.: 7°CDB, 6°CWB, and equivalent ref. Piping: 8m (horizontal)

Model			HTBU 901 XRV	HTBU 1001 XRV	HTBU 1121 XRV
Power supply		V- Ph-Hz	220-240V, 1Ph, 50Hz		
Cooling	Capacity	kW	9.0	10.0	11.2
	Input	W	160	160	160
	Rated current	A	0.7	0.7	0.7
Heating	Capacity	kW	10.0	11.0	12.5
	Input	W	160	160	160
	Rated current	A	0.7	0.7	0.7
Indoor fan motor	Model		YDK90-6E	YDK90-6E	YDK90-6E
	Type		AC motor	AC motor	AC motor
	Brand		Welling	Welling	Welling
	Input	W	165/143/114/93	165/143/114/93	165/143/114/93
	Capacitor	uF	3.5	3.5	3.5
	Speed (hi/mid/lo)	r/min	770/640/550	770/640/550	770/640/550
Indoor coil	Number of rows		2	2	2
	Tube pitch(a)x row pitch(b)	mm	21x13.37	21x13.37	21x13.37
	Fin spacing	mm	1.45	1.45	1.45
	Fin type		Hydrophilic Aluminium	Hydrophilic Aluminium	Hydrophilic Aluminium
	Tube outside dia. and type	mm	Φ7 Innergroove Tube	Φ7 Innergroove Tube	Φ7 Innergroove Tube
	Coil length x height x width	mm	1959.4x252x26.74	1959.4x252x26.74	1959.4x252x26.74
	Number of circuits		8	8	8
Indoor air flow (H/M/L)		m^3/h	1540/1300/1120	1540/1300/1120	1540/1300/1120
Indoor noise level (Hi/Mid/Lo)		dB(A)	53/48/45	53/48/45	53/48/45
Indoor unit	Dimension (WxHxD)	mm	840x300x840	840x300x840	840x300x840
	Packing (WxHxD)	mm	955X317X955	955X317X955	955X317X955
	Net/Gross weight	kg	36/41	36/41	36/41
Panel	Dimension (WxHxD)	mm	950x46x950	950x46x950	950x46x950
	Packing (WxHxD)	mm	1035x90x1035	1035x90x1035	1035x90x1035
	Net/Gross weight	kg	6/9	6/9	6/9
Refrigerant type			R410A	R410A	R410A
Throttle			Electric expansive valve		
Design pressure		MPa	2.5/4.4	2.5/4.4	2.5/4.4
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.53/Φ15.9	Φ9.53/Φ15.9	Φ9.53/Φ15.9
Connecting wiring	Power wiring	$Nb\times mm^2$	3×2.5(L≤20m)；3×3.5(L≤50m)		
	Signal wiring	$Nb\times mm^2$	3×1.0	3×1.0	3×1.0
Drainage water pipe dia.		mm	Φ32	Φ32	Φ32
Controller			Wireless remote controller (R05/BGE) (Standard)		
Operation temp			17 ~ 30		
Application area		m^2	25 ~ 90	30 ~ 100	35 ~ 110

Notes:

1. Nominal cooling capacities are based on the following conditions: return air temp.: 27°CDB, 19°CWB, and outdoor temp.:35°CDB, equivalent ref. piping: 8m (horizontal)
2. Nominal heating capacities are based on the following conditions: return air temp.: 20°CDB, outdoor temp.: 7°CDB, 6°CWB, and equivalent ref. Piping: 8m (horizontal)

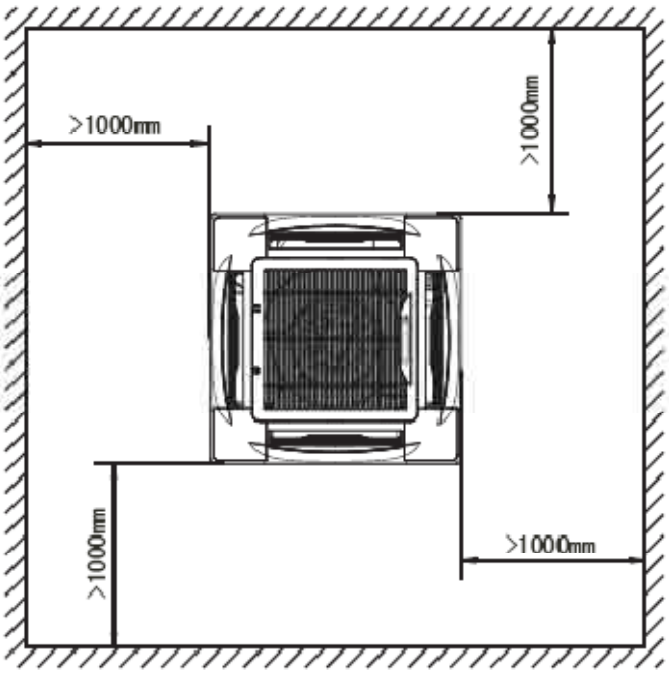
3. Dimensions

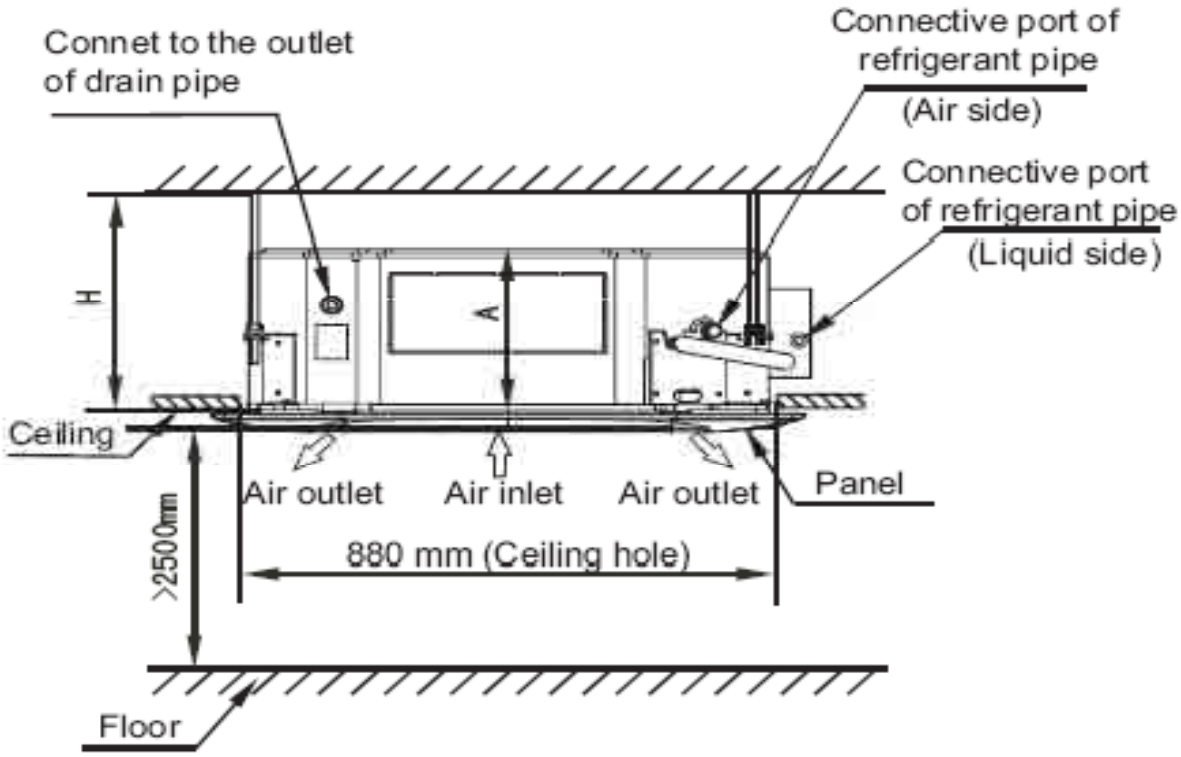


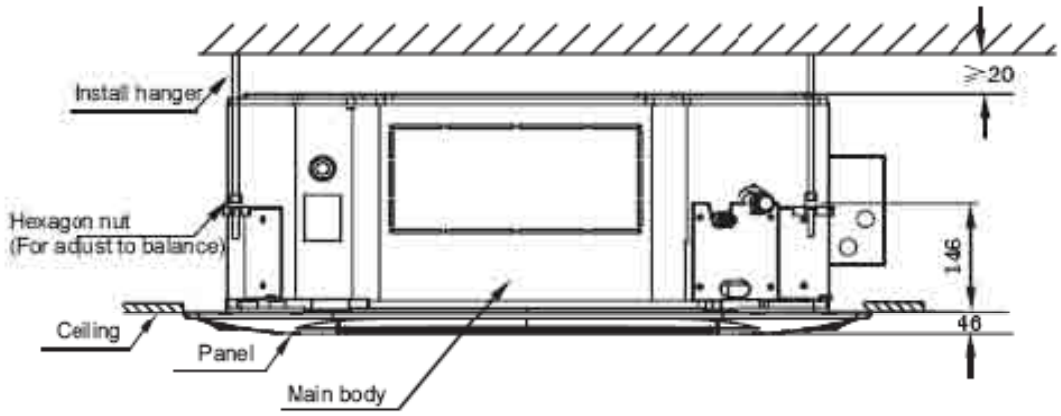
Indoor unit model	A(mm)	B(mm)
HTBU 561 XRV ~ HTBU 801 XRV	230	170
HTBU 901 XRV ~ HTBU 1121 XRV	300	190

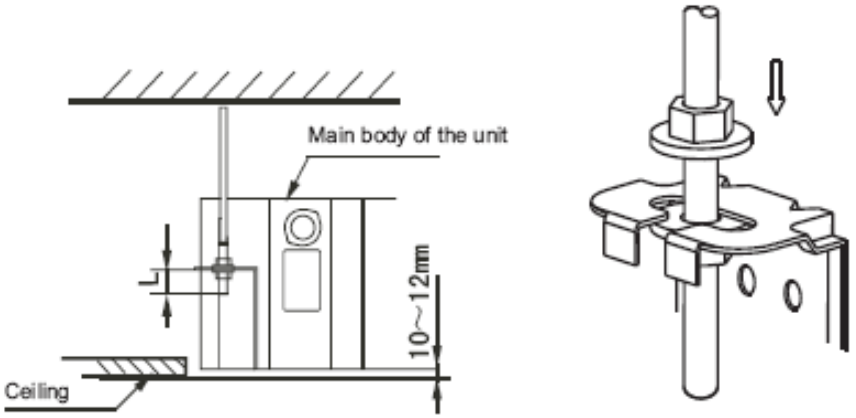
4. Service Space

1) There is enough room for installation and maintenance.
2) The ceiling is horizontal, and its structure can endure the weight of the indoor unit.
3) The outlet and the inlet are not impeded, and the influence of external air is the least.
4) The air flow can reach throughout the room.
5) The connecting pipe and drainpipe could be extracted out easily.
6) There is no direct radiation from heaters.



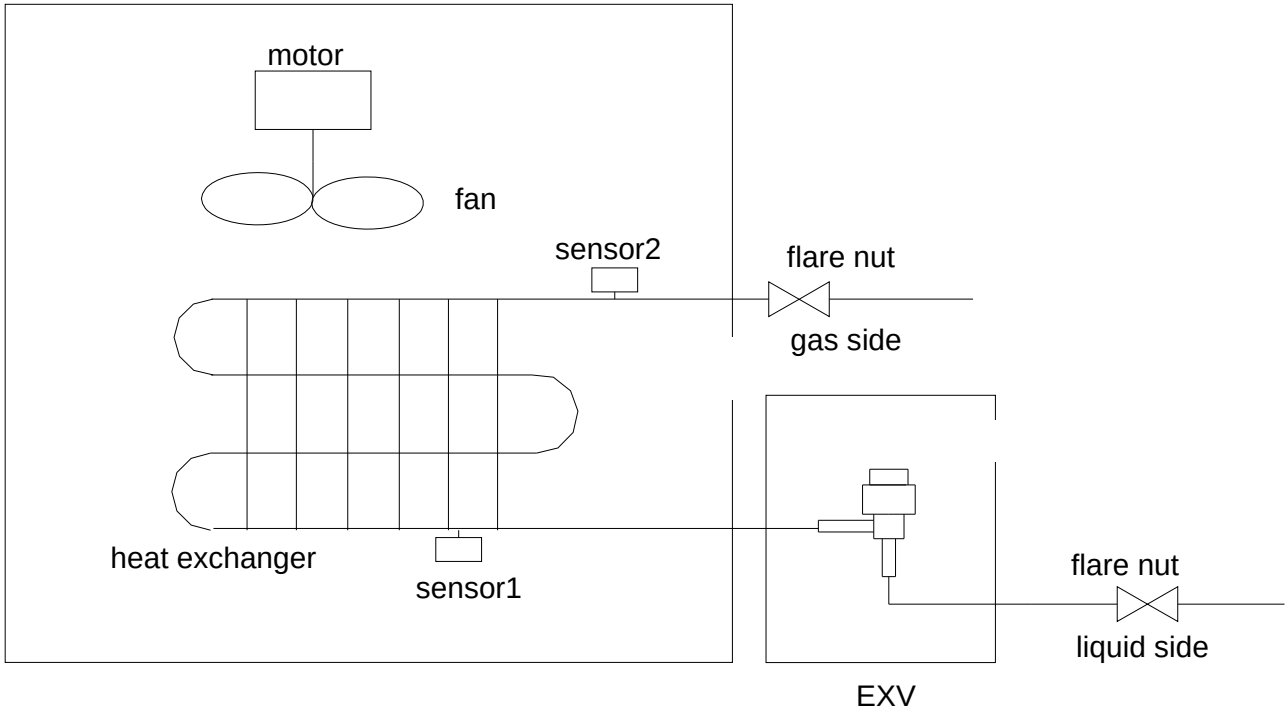






Indoor unit	A(mm)	H(mm)
HTBU 561 XRV ~ HTBU 801 XRV	230	≥260
HTBU 901 XRV ~ HTBU 1121 XRV	230	≥300

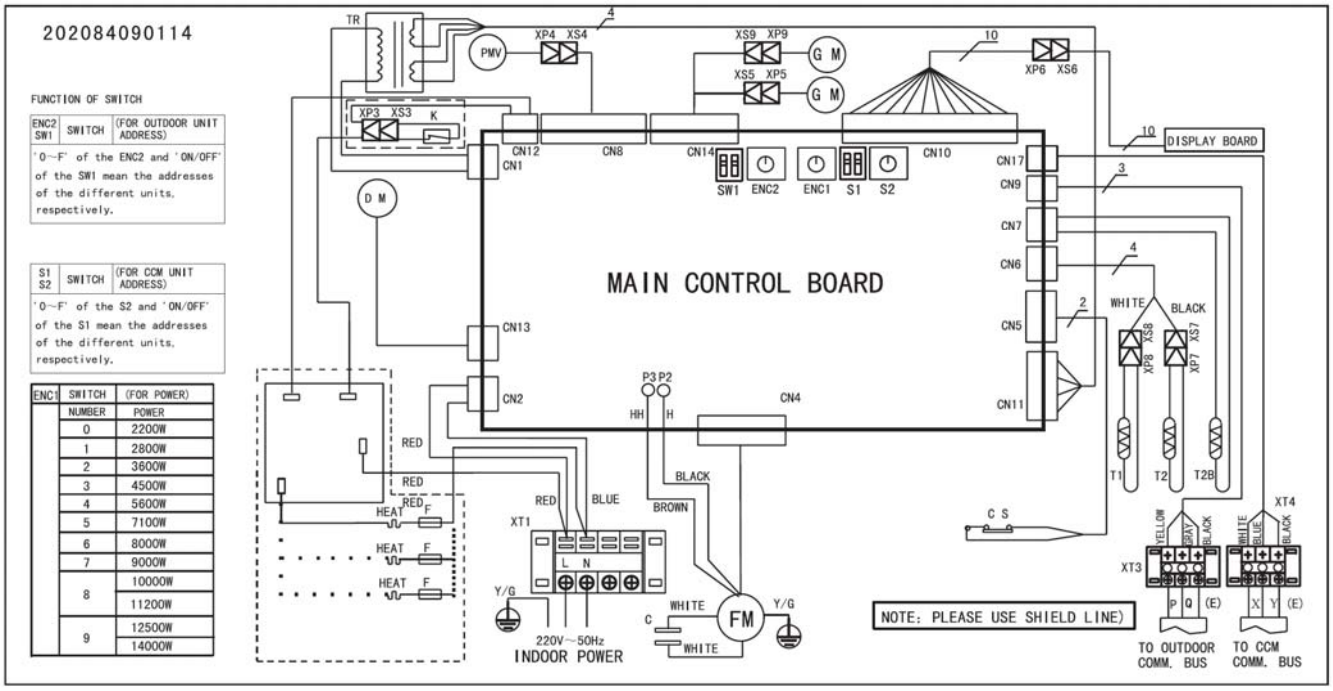
5. Piping Diagram



Sensor1: T2
Sensor2: T2B

6. Wiring Diagram

HTBU 561 ~ 1121 XRV



7. Capacity Tables

7.1.1 Cooling

TC: total capacity **SH**: sensible capacity

Indoor Unit size (KW)	Outdoor temperature (DB)	Indoor temperature (WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
5.6	10.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.3	4.1
	12.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.3	4.1
	14.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.2	4.1
	16.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	6.9	4.0
	18.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.1	4.1
	20.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.1	4.1
	21.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.0	4.1
	23.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	6.9	4.0
	25.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.5	4.1	6.8	3.9
	27.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.4	4.0	6.5	3.8
	29.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.3	4.0	6.4	3.7
	31.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.2	3.9	6.3	3.7
	33.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.0	3.8	6.3	3.7
	35.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	5.9	3.7	6.2	3.6
	37.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	5.9	3.9	6.1	3.5
	39.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	5.7	3.8	5.8	3.8	6.0	3.5
7.1	10.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	9.2	4.9
	12.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	9.1	4.8
	14.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	9.0	4.8
	16.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	8.9	4.7
	18.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	8.7	4.7
	20.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	8.5	4.6
	21.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	8.4	4.5
	23.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	8.3	4.5
	25.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	8.2	4.4
	27.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.1	4.9	8.2	4.4
	29.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.0	4.8	8.1	4.5
	31.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	7.9	4.7	7.8	4.4
	33.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	7.8	4.7	7.8	4.4
	35.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	7.6	4.6	7.7	4.3
	37.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	7.5	4.5	7.6	4.3
	39.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.2	4.6	7.4	4.4	7.6	4.3
8.0	10.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	10.4	5.6
	12.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	10.2	5.5
	14.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	10.2	5.5
	16.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	10.0	5.4
	18.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	9.8	5.3
	20.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	9.6	5.2
	21.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	9.4	5.1

Indoor Unit size (KW)	Outdoor temperature (DB)	Indoor temperature (WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
	23.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	9.4	5.1
	25.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	9.3	5.0
	27.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.1	5.3	9.2	5.1
	29.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.5	9.0	5.3	9.1	5.0
	31.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.5	8.9	5.2	8.8	4.8
	33.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.5	8.8	5.2	8.8	4.8
	35.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.5	8.6	5.1	8.6	4.8
	37.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.3	5.4	8.4	5.0	8.6	4.9
	39.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.1	5.3	8.3	5.0	8.6	4.9
9.0	10.0	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.6	6.5	10.6	6.6	11.7	6.6
	12.0	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.6	6.5	10.6	6.6	11.5	6.5
	14.0	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.6	6.5	10.6	6.6	11.4	6.4
	16.0	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.6	6.5	10.6	6.6	11.3	6.3
	18.0	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.6	6.5	10.6	6.6	11.0	6.3
	20.0	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.6	6.5	10.6	6.6	10.8	6.2
	21.0	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.6	6.5	10.6	6.6	10.6	6.1
	23.0	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.6	6.5	10.6	6.6	10.5	6.0
	25.0	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.6	6.5	10.6	6.6	10.4	6.0
	27.0	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.6	6.5	10.3	6.4	10.4	5.9
	29.0	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.6	6.5	10.1	6.2	10.3	5.8
	31.0	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.6	6.5	10.0	6.2	9.9	5.7
	33.0	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.6	6.5	9.9	6.1	9.9	5.7
	35.0	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.5	6.5	9.6	6.0	9.7	5.7
	37.0	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.3	6.3	9.5	5.9	9.6	5.8
	39.0	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.2	6.2	9.4	5.8	9.6	5.8
10.0	10.0	6.9	5.6	8.1	6.2	9.4	6.9	10.0	7.0	10.6	7.0	11.9	7.3	13.0	7.3
	12.0	6.9	5.6	8.1	6.2	9.4	6.9	10.0	7.0	10.6	7.0	11.9	7.3	12.8	7.2
	14.0	6.9	5.6	8.1	6.2	9.4	6.9	10.0	7.0	10.6	7.0	11.9	7.3	12.7	7.1
	16.0	6.9	5.6	8.1	6.2	9.4	6.9	10.0	7.0	10.6	7.0	11.9	7.3	12.5	7.0
	18.0	6.9	5.6	8.1	6.2	9.4	6.9	10.0	7.0	10.6	7.0	11.9	7.3	12.2	6.8
	20.0	6.9	5.6	8.1	6.2	9.4	6.9	10.0	7.0	10.6	7.0	11.9	7.3	12.0	6.7
	21.0	6.9	5.6	8.1	6.2	9.4	6.9	10.0	7.0	10.6	7.0	11.9	7.3	11.8	6.6
	23.0	6.9	5.6	8.1	6.2	9.4	6.9	10.0	7.0	10.6	7.0	11.7	7.3	11.7	6.6
	25.0	6.9	5.6	8.1	6.2	9.4	6.9	10.0	7.0	10.6	7.0	11.6	7.2	11.6	6.5
	27.0	6.9	5.6	8.1	6.2	9.4	6.9	10.0	7.0	10.6	7.0	11.5	7.1	11.5	6.6
	29.0	6.9	5.6	8.1	6.2	9.4	6.9	10.0	7.0	10.6	7.0	11.4	7.1	11.4	6.5
	31.0	6.9	5.6	8.1	6.2	9.4	6.9	10.0	7.0	10.6	7.0	11.3	7.0	11.0	6.3
	33.0	6.9	5.6	8.1	6.2	9.4	6.9	10.0	7.0	10.6	7.0	11.2	6.9	11.0	6.3
	35.0	6.9	5.6	8.1	6.2	9.4	6.9	10.0	7.0	10.5	6.9	10.8	6.7	10.8	6.3
	37.0	6.9	5.6	8.1	6.2	9.4	6.9	10.0	7.0	10.4	6.9	10.8	6.7	10.7	6.2
	39.0	6.9	5.6	8.1	6.2	9.4	6.9	10.0	7.0	10.2	6.7	10.4	6.6	10.7	6.3
11.2	10.0	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.9	8.1	13.3	8.3	15.5	9.0

Indoor Unit size (KW)	Outdoor temperature (DB)	Indoor temperature (WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
	12.0	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.9	8.1	13.3	8.3	14.4	8.4
	14.0	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.9	8.1	13.3	8.3	14.2	8.2
	16.0	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.9	8.1	13.3	8.3	14.1	8.2
	18.0	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.9	8.1	13.3	8.3	14.0	8.1
	20.0	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.9	8.1	13.3	8.3	13.9	8.1
	21.0	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.9	8.1	13.3	8.3	13.8	8.0
	23.0	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.9	8.1	13.1	8.1	13.7	7.9
	25.0	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.9	8.1	13.0	8.1	13.6	7.9
	27.0	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.9	8.1	12.9	8.0	13.4	7.8
	29.0	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.9	8.1	12.8	7.9	13.3	7.9
	31.0	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.9	8.1	12.7	7.8	12.8	7.5
	33.0	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.9	8.1	12.5	7.8	12.5	7.4
	35.0	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.8	8.0	12.4	7.7	12.3	7.3
	37.0	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.6	7.9	12.3	7.6	12.1	7.1
	39.0	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.4	7.8	12.2	7.6	11.9	7.1

7.1.2 Heating

TH: total capacity

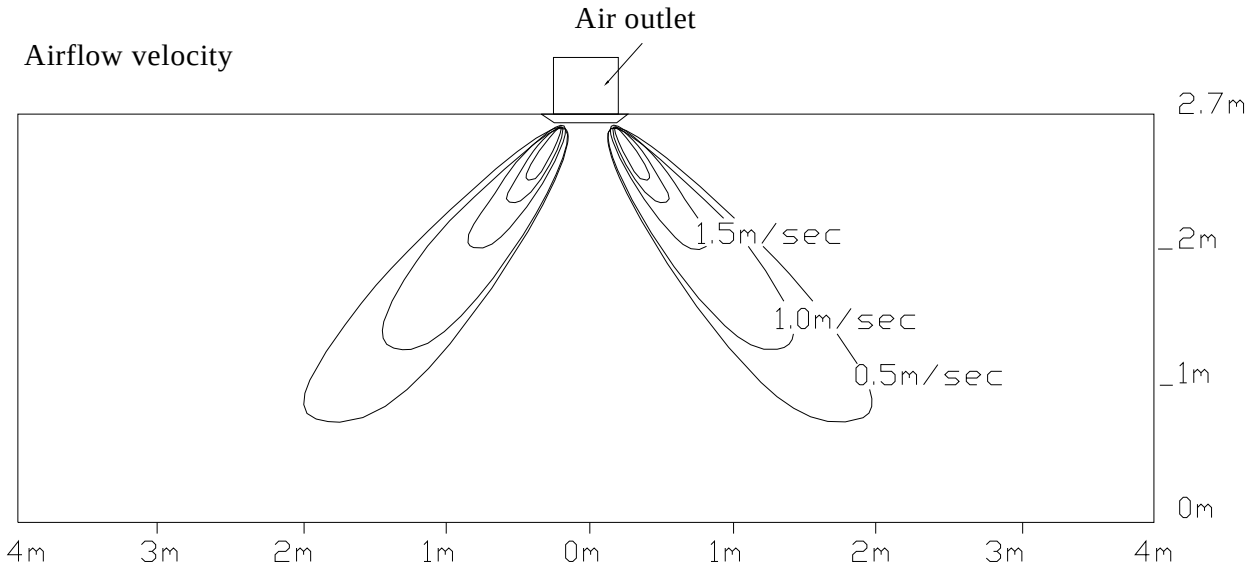
Indoor Unit size (kW)	Outdoor temperature (DB)		Indoor temperature (WB)					
			16.00	18.00	20.00	21.00	22.00	24.00
			TH	TH	TH	TH	TH	TH
	WB	DB	kW	kW	kW	kW	kW	kW
5.60	-15.00	-14.70	3.97	3.97	3.97	3.97	3.97	3.97
	-13.00	-12.60	4.22	4.22	4.22	4.22	4.22	4.22
	-11.00	-10.50	4.41	4.41	4.41	4.41	4.41	4.41
	-10.00	-9.50	4.60	4.60	4.60	4.60	4.60	4.60
	-9.10	-8.50	4.73	4.73	4.73	4.73	4.73	4.73
	-7.60	-7.00	4.79	4.79	4.79	4.79	4.79	4.79
	-5.60	-5.00	4.98	4.98	4.98	4.98	4.98	4.98
	-3.70	-3.00	5.23	5.23	5.23	5.23	5.23	5.23
	-0.70	0.00	5.61	5.61	5.61	5.61	5.61	5.29
	2.20	3.00	5.92	5.92	5.92	5.92	5.80	5.29
	4.10	5.00	6.11	6.11	6.11	6.11	5.80	5.29
	6.00	7.00	6.30	6.30	6.30	6.11	5.80	5.29
	7.90	9.00	6.49	6.49	6.30	6.11	5.80	5.29
	9.80	11.00	6.68	6.68	6.30	6.11	5.80	5.29
	11.80	13.00	6.93	6.80	6.30	6.11	5.80	5.29
	13.70	15.00	7.12	6.80	6.30	6.11	5.80	5.29
7.10	-15.00	-14.70	5.04	5.04	5.04	5.04	5.04	5.04
	-13.00	-12.60	5.36	5.36	5.36	5.36	5.36	5.36
	-11.00	-10.50	5.60	5.60	5.60	5.60	5.60	5.60
	-10.00	-9.50	5.84	5.84	5.84	5.84	5.84	5.84
	-9.10	-8.50	6.00	6.00	6.00	6.00	6.00	6.00
	-7.60	-7.00	6.08	6.08	6.08	6.08	6.08	6.08
	-5.60	-5.00	6.32	6.32	6.32	6.32	6.32	6.32
	-3.70	-3.00	6.64	6.64	6.64	6.64	6.64	6.64
	-0.70	0.00	7.12	7.12	7.12	7.12	7.12	6.72
	2.20	3.00	7.52	7.52	7.52	7.52	7.36	6.72
	4.10	5.00	7.76	7.76	7.76	7.76	7.36	6.72
	6.00	7.00	8.00	8.00	8.00	7.76	7.36	6.72
	7.90	9.00	8.24	8.24	8.00	7.76	7.36	6.72
	9.80	11.00	8.48	8.48	8.00	7.76	7.36	6.72
	11.80	13.00	8.80	8.64	8.00	7.76	7.36	6.72
	13.70	15.00	9.04	8.64	8.00	7.76	7.36	6.72
8.00	-15.00	-14.70	5.67	5.67	5.67	5.67	5.67	5.67
	-13.00	-12.60	6.03	6.03	6.03	6.03	6.03	6.03
	-11.00	-10.50	6.30	6.30	6.30	6.30	6.30	6.30
	-10.00	-9.50	6.57	6.57	6.57	6.57	6.57	6.57
	-9.10	-8.50	6.75	6.75	6.75	6.75	6.75	6.75
	-7.60	-7.00	6.84	6.84	6.84	6.84	6.84	6.84
	-5.60	-5.00	7.11	7.11	7.11	7.11	7.11	7.11
	-3.70	-3.00	7.47	7.47	7.47	7.47	7.47	7.47

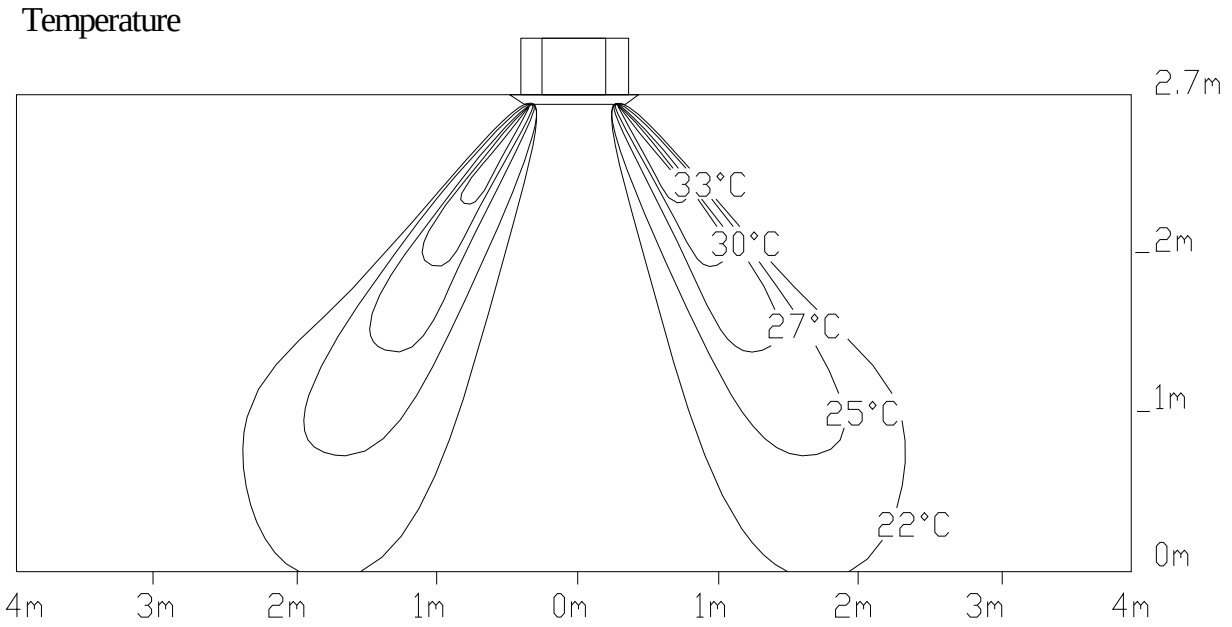
Indoor Unit size (kW)	Outdoor temperature (DB)		Indoor temperature (WB)					
			16.00	18.00	20.00	21.00	22.00	24.00
			TH	TH	TH	TH	TH	TH
	WB	DB	kW	kW	kW	kW	kW	kW
	-0.70	0.00	8.01	8.01	8.01	8.01	8.01	7.56
	2.20	3.00	8.46	8.46	8.46	8.46	8.28	7.56
	4.10	5.00	8.73	8.73	8.73	8.73	8.28	7.56
	6.00	7.00	9.00	9.00	9.00	8.73	8.28	7.56
	7.90	9.00	9.27	9.27	9.00	8.73	8.28	7.56
	9.80	11.00	9.54	9.54	9.00	8.73	8.28	7.56
	11.80	13.00	9.90	9.72	9.00	8.73	8.28	7.56
	13.70	15.00	10.17	9.72	9.00	8.73	8.28	7.56
9.00	-15.00	-14.70	6.30	6.30	6.30	6.30	6.30	6.30
	-13.00	-12.60	6.70	6.70	6.70	6.70	6.70	6.70
	-11.00	-10.50	7.00	7.00	7.00	7.00	7.00	7.00
	-10.00	-9.50	7.30	7.30	7.30	7.30	7.30	7.30
	-9.10	-8.50	7.50	7.50	7.50	7.50	7.50	7.50
	-7.60	-7.00	7.60	7.60	7.60	7.60	7.60	7.60
	-5.60	-5.00	7.90	7.90	7.90	7.90	7.90	7.90
	-3.70	-3.00	8.30	8.30	8.30	8.30	8.30	8.30
	-0.70	0.00	8.90	8.90	8.90	8.90	8.90	8.40
	2.20	3.00	9.40	9.40	9.40	9.40	9.20	8.40
	4.10	5.00	9.70	9.70	9.70	9.70	9.20	8.40
	6.00	7.00	10.00	10.00	10.00	9.70	9.20	8.40
	7.90	9.00	10.30	10.30	10.00	9.70	9.20	8.40
	9.80	11.00	10.60	10.60	10.00	9.70	9.20	8.40
	11.80	13.00	11.00	10.80	10.00	9.70	9.20	8.40
	13.70	15.00	11.30	10.80	10.00	9.70	9.20	8.40
10.00	-15.00	-14.70	6.93	6.93	6.93	6.93	6.93	6.93
	-13.00	-12.60	7.37	7.37	7.37	7.37	7.37	7.37
	-11.00	-10.50	7.70	7.70	7.70	7.70	7.70	7.70
	-10.00	-9.50	8.03	8.03	8.03	8.03	8.03	8.03
	-9.10	-8.50	8.25	8.25	8.25	8.25	8.25	8.25
	-7.60	-7.00	8.36	8.36	8.36	8.36	8.36	8.36
	-5.60	-5.00	8.69	8.69	8.69	8.69	8.69	8.69
	-3.70	-3.00	9.13	9.13	9.13	9.13	9.13	9.13
	-0.70	0.00	9.79	9.79	9.79	9.79	9.79	9.24
	2.20	3.00	10.34	10.34	10.34	10.34	10.12	9.24
	4.10	5.00	10.67	10.67	10.67	10.67	10.12	9.24
	6.00	7.00	11.00	11.00	11.00	10.67	10.12	9.24
	7.90	9.00	11.33	11.33	11.00	10.67	10.12	9.24
	9.80	11.00	11.66	11.66	11.00	10.67	10.12	9.24
	11.80	13.00	12.10	11.88	11.00	10.67	10.12	9.24
	13.70	15.00	12.43	11.88	11.00	10.67	10.12	9.24
11.20	-15.00	-14.70	7.88	7.88	7.88	7.88	7.88	7.88
	-13.00	-12.60	8.38	8.38	8.38	8.38	8.38	8.38

Indoor Unit size (kW)	Outdoor temperature (DB)		Indoor temperature (WB)					
			16.00	18.00	20.00	21.00	22.00	24.00
			TH	TH	TH	TH	TH	TH
	WB	DB	kW	kW	kW	kW	kW	kW
	-11.00	-10.50	8.75	8.75	8.75	8.75	8.75	8.75
	-10.00	-9.50	9.13	9.13	9.13	9.13	9.13	9.13
	-9.10	-8.50	9.38	9.38	9.38	9.38	9.38	9.38
	-7.60	-7.00	9.50	9.50	9.50	9.50	9.50	9.50
	-5.60	-5.00	9.88	9.88	9.88	9.88	9.88	9.88
	-3.70	-3.00	10.38	10.38	10.38	10.38	10.38	10.38
	-0.70	0.00	11.13	11.13	11.13	11.13	11.13	10.50
	2.20	3.00	11.75	11.75	11.75	11.75	11.50	10.50
	4.10	5.00	12.13	12.13	12.13	12.13	11.50	10.50
	6.00	7.00	12.50	12.50	12.50	12.13	11.50	10.50
	7.90	9.00	12.88	12.88	12.50	12.13	11.50	10.50
	9.80	11.00	13.25	13.25	12.50	12.13	11.50	10.50
	11.80	13.00	13.75	13.50	12.50	12.13	11.50	10.50
	13.70	15.00	14.13	13.50	12.50	12.13	11.50	10.50

8. Air Velocity Distribution

Discharge angle 60º





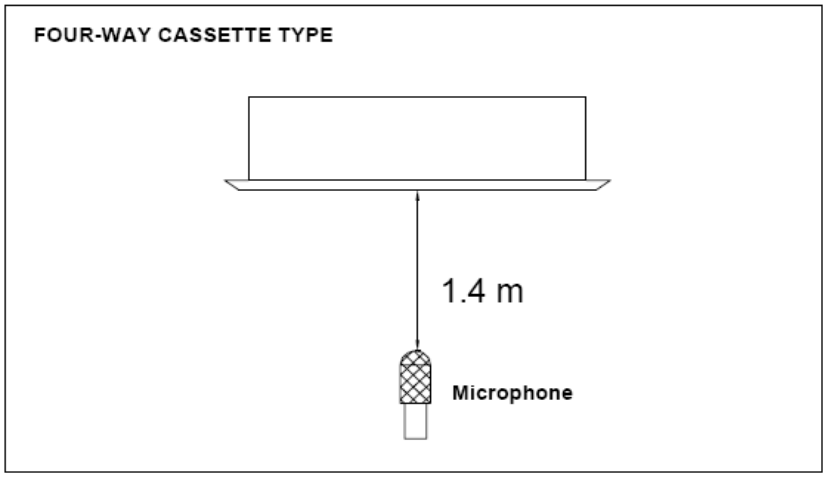
9. Electric Characteristics

Model	Indoor Unit				Power Supply		IFM	
	Hz	Voltage	Min.	Max.	MCA	MFA	kW	FLA
HTBU 561 XRV	50Hz	220-240V	198V	254V	0.5	15A	0.06	0.38
HTBU 711 XRV	50Hz	220-240V	198V	254V	0.65	15A	0.080	0.5
HTBU 801 XRV	50Hz	220-240V	198V	254V	0.65	15A	0.080	0.5
HTBU 901 XRV	50Hz	220-240V	198V	254V	0.85	15A	0.09	0.67
HTBU 1001 XRV	50Hz	220-240V	198V	254V	0.85	15A	0.09	0.67
HTBU 1121 XRV	50Hz	220-240V	198V	254V	0.85	15A	0.09	0.67

Remark:
MCA: Min. Current Amps. (A)
MFA: Max. Fuse Amps. (A)
kW: Fan Motor Rated Output (kW)
FLA: Full Load Amps. (A)
IFM: Indoor Fan Motor

1. Sound Levels

10.1 Test condition

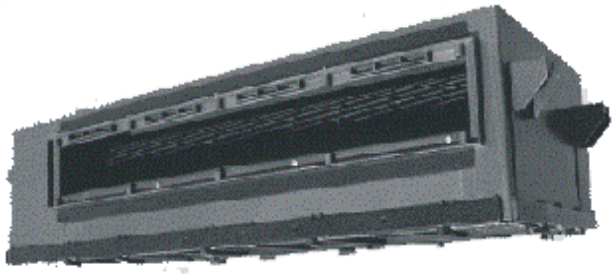


Model	Noise level under three speeds of fan (dB(A))		
	H	M	L
HTBU 561 XRV	39	38	36
HTBU 711 XRV	39	38	36
HTBU 801 XRV	39	38	36
HTBU 901 XRV	40	38	36
HTBU 1001 XRV	40	38	36
HTBU 1121 XRV	41	39	37

Low Static Pressure Duct Type

1. Features

1.1.1 Low operation noise
1.1.2 Compact Structure and light weight
1.1.3 Adopt Cross Fan
1.1.4 Adopt 4-bend Evaporator with High Efficient

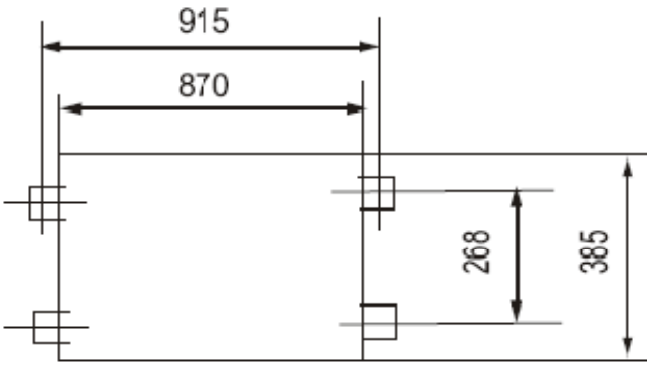


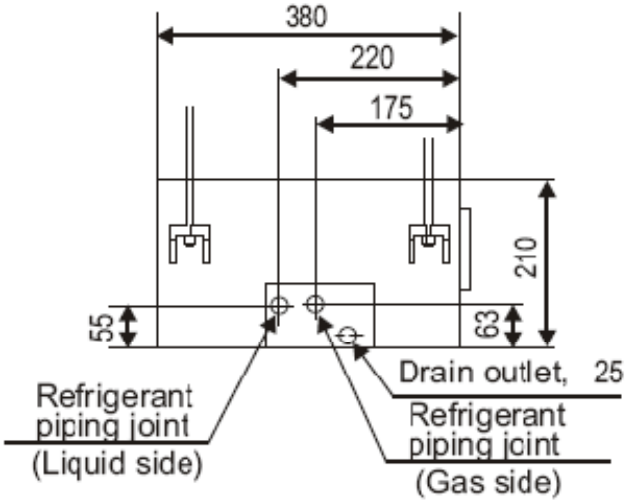
2. Specifications

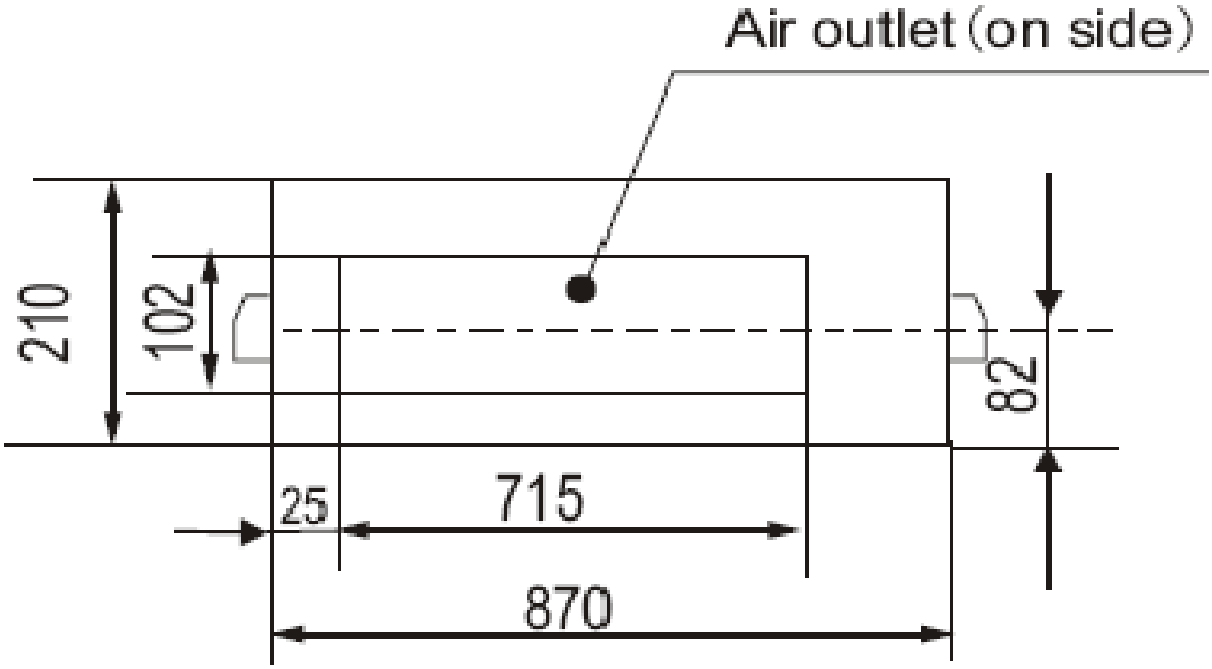
Sale Model			HRDU 221 XRV	HRDU 281 XRV	HRDU 361 XRV
Power supply		V-ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	kW	2.2	2.8	3.6
	Input	W	35	35	35
	Rated current	A	0.2	0.2	0.2
Heating	Capacity	kW	2.6	3.2	4.0
	Input	W	35	35	35
	Rated current	A	0.2	0.2	0.2
Indoor fan motor	Model		RPS20D	RPS20D	RPS20D
	Type		AC MOTOR	AC MOTOR	AC MOTOR
	Brand		Welling	Welling	Welling
	Input	W	34.5/30.5/27.3	34.5/30.5/27.3	34.5/30.5/27.3
	Capacitor	uF	0.8uF/450V	1uF/450V	1uF/450V
	Speed(hi/mi/lo)	r/min	940/840/760	940/840/760	940/840/760
Indoor coil	a.Number of rows		2	2	2
	b.Tube pitch(a)x row pitch(b)	mm	21×13.37	21×13.37	21×13.37
	c.Fin spacing	mm	1.5	1.5	1.5
	d.Fin type (code)		Hydrophilic aluminum		
	e.Tube outside dia.and type	mm	Φ7	Φ7	Φ7
			Inner groove tube		
	f.Coil length x height x width	mm	718 x317x26.74	718 x317x26.74	718 x317x26.74
	g.Number of circuits		2	4	4
Indoor air flow (Hi/Mi/Lo)		m^3/h	570/400/320	570/400/320	570/400/320
Indoor external static pressure (Hi)		Pa	10	10	10
Sound level (sound pressure)		dB(A)	34/32/30	35/33/31	35/33/31
Indoor unit	Dimension (W x H x D)	mm	955x210x385	955x210x385	955x210x385
	Packing (W x H x D)	mm	1114 x277 x469	1114 x277 x469	1114 x277 x469
	Net/Gross weight	kg	15/19	15/19	15/19
Refrigerant	Type		R410A	R410A	R410A
Design pressure		MPa	4.2/2.5	4.2/2.5	4.2/2.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ6.35/Φ12.7	Φ6.35/Φ12.7	Φ6.35/Φ12.7
Connection wiring	Power wiring	mm^2	3×2.5(L≤20m); 3×3.5(L≤50m)		
	Signal wiring	mm^2	3×1.0		
Drainage water pipe dia.		mm	Φ25	Φ25	Φ25
Controller			Wireless remote controller R51(standard)		
Operation temp		℃	17 ~ 30		
Application area		m^2	7~22	9~28	12~36

3. Dimensions

HRDU 221 XRV、HRDU 281 XRV、HRDU 361 XRV

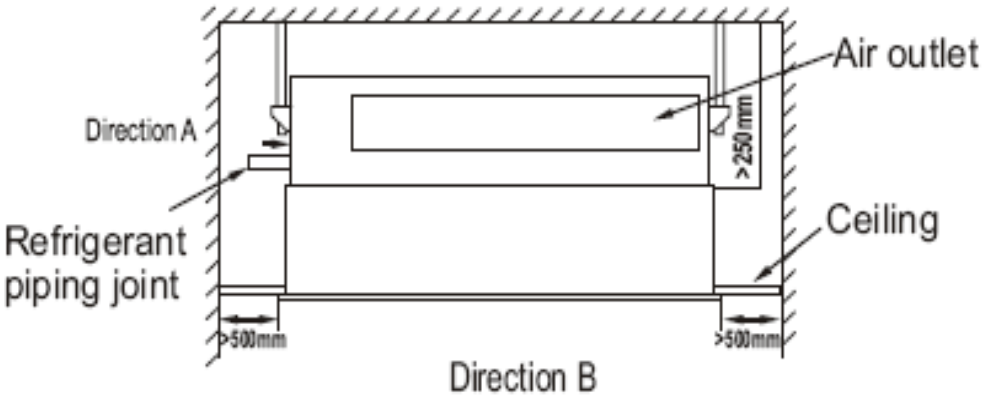


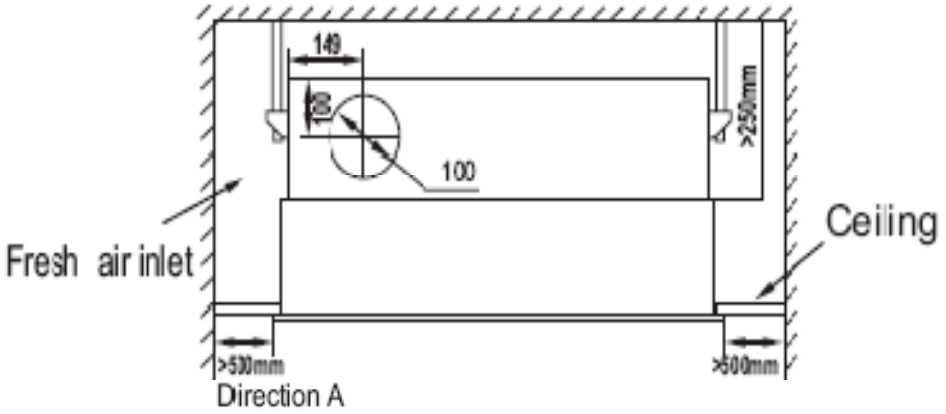


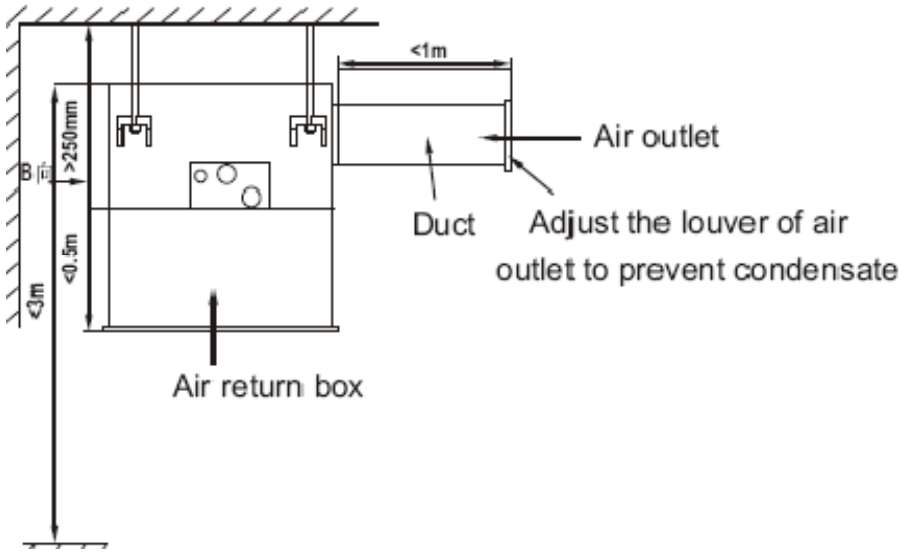


Air outlet schematic

4. Service Space

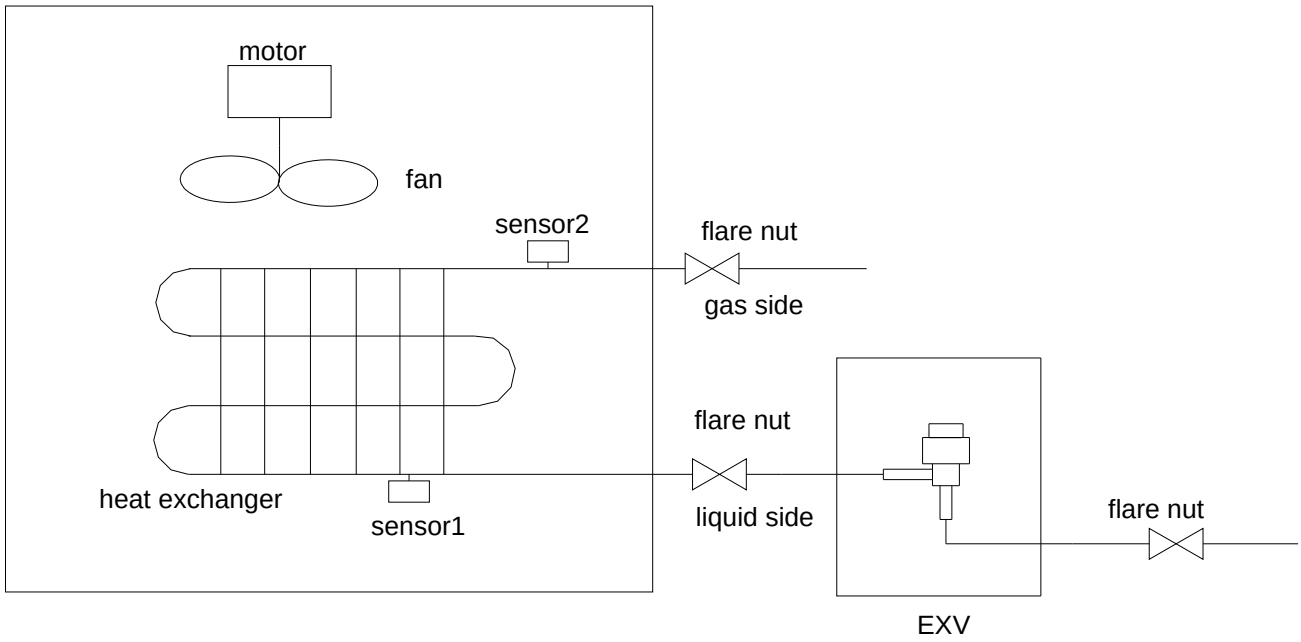






5. Piping Diagrams

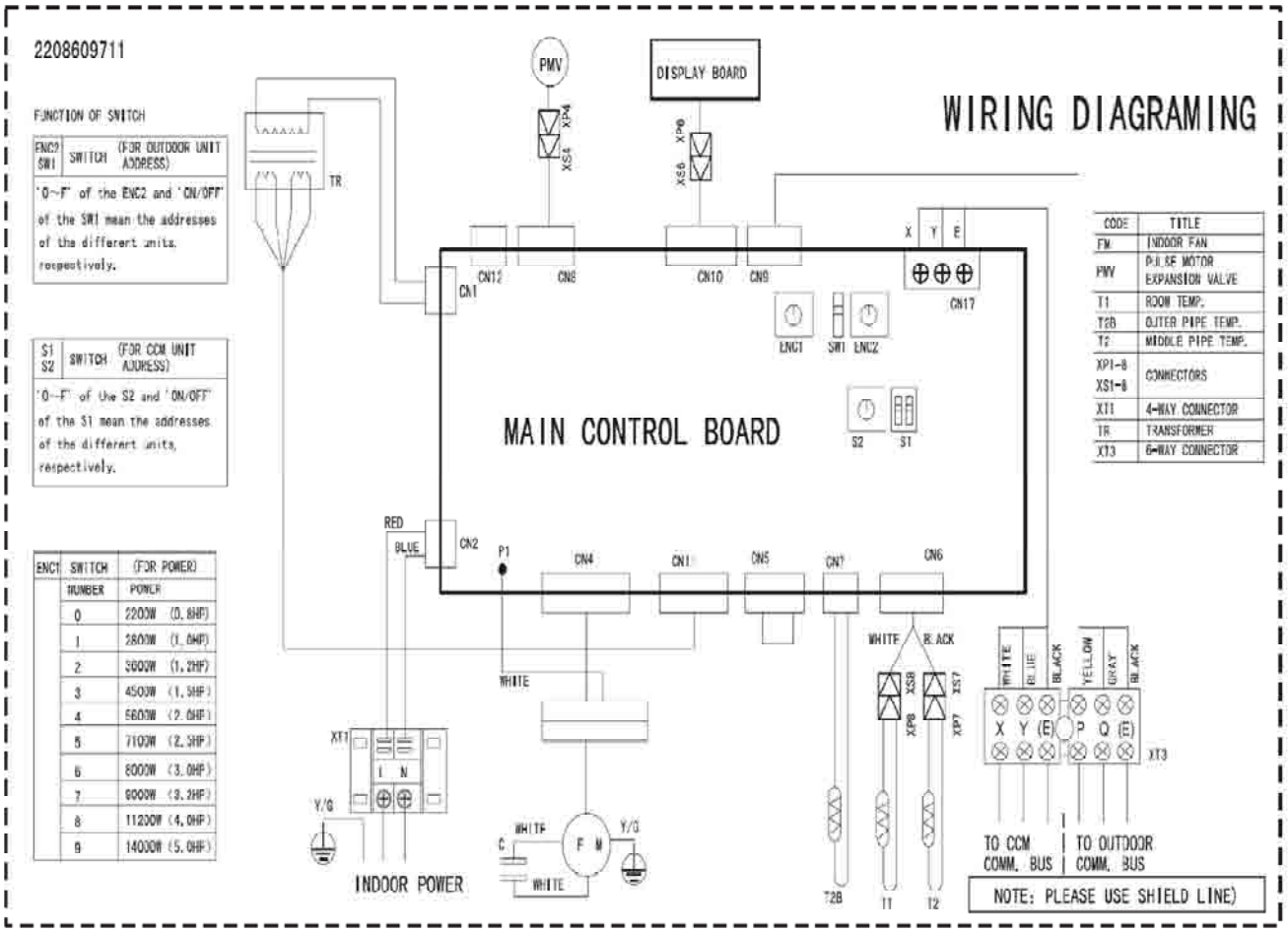
HRDU 221 XRV、HRDU 281 XRV、HRDU 361 XRV



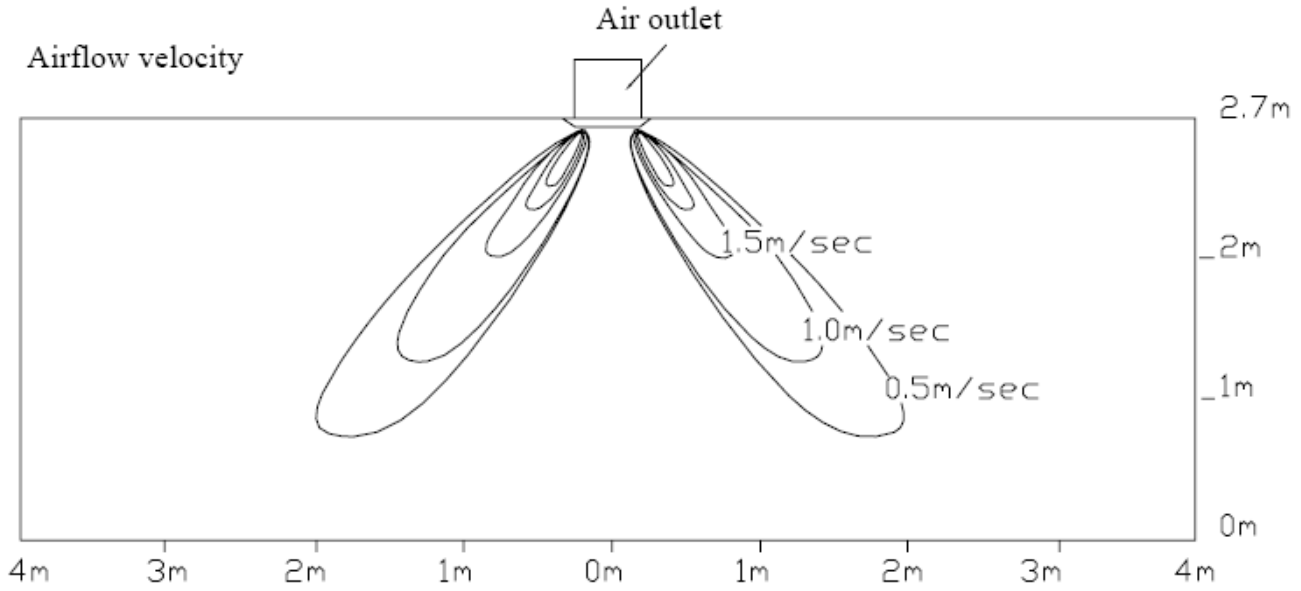
Sensor1: T2
Sensor2: T2B

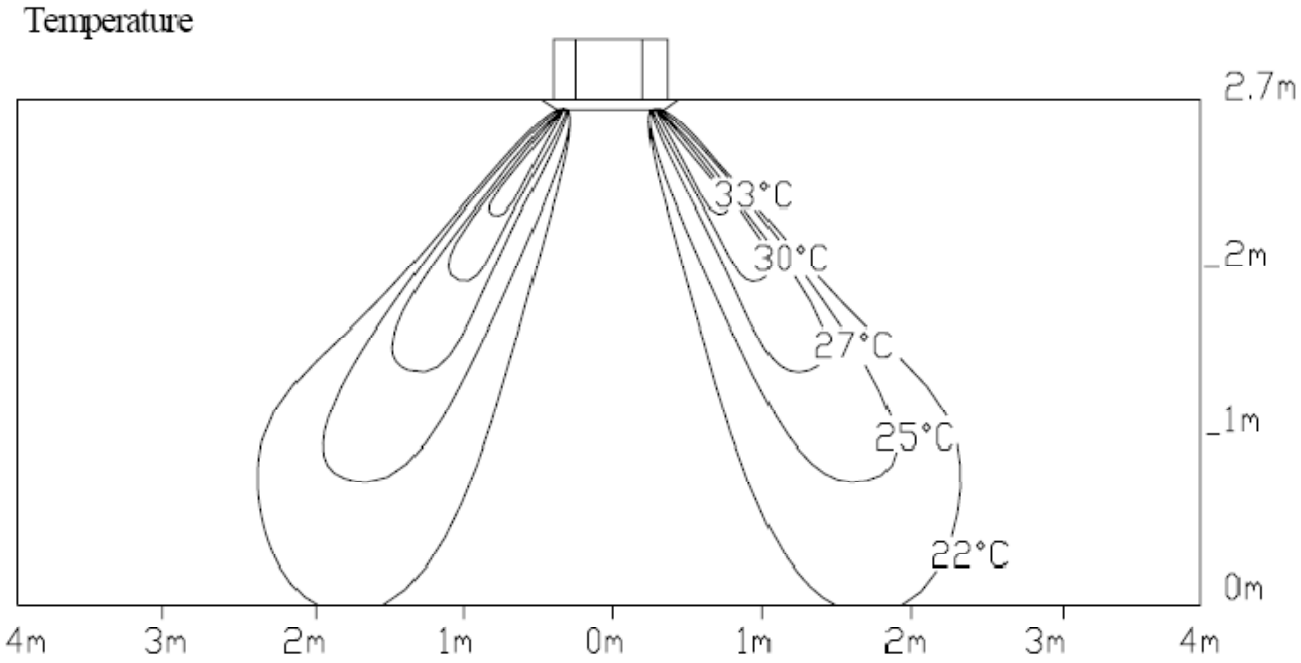
6. Wiring Diagrams

HRDU 221 XRV、HRDU 281 XRV、HRDU 361 XRV



7. Air Velocity and Temperature Distributions





8. Capacity Tables

8.1.1 Cooling

TH: total capacity **SH**: sensible capacity

Indoor Unit size (kW)	Outdoor temperature (DB)	Indoor temperature (WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
2.2	10.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.9	1.7
	12.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.8	1.6
	14.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.8	1.6
	16.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.8	1.6
	18.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.8	1.6
	20.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.7	1.5
	21.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.7	1.5
	23.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.5	1.6	2.7	1.5
	25.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.5	1.6	2.6	1.5
	27.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.5	1.6	2.6	1.5
	29.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.4	1.5	2.5	1.5
	31.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.4	1.5	2.5	1.5
	33.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.4	1.5	2.4	1.5
	35.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.3	1.5	2.4	1.5
	37.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.3	1.5	2.3	1.5
	39.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.2	1.6	2.3	1.5	2.3	1.5
2.8	10.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.7	2.1
	12.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.6	2.1
	14.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.6	2.1
	16.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.6	2.0
	18.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.5	2.0
	20.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.4	1.9
	21.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.4	1.9
	23.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.2	2.1	3.4	1.9
	25.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.2	2.0	3.3	1.9
	27.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.2	2.0	3.3	1.9
	29.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.1	2.0	3.2	1.9
	31.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.1	2.0	3.2	1.9
	33.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.1	2.0	3.1	2.0
	35.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.1	2.9	1.9	3.1	2.0
	37.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.1	2.9	1.9	2.9	1.9
	39.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.8	2.0	2.9	1.9	2.9	1.9
3.6	10.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.8	2.8
	12.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.6	2.7
	14.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.6	2.7
	16.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.5	2.7
	18.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.5	2.7
	20.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.4	2.7
	21.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.4	2.7

Indoor Unit size (kW)	Outdoor temperature (DB)	Indoor temperature (WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
	23.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.4	2.7
	25.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.1	2.7	4.2	2.6
	27.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.1	2.7	4.2	2.6
	29.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.0	2.6	4.1	2.5
	31.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.0	2.6	4.1	2.4
	33.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.0	2.6	4.0	2.4
	35.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.7	2.6	3.9	2.6	4.0	2.4
	37.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.7	2.6	3.9	2.6	3.9	2.3
	39.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.7	2.6	3.9	2.7	3.9	2.4

8.1.1.1 Heating

TH: total capacity

Indoor Unit size (kW)	Outdoor temperature (DB)		Indoor temperature (WB)					
			16.00	18.00	20.00	21.00	22.00	24.00
			TH	TH	TH	TH	TH	TH
	WB	DB	kW	kW	kW	kW	kW	kW
2.20	-15.00	-14.70	1.64	1.64	1.64	1.64	1.64	1.64
	-13.00	-12.60	1.74	1.74	1.74	1.74	1.74	1.74
	-11.00	-10.50	1.82	1.82	1.82	1.82	1.82	1.82
	-10.00	-9.50	1.90	1.90	1.90	1.90	1.90	1.90
	-9.10	-8.50	1.95	1.95	1.95	1.95	1.95	1.95
	-7.60	-7.00	1.98	1.98	1.98	1.98	1.98	1.98
	-5.60	-5.00	2.05	2.05	2.05	2.05	2.05	2.05
	-3.70	-3.00	2.16	2.16	2.16	2.16	2.16	2.16
	-0.70	0.00	2.31	2.31	2.31	2.31	2.31	2.18
	2.20	3.00	2.44	2.44	2.44	2.44	2.39	2.18
	4.10	5.00	2.52	2.52	2.52	2.52	2.39	2.18
	6.00	7.00	2.60	2.60	2.60	2.52	2.39	2.18
	7.90	9.00	2.68	2.68	2.60	2.52	2.39	2.18
	9.80	11.00	2.76	2.76	2.60	2.52	2.39	2.18
	11.80	13.00	2.86	2.81	2.60	2.52	2.39	2.18
	13.70	15.00	2.94	2.81	2.60	2.52	2.39	2.18
2.80	-15.00	-14.70	2.02	2.02	2.02	2.02	2.02	2.02
	-13.00	-12.60	2.14	2.14	2.14	2.14	2.14	2.14
	-11.00	-10.50	2.24	2.24	2.24	2.24	2.24	2.24
	-10.00	-9.50	2.34	2.34	2.34	2.34	2.34	2.34
	-9.10	-8.50	2.40	2.40	2.40	2.40	2.40	2.40
	-7.60	-7.00	2.43	2.43	2.43	2.43	2.43	2.43
	-5.60	-5.00	2.53	2.53	2.53	2.53	2.53	2.53
	-3.70	-3.00	2.66	2.66	2.66	2.66	2.66	2.66
	-0.70	0.00	2.85	2.85	2.85	2.85	2.85	2.69
	2.20	3.00	3.01	3.01	3.01	3.01	2.94	2.69
	4.10	5.00	3.10	3.10	3.10	3.10	2.94	2.69

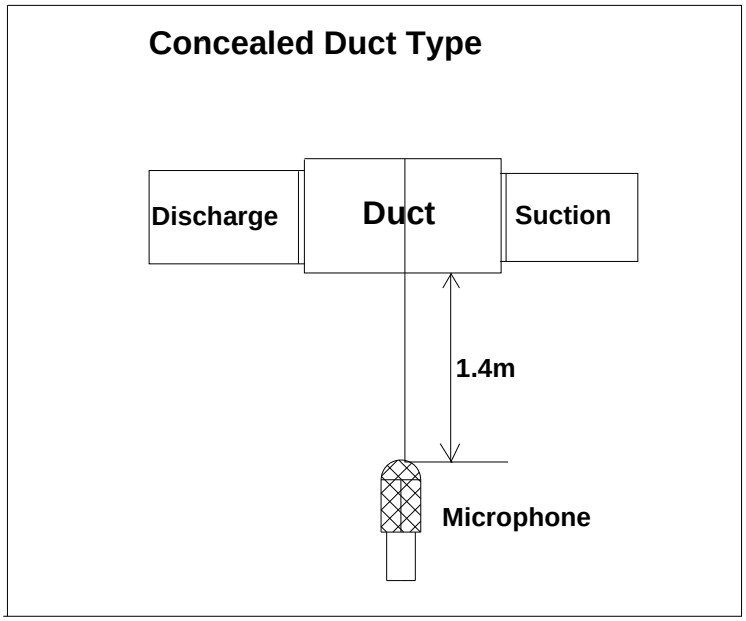
Indoor Unit size (kW)	Outdoor temperature (DB)		Indoor temperature (WB)					
			16.00	18.00	20.00	21.00	22.00	24.00
			TH	TH	TH	TH	TH	TH
	WB	DB	kW	kW	kW	kW	kW	kW
	6.00	7.00	3.20	3.20	3.20	3.10	2.94	2.69
	7.90	9.00	3.30	3.30	3.20	3.10	2.94	2.69
	9.80	11.00	3.39	3.39	3.20	3.10	2.94	2.69
	11.80	13.00	3.52	3.46	3.20	3.10	2.94	2.69
	13.70	15.00	3.62	3.46	3.20	3.10	2.94	2.69
3.60	-15.00	-14.70	2.52	2.52	2.52	2.52	2.52	2.52
	-13.00	-12.60	2.68	2.68	2.68	2.68	2.68	2.68
	-11.00	-10.50	2.80	2.80	2.80	2.80	2.80	2.80
	-10.00	-9.50	2.92	2.92	2.92	2.92	2.92	2.92
	-9.10	-8.50	3.00	3.00	3.00	3.00	3.00	3.00
	-7.60	-7.00	3.04	3.04	3.04	3.04	3.04	3.04
	-5.60	-5.00	3.16	3.16	3.16	3.16	3.16	3.16
	-3.70	-3.00	3.32	3.32	3.32	3.32	3.32	3.32
	-0.70	0.00	3.56	3.56	3.56	3.56	3.56	3.36
	2.20	3.00	3.76	3.76	3.76	3.76	3.68	3.36
	4.10	5.00	3.88	3.88	3.88	3.88	3.68	3.36
	6.00	7.00	4.00	4.00	4.00	3.88	3.68	3.36
	7.90	9.00	4.12	4.12	4.00	3.88	3.68	3.36
	9.80	11.00	4.24	4.24	4.00	3.88	3.68	3.36
	11.80	13.00	4.40	4.32	4.00	3.88	3.68	3.36
	13.70	15.00	4.52	4.32	4.00	3.88	3.68	3.36

9. Electric Characteristics

Model	Indoor Unit				Power Supply	IFM	
	Hz	Voltage	Min.	Max.	MFA	kW	FLA
HRDU 221 XRV	50	220-240	198	254	15	0.014	0.157
HRDU 281 XRV	50	220-240	198	254	15	0.014	0.157
HRDU 361 XRV	50	220-240	198	254	15	0.014	0.157

Remark:
MFA: Max. Fuse Amps. (A)
KW: Fan Motor Rated Output (KW)
FLA: Full Load Amps. (A)
IFM: Indoor Fan Motor

10. Sound Levels



Model	Noise level dB(A)		
	H	M	L
HRDU 221 XRV	35	32	30
HRDU 281 XRV	35	33	31
HRDU 361 XRV	35	33	31

Medium Static Pressure Duct Type

1. Features

1) Normal body

①. Economic and convenient installation

---Several diffusers branch off from an indoor unit, adjusting the room temperature, which makes many rooms to be air-conditioned with only one indoor unit.

---All models feature thin design making them applicable to ceiling pocket that tends to be shallow

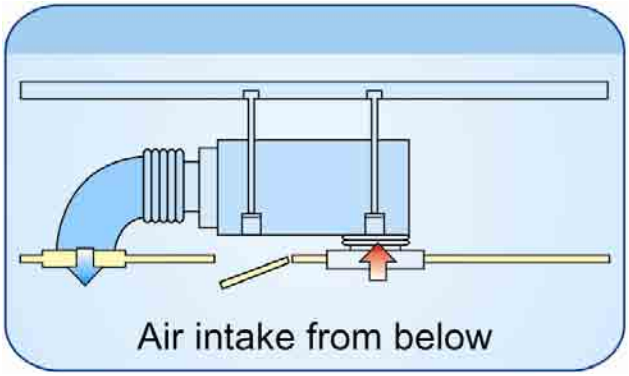
②. A wild variety of accessories included

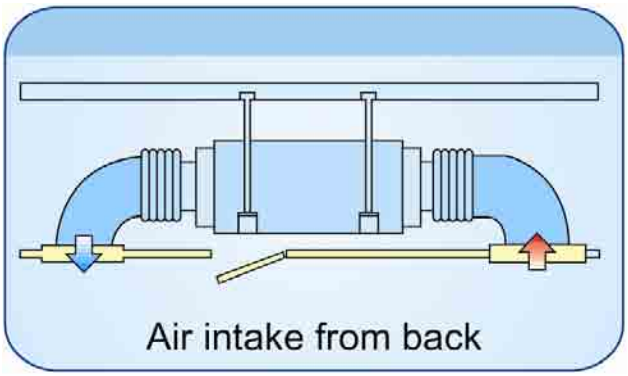
Clapboard

③. A long-life and high-efficiency filter

④. Way of air intake and inserting air filter

---Air intake can be positioned either at the back or below the unit. Similarly, the air filter also can be inserted either from the back or from the bottom of the unit.





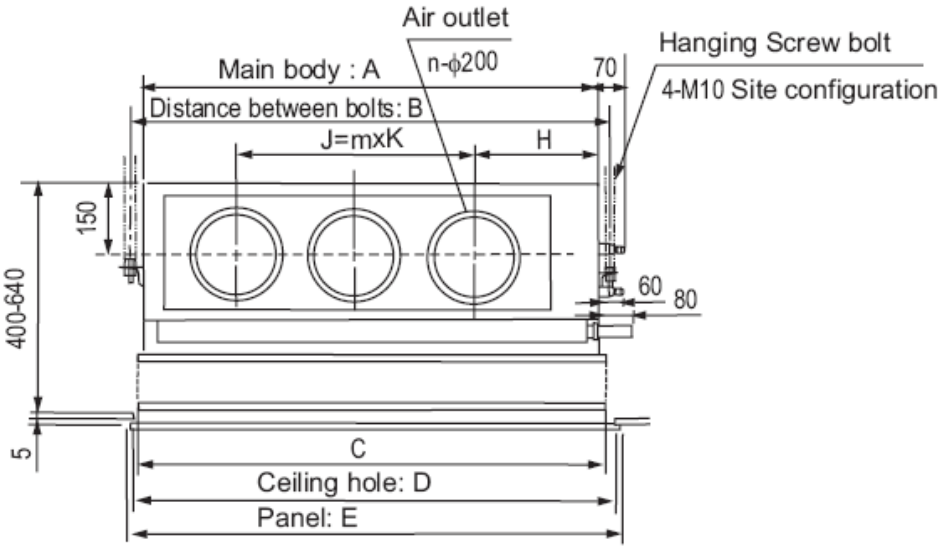
2. Specifications

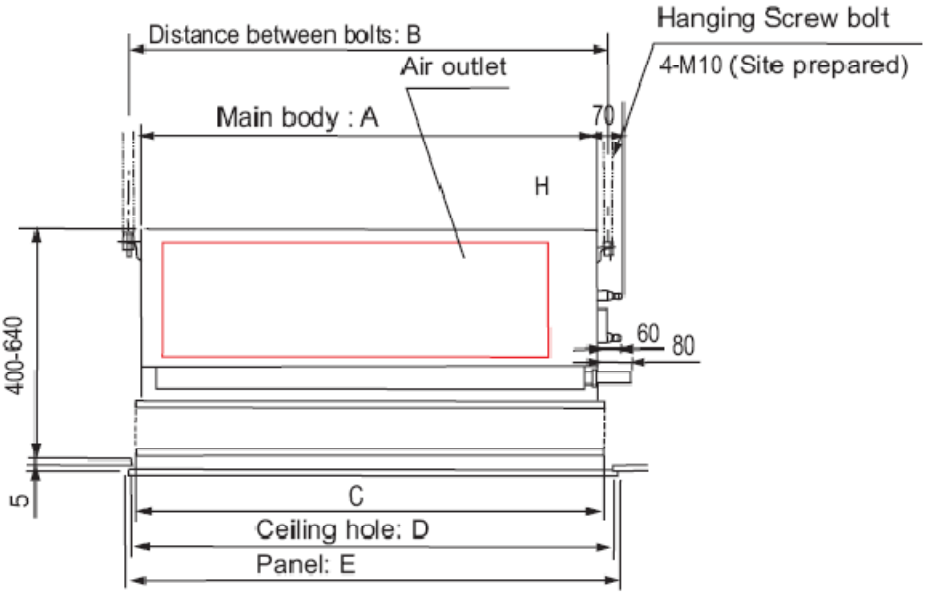
Sale Model				HUBU 451 XRV	HUBU 561 XRV
Power supply			V-ph-Hz	220~240-1-50	220~240-1-50
Cooling	Capacity		kW	4.5	5.6
	Input		W	110	110
	Rated current		A	0.5	0.5
Heating	Capacity		kW	5.0	6.3
	Input		W	110	110
	Rated current		A	0.5	0.5
Indoor fan motor	Model			YSK55-4D	YSK55-4D
	Type			AC MOTOR	AC MOTOR
	Brand			Welling	Welling
	Input		W	117/110/101	117/110/101
	Capacitor		uF	3uF/450V	3uF/450V
	Speed(hi/mi/lo)		r/min	900/800/690	900/800/690
Indoor coil	a.Number of rows			3	3
	b.Tube pitch(a)x row pitch(b)		mm	25.4×22	25.4×22
	c.Fin spacing		mm	1.7	1.7
	d.Fin type (code)			Hydrophilic aluminum	
	e.Tube outside dia.and type		mm	Φ9.53	Φ9.53
				Inner groove tube	Inner groove tube
	f.Coil length x height x width		mm	800x66 x254	800x66 x254
	g.Number of circuits			2	2
Indoor air flow (Hi/Mi/Lo)			m^3/h	1160/1100/950	1160/1100/950
Indoor external static pressure (Hi)			Pa	40	40
Sound level (sound pressure)			dB(A)	45/41/38	45/41/38
Indoor unit	Dimension (W x H x D)		Mm	1000×298×800	1000×298×800
	Packing (W x H x D)		Mm	1205x370x940	1205x370x940
	Net/Gross weight		Kg	38/45	38/45
Refrigerant	Type			R410A	R410A
Design pressure			MPa	4.4/2.5	4.4/2.5
Refrigerant piping		Liquid side/ Gas side	Mm	Φ6.35/Φ12.7	Φ9.53/Φ16
Connection wiring		Power wiring	Mm^2	3×2.5(L≤20m); 3×3.5(L≤50m)	
		Signal wiring	Mm^2	3×1.0	
Drainage water pipe dia.			Mm	Φ32	Φ32
Controller				Wireless remote controller R51(standard)	
Operation temp			℃	17 ~ 30	
Application area			m^2	15~45	15~45

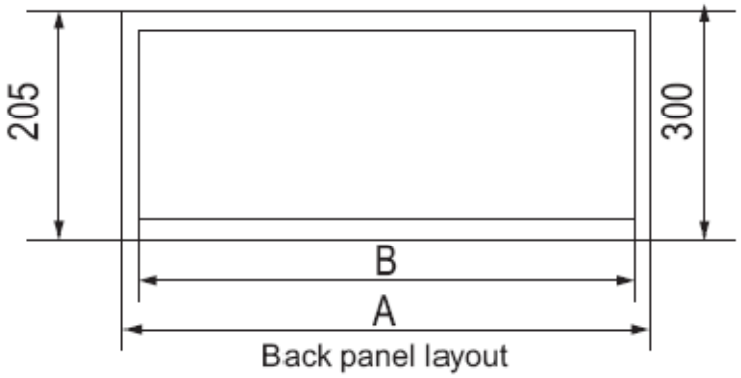
Sale Model				HUBU 711 XRV	HUBU 801 XRV
Power supply			V-ph-Hz	220~240-1-50	220~240-1-50
Cooling	Capacity		kW	7.1	8.0
	Input		W	150	150
	Rated current		A	0.72	0.72
Heating	Capacity		kW	8.0	9.0
	Input		W	150	150
	Rated current		A	0.72	0.72
Indoor fan motor	Model			YSK74-4C	YSK74-4C
	Type			AC MOTOR	AC MOTOR
	Brand			Welling	Welling
	Input		w	170/150/133	170/150/133
	Capacitor		uF	6.5UF/450V	6.5UF/450V
	Speed(hi/mi/lo)		r/min	1100/1020/900	1100/1020/900
Indoor coil	a.Number of rows			3	3
	b.Tube pitch(a)x row pitch(b)		mm	25.4×22	25.4×22
	c.Fin spacing		mm	1.7	1.7
	d.Fin type (code)			Hydrophilic aluminum	
	e.Tube outside dia.and type		mm	Φ9.53	Φ9.53
				Inner groove tube	
	f.Coil length x height x width		mm	800x66 x254	800x66 x254
	g.Number of circuits			3	3
Indoor air flow (Hi/Mi/Lo)			m^3/h	1400/1100/900	1400/1100/900
Indoor external static pressure (Hi)			Pa	40	40
Sound level (sound pressure)			dB(A)	46/44/42	46/44/42
Indoor unit	Dimension (W x H x D)		Mm	1000×298×800	1000×298×800
	Packing (W x H x D)		Mm	1205x370x940	1205x370x940
	Net/Gross weight		Kg	38/45	38/45
Refrigerant	Type			R410A	R410A
Design pressure			MPa	4.4/2.5	4.4/2.5
Refrigerant piping		Liquid side/ Gas side	Mm	Φ9.53/Φ15.9	Φ9.53/Φ15.9
Connection wiring		Power wiring	Mm^2	3×2.5(L≤20m); 3×3.5(L≤50m)	
		Signal wiring	Mm^2	3×1.0	
Drainage water pipe dia.			Mm	Φ32	Φ32
Controller				Wireless remote controller R51(standard)	
Operation temp			℃	17～30	
Application area			m^2	24~71	25~80

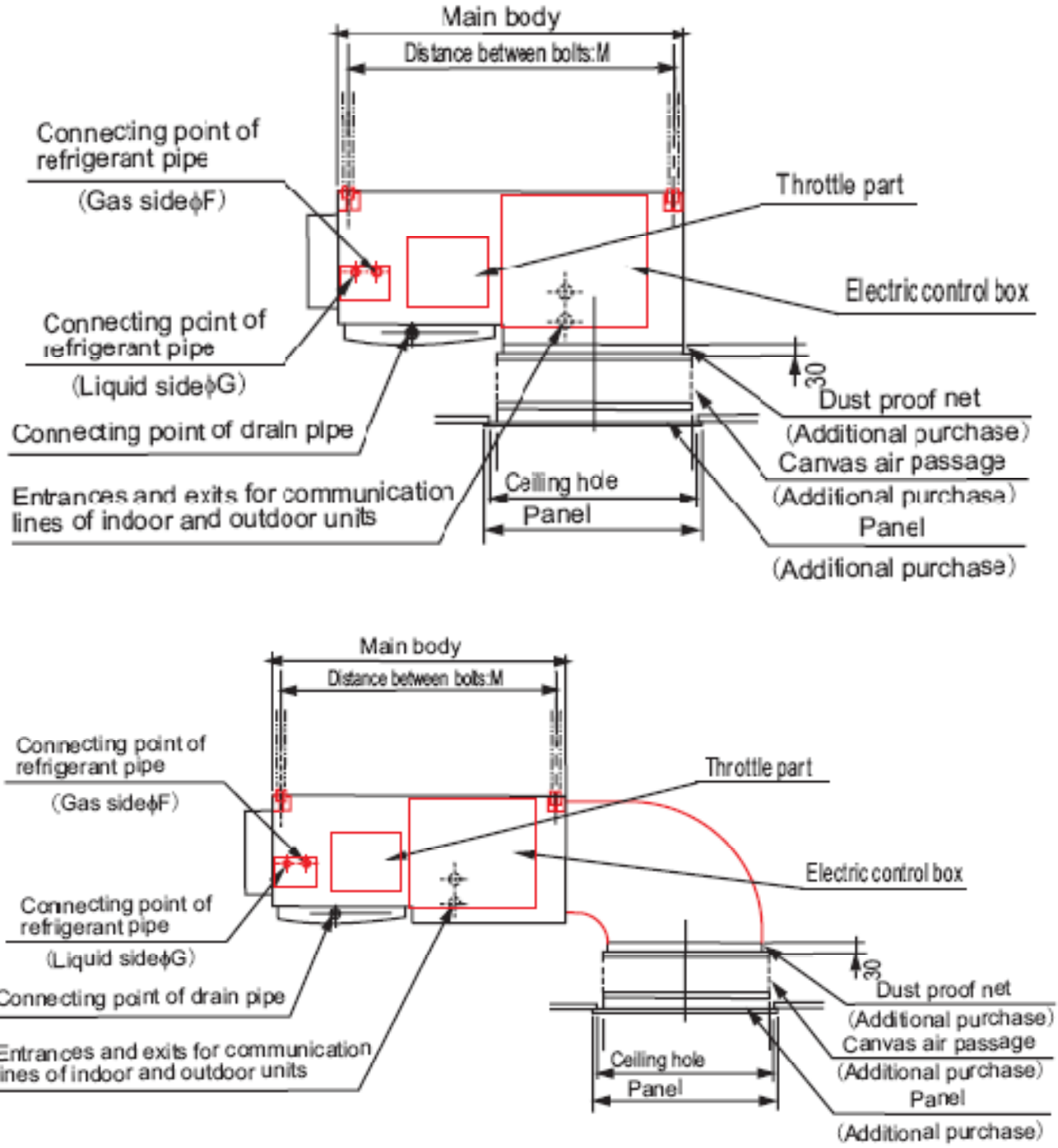
Sale Model			HUBU 901 XRV	HUBU 1121 XRV	HUBU 1401 XRV
Power supply		V-ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	kW	9.0	11.2	14.0
	Input	W	215	215	215
	Rated current	A	0.98	0.98	0.98
Heating	Capacity	kW	10.0	12.5	15.5
	Input	W	215	215	215
	Rated current	A	0.98	0.98	0.98
Indoor fan motor	Model		YSK59-4A x2	YSK59-4A x2	YSK59-4A x2
	Type		AC MOTOR	AC MOTOR	AC MOTOR
	Brand		Welling	Welling	Welling
	Input	W	104/87/78	104/87/78	104/87/78
	Capacitor	uF	4UF/450V x2	4UF/450V x2	4UF/450V x2
	Speed(hi/mi/lo)	r/min	840//695/610	840//695/610	840//695/610
Indoor coil	a.Number of rows		3	3	3
	b.Tube pitch(a)x row pitch(b)	mm	25.4×22	25.4×22	25.4×22
	c.Fin spacing	mm	1.7	1.7	1.7
	d.Fin type (code)		Hydrophilic aluminum		
	e.Tube outside dia.and type	mm	Φ9.53	Φ9.53	Φ9.53
			Inner groove tube		
	f.Coil length x height x width	mm	1150x66 x254	1150x66 x254	1150x66 x254
	g.Number of circuits		5	5	5
Indoor air flow (Hi/Mi/Lo)		m^3/h	1800/1500/1200	1800/1500/1200	1800/1500/1200
Indoor external static pressure (Hi)		Pa	70	70	70
Sound level (sound pressure)		dB(A)	47/45/43	47/45/43	48/46/44
Indoor unit	Dimension (W x H x D)	Mm	1350×298×800	1350×298×800	1350×298×800
	Packing (W x H x D)	Mm	1555X370 X940	1555X370 X940	1555X370 X940
	Net/Gross weight	Kg	48/57	51/58	51/58
Refrigerant	Type		R410A	R410A	R410A
Design pressure		MPa	4.4/2.5	4.4/2.5	4.4/2.5
Refrigerant piping	Liquid side/ Gas side	Mm	Φ9.53/Φ15.9	Φ9.53/Φ15.9	Φ9.53/Φ15.9
Connection wiring	Power wiring	Mm^2	3×2.5(L≤20m); 3×3.5(L≤50m)		
	Signal wiring	Mm^2	3×1.0		
Drainage water pipe dia.		Mm	Φ32	Φ32	Φ32
Controller			Wireless remote controller R51(standard)		
Operation temp		℃	17 ~ 30		
Application area		m^2	25~90	35~110	45~140

3. Dimensions



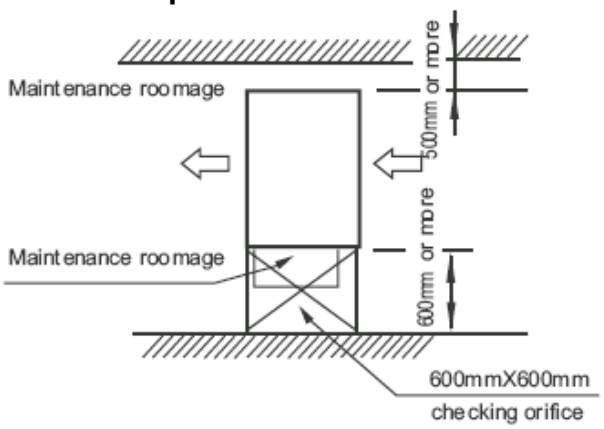


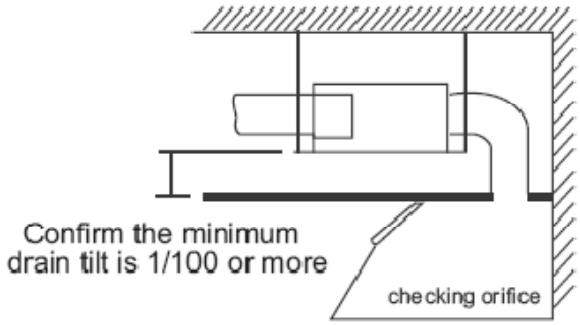




Cooling capacity(w)	A	B	C	D	E	F	G	H	J	K	L	M	m
4500~8000	1082	1052	1112	1085	1470	19	9.53	252	580	290	-	721	2
9000~14000	1350	1400	1380	1400	1430	16	9.53	252	930	310	-	721	3

4. Service Space

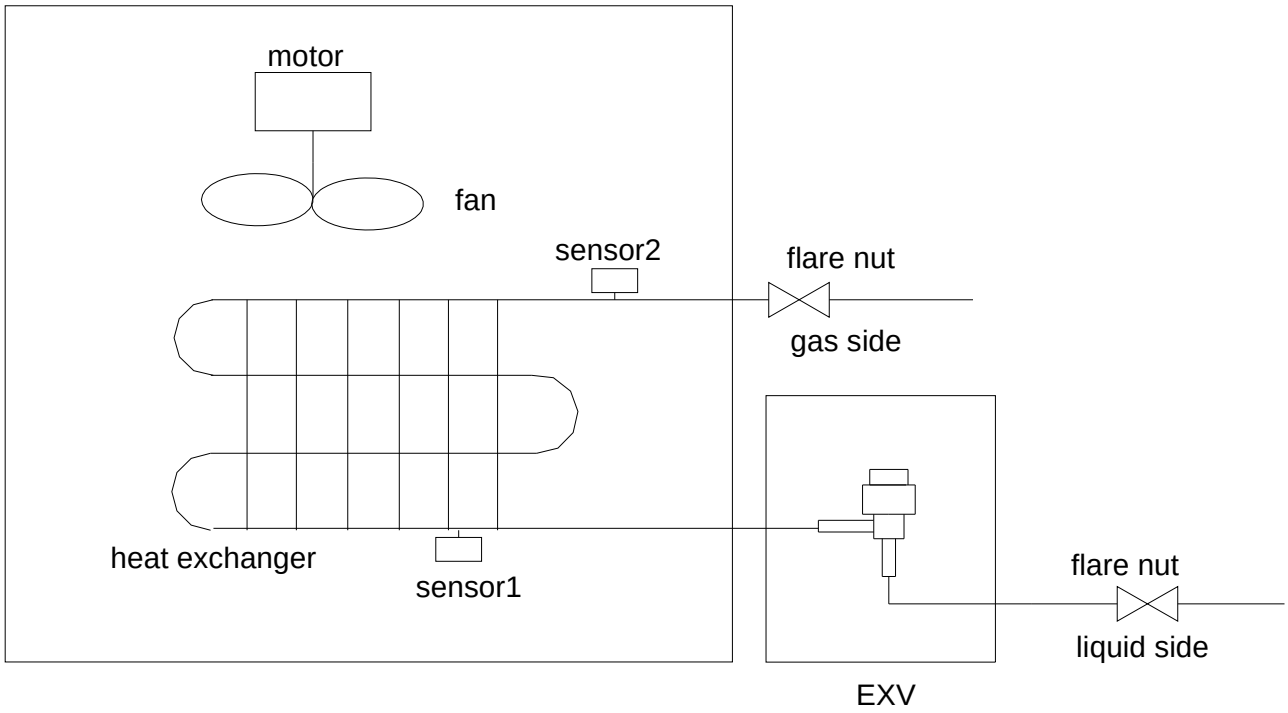




5. Piping Diagrams

HUBU 451 XRV、HUBU 561 XRV、HUBU 711 XRV、HUBU 801 XRV、

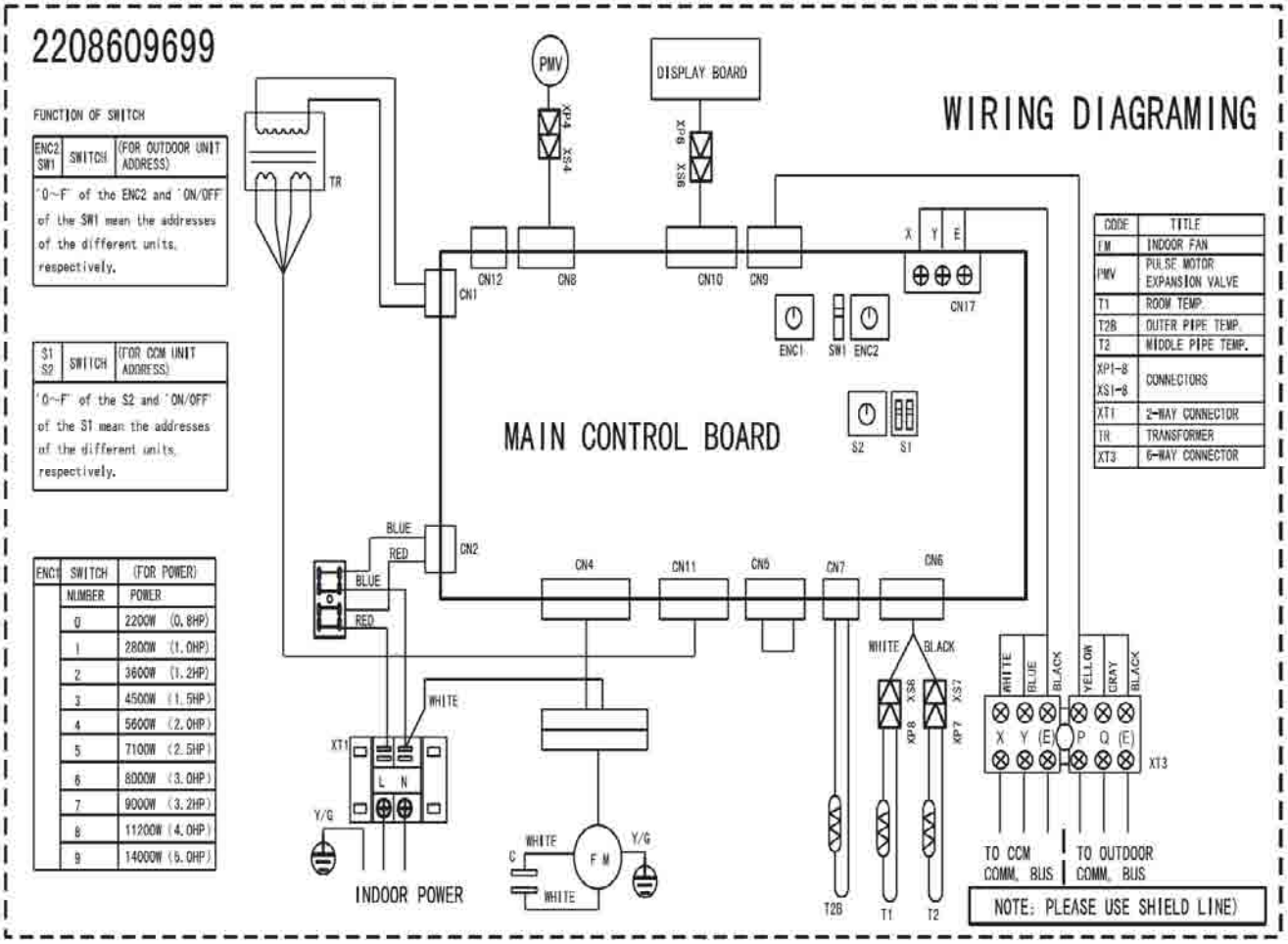
HUBU 901 XRV、HUBU 1121 XRV、HUBU 1401 XRV



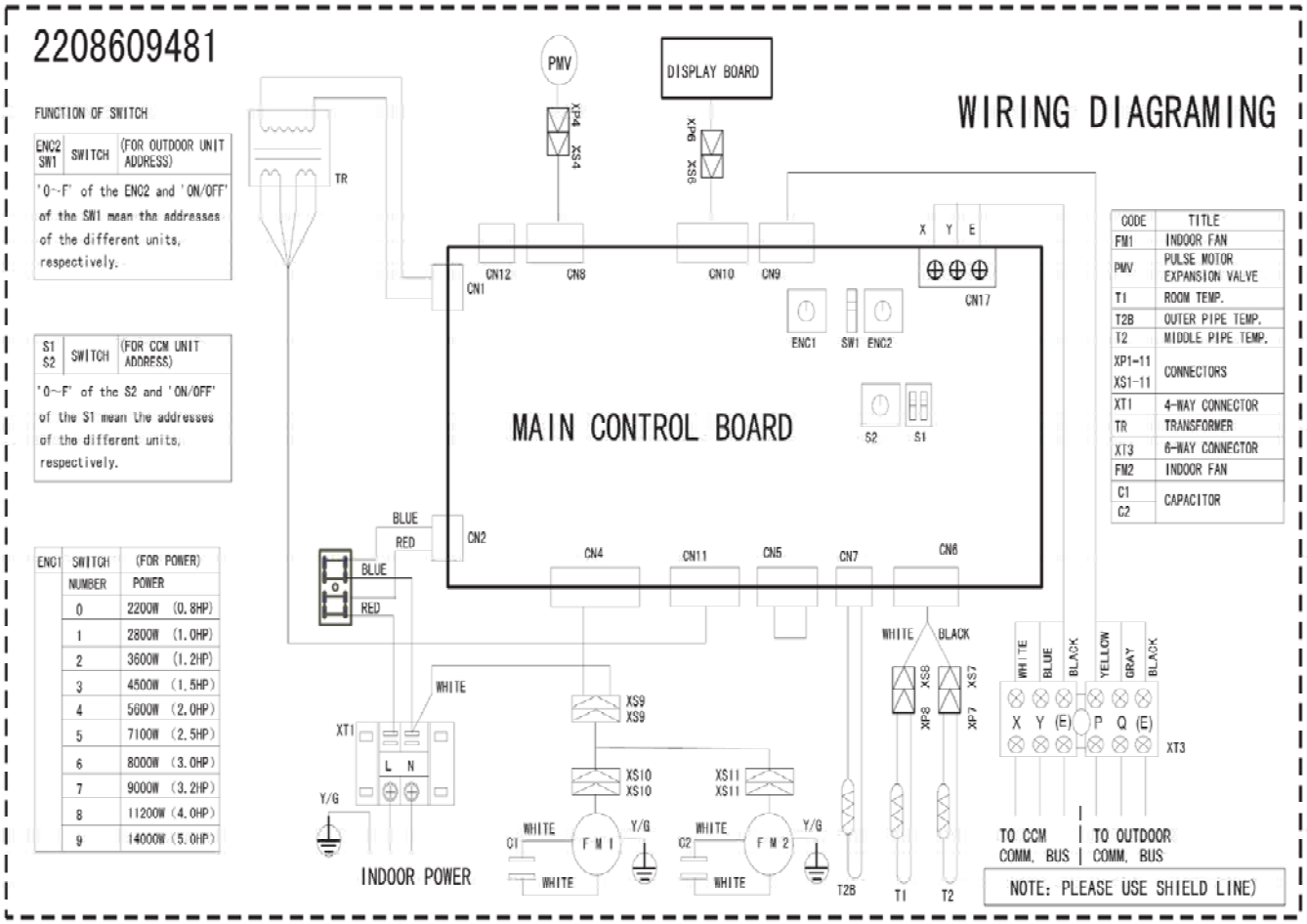
Sensor1: T2
Sensor2: T2B

6. Wiring Diagrams

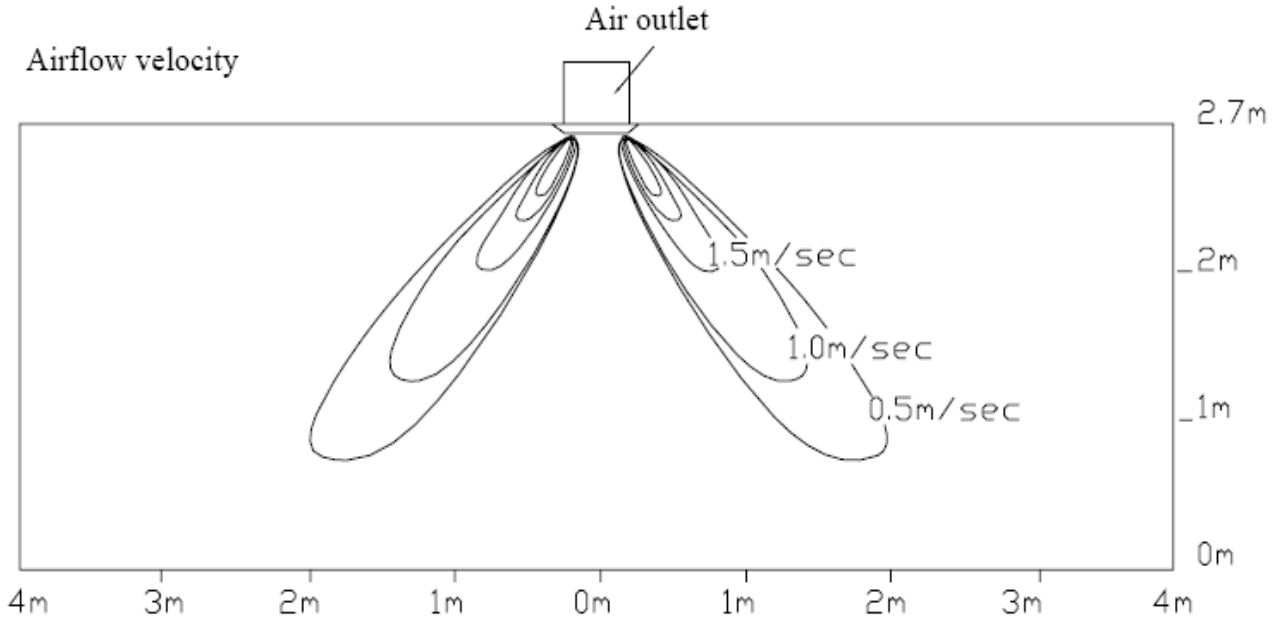
HUBU 451 XRV、HUBU 561 XRV、HUBU 711 XRV、HUBU 801 XRV

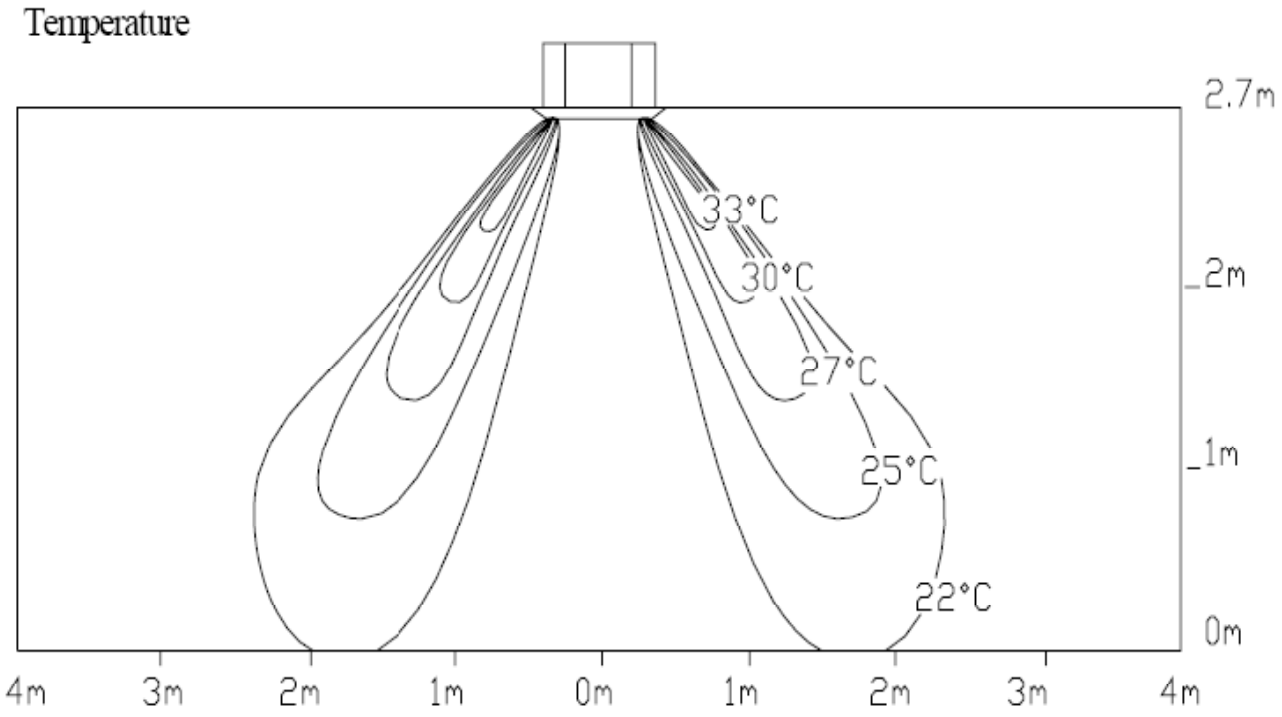


HUBU 901 XRV、HUBU 1121 XRV、HUBU 1401 XRV



7. Air Velocity and Temperature Distributions





8. Capacity Tables

8.1.1 Cooling

TH: total capacity **SH**: sensible capacity

Indoor Unit size (KW)	Outdoor temperature (℃DB)	Indoor temperature (℃WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
4.5	10.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.1	5.8	3.3
	12.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.1	5.8	3.3
	14.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.1	5.7	3.2
	16.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.1	5.5	3.1
	18.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.1	5.5	3.1
	20.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.1	5.4	3.1
	21.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.1	5.3	3.0
	23.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.1	3.1	5.2	3.0
	25.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.1	3.1	5.1	2.9
	27.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	4.9	3.0	5.1	2.9
	29.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	4.9	3.0	5.0	2.9
	31.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.4	5.0	2.9
	33.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.4	4.8	2.8
	35.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.1	3.4	4.7	2.8
	37.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.5	3.2	4.7	3.1	4.7	2.8
	39.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.5	3.2	4.7	3.1	4.7	2.8
5.6	10.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.3	4.1
	12.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.3	4.1
	14.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.2	4.1
	16.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	6.9	4.0
	18.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.1	4.1
	20.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.1	4.1
	21.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.0	4.1
	23.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	6.9	4.0
	25.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.5	4.1	6.8	3.9
	27.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.4	4.0	6.5	3.8
	29.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.3	4.0	6.4	3.7
	31.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.2	3.9	6.3	3.7
	33.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.0	3.8	6.3	3.7
	35.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	5.9	3.7	6.2	3.6
	37.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	5.9	3.9	6.1	3.5
	39.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	5.7	3.8	5.8	3.8	6.0	3.5
7.1	10.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	9.1	4.8
	12.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	9.0	4.7
	14.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	8.9	4.7
	16.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	8.8	4.6
	18.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	8.5	4.6
	20.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	8.4	4.5
	21.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	8.3	4.5

Indoor Unit size (KW)	Outdoor temperature (℃DB)	Indoor temperature (℃WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
	23.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	8.2	4.4
	25.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	8.1	4.4
	27.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.0	4.8	8.1	4.3
	29.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	7.8	4.7	8.0	4.5
	31.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	7.8	4.7	7.7	4.3
	33.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	7.7	4.6	7.7	4.3
	35.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	7.5	4.5	7.6	4.2
	37.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	7.4	4.4	7.5	4.2
	39.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.1	4.6	7.3	4.4	7.5	4.2
8.0	10.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	10.3	5.5
	12.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	10.1	5.5
	14.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	10.0	5.4
	16.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	9.9	5.3
	18.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	9.6	5.2
	20.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	9.5	5.1
	21.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	9.3	5.0
	23.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	9.2	5.0
	25.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	9.2	4.9
	27.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.0	5.2	9.1	5.0
	29.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.4	8.8	5.2	9.0	5.0
	31.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.4	8.8	5.2	8.7	4.8
	33.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.4	8.7	5.1	8.7	4.8
	35.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.4	8.5	5.0	8.5	4.7
	37.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.2	5.3	8.3	5.0	8.5	4.8
	39.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.0	5.2	8.2	4.9	8.5	4.8
9.0	10.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	11.4	6.4
	12.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	11.3	6.3
	14.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	11.2	6.3
	16.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	11.0	6.2
	18.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	10.7	6.1
	20.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	10.6	6.0
	21.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	10.4	5.9
	23.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	10.3	5.9
	25.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	10.2	5.8
	27.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.0	6.2	10.1	5.8
	29.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	9.9	6.1	10.0	5.7
	31.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	9.8	6.1	9.7	5.6
	33.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	9.7	6.0	9.7	5.6
	35.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.3	6.3	9.4	5.8	9.5	5.6
	37.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.1	6.2	9.2	5.7	9.4	5.6
	39.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.0	6.1	9.2	5.7	9.4	5.6
11.2	10.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.9	8.6	16.1	9.4

Indoor Unit size (KW)	Outdoor temperature (℃DB)	Indoor temperature (℃WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
	12.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.9	8.6	15.1	8.8
	14.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.9	8.6	14.9	8.6
	16.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.9	8.6	14.7	8.6
	18.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.9	8.6	14.6	8.5
	20.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.9	8.6	14.5	8.4
	21.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.9	8.6	14.4	8.3
	23.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.7	8.5	14.3	8.3
	25.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.6	8.4	14.2	8.2
	27.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.5	8.3	14.0	8.1
	29.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.3	8.3	13.9	8.2
	31.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.2	8.2	13.3	7.9
	33.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.1	8.1	13.1	7.7
	35.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.3	8.4	13.0	8.1	12.9	7.6
	37.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.2	8.3	12.9	8.0	12.6	7.5
	39.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	11.9	8.1	12.8	7.9	12.4	7.4
14.00	10.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.7	10.2	18.2	10.2
	12.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.7	10.2	17.9	10.0
	14.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.7	10.2	17.8	10.0
	16.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.7	10.2	17.5	9.8
	18.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.7	10.2	17.1	9.6
	20.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.7	10.2	16.8	9.4
	21.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.7	10.2	16.5	9.3
	23.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.4	10.2	16.4	9.2
	25.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.2	10.1	16.2	9.1
	27.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.1	10.0	16.1	9.2
	29.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.0	9.9	16.0	9.1
	31.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	15.8	9.8	15.4	8.8
	33.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	15.7	9.7	15.4	8.8
	35.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.7	9.7	15.1	9.4	15.1	8.8
	37.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.6	9.6	15.1	9.4	15.0	8.7
	39.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.3	9.4	14.6	9.2	15.0	8.8

8.1.2 Heating

TC: total capacity

Indoor Unit size (KW)	Outdoor temperature (℃DB)		Indoor temperature (℃WB)					
			16	18	20	21	22	24
			TC	TC	TC	TC	TC	TC
	WB	DB	kW	kW	kW	kW	kW	kW
4.50	-15.00	-14.70	3.15	3.15	3.15	3.15	3.15	3.15
	-13.00	-12.60	3.35	3.35	3.35	3.35	3.35	3.35
	-11.00	-10.50	3.50	3.50	3.50	3.50	3.50	3.50
	-10.00	-9.50	3.65	3.65	3.65	3.65	3.65	3.65
	-9.10	-8.50	3.75	3.75	3.75	3.75	3.75	3.75
	-7.60	-7.00	3.80	3.80	3.80	3.80	3.80	3.80
	-5.60	-5.00	3.95	3.95	3.95	3.95	3.95	3.95
	-3.70	-3.00	4.15	4.15	4.15	4.15	4.15	4.15
	-0.70	0.00	4.45	4.45	4.45	4.45	4.45	4.20
	2.20	3.00	4.70	4.70	4.70	4.70	4.60	4.20
	4.10	5.00	4.85	4.85	4.85	4.85	4.60	4.20
	6.00	7.00	5.00	5.00	5.00	4.85	4.60	4.20
	7.90	9.00	5.15	5.15	5.00	4.85	4.60	4.20
	9.80	11.00	5.30	5.30	5.00	4.85	4.60	4.20
	11.80	13.00	5.50	5.40	5.00	4.85	4.60	4.20
	13.70	15.00	5.65	5.40	5.00	4.85	4.60	4.20
5.6	-15.00	-14.70	3.97	3.97	3.97	3.97	3.97	3.97
	-13.00	-12.60	4.22	4.22	4.22	4.22	4.22	4.22
	-11.00	-10.50	4.41	4.41	4.41	4.41	4.41	4.41
	-10.00	-9.50	4.60	4.60	4.60	4.60	4.60	4.60
	-9.10	-8.50	4.73	4.73	4.73	4.73	4.73	4.73
	-7.60	-7.00	4.79	4.79	4.79	4.79	4.79	4.79
	-5.60	-5.00	4.98	4.98	4.98	4.98	4.98	4.98
	-3.70	-3.00	5.23	5.23	5.23	5.23	5.23	5.23
	-0.70	0.00	5.61	5.61	5.61	5.61	5.61	5.29
	2.20	3.00	5.92	5.92	5.92	5.92	5.80	5.29
	4.10	5.00	6.11	6.11	6.11	6.11	5.80	5.29
	6.00	7.00	6.30	6.30	6.30	6.11	5.80	5.29
	7.90	9.00	6.49	6.49	6.30	6.11	5.80	5.29
	9.80	11.00	6.68	6.68	6.30	6.11	5.80	5.29
	11.80	13.00	6.93	6.80	6.30	6.11	5.80	5.29
	13.70	15.00	7.12	6.80	6.30	6.11	5.80	5.29
7.1	-15.00	-14.70	5.04	5.04	5.04	5.04	5.04	5.04
	-13.00	-12.60	5.36	5.36	5.36	5.36	5.36	5.36
	-11.00	-10.50	5.60	5.60	5.60	5.60	5.60	5.60
	-10.00	-9.50	5.84	5.84	5.84	5.84	5.84	5.84
	-9.10	-8.50	6.00	6.00	6.00	6.00	6.00	6.00
	-7.60	-7.00	6.08	6.08	6.08	6.08	6.08	6.08
	-5.60	-5.00	6.32	6.32	6.32	6.32	6.32	6.32
	-3.70	-3.00	6.64	6.64	6.64	6.64	6.64	6.64

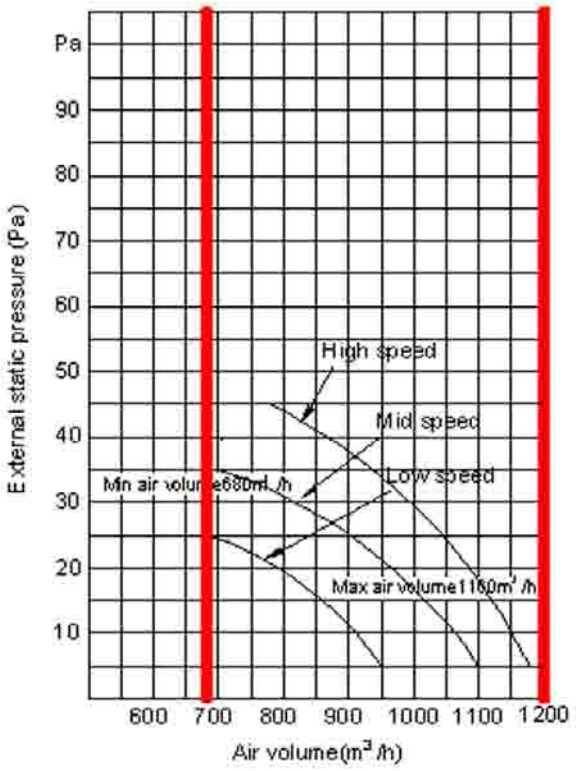
Indoor Unit size (KW)	Outdoor temperature (℃DB)		Indoor temperature (℃WB)					
			16	18	20	21	22	24
			TC	TC	TC	TC	TC	TC
	WB	DB	kW	kW	kW	kW	kW	kW
	-0.70	0.00	7.12	7.12	7.12	7.12	7.12	6.72
	2.20	3.00	7.52	7.52	7.52	7.52	7.36	6.72
	4.10	5.00	7.76	7.76	7.76	7.76	7.36	6.72
	6.00	7.00	8.00	8.00	8.00	7.76	7.36	6.72
	7.90	9.00	8.24	8.24	8.00	7.76	7.36	6.72
	9.80	11.00	8.48	8.48	8.00	7.76	7.36	6.72
	11.80	13.00	8.80	8.64	8.00	7.76	7.36	6.72
	13.70	15.00	9.04	8.64	8.00	7.76	7.36	6.72
8.0	-15	-14.7	5.67	5.67	5.67	5.67	5.67	5.67
	-13	-12.6	6.03	6.03	6.03	6.03	6.03	6.03
	-11	-10.5	6.30	6.30	6.30	6.30	6.30	6.30
	-10	-9.5	6.57	6.57	6.57	6.57	6.57	6.57
	-9.1	-8.5	6.75	6.75	6.75	6.75	6.75	6.75
	-7.6	-7	6.84	6.84	6.84	6.84	6.84	6.84
	-5.6	-5	7.11	7.11	7.11	7.11	7.11	7.11
	-3.7	-3	7.47	7.47	7.47	7.47	7.47	7.47
	-0.7	0	8.01	8.01	8.01	8.01	8.01	7.56
	2.2	3	8.46	8.46	8.46	8.46	8.28	7.56
	4.1	5	8.73	8.73	8.73	8.73	8.28	7.56
	6	7	9.00	9.00	9.00	8.73	8.28	7.56
	7.9	9	9.27	9.27	9.00	8.73	8.28	7.56
	9.8	11	9.54	9.54	9.00	8.73	8.28	7.56
	11.8	13	9.90	9.72	9.00	8.73	8.28	7.56
	13.7	15	10.17	9.72	9.00	8.73	8.28	7.56
9.0	-15	-14.7	6.30	6.30	6.30	6.30	6.30	6.30
	-13	-12.6	6.70	6.70	6.70	6.70	6.70	6.70
	-11	-10.5	7.00	7.00	7.00	7.00	7.00	7.00
	-10	-9.5	7.30	7.30	7.30	7.30	7.30	7.30
	-9.1	-8.5	7.50	7.50	7.50	7.50	7.50	7.50
	-7.6	-7	7.60	7.60	7.60	7.60	7.60	7.60
	-5.6	-5	7.90	7.90	7.90	7.90	7.90	7.90
	-3.7	-3	8.30	8.30	8.30	8.30	8.30	8.30
	-0.7	0	8.90	8.90	8.90	8.90	8.90	8.40
	2.2	3	9.40	9.40	9.40	9.40	9.20	8.40
	4.1	5	9.70	9.70	9.70	9.70	9.20	8.40
	6	7	10.00	10.00	10.00	9.70	9.20	8.40
	7.9	9	10.30	10.30	10.00	9.70	9.20	8.40
	9.8	11	10.60	10.60	10.00	9.70	9.20	8.40
	11.8	13	11.00	10.80	10.00	9.70	9.20	8.40
	13.7	15	11.30	10.80	10.00	9.70	9.20	8.40
11.2	-15	-14.7	7.88	7.88	7.88	7.88	7.88	7.88
	-13	-12.6	8.38	8.38	8.38	8.38	8.38	8.38

Indoor Unit size (KW)	Outdoor temperature (℃DB)		Indoor temperature (℃WB)					
			16	18	20	21	22	24
			TC	TC	TC	TC	TC	TC
	WB	DB	kW	kW	kW	kW	kW	kW
	-11	-10.5	8.75	8.75	8.75	8.75	8.75	8.75
	-10	-9.5	9.13	9.13	9.13	9.13	9.13	9.13
	-9.1	-8.5	9.38	9.38	9.38	9.38	9.38	9.38
	-7.6	-7	9.50	9.50	9.50	9.50	9.50	9.50
	-5.6	-5	9.88	9.88	9.88	9.88	9.88	9.88
	-3.7	-3	10.38	10.38	10.38	10.38	10.38	10.38
	-0.7	0	11.13	11.13	11.13	11.13	11.13	10.50
	2.2	3	11.75	11.75	11.75	11.75	11.50	10.50
	4.1	5	12.13	12.13	12.13	12.13	11.50	10.50
	6	7	12.50	12.50	12.50	12.13	11.50	10.50
	7.9	9	12.88	12.88	12.50	12.13	11.50	10.50
	9.8	11	13.25	13.25	12.50	12.13	11.50	10.50
	11.8	13	13.75	13.50	12.50	12.13	11.50	10.50
	13.7	15	14.13	13.50	12.50	12.13	11.50	10.50
14.0	-15	-14.7	9.77	9.77	9.77	9.77	9.77	9.77
	-13	-12.6	10.39	10.39	10.39	10.39	10.39	10.39
	-11	-10.5	10.85	10.85	10.85	10.85	10.85	10.85
	-10	-9.5	11.32	11.32	11.32	11.32	11.32	11.32
	-9.1	-8.5	11.63	11.63	11.63	11.63	11.63	11.63
	-7.6	-7	11.78	11.78	11.78	11.78	11.78	11.78
	-5.6	-5	12.25	12.25	12.25	12.25	12.25	12.25
	-3.7	-3	12.87	12.87	12.87	12.87	12.87	12.87
	-0.7	0	13.80	13.80	13.80	13.80	13.80	13.02
	2.2	3	14.57	14.57	14.57	14.57	14.26	13.02
	4.1	5	15.04	15.04	15.04	15.04	14.26	13.02
	6	7	15.50	15.50	15.50	15.04	14.26	13.02
	7.9	9	15.97	15.97	15.50	15.04	14.26	13.02
	9.8	11	16.43	16.43	15.50	15.04	14.26	13.02
	11.8	13	17.05	16.74	15.50	15.04	14.26	13.02
	13.7	15	17.52	16.74	15.50	15.04	14.26	13.02

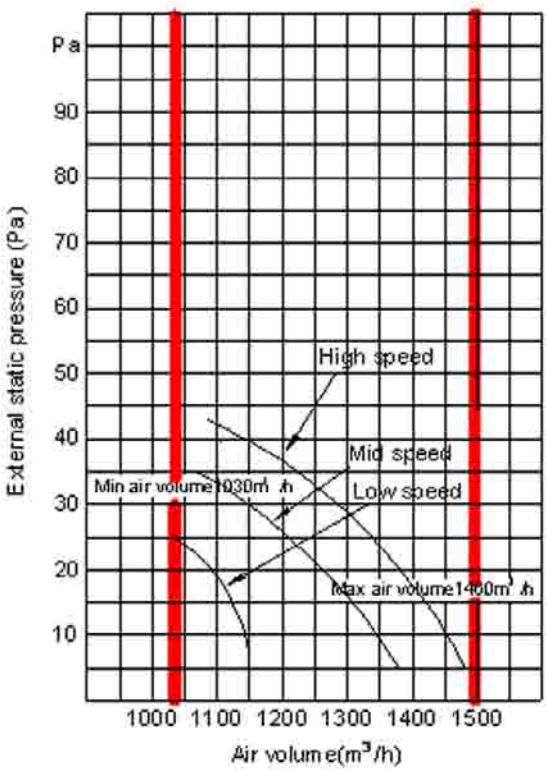
9. Fan performances

Static pressure curve

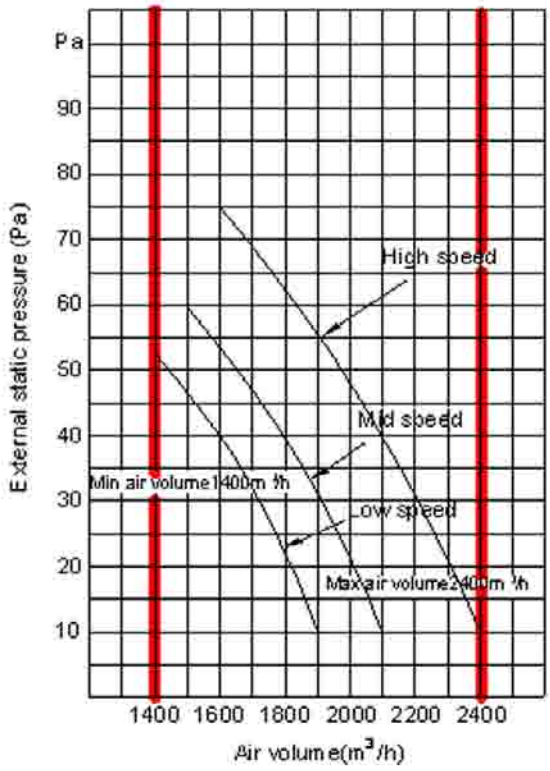
HUBU 451-561 XRV



HUBU 711-801 XRV



HUBU 901-1121-1401 XRV

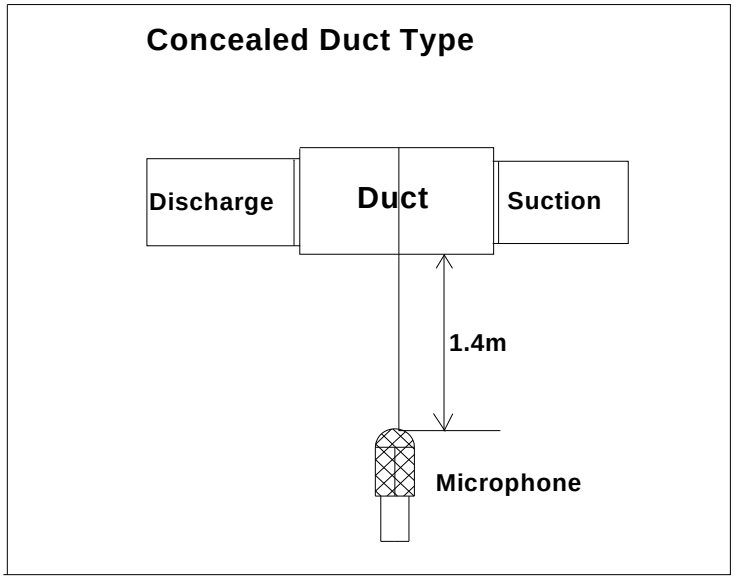


10. Electric Characteristics

Model	Indoor Unit				Power Supply	IFM	
	Hz	Voltage	Min.	Max.	MFA	kW	FLA
HUBU 451 XRV	50	220-240V	198V	254V	15A	0.055	0.54
HUBU 561 XRV	50	220-240V	198V	254V	15A	0.055	0.54
HUBU 711 XRV	50	220-240V	198V	254V	15A	0.074	0.785
HUBU 801 XRV	50	220-240V	198V	254V	15A	0.074	0.785
HUBU 901 XRV	50	220-240V	198V	254V	15A	0.059	0.475
HUBU 1121 XRV	50	220-240V	198V	254V	15A	0.059	0.475
HUBU 1401 XRV	50	220-240V	198V	254V	15A	0.059	0.475

Remark:
MFA: Max. Fuse Amps. (A)
KW: Fan Motor Rated Output (KW)
FLA: Full Load Amps. (A)
IFM: Indoor Fan Motor

11. Sound Levels



Model	Noise level dB(A)		
	H	M	L
HUBU 451 XRV	45	41	38
HUBU 561 XRV	45	41	38
HUBU 711 XRV	46	44	42
HUBU 801 XRV	46	44	42
HUBU 901 XRV	47	45	43
HUBU 1121 XRV	47	45	43
HUBU 1401 XRV	48	46	44

Ceiling & Floor Type

1. Features

1.1. New design, more modern and elegant appearance.

1.2. Convenient installation

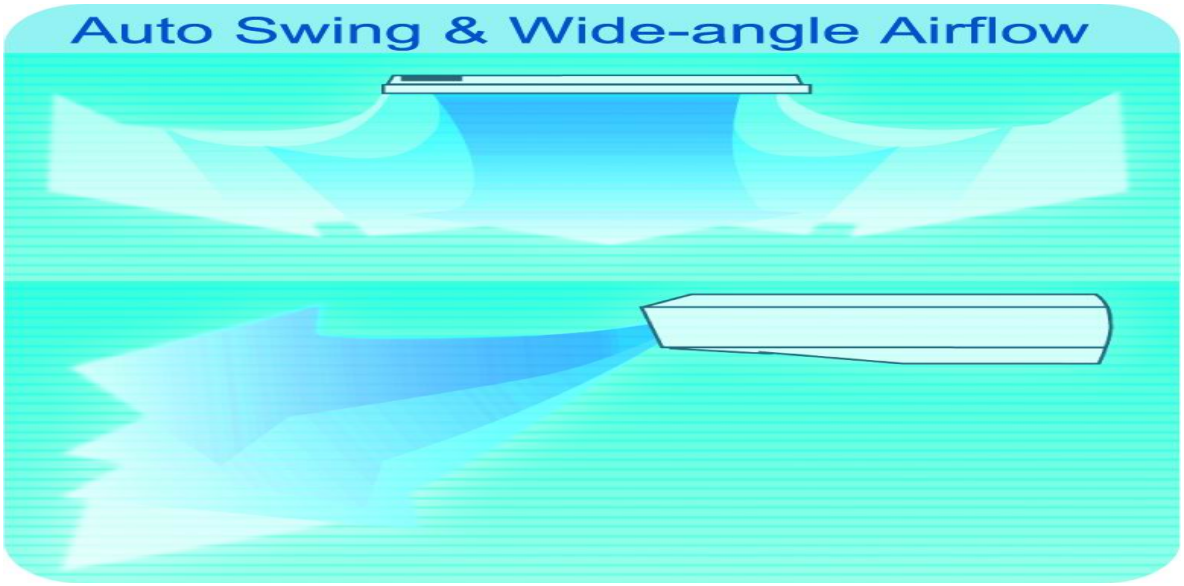
--The ceiling type can be easily installed into a corner of the ceiling even if the ceiling is very narrow

--It is especially useful when installation of an air conditioner in the center of the ceiling is impossible due to a structure such as one lighting

1.3. Two direction auto swing (vertical & horizontal) and wide angle air flow

--Air flow directional control minimizes the air resistance and produces wilder air flow to vertical direction.

--The range of horizontal air discharge is widened which secures wider air flow distribution to provide more comfortable air circulation no matter where the unit is set up



1.4. Three level fan speed, more humanism design, meets different air-supply requirement.

1.5. Water proof by utilizing the absorbing plastic film on water collector

1.6. Easy operation. Auto-restart function, remote control and optional wire control method.

1.7. Low noise level plus compact size

--Shape of the blades has been improved to prevent noise caused by turbulence.

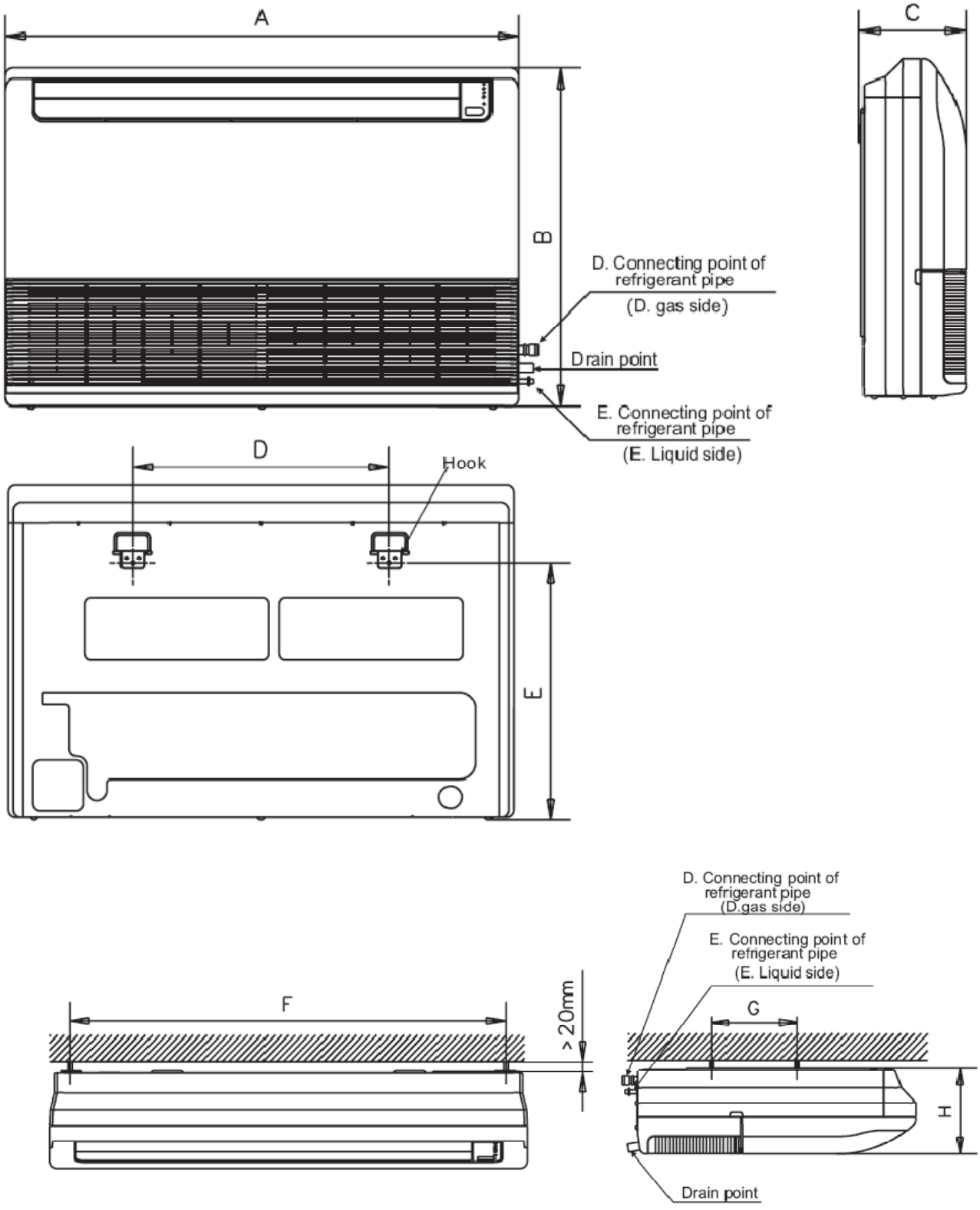
2. Specifications

Sale Model			HSFU 361 XRV	HSFU 451 XRV	HSFU 561 XRV
Power supply		V-ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	kW	3.6	4.5	5.6
	Input	W	120	120	122
	Rated current	A	0.55	0.55	0.55
Heating	Capacity	kW	4.0	5.0	6.3
	Input	W	120	120	122
	Rated current	A	0.55	0.55	0.55
Indoor fan motor	Model		YSK25-6L	YSK55-4L	YSK55-4L
	Type		Ac Motor	Ac Motor	Ac Motor
	Brand		Welling	Welling	Welling
	Input	w	33.4/31.1/29.5	125/105/85	125/105/85
	Capacitor	uF	1.2uF/450V	2UF/450V	2.5UF/450V
	Speed(hi/mi/lo)	r/min	756/666/592	1310/1190/1040	1310/1190/1040
Indoor coil	a.Number of rows		2	3	3
	b.Tube pitch(a)x row pitch(b)	mm	25.4x22	25.4x22	25.4x22
	c.Fin spacing	mm	1.8	1.8	1.8
	d.Fin type (code)		Hydrophilic aluminum		
	e.Tube outside dia.and type	mm	Φ9.53	Φ9.53	Φ9.53
			Inner groove tube		
	f.Coil length x height x width	mm	804x44 x254	804x66 x254	804x66 x254
	g.Number of circuits		3	3	3
Indoor air flow (Hi/Mi/Lo)		m^3/h	650/570/500	800/600/500	800/600/500
Sound level (sound pressure)		dB(A)	43/41/38	43/41/38	43/41/38
Indoor unit	Dimension (W x H x D)	mm	990x660x206	990x660x206	990x660x206
	Packing (W x H x D)	mm	1089x744x296	1089x744x296	1089x744x296
	Net/Gross weight	kg	29/35	29/35	29/35
Refrigerant	Type		R410A	R410A	R410A
Design pressure		MPa	4.2/2.5	4.2/2.5	4.2/2.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ6.35/Φ12.7	Φ6.35/Φ12.7	Φ9.53/Φ16
Connection wiring	Power wiring	mm^2	3×2.5(L≤20m); 3×3.5(L≤50m)		
	Signal wiring	mm^2	3×1.0		
Drainage water pipe diameter		mm	Φ25	Φ25	Φ25
Controller			Wireless remote controller R05 (standard)		
Operation temp		℃	17 ~ 30		
Application area		m^2	14 ~ 24	18 ~ 30	22 ~ 37

Sale Model			HSFU 711 XRV	HSFU 801 XRV	HSFU 901 XRV
Power supply		V-ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	kW	7.1	8.0	9.0
	Input	W	125	130	130
	Rated current	A	0.57	0.6	0.6
Heating	Capacity	kW	8.0	9.0	10.0
	Input	W	125	130	130
	Rated current	A	0.57	0.6	0.6
Indoor fan motor	Model		YSK55-4L	YSK80-4A	YSK80-4A
	Type		Ac Motor	Ac Motor	Ac Motor
	Brand		Welling	Welling	Welling
	Input	w	125/105/85	143/122/110	143/122/110
	Capacitor	uF	2.5UF/450V	3.5UF/450V	3.5UF/450V
	Speed(hi/mi/lo)	r/min	1310/1190/1040	1310/1210/1115	1310/1210/1115
Indoor coil	a.Number of rows		3	3	3
	b.Tube pitch(a)x row pitch(b)	mm	25.4x22	25.4x22	25.4x22
	c.Fin spacing	mm	1.8	1.8	1.8
	d.Fin type (code)		Hydrophilic aluminum		
	e.Tube outside dia.and type	mm	Φ9.53	Φ9.53	Φ9.53
			Inner groove tube		
	f.Coil length x height x width	mm	804x66 x254	1094x66 x254	1094x66 x254
	g.Number of circuits		3	5	5
Indoor air flow (Hi/Mi/Lo)		m^3/h	800/600/500	1200/900/700	1200/900/700
Sound level (sound pressure)		dB(A)	43/41/38	45/43/40	45/43/40
Indoor unit	Dimension (W x H x D)	mm	990x660x206	1280 x 660x206	1280 x 660x206
	Packing (W x H x D)	mm	1089x744x296	1379x744x296	1379x744x296
	Net/Gross weight	kg	29/35	37/42	37/42
Refrigerant	Type		R410A	R410A	R410A
Design pressure		MPa	4.2/2.5	4.2/2.5	4.2/2.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.53/Φ16	Φ9.53/Φ16	Φ9.53/Φ16
Connection wiring	Power wiring	mm^2	3×2.5(L≤20m); 3×3.5(L≤50m)		
	Signal wiring	mm^2	3×1.0		
Drainage water pipe dia.		mm	Φ25	Φ25	Φ25
Controller			Wireless remote controller R05 (standard)		
Operation temp		℃	17 ~ 30		
Application area		m^2	28 ~ 47	32 ~ 53	36 ~ 60

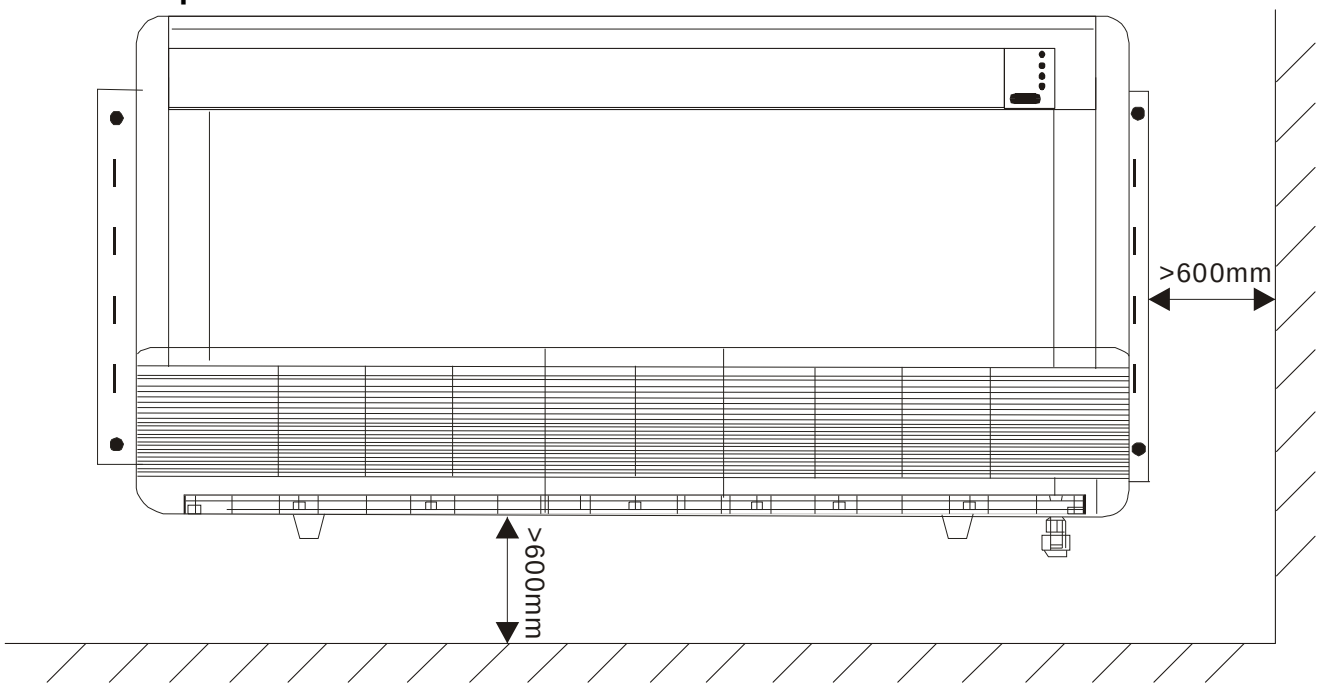
Sale Model			HSFU 1121 XRV	HSFU 1401 XRV
Power supply		V-ph-Hz	220~240-1-50	220~240-1-50
Cooling	Capacity	kW	11.2	14.0
	Input	W	182	182
	Rated current	A	0.83	0.83
Heating	Capacity	kW	12.5	15.5
	Input	W	182	182
	Rated current	A	0.83	0.83
Indoor fan motor	Model		YSK59-4D x2	YSK59-4D x2
	Type		Ac Motor	Ac Motor
	Brand		Welling	Welling
	Input	w	(89.5/81.5/77.5) x 2	(89.5/81.5/77.5) x 2
	Capacitor	uF	2.5UF/450V x2	2.5UF/450V x2
	Speed(hi/mi/lo)	r/min	1170/1070/995	1170/1070/995
Indoor coil	a.Number of rows		3	3
	b.Tube pitch(a)x row pitch(b)	mm	25.4x22	25.4x22
	c.Fin spacing	mm	1.8	1.8
	d.Fin type (code)		Hydrophilic aluminum	
	e.Tube outside dia.and type	mm	Φ9.53	Φ9.53
			Inner groove tube	
	f.Coil length x height x width	mm	1360x66 x254	1360x66 x254
	g.Number of circuits		5	5
Indoor air flow (Hi/Mi/Lo)		m^3/h	1980/1860/1730	1980/1860/1730
Sound level (sound pressure)		dB(A)	47/45/42	47/45/42
Indoor unit	Dimension (W x H x D)	mm	1670x680x244	1670x680x244
	Packing (W x H x D)	mm	1764x760x329	1764x760x329
	Net/Gross weight	kg	54/61	54/61
Refrigerant	Type		R410A	R410A
Design pressure		MPa	4.2/2.5	4.2/2.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.53/Φ16	Φ9.53/Φ16
Connection wiring	Power wiring	mm^2	3×2.5(L≤20m); 3×3.5(L≤50m)	
	Signal wiring	mm^2	3×1.0	
Drainage water pipe dia.		mm	Φ25	Φ25
Controller			Wireless remote controller R05 (standard)	
Operation temp		℃	17 ~ 30	
Application area		m^2	44 ~ 75	56 ~ 93

3. Dimensions



Capacity(W)	A	B	C	D	E	F	G	H
3600-7100	990	660	206	505	506	907	200	203
8000-9000	1280	660	206	795	506	1195	200	203
11200-14000	1670	680	244	1070	450	1542	200	240

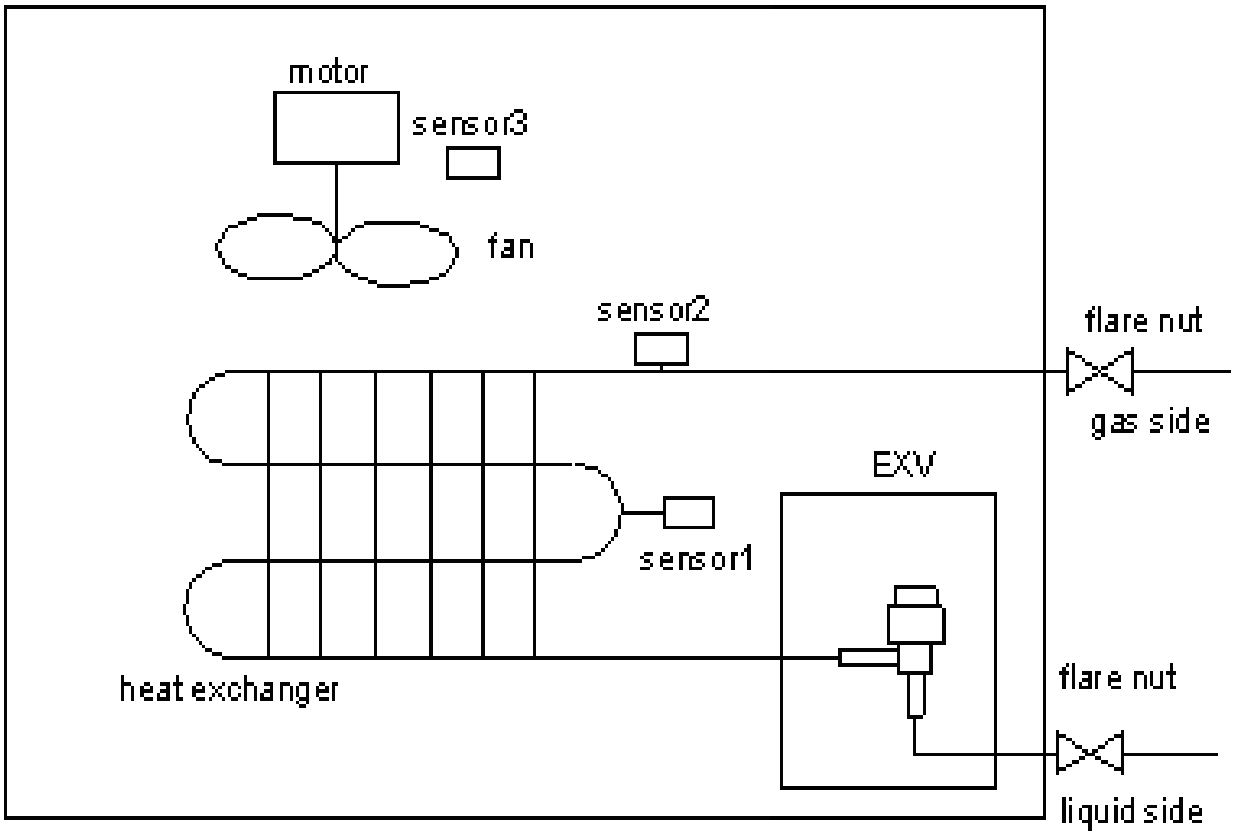
4. Service Space



5. Piping Diagrams

HSFU 361 XRV、HSFU 451 XRV、HSFU 561 XRV、HSFU 711 XRV

HSFU 801 XRV、HSFU 901 XRV、HSFU 1121 XRV、HSFU 1401 XRV

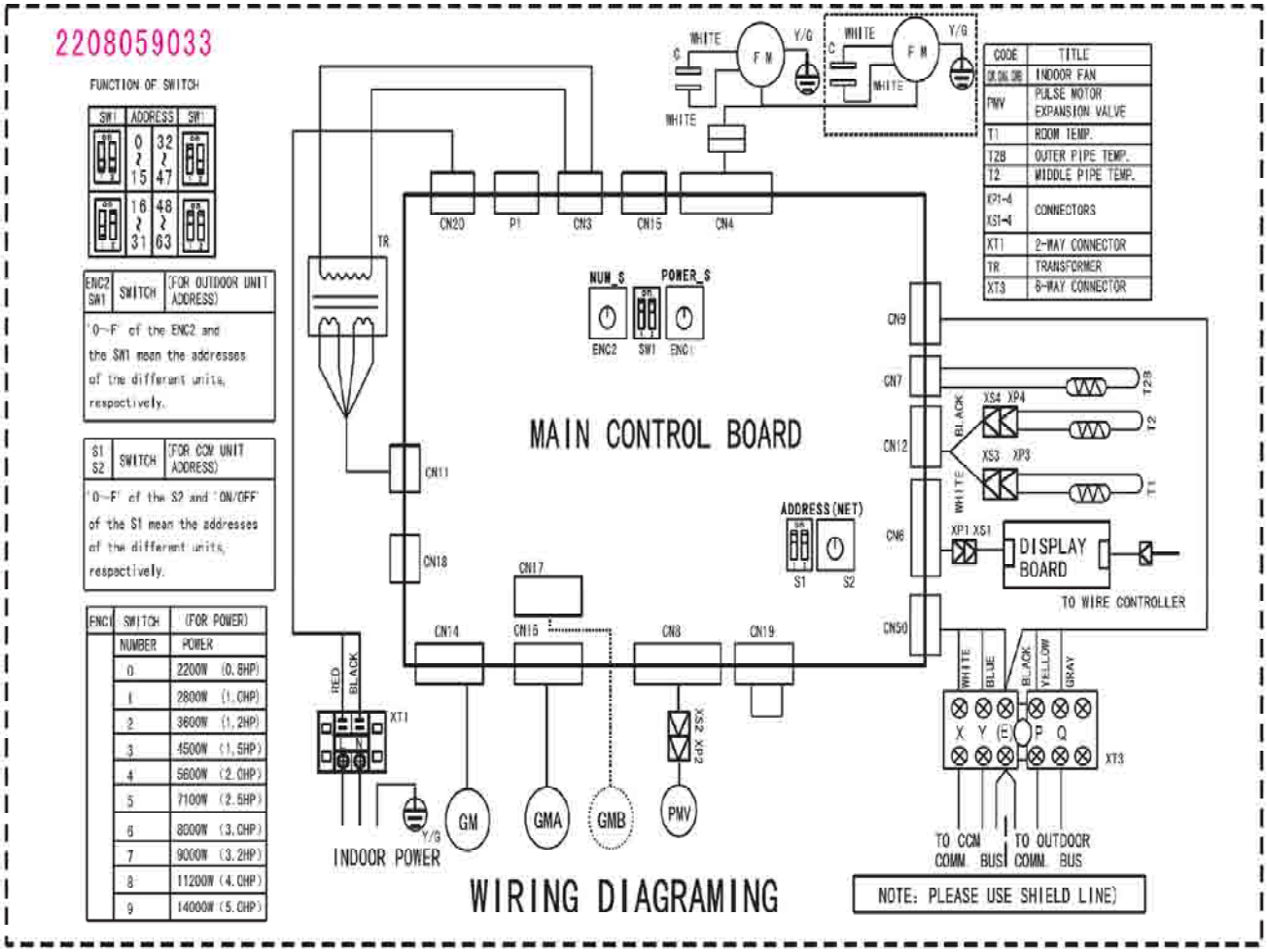


Sensor1: T2
Sensor2: T2B

6. Wiring Diagrams

HSFU 361 XRV、HSFU 451 XRV、HSFU 561 XRV、HSFU 711 XRV

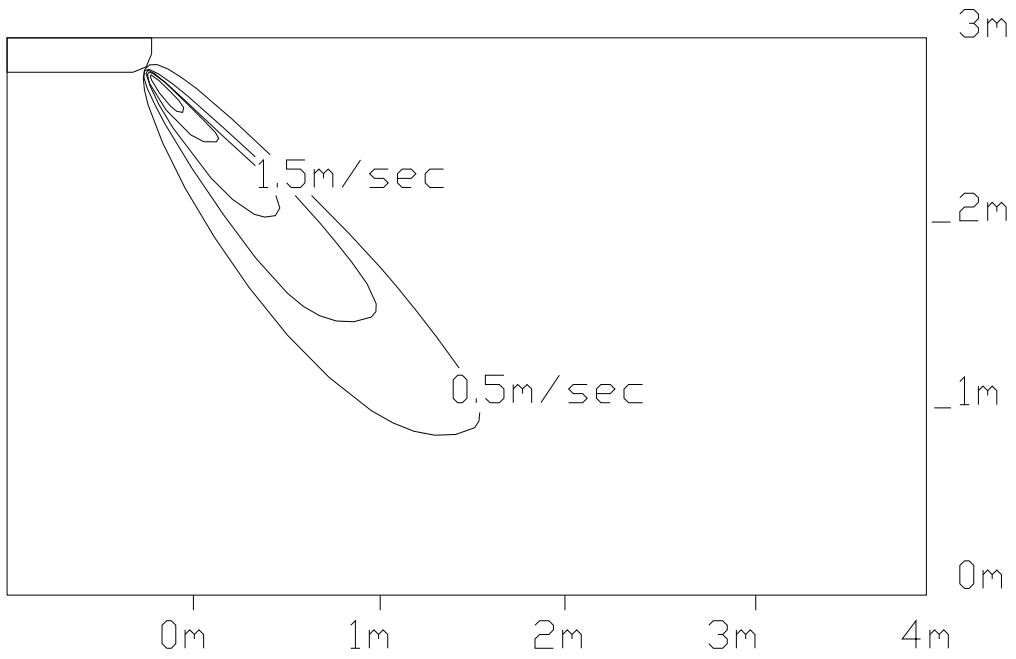
HSFU 801 XRV、HSFU 901 XRV、HSFU 1121 XRV、HSFU 1401 XRV



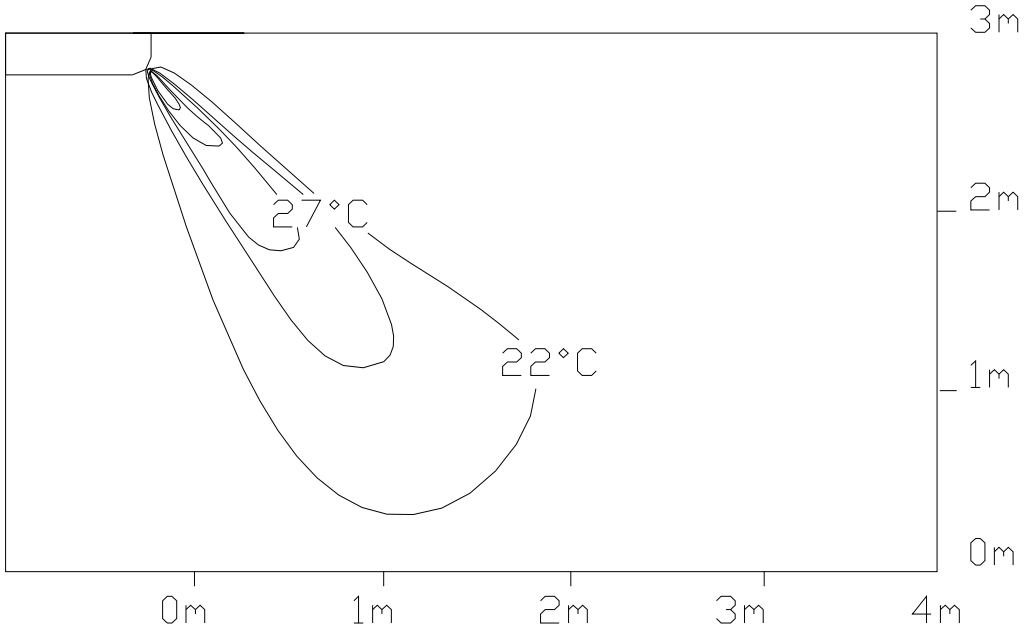
7. Air Velocity and Temperature Distributions

Discharge angle 60° (CEILING)

Airflow velocity

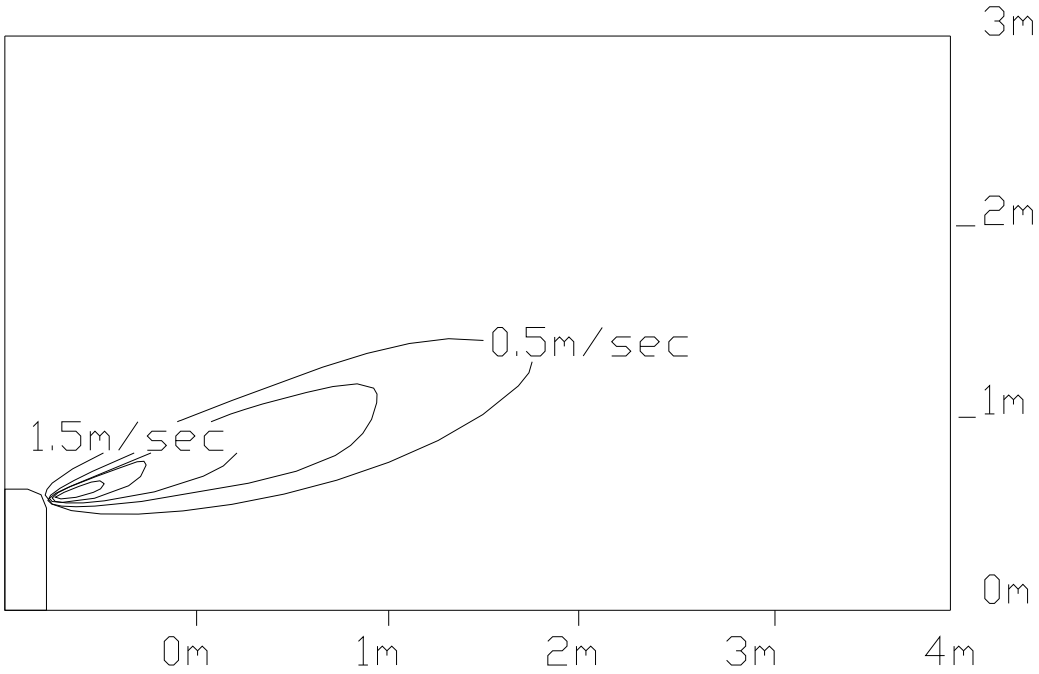


Temperature

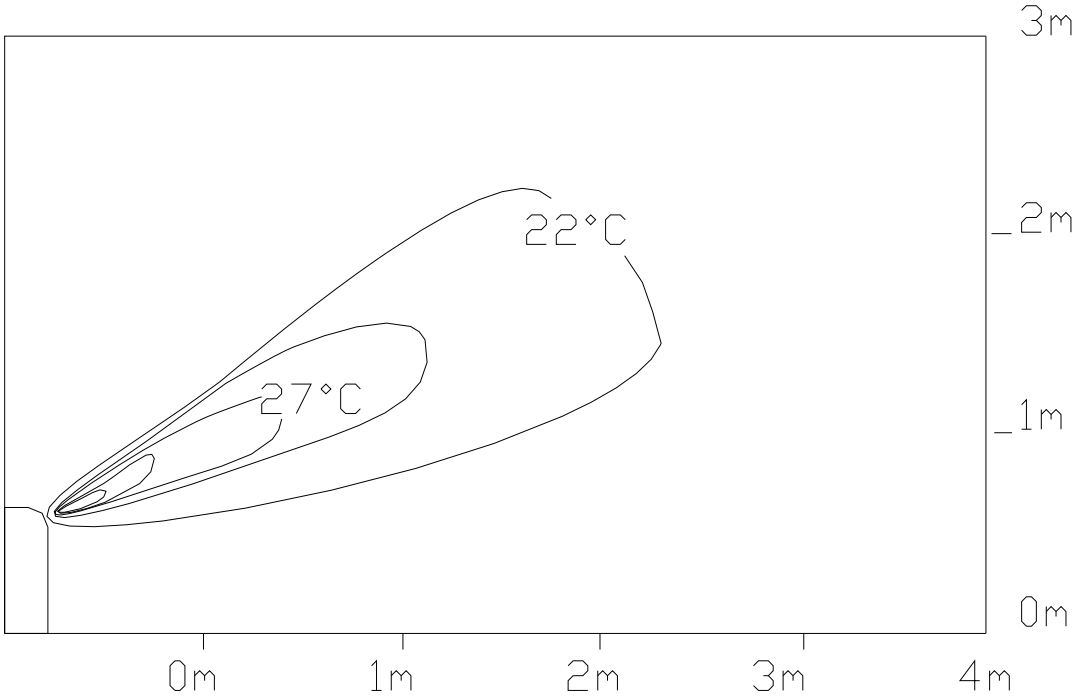


Discharge angle 60°(FLOOR)

Airflow velocity



Temperature



8. Capacity Tables

8.1.1 Cooling

TH: total capacity **SH**: sensible capacity

Indoor Unit size (KW)	Outdoor temperature (℃DB)	Indoor temperature (℃WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
3.6	10.0	2.4	2.1	2.9	2.4	3.3	2.6	3.5	2.6	3.7	2.6	4.1	2.8	4.6	2.7
	12.0	2.4	2.1	2.9	2.4	3.3	2.6	3.5	2.6	3.7	2.6	4.1	2.8	4.5	2.7
	14.0	2.4	2.1	2.9	2.4	3.3	2.6	3.5	2.6	3.7	2.6	4.1	2.8	4.5	2.7
	16.0	2.4	2.1	2.9	2.4	3.3	2.6	3.5	2.6	3.7	2.6	4.1	2.8	4.4	2.6
	18.0	2.4	2.1	2.9	2.4	3.3	2.6	3.5	2.6	3.7	2.6	4.1	2.8	4.4	2.6
	20.0	2.4	2.1	2.9	2.4	3.3	2.6	3.5	2.6	3.7	2.6	4.1	2.8	4.2	2.6
	21.0	2.4	2.1	2.9	2.4	3.3	2.6	3.5	2.6	3.7	2.6	4.1	2.8	4.2	2.6
	23.0	2.4	2.1	2.9	2.4	3.3	2.6	3.5	2.6	3.7	2.6	4.1	2.7	4.2	2.6
	25.0	2.4	2.1	2.9	2.4	3.3	2.6	3.5	2.6	3.7	2.6	4.0	2.6	4.1	2.5
	27.0	2.4	2.1	2.9	2.4	3.3	2.6	3.5	2.6	3.7	2.6	4.0	2.6	4.1	2.5
	29.0	2.4	2.1	2.9	2.4	3.3	2.6	3.5	2.6	3.7	2.6	3.9	2.5	4.0	2.4
	31.0	2.4	2.1	2.9	2.4	3.3	2.6	3.5	2.6	3.7	2.6	3.9	2.5	4.0	2.4
	33.0	2.4	2.1	2.9	2.4	3.3	2.6	3.5	2.6	3.7	2.6	3.9	2.5	3.9	2.3
	35.0	2.4	2.1	2.9	2.4	3.3	2.6	3.5	2.6	3.6	2.5	3.7	2.5	3.9	2.3
	37.0	2.4	2.1	2.9	2.4	3.3	2.6	3.5	2.6	3.6	2.5	3.7	2.5	3.7	2.3
	39.0	2.4	2.1	2.9	2.4	3.3	2.6	3.5	2.6	3.6	2.5	3.7	2.6	3.7	2.4
4.5	10.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.1	5.8	3.3
	12.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.1	5.8	3.3
	14.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.1	5.7	3.2
	16.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.1	5.5	3.1
	18.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.1	5.5	3.1
	20.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.1	5.4	3.1
	21.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.1	5.3	3.0
	23.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.1	3.1	5.2	3.0
	25.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.1	3.1	5.1	2.9
	27.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	4.9	3.0	5.1	2.9
	29.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	4.9	3.0	5.0	2.9
	31.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.4	5.0	2.9
	33.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.2	3.4	4.8	2.8
	35.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.7	3.3	5.1	3.4	4.7	2.8
	37.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.5	3.2	4.7	3.1	4.7	2.8
	39.0	3.0	2.6	3.6	2.8	4.1	3.1	4.4	3.2	4.5	3.2	4.7	3.1	4.7	2.8
5.6	10.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.3	4.1
	12.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.3	4.1
	14.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.2	4.1
	16.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	6.9	4.0
	18.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.1	4.1
	20.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.1	4.1
	21.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.0	4.1
	23.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	6.9	4.0
	25.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.5	4.1	6.8	3.9
	27.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.4	4.0	6.5	3.8
	29.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.3	4.0	6.4	3.7
	31.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.2	3.9	6.3	3.7

Indoor Unit size (KW)	Outdoor temperature (℃DB)	Indoor temperature (℃WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
	33.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.0	3.8	6.3	3.7
	35.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	5.9	3.7	6.2	3.6
	37.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	5.9	3.9	6.1	3.5
	39.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	5.7	3.8	5.8	3.8	6.0	3.5
7.1	10.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	9.1	4.8
	12.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	9.0	4.7
	14.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	8.9	4.7
	16.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	8.8	4.6
	18.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	8.5	4.6
	20.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	8.4	4.5
	21.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	8.3	4.5
	23.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	8.2	4.4
	25.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.3	4.9	8.1	4.4
	27.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	8.0	4.8	8.1	4.3
	29.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	7.8	4.7	8.0	4.5
	31.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	7.8	4.7	7.7	4.3
	33.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	7.7	4.6	7.7	4.3
	35.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	7.5	4.5	7.6	4.2
	37.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.4	4.7	7.4	4.4	7.5	4.2
	39.0	4.9	3.7	5.7	4.1	6.7	4.5	7.0	4.6	7.1	4.6	7.3	4.4	7.5	4.2
8.0	10.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	10.3	5.5
	12.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	10.1	5.5
	14.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	10.0	5.4
	16.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	9.9	5.3
	18.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	9.6	5.2
	20.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	9.5	5.1
	21.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	9.3	5.0
	23.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	9.2	5.0
	25.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.3	5.4	9.2	4.9
	27.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.3	9.0	5.2	9.1	5.0
	29.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.4	8.8	5.2	9.0	5.0
	31.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.4	8.8	5.2	8.7	4.8
	33.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.4	8.7	5.1	8.7	4.8
	35.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.3	5.4	8.5	5.0	8.5	4.7
	37.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.2	5.3	8.3	5.0	8.5	4.8
	39.0	5.5	4.4	6.5	4.8	7.4	5.2	7.9	5.5	8.0	5.2	8.2	4.9	8.5	4.8
9.0	10.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	11.4	6.4
	12.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	11.3	6.3
	14.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	11.2	6.3
	16.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	11.0	6.2
	18.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	10.7	6.1
	20.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	10.6	6.0
	21.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	10.4	5.9
	23.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	10.3	5.9
	25.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.4	6.4	10.2	5.8
	27.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	10.0	6.2	10.1	5.8

Indoor Unit size (KW)	Outdoor temperature (℃DB)	Indoor temperature (℃WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
	29.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	9.9	6.1	10.0	5.7
	31.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	9.8	6.1	9.7	5.6
	33.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.4	6.4	9.7	6.0	9.7	5.6
	35.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.3	6.3	9.4	5.8	9.5	5.6
	37.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.1	6.2	9.2	5.7	9.4	5.6
	39.0	6.1	5.2	7.1	5.6	8.2	6.1	8.8	6.2	9.0	6.1	9.2	5.7	9.4	5.6
11.2	10.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.9	8.6	16.1	9.4
	12.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.9	8.6	15.1	8.8
	14.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.9	8.6	14.9	8.6
	16.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.9	8.6	14.7	8.6
	18.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.9	8.6	14.6	8.5
	20.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.9	8.6	14.5	8.4
	21.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.9	8.6	14.4	8.3
	23.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.7	8.5	14.3	8.3
	25.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.6	8.4	14.2	8.2
	27.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.5	8.3	14.0	8.1
	29.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.3	8.3	13.9	8.2
	31.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.2	8.2	13.3	7.9
	33.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.4	8.4	13.1	8.1	13.1	7.7
	35.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.3	8.4	13.0	8.1	12.9	7.6
	37.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	12.2	8.3	12.9	8.0	12.6	7.5
	39.0	8.1	6.7	9.5	7.4	11.0	8.0	11.7	8.2	11.9	8.1	12.8	7.9	12.4	7.4
14.00	10.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.7	10.2	18.2	10.2
	12.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.7	10.2	17.9	10.0
	14.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.7	10.2	17.8	10.0
	16.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.7	10.2	17.5	9.8
	18.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.7	10.2	17.1	9.6
	20.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.7	10.2	16.8	9.4
	21.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.7	10.2	16.5	9.3
	23.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.4	10.2	16.4	9.2
	25.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.2	10.1	16.2	9.1
	27.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.1	10.0	16.1	9.2
	29.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	16.0	9.9	16.0	9.1
	31.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	15.8	9.8	15.4	8.8
	33.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	15.7	9.7	15.4	8.8
	35.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.7	9.7	15.1	9.4	15.1	8.8
	37.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.6	9.6	15.1	9.4	15.0	8.7
	39.0	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.3	9.4	14.6	9.2	15.0	8.8

8.1.2 Heating

TC: total capacity

Indoor Unit size (KW)	Outdoor temperature (DB)		Indoor temperature (WB)					
			16	18	20	21	22	24
			TC	TC	TC	TC	TC	TC
	WB	DB	kW	kW	kW	kW	kW	kW
3.6	-15.00	-14.70	2.52	2.52	2.52	2.52	2.52	2.52
	-13.00	-12.60	2.68	2.68	2.68	2.68	2.68	2.68
	-11.00	-10.50	2.80	2.80	2.80	2.80	2.80	2.80
	-10.00	-9.50	2.92	2.92	2.92	2.92	2.92	2.92
	-9.10	-8.50	3.00	3.00	3.00	3.00	3.00	3.00
	-7.60	-7.00	3.04	3.04	3.04	3.04	3.04	3.04
	-5.60	-5.00	3.16	3.16	3.16	3.16	3.16	3.16
	-3.70	-3.00	3.32	3.32	3.32	3.32	3.32	3.32
	-0.70	0.00	3.56	3.56	3.56	3.56	3.56	3.36
	2.20	3.00	3.76	3.76	3.76	3.76	3.68	3.36
	4.10	5.00	3.88	3.88	3.88	3.88	3.68	3.36
	6.00	7.00	4.00	4.00	4.00	3.88	3.68	3.36
	7.90	9.00	4.12	4.12	4.00	3.88	3.68	3.36
	9.80	11.00	4.24	4.24	4.00	3.88	3.68	3.36
	11.80	13.00	4.40	4.32	4.00	3.88	3.68	3.36
	13.70	15.00	4.52	4.32	4.00	3.88	3.68	3.36
4.5	-15.00	-14.70	3.15	3.15	3.15	3.15	3.15	3.15
	-13.00	-12.60	3.35	3.35	3.35	3.35	3.35	3.35
	-11.00	-10.50	3.50	3.50	3.50	3.50	3.50	3.50
	-10.00	-9.50	3.65	3.65	3.65	3.65	3.65	3.65
	-9.10	-8.50	3.75	3.75	3.75	3.75	3.75	3.75
	-7.60	-7.00	3.80	3.80	3.80	3.80	3.80	3.80
	-5.60	-5.00	3.95	3.95	3.95	3.95	3.95	3.95
	-3.70	-3.00	4.15	4.15	4.15	4.15	4.15	4.15
	-0.70	0.00	4.45	4.45	4.45	4.45	4.45	4.20
	2.20	3.00	4.70	4.70	4.70	4.70	4.60	4.20
	4.10	5.00	4.85	4.85	4.85	4.85	4.60	4.20
	6.00	7.00	5.00	5.00	5.00	4.85	4.60	4.20
	7.90	9.00	5.15	5.15	5.00	4.85	4.60	4.20
	9.80	11.00	5.30	5.30	5.00	4.85	4.60	4.20
	11.80	13.00	5.50	5.40	5.00	4.85	4.60	4.20
	13.70	15.00	5.65	5.40	5.00	4.85	4.60	4.20
5.6	-15.00	-14.70	3.97	3.97	3.97	3.97	3.97	3.97
	-13.00	-12.60	4.22	4.22	4.22	4.22	4.22	4.22
	-11.00	-10.50	4.41	4.41	4.41	4.41	4.41	4.41
	-10.00	-9.50	4.60	4.60	4.60	4.60	4.60	4.60
	-9.10	-8.50	4.73	4.73	4.73	4.73	4.73	4.73
	-7.60	-7.00	4.79	4.79	4.79	4.79	4.79	4.79
	-5.60	-5.00	4.98	4.98	4.98	4.98	4.98	4.98
	-3.70	-3.00	5.23	5.23	5.23	5.23	5.23	5.23
	-0.70	0.00	5.61	5.61	5.61	5.61	5.61	5.29
	2.20	3.00	5.92	5.92	5.92	5.92	5.80	5.29
	4.10	5.00	6.11	6.11	6.11	6.11	5.80	5.29
	6.00	7.00	6.30	6.30	6.30	6.11	5.80	5.29
	7.90	9.00	6.49	6.49	6.30	6.11	5.80	5.29

Indoor Unit size (KW)	Outdoor temperature (DB)		Indoor temperature (WB)					
			16	18	20	21	22	24
			TC	TC	TC	TC	TC	TC
	WB	DB	kW	kW	kW	kW	kW	kW
	9.80	11.00	6.68	6.68	6.30	6.11	5.80	5.29
	11.80	13.00	6.93	6.80	6.30	6.11	5.80	5.29
	13.70	15.00	7.12	6.80	6.30	6.11	5.80	5.29
7.1	-15.00	-14.70	5.04	5.04	5.04	5.04	5.04	5.04
	-13.00	-12.60	5.36	5.36	5.36	5.36	5.36	5.36
	-11.00	-10.50	5.60	5.60	5.60	5.60	5.60	5.60
	-10.00	-9.50	5.84	5.84	5.84	5.84	5.84	5.84
	-9.10	-8.50	6.00	6.00	6.00	6.00	6.00	6.00
	-7.60	-7.00	6.08	6.08	6.08	6.08	6.08	6.08
	-5.60	-5.00	6.32	6.32	6.32	6.32	6.32	6.32
	-3.70	-3.00	6.64	6.64	6.64	6.64	6.64	6.64
	-0.70	0.00	7.12	7.12	7.12	7.12	7.12	6.72
	2.20	3.00	7.52	7.52	7.52	7.52	7.36	6.72
	4.10	5.00	7.76	7.76	7.76	7.76	7.36	6.72
	6.00	7.00	8.00	8.00	8.00	7.76	7.36	6.72
	7.90	9.00	8.24	8.24	8.00	7.76	7.36	6.72
	9.80	11.00	8.48	8.48	8.00	7.76	7.36	6.72
	11.80	13.00	8.80	8.64	8.00	7.76	7.36	6.72
	13.70	15.00	9.04	8.64	8.00	7.76	7.36	6.72
8.0	-15	-14.7	5.67	5.67	5.67	5.67	5.67	5.67
	-13	-12.6	6.03	6.03	6.03	6.03	6.03	6.03
	-11	-10.5	6.30	6.30	6.30	6.30	6.30	6.30
	-10	-9.5	6.57	6.57	6.57	6.57	6.57	6.57
	-9.1	-8.5	6.75	6.75	6.75	6.75	6.75	6.75
	-7.6	-7	6.84	6.84	6.84	6.84	6.84	6.84
	-5.6	-5	7.11	7.11	7.11	7.11	7.11	7.11
	-3.7	-3	7.47	7.47	7.47	7.47	7.47	7.47
	-0.7	0	8.01	8.01	8.01	8.01	8.01	7.56
	2.2	3	8.46	8.46	8.46	8.46	8.28	7.56
	4.1	5	8.73	8.73	8.73	8.73	8.28	7.56
	6	7	9.00	9.00	9.00	8.73	8.28	7.56
	7.9	9	9.27	9.27	9.00	8.73	8.28	7.56
	9.8	11	9.54	9.54	9.00	8.73	8.28	7.56
	11.8	13	9.90	9.72	9.00	8.73	8.28	7.56
	13.7	15	10.17	9.72	9.00	8.73	8.28	7.56
9.0	-15	-14.7	6.30	6.30	6.30	6.30	6.30	6.30
	-13	-12.6	6.70	6.70	6.70	6.70	6.70	6.70
	-11	-10.5	7.00	7.00	7.00	7.00	7.00	7.00
	-10	-9.5	7.30	7.30	7.30	7.30	7.30	7.30
	-9.1	-8.5	7.50	7.50	7.50	7.50	7.50	7.50
	-7.6	-7	7.60	7.60	7.60	7.60	7.60	7.60
	-5.6	-5	7.90	7.90	7.90	7.90	7.90	7.90
	-3.7	-3	8.30	8.30	8.30	8.30	8.30	8.30
	-0.7	0	8.90	8.90	8.90	8.90	8.90	8.40
	2.2	3	9.40	9.40	9.40	9.40	9.20	8.40
	4.1	5	9.70	9.70	9.70	9.70	9.20	8.40

Indoor Unit size (KW)	Outdoor temperature (DB)		Indoor temperature (WB)					
			16	18	20	21	22	24
			TC	TC	TC	TC	TC	TC
	WB	DB	kW	kW	kW	kW	kW	kW
	6	7	10.00	10.00	10.00	9.70	9.20	8.40
	7.9	9	10.30	10.30	10.00	9.70	9.20	8.40
	9.8	11	10.60	10.60	10.00	9.70	9.20	8.40
	11.8	13	11.00	10.80	10.00	9.70	9.20	8.40
	13.7	15	11.30	10.80	10.00	9.70	9.20	8.40
11.2	-15	-14.7	7.88	7.88	7.88	7.88	7.88	7.88
	-13	-12.6	8.38	8.38	8.38	8.38	8.38	8.38
	-11	-10.5	8.75	8.75	8.75	8.75	8.75	8.75
	-10	-9.5	9.13	9.13	9.13	9.13	9.13	9.13
	-9.1	-8.5	9.38	9.38	9.38	9.38	9.38	9.38
	-7.6	-7	9.50	9.50	9.50	9.50	9.50	9.50
	-5.6	-5	9.88	9.88	9.88	9.88	9.88	9.88
	-3.7	-3	10.38	10.38	10.38	10.38	10.38	10.38
	-0.7	0	11.13	11.13	11.13	11.13	11.13	10.50
	2.2	3	11.75	11.75	11.75	11.75	11.50	10.50
	4.1	5	12.13	12.13	12.13	12.13	11.50	10.50
	6	7	12.50	12.50	12.50	12.13	11.50	10.50
	7.9	9	12.88	12.88	12.50	12.13	11.50	10.50
	9.8	11	13.25	13.25	12.50	12.13	11.50	10.50
	11.8	13	13.75	13.50	12.50	12.13	11.50	10.50
	13.7	15	14.13	13.50	12.50	12.13	11.50	10.50
14.0	-15	-14.7	9.77	9.77	9.77	9.77	9.77	9.77
	-13	-12.6	10.39	10.39	10.39	10.39	10.39	10.39
	-11	-10.5	10.85	10.85	10.85	10.85	10.85	10.85
	-10	-9.5	11.32	11.32	11.32	11.32	11.32	11.32
	-9.1	-8.5	11.63	11.63	11.63	11.63	11.63	11.63
	-7.6	-7	11.78	11.78	11.78	11.78	11.78	11.78
	-5.6	-5	12.25	12.25	12.25	12.25	12.25	12.25
	-3.7	-3	12.87	12.87	12.87	12.87	12.87	12.87
	-0.7	0	13.80	13.80	13.80	13.80	13.80	13.02
	2.2	3	14.57	14.57	14.57	14.57	14.26	13.02
	4.1	5	15.04	15.04	15.04	15.04	14.26	13.02
	6	7	15.50	15.50	15.50	15.04	14.26	13.02
	7.9	9	15.97	15.97	15.50	15.04	14.26	13.02
	9.8	11	16.43	16.43	15.50	15.04	14.26	13.02
	11.8	13	17.05	16.74	15.50	15.04	14.26	13.02
	13.7	15	17.52	16.74	15.50	15.04	14.26	13.02

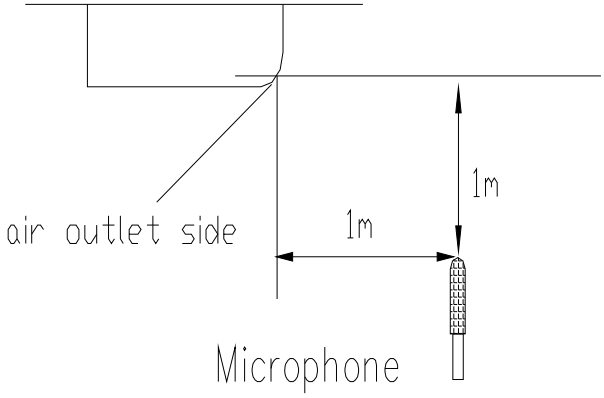
9. Electric Characteristics

Model	Indoor Unit				Power Supply	IFM	
	Hz	Voltage	Min	Max	MFA	kW	FLA
HSFU 361 XRV	50	220-240V	198	254	15	0.025	0.15
HSFU 451 XRV	50	220-240V	198	254	15	0.055	0.57
HSFU 561 XRV	50	220-240V	198	254	15	0.055	0.57
HSFU 711 XRV	50	220-240V	198	254	15	0.055	0.57
HSFU 801 XRV	50	220-240V	198	254	15	0.08	0.63
HSFU 901 XRV	50	220-240V	198	254	15	0.08	0.63
HSFU 1121 XRV	50	220-240V	198	254	15	0.059	0.39
HSFU 1401 XRV	50	220-240V	198	254	15	0.059	0.39

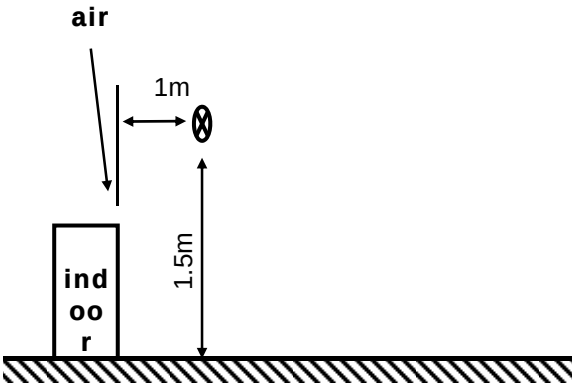
Remark:

MFA: Max. Fuse Amps. (A)
KW: Fan Motor Rated Output (KW)
FLA: Full Load Amps. (A)
IFM: Indoor Fan Motor

10. Sound Levels



Ceiling

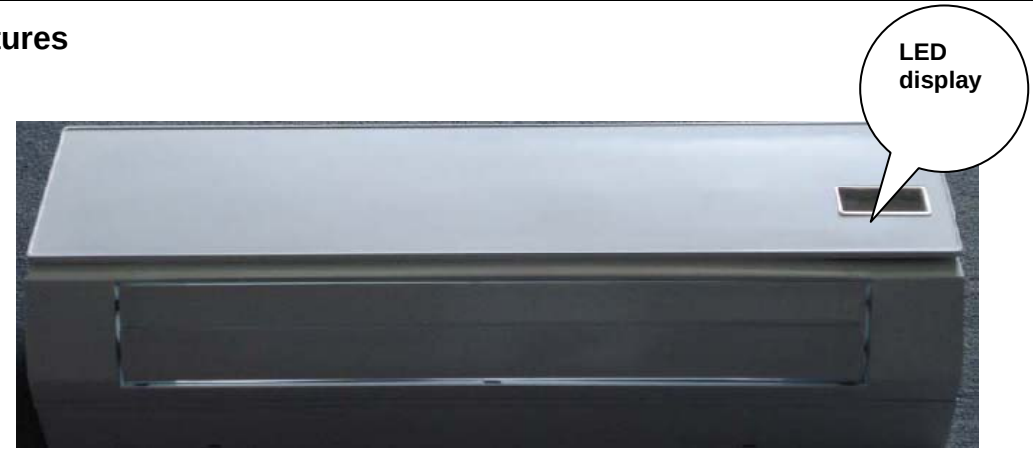


Floor

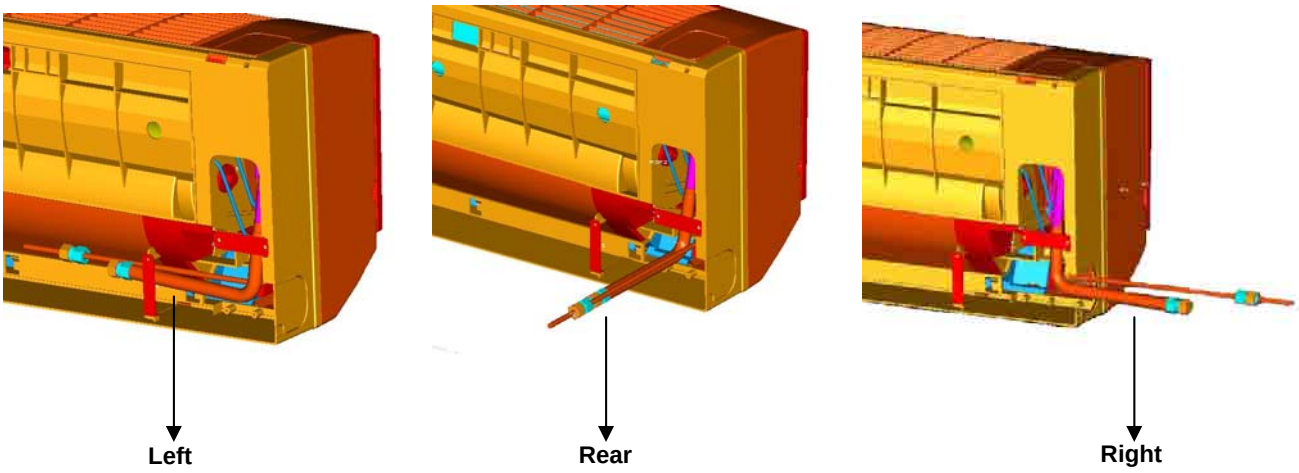
Model	Noise level dB(A)		
	H	M	L
HSFU 361 XRV	43	41	38
HSFU 451 XRV	43	41	38
HSFU 561 XRV	43	41	38
HSFU 711 XRV	43	41	38
HSFU 801 XRV	45	43	40
HSFU 901 XRV	45	43	40
HSFU 1121 XRV	47	45	42
HSFU 1401 XRV	47	45	42

New Wall-mounted Type

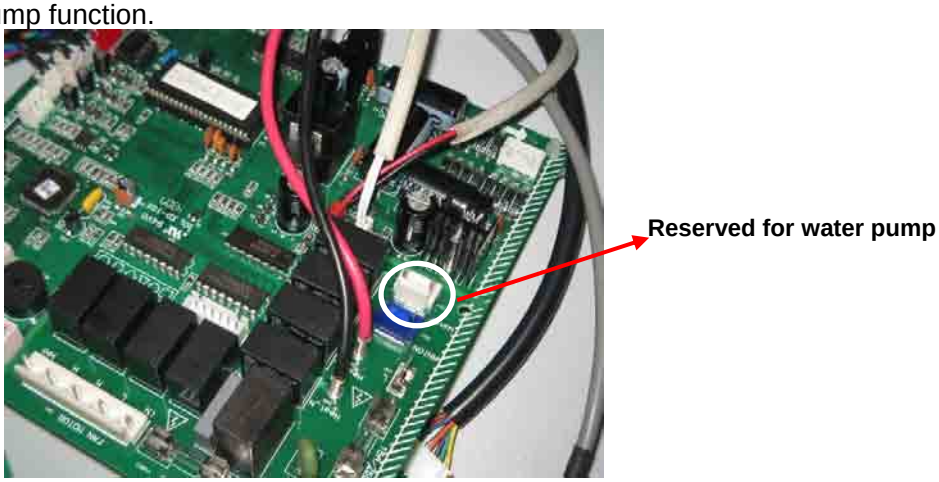
1. Features



1. LED display.
2. Built-in the electronic throttle kit.
3. Multi-refrigerant outlet pipe method: left\right\rear, satisfy the need of different rooms.



4. Adopt new type installation plate, easy for installation and stable.
5. Reserved the socket on main control board for water pump and PCB can be customized if you need water pump function.



6. Three air flow speed: high、middle and low, double air guides.
7. Low noise, creates quite and comfortable environment.
8. Air cleaning equipment and the high efficiency filter, keep the air fresh.

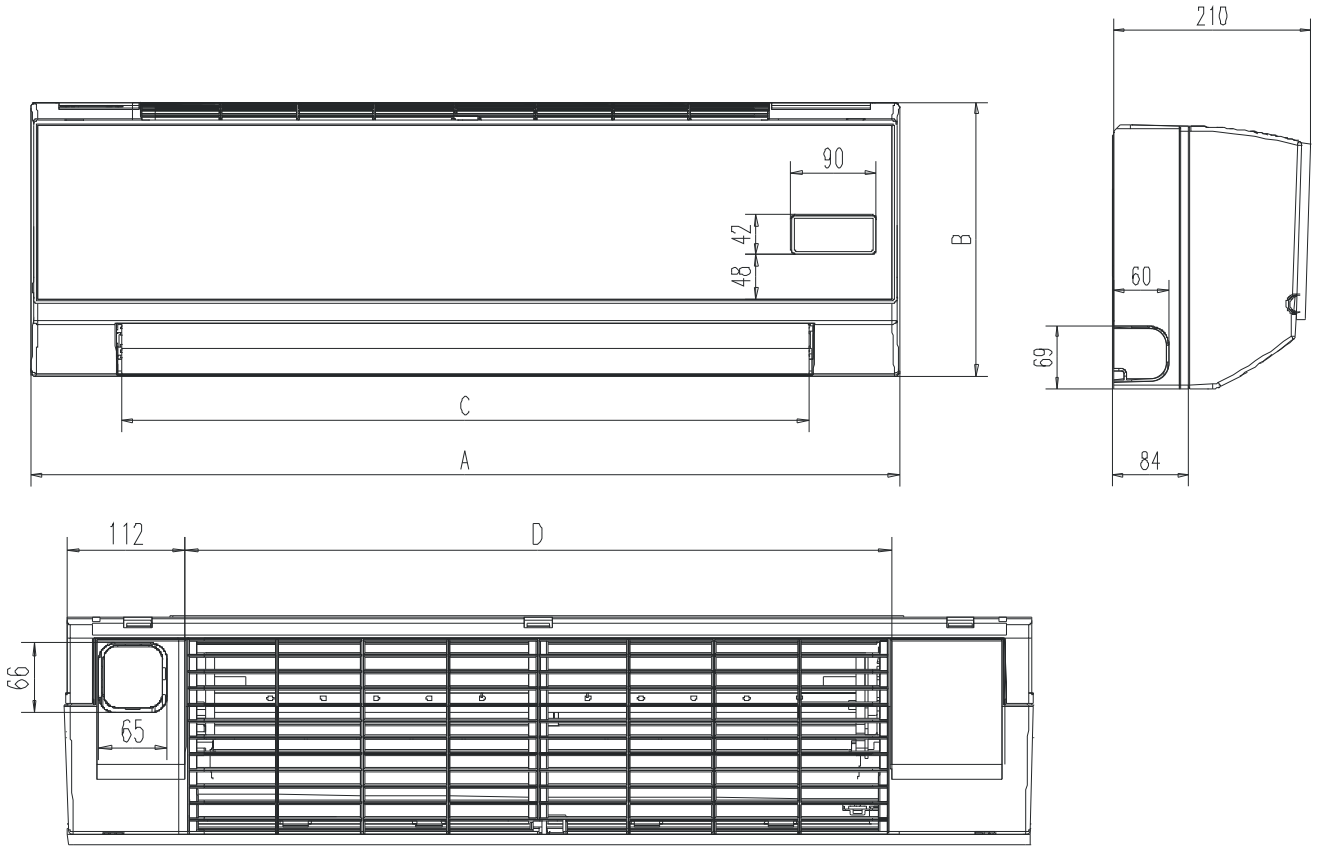
2. Specifications

Model			HKEU 221 XRV	HKEU 281 XRV	HKEU 361 XRV	HKEU 451 XRV	HKEU 561 XRV
Power supply		V- Ph-Hz	220-240~1~50				
Cooling	Capacity	kW	2.2	2.8	3.6	4.5	5.6
	Input	W	30	30	30	45	45
	Rated current	A	0.14	0.14	0.14	0.2	0.2
Heating	Capacity	kW	2.6	3.2	4.0	5.0	6.3
	Input	W	30	30	30	45	45
	Rated current	A	0.14	0.14	0.14	0.2	0.2
Indoor fan motor	Model		YDK15-6	YDK15-6	YDK15-6	YDK18-4	YDK18-4
	Type		AC motor	AC motor	AC motor	AC motor	AC motor
	Brand		Welling	Welling	Welling	Welling	Welling
	Input	W	30/24/22	30/24/22	30/24/22	44/42/39	44/42/39
	Capacitor	uF	1.2	1.2	1.2	1.2	1.2
	Speed (hi/mid/lo)	r/min	880/810/760	880/810/760	880/810/760	1030/980/880	1030/980/880
Indoor coil	Number of rows		2	2	2	2	2
	Tube pitch(a)x row pitch(b)	mm	21 x13.37	21 x13.37	21 x13.37	21 x13.37	21 x13.37
	Fin spacing	mm	1.5	1.5	1.5	1.5	1.5
	Fin type		Hydrophilic Aluminium				
	Tube outside dia. and type	mm	Φ7, Inner groove Tube	Φ7, Inner groove Tube	Φ7, Inner groove Tube	Φ7, Inner groove Tube	Φ7, Inner groove Tube
	Coil length x height x width	mm	635x315 x26.74	635x315x26.74	635x315x26.74	785x357x26.74	785x357x26.74
	Number of circuits		3	3	3	6	6
Indoor air flow (H/M/L)		m^3/h	580/500/420	580/500/420	580/500/420	900/760/650	900/760/650
Indoor noise level (sound pressure)		dB(A)	35/32/29	35/32/29	35/32/29	40/38/34	40/38/34
Indoor unit	Dimension (WxHxD)	mm	915 x210x290	915 x210x290	915 x210x290	1070 x210x315	1070 x210x315
	Packing (WxHxD)	mm	1020X300X385	1020X300X385	1020X300X385	1180X300X410	1180X300X410
	Net/Gross weight	kg	12/16	12/16	12/16	15/19	16/19
Refrigerant type			R410A	R410A	R410A	R410A	R410A
Throttle			Inside Electric expansive valve				
Design pressure		MPa	2.5/4.4	2.5/4.4	2.5/4.4	2.5/4.4	2.5/4.4
Refrigerant piping	Liquid side/ Gas side	mm	6.35/12.7	6.35/12.7	6.35/12.7	6.35/12.7	9.53/15.9
Connecting wiring	Power wiring	Nb× mm^2	3×2.5(L≤20m); 3×3.5(L≤50m)				
	Signal wiring	Nb× mm^2	3×1.0	3×1.0	3×1.0	3×1.0	3×1.0
Drainage water pipe dia.		mm	Φ20	Φ20	Φ20	Φ20	Φ20
Controller			Wireless remote controller (R51/E)(standard)				
Operation temp			17~30				
Application area		m^2	7~22	9~28	12~36	15~45	18~56

Notes: 1. Nominal cooling capacities are based on the following conditions:
indoor temperature : 27°CDB,19°CWB,outdoor temperature:35°CDB,equivalent ref. Piping: 8m(horizontal).
2. Nominal heating capacities are based on the following conditions:
indoor temperature: 20°CDB,outdoor temperature: 7°CDB,6°CWB,equivalent ref. Piping: 8m(horizontal).

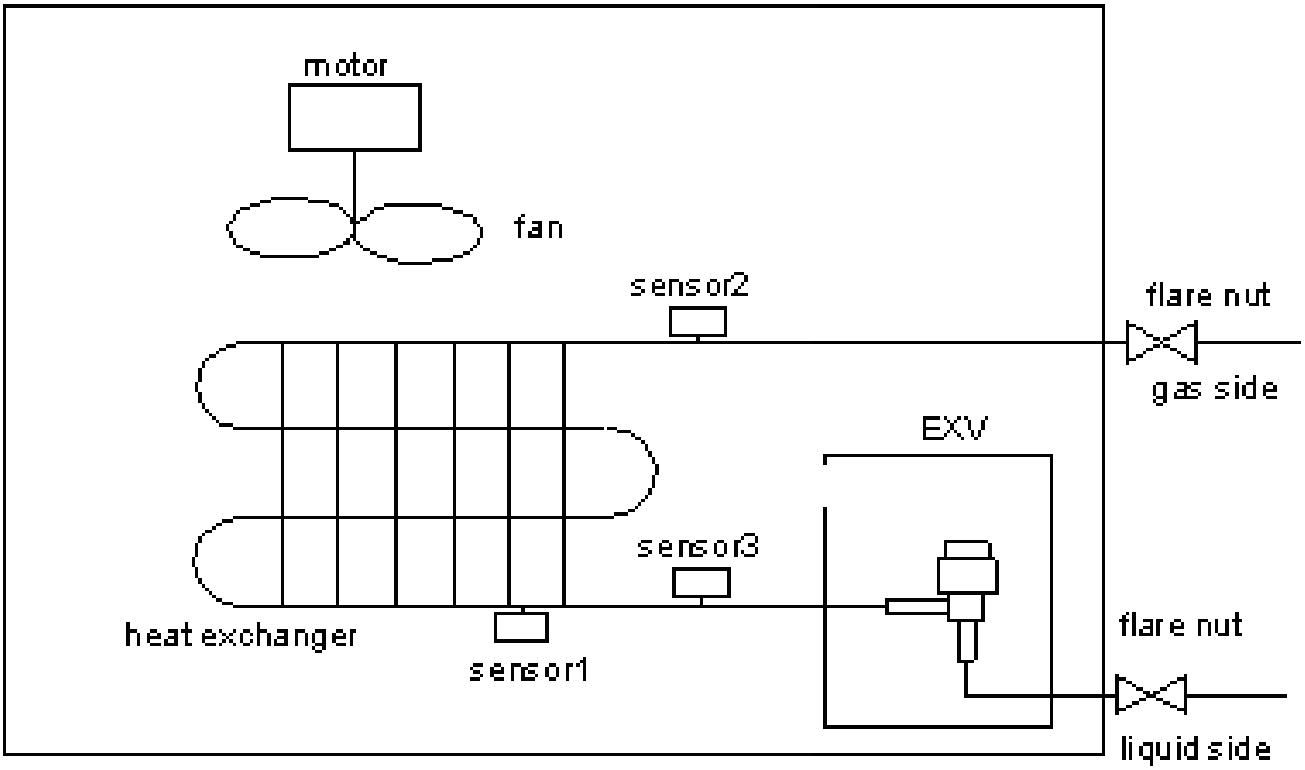
3. Dimensions

3.1 HKEU 221 XRV HKEU 281 XRV HKEU 361 XRV MDVD451 XRV MDVD561 XRV



Model	2.2kW	2.8 kW	3.6 kW	4.5 kW	5.6 kW
A	915	915	915	1070	1070
B	290	290	290	315	315
C	725	725	725	885	885
D	670	670	670	815	815

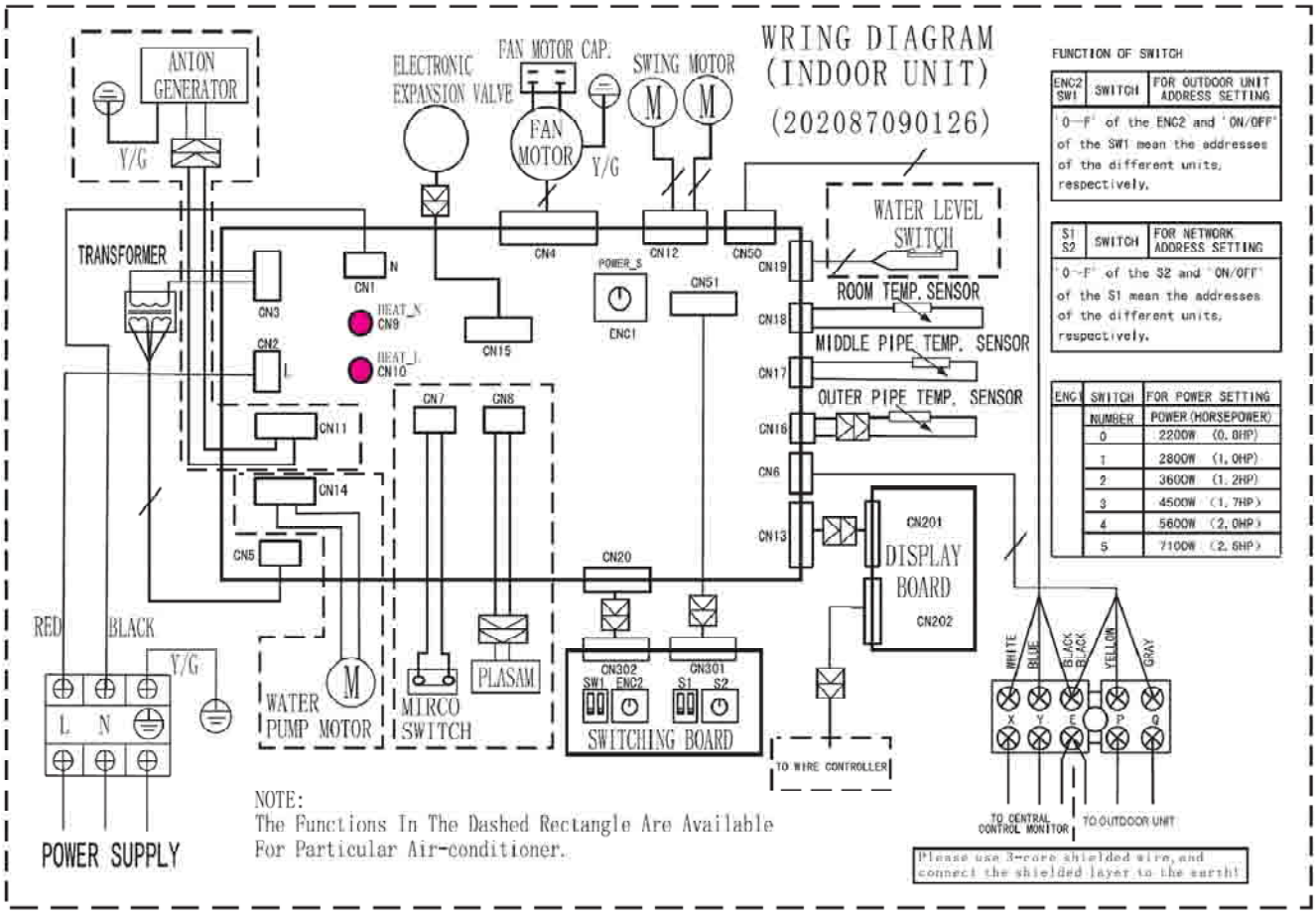
4. Piping Diagram



Sensor1: T2
Sensor2: T2B
Sensor3: T1

5. Wiring Diagrams

5.1 HKEU 221 XRV HKEU 281 XRV HKEU 361 XRV HKEU 451 XRV HKEU 561 XRV



6. Capacity Tables

6.1.1 Cooling

TH: total capacity **SH**: sensible capacity

Indoor Unit size (kW)	Outdoor temperature (℃DB)	Indoor temperature (℃WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
2.2	10.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.9	1.7
	12.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.8	1.6
	14.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.8	1.6
	16.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.8	1.6
	18.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.8	1.6
	20.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.7	1.5
	21.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.7	1.5
	23.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.5	1.6	2.7	1.5
	25.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.5	1.6	2.6	1.5
	27.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.5	1.6	2.6	1.5
	29.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.4	1.5	2.5	1.5
	31.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.4	1.5	2.5	1.5
	33.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.4	1.5	2.4	1.5
	35.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.3	1.5	2.4	1.5
	37.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.3	1.5	2.3	1.5
	39.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.2	1.6	2.3	1.5	2.3	1.5
2.8	10.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.7	2.1
	12.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.6	2.1
	14.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.6	2.1
	16.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.6	2.0
	18.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.5	2.0
	20.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.4	1.9
	21.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.4	1.9
	23.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.2	2.1	3.4	1.9
	25.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.2	2.0	3.3	1.9
	27.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.2	2.0	3.3	1.9
	29.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.1	2.0	3.2	1.9
	31.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.1	2.0	3.2	1.9
	33.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.1	2.0	3.1	2.0
	35.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.1	2.9	1.9	3.1	2.0
	37.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.1	2.9	1.9	2.9	1.9
	39.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.8	2.0	2.9	1.9	2.9	1.9
3.6	10.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.8	2.8
	12.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.6	2.7
	14.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.6	2.7
	16.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.5	2.7
	18.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.5	2.7
	20.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.4	2.7
	21.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.4	2.7
	23.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.4	2.7
	25.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.1	2.7	4.2	2.6
	27.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.1	2.7	4.2	2.6
	29.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.0	2.6	4.1	2.5

Indoor Unit size (kW)	Outdoor temperature (℃DB)	Indoor temperature (℃WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH	TH	SH
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
4.5	31.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.0	2.6	4.1	2.4
	33.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.0	2.6	4.0	2.4
	35.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.7	2.6	3.9	2.6	4.0	2.4
	37.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.7	2.6	3.9	2.6	3.9	2.3
	39.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.7	2.6	3.9	2.7	3.9	2.4
	10.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.9	3.4
	12.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.9	3.4
	14.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.8	3.3
	16.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.6	3.2
	18.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.6	3.2
	20.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.5	3.2
	21.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.4	3.1
	23.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.2	3.2	5.4	3.1
	25.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.2	3.2	5.3	3.0
	27.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.0	3.0	5.3	3.0
	29.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.0	3.0	5.1	2.9
	31.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.3	3.5	5.1	3.0
	33.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.3	3.5	4.9	2.9
	35.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.3	3.5	4.8	2.8
	37.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.6	3.2	4.8	3.1	4.8	2.9
	39.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.6	3.2	4.8	3.1	4.8	2.9
5.6	10.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.3	4.1
	12.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.3	4.1
	14.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.2	4.1
	16.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	6.9	4.0
	18.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.1	4.1
	20.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.1	4.1
	21.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.0	4.1
	23.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	6.9	4.0
	25.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.5	4.1	6.8	3.9
	27.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.4	4.0	6.5	3.8
	29.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.3	4.0	6.4	3.7
	31.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.2	3.9	6.3	3.7
	33.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.0	3.8	6.3	3.7
	35.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	5.9	3.7	6.2	3.6
	37.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	5.9	3.9	6.1	3.5
	39.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	5.7	3.8	5.8	3.8	6.0	3.5

6.1.2 Heating

TH: total capacity

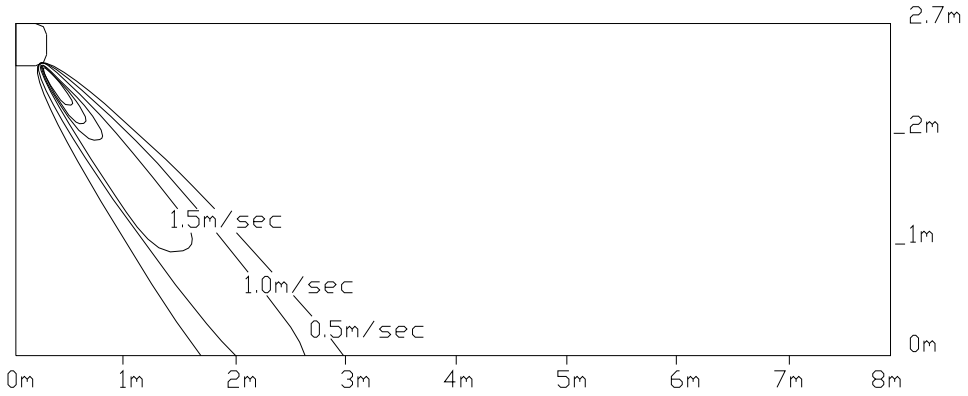
Indoor Unit size (kW)	Outdoor temperature (℃DB)		Indoor temperature (℃WB)					
			16.00	18.00	20.00	21.00	22.00	24.00
			TH	TH	TH	TH	TH	TH
	WB	DB	kW	kW	kW	kW	kW	kW
2.20	-15.00	-14.70	1.64	1.64	1.64	1.64	1.64	1.64
	-13.00	-12.60	1.74	1.74	1.74	1.74	1.74	1.74
	-11.00	-10.50	1.82	1.82	1.82	1.82	1.82	1.82
	-10.00	-9.50	1.90	1.90	1.90	1.90	1.90	1.90
	-9.10	-8.50	1.95	1.95	1.95	1.95	1.95	1.95
	-7.60	-7.00	1.98	1.98	1.98	1.98	1.98	1.98
	-5.60	-5.00	2.05	2.05	2.05	2.05	2.05	2.05
	-3.70	-3.00	2.16	2.16	2.16	2.16	2.16	2.16
	-0.70	0.00	2.31	2.31	2.31	2.31	2.31	2.18
	2.20	3.00	2.44	2.44	2.44	2.44	2.39	2.18
	4.10	5.00	2.52	2.52	2.52	2.52	2.39	2.18
	6.00	7.00	2.60	2.60	2.60	2.52	2.39	2.18
	7.90	9.00	2.68	2.68	2.60	2.52	2.39	2.18
	9.80	11.00	2.76	2.76	2.60	2.52	2.39	2.18
	11.80	13.00	2.86	2.81	2.60	2.52	2.39	2.18
	13.70	15.00	2.94	2.81	2.60	2.52	2.39	2.18
2.80	-15.00	-14.70	2.02	2.02	2.02	2.02	2.02	2.02
	-13.00	-12.60	2.14	2.14	2.14	2.14	2.14	2.14
	-11.00	-10.50	2.24	2.24	2.24	2.24	2.24	2.24
	-10.00	-9.50	2.34	2.34	2.34	2.34	2.34	2.34
	-9.10	-8.50	2.40	2.40	2.40	2.40	2.40	2.40
	-7.60	-7.00	2.43	2.43	2.43	2.43	2.43	2.43
	-5.60	-5.00	2.53	2.53	2.53	2.53	2.53	2.53
	-3.70	-3.00	2.66	2.66	2.66	2.66	2.66	2.66
	-0.70	0.00	2.85	2.85	2.85	2.85	2.85	2.69
	2.20	3.00	3.01	3.01	3.01	3.01	2.94	2.69
	4.10	5.00	3.10	3.10	3.10	3.10	2.94	2.69
	6.00	7.00	3.20	3.20	3.20	3.10	2.94	2.69
	7.90	9.00	3.30	3.30	3.20	3.10	2.94	2.69
	9.80	11.00	3.39	3.39	3.20	3.10	2.94	2.69
	11.80	13.00	3.52	3.46	3.20	3.10	2.94	2.69
	13.70	15.00	3.62	3.46	3.20	3.10	2.94	2.69
3.60	-15.00	-14.70	2.52	2.52	2.52	2.52	2.52	2.52
	-13.00	-12.60	2.68	2.68	2.68	2.68	2.68	2.68
	-11.00	-10.50	2.80	2.80	2.80	2.80	2.80	2.80
	-10.00	-9.50	2.92	2.92	2.92	2.92	2.92	2.92
	-9.10	-8.50	3.00	3.00	3.00	3.00	3.00	3.00
	-7.60	-7.00	3.04	3.04	3.04	3.04	3.04	3.04
	-5.60	-5.00	3.16	3.16	3.16	3.16	3.16	3.16
	-3.70	-3.00	3.32	3.32	3.32	3.32	3.32	3.32
	-0.70	0.00	3.56	3.56	3.56	3.56	3.56	3.36
	2.20	3.00	3.76	3.76	3.76	3.76	3.68	3.36
	4.10	5.00	3.88	3.88	3.88	3.88	3.68	3.36
	6.00	7.00	4.00	4.00	4.00	3.88	3.68	3.36

Indoor Unit size (kW)	Outdoor temperature (℃DB)		Indoor temperature (℃WB)					
			16.00	18.00	20.00	21.00	22.00	24.00
			TH	TH	TH	TH	TH	TH
	WB	DB	kW	kW	kW	kW	kW	kW
	7.90	9.00	4.12	4.12	4.00	3.88	3.68	3.36
	9.80	11.00	4.24	4.24	4.00	3.88	3.68	3.36
	11.80	13.00	4.40	4.32	4.00	3.88	3.68	3.36
	13.70	15.00	4.52	4.32	4.00	3.88	3.68	3.36
4.50	-15.00	-14.70	3.15	3.15	3.15	3.15	3.15	3.15
	-13.00	-12.60	3.35	3.35	3.35	3.35	3.35	3.35
	-11.00	-10.50	3.50	3.50	3.50	3.50	3.50	3.50
	-10.00	-9.50	3.65	3.65	3.65	3.65	3.65	3.65
	-9.10	-8.50	3.75	3.75	3.75	3.75	3.75	3.75
	-7.60	-7.00	3.80	3.80	3.80	3.80	3.80	3.80
	-5.60	-5.00	3.95	3.95	3.95	3.95	3.95	3.95
	-3.70	-3.00	4.15	4.15	4.15	4.15	4.15	4.15
	-0.70	0.00	4.45	4.45	4.45	4.45	4.45	4.20
	2.20	3.00	4.70	4.70	4.70	4.70	4.60	4.20
	4.10	5.00	4.85	4.85	4.85	4.85	4.60	4.20
	6.00	7.00	5.00	5.00	5.00	4.85	4.60	4.20
	7.90	9.00	5.15	5.15	5.00	4.85	4.60	4.20
	9.80	11.00	5.30	5.30	5.00	4.85	4.60	4.20
	11.80	13.00	5.50	5.40	5.00	4.85	4.60	4.20
	13.70	15.00	5.65	5.40	5.00	4.85	4.60	4.20
5.60	-15.00	-14.70	3.97	3.97	3.97	3.97	3.97	3.97
	-13.00	-12.60	4.22	4.22	4.22	4.22	4.22	4.22
	-11.00	-10.50	4.41	4.41	4.41	4.41	4.41	4.41
	-10.00	-9.50	4.60	4.60	4.60	4.60	4.60	4.60
	-9.10	-8.50	4.73	4.73	4.73	4.73	4.73	4.73
	-7.60	-7.00	4.79	4.79	4.79	4.79	4.79	4.79
	-5.60	-5.00	4.98	4.98	4.98	4.98	4.98	4.98
	-3.70	-3.00	5.23	5.23	5.23	5.23	5.23	5.23
	-0.70	0.00	5.61	5.61	5.61	5.61	5.61	5.29
	2.20	3.00	5.92	5.92	5.92	5.92	5.80	5.29
	4.10	5.00	6.11	6.11	6.11	6.11	5.80	5.29
	6.00	7.00	6.30	6.30	6.30	6.11	5.80	5.29
	7.90	9.00	6.49	6.49	6.30	6.11	5.80	5.29
	9.80	11.00	6.68	6.68	6.30	6.11	5.80	5.29
	11.80	13.00	6.93	6.80	6.30	6.11	5.80	5.29
	13.70	15.00	7.12	6.80	6.30	6.11	5.80	5.29

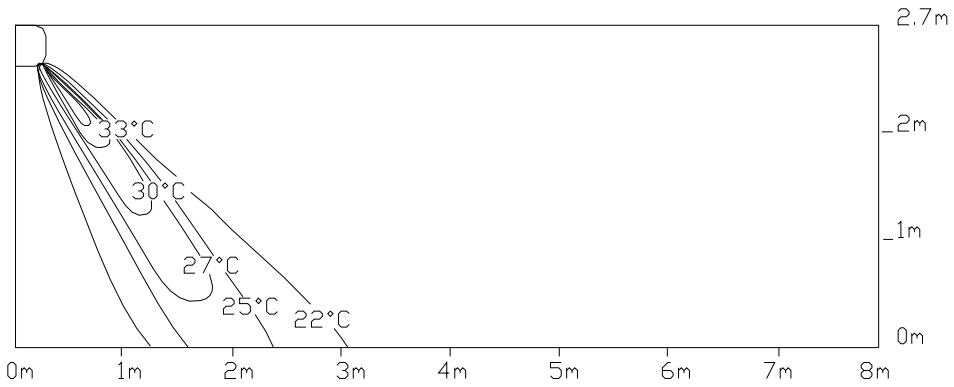
7. Velocity and Temperature Distribution

Discharge angle 70º

Airflow velocity



Temperature



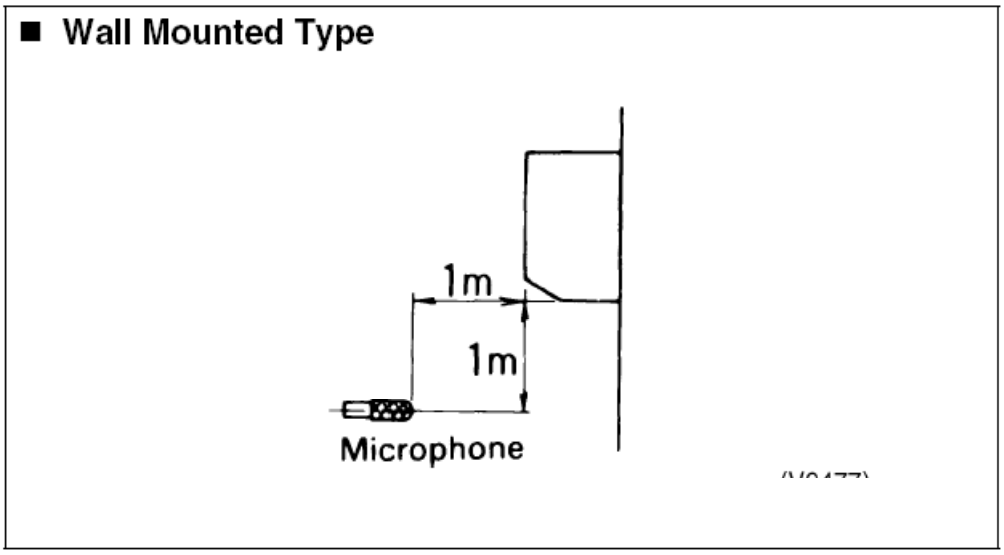
8. Electric Characteristics

Model	Indoor Unit				Power Supply
	Hz	Voltage	Min.	Max.	MFA
HKEU 221 XRV	50	220-240V	198	254	15A
HKEU 281 XRV	50	220-240V	198	254	15A
HKEU 361 XRV	50	220-240V	198	254	15A
HKEU 451 XRV	50	220-240V	198	254	15A
HKEU 561 XRV	50	220-240V	198	254	15A

Remark:
MFA: Max. Fuse Amps. (A)

9. Sound Levels

9.1 Test condition



Unit Number	Model	Noise level under three speeds of fan (dB(A))		
		H	M	L
1	HKEU 221 XRV	35	32	29
2	HKEU 281 XRV	35	32	29
3	HKEU 361 XRV	35	32	29
4	HKEU 451 XRV	40	38	34
5	HKEU 561 XRV	40	38	34

Exposed & Concealed Floor-standing Type

1. Features

Exposed

Concealed

1. Two intake directions: front and below.
2. Built-in the electronic throttle kit
3. Three speeds
4. Low noise operation.
5. Easy installation and maintenance.
6. Air filter easily removed and cleaned
7. Removable blades for easy and effective cleaning
8. Streamlined appearances, flowing lines.
9. All metal parts are made of commercial grade galvanized steel, providing maximum protection against corrosion.

2. Specifications

Model			**HFLU 221 XRV**	**HFCU 221 XRV**
Power supply		V- Ph-Hz	220-240V, 1Ph, 50Hz	
Cooling	Capacity	kW	2.2	2.2
	Input	W	40	40
	Rated current	A	0.19	0.19
Heating	Capacity	kW	2.6	2.6
	Input	W	40	40
	Rated current	A	0.19	0.19
Indoor fan motor	Model		YSK20-4A	YSK20-4A
	Type		AC motor	AC motor
	Brand		Welling	Welling
	Input	W	42/37/34	42/37/34
	Capacitor	μF	0.8	0.8
	Speed (hi/mid/lo)	r/min	935/810/720	935/810/720
Indoor coil	Number of rows		2	2
	Tube pitch(a)x row pitch(b)	Mm	25.4x22	25.4x22
	Fin spacing	Mm	1.8	1.8
	Fin type		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ9.53 innergroove tube	Φ9.53 innergroove tube
	Coil length x height x width	mm	568 x254 x44	568 x254 x44
	Number of circuits		3	3
Indoor air flow (H/M/L)		m^3/h	530/456/400	530/456/400
Indoor external static pressure (Hi)		Pa	12	12
Indoor noise level (Hi/Mid/Lo) (Sound pressure)		dB(A)	37/35/33	37/35/33
Indoor unit	Dimension (WxHxD)	mm	1000×220×625	840×212×544
	Packing (WxHxD)	mm	1179X722X312	939X639X305
	Net/Gross weight	kg	30/38	26/29.5
Refrigerant type			R410A	R410A
Throttle			Electric expansive valve	
Design pressure		MPa	2.5/4.4	2.5/4.4
Refrigerant piping	Liquid side/ Gas side	mm	Φ6.35/Φ12.7	Φ6.35/Φ12.7
Connecting wiring	Power wiring	$Nb×mm^2$	3×2.5(L≤20m) ; 3×3.5(L≤50m)	
	Signal wiring	$Nb×mm^2$	3×1.0	3×1.0
Drainage water pipe dia.		mm	Φ25	Φ25
Controller			Wireless controller (R51/E)	
Operation temp			17-30	
Application area		m^2	8~15	8~15

Notes:

1. Nominal cooling capacities are based on the following conditions: return air temp.: 27°CDB, 19°CWB, and outdoor temp.:35°CDB, equivalent ref. piping: 8m (horizontal)
2. Nominal heating capacities are based on the following conditions: return air temp.: 20°CDB, outdoor temp.: 7°CDB, 6°CWB, and equivalent ref. Piping: 8m (horizontal)

Model			**HFLU 281 XRV**	**HFCU 281 XRV**
Power supply		V- Ph-Hz	220-240V, 1Ph, 50Hz	
Cooling	Capacity	kW	2.8	2.8
	Input	W	46	46
	Rated current	A	0.2	0.2
Heating	Capacity	kW	3.2	3.2
	Input	W	46	46
	Rated current	A	0.2	0.2
Indoor fan motor	Model		YSK20-4A	YSK20-4A
	Type		AC motor	AC motor
	Brand		Welling	Welling
	Input	W	42/37/34	42/37/34
	Capacitor	μF	1.0	1.0
	Speed (hi/mid/lo)	r/min	935/810/720	935/810/720
Indoor coil	Number of rows		2	2
	Tube pitch(a)x row pitch(b)	mm	25.4x22	25.4x22
	Fin spacing	mm	1.8	1.8
	Fin type		Hydrophilic aluminum	
	Tube outside dia. and type	mm	Φ9.53 Inner groove tube	Φ9.53 Inner groove tube
	Coil length x height x width	mm	568 x254 x44	568 x254 x44
	Number of circuits		3	3
Indoor air flow (H/M/L)		m^3/h	569/485/421	569/485/421
Indoor external static pressure (Hi)		Pa	12	12
Indoor noise level (Hi/Mid/Lo) (Sound pressure)		dB(A)	37/35/33	37/35/33
Indoor unit	Dimension (WxHxD)	mm	1000×220×625	840×212×544
	Packing (WxHxD)	mm	1179X722X312	939X639X305
	Net/Gross weight	kg	30/38	26/29.5
Refrigerant type			R410A	R410A
Throttle			Electric expansive valve	
Design pressure		MPa	2.5/4.4	2.5/4.4
Refrigerant piping	Liquid side/ Gas side	mm	Φ6.35/Φ12.7	Φ6.35/Φ12.7
Connecting wiring	Power wiring	$Nb×mm^2$	3×2.5(L≤20m) ; 3×3.5(L≤50m)	
	Signal wiring	$Nb×mm^2$	3×1.0	3×1.0
Drainage water pipe dia.		mm	Φ25	Φ25
Controller			Wireless controller (R51/E)	
Operation temp			17-30	
Application area		m^2	11~18	11~18

Notes:

1. Nominal cooling capacities are based on the following conditions: return air temp.: 27°CDB, 19°CWB, and outdoor temp.:35°CDB, equivalent ref. piping: 8m (horizontal)
2. Nominal heating capacities are based on the following conditions: return air temp.: 20°CDB, outdoor temp.: 7°CDB, 6°CWB, and equivalent ref. Piping: 8m (horizontal)

Model			HFLU 361 XRV	HFCU 361 XRV
Power supply		V- Ph-Hz	220-240V, 1Ph, 50Hz	
Cooling	Capacity	kW	3.6	3.6
	Input	W	35	35
	Rated current	A	0.15	0.15
Heating	Capacity	kW	4.0	4.0
	Input	W	35	35
	Rated current	A	0.15	0.15
Indoor fan motor	Model		YSK20-6	YSK20-6
	Type		AC motor	AC motor
	Brand		Yongan	Yongan
	Input	W	49/40/34	49/40/34
	Capacitor	μF	1.2	1.2
	Speed (hi/mid/lo)	r/min	820/745/600	820/745/600
Indoor coil	Number of rows		3	3
	Tube pitch(a)x row pitch(b)	mm	25.4x22	25.4x22
	Fin spacing	mm	1.8	1.8
	Fin type		Hydrophilic aluminum	
	Tube outside dia. and type	mm	Φ9.53 innergroove tube	Φ9.53 innergroove tube
	Coil length x height x width	mm	768 x254 x66	768 x254 x66
	Number of circuits		3	3
Indoor air flow (H/M/L)		m^3/h	624/522/375	624/522/375
Indoor external static pressure (Hi)		Pa	12	12
Indoor noise level (Hi/Mid/Lo) (Sound pressure)		dB(A)	39/37/35	39/37/35
Indoor unit	Dimension (WxHxD)	mm	1200×220×625	1036×212×544
	Packing (WxHxD)	mm	1379X722X312	1139X639X305
	Net/Gross weight	Kg	37/46	29.5/34
Refrigerant type			R410A	R410A
Throttle			Electric expansive valve	
Design pressure		MPa	2.5/4.4	2.5/4.4
Refrigerant piping	Liquid side/ Gas side	mm	Φ6.35/Φ12.7	Φ6.35/Φ12.7
Connecting wiring	Power wiring	$Nb×mm^2$	3×2.5(L≤20m) ; 3×3.5(L≤50m)	
	Signal wiring	$Nb×mm^2$	3×1.0	3×1.0
Drainage water pipe dia.		mm	Φ25	Φ25
Controller			Wireless controller (R51/E)	
Operation temp			17-30	
Application area		m^2	14 ~ 24	14 ~ 24

Notes:

1. Nominal cooling capacities are based on the following conditions: return air temp.: 27°CDB, 19°CWB, and outdoor temp.:35°CDB, equivalent ref. piping: 8m (horizontal)
2. Nominal heating capacities are based on the following conditions: return air temp.: 20°CDB, outdoor temp.: 7°CDB, 6°CWB, and equivalent ref. Piping: 8m (horizontal)

Model			HFLU 451 XRV	HFCU 451 XRV
Power supply		V- Ph-Hz	220-240V, 1Ph, 50Hz	
Cooling	Capacity	kW	4.5	4.5
	Input	W	49	49
	Rated current	A	0.22	0.22
Heating	Capacity	kW	5.0	5.0
	Input	W	49	49
	Rated current	A	0.22	0.22
Indoor fan motor	Model		YSK20-6	YSK20-6
	Type		AC motor	AC motor
	Brand		Yongan	Yongan
	Input	W	49/40/34	49/40/34
	Capacitor	μF	1.2	1.2
	Speed (hi/mid/lo)	r/min	820/745/600	820/745/600
Indoor coil	Number of rows		3	3
	Tube pitch(a)x row pitch(b)	mm	25.4x22	25.4x22
	Fin spacing	mm	1.8	1.8
	Fin type		Hydrophilic aluminum	
	Tube outside dia. and type	mm	Φ9.53 innergroove tube	Φ9.53 innergroove tube
	Coil length x height x width	mm	768 x254 x66	768 x254 x66
	Number of circuits		3	3
Indoor air flow (H/M/L)		m^3/h	660/542/440	660/542/440
Indoor external static pressure (Hi)		Pa	12	12
Indoor noise level (Hi/Mid/Lo) (Sound pressure)		dB(A)	39/37/35	39/37/35
Indoor unit	Dimension (WxHxD)	mm	1200×220×625	1036×212×544
	Packing (WxHxD)	mm	1379X722X312	1139X639X305
	Net/Gross weight	Kg	37/46	29.5/34
Refrigerant type			R410A	R410A
Throttle			Electric expansive valve	
Design pressure		MPa	2.5/4.4	2.5/4.4
Refrigerant piping	Liquid side/ Gas side	mm	Φ6.35/Φ12.7	Φ6.35/Φ12.7
Connecting wiring	Power wiring	$Nb×mm^2$	3×2.5(L≤20m)；3×3.5(L≤50m)	
	Signal wiring	$Nb×mm^2$	3×1.0	3×1.0
Drainage water pipe dia.		mm	Φ25	Φ25
Controller			Wireless controller (R51/E)	
Operation temp			17-30	
Application area		m^2	18～30	18～30

Notes:

1. Nominal cooling capacities are based on the following conditions: return air temp.: 27°CDB, 19°CWB, and outdoor temp.:35°CDB, equivalent ref. piping: 8m (horizontal)
2. Nominal heating capacities are based on the following conditions: return air temp.: 20°CDB, outdoor temp.: 7°CDB, 6°CWB, and equivalent ref. Piping: 8m (horizontal)

Model			HFLU 561 XRV	HFCU 561 XRV
Power supply		V-Ph-Hz	220-240V, 1Ph, 50Hz	
Cooling	Capacity	kW	5.6	5.6
	Input	W	88	88
	Rated current	A	0.38	0.38
Heating	Capacity	kW	6.3	6.3
	Input	W	88	88
	Rated current	A	0.38	0.38
Indoor fan motor	Model		YSK28-4E	YSK28-4E
	Type		AC motor	AC motor
	Brand		Welling	Welling
	Input	W	95/77/67	95/77/67
	Capacitor	μF	2.5	2.5
	Speed (hi/mid/lo)	r/min	915/770/660	915/770/660
Indoor coil	Number of rows		2	2
	Tube pitch(a)x row pitch(b)	mm	25.4x22	25.4x22
	Fin spacing	mm	1.8	1.8
	Fin type		Hydrophilic aluminum	
	Tube outside dia. and type	mm	Φ9.53 innergroove tube	Φ9.53 innergroove tube
	Coil length x height x width	mm	1068 x 254 x 44	1068 x 254 x 44
	Number of circuits		4	4
Indoor air flow (H/M/L)		m^3/h	1150/970/830	1150/970/830
Indoor external static pressure (Hi)		Pa	12	12
Indoor noise level (Hi/Mid/Lo) (Sound pressure)		dB(A)	41/39/37	41/39/37
Indoor unit	Dimension (WxHxD)	mm	1500×220×625	1336×212×544
	Packing (WxHxD)	mm	1679X722X312	1439X639X305
	Net/Gross weight	kg	44/53	36/40
Refrigerant type			R410A	R410A
Throttle			Electric expansive valve	
Design pressure		MPa	2.5/4.4	2.5/4.4
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.53/Φ15.9	Φ9.53/Φ15.9
Connecting wiring	Power wiring	$Nb×mm^2$	3×2.5(L≤20m) ; 3×3.5(L≤50m)	
	Signal wiring	$Nb×mm^2$	3×1.0	3×1.0
Drainage water pipe dia.		mm	Φ25	Φ25
Controller			Wireless controller (R51/E)	
Operation temp			17-30	
Application area		m^2	22 ~ 37	22 ~ 37

Notes:

1. Nominal cooling capacities are based on the following conditions: return air temp.: 27°CDB, 19°C WB, and outdoor temp.:35°CDB, equivalent ref. piping: 8m (horizontal)
2. Nominal heating capacities are based on the following conditions: return air temp.: 20°CDB, outdoor temp.: 7°CDB, 6°CWB, and equivalent ref. Piping: 8m (horizontal)

Model			**HFLU 711 XRV**	**HFCU 711 XRV**
Power supply		V- Ph-Hz	220-240V, 1Ph, 50Hz	
Cooling	Capacity	kW	7.1	7.1
	Input	W	130	130
	Rated current	A	0.57	0.57
Heating	Capacity	kW	8.0	8.0
	Input	W	130	130
	Rated current	A	0.57	0.57
Indoor fan motor	Model		YSK74-4E	YSK74-4E
	Type		AC motor	AC motor
	Brand		Yongan	Yongan
	Input	W	138.5/119/97	138.5/119/97
	Capacitor	μF	3	3
	Speed (hi/mid/lo)	r/min	1120/1020/880	1120/1020/880
Indoor coil	Number of rows		2	2
	Tube pitch(a)x row pitch(b)	mm	25.4x22	25.4x22
	Fin spacing	mm	1.8	1.8
	Fin type		hydrophilic aluminum	
	Tube outside dia. and type	mm	Φ9.53 innergroove tube	Φ9.53 innergroove tube
	Coil length x height x width	mm	1068 x 254 x 44	1068 x 254 x 44
	Number of circuits		4	4
Indoor air flow (H/M/L)		m^3/h	1380/1100/870	1380/1100/870
Indoor external static pressure (Hi)		Pa	12	12
Indoor noise level (Hi/Mid/Lo) (Sound pressure)		dB(A)	43/41/38	43/41/38
Indoor unit	Dimension (WxHxD)	mm	1500×220×625	1336×212×545
	Packing (WxHxD)	mm	1679X722X312	1439X639X305
	Net/Gross weight	kg	44/53	36/40
Refrigerant type			R410A	R410A
Throttle			Electric expansive valve	
Design pressure		MPa	2.5/4.4	2.5/4.4
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.53/Φ15.9	Φ9.53/Φ15.9
Connecting wiring	Power wiring	$Nb×mm^2$	3×2.5(L≤20m)；3×3.5(L≤50m)	
	Signal wiring	$Nb×mm^2$	3×1.0	3×1.0
Drainage water pipe dia.		mm	Φ25	Φ25
Controller			Wireless controller (R51/E)	
Operation temp			17-30	
Application area		m^2	28～47	28～47

Notes:

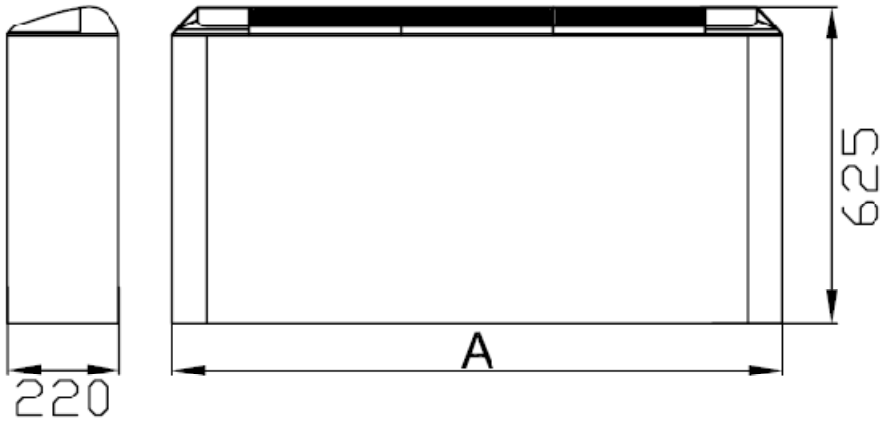
1. Nominal cooling capacities are based on the following conditions: return air temp.: 27°CDB, 19°CWB, and outdoor temp.:35°CDB, equivalent ref. piping: 8m (horizontal)
2. Nominal heating capacities are based on the following conditions: return air temp.: 20°CDB, outdoor temp.: 7°CDB, 6°CWB, and equivalent ref. Piping: 8m (horizontal)

Model			**HFLU 801 XRV**	**HFCU 801 XRV**
Power supply		V- Ph-Hz	220-240V, 1Ph, 50Hz	
Cooling	Capacity	kW	8.0	8.0
	Input	W	130	130
	Rated current	A	0.56	0.56
Heating	Capacity	kW	9.0	9.0
	Input	W	130	130
	Rated current	A	0.56	0.56
Indoor fan motor	Model		YSK74-4E	YSK74-4E
	Type		AC motor	AC motor
	Brand		Yongan	Yongan
	Input	W	138.5/119/97	138.5/119/97
	Capacitor	μF	3	3
	Speed (hi/mid/lo)	r/min	1120/1020/880	1120/1020/880
Indoor coil	Number of rows		3	3
	Tube pitch(a)x row pitch(b)	mm	25.4x22	25.4x22
	Fin spacing	mm	1.8	1.8
	Fin type		Hydrophilic aluminum	
	Tube outside dia. and type	mm	Φ9.53 innergroove tube	Φ9.53 innergroove tube
	Coil length x height x width	mm	1068×66×254	1068×66×254
	Number of circuits		3	3
Indoor air flow (H/M/L)		m^3/h	1332/1212/1023	1332/1212/1023
Indoor external static pressure (Hi)		Pa	12	12
Indoor noise level (Hi/Mid/Lo) (Sound pressure)		dB(A)	43/41/38	43/41/38
Indoor unit	Dimension (WxHxD)	mm	1500×220×625	1336×212×545
	Packing (WxHxD)	mm	1679X722X312	1439X639X305
	Net/Gross weight	kg	44/53	36/40
Refrigerant type			R410A	R410A
Throttle			Electric expansive valve	
Design pressure		MPa	2.5/4.4	2.5/4.4
Refrigerant piping	Liquid side/ Gas side	mm(inch)	Φ9.53/Φ15.9	Φ9.53/Φ15.9
Connecting wiring	Power wiring	$Nb×mm^2$	3×2.5(L≤20m)；3×3.5(L≤50m)	
	Signal wiring	$Nb×mm^2$	3×1.0	3×1.0
Drainage water pipe dia.		mm	Φ25	Φ25
Controller			Wireless controller (R51/E)	
Operation temp			17-30	
Application area		m^2	32～53	32～53

Notes:

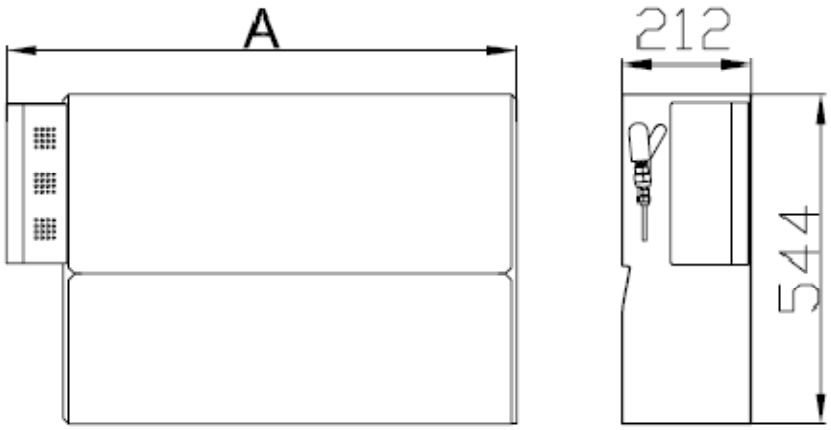
1. Nominal cooling capacities are based on the following conditions: return air temp.: 27°CDB, 19°CWB, and outdoor temp.:35°CDB, equivalent ref. piping: 8m (horizontal)
2. Nominal heating capacities are based on the following conditions: return air temp.: 20°CDB, outdoor temp.: 7°CDB, 6°CWB, and equivalent ref. Piping: 8m (horizontal)

3. Dimensions
3.1 Exposed floor standing (air inlet from below)



No	Model	A (mm)
1	HFLU 221 XRV	1000
2	HFLU 281 XRV	1000
3	HFLU 361 XRV	1200
4	HFLU 451 XRV	1200
5	HFLU 561 XRV	1500
6	HFLU 711 XRV	1500
7	HFLU 801 XRV	1500

3.2 Concealed floor standing

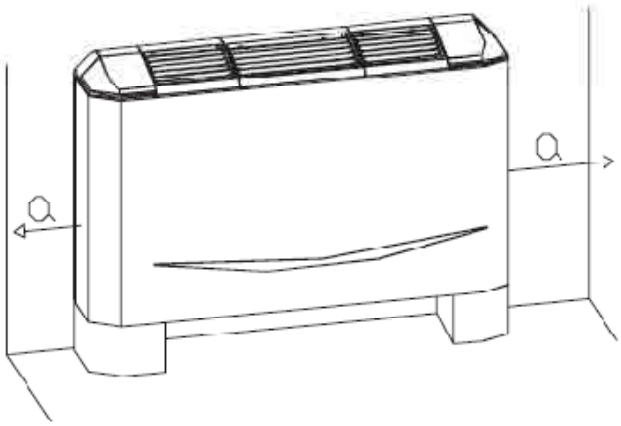


No	Model	A (mm)
1	HFCU 221 XRV	840
2	HFCU 281 XRV	840
3	HFCU 361 XRV	1036
4	HFCU 451 XRV	1036
5	HFCU 561 XRV	1336
6	HFCU 711 XRV	1336
7	HFCU 801 XRV	1336

4. Service Space

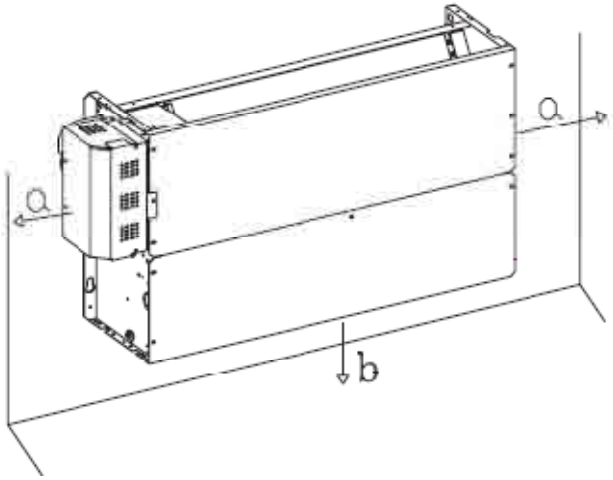
Version HFLU

Vertical unit with casing, with air intake from below and air outlet on top, for installation on a wall or on feet on the floor.



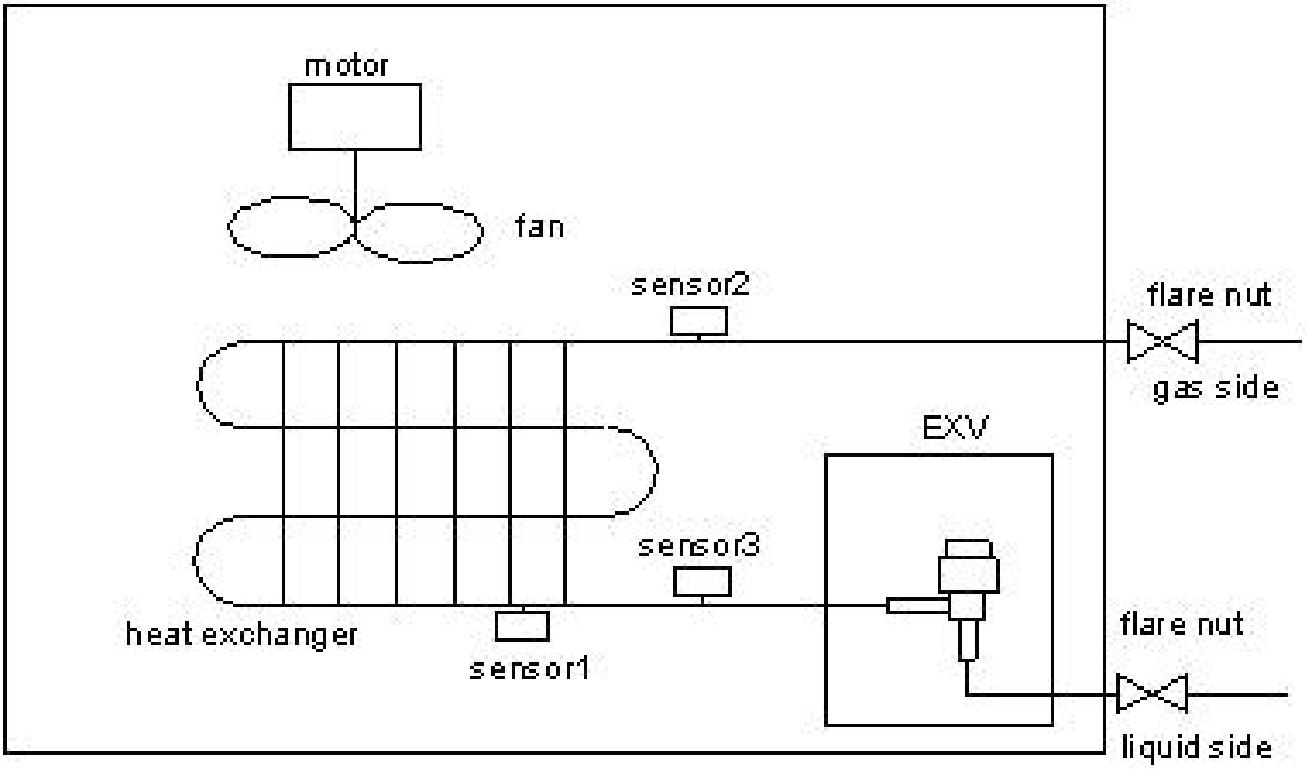
Version HFCU

Vertical unit for building-in, with air intake from below and air delivery at the top, for installation on a wall.



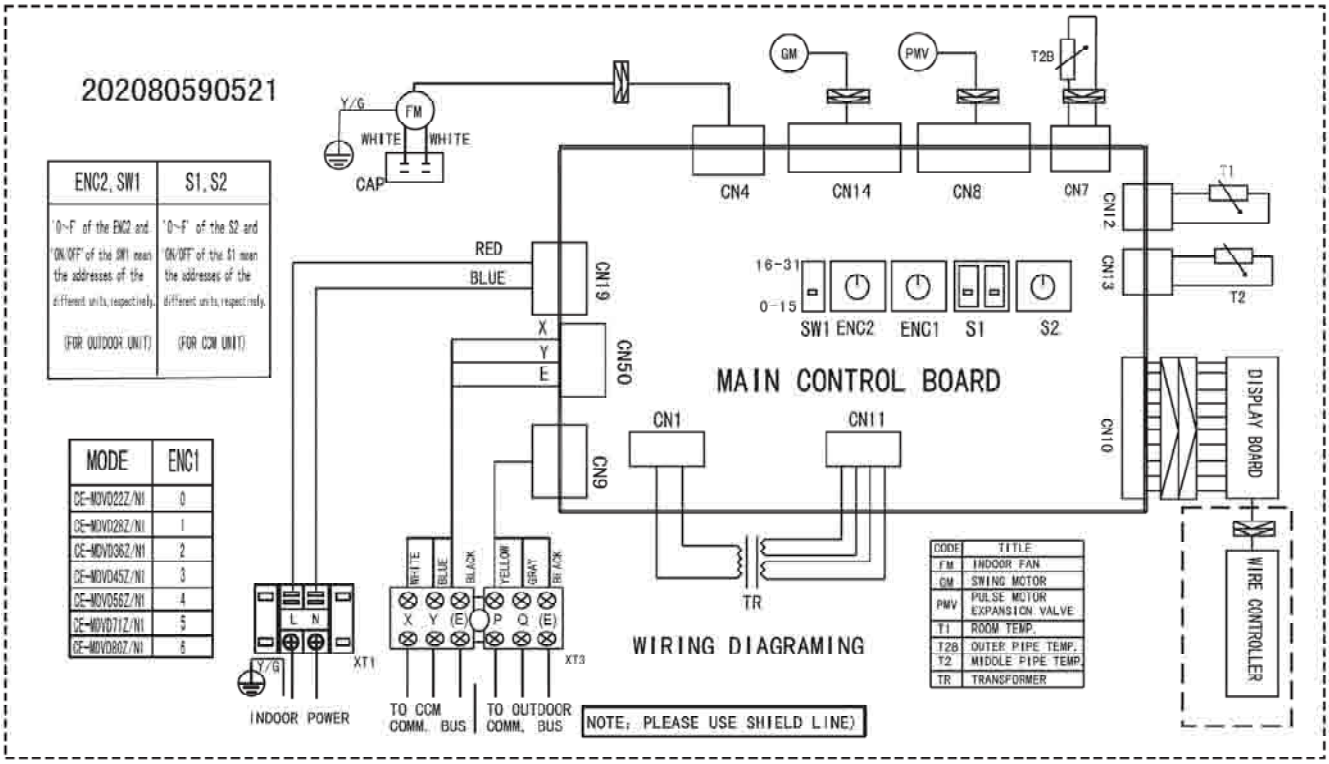
Version	Version HFLU	Version HFCU
a(mm)	≥150	≥200
b(mm)	/	≥80

5. Piping Diagram



Sensor1: T2
Sensor2: T2B
Sensor3: T1

6. Wiring Diagram



7. Capacity Tables

7.1.1 Cooling

TC: total capacity **SH**: sensible capacity

Indoor Unit size (kW)	Outdoor temperature (DB)	Indoor temperature (WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TC	SH	TC	SH	TC	SH	TC	SH	TC	SH	TC	SH	TC	SH
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
2.2	10.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.9	1.7
	12.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.8	1.6
	14.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.8	1.6
	16.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.8	1.6
	18.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.8	1.6
	20.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.7	1.5
	21.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.6	1.7	2.7	1.5
	23.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.5	1.6	2.7	1.5
	25.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.5	1.6	2.6	1.5
	27.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.5	1.6	2.6	1.5
	29.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.4	1.5	2.5	1.5
	31.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.4	1.5	2.5	1.5
	33.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.4	1.5	2.4	1.5
	35.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.3	1.5	2.4	1.5
	37.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.3	1.5	2.3	1.5
	39.0	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.2	1.6	2.3	1.5	2.3	1.5
2.8	10.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.7	2.1
	12.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.6	2.1
	14.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.6	2.1
	16.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.6	2.0
	18.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.5	2.0
	20.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.4	1.9
	21.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.3	2.1	3.4	1.9
	23.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.2	2.1	3.4	1.9
	25.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.2	2.0	3.3	1.9
	27.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.2	2.0	3.3	1.9
	29.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.1	2.0	3.2	1.9
	31.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.1	2.0	3.2	1.9
	33.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.2	3.1	2.0	3.1	2.0
	35.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.1	2.9	1.9	3.1	2.0
	37.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.9	2.1	2.9	1.9	2.9	1.9
	39.0	1.9	1.8	2.3	1.9	2.7	2.0	2.8	2.0	2.8	2.0	2.9	1.9	2.9	1.9
3.6	10.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.8	2.8
	12.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.6	2.7
	14.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.6	2.7
	16.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.5	2.7
	18.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.5	2.7
	20.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.4	2.7
	21.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.4	2.7
	23.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.2	2.8	4.4	2.7
	25.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.1	2.7	4.2	2.6
	27.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.1	2.7	4.2	2.6
	29.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.0	2.6	4.1	2.5
	31.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.0	2.6	4.1	2.4

Indoor Unit size (kW)	Outdoor temperature (DB)	Indoor temperature (WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TC	SH	TC	SH	TC	SH	TC	SH	TC	SH	TC	SH	TC	SH
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
4.5	33.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.9	2.7	4.0	2.6	4.0	2.4
	35.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.7	2.6	3.9	2.6	4.0	2.4
	37.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.7	2.6	3.9	2.6	3.9	2.3
	39.0	2.4	2.2	3.0	2.5	3.3	2.7	3.6	2.7	3.7	2.6	3.9	2.7	3.9	2.4
	10.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.9	3.4
	12.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.9	3.4
	14.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.8	3.3
	16.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.6	3.2
	18.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.6	3.2
	20.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.5	3.2
	21.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.4	3.2	5.4	3.1
	23.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.2	3.2	5.4	3.1
	25.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.2	3.2	5.3	3.0
	27.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.0	3.0	5.3	3.0
	29.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.0	3.0	5.1	2.9
	31.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.3	3.5	5.1	3.0
	33.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.3	3.5	4.9	2.9
	35.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.8	3.3	5.3	3.5	4.8	2.8
	37.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.6	3.2	4.8	3.1	4.8	2.9
	39.0	3.1	2.6	3.6	2.9	4.2	3.1	4.5	3.2	4.6	3.2	4.8	3.1	4.8	2.9
5.6	10.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.3	4.1
	12.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.3	4.1
	14.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.2	4.1
	16.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	6.9	4.0
	18.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.1	4.1
	20.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.1	4.1
	21.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	7.0	4.1
	23.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.6	4.6	6.9	4.0
	25.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.5	4.1	6.8	3.9
	27.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.4	4.0	6.5	3.8
	29.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.3	4.0	6.4	3.7
	31.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.2	3.9	6.3	3.7
	33.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	6.0	3.8	6.3	3.7
	35.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	5.9	3.7	6.2	3.6
	37.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	6.0	4.0	5.9	3.9	6.1	3.5
	39.0	3.9	3.2	4.6	3.5	5.2	3.9	5.6	4.0	5.7	3.8	5.8	3.8	6.0	3.5
7.1	10.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	9.2	4.9
	12.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	9.1	4.8
	14.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	9.0	4.8
	16.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	8.9	4.7
	18.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	8.7	4.7
	20.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	8.5	4.6
	21.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	8.4	4.5
	23.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	8.3	4.5
	25.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.4	4.9	8.2	4.4
	27.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.1	4.9	8.2	4.4

Indoor Unit size (kW)	Outdoor temperature (DB)	Indoor temperature (WB)													
		14/20		16/23		18/26		19/27		20/28		22/30		24/32	
		TC	SH	TC	SH	TC	SH	TC	SH	TC	SH	TC	SH	TC	SH
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
	29.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	8.0	4.8	8.1	4.5
	31.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	7.9	4.7	7.8	4.4
	33.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	7.8	4.7	7.8	4.4
	35.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	7.6	4.6	7.7	4.3
	37.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.5	4.8	7.5	4.5	7.6	4.3
	39.0	5.0	3.8	5.8	4.2	6.7	4.6	7.1	4.7	7.2	4.6	7.4	4.4	7.6	4.3
8.0	10.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	10.4	5.6
	12.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	10.2	5.5
	14.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	10.2	5.5
	16.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	10.0	5.4
	18.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	9.8	5.3
	20.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	9.6	5.2
	21.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	9.4	5.1
	23.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	9.4	5.1
	25.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.4	5.5	9.3	5.0
	27.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.4	9.1	5.3	9.2	5.1
	29.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.5	9.0	5.3	9.1	5.0
	31.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.5	8.9	5.2	8.8	4.8
	33.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.5	8.8	5.2	8.8	4.8
	35.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.5	8.6	5.1	8.6	4.8
	37.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.3	5.4	8.4	5.0	8.6	4.9
	39.0	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.1	5.3	8.3	5.0	8.6	4.9

7.1.2 Heating

TC: total capacity

Indoor Unit size (KW)	Outdoor temperature (DB)		Indoor temperature (WB)					
			16.00	18.00	20.00	21.00	22.00	24.00
			TH	TH	TH	TH	TH	TH
	WB	DB	kW	kW	kW	kW	kW	kW
2.20	-15.00	-14.70	1.64	1.64	1.64	1.64	1.64	1.64
	-13.00	-12.60	1.74	1.74	1.74	1.74	1.74	1.74
	-11.00	-10.50	1.82	1.82	1.82	1.82	1.82	1.82
	-10.00	-9.50	1.90	1.90	1.90	1.90	1.90	1.90
	-9.10	-8.50	1.95	1.95	1.95	1.95	1.95	1.95
	-7.60	-7.00	1.98	1.98	1.98	1.98	1.98	1.98
	-5.60	-5.00	2.05	2.05	2.05	2.05	2.05	2.05
	-3.70	-3.00	2.16	2.16	2.16	2.16	2.16	2.16
	-0.70	0.00	2.31	2.31	2.31	2.31	2.31	2.18
	2.20	3.00	2.44	2.44	2.44	2.44	2.39	2.18
	4.10	5.00	2.52	2.52	2.52	2.52	2.39	2.18
	6.00	7.00	2.60	2.60	2.60	2.52	2.39	2.18
	7.90	9.00	2.68	2.68	2.93	2.52	2.39	2.18
	9.80	11.00	2.76	2.76	2.60	2.52	2.39	2.18
	11.80	13.00	2.86	2.81	2.60	2.52	2.39	2.18
	13.70	15.00	2.94	2.81	2.60	2.52	2.39	2.18
2.80	-15.00	-14.70	2.02	2.02	2.02	2.02	2.02	2.02
	-13.00	-12.60	2.14	2.14	2.14	2.14	2.14	2.14
	-11.00	-10.50	2.24	2.24	2.24	2.24	2.24	2.24
	-10.00	-9.50	2.34	2.34	2.34	2.34	2.34	2.34
	-9.10	-8.50	2.40	2.40	2.40	2.40	2.40	2.40
	-7.60	-7.00	2.43	2.43	2.43	2.43	2.43	2.43
	-5.60	-5.00	2.53	2.53	2.53	2.53	2.53	2.53
	-3.70	-3.00	2.66	2.66	2.66	2.66	2.66	2.66
	-0.70	0.00	2.85	2.85	2.85	2.85	2.85	2.69
	2.20	3.00	3.01	3.01	3.01	3.01	2.94	2.69
	4.10	5.00	3.10	3.10	3.10	3.10	2.94	2.69
	6.00	7.00	3.20	3.20	3.20	3.10	2.94	2.69
	7.90	9.00	3.30	3.30	2.93	3.10	2.94	2.69
	9.80	11.00	3.39	3.39	3.20	3.10	2.94	2.69
	11.80	13.00	3.52	3.46	3.20	3.10	2.94	2.69
	13.70	15.00	3.62	3.46	3.20	3.10	2.94	2.69
3.60	-15.00	-14.70	2.52	2.52	2.52	2.52	2.52	2.52
	-13.00	-12.60	2.68	2.68	2.68	2.68	2.68	2.68
	-11.00	-10.50	2.80	2.80	2.80	2.80	2.80	2.80
	-10.00	-9.50	2.92	2.92	2.92	2.92	2.92	2.92
	-9.10	-8.50	3.00	3.00	3.00	3.00	3.00	3.00
	-7.60	-7.00	3.04	3.04	3.04	3.04	3.04	3.04
	-5.60	-5.00	3.16	3.16	3.16	3.16	3.16	3.16
	-3.70	-3.00	3.32	3.32	3.32	3.32	3.32	3.32
	-0.70	0.00	3.56	3.56	3.56	3.56	3.56	3.36
	2.20	3.00	3.76	3.76	3.76	3.76	3.68	3.36
	4.10	5.00	3.88	3.88	3.88	3.88	3.68	3.36
	6.00	7.00	4.00	4.00	4.00	3.88	3.68	3.36

Indoor Unit size (KW)	Outdoor temperature (DB)		Indoor temperature (WB)					
			16.00	18.00	20.00	21.00	22.00	24.00
			TH	TH	TH	TH	TH	TH
	WB	DB	kW	kW	kW	kW	kW	kW
	7.90	9.00	4.12	4.12	2.93	3.88	3.68	3.36
	9.80	11.00	4.24	4.24	4.00	3.88	3.68	3.36
	11.80	13.00	4.40	4.32	4.00	3.88	3.68	3.36
	13.70	15.00	4.52	4.32	4.00	3.88	3.68	3.36
4.50	-15.00	-14.70	3.15	3.15	3.15	3.15	3.15	3.15
	-13.00	-12.60	3.35	3.35	3.35	3.35	3.35	3.35
	-11.00	-10.50	3.50	3.50	3.50	3.50	3.50	3.50
	-10.00	-9.50	3.65	3.65	3.65	3.65	3.65	3.65
	-9.10	-8.50	3.75	3.75	3.75	3.75	3.75	3.75
	-7.60	-7.00	3.80	3.80	3.80	3.80	3.80	3.80
	-5.60	-5.00	3.95	3.95	3.95	3.95	3.95	3.95
	-3.70	-3.00	4.15	4.15	4.15	4.15	4.15	4.15
	-0.70	0.00	4.45	4.45	4.45	4.45	4.45	4.20
	2.20	3.00	4.70	4.70	4.70	4.70	4.60	4.20
	4.10	5.00	4.85	4.85	4.85	4.85	4.60	4.20
	6.00	7.00	5.00	5.00	5.00	4.85	4.60	4.20
	7.90	9.00	5.15	5.15	2.93	4.85	4.60	4.20
	9.80	11.00	5.30	5.30	5.00	4.85	4.60	4.20
	11.80	13.00	5.50	5.40	5.00	4.85	4.60	4.20
	13.70	15.00	5.65	5.40	5.00	4.85	4.60	4.20
5.60	-15.00	-14.70	3.97	3.97	3.97	3.97	3.97	3.97
	-13.00	-12.60	4.22	4.22	4.22	4.22	4.22	4.22
	-11.00	-10.50	4.41	4.41	4.41	4.41	4.41	4.41
	-10.00	-9.50	4.60	4.60	4.60	4.60	4.60	4.60
	-9.10	-8.50	4.73	4.73	4.73	4.73	4.73	4.73
	-7.60	-7.00	4.79	4.79	4.79	4.79	4.79	4.79
	-5.60	-5.00	4.98	4.98	4.98	4.98	4.98	4.98
	-3.70	-3.00	5.23	5.23	5.23	5.23	5.23	5.23
	-0.70	0.00	5.61	5.61	5.61	5.61	5.61	5.29
	2.20	3.00	5.92	5.92	5.92	5.92	5.80	5.29
	4.10	5.00	6.11	6.11	6.11	6.11	5.80	5.29
	6.00	7.00	6.30	6.30	6.30	6.11	5.80	5.29
	7.90	9.00	6.49	6.49	2.93	6.11	5.80	5.29
	9.80	11.00	6.68	6.68	6.30	6.11	5.80	5.29
	11.80	13.00	6.93	6.80	6.30	6.11	5.80	5.29
	13.70	15.00	7.12	6.80	6.30	6.11	5.80	5.29
7.10	-15.00	-14.70	5.04	5.04	5.04	5.04	5.04	5.04
	-13.00	-12.60	5.36	5.36	5.36	5.36	5.36	5.36
	-11.00	-10.50	5.60	5.60	5.60	5.60	5.60	5.60
	-10.00	-9.50	5.84	5.84	5.84	5.84	5.84	5.84
	-9.10	-8.50	6.00	6.00	6.00	6.00	6.00	6.00
	-7.60	-7.00	6.08	6.08	6.08	6.08	6.08	6.08
	-5.60	-5.00	6.32	6.32	6.32	6.32	6.32	6.32
	-3.70	-3.00	6.64	6.64	6.64	6.64	6.64	6.64
	-0.70	0.00	7.12	7.12	7.12	7.12	7.12	6.72
	2.20	3.00	7.52	7.52	7.52	7.52	7.36	6.72

Indoor Unit size (KW)	Outdoor temperature (DB)		Indoor temperature (WB)					
			16.00	18.00	20.00	21.00	22.00	24.00
			TH	TH	TH	TH	TH	TH
	WB	DB	kW	kW	kW	kW	kW	kW
	4.10	5.00	7.76	7.76	7.76	7.76	7.36	6.72
	6.00	7.00	8.00	8.00	8.00	7.76	7.36	6.72
	7.90	9.00	8.24	8.24	2.93	7.76	7.36	6.72
	9.80	11.00	8.48	8.48	8.00	7.76	7.36	6.72
	11.80	13.00	8.80	8.64	8.00	7.76	7.36	6.72
	13.70	15.00	9.04	8.64	8.00	7.76	7.36	6.72
8.00	-15.00	-14.70	5.67	5.67	5.67	5.67	5.67	5.67
	-13.00	-12.60	6.03	6.03	6.03	6.03	6.03	6.03
	-11.00	-10.50	6.30	6.30	6.30	6.30	6.30	6.30
	-10.00	-9.50	6.57	6.57	6.57	6.57	6.57	6.57
	-9.10	-8.50	6.75	6.75	6.75	6.75	6.75	6.75
	-7.60	-7.00	6.84	6.84	6.84	6.84	6.84	6.84
	-5.60	-5.00	7.11	7.11	7.11	7.11	7.11	7.11
	-3.70	-3.00	7.47	7.47	7.47	7.47	7.47	7.47
	-0.70	0.00	8.01	8.01	8.01	8.01	8.01	7.56
	2.20	3.00	8.46	8.46	8.46	8.46	8.28	7.56
	4.10	5.00	8.73	8.73	8.73	8.73	8.28	7.56
	6.00	7.00	9.00	9.00	9.00	8.73	8.28	7.56
	7.90	9.00	9.27	9.27	2.93	8.73	8.28	7.56
	9.80	11.00	9.54	9.54	9.00	8.73	8.28	7.56
	11.80	13.00	9.90	9.72	9.00	8.73	8.28	7.56
	13.70	15.00	10.17	9.72	9.00	8.73	8.28	7.56

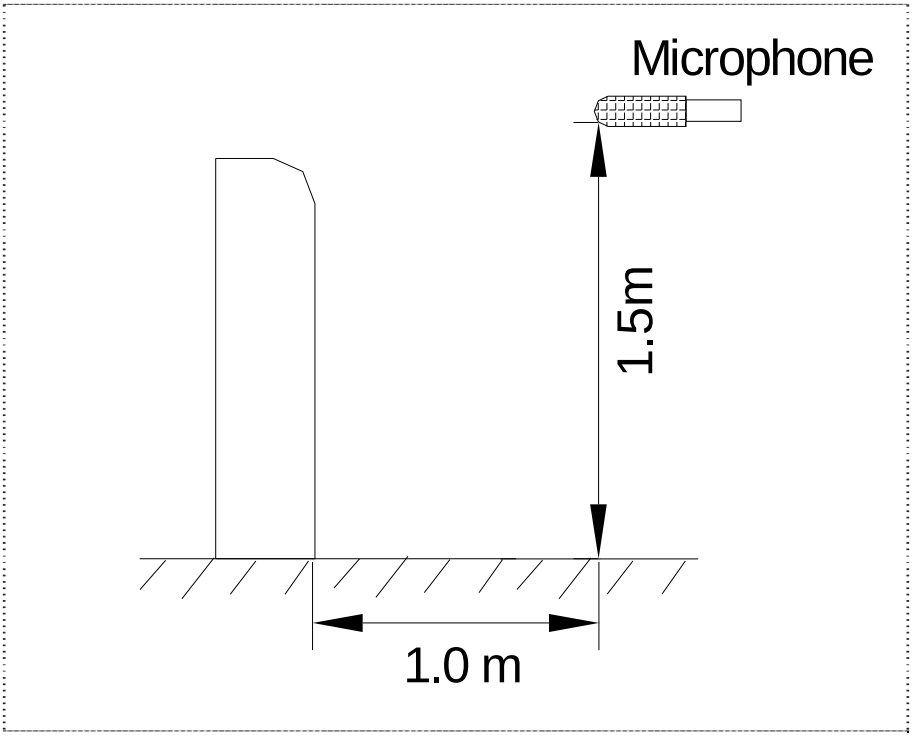
8. Electric Characteristics

Model	Indoor Unit				Power Supply		IFM	
	Hz	Voltage	Min.	Max.	MCA	MFA	KW	FLA
HFLU 221 XRV	50	220-240V	198	254	0.25	15	0.02	0.2
HFCU 221 XRV	50	220-240V	198	254	0.25	15	0.02	0.2
HFLU 281 XRV	50	220-240V	198	254	0.25	15	0.02	0.2
HFCU 281 XRV	50	220-240V	198	254	0.25	15	0.02	0.2
HFLU 361 XRV	50	220-240V	198	254	0.3	15	0.02	0.24
HFCU 361 XRV	50	220-240V	198	254	0.3	15	0.02	0.24
HFLU 451 XRV	50	220-240V	198	254	0.4	15	0.02	0.3
HFCU 451 XRV	50	220-240V	198	254	0.4	15	0.02	0.3
HFLU 561 XRV	50	220-240V	198	254	0.6	15	0.028	0.48
HFCU 561 XRV	50	220-240V	198	254	0.6	15	0.028	0.48
HFLU 711 XRV	50	220-240V	198	254	0.8	15	0.07	0.62
HFCU 711 XRV	50	220-240V	198	254	0.8	15	0.07	0.62
HFLU 801 XRV	50	220-240V	198	254	0.8	15	0.07	0.62
HFCU 801 XRV	50	220-240V	198	254	0.8	15	0.07	0.62

Remark:
MCA: Min. Current Amps. (A)
MFA: Max. Fuse Amps. (A)
KW: Fan Motor Rated Output (kW)
FLA: Full Load Amps. (A)
IFM: Indoor Fan Motor

9. Sound Levels

10.1 Test condition



10.2 Test value

Model	Noise level under three speeds of fan (dB(A))		
	H	M	L
HFLU - HFCU 221 XRV	37	35	33
HFLU - HFCU 281 XRV	37	35	33
HFLU - HFCU 361 XRV	39	37	35
HFLU - HFCU 451 XRV	39	37	35
HFLU - HFCU 561 XRV	41	39	37
HFLU - HFCU 711 XRV	43	41	38
HFLU - HFCU 801 XRV	43	41	38

Outdoor Units

Sommario

1. Introduction

5 basic modules, which can be freely assembled.
2HP increments of capacity range, which meets customer's needs accurately.
Maximum capacity is 64HP, the maximum capacity in air-conditioner refrigeration industry.

Note: when in project designing, it should never reach all the operating limit of the MDV system at the same time; otherwise we don't response to the claim for poor performance of the system.
For example:
The status of installation in your project: the total capacity of indoor units is as 130% as total capacity of outdoor units, the longest pipe between indoor unit and outdoor unit reaches 175m, the height difference between indoor unit and outdoor unit reaches 70m.
It can't guarantee each indoor unit has normal capacity:
a) when all the indoor units operate simultaneously;
b) when the outdoor ambient temperature is very bad.

2. Unit selection (Based on cooling load)

2.1 Indoor unit selection

2.1.1 After calculated the heat load of rooms, please select the nearest load capacity of indoor units with given load according to the local weather parameter, area, cubage and structure of rooms.

2.1.2 Selecting the proper indoor units including the type of indoor units (Such as the four way cassette, duct and so on).

2.1.3 Pay attention to the requirements of customers and local corresponding design standards.

CAUTION: The described capacity may be different from each indoor unit according to combination. So the real capacity should be calculated with outdoor unit capacity table.

2.2 Outdoor unit selection

The allowable combination is described on the indoor combination total capacity index table.

For the standard of the indoor unit and outdoor unit combination, select the nearest value that the total indoor unit capacity index is less than 130% outdoor unit capacity index.

Indoor unit combination total capacity index (kW)

Outdoor Unit	Indoor unit combination						
	130%	100%	90%	80%	70%	60%	50%
HCSU 2501 XRV	32.8	25.2	22.7	20.1	17.6	15.1	12.6
HCSU 3001 XRV	36.4	28.0	25.2	22.4	19.6	16.8	14.0
HCSU 3501 XRV	43.6	33.5	30.2	26.8	23.5	20.2	16.8
HCSU 4001 XRV	52.0	40.0	36.0	32.0	28.0	24.0	20.0
HCSU 4501 XRV	58.5	45.0	40.5	36.0	31.5	27.0	22.5

Indoor unit capacity index

Unit size	22	28	36	45	56	71	80	90	112	140	280
Capacity index (kW)	2.2	2.8	3.6	4.5	5.6	7.1	8.0	9.0	11.2	14.0	28.0

2.3 Real function data

2.3.1 Select the exact table according to outdoor unit model and combination rate using outdoor unit capacity table. According to given indoor and outdoor temperature, find outdoor unit capacity and power input using the table. Each indoor unit capacity (Power input) is calculated as follows:

IUC=OUC × INX/TNX

IUC: Each indoor unit capacity

OUC: Outdoors unit capacity

INX: Each indoor unit capacity index

TNX: Total capacity index

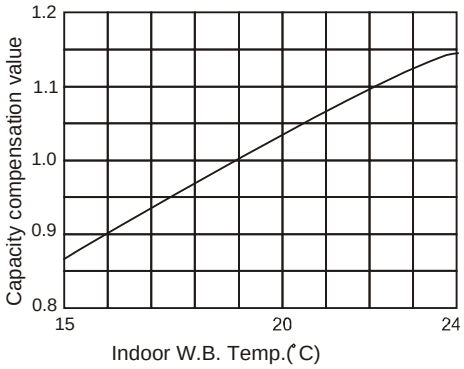
2.3.2 According to different pipe lengths and height difference, the indoor unit capacity will change accordingly. If the changed capacity is smaller than load, replace it with a larger capacity indoor unit and repeat the selecting progress.

2.4 Variation in capacity in accordance with the length of refrigerant pipe

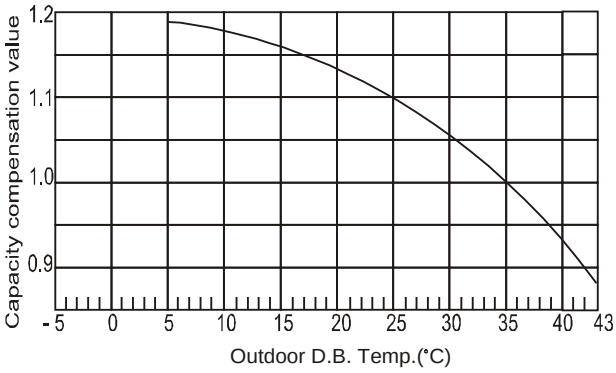
2.4.1 Cooling capacity modification

Effectual cooling capacity=Rated cooling capacity **×** Modification coefficient **(□×□×□×□)**

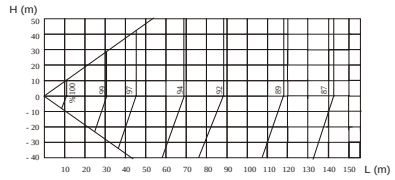
2.4.1.1 Modification coefficient of indoor W.B. temperature



2.4.1.2 modification coefficient of outdoor D.B. temperature



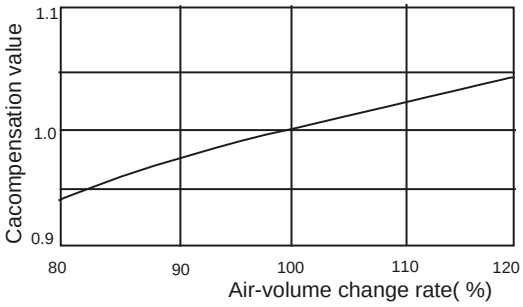
2.4.1.3 Modification coefficient of the length and high difference of refrigerant pipe:



L: Refrigerant pipe equivalent length

H: Height difference between outdoor and indoor

2.4.1.4 Modification coefficient of indoor air-volume changing rate:

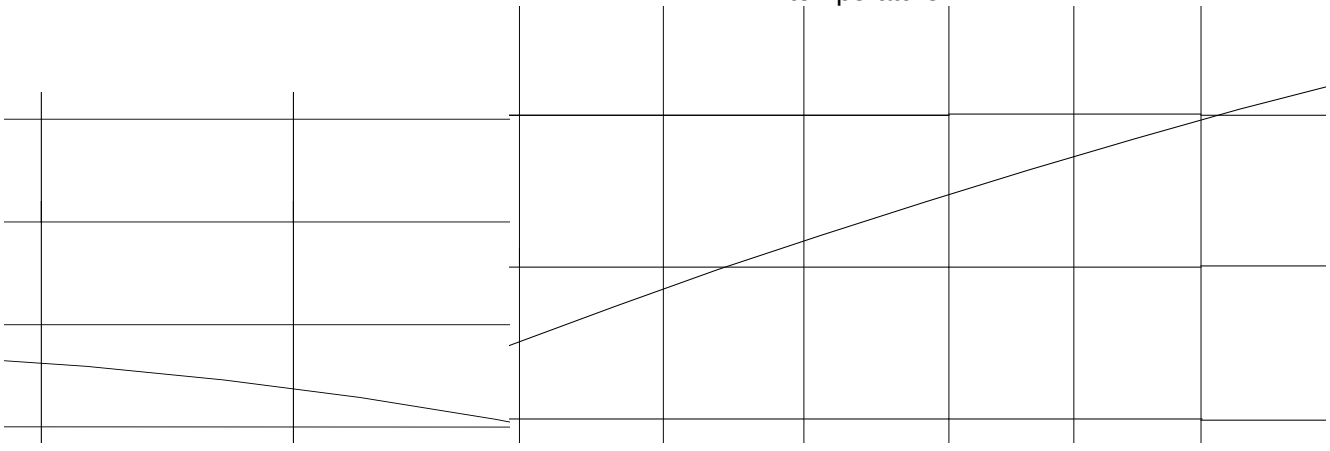


2.4.2 Heating capacity modification

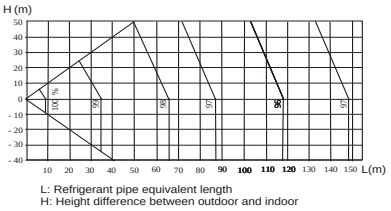
Effectual heating capacity=Rated heating capacity × Modification coefficient (□×□×□×□)

2.4.2.1 Modification coefficient of indoor D.B. temperature

2.4.2.2 modification coefficient of outdoor W.B. temperature

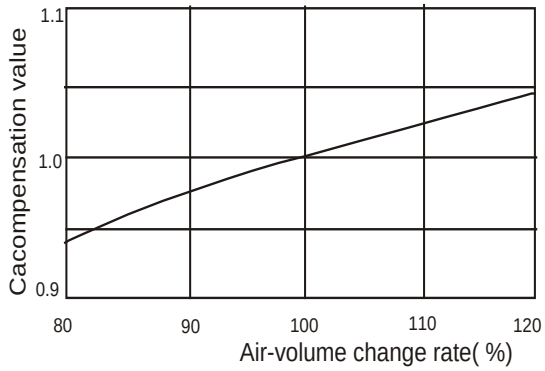


2.4.2.3 Modification coefficient of the length and high difference of refrigerant pipe:



L: Refrigerant pipe equivalent length
H: Height difference between outdoor and indoor

2.4.2.4 Modification coefficient of indoor air-volume changing rate:



2.5 Example for unit selection with cooling load

2.5.1 Given condition

2.5.1.1 Design condition (Cooling: Indoor 20°C (WB), Outdoor 35°C (DB))

2.5.1.2 Cooling load

Location	Room A	Room B	Room C	Room D	Room E	Room F
Load (kW)	2.1	2.8	3.5	4.6	5.8	7.2

2.5.1.3 Power supply unit: Outdoor 3 Phase 380V 50Hz, Indoor 1 Phase 220V 50Hz

2.5.1.4 Pipe length: 50m

2.5.1.5 Height difference: 30m

2.5.2 Indoor unit selection

Select the suitable capacity for condition of 'Indoor 20°C (WB), Outdoor 35°C (DB)' using indoor unit capacity table. The selected result is as follows. (Assuming the indoor unit type is duct)

Location	Room A	Room B	Room C	Room D	Room E	Room F
Load (kW)	2.1	2.8	3.5	4.6	5.8	7.2
Unit size	22	28	36	45	56	71
Capacity (kW)	2.5	3.1	3.9	4.9	6.0	7.6

2.5.3 Outdoor unit selection

2.5.3.1 Assume the indoor unit and outdoor unit combination as follows

2.5.3.1.1 Calculate the total nominal capacity of indoor units in the combination according to the above table:

2.2 × 1 +2.8 × 1+ 3.6 × 1 +4.5 × 1+ 5.6 × 1 + 7.1 × 1 = 25.8KW

2.5.3.1.2 Select outdoor unit: MDV-280W/ DSN1 which has nominal cooling capacity: 28kW.

Calculate the proportion between □ and □: 258/280= 92%

2.5.3.2 Result : Because the proportion is within 50 ~ 130%, it is a ”Right” selection.

2.5.3.3 Real function data with indoor unit combination

- For the 92% combination, calculate the cooling capacity of outdoor unit (HCSU 3001 XRV).
  26.73kW ←90 % (Indoor temperature: WB 20°C, Outdoor temperature: DB 35°C)
  28.30kW ←100 %(Indoor temperature: WB 20°C, Outdoor temperature: DB 35°C)
  Then calculated the outdoor capacity in 92% combination index:
  Therefore: 26.73 + {(28.30 –26.73)/ 10} ×2= 27.04;
- Outdoor unit (HCSU 3001 XRV) cooling temperature: DB 35°C
- Capacity modification coefficient with pipe length (50m) and height difference (30m): 0.958
- Each indoor unit cooling capacity
  HFLU 221 XRV: 27.04 × 22/258 × 0.958 = 2.21(kW)
  HFLU 281 XRV: 27.04 × 28/258 ×0.958 = 2.81 (kW)
  HFLU 361 XRV: 27.04 × 36/258 ×0.958 = 3.61 (kW)
  HFLU 451 XRV: 27.04 × 45/258 ×0.958 = 4.52 (kW)
  HFLU 561 XRV: 27.04 × 56/258 ×0.958 = 5.62 (kW)
  HFLU 711 XRV: 27.04 × 71/258 ×0.958 = 7.13 (kW)

Location	Room A	Room B	Room C	Room D	Room E	Room F
Load (KW)	2.1	2.8	3.5	4.6	5.8	7.2
Unit size	22	28	36	45	56	71
Capacity (KW)	2.21	2.81	3.61	4.52	5.62	7.13

2.5.4 Conclusion: Generally, we think this result is acceptable, so we can think we have accomplished the calculation. But if you think this result is not acceptable, you can repeat the over process.

Remark: In this sample, we don’t consider the other capacity modification index and assume them is 1.

3. Specifications

Sale Model			HCSU 2501 XRV	HCSU 3001 XRV	HCSU 3501 XRV
Power supply		V-Ph-Hz	380V 3N~ 50Hz	380V 3N~ 50Hz	380V 3N~ 50Hz
Cooling	Capacity	kW	25,00	30,00	35,00
	Input	kW	7,13	8,17	9,84
	Rated current	A	10,30	13,10	16,70
Heating	Capacity	kW	28,00	33,00	38,00
	Input	kW	6,88	7,98	9,21
	Rated current	A	10,50	13,00	15,30
EER			3,51	3,67	3,56
COP			4,07	4,14	4,13
Max. input consumption		W	14500	14500	14500
Max. current		A	24,5	24,5	24,5
Compressor	Model		E405AHD-36D2Y	E405AHD-36D2Y	E405AHD-36D2Y
	Type		DC Invert compressor	DC Invert compressor	DC Invert compressor
	Brand		Hitachi	Hitachi	Hitachi
	Supplier		Hitachi	Hitachi	Hitachi
	Capacity	Btu/h	11880	11880	11880
	Input	W	3665	3665	3665
	Rated current(RLA)	A	9,5	9,5	9,5
	Thermal protector		Inner protect	Inner protect	Inner protect
	Capacitor	uF			
	Refrigerant oil	ml	FVC68D / 500ml	FVC68D / 500ml	FVC68D / 500ml
Compressor	Model		E505DH-49D2Y	E605DH-59D2Y	E605DH-59D2Y
	Type		Fixed Scroll compressor	Fixed Scroll compressor	Fixed Scroll compressor
	Brand		Hitachi	Hitachi	Hitachi
	Supplier		Hitachi	Hitachi	Hitachi
	Capacity	W	12950	15470	15470
	Input	W	4250	4520	4520
	Rated current(RLA)	A	8	8,5	8,5
	Thermal protector		Inner protect	Inner protect	Inner protect
	Capacitor	uF			
	Refrigerant oil	ml	FVC68D / 500ml	FVC68D / 500ml	FVC68D / 500ml
Outdoor fan motor	Model		YDK400-8A 202400400031	YDK400-8A 202400400031	YDK350-6A (×2) 202400420230
	Brand		Yongan	Yongan	Weilling
	Input	W	647/460	647/460	575/385 (×2)
	Capacitor	uF	25	25	20(×2)
	Speed	r/min	670/540	670/540	760/540 (×2)
Outdoor coil	Number of rows		2	2	2
	Tube pitch(a)x row pitch(b)	mm	25.4x22	25.4x22	25.4x22
	Fin spacing	mm	1,5	1,5	1,7
	Fin type (code)		hydrophilic aluminium	hydrophilic aluminium	hydrophilic aluminium
	Tube outside dia.and type	mm	9,53	9,53	9,53
			inergroove tube	inergroove tube	inergroove tube

	Coil length x height x width	mm	1970×1118×44	1970×1118×44	2223×1219×44
	Number of circuits		22	22	24
Outdoor air flow		m^3/h	12500	12500	7000×2
Outndoor noise level(Sound pressure)		dB(A)	57	57	58
Outdoor unit	Dimension(W×H×D)	mm	980×800×1615	980×800×1615	1380×830×1630
	Packing (W×H×D)	mm	1045×865×1790	1045×865×1790	1450×900×1790
	Net/Gross weight	kg	300/320	300/320	330/350
Refrigerant type		g	R410A/11000g	R410A/11000g	R410A/13000g
Throttle type			Electric expansive valve	Electric expansive valve	Electric expansive valve
Design pressure		MPa	4.2/2.6	4.2/2.6	4.2/2.6
Refrigerant piping	Liquid side/ Gas side	mm	Φ12.7/Φ25.4	Φ12.7/Φ25.4	Φ12.7/Φ25.4
	Oil balance pipe	mm	Φ6.35	Φ6.35	Φ6.35
	Gas balance pipe	mm	Φ19.1	Φ19.1	Φ19.1
	Max. refrigerant pipe length	m	175	175	175
	Max. defference between indoor units	m	15	15	15
	Max. difference between outdoor unit and indoor unit	m	70	70	70
Connection wiring	Power wiring	$Nb×mm^2$	4×16	4×16	4×16
	Signal wiring	$Nb×mm^2$	3×1.0	3×1.0	3×1.0
Operation temp		℃	Cooling:-≥17℃; Heating:≤28℃	Cooling:-≥17℃; Heating:≤28℃	Cooling:-≥17℃; Heating:≤28℃
Ambient temp		℃	Cooling:-5℃-48℃; Heating:-15℃-27℃	Cooling:-5℃-48℃; Heating:-15℃-27℃	Cooling:-5℃-48℃; Heating:-15℃-27℃
Application area		m^2	101 ~ 168	112 ~ 187	134 ~ 223

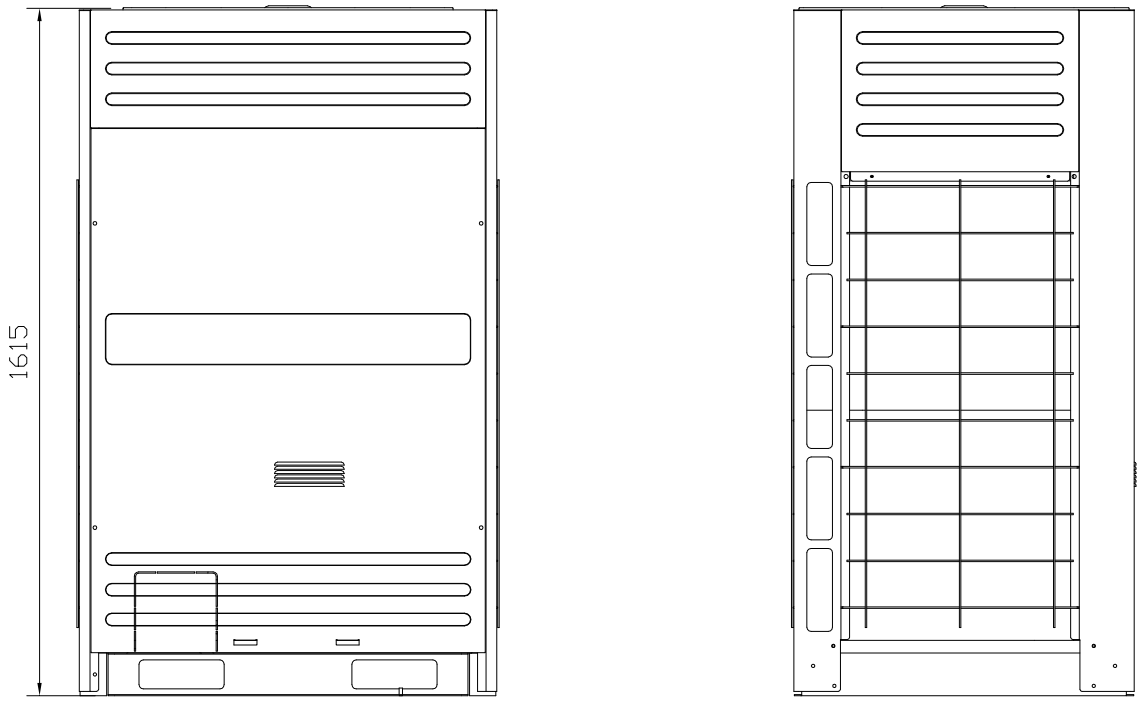
Sale Model			**HCSU 4001 XRV**	**HCSU 4501 XRV**
Power supply		V-Ph-Hz	380V 3N~ 50Hz	380V 3N~ 50Hz
Cooling	Capacity	kW	40,00	45,00
	Input	kW	11,36	12,94
	Rated current	A	20,70	23,70
Heating	Capacity	kW	45,00	50,00
	Input	kW	10,87	12,12
	Rated current	A	18,90	21,30
EER			3,52	3,48
COP			4,14	4,13
Max. input consumption		W	20700	20700
Max. current		A	33	33
Compressor	Model		E405AHD-36D2Y	E405AHD-36D2Y
	Type		DC Invert compressor	DC Invert compressor
	Brand		Hitachi	Hitachi
	Supplier		Hitachi	Hitachi
	Capacity	Btu/h	11880	11880
	Input	W	3665	3665
	Rated current(RLA)	A	9,5	9,5
	Thermal protector		Inner protect	Inner protect
	Capacitor	uF		
	Refrigerant oil	ml	FVC68D / 500ml	FVC68D / 500ml
Compressor	Model		E505DH-49D2Y(×2)	E605DH-59D2Y(×2)
	Type		Fixed Scroll compressor	Fixed Scroll compressor
	Brand		Hitachi	Hitachi
	Supplier		Hitachi	Hitachi
	Capacity	W	12950(×2)	15470(×2)
	Input	W	4250(×2)	4520(×2)
	Rated current(RLA)	A	8(×2)	8.5(×2)
	Thermal protector		Inner protect	Inner protect
	Capacitor	uF		
	Refrigerant oil	ml	FVC68D / 500ml	FVC68D / 500ml
Outdoor fan motor	Model		YDK450-6A (×2) 202400420231	YDK450-6A (×2) 202400420231
	Brand		Weilling	Weilling
	Input	W	720/420(×2)	720/420(×2)
	Capacitor	uF	20(×2)	20(×2)
	Speed	r/min	810/530(×2)	810/530(×2)
Outdoor coil	Number of rows		3	3
	Tube pitch(a)x row pitch(b)	mm	25.4x22	25.4x22
	Fin spacing	mm	1,7	1,7
	Fin type (code)		hydrophilic aluminium	hydrophilic aluminium
	Tube outside dia.and type	mm	9,53	9,53
			inergroove tube	inergroove tube
	Coil length x height x width	mm	2170×609.6×66	2170×609.6×66
	Number of circuits		24	24
Outdoor air flow		m^3/h	7000×2	7000×2

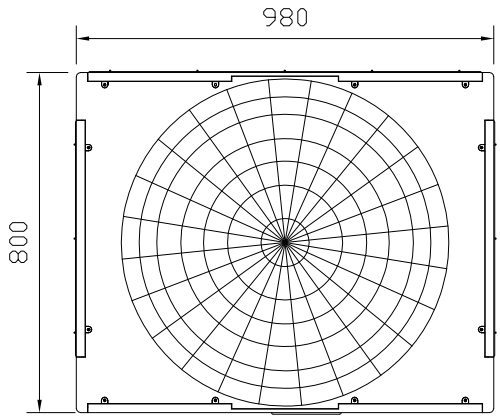
Outndoor noise level(Sound pressure)		dB(A)	60	60
Outdoor unit	Dimension(W×H×D)	mm	1380×830×1630	1380×830×1630
	Packing (W×H×D)	mm	1450×900×1790	1450×900×1790
	Net/Gross weight	kg	400/420	400/420
Refrigerant type		g	R410A/16000g	R410A/16000g
Throttle type			Electric expansive valve	Electric expansive valve
Design pressure		MPa	4.2/2.6	4.2/2.6
Refrigerant piping	Liquid side/ Gas side	mm	Φ15.9/Φ28.6	Φ15.9/Φ28.6
	Oil balance pipe	mm	Φ6.35	Φ6.35
	Gas balance pipe	mm	Φ19.1	Φ19.1
	Max. refrigerant pipe length	m	175	175
	Max. defference between indoor units	m	15	15
	Max. difference between outdoor unit and indoor unit	m	70	70
Connection wiring	Power wiring	Nb×mm^2	4×16	4×16
	Signal wiring	Nb×mm^2	3×1.0	3×1.0
Operation temp		℃	Cooling:-≥17℃; Heating:≤28 ℃	Cooling:-≥17℃; Heating:≤28 ℃
Ambient temp		℃	Cooling:-5℃-48℃; Heating:-15℃-27℃	Cooling:-5℃-48℃; Heating:-15℃-27℃
Application area		m^2	160 ~ 267	180 ~ 300

4. Dimensions

4.1 HCSU 2501 XRV HCSU 3001 XRV

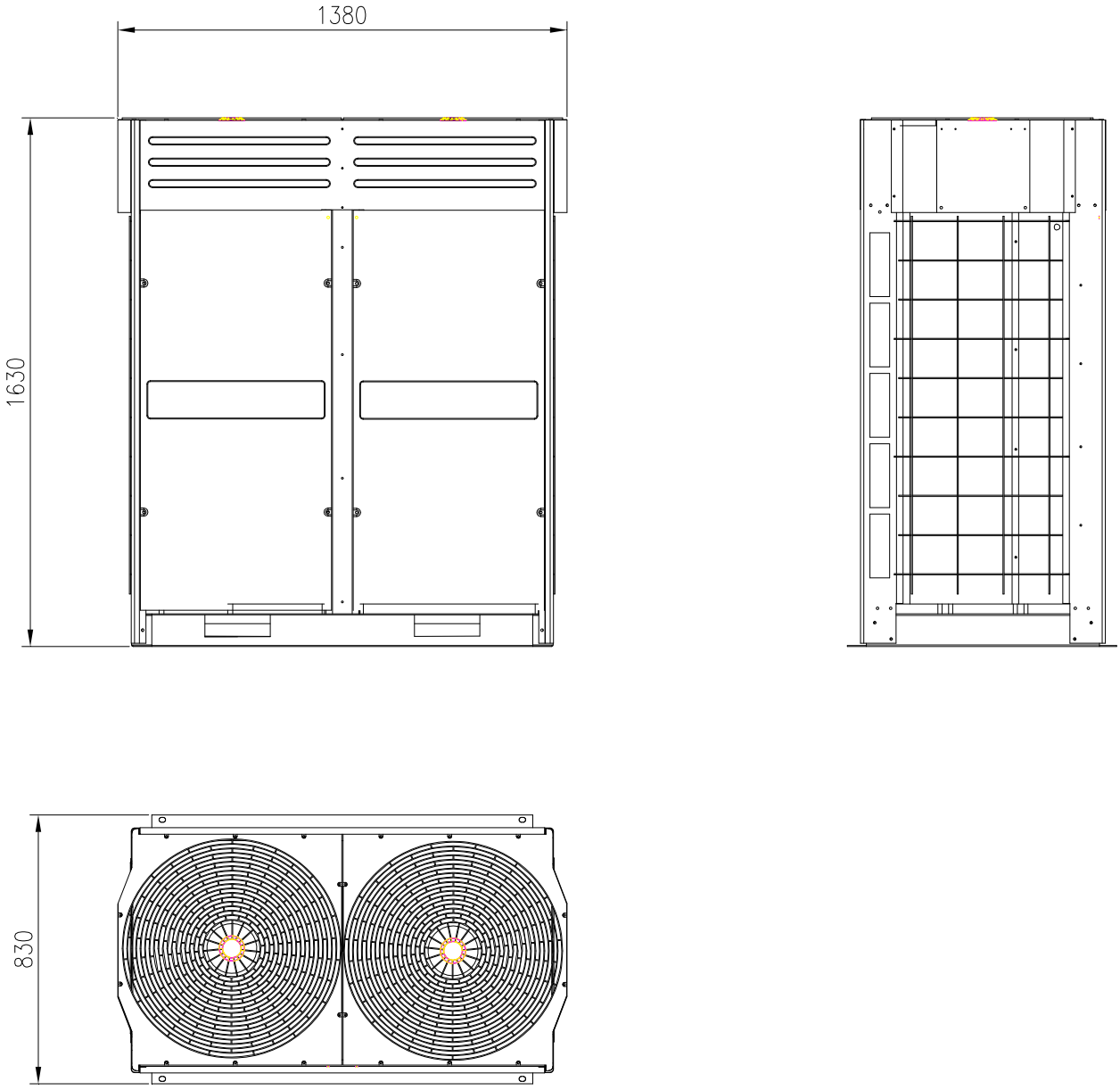
(Unit: mm)





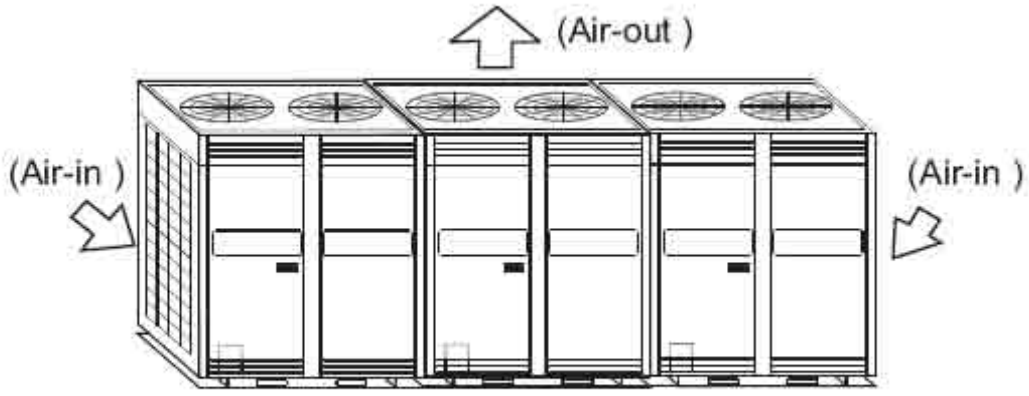
4.2 HCSU 3501 XRV HCSU 4001 XRV HCSU 4501 XRV

(Unit: mm)

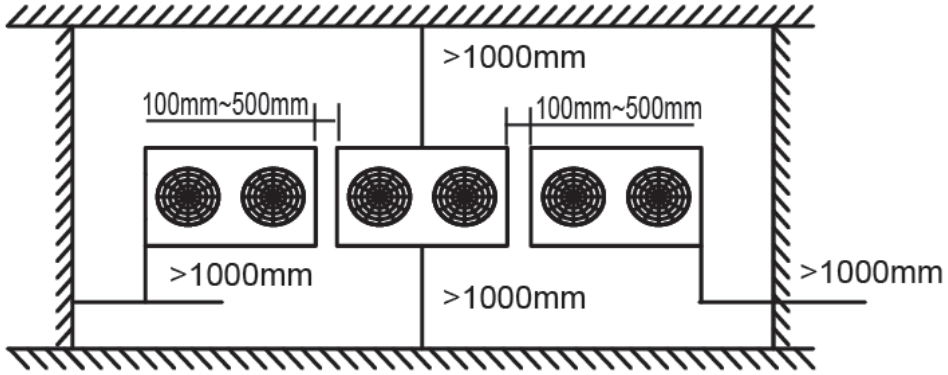


5. Service Space

5.1 Power supply equipment is preferred to be installed by the side of the outdoor unit;
5.2 Ensure there is sufficient space for the maintenance of the outdoor unit. The modules in the same system must be on the same height.



5.3 Proper space between outdoor units should be kept;

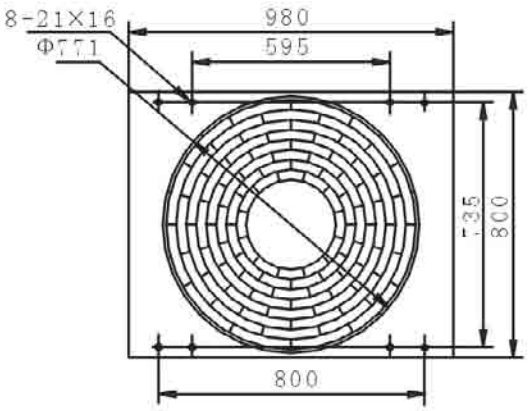


Top view of the outdoor unit

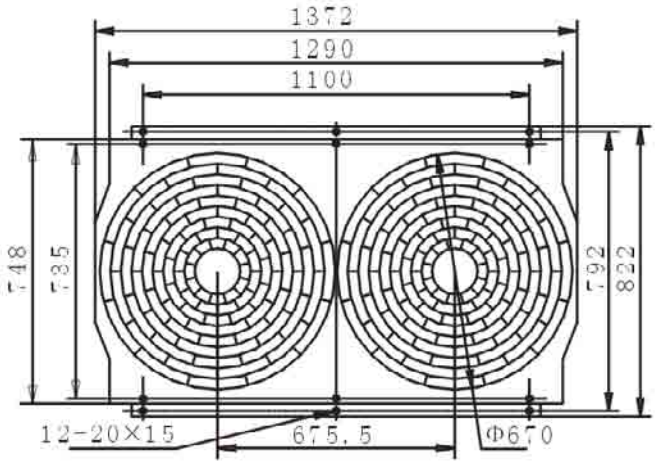
5.4 Distance between ground bolt is shown below:
(Note: Outdoor units in the same system should be located in the same level.

(Unit: mm)

HCSU 2501 XRV HCSU 3001 XRV



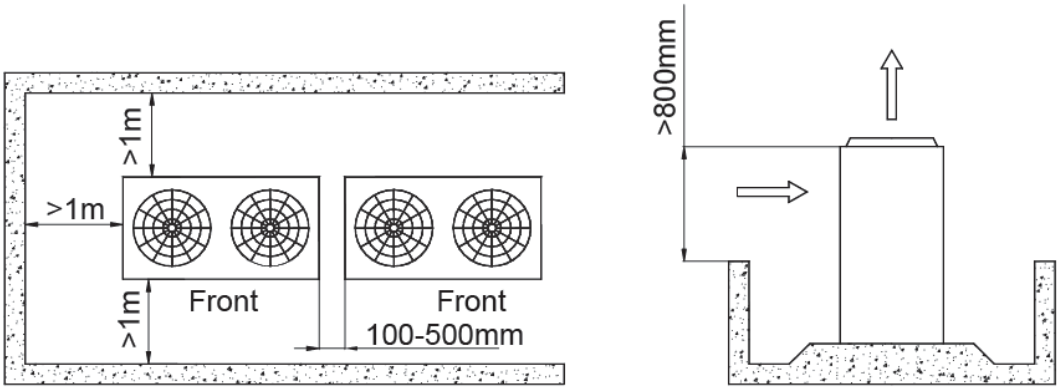
HCSU 3501 XRV HCSU 4001 XRV HCSU 4501 XRV



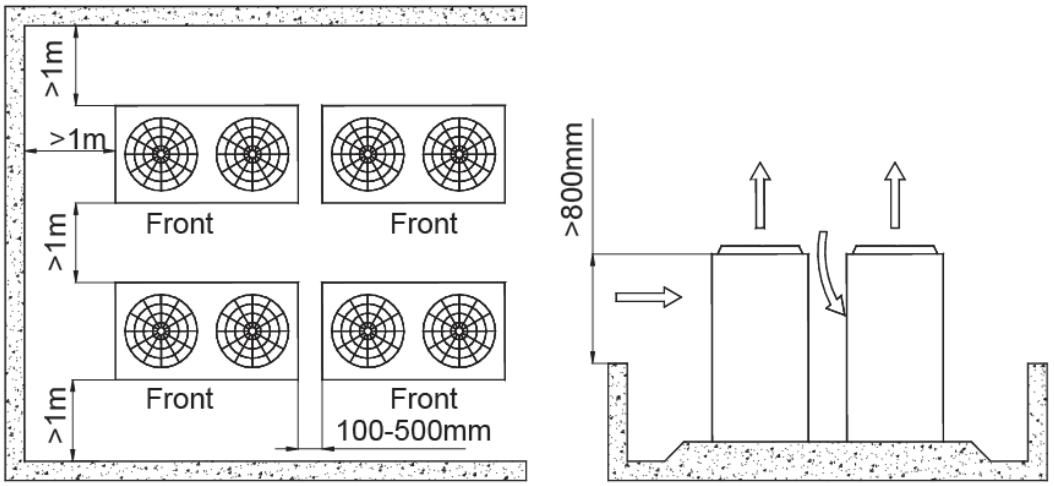
5.5 Outdoor unit arrangement

Outdoor units are higher than the surrounding buildings

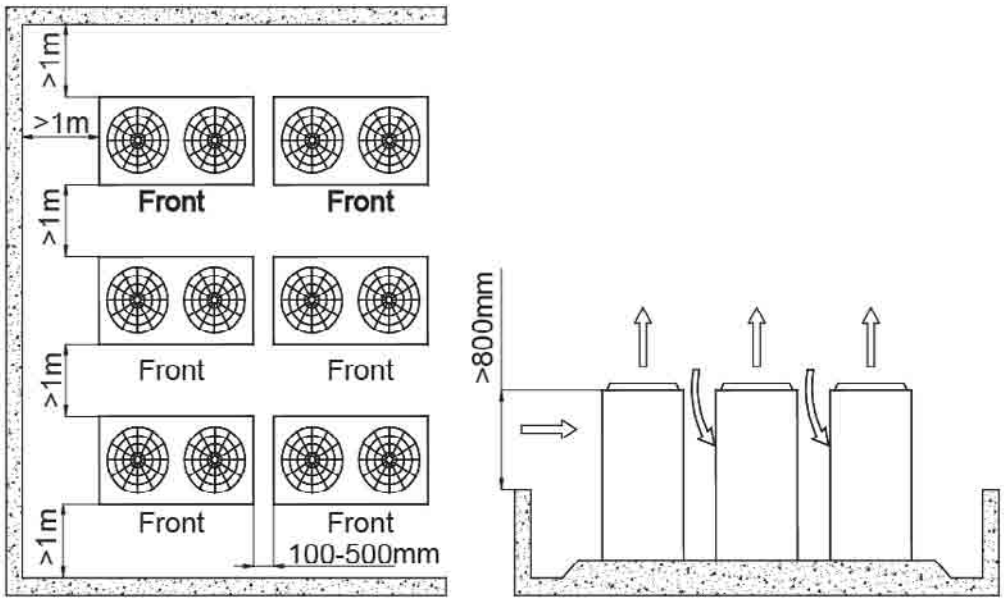
Outdoor units are aligned in one line



Outdoor units are aligned in two lines

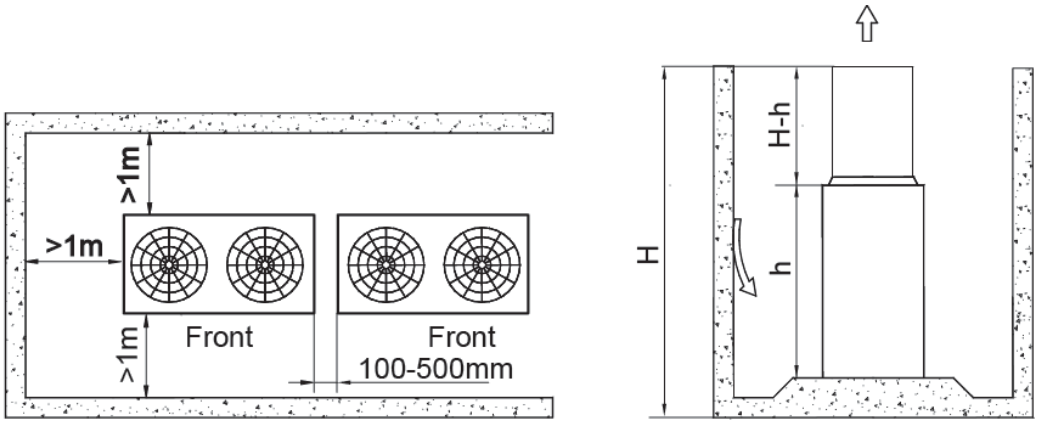


More than 2 lines of outdoor units

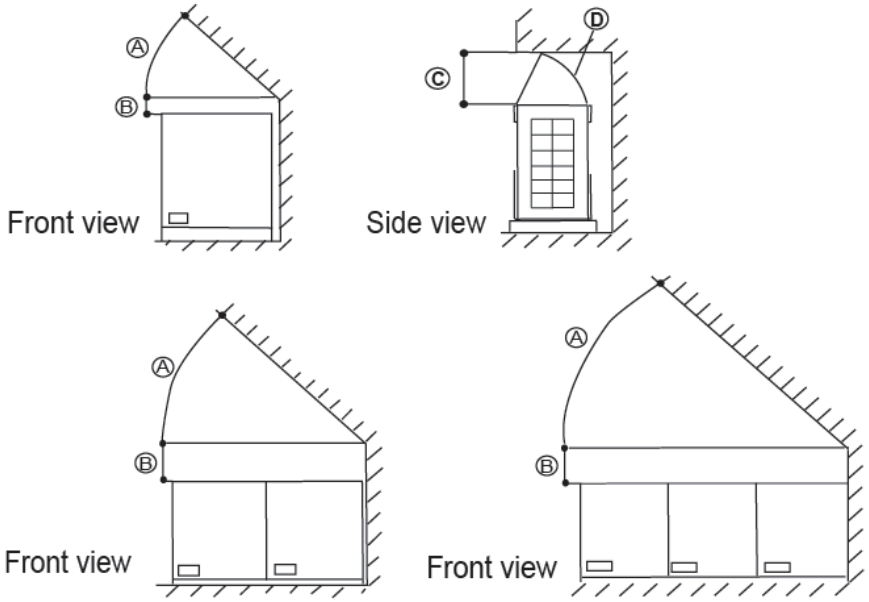


5.6 Outdoor units are lower than the surrounding obstacles

If the outdoor units are lower than the surrounding obstacles, in order to ensure an effective “heat exchange “a conduit is strongly recommended to help the heat emission and avoid the discharging air being absorbed into the system again. The conduit is made on the installation spot with the height HD=H-h. (Note: Because the outdoor fan motor has no enough static pressure, the Max. Length should be less than 3meters.)



5.7 When there are obstacles above the outdoor unit:



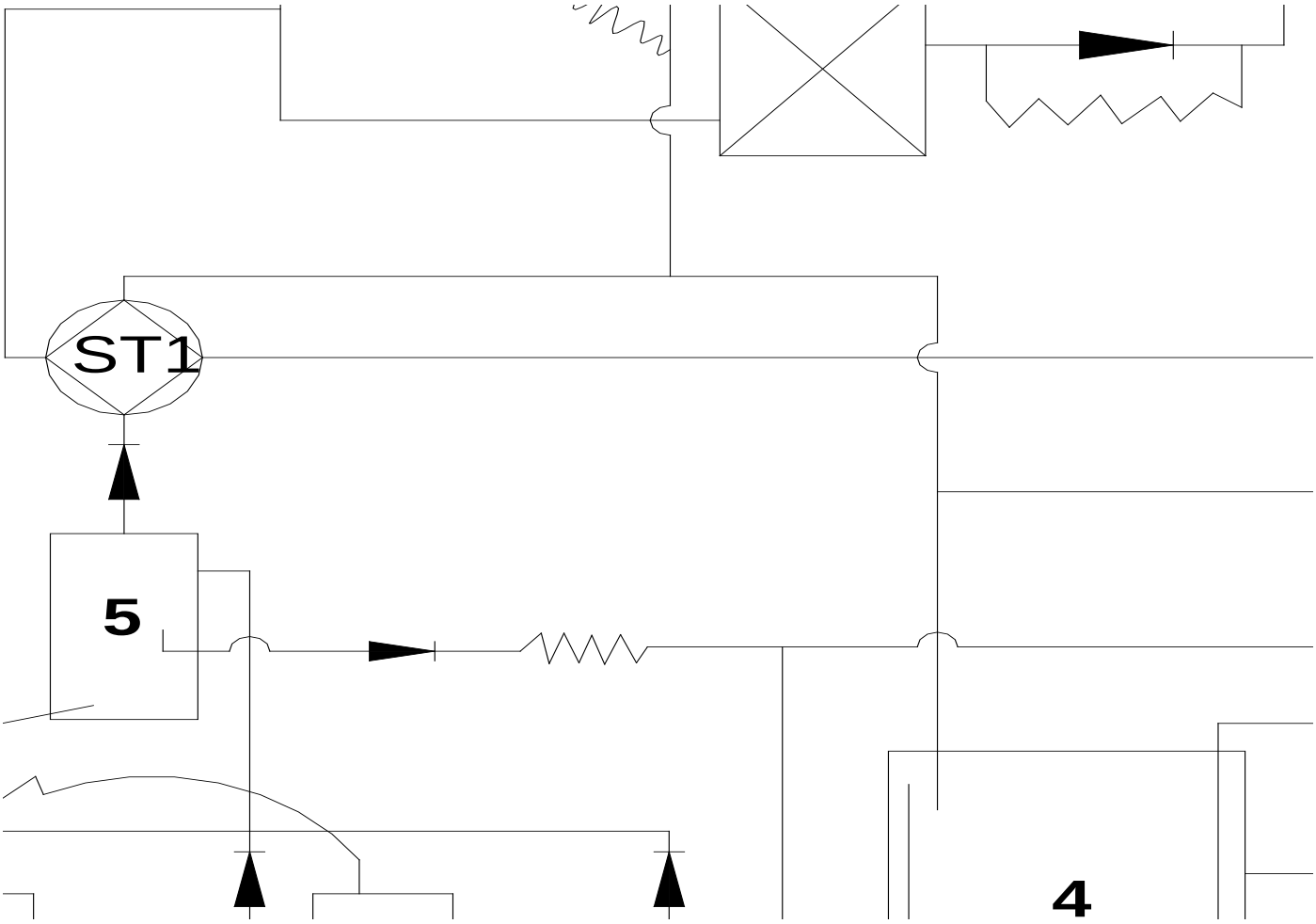
Ⓐ >45° Ⓑ >300mm

Ⓒ >1000mm Ⓓ Airflow deflector

Note: If miscellaneous articles are piled around the outdoor unit, such articles must be 800mm below the top of the outdoor unit. Otherwise, a mechanic exhaust device must be added.

6. Piping Diagram

Take HCSU 4001 XRV for example:



Remark:

1: DC Inverter compressor

2/3: Fixed compressor

4: Gas-liquid separator

5: Oil separator

Note: Model MDV-252(8)W/DSN1、MDV-280(10)W/DSN1, MDV-335(12)W/DSN1 has only one fixed compressor, ,model MDV-400(14)W/DSN1, MDV-450(16)W/DSN1 have two fixed compressors.

EXV (electromagnetic expand valve) control:

1) Every outdoor unit has two same EXV.
2) Max. Open degree is 480 pulses.
3) Generally when system is electrified the EXV closes 700pulse first, then opens to 350 pulse and stand by. Then the unit is started, it opens to the right pulse.
4) When the running outdoor unit receives OFF signal, the EXV of auxiliary unit will stop while main unit is running and auxiliary unit is stopped at the same time. If all outdoor units are stopped, the EXV will close first, then open to the pulse of stand-by.
5) **SV1:** Opens when outdoor unit starts. Closes when unit stops.
6) **SV2:** for spraying a little refrigerant to cool compressor down.
   Opens if any compressor discharge temp. is higher than 100□.
7) **SV3:** for changing the heat-exchanged areas on heating mode.
   Opens when the average temp. of all indoor evaporators is less than 46□.
   Closes while the average temp. of all indoor evaporators more than 52□
   OFF on cooling mode

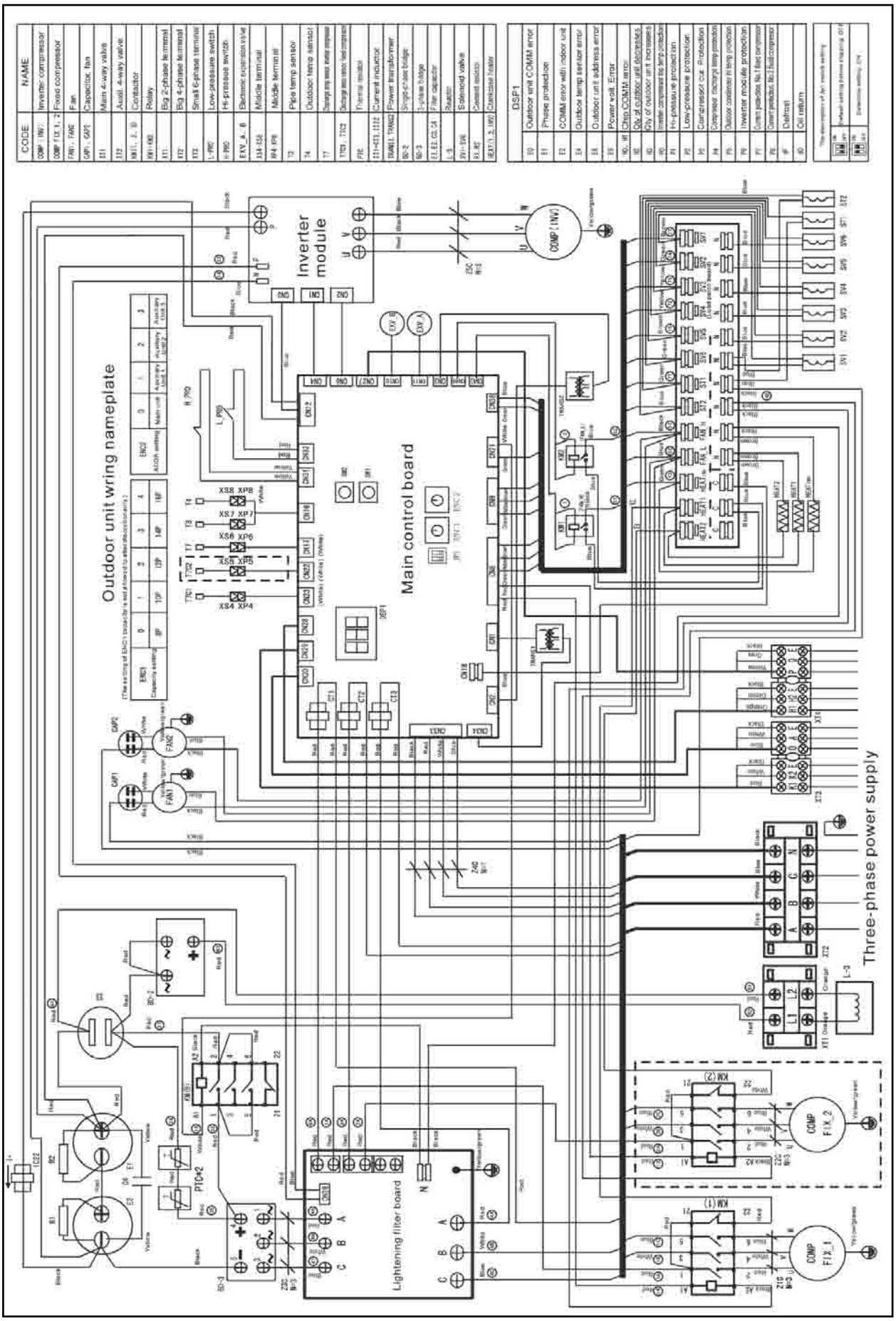
8) **SV4:** oil returning valve.
   Opens when the unit is running for every 20 minutes and last 3 minutes
9) **SV5:** for defrost.
   In defrosting mode, the opening of SV5 can cut the refrigerant flowing circle, so the defrosting process will takes less time.
10) **SV6:** for by-pass.
    Closes when the unit stands by and system in heating mode.
    Opens when the discharge temperature is too high in cooling mode.

Four-way valve control:

1) **ST1:** Main 4-way valve
   Closes in cooling mode and opens in heating mode
2) **ST2:** Auxiliary 4-way valve, for changing the heat-exchanger areas in cooling mode.
   Opens when in part load mode and closes while in full load mode.
   Closes in heating mode.

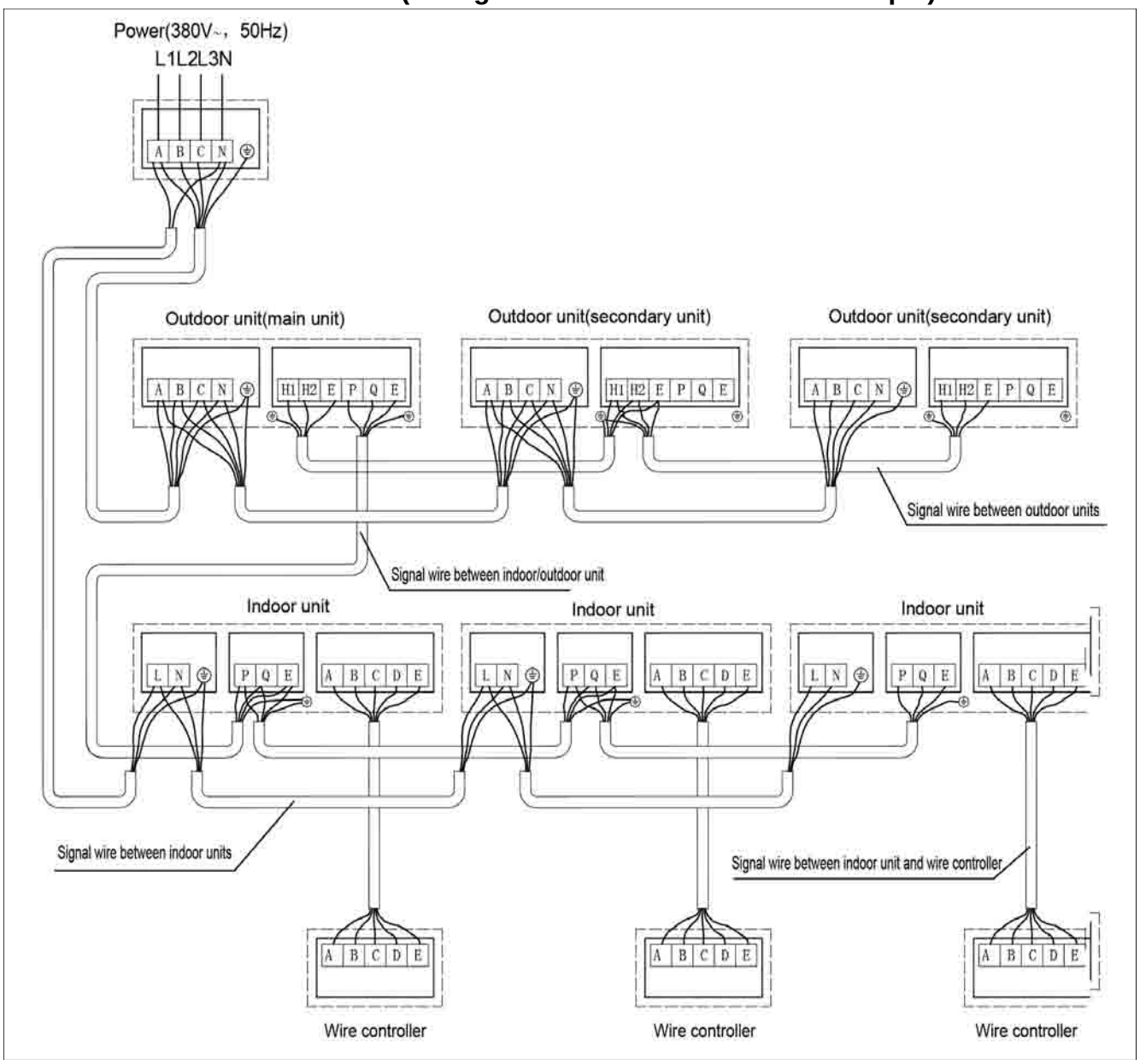
7. Wiring Diagram

HCSU 2501-3001-3501-4001-4501 XRV



8. Field Wiring

8.1 Connection of control wire (taking multi-connected unit for example)

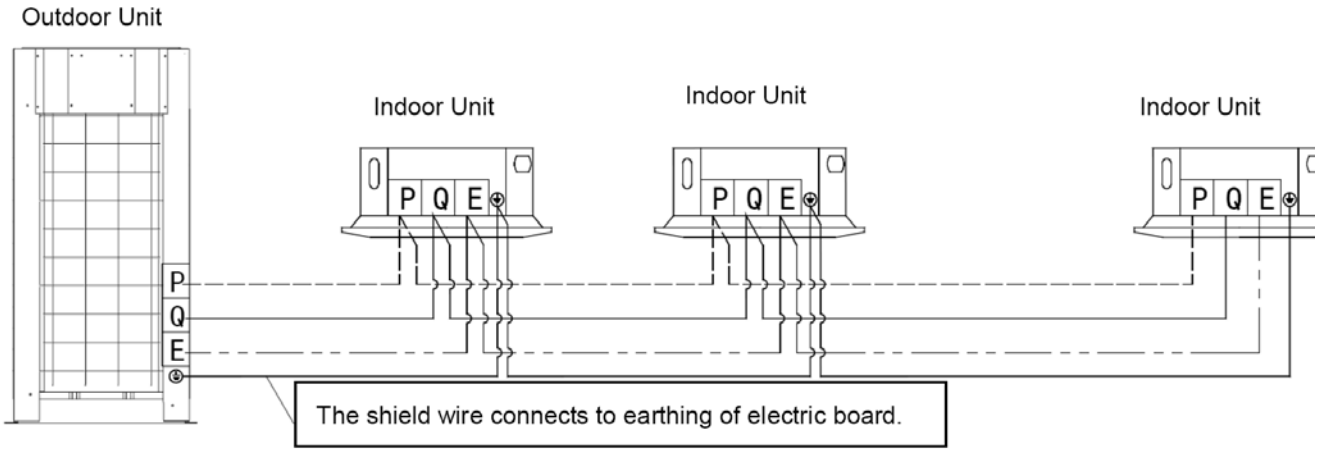


Note:

1. The signal connecting line between outdoor units, indoor and outdoor units and indoor units has polarity. When connecting, be careful to prevent error connection.
2. Signal line shall adopt three-core shielded wire with an area above 0.75 mm^2.
3. Do not bind signal line and copper pipe together with belting.

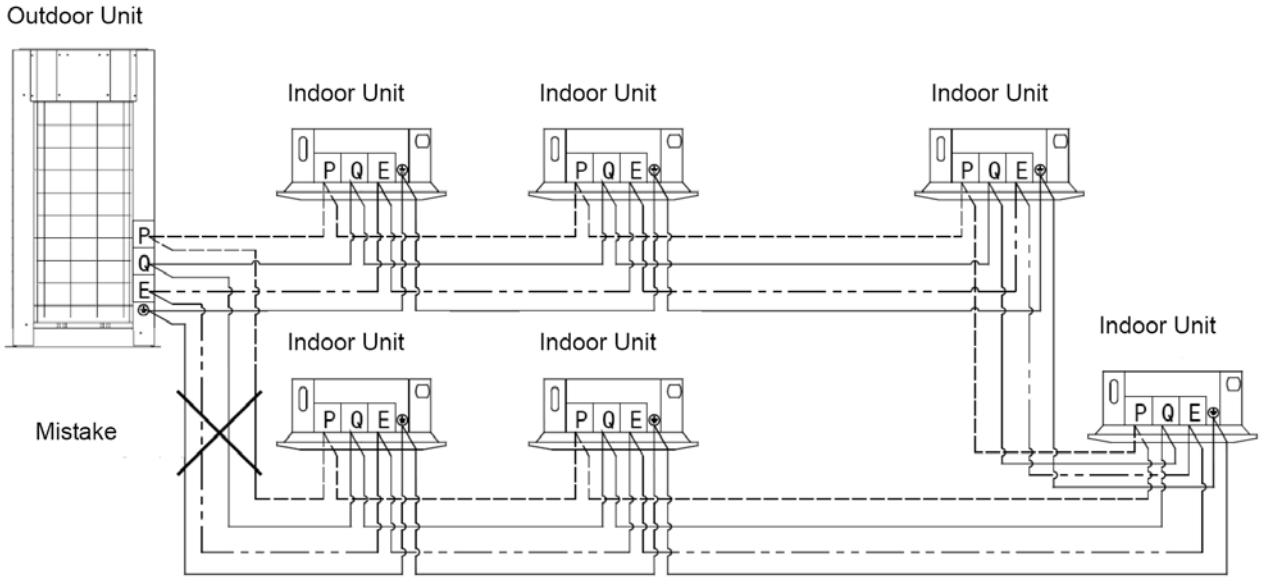
8.2 Control Wiring Connection Method

1) Correct connection



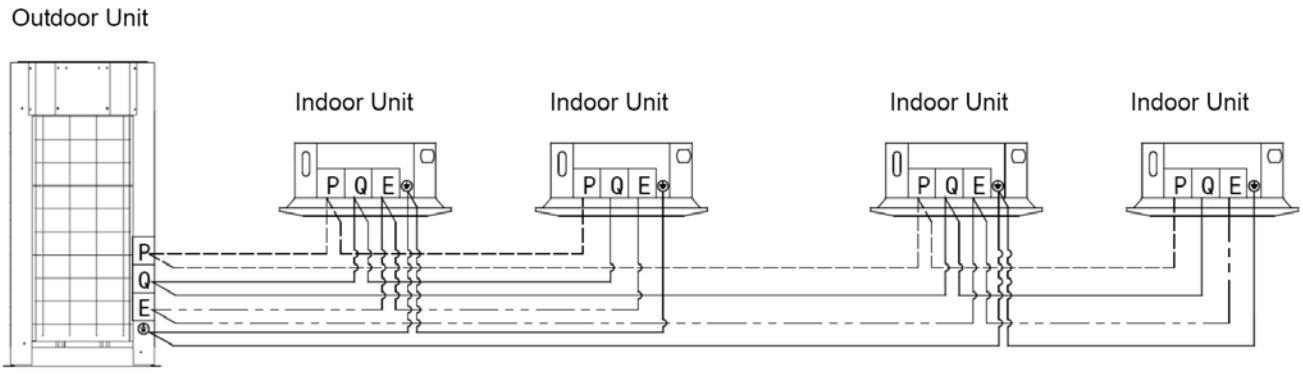
2) Typical wrong connection

a. Annular connection of signal line

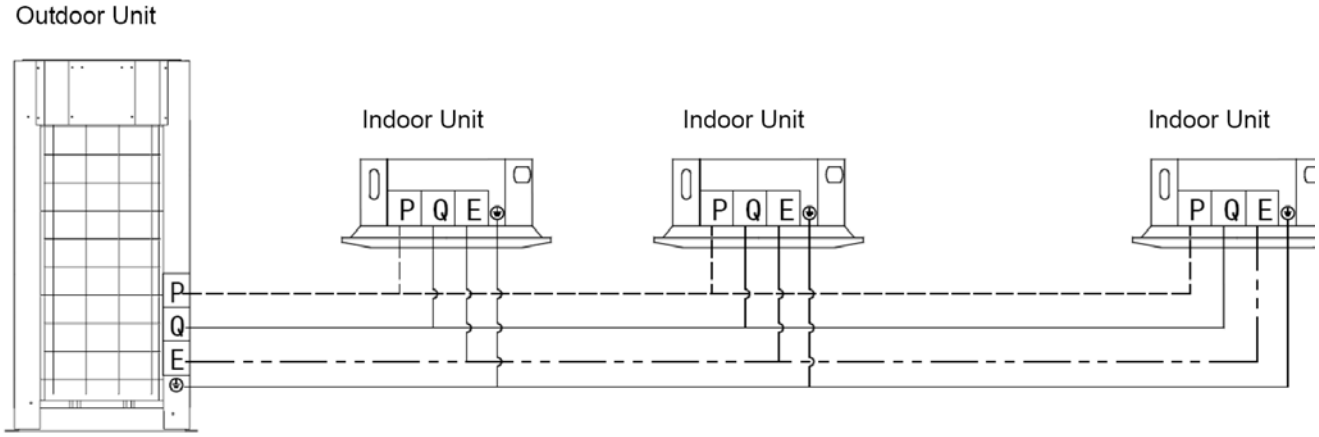


b. Star connection of signal line

● Star connection of part signal line

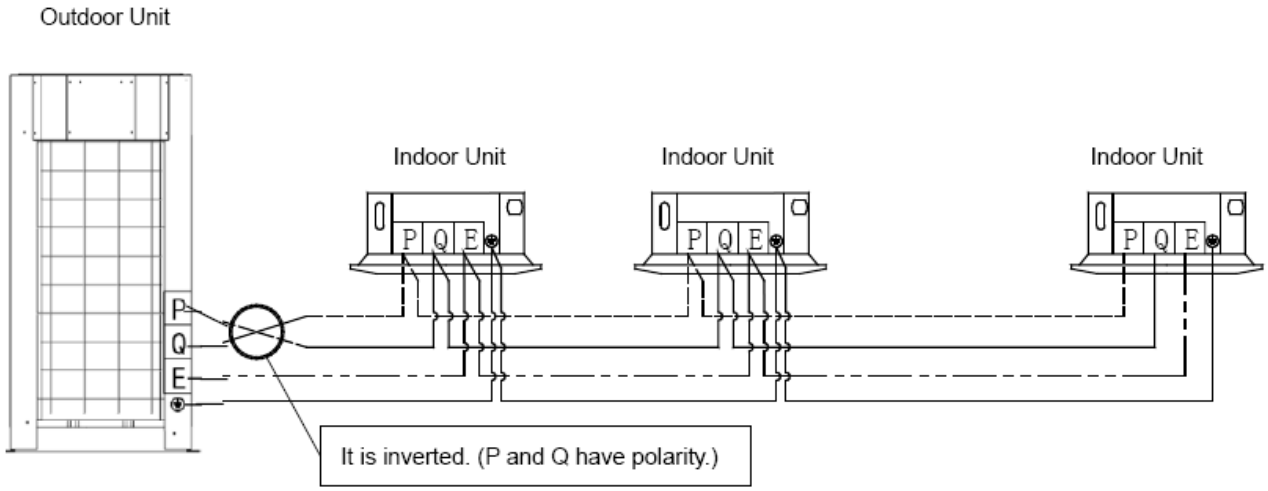


● Star connection of all signal line

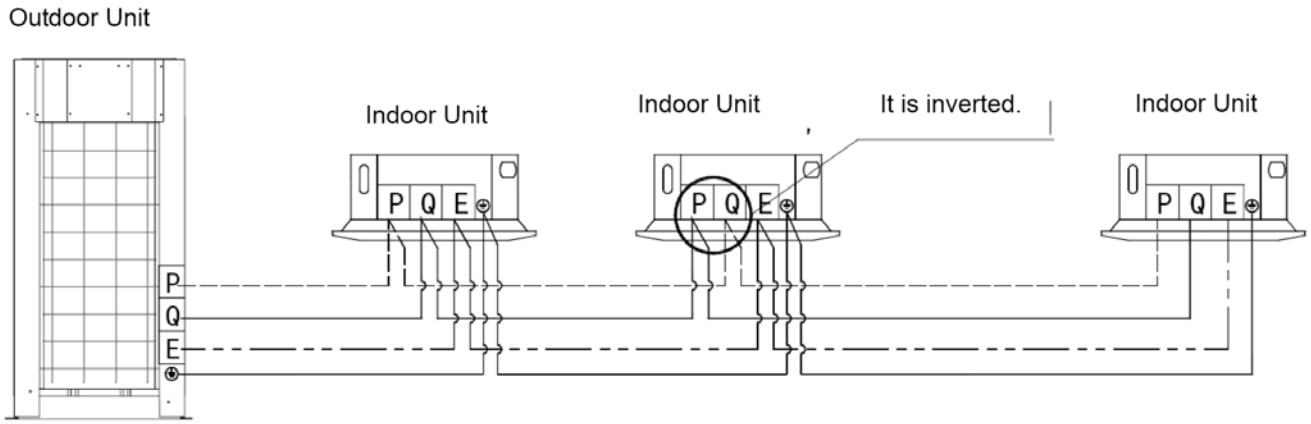


c. Reverse connection of signal line

● Outdoor unit — indoor unit



●Indoor unit — indoor unit



Caution: shielded layer shall be connected to electrical panel.

Specification of Control Wiring

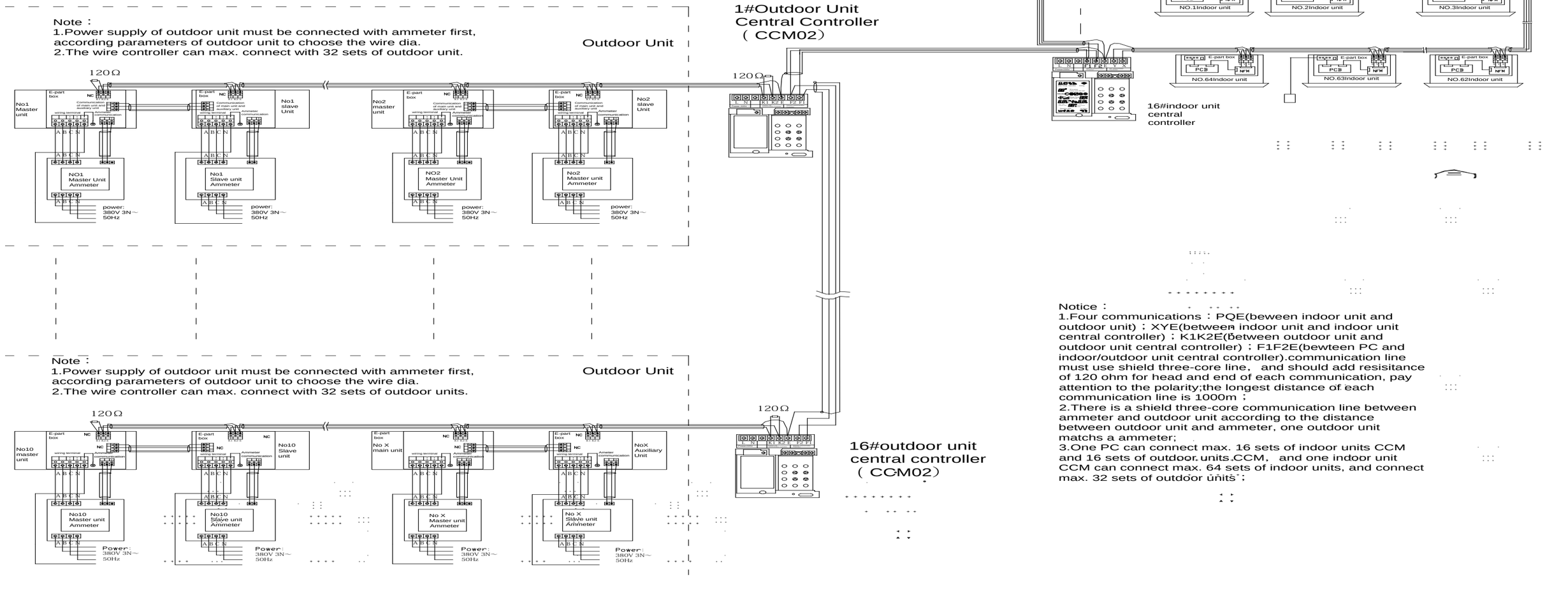
Normal shield wires are as following:

Model	Item
AVP	Copper core PVC insulated shield wire
AVP-105	Heat-resistant 105□ PVC insulated shield wire
RVP	PVC insulated shielded flexible wire
RVP-105	Heat-resistant 105□ PVC insulated shielded flexible wire
RVVP	Copper core PVC-insulated PVC-sheathed metal shielded flexible cable
RVVP1	Copper core PVC-insulated PVC-sheathed metal twisted shielded flexible cable

Note:

1) Communication wire should be 3-core shield wire; there should be metal-shield layer twist. Otherwise it will be easily interfered and bring wrong action.
2) And the size should be above 0.75mm^2 (Diameter.)
3) The material is RVVP (copper core PVC-insulated PVC-sheathed metal shielded flexible cable) or RVVP1(copper core PVC-insulated PVC-sheathed metal twisted shielded flexible cable) series
4) It has three cores (X, Y, E) inside, and E is a 5V layer.
5) The metal layer should be grounded well indoor control box in order to prevent interference.

8.3 Wiring Diagram (Indoor/CCM)



Note: The 120 ohm resistance can be cancelled because we have strengthened the anti- interfere capacity in the program.

9. Electric Characteristics

9.1 Brief Introduction

9.1.1 All wires, parts and material must conform to concerning national standards.

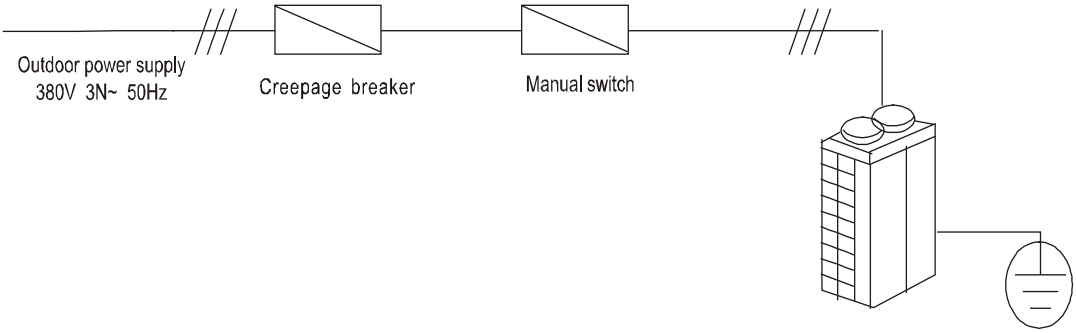
9.1.2 All wiring work must be done by qualified person.

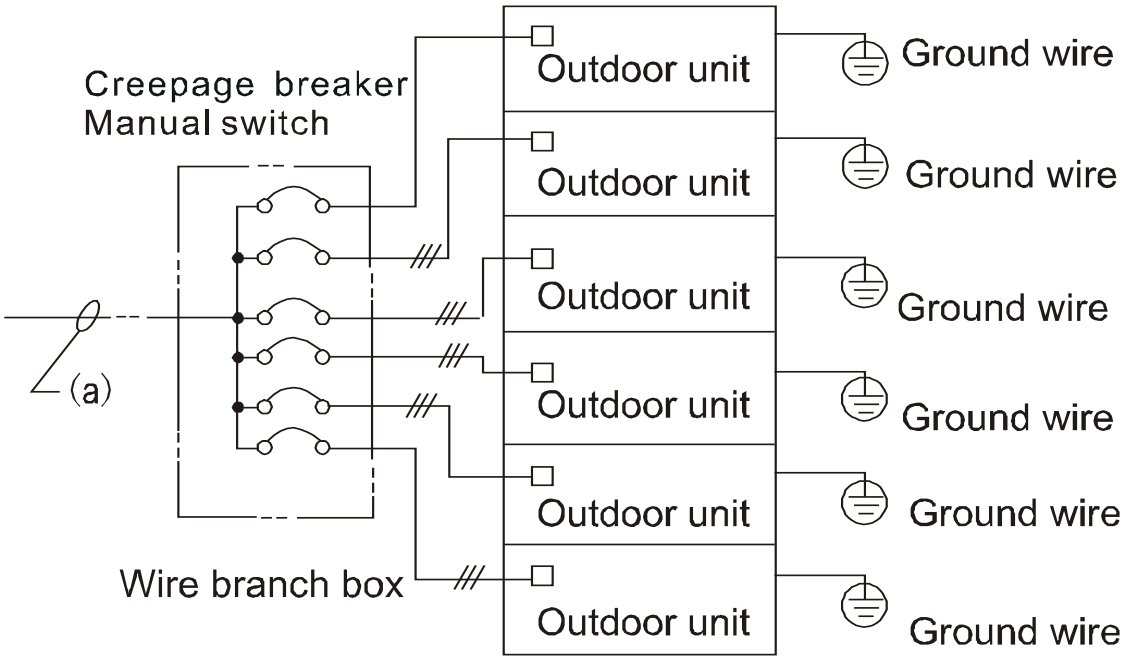
9.1.3 Grounded well.

9.2 Power circuitry installation

Outdoors power supply wiring

9.2.1 Single power supply (no power supply device)

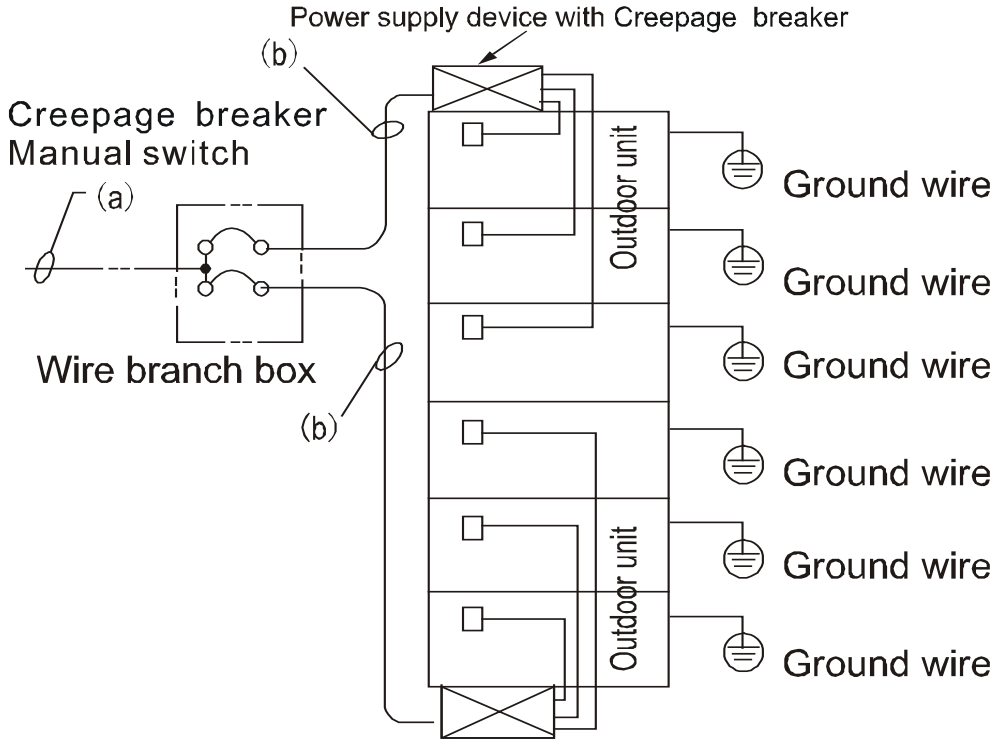




Item / Model	Power supply	Minimum Power wire diameter (mm^2) Wiring of mental and synthetic resin		manual switch (A)		Creepage breaker
		Size	Ground wire	Capacity	Fuse	
HCSU 2501 XRV	380V 3N-50Hz	16(L≤29m) 25(L≤46m) 35(L≤78m)	16	60	50	100 mA under 0.1sec
HCSU 3001 XRV						
HCSU 3501 XRV						
HCSU 4001 XRV	380V 3N-50Hz		16	80	70	
HCSU 4501 XRV						

Note: Select power cord for these five models separately according to relevant standard.
The wiring diameter and the length in the table indicate the condition that the voltage dropping range is within 2%. If the length exceeds the above figure, please select the wire diameter according to relevant standard.

9.2.2 With power supply device



9.2.3 Select the wire diameter

Power wiring refers to the main wire (a) connecting to branch box and the wiring (b) between branch box and power facilities. Please select the wire diameter according to the following requirement.

9.2.3.1 The dimension of the main power wiring (a).

Calculate the total capacity of all outdoor units (HP) and according the following table to select the dimension of the wiring.

9.2.3.2 The dimension of branch wiring (b) between Wire Branch Box and outdoor unit.

In condition that no more than 4 outdoor units are combined, the dimension is the same as main power wiring. When more than 4 units are combined, the electric control boxes of power device is divided into two, then select the dimension of the wiring according to the following table.

Total capacity (HP)	Mini. dimension of wiring (mm^2)			Total capacity	Dimension of wiring (mm^2)	
	Below 20m	20 to 50m			Below 20m	20 to 50m
8	10	25		38	70	95
10	10	25		40	70	95
12	16	25		42	70	95
14	25	35		44	70	95
16	25	35		46	70	95
18	25	35		48	70	95
20	25	35		50	95	120
22	35	70		52	95	120
24	35	70		54	95	120
26	35	70		56	95	120
28	35	70		58	95	120
30	50	70		60	95	120
32	50	70		62	95	120
34	50	70		64	95	120
36	50	70				

Note: the data in the above table is under the condition that the voltage decreases no more than 2%. If the length of wiring is more than the data in the diagram, please select wires according to certain standards.

9.2.4 Selection the fuse and manual switch of wire branch box.

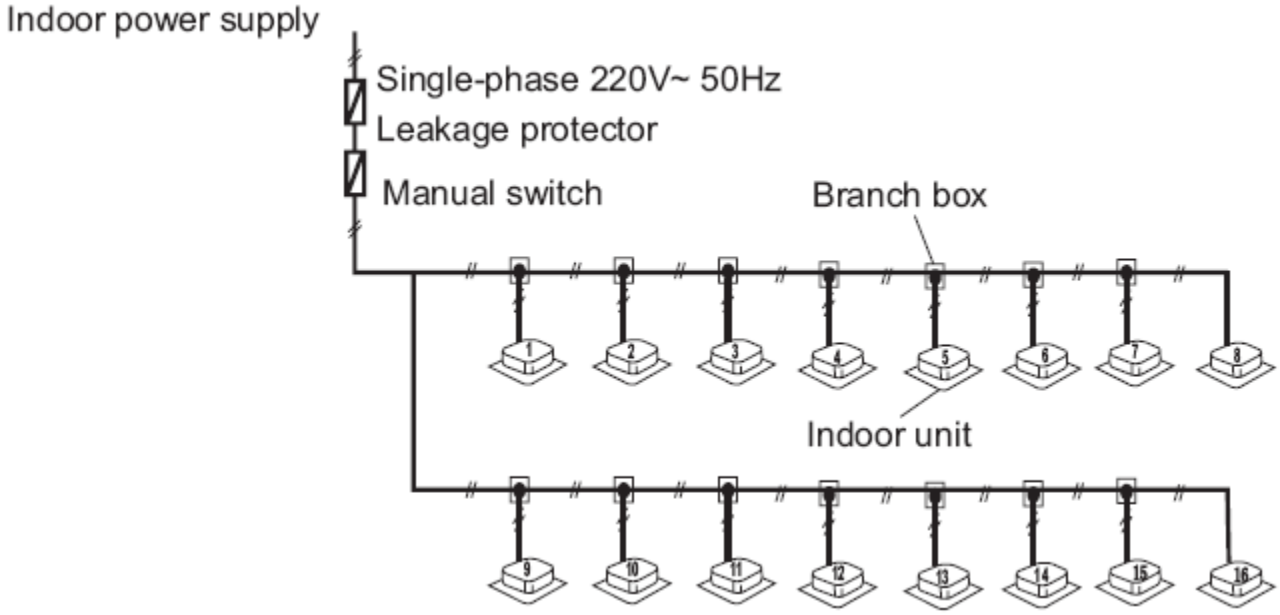
Total capacity of outdoor units (HP)	Manual switch (A)	Fuse (A)		Total capacity of outdoor units (HP)	Manual switch (A)	Fuse (A)
10~14	100	75		37~47	300	250
15~18	100	100		48~50	300	300
19~28	150	150		52 ~ 64	400	400
29~36	200	200				

Indoor power supply wiring

The dimension of indoor power supply wiring

Item / Model	Power supply	The minimal dimension of wiring ((mm^2)		manual switch (A)		Creepage breaker
		Continuous wire length ≤20m (≤50m)	Ground wire	Capacity	Fuse	
All indoor units	220-240V 1N-50Hz	2.5 (3.5)	φ1.6mm	30	15	30mA under 0.1sec

Note: The length in the table equals the value of power cord connecting parallel indoor units, indicating the condition that the voltage dropping range is within 2%. If the length exceeds the above figure, please select the wire diameter according to relevant standard.



Selection wiring specification

The following wiring specification just aim at Fluorin resinoid insulating wire, if use others, please refer to the concerning national standard.

Normal Fluorin resinoid insulating wire

Model	Name
BV	Fluorin resinoid insulating wire, copper-core
BLV	Fluorin resinoid insulating wire, aluminum-core
BVR	Fluorin resinoid insulating soft wire, copper-core
BVV	Fluorin resinoid insulating wire, copper-core, round-type
BLVV	Fluorin resinoid insulating wire, aluminum-core, round-type
BVVB	Fluorin resinoid insulating wire, copper-core, flat-type
BLVVB	Fluorin resinoid insulating wire, aluminum-core, flat-type
BV-105	Fluorin resinoid insulating wire, copper-core, heat-endurance 105□

RV	Fluorin resinoid insulating connecting soft wire, copper-core
RVB	Fluorin resinoid insulating connecting wire, copper-core, flat-type
RVS	Fluorin resinoid insulating connecting wire, copper-core, twist-type
RVV	Fluorin resinoid insulating connecting soft wire, copper-core, round-type
RVVB	Fluorin resinoid insulating connecting soft wire, copper-core, flat-type
RV-105	Fluorin resinoid insulating connecting soft wire, copper-core, heat-endurance 105□

9.3 Electric Characteristics

Model	Outdoor Unit				Power Supply			Compressor		OFM	
	Hz	Voltage	Min.	Max.	MCA	TOCA	MFA	MSC	RLA	kW	FLA
HCSU 2501 XRV	50	380	342	418	12	24.5	45	-/58	9.4/7.3	0.4	2.95
HCSU 3001 XRV	50	380	342	418	12	24.5	45	-/62	9.4/8.8	0.4	2.95
HCSU 3501 XRV	50	380	342	418	12	24.5	45	-/62	9.4/8.8	0.35(×2)	2.7(×2)
HCSU 4001 XRV	50	380	342	418	12.5	33	50	-/58/58	9.4/7.3/7.3	0.45(×2)	3.28(×2)
HCSU 4501 XRV	50	380	342	418	12.5	33	50	-/62/62	9.4/8.8/8.8	0.45(×2)	3.28(×2)

Remark:
MCA: Min. Current Amps. (A)
TOCA: Max. Operation current Amps. (A)
MFA: Max. Fuse Amps. (A)
MSC: Max. Starting Amps. (A)
RLA: Rated Locked Amps. (A)
OFM: Outdoor Fan Motor.
FLA: Full Load Amps. (A)
kW: Rated Motor Output (kW)

10. Capacity Tables

10.1 Cooling:

HCSU 2501 XRV

TC: total capacity **PI**: power input

Combination (Capacity index)	Outdoor temperature(°C DB)	Indoor temperature(°C WB)													
		14		16		18		19		20		22		24	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	10	18,98	2,22	22,41	2,77	25,83	3,32	27,41	3,6	28,99	3,88	29,61	3,89	30,25	3,93
	12	18,98	2,26	22,41	2,82	25,83	3,38	27,41	3,67	28,99	3,95	29,61	3,96	30,25	4
	14	18,98	2,31	22,41	2,87	25,83	3,44	27,41	3,73	28,99	4,02	29,61	4,04	30,25	4,07
	16	18,98	2,35	22,41	2,92	25,83	3,5	27,41	3,8	28,99	4,09	29,61	4,11	30,25	4,15
	18	18,98	2,39	22,41	2,98	25,83	3,56	27,41	3,86	28,99	4,17	29,61	4,18	30,25	4,22
	19	18,98	2,43	22,41	3,03	25,83	3,62	27,41	3,93	28,99	4,24	29,61	4,25	30,25	4,29
	21	18,98	2,6	22,41	3,25	25,83	3,89	27,41	4,21	28,99	4,54	29,61	4,56	30,25	4,6
	23	18,98	2,79	22,41	3,48	25,83	4,16	27,41	4,51	28,99	4,87	29,61	4,88	30,25	4,93
	25	18,98	2,99	22,41	3,72	25,83	4,45	27,41	4,83	28,99	5,21	29,61	5,22	30,25	5,27
	27	18,98	3,19	22,41	3,98	25,83	4,76	27,41	5,16	28,99	5,57	29,61	5,58	30,25	5,64
	29	18,98	3,41	22,41	4,25	25,83	5,08	27,41	5,51	28,99	5,94	29,61	5,96	30,25	6,02
	31	18,98	3,63	22,41	4,53	25,83	5,42	27,41	5,88	28,99	6,34	29,61	6,36	30,25	6,42
	33	18,98	3,87	22,41	4,82	25,83	5,78	27,41	6,26	28,99	6,75	29,61	6,77	30,25	6,84
	35	18,98	4,12	22,41	5,13	25,83	6,14	27,41	6,66	28,99	7,18	29,61	7,21	30,25	7,28
	37	18,98	4,38	22,41	5,46	25,83	6,53	27,41	7,09	28,99	7,64	29,61	7,66	30,25	7,74
	39	18,98	4,4	22,41	5,48	25,83	6,56	27,41	7,12	28,99	7,67	29,61	7,7	30,25	7,77
	41	18,98	4,42	22,41	5,51	25,83	6,59	27,41	7,15	28,99	7,71	29,61	7,73	30,25	7,81
	43	18,98	4,44	22,41	5,53	25,83	6,62	27,41	7,18	28,99	7,74	29,61	7,77	30,25	7,84
	45	18,98	4,46	22,41	5,56	25,83	6,65	27,41	7,22	28,99	7,78	29,61	7,8	30,25	7,88
	47	18,98	4,48	22,41	5,58	25,83	6,68	27,41	7,25	28,99	7,82	29,61	7,84	30,25	7,92
	48	18,98	4,5	22,41	5,61	25,83	6,72	27,41	7,28	28,99	7,85	29,61	7,88	30,25	7,95
120%	10	18,67	2,2	22,04	2,74	25,42	3,29	26,96	3,56	28,51	3,84	29,14	3,85	29,75	3,89
	12	18,67	2,24	22,04	2,79	25,42	3,35	26,96	3,63	28,51	3,91	29,14	3,92	29,75	3,96
	14	18,67	2,28	22,04	2,85	25,42	3,41	26,96	3,7	28,51	3,98	29,14	4	29,75	4,04
	16	18,67	2,32	22,04	2,9	25,42	3,47	26,96	3,76	28,51	4,06	29,14	4,07	29,75	4,11
	18	18,67	2,37	22,04	2,95	25,42	3,53	26,96	3,83	28,51	4,13	29,14	4,14	29,75	4,18
	19	18,67	2,41	22,04	3	25,42	3,59	26,96	3,89	28,51	4,2	29,14	4,21	29,75	4,25
	21	18,67	2,58	22,04	3,21	25,42	3,85	26,96	4,17	28,51	4,5	29,14	4,51	29,75	4,56
	23	18,67	2,76	22,04	3,44	25,42	4,12	26,96	4,47	28,51	4,82	29,14	4,83	29,75	4,88
	25	18,67	2,96	22,04	3,68	25,42	4,41	26,96	4,78	28,51	5,16	29,14	5,17	29,75	5,22
	27	18,67	3,16	22,04	3,94	25,42	4,72	26,96	5,11	28,51	5,51	29,14	5,53	29,75	5,58
	29	18,67	3,37	22,04	4,21	25,42	5,04	26,96	5,46	28,51	5,89	29,14	5,91	29,75	5,96
	31	18,67	3,6	22,04	4,48	25,42	5,37	26,96	5,82	28,51	6,28	29,14	6,3	29,75	6,36
	33	18,67	3,83	22,04	4,78	25,42	5,72	26,96	6,2	28,51	6,69	29,14	6,71	29,75	6,77
	35	18,67	4,08	22,04	5,08	25,42	6,08	26,96	6,6	28,51	7,11	29,14	7,14	29,75	7,21
	37	18,67	4,34	22,04	5,4	25,42	6,47	26,96	7,02	28,51	7,57	29,14	7,59	29,75	7,66
	39	18,67	4,36	22,04	5,43	25,42	6,5	26,96	7,05	28,51	7,6	29,14	7,62	29,75	7,7
	41	18,67	4,38	22,04	5,45	25,42	6,53	26,96	7,08	28,51	7,63	29,14	7,66	29,75	7,73
	43	18,67	4,4	22,04	5,48	25,42	6,56	26,96	7,11	28,51	7,67	29,14	7,69	29,75	7,77
	45	18,67	4,42	22,04	5,5	25,42	6,59	26,96	7,15	28,51	7,7	29,14	7,73	29,75	7,8
	47	18,67	4,44	22,04	5,53	25,42	6,62	26,96	7,18	28,51	7,74	29,14	7,76	29,75	7,84
	48	18,67	4,46	22,04	5,55	25,42	6,65	26,96	7,21	28,51	7,78	29,14	7,8	29,75	7,88
110%	10	18,36	2,18	21,68	2,72	24,99	3,25	26,52	3,53	28,04	3,8	28,65	3,82	29,26	3,85

	12	18,36	2,22	21,68	2,77	24,99	3,31	26,52	3,59	28,04	3,87	28,65	3,89	29,26	3,92
	14	18,36	2,26	21,68	2,82	24,99	3,37	26,52	3,66	28,04	3,95	28,65	3,96	29,26	4
	16	18,36	2,3	21,68	2,87	24,99	3,43	26,52	3,73	28,04	4,02	28,65	4,03	29,26	4,07
	18	18,36	2,34	21,68	2,92	24,99	3,49	26,52	3,79	28,04	4,09	28,65	4,1	29,26	4,14
	19	18,36	2,38	21,68	2,97	24,99	3,56	26,52	3,86	28,04	4,16	28,65	4,17	29,26	4,21
	21	18,36	2,55	21,68	3,18	24,99	3,81	26,52	4,13	28,04	4,46	28,65	4,47	29,26	4,51
	23	18,36	2,74	21,68	3,41	24,99	4,08	26,52	4,43	28,04	4,77	28,65	4,79	29,26	4,83
	25	18,36	2,93	21,68	3,65	24,99	4,37	26,52	4,74	28,04	5,11	28,65	5,12	29,26	5,17
	27	18,36	3,13	21,68	3,9	24,99	4,67	26,52	5,07	28,04	5,46	28,65	5,48	29,26	5,53
	29	18,36	3,34	21,68	4,16	24,99	4,99	26,52	5,41	28,04	5,83	28,65	5,85	29,26	5,9
	31	18,36	3,56	21,68	4,44	24,99	5,32	26,52	5,77	28,04	6,22	28,65	6,24	29,26	6,3
	33	18,36	3,8	21,68	4,73	24,99	5,66	26,52	6,14	28,04	6,62	28,65	6,64	29,26	6,71
	35	18,36	4,04	21,68	5,03	24,99	6,03	26,52	6,54	28,04	7,05	28,65	7,07	29,26	7,14
	37	18,36	4,3	21,68	5,35	24,99	6,41	26,52	6,95	28,04	7,49	28,65	7,52	29,26	7,59
	39	18,36	4,31	21,68	5,38	24,99	6,44	26,52	6,98	28,04	7,53	28,65	7,55	29,26	7,62
	41	18,36	4,33	21,68	5,4	24,99	6,47	26,52	7,01	28,04	7,56	28,65	7,58	29,26	7,66
	43	18,36	4,35	21,68	5,42	24,99	6,5	26,52	7,05	28,04	7,59	28,65	7,62	29,26	7,69
	45	18,36	4,37	21,68	5,45	24,99	6,53	26,52	7,08	28,04	7,63	28,65	7,65	29,26	7,73
	47	18,36	4,39	21,68	5,48	24,99	6,56	26,52	7,11	28,04	7,67	28,65	7,69	29,26	7,76
	48	18,36	4,41	21,68	5,5	24,99	6,59	26,52	7,14	28,04	7,7	28,65	7,72	29,26	7,8
100%	10	17,31	2,04	20,44	2,54	23,56	3,04	25,00	3,29	26,44	3,55	27,01	3,56	27,59	3,6
	12	17,31	2,07	20,44	2,58	23,56	3,09	25,00	3,36	26,44	3,62	27,01	3,63	27,59	3,66
	14	17,31	2,11	20,44	2,63	23,56	3,15	25,00	3,42	26,44	3,68	27,01	3,69	27,59	3,73
	16	17,31	2,15	20,44	2,68	23,56	3,21	25,00	3,48	26,44	3,75	27,01	3,76	27,59	3,8
	18	17,31	2,19	20,44	2,72	23,56	3,26	25,00	3,54	26,44	3,81	27,01	3,83	27,59	3,86
	19	17,31	2,22	20,44	2,77	23,56	3,32	25,00	3,6	26,44	3,88	27,01	3,89	27,59	3,93
	21	17,31	2,38	20,44	2,97	23,56	3,56	25,00	3,86	26,44	4,16	27,01	4,17	27,59	4,21
	23	17,31	2,55	20,44	3,18	23,56	3,81	25,00	4,13	26,44	4,46	27,01	4,47	27,59	4,51
	25	17,31	2,73	20,44	3,41	23,56	4,08	25,00	4,42	26,44	4,77	27,01	4,78	27,59	4,83
	27	17,31	2,92	20,44	3,64	23,56	4,36	25,00	4,73	26,44	5,1	27,01	5,11	27,59	5,16
	29	17,31	3,12	20,44	3,89	23,56	4,65	25,00	5,05	26,44	5,44	27,01	5,46	27,59	5,51
	31	17,31	3,33	20,44	4,15	23,56	4,96	25,00	5,38	26,44	5,8	27,01	5,82	27,59	5,88
	33	17,31	3,54	20,44	4,42	23,56	5,29	25,00	5,73	26,44	6,18	27,01	6,2	27,59	6,26
	35	17,31	3,77	20,44	4,7	23,56	5,62	25,00	6,1	26,44	6,58	27,01	6,6	27,59	6,66
	37	17,31	4,01	20,44	5	23,56	5,98	25,00	6,49	26,44	6,99	27,01	7,02	27,59	7,08
	39	17,31	4,03	20,44	5,02	23,56	6,01	25,00	6,52	26,44	7,02	27,01	7,05	27,59	7,11
	41	17,31	4,04	20,44	5,04	23,56	6,03	25,00	6,55	26,44	7,06	27,01	7,08	27,59	7,15
	43	17,31	4,06	20,44	5,06	23,56	6,06	25,00	6,58	26,44	7,09	27,01	7,11	27,59	7,18
	45	17,31	4,08	20,44	5,09	23,56	6,09	25,00	6,61	26,44	7,12	27,01	7,14	27,59	7,21
	47	17,31	4,1	20,44	5,11	23,56	6,12	25,00	6,64	26,44	7,15	27,01	7,18	27,59	7,25
	48	17,31	4,12	20,44	5,13	23,56	6,15	25,00	6,67	26,44	7,19	27,01	7,21	27,59	7,28
90%	10	15,58	1,76	18,39	2,19	21,21	2,63	22,50	2,85	23,79	3,07	24,31	3,08	24,83	3,11
	12	15,58	1,79	18,39	2,23	21,21	2,67	22,50	2,9	23,79	3,13	24,31	3,14	24,83	3,17
	14	15,58	1,83	18,39	2,27	21,21	2,72	22,50	2,95	23,79	3,18	24,31	3,19	24,83	3,22
	16	15,58	1,86	18,39	2,31	21,21	2,77	22,50	3,01	23,79	3,24	24,31	3,25	24,83	3,28
	18	15,58	1,89	18,39	2,36	21,21	2,82	22,50	3,06	23,79	3,3	24,31	3,31	24,83	3,34
	19	15,58	1,92	18,39	2,4	21,21	2,87	22,50	3,11	23,79	3,35	24,31	3,36	24,83	3,4
	21	15,58	2,06	18,39	2,57	21,21	3,08	22,50	3,34	23,79	3,6	24,31	3,61	24,83	3,64
	23	15,58	2,21	18,39	2,75	21,21	3,29	22,50	3,57	23,79	3,85	24,31	3,86	24,83	3,9
	25	15,58	2,36	18,39	2,94	21,21	3,53	22,50	3,82	23,79	4,12	24,31	4,13	24,83	4,17
	27	15,58	2,53	18,39	3,15	21,21	3,77	22,50	4,09	23,79	4,41	24,31	4,42	24,83	4,46

	29	15,58	2,7	18,39	3,36	21,21	4,02	22,50	4,36	23,79	4,7	24,31	4,72	24,83	4,76
	31	15,58	2,88	18,39	3,58	21,21	4,29	22,50	4,65	23,79	5,02	24,31	5,03	24,83	5,08
	33	15,58	3,06	18,39	3,82	21,21	4,57	22,50	4,96	23,79	5,34	24,31	5,36	24,83	5,41
	35	15,58	3,26	18,39	4,06	21,21	4,86	22,50	5,27	23,79	5,68	24,31	5,7	24,83	5,76
	37	15,58	3,47	18,39	4,32	21,21	5,17	22,50	5,61	23,79	6,05	24,31	6,06	24,83	6,12
	39	15,58	3,48	18,39	4,34	21,21	5,19	22,50	5,63	23,79	6,07	24,31	6,09	24,83	6,15
	41	15,58	3,5	18,39	4,36	21,21	5,22	22,50	5,66	23,79	6,1	24,31	6,12	24,83	6,18
	43	15,58	3,51	18,39	4,38	21,21	5,24	22,50	5,68	23,79	6,13	24,31	6,15	24,83	6,21
	45	15,58	3,53	18,39	4,4	21,21	5,27	22,50	5,71	23,79	6,16	24,31	6,18	24,83	6,24
	47	15,58	3,55	18,39	4,42	21,21	5,29	22,50	5,74	23,79	6,19	24,31	6,2	24,83	6,26
	48	15,58	3,56	18,39	4,44	21,21	5,31	22,50	5,76	23,79	6,21	24,31	6,23	24,83	6,29
	10	13,85	1,5	16,35	1,87	18,85	2,24	20,00	2,43	21,15	2,62	21,61	2,63	22,07	2,66
	12	13,85	1,53	16,35	1,91	18,85	2,28	20,00	2,48	21,15	2,67	21,61	2,68	22,07	2,7
	14	13,85	1,56	16,35	1,94	18,85	2,33	20,00	2,52	21,15	2,72	21,61	2,73	22,07	2,75
	16	13,85	1,59	16,35	1,98	18,85	2,37	20,00	2,57	21,15	2,77	21,61	2,78	22,07	2,8
	18	13,85	1,61	16,35	2,01	18,85	2,41	20,00	2,61	21,15	2,82	21,61	2,83	22,07	2,85
	19	13,85	1,64	16,35	2,05	18,85	2,45	20,00	2,66	21,15	2,86	21,61	2,87	22,07	2,9
	21	13,85	1,76	16,35	2,19	18,85	2,63	20,00	2,85	21,15	3,07	21,61	3,08	22,07	3,11
	23	13,85	1,89	16,35	2,35	18,85	2,81	20,00	3,05	21,15	3,29	21,61	3,3	22,07	3,33
	25	13,85	2,02	16,35	2,51	18,85	3,01	20,00	3,27	21,15	3,52	21,61	3,53	22,07	3,57
	27	13,85	2,16	16,35	2,69	18,85	3,22	20,00	3,49	21,15	3,76	21,61	3,77	22,07	3,81
80%	29	13,85	2,3	16,35	2,87	18,85	3,44	20,00	3,73	21,15	4,02	21,61	4,03	22,07	4,07
	31	13,85	2,46	16,35	3,06	18,85	3,67	20,00	3,98	21,15	4,29	21,61	4,3	22,07	4,34
	33	13,85	2,62	16,35	3,26	18,85	3,9	20,00	4,23	21,15	4,56	21,61	4,58	22,07	4,62
	35	13,85	2,78	16,35	3,47	18,85	4,15	20,00	4,5	21,15	4,86	21,61	4,87	22,07	4,92
	37	13,85	2,96	16,35	3,69	18,85	4,42	20,00	4,79	21,15	5,16	21,61	5,18	22,07	5,23
	39	13,85	2,97	16,35	3,71	18,85	4,44	20,00	4,81	21,15	5,19	21,61	5,2	22,07	5,25
	41	13,85	2,99	16,35	3,72	18,85	4,46	20,00	4,83	21,15	5,21	21,61	5,23	22,07	5,28
	43	13,85	3	16,35	3,74	18,85	4,48	20,00	4,86	21,15	5,23	21,61	5,25	22,07	5,3
	45	13,85	3,01	16,35	3,76	18,85	4,5	20,00	4,88	21,15	5,26	21,61	5,28	22,07	5,33
	47	13,85	3,03	16,35	3,77	18,85	4,52	20,00	4,9	21,15	5,28	21,61	5,3	22,07	5,35
	48	13,85	3,04	16,35	3,79	18,85	4,54	20,00	4,92	21,15	5,31	21,61	5,32	22,07	5,38
	10	12,12	1,27	14,30	1,58	16,50	1,89	17,50	2,05	18,50	2,21	18,91	2,21	19,31	2,24
	12	12,12	1,29	14,30	1,61	16,50	1,92	17,50	2,09	18,50	2,25	18,91	2,26	19,31	2,28
	14	12,12	1,31	14,30	1,64	16,50	1,96	17,50	2,12	18,50	2,29	18,91	2,3	19,31	2,32
	16	12,12	1,34	14,30	1,66	16,50	1,99	17,50	2,16	18,50	2,33	18,91	2,34	19,31	2,36
	18	12,12	1,36	14,30	1,69	16,50	2,03	17,50	2,2	18,50	2,37	18,91	2,38	19,31	2,4
	19	12,12	1,38	14,30	1,72	16,50	2,06	17,50	2,24	18,50	2,41	18,91	2,42	19,31	2,44
	21	12,12	1,48	14,30	1,85	16,50	2,21	17,50	2,4	18,50	2,59	18,91	2,59	19,31	2,62
	23	12,12	1,59	14,30	1,98	16,50	2,37	17,50	2,57	18,50	2,77	18,91	2,78	19,31	2,81
	25	12,12	1,7	14,30	2,12	16,50	2,54	17,50	2,75	18,50	2,96	18,91	2,97	19,31	3
70%	27	12,12	1,82	14,30	2,26	16,50	2,71	17,50	2,94	18,50	3,17	18,91	3,18	19,31	3,21
	29	12,12	1,94	14,30	2,42	16,50	2,89	17,50	3,14	18,50	3,38	18,91	3,39	19,31	3,43
	31	12,12	2,07	14,30	2,58	16,50	3,09	17,50	3,35	18,50	3,61	18,91	3,62	19,31	3,65
	33	12,12	2,2	14,30	2,75	16,50	3,29	17,50	3,57	18,50	3,84	18,91	3,86	19,31	3,89
	35	12,12	2,34	14,30	2,92	16,50	3,5	17,50	3,79	18,50	4,09	18,91	4,1	19,31	4,14
	37	12,12	2,49	14,30	3,11	16,50	3,72	17,50	4,03	18,50	4,35	18,91	4,36	19,31	4,4
	39	12,12	2,5	14,30	3,12	16,50	3,74	17,50	4,05	18,50	4,37	18,91	4,38	19,31	4,42
	41	12,12	2,52	14,30	3,13	16,50	3,75	17,50	4,07	18,50	4,39	18,91	4,4	19,31	4,44
	43	12,12	2,53	14,30	3,15	16,50	3,77	17,50	4,09	18,50	4,41	18,91	4,42	19,31	4,46
	45	12,12	2,54	14,30	3,16	16,50	3,79	17,50	4,11	18,50	4,43	18,91	4,44	19,31	4,49

	47	12,12	2,55	14,30	3,18	16,50	3,81	17,50	4,13	18,50	4,45	18,91	4,46	19,31	4,51
	48	12,12	2,56	14,30	3,19	16,50	3,82	17,50	4,15	18,50	4,47	18,91	4,48	19,31	4,53
60%	10	10,39	1,05	12,26	1,31	14,14	1,56	15,00	1,7	15,86	1,83	16,21	1,83	16,55	1,85
	12	10,39	1,07	12,26	1,33	14,14	1,59	15,00	1,73	15,86	1,86	16,21	1,87	16,55	1,89
	14	10,39	1,09	12,26	1,35	14,14	1,62	15,00	1,76	15,86	1,9	16,21	1,9	16,55	1,92
	16	10,39	1,11	12,26	1,38	14,14	1,65	15,00	1,79	15,86	1,93	16,21	1,94	16,55	1,95
	18	10,39	1,13	12,26	1,4	14,14	1,68	15,00	1,82	15,86	1,96	16,21	1,97	16,55	1,99
	19	10,39	1,14	12,26	1,43	14,14	1,71	15,00	1,85	15,86	2	16,21	2	16,55	2,02
	21	10,39	1,23	12,26	1,53	14,14	1,83	15,00	1,99	15,86	2,14	16,21	2,15	16,55	2,17
	23	10,39	1,31	12,26	1,64	14,14	1,96	15,00	2,13	15,86	2,29	16,21	2,3	16,55	2,32
	25	10,39	1,41	12,26	1,75	14,14	2,1	15,00	2,28	15,86	2,45	16,21	2,46	16,55	2,49
	27	10,39	1,5	12,26	1,87	14,14	2,24	15,00	2,43	15,86	2,62	16,21	2,63	16,55	2,66
	29	10,39	1,61	12,26	2	14,14	2,4	15,00	2,6	15,86	2,8	16,21	2,81	16,55	2,84
	31	10,39	1,71	12,26	2,13	14,14	2,55	15,00	2,77	15,86	2,99	16,21	3	16,55	3,03
	33	10,39	1,82	12,26	2,27	14,14	2,72	15,00	2,95	15,86	3,18	16,21	3,19	16,55	3,22
	35	10,39	1,94	12,26	2,42	14,14	2,89	15,00	3,14	15,86	3,38	16,21	3,39	16,55	3,43
	37	10,39	2,06	12,26	2,57	14,14	3,08	15,00	3,34	15,86	3,6	16,21	3,61	16,55	3,65
	39	10,39	2,07	12,26	2,58	14,14	3,09	15,00	3,35	15,86	3,62	16,21	3,63	16,55	3,66
	41	10,39	2,08	12,26	2,59	14,14	3,11	15,00	3,37	15,86	3,63	16,21	3,64	16,55	3,68
	43	10,39	2,09	12,26	2,61	14,14	3,12	15,00	3,38	15,86	3,65	16,21	3,66	16,55	3,7
	45	10,39	2,1	12,26	2,62	14,14	3,14	15,00	3,4	15,86	3,67	16,21	3,68	16,55	3,71
	47	10,39	2,11	12,26	2,63	14,14	3,15	15,00	3,42	15,86	3,68	16,21	3,69	16,55	3,73
	48	10,39	2,12	12,26	2,64	14,14	3,16	15,00	3,43	15,86	3,7	16,21	3,71	16,55	3,75
50%	10	8,66	0,85	10,22	1,06	11,78	1,27	12,50	1,37	13,21	1,48	13,50	1,49	13,79	1,5
	12	8,66	0,86	10,22	1,08	11,78	1,29	12,50	1,4	13,21	1,51	13,50	1,51	13,79	1,53
	14	8,66	0,88	10,22	1,1	11,78	1,31	12,50	1,42	13,21	1,54	13,50	1,54	13,79	1,56
	16	8,66	0,9	10,22	1,12	11,78	1,34	12,50	1,45	13,21	1,56	13,50	1,57	13,79	1,58
	18	8,66	0,91	10,22	1,14	11,78	1,36	12,50	1,48	13,21	1,59	13,50	1,6	13,79	1,61
	19	8,66	0,93	10,22	1,16	11,78	1,38	12,50	1,5	13,21	1,62	13,50	1,62	13,79	1,64
	21	8,66	0,99	10,22	1,24	11,78	1,48	12,50	1,61	13,21	1,73	13,50	1,74	13,79	1,76
	23	8,66	1,07	10,22	1,33	11,78	1,59	12,50	1,72	13,21	1,86	13,50	1,86	13,79	1,88
	25	8,66	1,14	10,22	1,42	11,78	1,7	12,50	1,84	13,21	1,99	13,50	1,99	13,79	2,01
	27	8,66	1,22	10,22	1,52	11,78	1,82	12,50	1,97	13,21	2,13	13,50	2,13	13,79	2,15
	29	8,66	1,3	10,22	1,62	11,78	1,94	12,50	2,1	13,21	2,27	13,50	2,28	13,79	2,3
	31	8,66	1,39	10,22	1,73	11,78	2,07	12,50	2,24	13,21	2,42	13,50	2,43	13,79	2,45
	33	8,66	1,48	10,22	1,84	11,78	2,2	12,50	2,39	13,21	2,58	13,50	2,59	13,79	2,61
	35	8,66	1,57	10,22	1,96	11,78	2,35	12,50	2,54	13,21	2,74	13,50	2,75	13,79	2,78
	37	8,66	1,67	10,22	2,08	11,78	2,49	12,50	2,71	13,21	2,92	13,50	2,93	13,79	2,95
	39	8,66	1,68	10,22	2,09	11,78	2,51	12,50	2,72	13,21	2,93	13,50	2,94	13,79	2,97
	41	8,66	1,69	10,22	2,1	11,78	2,52	12,50	2,73	13,21	2,94	13,50	2,95	13,79	2,98
	43	8,66	1,69	10,22	2,11	11,78	2,53	12,50	2,74	13,21	2,96	13,50	2,97	13,79	2,99
	45	8,66	1,7	10,22	2,12	11,78	2,54	12,50	2,75	13,21	2,97	13,50	2,98	13,79	3,01
	47	8,66	1,71	10,22	2,13	11,78	2,55	12,50	2,77	13,21	2,98	13,50	2,99	13,79	3,02
	48	8,66	1,72	10,22	2,14	11,78	2,56	12,50	2,78	13,21	3	13,50	3,01	13,79	3,04

HCSU 3001 XRV

TC: total capacity **PI**: power input

Combination (Capacity index)	Outdoor temperature(°C DB)	Indoor temperature(°C WB)													
		14		16		18		19		20		22		24	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	10	22,78	2,82	26,89	3,51	31,00	4,2	32,89	4,56	34,78	4,92	35,54	4,93	36,30	4,98
	12	22,78	2,87	26,89	3,58	31,00	4,28	32,89	4,64	34,78	5,01	35,54	5,02	36,30	5,07
	14	22,78	2,92	26,89	3,64	31,00	4,36	32,89	4,73	34,78	5,1	35,54	5,11	36,30	5,16
	16	22,78	2,97	26,89	3,71	31,00	4,44	32,89	4,81	34,78	5,19	35,54	5,2	36,30	5,26
	18	22,78	3,03	26,89	3,77	31,00	4,52	32,89	4,9	34,78	5,28	35,54	5,3	36,30	5,35
	19	22,78	3,08	26,89	3,84	31,00	4,59	32,89	4,98	34,78	5,37	35,54	5,39	36,30	5,44
	21	22,78	3,3	26,89	4,11	31,00	4,92	32,89	5,34	34,78	5,76	35,54	5,78	36,30	5,83
	23	22,78	3,54	26,89	4,41	31,00	5,27	32,89	5,72	34,78	6,17	35,54	6,19	36,30	6,25
	25	22,78	3,78	26,89	4,71	31,00	5,64	32,89	6,12	34,78	6,6	35,54	6,62	36,30	6,68
	27	22,78	4,04	26,89	5,04	31,00	6,03	32,89	6,54	34,78	7,05	35,54	7,08	36,30	7,15
	29	22,78	4,32	26,89	5,38	31,00	6,44	32,89	6,99	34,78	7,53	35,54	7,56	36,30	7,63
	31	22,78	4,61	26,89	5,74	31,00	6,87	32,89	7,45	34,78	8,03	35,54	8,06	36,30	8,14
	33	22,78	4,91	26,89	6,11	31,00	7,32	32,89	7,94	34,78	8,56	35,54	8,58	36,30	8,67
	35	22,78	5,22	26,89	6,5	31,00	7,79	32,89	8,44	34,78	9,1	35,54	9,13	36,30	9,22
	37	22,78	5,55	26,89	6,92	31,00	8,28	32,89	8,98	34,78	9,68	35,54	9,71	36,30	9,81
	39	22,78	5,57	26,89	6,95	31,00	8,32	32,89	9,02	34,78	9,72	35,54	9,75	36,30	9,85
	41	22,78	5,6	26,89	6,98	31,00	8,35	32,89	9,06	34,78	9,77	35,54	9,8	36,30	9,89
	43	22,78	5,63	26,89	7,01	31,00	8,39	32,89	9,1	34,78	9,81	35,54	9,84	36,30	9,94
	45	22,78	5,65	26,89	7,04	31,00	8,43	32,89	9,15	34,78	9,86	35,54	9,89	36,30	9,98
	47	22,78	5,68	26,89	7,07	31,00	8,47	32,89	9,19	34,78	9,9	35,54	9,93	36,30	10,03
	48	22,78	5,7	26,89	7,11	31,00	8,51	32,89	9,23	34,78	9,95	35,54	9,98	36,30	10,08
120%	10	22,40	2,79	26,45	3,48	30,49	4,16	32,36	4,52	34,22	4,87	34,96	4,88	35,71	4,93
	12	22,40	2,84	26,45	3,54	30,49	4,24	32,36	4,6	34,22	4,96	34,96	4,97	35,71	5,02
	14	22,40	2,89	26,45	3,61	30,49	4,32	32,36	4,68	34,22	5,05	34,96	5,06	35,71	5,11
	16	22,40	2,95	26,45	3,67	30,49	4,4	32,36	4,77	34,22	5,14	34,96	5,15	35,71	5,2
	18	22,40	3	26,45	3,73	30,49	4,47	32,36	4,85	34,22	5,23	34,96	5,24	35,71	5,3
	19	22,40	3,05	26,45	3,8	30,49	4,55	32,36	4,93	34,22	5,32	34,96	5,34	35,71	5,39
	21	22,40	3,27	26,45	4,07	30,49	4,88	32,36	5,29	34,22	5,7	34,96	5,72	35,71	5,78
	23	22,40	3,5	26,45	4,36	30,49	5,22	32,36	5,67	34,22	6,11	34,96	6,13	35,71	6,19
	25	22,40	3,75	26,45	4,67	30,49	5,59	32,36	6,06	34,22	6,54	34,96	6,56	35,71	6,62
	27	22,40	4,01	26,45	4,99	30,49	5,98	32,36	6,48	34,22	6,99	34,96	7,01	35,71	7,08
	29	22,40	4,28	26,45	5,33	30,49	6,38	32,36	6,92	34,22	7,46	34,96	7,48	35,71	7,56
	31	22,40	4,56	26,45	5,68	30,49	6,8	32,36	7,38	34,22	7,96	34,96	7,98	35,71	8,06
	33	22,40	4,86	26,45	6,05	30,49	7,25	32,36	7,86	34,22	8,47	34,96	8,5	35,71	8,58
	35	22,40	5,17	26,45	6,44	30,49	7,71	32,36	8,36	34,22	9,02	34,96	9,04	35,71	9,13
	37	22,40	5,5	26,45	6,85	30,49	8,2	32,36	8,89	34,22	9,59	34,96	9,62	35,71	9,71
	39	22,40	5,52	26,45	6,88	30,49	8,24	32,36	8,93	34,22	9,63	34,96	9,66	35,71	9,75
	41	22,40	5,55	26,45	6,91	30,49	8,27	32,36	8,97	34,22	9,67	34,96	9,7	35,71	9,8
	43	22,40	5,57	26,45	6,94	30,49	8,31	32,36	9,02	34,22	9,72	34,96	9,75	35,71	9,84
	45	22,40	5,6	26,45	6,97	30,49	8,35	32,36	9,06	34,22	9,76	34,96	9,79	35,71	9,89
	47	22,40	5,62	26,45	7,01	30,49	8,39	32,36	9,1	34,22	9,81	34,96	9,84	35,71	9,93
	48	22,40	5,65	26,45	7,04	30,49	8,43	32,36	9,14	34,22	9,85	34,96	9,88	35,71	9,98
110%	10	22,04	2,76	26,01	3,44	29,99	4,12	31,82	4,47	33,65	4,82	34,38	4,84	35,11	4,88
	12	22,04	2,82	26,01	3,51	29,99	4,2	31,82	4,56	33,65	4,91	34,38	4,93	35,11	4,97
	14	22,04	2,87	26,01	3,57	29,99	4,28	31,82	4,64	33,65	5	34,38	5,01	35,11	5,06

	16	22,04	2,92	26,01	3,63	29,99	4,35	31,82	4,72	33,65	5,09	34,38	5,1	35,11	5,15
	18	22,04	2,97	26,01	3,7	29,99	4,43	31,82	4,8	33,65	5,18	34,38	5,19	35,11	5,24
	19	22,04	3,02	26,01	3,76	29,99	4,51	31,82	4,89	33,65	5,27	34,38	5,28	35,11	5,33
	21	22,04	3,24	26,01	4,03	29,99	4,83	31,82	5,24	33,65	5,65	34,38	5,66	35,11	5,72
	23	22,04	3,47	26,01	4,32	29,99	5,17	31,82	5,61	33,65	6,05	34,38	6,07	35,11	6,13
	25	22,04	3,71	26,01	4,62	29,99	5,54	31,82	6	33,65	6,47	34,38	6,49	35,11	6,56
	27	22,04	3,97	26,01	4,94	29,99	5,92	31,82	6,42	33,65	6,92	34,38	6,94	35,11	7,01
	29	22,04	4,24	26,01	5,28	29,99	6,32	31,82	6,85	33,65	7,39	34,38	7,41	35,11	7,48
	31	22,04	4,52	26,01	5,63	29,99	6,74	31,82	7,31	33,65	7,88	34,38	7,9	35,11	7,98
	33	22,04	4,81	26,01	5,99	29,99	7,18	31,82	7,79	33,65	8,39	34,38	8,42	35,11	8,5
	35	22,04	5,12	26,01	6,38	29,99	7,64	31,82	8,28	33,65	8,93	34,38	8,96	35,11	9,04
	37	22,04	5,44	26,01	6,78	29,99	8,12	31,82	8,81	33,65	9,5	34,38	9,52	35,11	9,62
	39	22,04	5,47	26,01	6,81	29,99	8,16	31,82	8,85	33,65	9,54	34,38	9,57	35,11	9,66
	41	22,04	5,49	26,01	6,84	29,99	8,19	31,82	8,89	33,65	9,58	34,38	9,61	35,11	9,7
	43	22,04	5,52	26,01	6,87	29,99	8,23	31,82	8,93	33,65	9,62	34,38	9,65	35,11	9,75
	45	22,04	5,54	26,01	6,91	29,99	8,27	31,82	8,97	33,65	9,67	34,38	9,7	35,11	9,79
	47	22,04	5,57	26,01	6,94	29,99	8,31	31,82	9,01	33,65	9,71	34,38	9,74	35,11	9,84
	48	22,04	5,59	26,01	6,97	29,99	8,35	31,82	9,05	33,65	9,76	34,38	9,79	35,11	9,88
100%	10	20,78	2,58	24,53	3,21	28,28	3,85	30,00	4,17	31,73	4,5	32,41	4,51	33,11	4,56
	12	20,78	2,63	24,53	3,27	28,28	3,92	30,00	4,25	31,73	4,58	32,41	4,6	33,11	4,64
	14	20,78	2,68	24,53	3,33	28,28	3,99	30,00	4,33	31,73	4,67	32,41	4,68	33,11	4,73
	16	20,78	2,72	24,53	3,39	28,28	4,06	30,00	4,41	31,73	4,75	32,41	4,76	33,11	4,81
	18	20,78	2,77	24,53	3,45	28,28	4,13	30,00	4,48	31,73	4,83	32,41	4,85	33,11	4,89
	19	20,78	2,82	24,53	3,51	28,28	4,2	30,00	4,56	31,73	4,92	32,41	4,93	33,11	4,98
	21	20,78	3,02	24,53	3,76	28,28	4,51	30,00	4,89	31,73	5,27	32,41	5,29	33,11	5,34
	23	20,78	3,24	24,53	4,03	28,28	4,83	30,00	5,24	31,73	5,65	32,41	5,66	33,11	5,72
	25	20,78	3,46	24,53	4,32	28,28	5,17	30,00	5,6	31,73	6,04	32,41	6,06	33,11	6,12
	27	20,78	3,7	24,53	4,61	28,28	5,52	30,00	5,99	31,73	6,46	32,41	6,48	33,11	6,54
	29	20,78	3,95	24,53	4,93	28,28	5,9	30,00	6,4	31,73	6,9	32,41	6,92	33,11	6,98
	31	20,78	4,22	24,53	5,25	28,28	6,29	30,00	6,82	31,73	7,35	32,41	7,38	33,11	7,45
	33	20,78	4,49	24,53	5,59	28,28	6,7	30,00	7,27	31,73	7,83	32,41	7,86	33,11	7,93
	35	20,78	4,78	24,53	5,95	28,28	7,13	30,00	7,73	31,73	8,33	32,41	8,36	33,11	8,44
	37	20,78	5,08	24,53	6,33	28,28	7,58	30,00	8,22	31,73	8,86	32,41	8,89	33,11	8,98
	39	20,78	5,1	24,53	6,36	28,28	7,61	30,00	8,26	31,73	8,9	32,41	8,93	33,11	9,02
	41	20,78	5,13	24,53	6,39	28,28	7,65	30,00	8,29	31,73	8,94	32,41	8,97	33,11	9,06
	43	20,78	5,15	24,53	6,42	28,28	7,68	30,00	8,33	31,73	8,98	32,41	9,01	33,11	9,1
	45	20,78	5,17	24,53	6,45	28,28	7,72	30,00	8,37	31,73	9,02	32,41	9,05	33,11	9,14
	47	20,78	5,2	24,53	6,48	28,28	7,75	30,00	8,41	31,73	9,07	32,41	9,09	33,11	9,18
	48	20,78	5,22	24,53	6,51	28,28	7,79	30,00	8,45	31,73	9,11	32,41	9,14	33,11	9,22
90%	10	18,70	2,23	22,07	2,78	25,45	3,33	27,00	3,61	28,55	3,89	29,18	3,9	29,80	3,94
	12	18,70	2,27	22,07	2,83	25,45	3,39	27,00	3,68	28,55	3,96	29,18	3,97	29,80	4,01
	14	18,70	2,31	22,07	2,88	25,45	3,45	27,00	3,74	28,55	4,03	29,18	4,05	29,80	4,09
	16	18,70	2,35	22,07	2,93	25,45	3,51	27,00	3,81	28,55	4,11	29,18	4,12	29,80	4,16
	18	18,70	2,4	22,07	2,98	25,45	3,57	27,00	3,88	28,55	4,18	29,18	4,19	29,80	4,23
	19	18,70	2,44	22,07	3,04	25,45	3,64	27,00	3,94	28,55	4,25	29,18	4,26	29,80	4,3
	21	18,70	2,61	22,07	3,25	25,45	3,9	27,00	4,23	28,55	4,56	29,18	4,57	29,80	4,61
	23	18,70	2,8	22,07	3,49	25,45	4,17	27,00	4,53	28,55	4,88	29,18	4,9	29,80	4,94
	25	18,70	2,99	22,07	3,73	25,45	4,47	27,00	4,84	28,55	5,22	29,18	5,24	29,80	5,29
	27	18,70	3,2	22,07	3,99	25,45	4,78	27,00	5,18	28,55	5,58	29,18	5,6	29,80	5,65
	29	18,70	3,42	22,07	4,26	25,45	5,1	27,00	5,53	28,55	5,96	29,18	5,98	29,80	6,04
	31	18,70	3,64	22,07	4,54	25,45	5,44	27,00	5,9	28,55	6,36	29,18	6,38	29,80	6,44

	33	18,70	3,88	22,07	4,84	25,45	5,79	27,00	6,28	28,55	6,77	29,18	6,79	29,80	6,86
	35	18,70	4,13	22,07	5,15	25,45	6,16	27,00	6,68	28,55	7,2	29,18	7,23	29,80	7,3
	37	18,70	4,39	22,07	5,47	25,45	6,55	27,00	7,11	28,55	7,66	29,18	7,69	29,80	7,76
	39	18,70	4,41	22,07	5,5	25,45	6,58	27,00	7,14	28,55	7,7	29,18	7,72	29,80	7,79
	41	18,70	4,43	22,07	5,52	25,45	6,61	27,00	7,17	28,55	7,73	29,18	7,75	29,80	7,83
	43	18,70	4,45	22,07	5,55	25,45	6,64	27,00	7,2	28,55	7,77	29,18	7,79	29,80	7,87
	45	18,70	4,47	22,07	5,57	25,45	6,67	27,00	7,24	28,55	7,8	29,18	7,83	29,80	7,9
	47	18,70	4,49	22,07	5,6	25,45	6,7	27,00	7,27	28,55	7,84	29,18	7,86	29,80	7,94
	48	18,70	4,51	22,07	5,62	25,45	6,73	27,00	7,3	28,55	7,87	29,18	7,9	29,80	7,97
	10	16,62	1,9	19,62	2,37	22,62	2,84	24,00	3,08	25,38	3,32	25,93	3,33	26,49	3,37
	12	16,62	1,94	19,62	2,42	22,62	2,89	24,00	3,14	25,38	3,38	25,93	3,39	26,49	3,43
	14	16,62	1,98	19,62	2,46	22,62	2,95	24,00	3,2	25,38	3,45	25,93	3,46	26,49	3,49
	16	16,62	2,01	19,62	2,51	22,62	3	24,00	3,25	25,38	3,51	25,93	3,52	26,49	3,55
	18	16,62	2,05	19,62	2,55	22,62	3,05	24,00	3,31	25,38	3,57	25,93	3,58	26,49	3,61
	19	16,62	2,08	19,62	2,59	22,62	3,11	24,00	3,37	25,38	3,63	25,93	3,64	26,49	3,68
	21	16,62	2,23	19,62	2,78	22,62	3,33	24,00	3,61	25,38	3,89	25,93	3,9	26,49	3,94
	23	16,62	2,39	19,62	2,98	22,62	3,57	24,00	3,87	25,38	4,17	25,93	4,18	26,49	4,22
	25	16,62	2,56	19,62	3,19	22,62	3,82	24,00	4,14	25,38	4,46	25,93	4,47	26,49	4,52
	27	16,62	2,73	19,62	3,41	22,62	4,08	24,00	4,42	25,38	4,77	25,93	4,78	26,49	4,83
80%	29	16,62	2,92	19,62	3,64	22,62	4,36	24,00	4,72	25,38	5,09	25,93	5,11	26,49	5,16
	31	16,62	3,11	19,62	3,88	22,62	4,64	24,00	5,04	25,38	5,43	25,93	5,45	26,49	5,5
	33	16,62	3,32	19,62	4,13	22,62	4,95	24,00	5,37	25,38	5,78	25,93	5,8	26,49	5,86
	35	16,62	3,53	19,62	4,4	22,62	5,26	24,00	5,71	25,38	6,15	25,93	6,17	26,49	6,23
	37	16,62	3,75	19,62	4,67	22,62	5,6	24,00	6,07	25,38	6,54	25,93	6,56	26,49	6,63
	39	16,62	3,77	19,62	4,7	22,62	5,62	24,00	6,1	25,38	6,57	25,93	6,59	26,49	6,66
	41	16,62	3,79	19,62	4,72	22,62	5,65	24,00	6,12	25,38	6,6	25,93	6,62	26,49	6,69
	43	16,62	3,8	19,62	4,74	22,62	5,67	24,00	6,15	25,38	6,63	25,93	6,65	26,49	6,72
	45	16,62	3,82	19,62	4,76	22,62	5,7	24,00	6,18	25,38	6,66	25,93	6,68	26,49	6,75
	47	16,62	3,84	19,62	4,78	22,62	5,73	24,00	6,21	25,38	6,69	25,93	6,72	26,49	6,78
	48	16,62	3,86	19,62	4,8	22,62	5,75	24,00	6,24	25,38	6,73	25,93	6,75	26,49	6,81
	10	14,54	1,6	17,16	2	19,79	2,39	21,00	2,6	22,21	2,8	22,69	2,81	23,18	2,83
	12	14,54	1,63	17,16	2,04	19,79	2,44	21,00	2,64	22,21	2,85	22,69	2,86	23,18	2,89
	14	14,54	1,66	17,16	2,07	19,79	2,48	21,00	2,69	22,21	2,9	22,69	2,91	23,18	2,94
	16	14,54	1,69	17,16	2,11	19,79	2,53	21,00	2,74	22,21	2,95	22,69	2,96	23,18	2,99
	18	14,54	1,72	17,16	2,15	19,79	2,57	21,00	2,79	22,21	3,01	22,69	3,01	23,18	3,04
	19	14,54	1,75	17,16	2,18	19,79	2,61	21,00	2,84	22,21	3,06	22,69	3,07	23,18	3,1
	21	14,54	1,88	17,16	2,34	19,79	2,8	21,00	3,04	22,21	3,28	22,69	3,29	23,18	3,32
	23	14,54	2,01	17,16	2,51	19,79	3	21,00	3,26	22,21	3,51	22,69	3,52	23,18	3,56
	25	14,54	2,15	17,16	2,68	19,79	3,21	21,00	3,49	22,21	3,76	22,69	3,77	23,18	3,8
	27	14,54	2,3	17,16	2,87	19,79	3,43	21,00	3,73	22,21	4,02	22,69	4,03	23,18	4,07
70%	29	14,54	2,46	17,16	3,06	19,79	3,67	21,00	3,98	22,21	4,29	22,69	4,3	23,18	4,34
	31	14,54	2,62	17,16	3,27	19,79	3,91	21,00	4,24	22,21	4,57	22,69	4,59	23,18	4,63
	33	14,54	2,79	17,16	3,48	19,79	4,17	21,00	4,52	22,21	4,87	22,69	4,89	23,18	4,93
	35	14,54	2,97	17,16	3,7	19,79	4,43	21,00	4,81	22,21	5,18	22,69	5,2	23,18	5,25
	37	14,54	3,16	17,16	3,94	19,79	4,71	21,00	5,11	22,21	5,51	22,69	5,53	23,18	5,58
	39	14,54	3,17	17,16	3,95	19,79	4,73	21,00	5,13	22,21	5,54	22,69	5,55	23,18	5,61
	41	14,54	3,19	17,16	3,97	19,79	4,76	21,00	5,16	22,21	5,56	22,69	5,58	23,18	5,63
	43	14,54	3,2	17,16	3,99	19,79	4,78	21,00	5,18	22,21	5,59	22,69	5,6	23,18	5,66
	45	14,54	3,22	17,16	4,01	19,79	4,8	21,00	5,21	22,21	5,61	22,69	5,63	23,18	5,68
	47	14,54	3,23	17,16	4,03	19,79	4,82	21,00	5,23	22,21	5,64	22,69	5,66	23,18	5,71
	48	14,54	3,25	17,16	4,05	19,79	4,84	21,00	5,25	22,21	5,66	22,69	5,68	23,18	5,74

	10	12,46	1,33	14,71	1,65	16,96	1,98	18,00	2,15	19,04	2,32	19,45	2,32	19,86	2,35
	12	12,46	1,35	14,71	1,68	16,96	2,02	18,00	2,19	19,04	2,36	19,45	2,37	19,86	2,39
	14	12,46	1,38	14,71	1,72	16,96	2,05	18,00	2,23	19,04	2,4	19,45	2,41	19,86	2,43
	16	12,46	1,4	14,71	1,75	16,96	2,09	18,00	2,27	19,04	2,44	19,45	2,45	19,86	2,48
	18	12,46	1,43	14,71	1,78	16,96	2,13	18,00	2,31	19,04	2,49	19,45	2,5	19,86	2,52
	19	12,46	1,45	14,71	1,81	16,96	2,16	18,00	2,35	19,04	2,53	19,45	2,54	19,86	2,56
	21	12,46	1,56	14,71	1,94	16,96	2,32	18,00	2,52	19,04	2,71	19,45	2,72	19,86	2,75
	23	12,46	1,67	14,71	2,08	16,96	2,49	18,00	2,7	19,04	2,91	19,45	2,91	19,86	2,94
	25	12,46	1,78	14,71	2,22	16,96	2,66	18,00	2,88	19,04	3,11	19,45	3,12	19,86	3,15
	27	12,46	1,91	14,71	2,37	16,96	2,84	18,00	3,08	19,04	3,32	19,45	3,33	19,86	3,37
60%	29	12,46	2,03	14,71	2,54	16,96	3,04	18,00	3,29	19,04	3,55	19,45	3,56	19,86	3,59
	31	12,46	2,17	14,71	2,7	16,96	3,24	18,00	3,51	19,04	3,79	19,45	3,8	19,86	3,83
	33	12,46	2,31	14,71	2,88	16,96	3,45	18,00	3,74	19,04	4,03	19,45	4,04	19,86	4,08
	35	12,46	2,46	14,71	3,06	16,96	3,67	18,00	3,98	19,04	4,29	19,45	4,3	19,86	4,34
	37	12,46	2,62	14,71	3,26	16,96	3,9	18,00	4,23	19,04	4,56	19,45	4,58	19,86	4,62
	39	12,46	2,63	14,71	3,27	16,96	3,92	18,00	4,25	19,04	4,58	19,45	4,6	19,86	4,64
	41	12,46	2,64	14,71	3,29	16,96	3,94	18,00	4,27	19,04	4,6	19,45	4,62	19,86	4,66
	43	12,46	2,65	14,71	3,3	16,96	3,95	18,00	4,29	19,04	4,62	19,45	4,64	19,86	4,68
	45	12,46	2,66	14,71	3,32	16,96	3,97	18,00	4,31	19,04	4,64	19,45	4,66	19,86	4,7
	47	12,46	2,68	14,71	3,33	16,96	3,99	18,00	4,33	19,04	4,67	19,45	4,68	19,86	4,73
	48	12,46	2,69	14,71	3,35	16,96	4,01	18,00	4,35	19,04	4,69	19,45	4,7	19,86	4,75
	10	10,39	1,08	12,27	1,34	14,14	1,6	15,00	1,74	15,87	1,88	16,21	1,88	16,55	1,9
	12	10,39	1,1	12,27	1,37	14,14	1,63	15,00	1,77	15,87	1,91	16,21	1,92	16,55	1,94
	14	10,39	1,12	12,27	1,39	14,14	1,66	15,00	1,81	15,87	1,95	16,21	1,95	16,55	1,97
	16	10,39	1,14	12,27	1,41	14,14	1,69	15,00	1,84	15,87	1,98	16,21	1,99	16,55	2,01
	18	10,39	1,16	12,27	1,44	14,14	1,72	15,00	1,87	15,87	2,02	16,21	2,02	16,55	2,04
	19	10,39	1,18	12,27	1,46	14,14	1,75	15,00	1,9	15,87	2,05	16,21	2,06	16,55	2,08
	21	10,39	1,26	12,27	1,57	14,14	1,88	15,00	2,04	15,87	2,2	16,21	2,2	16,55	2,23
	23	10,39	1,35	12,27	1,68	14,14	2,01	15,00	2,18	15,87	2,35	16,21	2,36	16,55	2,38
	25	10,39	1,44	12,27	1,8	14,14	2,15	15,00	2,34	15,87	2,52	16,21	2,53	16,55	2,55
	27	10,39	1,54	12,27	1,92	14,14	2,3	15,00	2,5	15,87	2,69	16,21	2,7	16,55	2,73
50%	29	10,39	1,65	12,27	2,05	14,14	2,46	15,00	2,67	15,87	2,88	16,21	2,88	16,55	2,91
	31	10,39	1,76	12,27	2,19	14,14	2,62	15,00	2,84	15,87	3,07	16,21	3,08	16,55	3,11
	33	10,39	1,87	12,27	2,33	14,14	2,79	15,00	3,03	15,87	3,27	16,21	3,28	16,55	3,31
	35	10,39	1,99	12,27	2,48	14,14	2,97	15,00	3,22	15,87	3,47	16,21	3,49	16,55	3,52
	37	10,39	2,12	12,27	2,64	14,14	3,16	15,00	3,43	15,87	3,7	16,21	3,71	16,55	3,74
	39	10,39	2,13	12,27	2,65	14,14	3,17	15,00	3,44	15,87	3,71	16,21	3,72	16,55	3,76
	41	10,39	2,14	12,27	2,66	14,14	3,19	15,00	3,46	15,87	3,73	16,21	3,74	16,55	3,78
	43	10,39	2,15	12,27	2,68	14,14	3,2	15,00	3,47	15,87	3,75	16,21	3,76	16,55	3,79
	45	10,39	2,16	12,27	2,69	14,14	3,22	15,00	3,49	15,87	3,76	16,21	3,77	16,55	3,81
	47	10,39	2,17	12,27	2,7	14,14	3,23	15,00	3,51	15,87	3,78	16,21	3,79	16,55	3,83
	48	10,39	2,18	12,27	2,71	14,14	3,25	15,00	3,52	15,87	3,8	16,21	3,81	16,55	3,85

HCSU 3501 XRV

TC: total capacity **PI**: power input

Combination (Capacity index)	Outdoor temperature(°C DB)	Indoor temperature(°C WB)													
		14		16		18		19		20		22		24	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	10	26,58	3,6	31,37	4,49	36,17	5,37	38,37	5,83	40,58	6,28	41,47	6,3	42,34	6,36
	12	26,58	3,67	31,37	4,57	36,17	5,47	38,37	5,94	40,58	6,4	41,47	6,42	42,34	6,48
	14	26,58	3,74	31,37	4,65	36,17	5,57	38,37	6,04	40,58	6,52	41,47	6,54	42,34	6,6
	16	26,58	3,8	31,37	4,74	36,17	5,67	38,37	6,15	40,58	6,63	41,47	6,65	42,34	6,72
	18	26,58	3,87	31,37	4,82	36,17	5,77	38,37	6,26	40,58	6,75	41,47	6,77	42,34	6,83
	19	26,58	3,94	31,37	4,9	36,17	5,87	38,37	6,37	40,58	6,86	41,47	6,89	42,34	6,95
	21	26,58	4,22	31,37	5,26	36,17	6,29	38,37	6,83	40,58	7,36	41,47	7,38	42,34	7,45
	23	26,58	4,52	31,37	5,63	36,17	6,74	38,37	7,31	40,58	7,88	41,47	7,91	42,34	7,98
	25	26,58	4,84	31,37	6,03	36,17	7,21	38,37	7,82	40,58	8,44	41,47	8,46	42,34	8,54
	27	26,58	5,17	31,37	6,44	36,17	7,71	38,37	8,36	40,58	9,02	41,47	9,04	42,34	9,13
	29	26,58	5,52	31,37	6,88	36,17	8,23	38,37	8,93	40,58	9,63	41,47	9,66	42,34	9,75
	31	26,58	5,89	31,37	7,33	36,17	8,78	38,37	9,52	40,58	10,27	41,47	10,3	42,34	10,4
	33	26,58	6,27	31,37	7,81	36,17	9,35	38,37	10,15	40,58	10,94	41,47	10,97	42,34	11,08
	35	26,58	6,67	31,37	8,31	36,17	9,95	38,37	10,79	40,58	11,63	41,47	11,67	42,34	11,78
	37	26,58	7,09	31,37	8,84	36,17	10,58	38,37	11,48	40,58	12,37	41,47	12,41	42,34	12,53
	39	26,58	7,12	31,37	8,88	36,17	10,63	38,37	11,53	40,58	12,43	41,47	12,47	42,34	12,59
	41	26,58	7,16	31,37	8,92	36,17	10,68	38,37	11,58	40,58	12,48	41,47	12,52	42,34	12,64
	43	26,58	7,19	31,37	8,96	36,17	10,73	38,37	11,63	40,58	12,54	41,47	12,58	42,34	12,7
	45	26,58	7,22	31,37	9	36,17	10,78	38,37	11,69	40,58	12,6	41,47	12,64	42,34	12,76
	47	26,58	7,26	31,37	9,04	36,17	10,83	38,37	11,74	40,58	12,66	41,47	12,7	42,34	12,82
	48	26,58	7,29	31,37	9,08	36,17	10,88	38,37	11,8	40,58	12,72	41,47	12,76	42,34	12,88
120%	10	26,14	3,57	30,86	4,44	35,57	5,32	37,75	5,77	39,92	6,22	40,79	6,24	41,66	6,3
	12	26,14	3,63	30,86	4,53	35,57	5,42	37,75	5,88	39,92	6,34	40,79	6,36	41,66	6,42
	14	26,14	3,7	30,86	4,61	35,57	5,52	37,75	5,99	39,92	6,45	40,79	6,47	41,66	6,54
	16	26,14	3,77	30,86	4,69	35,57	5,62	37,75	6,09	39,92	6,57	40,79	6,59	41,66	6,65
	18	26,14	3,83	30,86	4,77	35,57	5,72	37,75	6,2	39,92	6,68	40,79	6,7	41,66	6,77
	19	26,14	3,9	30,86	4,86	35,57	5,81	37,75	6,31	39,92	6,8	40,79	6,82	41,66	6,89
	21	26,14	4,18	30,86	5,21	35,57	6,23	37,75	6,76	39,92	7,29	40,79	7,31	41,66	7,38
	23	26,14	4,48	30,86	5,58	35,57	6,68	37,75	7,24	39,92	7,81	40,79	7,83	41,66	7,91
	25	26,14	4,79	30,86	5,97	35,57	7,15	37,75	7,75	39,92	8,35	40,79	8,38	41,66	8,46
	27	26,14	5,12	30,86	6,38	35,57	7,64	37,75	8,28	39,92	8,93	40,79	8,96	41,66	9,04
	29	26,14	5,47	30,86	6,81	35,57	8,16	37,75	8,85	39,92	9,54	40,79	9,56	41,66	9,66
	31	26,14	5,83	30,86	7,26	35,57	8,7	37,75	9,43	39,92	10,17	40,79	10,2	41,66	10,3
	33	26,14	6,21	30,86	7,74	35,57	9,26	37,75	10,05	39,92	10,83	40,79	10,86	41,66	10,97
	35	26,14	6,61	30,86	8,23	35,57	9,86	37,75	10,69	39,92	11,52	40,79	11,56	41,66	11,67
	37	26,14	7,03	30,86	8,75	35,57	10,48	37,75	11,37	39,92	12,26	40,79	12,29	41,66	12,41
	39	26,14	7,06	30,86	8,79	35,57	10,53	37,75	11,42	39,92	12,31	40,79	12,35	41,66	12,47
	41	26,14	7,09	30,86	8,83	35,57	10,57	37,75	11,47	39,92	12,36	40,79	12,4	41,66	12,52
	43	26,14	7,12	30,86	8,87	35,57	10,62	37,75	11,52	39,92	12,42	40,79	12,46	41,66	12,58
	45	26,14	7,15	30,86	8,91	35,57	10,67	37,75	11,58	39,92	12,48	40,79	12,52	41,66	12,64
	47	26,14	7,19	30,86	8,95	35,57	10,72	37,75	11,63	39,92	12,54	40,79	12,58	41,66	12,7
	48	26,14	7,22	30,86	9	35,57	10,77	37,75	11,68	39,92	12,59	40,79	12,63	41,66	12,76
110%	10	25,71	3,53	30,35	4,4	34,99	5,27	37,12	5,72	39,26	6,16	40,11	6,18	40,97	6,24
	12	25,71	3,6	30,35	4,48	34,99	5,37	37,12	5,82	39,26	6,28	40,11	6,3	40,97	6,36
	14	25,71	3,66	30,35	4,56	34,99	5,47	37,12	5,93	39,26	6,39	40,11	6,41	40,97	6,47

	16	25,71	3,73	30,35	4,65	34,99	5,56	37,12	6,03	39,26	6,5	40,11	6,52	40,97	6,59
	18	25,71	3,79	30,35	4,73	34,99	5,66	37,12	6,14	39,26	6,62	40,11	6,64	40,97	6,7
	19	25,71	3,86	30,35	4,81	34,99	5,76	37,12	6,25	39,26	6,73	40,11	6,75	40,97	6,82
	21	25,71	4,14	30,35	5,16	34,99	6,17	37,12	6,7	39,26	7,22	40,11	7,24	40,97	7,31
	23	25,71	4,43	30,35	5,52	34,99	6,61	37,12	7,17	39,26	7,73	40,11	7,75	40,97	7,83
	25	25,71	4,74	30,35	5,91	34,99	7,08	37,12	7,67	39,26	8,27	40,11	8,3	40,97	8,38
	27	25,71	5,07	30,35	6,32	34,99	7,56	37,12	8,2	39,26	8,84	40,11	8,87	40,97	8,96
	29	25,71	5,41	30,35	6,74	34,99	8,08	37,12	8,76	39,26	9,44	40,11	9,47	40,97	9,56
	31	25,71	5,77	30,35	7,19	34,99	8,61	37,12	9,34	39,26	10,07	40,11	10,1	40,97	10,2
	33	25,71	6,15	30,35	7,66	34,99	9,17	37,12	9,95	39,26	10,73	40,11	10,76	40,97	10,86
	35	25,71	6,54	30,35	8,15	34,99	9,76	37,12	10,59	39,26	11,41	40,11	11,45	40,97	11,56
	37	25,71	6,96	30,35	8,67	34,99	10,38	37,12	11,26	39,26	12,14	40,11	12,17	40,97	12,29
	39	25,71	6,99	30,35	8,71	34,99	10,43	37,12	11,31	39,26	12,19	40,11	12,23	40,97	12,35
	41	25,71	7,02	30,35	8,75	34,99	10,47	37,12	11,36	39,26	12,24	40,11	12,28	40,97	12,4
	43	25,71	7,05	30,35	8,79	34,99	10,52	37,12	11,41	39,26	12,3	40,11	12,34	40,97	12,46
	45	25,71	7,08	30,35	8,83	34,99	10,57	37,12	11,46	39,26	12,36	40,11	12,4	40,97	12,52
	47	25,71	7,12	30,35	8,87	34,99	10,62	37,12	11,52	39,26	12,42	40,11	12,45	40,97	12,57
	48	25,71	7,15	30,35	8,91	34,99	10,67	37,12	11,57	39,26	12,47	40,11	12,51	40,97	12,63
100%	10	24,24	3,3	28,62	4,11	32,98	4,92	35,00	5,34	37,02	5,75	37,82	5,77	38,63	5,82
	12	24,24	3,36	28,62	4,18	32,98	5,01	35,00	5,43	37,02	5,86	37,82	5,88	38,63	5,93
	14	24,24	3,42	28,62	4,26	32,98	5,1	35,00	5,53	37,02	5,96	37,82	5,98	38,63	6,04
	16	24,24	3,48	28,62	4,34	32,98	5,19	35,00	5,63	37,02	6,07	37,82	6,09	38,63	6,15
	18	24,24	3,54	28,62	4,41	32,98	5,28	35,00	5,73	37,02	6,18	37,82	6,2	38,63	6,26
	19	24,24	3,6	28,62	4,49	32,98	5,37	35,00	5,83	37,02	6,28	37,82	6,3	38,63	6,36
	21	24,24	3,86	28,62	4,81	32,98	5,76	35,00	6,25	37,02	6,74	37,82	6,76	38,63	6,82
	23	24,24	4,14	28,62	5,15	32,98	6,17	35,00	6,69	37,02	7,22	37,82	7,24	38,63	7,31
	25	24,24	4,43	28,62	5,52	32,98	6,6	35,00	7,16	37,02	7,72	37,82	7,75	38,63	7,82
	27	24,24	4,73	28,62	5,9	32,98	7,06	35,00	7,66	37,02	8,25	37,82	8,28	38,63	8,36
	29	24,24	5,05	28,62	6,3	32,98	7,54	35,00	8,18	37,02	8,81	37,82	8,84	38,63	8,93
	31	24,24	5,39	28,62	6,71	32,98	8,04	35,00	8,72	37,02	9,4	37,82	9,43	38,63	9,52
	33	24,24	5,74	28,62	7,15	32,98	8,56	35,00	9,29	37,02	10,01	37,82	10,04	38,63	10,14
	35	24,24	6,11	28,62	7,61	32,98	9,11	35,00	9,88	37,02	10,65	37,82	10,68	38,63	10,79
	37	24,24	6,49	28,62	8,09	32,98	9,69	35,00	10,51	37,02	11,33	37,82	11,36	38,63	11,47
	39	24,24	6,52	28,62	8,13	32,98	9,73	35,00	10,55	37,02	11,38	37,82	11,41	38,63	11,52
	41	24,24	6,55	28,62	8,16	32,98	9,77	35,00	10,6	37,02	11,43	37,82	11,46	38,63	11,57
	43	24,24	6,58	28,62	8,2	32,98	9,82	35,00	10,65	37,02	11,48	37,82	11,52	38,63	11,63
	45	24,24	6,61	28,62	8,24	32,98	9,87	35,00	10,7	37,02	11,53	37,82	11,57	38,63	11,68
	47	24,24	6,64	28,62	8,28	32,98	9,91	35,00	10,75	37,02	11,59	37,82	11,62	38,63	11,74
	48	24,24	6,67	28,62	8,32	32,98	9,96	35,00	10,8	37,02	11,64	37,82	11,68	38,63	11,79
90%	10	21,81	2,85	25,75	3,55	29,69	4,25	31,50	4,61	33,31	4,97	34,04	4,99	34,76	5,04
	12	21,81	2,9	25,75	3,62	29,69	4,33	31,50	4,7	33,31	5,06	34,04	5,08	34,76	5,13
	14	21,81	2,96	25,75	3,68	29,69	4,41	31,50	4,78	33,31	5,16	34,04	5,17	34,76	5,22
	16	21,81	3,01	25,75	3,75	29,69	4,49	31,50	4,87	33,31	5,25	34,04	5,26	34,76	5,32
	18	21,81	3,06	25,75	3,81	29,69	4,57	31,50	4,95	33,31	5,34	34,04	5,36	34,76	5,41
	19	21,81	3,11	25,75	3,88	29,69	4,65	31,50	5,04	33,31	5,43	34,04	5,45	34,76	5,5
	21	21,81	3,34	25,75	4,16	29,69	4,98	31,50	5,4	33,31	5,82	34,04	5,84	34,76	5,9
	23	21,81	3,58	25,75	4,46	29,69	5,34	31,50	5,79	33,31	6,24	34,04	6,26	34,76	6,32
	25	21,81	3,83	25,75	4,77	29,69	5,71	31,50	6,19	33,31	6,68	34,04	6,7	34,76	6,76
	27	21,81	4,09	25,75	5,1	29,69	6,1	31,50	6,62	33,31	7,14	34,04	7,16	34,76	7,23
	29	21,81	4,37	25,75	5,44	29,69	6,52	31,50	7,07	33,31	7,62	34,04	7,64	34,76	7,72
	31	21,81	4,66	25,75	5,8	29,69	6,95	31,50	7,54	33,31	8,13	34,04	8,15	34,76	8,23

	33	21,81	4,96	25,75	6,18	29,69	7,4	31,50	8,03	33,31	8,66	34,04	8,68	34,76	8,77
	35	21,81	5,28	25,75	6,58	29,69	7,88	31,50	8,54	33,31	9,21	34,04	9,24	34,76	9,33
	37	21,81	5,61	25,75	7	29,69	8,38	31,50	9,08	33,31	9,79	34,04	9,82	34,76	9,92
	39	21,81	5,64	25,75	7,03	29,69	8,41	31,50	9,12	33,31	9,84	34,04	9,87	34,76	9,96
	41	21,81	5,66	25,75	7,06	29,69	8,45	31,50	9,16	33,31	9,88	34,04	9,91	34,76	10,01
	43	21,81	5,69	25,75	7,09	29,69	8,49	31,50	9,21	33,31	9,93	34,04	9,96	34,76	10,05
	45	21,81	5,72	25,75	7,12	29,69	8,53	31,50	9,25	33,31	9,97	34,04	10	34,76	10,1
	47	21,81	5,74	25,75	7,16	29,69	8,57	31,50	9,29	33,31	10,02	34,04	10,05	34,76	10,15
	48	21,81	5,77	25,75	7,19	29,69	8,61	31,50	9,34	33,31	10,06	34,04	10,09	34,76	10,19
	10	19,39	2,43	22,89	3,03	26,39	3,63	28,00	3,94	29,61	4,25	30,26	4,26	30,89	4,3
	12	19,39	2,48	22,89	3,09	26,39	3,7	28,00	4,01	29,61	4,33	30,26	4,34	30,89	4,38
	14	19,39	2,52	22,89	3,15	26,39	3,77	28,00	4,09	29,61	4,4	30,26	4,42	30,89	4,46
	16	19,39	2,57	22,89	3,2	26,39	3,83	28,00	4,16	29,61	4,48	30,26	4,5	30,89	4,54
	18	19,39	2,62	22,89	3,26	26,39	3,9	28,00	4,23	29,61	4,56	30,26	4,58	30,89	4,62
	19	19,39	2,66	22,89	3,31	26,39	3,97	28,00	4,3	29,61	4,64	30,26	4,65	30,89	4,7
	21	19,39	2,85	22,89	3,55	26,39	4,25	28,00	4,61	29,61	4,97	30,26	4,99	30,89	5,04
	23	19,39	3,05	22,89	3,81	26,39	4,56	28,00	4,94	29,61	5,33	30,26	5,34	30,89	5,4
	25	19,39	3,27	22,89	4,07	26,39	4,88	28,00	5,29	29,61	5,7	30,26	5,72	30,89	5,78
	27	19,39	3,49	22,89	4,35	26,39	5,21	28,00	5,65	29,61	6,1	30,26	6,11	30,89	6,17
80%	29	19,39	3,73	22,89	4,65	26,39	5,57	28,00	6,04	29,61	6,51	30,26	6,53	30,89	6,59
	31	19,39	3,98	22,89	4,96	26,39	5,94	28,00	6,44	29,61	6,94	30,26	6,96	30,89	7,03
	33	19,39	4,24	22,89	5,28	26,39	6,32	28,00	6,86	29,61	7,39	30,26	7,42	30,89	7,49
	35	19,39	4,51	22,89	5,62	26,39	6,73	28,00	7,3	29,61	7,86	30,26	7,89	30,89	7,97
	37	19,39	4,8	22,89	5,98	26,39	7,15	28,00	7,76	29,61	8,37	30,26	8,39	30,89	8,47
	39	19,39	4,82	22,89	6	26,39	7,19	28,00	7,79	29,61	8,4	30,26	8,43	30,89	8,51
	41	19,39	4,84	22,89	6,03	26,39	7,22	28,00	7,83	29,61	8,44	30,26	8,46	30,89	8,55
	43	19,39	4,86	22,89	6,06	26,39	7,25	28,00	7,86	29,61	8,48	30,26	8,5	30,89	8,59
	45	19,39	4,88	22,89	6,08	26,39	7,29	28,00	7,9	29,61	8,52	30,26	8,54	30,89	8,63
	47	19,39	4,91	22,89	6,11	26,39	7,32	28,00	7,94	29,61	8,56	30,26	8,58	30,89	8,67
	48	19,39	4,93	22,89	6,14	26,39	7,35	28,00	7,97	29,61	8,6	30,26	8,62	30,89	8,71
	10	16,97	2,05	20,03	2,55	23,09	3,06	24,50	3,32	25,91	3,58	26,47	3,59	27,04	3,62
	12	16,97	2,09	20,03	2,6	23,09	3,12	24,50	3,38	25,91	3,64	26,47	3,65	27,04	3,69
	14	16,97	2,13	20,03	2,65	23,09	3,17	24,50	3,44	25,91	3,71	26,47	3,72	27,04	3,76
	16	16,97	2,16	20,03	2,7	23,09	3,23	24,50	3,5	25,91	3,78	26,47	3,79	27,04	3,82
	18	16,97	2,2	20,03	2,74	23,09	3,29	24,50	3,56	25,91	3,84	26,47	3,85	27,04	3,89
	19	16,97	2,24	20,03	2,79	23,09	3,34	24,50	3,62	25,91	3,91	26,47	3,92	27,04	3,96
	21	16,97	2,4	20,03	2,99	23,09	3,58	24,50	3,89	25,91	4,19	26,47	4,2	27,04	4,24
	23	16,97	2,57	20,03	3,21	23,09	3,84	24,50	4,16	25,91	4,49	26,47	4,5	27,04	4,54
	25	16,97	2,75	20,03	3,43	23,09	4,11	24,50	4,45	25,91	4,8	26,47	4,82	27,04	4,86
	27	16,97	2,94	20,03	3,67	23,09	4,39	24,50	4,76	25,91	5,13	26,47	5,15	27,04	5,2
70%	29	16,97	3,14	20,03	3,91	23,09	4,69	24,50	5,08	25,91	5,48	26,47	5,5	27,04	5,55
	31	16,97	3,35	20,03	4,17	23,09	5	24,50	5,42	25,91	5,84	26,47	5,86	27,04	5,92
	33	16,97	3,57	20,03	4,45	23,09	5,32	24,50	5,78	25,91	6,23	26,47	6,24	27,04	6,31
	35	16,97	3,8	20,03	4,73	23,09	5,66	24,50	6,14	25,91	6,62	26,47	6,64	27,04	6,71
	37	16,97	4,04	20,03	5,03	23,09	6,02	24,50	6,53	25,91	7,04	26,47	7,07	27,04	7,13
	39	16,97	4,06	20,03	5,05	23,09	6,05	24,50	6,56	25,91	7,07	26,47	7,1	27,04	7,17
	41	16,97	4,07	20,03	5,08	23,09	6,08	24,50	6,59	25,91	7,11	26,47	7,13	27,04	7,2
	43	16,97	4,09	20,03	5,1	23,09	6,11	24,50	6,62	25,91	7,14	26,47	7,16	27,04	7,23
	45	16,97	4,11	20,03	5,12	23,09	6,13	24,50	6,65	25,91	7,17	26,47	7,19	27,04	7,26
	47	16,97	4,13	20,03	5,15	23,09	6,16	24,50	6,68	25,91	7,21	26,47	7,23	27,04	7,3
	48	16,97	4,15	20,03	5,17	23,09	6,19	24,50	6,72	25,91	7,24	26,47	7,26	27,04	7,33

	10	14,54	1,7	17,17	2,11	19,79	2,53	21,00	2,75	22,21	2,96	22,69	2,97	23,17	3
	12	14,54	1,73	17,17	2,15	19,79	2,58	21,00	2,8	22,21	3,02	22,69	3,02	23,17	3,05
	14	14,54	1,76	17,17	2,19	19,79	2,63	21,00	2,85	22,21	3,07	22,69	3,08	23,17	3,11
	16	14,54	1,79	17,17	2,23	19,79	2,67	21,00	2,9	22,21	3,12	22,69	3,13	23,17	3,16
	18	14,54	1,82	17,17	2,27	19,79	2,72	21,00	2,95	22,21	3,18	22,69	3,19	23,17	3,22
	19	14,54	1,85	17,17	2,31	19,79	2,77	21,00	3	22,21	3,23	22,69	3,24	23,17	3,28
	21	14,54	1,99	17,17	2,48	19,79	2,97	21,00	3,22	22,21	3,47	22,69	3,48	23,17	3,51
	23	14,54	2,13	17,17	2,65	19,79	3,18	21,00	3,45	22,21	3,71	22,69	3,73	23,17	3,76
	25	14,54	2,28	17,17	2,84	19,79	3,4	21,00	3,69	22,21	3,97	22,69	3,99	23,17	4,03
	27	14,54	2,44	17,17	3,03	19,79	3,63	21,00	3,94	22,21	4,25	22,69	4,26	23,17	4,3
60%	29	14,54	2,6	17,17	3,24	19,79	3,88	21,00	4,21	22,21	4,54	22,69	4,55	23,17	4,59
	31	14,54	2,77	17,17	3,46	19,79	4,14	21,00	4,49	22,21	4,84	22,69	4,85	23,17	4,9
	33	14,54	2,95	17,17	3,68	19,79	4,41	21,00	4,78	22,21	5,15	22,69	5,17	23,17	5,22
	35	14,54	3,14	17,17	3,92	19,79	4,69	21,00	5,09	22,21	5,48	22,69	5,5	23,17	5,55
	37	14,54	3,34	17,17	4,16	19,79	4,99	21,00	5,41	22,21	5,83	22,69	5,85	23,17	5,91
	39	14,54	3,36	17,17	4,18	19,79	5,01	21,00	5,43	22,21	5,86	22,69	5,87	23,17	5,93
	41	14,54	3,37	17,17	4,2	19,79	5,03	21,00	5,46	22,21	5,88	22,69	5,9	23,17	5,96
	43	14,54	3,39	17,17	4,22	19,79	5,05	21,00	5,48	22,21	5,91	22,69	5,93	23,17	5,99
	45	14,54	3,4	17,17	4,24	19,79	5,08	21,00	5,51	22,21	5,94	22,69	5,96	23,17	6,01
	47	14,54	3,42	17,17	4,26	19,79	5,1	21,00	5,53	22,21	5,96	22,69	5,98	23,17	6,04
	48	14,54	3,43	17,17	4,28	19,79	5,12	21,00	5,56	22,21	5,99	22,69	6,01	23,17	6,07
	10	12,12	1,37	14,30	1,71	16,50	2,05	17,50	2,22	18,50	2,4	18,91	2,41	19,31	2,43
	12	12,12	1,4	14,30	1,74	16,50	2,09	17,50	2,27	18,50	2,44	18,91	2,45	19,31	2,47
	14	12,12	1,43	14,30	1,78	16,50	2,13	17,50	2,31	18,50	2,49	18,91	2,49	19,31	2,52
	16	12,12	1,45	14,30	1,81	16,50	2,17	17,50	2,35	18,50	2,53	18,91	2,54	19,31	2,56
	18	12,12	1,48	14,30	1,84	16,50	2,2	17,50	2,39	18,50	2,58	18,91	2,58	19,31	2,61
	19	12,12	1,5	14,30	1,87	16,50	2,24	17,50	2,43	18,50	2,62	18,91	2,63	19,31	2,65
	21	12,12	1,61	14,30	2,01	16,50	2,4	17,50	2,61	18,50	2,81	18,91	2,82	19,31	2,85
	23	12,12	1,73	14,30	2,15	16,50	2,57	17,50	2,79	18,50	3,01	18,91	3,02	19,31	3,05
	25	12,12	1,85	14,30	2,3	16,50	2,75	17,50	2,99	18,50	3,22	18,91	3,23	19,31	3,26
	27	12,12	1,97	14,30	2,46	16,50	2,94	17,50	3,19	18,50	3,44	18,91	3,45	19,31	3,49
50%	29	12,12	2,11	14,30	2,63	16,50	3,14	17,50	3,41	18,50	3,68	18,91	3,69	19,31	3,72
	31	12,12	2,25	14,30	2,8	16,50	3,35	17,50	3,64	18,50	3,92	18,91	3,93	19,31	3,97
	33	12,12	2,39	14,30	2,98	16,50	3,57	17,50	3,87	18,50	4,17	18,91	4,19	19,31	4,23
	35	12,12	2,55	14,30	3,17	16,50	3,8	17,50	4,12	18,50	4,44	18,91	4,45	19,31	4,5
	37	12,12	2,71	14,30	3,37	16,50	4,04	17,50	4,38	18,50	4,72	18,91	4,74	19,31	4,78
	39	12,12	2,72	14,30	3,39	16,50	4,06	17,50	4,4	18,50	4,74	18,91	4,76	19,31	4,8
	41	12,12	2,73	14,30	3,4	16,50	4,08	17,50	4,42	18,50	4,77	18,91	4,78	19,31	4,83
	43	12,12	2,74	14,30	3,42	16,50	4,09	17,50	4,44	18,50	4,79	18,91	4,8	19,31	4,85
	45	12,12	2,76	14,30	3,44	16,50	4,11	17,50	4,46	18,50	4,81	18,91	4,82	19,31	4,87
	47	12,12	2,77	14,30	3,45	16,50	4,13	17,50	4,48	18,50	4,83	18,91	4,85	19,31	4,89
	48	12,12	2,78	14,30	3,47	16,50	4,15	17,50	4,5	18,50	4,85	18,91	4,87	19,31	4,92

HCSU 4001 XRV

TC: total capacity **PI**: power input

Combination (Capacity index)	Outdoor temperature(°C DB)	Indoor temperature(°C WB)													
		14		16		18		19		20		22		24	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	10	30,37	4,47	35,85	5,57	41,33	6,67	43,86	7,23	46,38	7,8	47,39	7,82	48,4	7,9
	12	30,37	4,55	35,85	5,67	41,33	6,79	43,86	7,37	46,38	7,94	47,39	7,96	48,4	8,04
	14	30,37	4,63	35,85	5,77	41,33	6,91	43,86	7,5	46,38	8,08	47,39	8,11	48,4	8,19
	16	30,37	4,72	35,85	5,88	41,33	7,04	43,86	7,63	46,38	8,23	47,39	8,25	48,4	8,33
	18	30,37	4,8	35,85	5,98	41,33	7,16	43,86	7,77	46,38	8,37	47,39	8,4	48,4	8,48
	19	30,37	4,88	35,85	6,08	41,33	7,29	43,86	7,9	46,38	8,52	47,39	8,54	48,4	8,63
	21	30,37	5,24	35,85	6,52	41,33	7,81	43,86	8,47	46,38	9,13	47,39	9,16	48,4	9,25
	23	30,37	5,61	35,85	6,99	41,33	8,37	43,86	9,07	46,38	9,78	47,39	9,81	48,4	9,91
	25	30,37	6	35,85	7,48	41,33	8,95	43,86	9,71	46,38	10,47	47,39	10,5	48,4	10,6
	27	30,37	6,41	35,85	7,99	41,33	9,57	43,86	10,38	46,38	11,19	47,39	11,22	48,4	11,33
	29	30,37	6,85	35,85	8,53	41,33	10,22	43,86	11,08	46,38	11,95	47,39	11,98	48,4	12,1
	31	30,37	7,3	35,85	9,1	41,33	10,9	43,86	11,82	46,38	12,74	47,39	12,78	48,4	12,9
	33	30,37	7,78	35,85	9,69	41,33	11,61	43,86	12,59	46,38	13,57	47,39	13,61	48,4	13,74
	35	30,37	8,28	35,85	10,31	41,33	12,35	43,86	13,39	46,38	14,44	47,39	14,48	48,4	14,62
	37	30,37	8,8	35,85	10,97	41,33	13,13	43,86	14,24	46,38	15,36	47,39	15,4	48,4	15,55
	39	30,37	8,84	35,85	11,02	41,33	13,19	43,86	14,31	46,38	15,42	47,39	15,47	48,4	15,62
	41	30,37	8,88	35,85	11,07	41,33	13,25	43,86	14,37	46,38	15,49	47,39	15,54	48,4	15,69
	43	30,37	8,92	35,85	11,12	41,33	13,31	43,86	14,44	46,38	15,56	47,39	15,61	48,4	15,76
	45	30,37	8,96	35,85	11,17	41,33	13,37	43,86	14,5	46,38	15,64	47,39	15,68	48,4	15,84
	47	30,37	9,01	35,85	11,22	41,33	13,43	43,86	14,57	46,38	15,71	47,39	15,76	48,4	15,91
	48	30,37	9,05	35,85	11,27	41,33	13,5	43,86	14,64	46,38	15,78	47,39	15,83	48,4	15,98
120%	10	29,88	4,43	35,27	5,52	40,66	6,6	43,14	7,16	45,62	7,72	46,61	7,74	47,61	7,82
	12	29,88	4,51	35,27	5,62	40,66	6,73	43,14	7,3	45,62	7,86	46,61	7,89	47,61	7,96
	14	29,88	4,59	35,27	5,72	40,66	6,85	43,14	7,43	45,62	8,01	46,61	8,03	47,61	8,11
	16	29,88	4,67	35,27	5,82	40,66	6,97	43,14	7,56	45,62	8,15	46,61	8,18	47,61	8,25
	18	29,88	4,75	35,27	5,92	40,66	7,09	43,14	7,69	45,62	8,29	46,61	8,32	47,61	8,4
	19	29,88	4,84	35,27	6,03	40,66	7,22	43,14	7,83	45,62	8,44	46,61	8,46	47,61	8,54
	21	29,88	5,18	35,27	6,46	40,66	7,74	43,14	8,39	45,62	9,04	46,61	9,07	47,61	9,16
	23	29,88	5,55	35,27	6,92	40,66	8,29	43,14	8,99	45,62	9,69	46,61	9,72	47,61	9,81
	25	29,88	5,94	35,27	7,4	40,66	8,87	43,14	9,62	45,62	10,37	46,61	10,4	47,61	10,5
	27	29,88	6,35	35,27	7,92	40,66	9,48	43,14	10,28	45,62	11,08	46,61	11,12	47,61	11,22
	29	29,88	6,78	35,27	8,45	40,66	10,12	43,14	10,98	45,62	11,83	46,61	11,87	47,61	11,98
	31	29,88	7,23	35,27	9,01	40,66	10,79	43,14	11,71	45,62	12,62	46,61	12,66	47,61	12,78
	33	29,88	7,71	35,27	9,6	40,66	11,5	43,14	12,47	45,62	13,44	46,61	13,48	47,61	13,61
	35	29,88	8,2	35,27	10,21	40,66	12,23	43,14	13,26	45,62	14,3	46,61	14,34	47,61	14,48
	37	29,88	8,72	35,27	10,86	40,66	13,01	43,14	14,11	45,62	15,21	46,61	15,25	47,61	15,4
	39	29,88	8,76	35,27	10,91	40,66	13,06	43,14	14,17	45,62	15,27	46,61	15,32	47,61	15,47
	41	29,88	8,8	35,27	10,96	40,66	13,12	43,14	14,23	45,62	15,34	46,61	15,39	47,61	15,54
	43	29,88	8,84	35,27	11,01	40,66	13,18	43,14	14,3	45,62	15,41	46,61	15,46	47,61	15,61
	45	29,88	8,88	35,27	11,06	40,66	13,24	43,14	14,37	45,62	15,49	46,61	15,53	47,61	15,68
	47	29,88	8,92	35,27	11,11	40,66	13,31	43,14	14,43	45,62	15,56	46,61	15,6	47,61	15,76
	48	29,88	8,96	35,27	11,16	40,66	13,37	43,14	14,5	45,62	15,63	46,61	15,68	47,61	15,83
110%	10	29,38	4,38	34,68	5,46	39,99	6,54	42,43	7,09	44,87	7,65	45,84	7,67	46,82	7,74
	12	29,38	4,46	34,68	5,56	39,99	6,66	42,43	7,22	44,87	7,79	45,84	7,81	46,82	7,89
	14	29,38	4,55	34,68	5,66	39,99	6,78	42,43	7,36	44,87	7,93	45,84	7,95	46,82	8,03

	16	29,38	4,63	34,68	5,77	39,99	6,9	42,43	7,49	44,87	8,07	45,84	8,1	46,82	8,17
	18	29,38	4,71	34,68	5,87	39,99	7,02	42,43	7,62	44,87	8,21	45,84	8,24	46,82	8,32
	19	29,38	4,79	34,68	5,97	39,99	7,15	42,43	7,75	44,87	8,35	45,84	8,38	46,82	8,46
	21	29,38	5,13	34,68	6,4	39,99	7,66	42,43	8,31	44,87	8,96	45,84	8,98	46,82	9,07
	23	29,38	5,5	34,68	6,85	39,99	8,21	42,43	8,9	44,87	9,59	45,84	9,62	46,82	9,72
	25	29,38	5,89	34,68	7,33	39,99	8,78	42,43	9,52	44,87	10,27	45,84	10,3	46,82	10,4
	27	29,38	6,29	34,68	7,84	39,99	9,39	42,43	10,18	44,87	10,97	45,84	11,01	46,82	11,11
	29	29,38	6,72	34,68	8,37	39,99	10,02	42,43	10,87	44,87	11,72	45,84	11,75	46,82	11,87
	31	29,38	7,16	34,68	8,93	39,99	10,69	42,43	11,59	44,87	12,5	45,84	12,53	46,82	12,66
	33	29,38	7,63	34,68	9,51	39,99	11,38	42,43	12,35	44,87	13,31	45,84	13,35	46,82	13,48
	35	29,38	8,12	34,68	10,11	39,99	12,11	42,43	13,14	44,87	14,16	45,84	14,2	46,82	14,34
	37	29,38	8,63	34,68	10,76	39,99	12,88	42,43	13,97	44,87	15,06	45,84	15,11	46,82	15,25
	39	29,38	8,67	34,68	10,8	39,99	12,94	42,43	14,03	44,87	15,13	45,84	15,17	46,82	15,32
	41	29,38	8,71	34,68	10,85	39,99	12,99	42,43	14,09	44,87	15,19	45,84	15,24	46,82	15,39
	43	29,38	8,75	34,68	10,9	39,99	13,06	42,43	14,16	44,87	15,26	45,84	15,31	46,82	15,46
	45	29,38	8,79	34,68	10,95	39,99	13,12	42,43	14,23	44,87	15,34	45,84	15,38	46,82	15,53
	47	29,38	8,83	34,68	11	39,99	13,18	42,43	14,29	44,87	15,41	45,84	15,45	46,82	15,6
	48	29,38	8,87	34,68	11,05	39,99	13,24	42,43	14,36	44,87	15,48	45,84	15,52	46,82	15,67
100%	10	27,7	4,09	32,7	5,1	37,7	6,1	40	6,62	42,3	7,14	43,22	7,16	44,14	7,23
	12	27,7	4,17	32,7	5,19	37,7	6,22	40	6,74	42,3	7,27	43,22	7,29	44,14	7,36
	14	27,7	4,24	32,7	5,29	37,7	6,33	40	6,87	42,3	7,4	43,22	7,42	44,14	7,5
	16	27,7	4,32	32,7	5,38	37,7	6,44	40	6,99	42,3	7,53	43,22	7,56	44,14	7,63
	18	27,7	4,39	32,7	5,48	37,7	6,56	40	7,11	42,3	7,67	43,22	7,69	44,14	7,76
	19	27,7	4,47	32,7	5,57	37,7	6,67	40	7,23	42,3	7,8	43,22	7,82	44,14	7,9
	21	27,7	4,79	32,7	5,97	37,7	7,15	40	7,75	42,3	8,36	43,22	8,38	44,14	8,47
	23	27,7	5,13	32,7	6,4	37,7	7,66	40	8,31	42,3	8,95	43,22	8,98	44,14	9,07
	25	27,7	5,49	32,7	6,84	37,7	8,2	40	8,89	42,3	9,58	43,22	9,61	44,14	9,7
	27	27,7	5,87	32,7	7,32	37,7	8,76	40	9,5	42,3	10,24	43,22	10,27	44,14	10,37
	29	27,7	6,27	32,7	7,81	37,7	9,35	40	10,15	42,3	10,94	43,22	10,97	44,14	11,08
	31	27,7	6,69	32,7	8,33	37,7	9,98	40	10,82	42,3	11,66	43,22	11,7	44,14	11,81
	33	27,7	7,12	32,7	8,87	37,7	10,63	40	11,52	42,3	12,42	43,22	12,46	44,14	12,58
	35	27,7	7,58	32,7	9,44	37,7	11,3	40	12,26	42,3	13,22	43,22	13,26	44,14	13,39
	37	27,7	8,06	32,7	10,04	37,7	12,02	40	13,04	42,3	14,06	43,22	14,1	44,14	14,24
	39	27,7	8,09	32,7	10,08	37,7	12,07	40	13,1	42,3	14,12	43,22	14,16	44,14	14,3
	41	27,7	8,13	32,7	10,13	37,7	12,13	40	13,15	42,3	14,18	43,22	14,22	44,14	14,36
	43	27,7	8,17	32,7	10,18	37,7	12,19	40	13,22	42,3	14,25	43,22	14,29	44,14	14,43
	45	27,7	8,21	32,7	10,22	37,7	12,24	40	13,28	42,3	14,31	43,22	14,36	44,14	14,5
	47	27,7	8,24	32,7	10,27	37,7	12,3	40	13,34	42,3	14,38	43,22	14,42	44,14	14,56
	48	27,7	8,28	32,7	10,32	37,7	12,35	40	13,4	42,3	14,45	43,22	14,49	44,14	14,63
90%	10	24,93	3,54	29,43	4,41	33,93	5,28	36	5,72	38,07	6,17	38,9	6,19	39,73	6,25
	12	24,93	3,6	29,43	4,49	33,93	5,37	36	5,83	38,07	6,28	38,9	6,3	39,73	6,36
	14	24,93	3,67	29,43	4,57	33,93	5,47	36	5,94	38,07	6,4	38,9	6,42	39,73	6,48
	16	24,93	3,73	29,43	4,65	33,93	5,57	36	6,04	38,07	6,51	38,9	6,53	39,73	6,6
	18	24,93	3,8	29,43	4,73	33,93	5,67	36	6,15	38,07	6,63	38,9	6,65	39,73	6,71
	19	24,93	3,86	29,43	4,82	33,93	5,77	36	6,25	38,07	6,74	38,9	6,76	39,73	6,83
	21	24,93	4,14	29,43	5,16	33,93	6,18	36	6,7	38,07	7,23	38,9	7,25	39,73	7,32
	23	24,93	4,44	29,43	5,53	33,93	6,62	36	7,18	38,07	7,74	38,9	7,76	39,73	7,84
	25	24,93	4,75	29,43	5,92	33,93	7,08	36	7,68	38,07	8,28	38,9	8,31	39,73	8,39
	27	24,93	5,08	29,43	6,32	33,93	7,57	36	8,21	38,07	8,85	38,9	8,88	39,73	8,97
	29	24,93	5,42	29,43	6,75	33,93	8,09	36	8,77	38,07	9,45	38,9	9,48	39,73	9,58
	31	24,93	5,78	29,43	7,2	33,93	8,62	36	9,35	38,07	10,08	38,9	10,11	39,73	10,21

	33	24,93	6,16	29,43	7,67	33,93	9,19	36	9,96	38,07	10,74	38,9	10,77	39,73	10,88
	35	24,93	6,55	29,43	8,16	33,93	9,77	36	10,6	38,07	11,43	38,9	11,46	39,73	11,57
	37	24,93	6,97	29,43	8,68	33,93	10,39	36	11,27	38,07	12,15	38,9	12,19	39,73	12,31
	39	24,93	7	29,43	8,72	33,93	10,44	36	11,32	38,07	12,2	38,9	12,24	39,73	12,36
	41	24,93	7,03	29,43	8,76	33,93	10,49	36	11,37	38,07	12,26	38,9	12,3	39,73	12,42
	43	24,93	7,06	29,43	8,8	33,93	10,53	36	11,43	38,07	12,32	38,9	12,35	39,73	12,47
	45	24,93	7,09	29,43	8,84	33,93	10,58	36	11,48	38,07	12,37	38,9	12,41	39,73	12,53
	47	24,93	7,13	29,43	8,88	33,93	10,63	36	11,53	38,07	12,43	38,9	12,47	39,73	12,59
	48	24,93	7,16	29,43	8,92	33,93	10,68	36	11,58	38,07	12,49	38,9	12,53	39,73	12,65
80%	10	22,16	3,02	26,16	3,76	30,16	4,51	32	4,89	33,84	5,27	34,58	5,29	35,31	5,34
	12	22,16	3,08	26,16	3,83	30,16	4,59	32	4,98	33,84	5,37	34,58	5,38	35,31	5,44
	14	22,16	3,13	26,16	3,9	30,16	4,67	32	5,07	33,84	5,47	34,58	5,48	35,31	5,54
	16	22,16	3,19	26,16	3,97	30,16	4,76	32	5,16	33,84	5,56	34,58	5,58	35,31	5,63
	18	22,16	3,25	26,16	4,04	30,16	4,84	32	5,25	33,84	5,66	34,58	5,68	35,31	5,73
	19	22,16	3,3	26,16	4,11	30,16	4,92	32	5,34	33,84	5,76	34,58	5,78	35,31	5,83
	21	22,16	3,54	26,16	4,41	30,16	5,28	32	5,73	33,84	6,17	34,58	6,19	35,31	6,25
	23	22,16	3,79	26,16	4,72	30,16	5,66	32	6,13	33,84	6,61	34,58	6,63	35,31	6,7
	25	22,16	4,06	26,16	5,05	30,16	6,05	32	6,56	33,84	7,08	34,58	7,1	35,31	7,17
	27	22,16	4,34	26,16	5,4	30,16	6,47	32	7,02	33,84	7,56	34,58	7,59	35,31	7,66
	29	22,16	4,63	26,16	5,77	30,16	6,91	32	7,49	33,84	8,08	34,58	8,1	35,31	8,18
	31	22,16	4,94	26,16	6,15	30,16	7,37	32	7,99	33,84	8,61	34,58	8,64	35,31	8,72
	33	22,16	5,26	26,16	6,55	30,16	7,85	32	8,51	33,84	9,17	34,58	9,2	35,31	9,29
	35	22,16	5,59	26,16	6,97	30,16	8,35	32	9,05	33,84	9,76	34,58	9,79	35,31	9,88
	37	22,16	5,95	26,16	7,41	30,16	8,88	32	9,63	33,84	10,38	34,58	10,41	35,31	10,51
	39	22,16	5,98	26,16	7,45	30,16	8,92	32	9,67	33,84	10,43	34,58	10,46	35,31	10,56
	41	22,16	6	26,16	7,48	30,16	8,96	32	9,71	33,84	10,47	34,58	10,5	35,31	10,61
	43	22,16	6,03	26,16	7,51	30,16	9	32	9,76	33,84	10,52	34,58	10,55	35,31	10,66
	45	22,16	6,06	26,16	7,55	30,16	9,04	32	9,8	33,84	10,57	34,58	10,6	35,31	10,7
	47	22,16	6,09	26,16	7,58	30,16	9,08	32	9,85	33,84	10,62	34,58	10,65	35,31	10,75
	48	22,16	6,12	26,16	7,62	30,16	9,12	32	9,9	33,84	10,67	34,58	10,7	35,31	10,8
70%	10	19,39	2,54	22,89	3,17	26,39	3,8	28	4,12	29,61	4,44	30,25	4,45	30,9	4,49
	12	19,39	2,59	22,89	3,23	26,39	3,87	28	4,19	29,61	4,52	30,25	4,53	30,9	4,58
	14	19,39	2,64	22,89	3,29	26,39	3,94	28	4,27	29,61	4,6	30,25	4,62	30,9	4,66
	16	19,39	2,69	22,89	3,35	26,39	4,01	28	4,35	29,61	4,68	30,25	4,7	30,9	4,74
	18	19,39	2,73	22,89	3,4	26,39	4,08	28	4,42	29,61	4,77	30,25	4,78	30,9	4,83
	19	19,39	2,78	22,89	3,46	26,39	4,15	28	4,5	29,61	4,85	30,25	4,86	30,9	4,91
	21	19,39	2,98	22,89	3,71	26,39	4,45	28	4,82	29,61	5,2	30,25	5,21	30,9	5,26
	23	19,39	3,19	22,89	3,98	26,39	4,76	28	5,17	29,61	5,57	30,25	5,59	30,9	5,64
	25	19,39	3,42	22,89	4,26	26,39	5,1	28	5,53	29,61	5,96	30,25	5,98	30,9	6,03
	27	19,39	3,65	22,89	4,55	26,39	5,45	28	5,91	29,61	6,37	30,25	6,39	30,9	6,45
	29	19,39	3,9	22,89	4,86	26,39	5,82	28	6,31	29,61	6,8	30,25	6,82	30,9	6,89
	31	19,39	4,16	22,89	5,18	26,39	6,2	28	6,73	29,61	7,25	30,25	7,28	30,9	7,35
	33	19,39	4,43	22,89	5,52	26,39	6,61	28	7,17	29,61	7,73	30,25	7,75	30,9	7,82
	35	19,39	4,71	22,89	5,87	26,39	7,03	28	7,62	29,61	8,22	30,25	8,24	30,9	8,32
	37	19,39	5,01	22,89	6,24	26,39	7,48	28	8,11	29,61	8,74	30,25	8,77	30,9	8,85
	39	19,39	5,03	22,89	6,27	26,39	7,51	28	8,14	29,61	8,78	30,25	8,81	30,9	8,89
	41	19,39	5,06	22,89	6,3	26,39	7,54	28	8,18	29,61	8,82	30,25	8,85	30,9	8,93
	43	19,39	5,08	22,89	6,33	26,39	7,58	28	8,22	29,61	8,86	30,25	8,89	30,9	8,97
	45	19,39	5,1	22,89	6,36	26,39	7,61	28	8,26	29,61	8,9	30,25	8,93	30,9	9,01
	47	19,39	5,13	22,89	6,39	26,39	7,65	28	8,29	29,61	8,94	30,25	8,97	30,9	9,06
	48	19,39	5,15	22,89	6,42	26,39	7,68	28	8,33	29,61	8,98	30,25	9,01	30,9	9,1

	10	16,62	2,11	19,62	2,62	22,62	3,14	24	3,41	25,38	3,67	25,93	3,68	26,48	3,72
	12	16,62	2,14	19,62	2,67	22,62	3,2	24	3,47	25,38	3,74	25,93	3,75	26,48	3,79
	14	16,62	2,18	19,62	2,72	22,62	3,26	24	3,53	25,38	3,81	25,93	3,82	26,48	3,86
	16	16,62	2,22	19,62	2,77	22,62	3,32	24	3,6	25,38	3,88	25,93	3,89	26,48	3,93
	18	16,62	2,26	19,62	2,82	22,62	3,37	24	3,66	25,38	3,95	25,93	3,96	26,48	4
	19	16,62	2,3	19,62	2,87	22,62	3,43	24	3,72	25,38	4,01	25,93	4,03	26,48	4,06
	21	16,62	2,47	19,62	3,07	22,62	3,68	24	3,99	25,38	4,3	25,93	4,32	26,48	4,36
	23	16,62	2,64	19,62	3,29	22,62	3,94	24	4,28	25,38	4,61	25,93	4,62	26,48	4,67
	25	16,62	2,83	19,62	3,52	22,62	4,22	24	4,57	25,38	4,93	25,93	4,95	26,48	4,99
	27	16,62	3,02	19,62	3,77	22,62	4,51	24	4,89	25,38	5,27	25,93	5,29	26,48	5,34
60%	29	16,62	3,23	19,62	4,02	22,62	4,81	24	5,22	25,38	5,63	25,93	5,65	26,48	5,7
	31	16,62	3,44	19,62	4,29	22,62	5,13	24	5,57	25,38	6	25,93	6,02	26,48	6,08
	33	16,62	3,67	19,62	4,57	22,62	5,47	24	5,93	25,38	6,39	25,93	6,41	26,48	6,48
	35	16,62	3,9	19,62	4,86	22,62	5,82	24	6,31	25,38	6,8	25,93	6,82	26,48	6,89
	37	16,62	4,15	19,62	5,17	22,62	6,19	24	6,71	25,38	7,24	25,93	7,26	26,48	7,33
	39	16,62	4,17	19,62	5,19	22,62	6,21	24	6,74	25,38	7,27	25,93	7,29	26,48	7,36
	41	16,62	4,18	19,62	5,21	22,62	6,24	24	6,77	25,38	7,3	25,93	7,32	26,48	7,39
	43	16,62	4,2	19,62	5,24	22,62	6,27	24	6,8	25,38	7,33	25,93	7,36	26,48	7,43
	45	16,62	4,22	19,62	5,26	22,62	6,3	24	6,83	25,38	7,37	25,93	7,39	26,48	7,46
	47	16,62	4,24	19,62	5,29	22,62	6,33	24	6,87	25,38	7,4	25,93	7,42	26,48	7,5
	48	16,62	4,26	19,62	5,31	22,62	6,36	24	6,9	25,38	7,44	25,93	7,46	26,48	7,53
	10	13,85	1,71	16,35	2,13	18,85	2,55	20	2,76	21,15	2,98	21,61	2,99	22,07	3,01
	12	13,85	1,74	16,35	2,17	18,85	2,59	20	2,81	21,15	3,03	21,61	3,04	22,07	3,07
	14	13,85	1,77	16,35	2,2	18,85	2,64	20	2,86	21,15	3,09	21,61	3,1	22,07	3,13
	16	13,85	1,8	16,35	2,24	18,85	2,69	20	2,91	21,15	3,14	21,61	3,15	22,07	3,18
	18	13,85	1,83	16,35	2,28	18,85	2,73	20	2,97	21,15	3,2	21,61	3,21	22,07	3,24
	19	13,85	1,86	16,35	2,32	18,85	2,78	20	3,02	21,15	3,25	21,61	3,26	22,07	3,29
	21	13,85	2	16,35	2,49	18,85	2,98	20	3,23	21,15	3,49	21,61	3,5	22,07	3,53
	23	13,85	2,14	16,35	2,67	18,85	3,19	20	3,46	21,15	3,73	21,61	3,75	22,07	3,78
	25	13,85	2,29	16,35	2,85	18,85	3,42	20	3,71	21,15	4	21,61	4,01	22,07	4,05
	27	13,85	2,45	16,35	3,05	18,85	3,65	20	3,96	21,15	4,27	21,61	4,28	22,07	4,33
50%	29	13,85	2,61	16,35	3,26	18,85	3,9	20	4,23	21,15	4,56	21,61	4,57	22,07	4,62
	31	13,85	2,79	16,35	3,47	18,85	4,16	20	4,51	21,15	4,86	21,61	4,88	22,07	4,93
	33	13,85	2,97	16,35	3,7	18,85	4,43	20	4,81	21,15	5,18	21,61	5,2	22,07	5,25
	35	13,85	3,16	16,35	3,94	18,85	4,71	20	5,11	21,15	5,51	21,61	5,53	22,07	5,58
	37	13,85	3,36	16,35	4,19	18,85	5,01	20	5,44	21,15	5,86	21,61	5,88	22,07	5,94
	39	13,85	3,37	16,35	4,21	18,85	5,04	20	5,46	21,15	5,89	21,61	5,91	22,07	5,96
	41	13,85	3,39	16,35	4,22	18,85	5,06	20	5,49	21,15	5,91	21,61	5,93	22,07	5,99
	43	13,85	3,41	16,35	4,24	18,85	5,08	20	5,51	21,15	5,94	21,61	5,96	22,07	6,02
	45	13,85	3,42	16,35	4,26	18,85	5,1	20	5,54	21,15	5,97	21,61	5,99	22,07	6,05
	47	13,85	3,44	16,35	4,28	18,85	5,13	20	5,56	21,15	6	21,61	6,01	22,07	6,07
	48	13,85	3,45	16,35	4,3	18,85	5,15	20	5,59	21,15	6,02	21,61	6,04	22,07	6,1

HCSU 4501 XRV

TC: total capacity **PI**: power input

Combination (Capacity index)	Outdoor temperature(°C DB)	Indoor temperature(°C WB)													
		14		16		18		19		20		22		24	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	10	34,17	5,12	40,33	6,38	46,5	7,64	49,34	8,29	52,17	8,93	53,31	8,96	54,44	9,05
	12	34,17	5,22	40,33	6,5	46,5	7,78	49,34	8,44	52,17	9,1	53,31	9,13	54,44	9,22
	14	34,17	5,31	40,33	6,62	46,5	7,92	49,34	8,6	52,17	9,27	53,31	9,29	54,44	9,38
	16	34,17	5,41	40,33	6,74	46,5	8,07	49,34	8,75	52,17	9,43	53,31	9,46	54,44	9,55
	18	34,17	5,5	40,33	6,85	46,5	8,21	49,34	8,9	52,17	9,6	53,31	9,63	54,44	9,72
	19	34,17	5,6	40,33	6,97	46,5	8,35	49,34	9,06	52,17	9,76	53,31	9,79	54,44	9,89
	21	34,17	6	40,33	7,47	46,5	8,95	49,34	9,71	52,17	10,46	53,31	10,5	54,44	10,6
	23	34,17	6,43	40,33	8,01	46,5	9,59	49,34	10,4	52,17	11,21	53,31	11,24	54,44	11,35
	25	34,17	6,88	40,33	8,57	46,5	10,26	49,34	11,13	52,17	12	53,31	12,03	54,44	12,15
	27	34,17	7,35	40,33	9,16	46,5	10,97	49,34	11,89	52,17	12,82	53,31	12,86	54,44	12,99
	29	34,17	7,85	40,33	9,78	46,5	11,71	49,34	12,7	52,17	13,69	53,31	13,73	54,44	13,87
	31	34,17	8,37	40,33	10,43	46,5	12,49	49,34	13,54	52,17	14,6	53,31	14,65	54,44	14,79
	33	34,17	8,92	40,33	11,11	46,5	13,3	49,34	14,43	52,17	15,55	53,31	15,6	54,44	15,75
	35	34,17	9,49	40,33	11,82	46,5	14,15	49,34	15,35	52,17	16,55	53,31	16,6	54,44	16,76
	37	34,17	10,09	40,33	12,57	46,5	15,05	49,34	16,32	52,17	17,6	53,31	17,65	54,44	17,82
	39	34,17	10,13	40,33	12,62	46,5	15,12	49,34	16,39	52,17	17,67	53,31	17,73	54,44	17,9
	41	34,17	10,18	40,33	12,68	46,5	15,18	49,34	16,47	52,17	17,75	53,31	17,81	54,44	17,98
	43	34,17	10,23	40,33	12,74	46,5	15,25	49,34	16,55	52,17	17,84	53,31	17,89	54,44	18,06
	45	34,17	10,27	40,33	12,8	46,5	15,33	49,34	16,62	52,17	17,92	53,31	17,97	54,44	18,15
	47	34,17	10,32	40,33	12,86	46,5	15,4	49,34	16,7	52,17	18	53,31	18,06	54,44	18,23
	48	34,17	10,37	40,33	12,92	46,5	15,47	49,34	16,78	52,17	18,08	53,31	18,14	54,44	18,32
120%	10	33,61	5,07	39,68	6,32	45,74	7,57	48,53	8,21	51,33	8,85	52,44	8,88	53,56	8,96
	12	33,61	5,17	39,68	6,44	45,74	7,71	48,53	8,36	51,33	9,01	52,44	9,04	53,56	9,13
	14	33,61	5,26	39,68	6,55	45,74	7,85	48,53	8,51	51,33	9,18	52,44	9,2	53,56	9,29
	16	33,61	5,35	39,68	6,67	45,74	7,99	48,53	8,66	51,33	9,34	52,44	9,37	53,56	9,46
	18	33,61	5,45	39,68	6,79	45,74	8,13	48,53	8,82	51,33	9,5	52,44	9,53	53,56	9,63
	19	33,61	5,54	39,68	6,91	45,74	8,27	48,53	8,97	51,33	9,67	52,44	9,7	53,56	9,79
	21	33,61	5,94	39,68	7,4	45,74	8,86	48,53	9,61	51,33	10,36	52,44	10,4	53,56	10,5
	23	33,61	6,36	39,68	7,93	45,74	9,5	48,53	10,3	51,33	11,1	52,44	11,14	53,56	11,24
	25	33,61	6,81	39,68	8,49	45,74	10,16	48,53	11,02	51,33	11,88	52,44	11,92	53,56	12,03
	27	33,61	7,28	39,68	9,07	45,74	10,86	48,53	11,78	51,33	12,7	52,44	12,74	53,56	12,86
	29	33,61	7,77	39,68	9,69	45,74	11,6	48,53	12,58	51,33	13,56	52,44	13,6	53,56	13,73
	31	33,61	8,29	39,68	10,33	45,74	12,37	48,53	13,41	51,33	14,46	52,44	14,51	53,56	14,65
	33	33,61	8,83	39,68	11	45,74	13,17	48,53	14,29	51,33	15,4	52,44	15,45	53,56	15,6
	35	33,61	9,39	39,68	11,7	45,74	14,02	48,53	15,2	51,33	16,39	52,44	16,44	53,56	16,6
	37	33,61	9,99	39,68	12,45	45,74	14,91	48,53	16,17	51,33	17,43	52,44	17,48	53,56	17,65
	39	33,61	10,03	39,68	12,5	45,74	14,97	48,53	16,24	51,33	17,5	52,44	17,56	53,56	17,73
	41	33,61	10,08	39,68	12,56	45,74	15,04	48,53	16,31	51,33	17,58	52,44	17,64	53,56	17,81
	43	33,61	10,13	39,68	12,62	45,74	15,11	48,53	16,39	51,33	17,66	52,44	17,72	53,56	17,89
	45	33,61	10,17	39,68	12,68	45,74	15,18	48,53	16,46	51,33	17,75	52,44	17,8	53,56	17,97
	47	33,61	10,22	39,68	12,73	45,74	15,25	48,53	16,54	51,33	17,83	52,44	17,88	53,56	18,06
	48	33,61	10,27	39,68	12,79	45,74	15,32	48,53	16,61	51,33	17,91	52,44	17,97	53,56	18,14
110%	10	33,05	5,02	39,02	6,26	44,99	7,49	47,73	8,13	50,48	8,76	51,57	8,79	52,67	8,87
	12	33,05	5,12	39,02	6,38	44,99	7,63	47,73	8,28	50,48	8,93	51,57	8,95	52,67	9,04
	14	33,05	5,21	39,02	6,49	44,99	7,77	47,73	8,43	50,48	9,09	51,57	9,12	52,67	9,2

	16	33,05	5,3	39,02	6,61	44,99	7,91	47,73	8,58	50,48	9,25	51,57	9,28	52,67	9,37
	18	33,05	5,4	39,02	6,72	44,99	8,05	47,73	8,73	50,48	9,41	51,57	9,44	52,67	9,53
	19	33,05	5,49	39,02	6,84	44,99	8,19	47,73	8,88	50,48	9,57	51,57	9,6	52,67	9,7
	21	33,05	5,88	39,02	7,33	44,99	8,78	47,73	9,52	50,48	10,26	51,57	10,3	52,67	10,4
	23	33,05	6,3	39,02	7,85	44,99	9,4	47,73	10,2	50,48	10,99	51,57	11,03	52,67	11,13
	25	33,05	6,74	39,02	8,4	44,99	10,06	47,73	10,91	50,48	11,76	51,57	11,8	52,67	11,92
	27	33,05	7,21	39,02	8,98	44,99	10,76	47,73	11,67	50,48	12,58	51,57	12,61	52,67	12,74
	29	33,05	7,7	39,02	9,59	44,99	11,48	47,73	12,46	50,48	13,43	51,57	13,47	52,67	13,6
	31	33,05	8,21	39,02	10,23	44,99	12,25	47,73	13,28	50,48	14,32	51,57	14,36	52,67	14,5
	33	33,05	8,74	39,02	10,9	44,99	13,05	47,73	14,15	50,48	15,25	51,57	15,3	52,67	15,45
	35	33,05	9,3	39,02	11,59	44,99	13,88	47,73	15,05	50,48	16,23	51,57	16,28	52,67	16,44
	37	33,05	9,89	39,02	12,33	44,99	14,76	47,73	16,01	50,48	17,26	51,57	17,31	52,67	17,48
	39	33,05	9,94	39,02	12,38	44,99	14,83	47,73	16,08	50,48	17,33	51,57	17,39	52,67	17,56
	41	33,05	9,98	39,02	12,44	44,99	14,89	47,73	16,15	50,48	17,41	51,57	17,47	52,67	17,63
	43	33,05	10,03	39,02	12,5	44,99	14,96	47,73	16,23	50,48	17,49	51,57	17,55	52,67	17,72
	45	33,05	10,07	39,02	12,55	44,99	15,03	47,73	16,3	50,48	17,57	51,57	17,63	52,67	17,8
	47	33,05	10,12	39,02	12,61	44,99	15,1	47,73	16,38	50,48	17,66	51,57	17,71	52,67	17,88
	48	33,05	10,17	39,02	12,67	44,99	15,17	47,73	16,45	50,48	17,74	51,57	17,79	52,67	17,96
100%	10	31,16	4,69	36,79	5,84	42,41	7	45	7,59	47,59	8,18	48,62	8,2	49,66	8,28
	12	31,16	4,78	36,79	5,95	42,41	7,12	45	7,73	47,59	8,33	48,62	8,36	49,66	8,44
	14	31,16	4,86	36,79	6,06	42,41	7,25	45	7,87	47,59	8,48	48,62	8,51	49,66	8,59
	16	31,16	4,95	36,79	6,17	42,41	7,38	45	8,01	47,59	8,63	48,62	8,66	49,66	8,74
	18	31,16	5,04	36,79	6,27	42,41	7,51	45	8,15	47,59	8,78	48,62	8,81	49,66	8,9
	19	31,16	5,12	36,79	6,38	42,41	7,64	45	8,29	47,59	8,94	48,62	8,96	49,66	9,05
	21	31,16	5,49	36,79	6,84	42,41	8,19	45	8,89	47,59	9,58	48,62	9,61	49,66	9,7
	23	31,16	5,88	36,79	7,33	42,41	8,78	45	9,52	47,59	10,26	48,62	10,29	49,66	10,39
	25	31,16	6,3	36,79	7,84	42,41	9,39	45	10,19	47,59	10,98	48,62	11,01	49,66	11,12
	27	31,16	6,73	36,79	8,38	42,41	10,04	45	10,89	47,59	11,74	48,62	11,77	49,66	11,89
	29	31,16	7,19	36,79	8,95	42,41	10,72	45	11,63	47,59	12,53	48,62	12,57	49,66	12,69
	31	31,16	7,66	36,79	9,55	42,41	11,43	45	12,4	47,59	13,37	48,62	13,41	49,66	13,54
	33	31,16	8,16	36,79	10,17	42,41	12,18	45	13,21	47,59	14,24	48,62	14,28	49,66	14,42
	35	31,16	8,68	36,79	10,82	42,41	12,95	45	14,05	47,59	15,15	48,62	15,19	49,66	15,34
	37	31,16	9,24	36,79	11,51	42,41	13,78	45	14,94	47,59	16,11	48,62	16,16	49,66	16,32
	39	31,16	9,28	36,79	11,56	42,41	13,84	45	15,01	47,59	16,18	48,62	16,23	49,66	16,39
	41	31,16	9,32	36,79	11,61	42,41	13,9	45	15,08	47,59	16,25	48,62	16,3	49,66	16,46
	43	31,16	9,36	36,79	11,66	42,41	13,96	45	15,15	47,59	16,33	48,62	16,38	49,66	16,54
	45	31,16	9,4	36,79	11,72	42,41	14,03	45	15,22	47,59	16,4	48,62	16,45	49,66	16,61
	47	31,16	9,45	36,79	11,77	42,41	14,09	45	15,29	47,59	16,48	48,62	16,53	49,66	16,69
	48	31,16	9,49	36,79	11,82	42,41	14,16	45	15,36	47,59	16,55	48,62	16,61	49,66	16,77
90%	10	28,05	4,05	33,11	5,05	38,17	6,05	40,5	6,56	42,83	7,07	43,76	7,09	44,69	7,16
	12	28,05	4,13	33,11	5,14	38,17	6,16	40,5	6,68	42,83	7,2	43,76	7,22	44,69	7,29
	14	28,05	4,2	33,11	5,24	38,17	6,27	40,5	6,8	42,83	7,33	43,76	7,35	44,69	7,43
	16	28,05	4,28	33,11	5,33	38,17	6,38	40,5	6,92	42,83	7,46	43,76	7,49	44,69	7,56
	18	28,05	4,35	33,11	5,42	38,17	6,5	40,5	7,04	42,83	7,59	43,76	7,62	44,69	7,69
	19	28,05	4,43	33,11	5,52	38,17	6,61	40,5	7,17	42,83	7,73	43,76	7,75	44,69	7,82
	21	28,05	4,75	33,11	5,92	38,17	7,08	40,5	7,68	42,83	8,28	43,76	8,31	44,69	8,39
	23	28,05	5,09	33,11	6,34	38,17	7,59	40,5	8,23	42,83	8,87	43,76	8,9	44,69	8,98
	25	28,05	5,44	33,11	6,78	38,17	8,12	40,5	8,81	42,83	9,49	43,76	9,52	44,69	9,61
	27	28,05	5,82	33,11	7,25	38,17	8,68	40,5	9,41	42,83	10,15	43,76	10,18	44,69	10,28
	29	28,05	6,21	33,11	7,74	38,17	9,27	40,5	10,05	42,83	10,83	43,76	10,87	44,69	10,97
	31	28,05	6,62	33,11	8,25	38,17	9,88	40,5	10,72	42,83	11,56	43,76	11,59	44,69	11,7

	33	28,05	7,06	33,11	8,79	38,17	10,53	40,5	11,42	42,83	12,31	43,76	12,35	44,69	12,47
	35	28,05	7,51	33,11	9,35	38,17	11,2	40,5	12,15	42,83	13,09	43,76	13,13	44,69	13,26
	37	28,05	7,98	33,11	9,95	38,17	11,91	40,5	12,92	42,83	13,93	43,76	13,97	44,69	14,1
	39	28,05	8,02	33,11	9,99	38,17	11,96	40,5	12,97	42,83	13,99	43,76	14,03	44,69	14,17
	41	28,05	8,05	33,11	10,04	38,17	12,02	40,5	13,03	42,83	14,05	43,76	14,09	44,69	14,23
	43	28,05	8,09	33,11	10,08	38,17	12,07	40,5	13,09	42,83	14,11	43,76	14,16	44,69	14,3
	45	28,05	8,13	33,11	10,13	38,17	12,13	40,5	13,15	42,83	14,18	43,76	14,22	44,69	14,36
	47	28,05	8,17	33,11	10,18	38,17	12,18	40,5	13,22	42,83	14,25	43,76	14,29	44,69	14,43
	48	28,05	8,2	33,11	10,22	38,17	12,24	40,5	13,28	42,83	14,31	43,76	14,36	44,69	14,49
80%	10	24,93	3,46	29,43	4,31	33,93	5,17	36	5,6	38,07	6,04	38,9	6,06	39,73	6,12
	12	24,93	3,53	29,43	4,39	33,93	5,26	36	5,71	38,07	6,15	38,9	6,17	39,73	6,23
	14	24,93	3,59	29,43	4,47	33,93	5,36	36	5,81	38,07	6,26	38,9	6,28	39,73	6,34
	16	24,93	3,65	29,43	4,55	33,93	5,45	36	5,91	38,07	6,38	38,9	6,39	39,73	6,46
	18	24,93	3,72	29,43	4,63	33,93	5,55	36	6,02	38,07	6,49	38,9	6,51	39,73	6,57
	19	24,93	3,78	29,43	4,71	33,93	5,64	36	6,12	38,07	6,6	38,9	6,62	39,73	6,68
	21	24,93	4,06	29,43	5,05	33,93	6,05	36	6,56	38,07	7,07	38,9	7,1	39,73	7,16
	23	24,93	4,34	29,43	5,41	33,93	6,48	36	7,03	38,07	7,58	38,9	7,6	39,73	7,67
	25	24,93	4,65	29,43	5,79	33,93	6,94	36	7,52	38,07	8,11	38,9	8,13	39,73	8,21
	27	24,93	4,97	29,43	6,19	33,93	7,41	36	8,04	38,07	8,67	38,9	8,69	39,73	8,78
	29	24,93	5,31	29,43	6,61	33,93	7,92	36	8,59	38,07	9,26	38,9	9,28	39,73	9,37
	31	24,93	5,66	29,43	7,05	33,93	8,44	36	9,16	38,07	9,87	38,9	9,9	39,73	10
	33	24,93	6,03	29,43	7,51	33,93	8,99	36	9,75	38,07	10,51	38,9	10,55	39,73	10,65
	35	24,93	6,41	29,43	7,99	33,93	9,57	36	10,38	38,07	11,18	38,9	11,22	39,73	11,33
	37	24,93	6,82	29,43	8,5	33,93	10,17	36	11,04	38,07	11,9	38,9	11,93	39,73	12,05
	39	24,93	6,85	29,43	8,53	33,93	10,22	36	11,08	38,07	11,95	38,9	11,98	39,73	12,1
	41	24,93	6,88	29,43	8,57	33,93	10,26	36	11,13	38,07	12	38,9	12,04	39,73	12,15
	43	24,93	6,91	29,43	8,61	33,93	10,31	36	11,18	38,07	12,06	38,9	12,09	39,73	12,21
	45	24,93	6,94	29,43	8,65	33,93	10,36	36	11,24	38,07	12,11	38,9	12,15	39,73	12,27
	47	24,93	6,98	29,43	8,69	33,93	10,41	36	11,29	38,07	12,17	38,9	12,21	39,73	12,32
	48	24,93	7,01	29,43	8,73	33,93	10,46	36	11,34	38,07	12,22	38,9	12,26	39,73	12,38
70%	10	21,81	2,92	25,75	3,63	29,69	4,35	31,5	4,72	33,31	5,09	34,04	5,1	34,76	5,15
	12	21,81	2,97	25,75	3,7	29,69	4,43	31,5	4,81	33,31	5,18	34,04	5,2	34,76	5,25
	14	21,81	3,02	25,75	3,77	29,69	4,51	31,5	4,89	33,31	5,27	34,04	5,29	34,76	5,34
	16	21,81	3,08	25,75	3,83	29,69	4,59	31,5	4,98	33,31	5,37	34,04	5,38	34,76	5,44
	18	21,81	3,13	25,75	3,9	29,69	4,67	31,5	5,07	33,31	5,46	34,04	5,48	34,76	5,53
	19	21,81	3,19	25,75	3,97	29,69	4,75	31,5	5,15	33,31	5,56	34,04	5,57	34,76	5,63
	21	21,81	3,42	25,75	4,26	29,69	5,1	31,5	5,53	33,31	5,96	34,04	5,98	34,76	6,03
	23	21,81	3,66	25,75	4,56	29,69	5,46	31,5	5,92	33,31	6,38	34,04	6,4	34,76	6,46
	25	21,81	3,91	25,75	4,88	29,69	5,84	31,5	6,33	33,31	6,83	34,04	6,85	34,76	6,92
	27	21,81	4,18	25,75	5,21	29,69	6,24	31,5	6,77	33,31	7,3	34,04	7,32	34,76	7,39
	29	21,81	4,47	25,75	5,57	29,69	6,67	31,5	7,23	33,31	7,79	34,04	7,82	34,76	7,89
	31	21,81	4,77	25,75	5,94	29,69	7,11	31,5	7,71	33,31	8,31	34,04	8,34	34,76	8,42
	33	21,81	5,08	25,75	6,32	29,69	7,57	31,5	8,21	33,31	8,85	34,04	8,88	34,76	8,97
	35	21,81	5,4	25,75	6,73	29,69	8,06	31,5	8,74	33,31	9,42	34,04	9,45	34,76	9,54
	37	21,81	5,74	25,75	7,16	29,69	8,57	31,5	9,29	33,31	10,02	34,04	10,05	34,76	10,15
	39	21,81	5,77	25,75	7,19	29,69	8,6	31,5	9,33	33,31	10,06	34,04	10,09	34,76	10,19
	41	21,81	5,79	25,75	7,22	29,69	8,64	31,5	9,37	33,31	10,11	34,04	10,14	34,76	10,24
	43	21,81	5,82	25,75	7,25	29,69	8,68	31,5	9,42	33,31	10,15	34,04	10,18	34,76	10,28
	45	21,81	5,85	25,75	7,29	29,69	8,72	31,5	9,46	33,31	10,2	34,04	10,23	34,76	10,33
	47	21,81	5,87	25,75	7,32	29,69	8,76	31,5	9,51	33,31	10,25	34,04	10,28	34,76	10,38
	48	21,81	5,9	25,75	7,35	29,69	8,8	31,5	9,55	33,31	10,29	34,04	10,33	34,76	10,43

	10	18,7	2,41	22,07	3,01	25,45	3,6	27	3,91	28,55	4,21	29,17	4,22	29,79	4,26
	12	18,7	2,46	22,07	3,06	25,45	3,67	27	3,98	28,55	4,29	29,17	4,3	29,79	4,34
	14	18,7	2,5	22,07	3,12	25,45	3,73	27	4,05	28,55	4,37	29,17	4,38	29,79	4,42
	16	18,7	2,55	22,07	3,17	25,45	3,8	27	4,12	28,55	4,44	29,17	4,46	29,79	4,5
	18	18,7	2,59	22,07	3,23	25,45	3,87	27	4,19	28,55	4,52	29,17	4,54	29,79	4,58
	19	18,7	2,64	22,07	3,29	25,45	3,93	27	4,27	28,55	4,6	29,17	4,61	29,79	4,66
	21	18,7	2,83	22,07	3,52	25,45	4,22	27	4,57	28,55	4,93	29,17	4,95	29,79	4,99
	23	18,7	3,03	22,07	3,77	25,45	4,52	27	4,9	28,55	5,28	29,17	5,3	29,79	5,35
	25	18,7	3,24	22,07	4,04	25,45	4,83	27	5,24	28,55	5,65	29,17	5,67	29,79	5,72
	27	18,7	3,46	22,07	4,32	25,45	5,17	27	5,6	28,55	6,04	29,17	6,06	29,79	6,12
60%	29	18,7	3,7	22,07	4,61	25,45	5,52	27	5,98	28,55	6,45	29,17	6,47	29,79	6,53
	31	18,7	3,94	22,07	4,91	25,45	5,88	27	6,38	28,55	6,88	29,17	6,9	29,79	6,97
	33	18,7	4,2	22,07	5,23	25,45	6,27	27	6,8	28,55	7,33	29,17	7,35	29,79	7,42
	35	18,7	4,47	22,07	5,57	25,45	6,67	27	7,23	28,55	7,8	29,17	7,82	29,79	7,9
	37	18,7	4,75	22,07	5,92	25,45	7,09	27	7,69	28,55	8,29	29,17	8,32	29,79	8,4
	39	18,7	4,77	22,07	5,95	25,45	7,12	27	7,72	28,55	8,33	29,17	8,35	29,79	8,43
	41	18,7	4,8	22,07	5,97	25,45	7,15	27	7,76	28,55	8,36	29,17	8,39	29,79	8,47
	43	18,7	4,82	22,07	6	25,45	7,19	27	7,8	28,55	8,4	29,17	8,43	29,79	8,51
	45	18,7	4,84	22,07	6,03	25,45	7,22	27	7,83	28,55	8,44	29,17	8,47	29,79	8,55
	47	18,7	4,86	22,07	6,06	25,45	7,25	27	7,87	28,55	8,48	29,17	8,51	29,79	8,59
	48	18,7	4,88	22,07	6,09	25,45	7,29	27	7,9	28,55	8,52	29,17	8,55	29,79	8,63
	10	15,58	1,96	18,39	2,44	21,21	2,92	22,5	3,16	23,79	3,41	24,31	3,42	24,83	3,45
	12	15,58	1,99	18,39	2,48	21,21	2,97	22,5	3,22	23,79	3,47	24,31	3,48	24,83	3,52
	14	15,58	2,03	18,39	2,53	21,21	3,03	22,5	3,28	23,79	3,54	24,31	3,55	24,83	3,58
	16	15,58	2,06	18,39	2,57	21,21	3,08	22,5	3,34	23,79	3,6	24,31	3,61	24,83	3,65
	18	15,58	2,1	18,39	2,62	21,21	3,13	22,5	3,4	23,79	3,66	24,31	3,67	24,83	3,71
	19	15,58	2,14	18,39	2,66	21,21	3,19	22,5	3,46	23,79	3,73	24,31	3,74	24,83	3,77
	21	15,58	2,29	18,39	2,85	21,21	3,42	22,5	3,71	23,79	3,99	24,31	4,01	24,83	4,05
	23	15,58	2,45	18,39	3,06	21,21	3,66	22,5	3,97	23,79	4,28	24,31	4,29	24,83	4,33
	25	15,58	2,63	18,39	3,27	21,21	3,92	22,5	4,25	23,79	4,58	24,31	4,59	24,83	4,64
	27	15,58	2,81	18,39	3,5	21,21	4,19	22,5	4,54	23,79	4,89	24,31	4,91	24,83	4,96
50%	29	15,58	3	18,39	3,73	21,21	4,47	22,5	4,85	23,79	5,23	24,31	5,24	24,83	5,29
	31	15,58	3,2	18,39	3,98	21,21	4,77	22,5	5,17	23,79	5,57	24,31	5,59	24,83	5,65
	33	15,58	3,4	18,39	4,24	21,21	5,08	22,5	5,51	23,79	5,94	24,31	5,96	24,83	6,01
	35	15,58	3,62	18,39	4,51	21,21	5,4	22,5	5,86	23,79	6,32	24,31	6,34	24,83	6,4
	37	15,58	3,85	18,39	4,8	21,21	5,75	22,5	6,23	23,79	6,72	24,31	6,74	24,83	6,8
	39	15,58	3,87	18,39	4,82	21,21	5,77	22,5	6,26	23,79	6,75	24,31	6,77	24,83	6,83
	41	15,58	3,89	18,39	4,84	21,21	5,8	22,5	6,29	23,79	6,78	24,31	6,8	24,83	6,86
	43	15,58	3,9	18,39	4,86	21,21	5,82	22,5	6,32	23,79	6,81	24,31	6,83	24,83	6,9
	45	15,58	3,92	18,39	4,89	21,21	5,85	22,5	6,35	23,79	6,84	24,31	6,86	24,83	6,93
	47	15,58	3,94	18,39	4,91	21,21	5,88	22,5	6,37	23,79	6,87	24,31	6,89	24,83	6,96
	48	15,58	3,96	18,39	4,93	21,21	5,9	22,5	6,4	23,79	6,9	24,31	6,92	24,83	6,99

10.3 Heating:
HCSU 2501 XRV

TC: total capacity **PI**: power input

Combination (Capacity index)	Outdoor air temp,		Indoor temperature(°C DB)											
			16		18		20		21		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	°C DB	°C WB	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	-14,7	-15	19,56	5,44	19,56	5,55	19,56	5,67	18,78	5,42	18,00	5,17	16,45	4,68
	-12,6	-13	20,65	5,53	20,65	5,64	20,65	5,76	19,83	5,51	19,01	5,26	17,37	4,75
	-10,5	-11	21,74	5,62	21,74	5,74	21,74	5,86	20,87	5,6	20,01	5,34	18,28	4,83
	-9,5	-10	22,26	5,66	22,26	5,78	22,26	5,9	21,36	5,64	20,48	5,38	18,72	4,87
	-8,5	-9,1	22,78	5,7	22,78	5,82	22,78	5,94	21,86	5,68	20,96	5,42	19,16	4,9
	-7	-7,6	23,54	5,77	23,54	5,89	23,54	6,01	22,61	5,75	21,68	5,49	19,81	4,96
	-5	-5,6	24,58	5,85	24,58	5,98	24,58	6,1	23,61	5,83	22,63	5,57	20,68	5,03
	-3	-3,7	25,62	5,94	25,62	6,06	25,62	6,19	24,60	5,92	23,58	5,65	21,55	5,11
	0	-0,7	27,17	6,07	27,17	6,19	27,17	6,32	26,09	6,05	25,02	5,77	22,86	5,22
	3	2,2	28,73	6,19	28,73	6,33	28,73	6,46	27,59	6,17	26,45	5,89	24,17	5,33
	5	4,1	29,77	6,28	29,77	6,41	29,77	6,55	28,58	6,26	27,40	5,97	25,05	5,4
	7	6	30,80	6,36	30,80	6,5	30,80	6,64	29,58	6,35	28,36	6,05	25,92	5,47
	9	7,9	30,80	6,15	30,80	6,28	30,80	6,41	29,58	6,13	28,36	5,85	25,92	5,29
	11	9,8	30,80	5,94	30,80	6,06	30,80	6,19	29,58	5,92	28,36	5,65	25,92	5,11
	13	11,8	30,80	5,72	30,80	5,85	30,80	5,97	29,58	5,71	28,36	5,44	25,92	4,92
	15	13,7	30,80	5,51	30,80	5,63	30,80	5,74	29,58	5,49	28,36	5,24	25,92	4,74
120%	-14,7	-15	19,56	5,6	19,56	5,72	19,56	5,84	18,78	5,58	18,00	5,32	16,45	4,81
	-12,6	-13	20,65	5,69	20,65	5,81	20,65	5,93	19,83	5,67	19,01	5,41	17,37	4,89
	-10,5	-11	21,74	5,78	21,74	5,9	21,74	6,03	20,87	5,76	20,01	5,5	18,28	4,97
	-9,5	-10	22,26	5,83	22,26	5,95	22,26	6,07	21,36	5,81	20,48	5,54	18,72	5,01
	-8,5	-9,1	22,78	5,87	22,78	5,99	22,78	6,12	21,86	5,85	20,96	5,58	19,16	5,05
	-7	-7,6	23,54	5,94	23,54	6,06	23,54	6,19	22,61	5,92	21,68	5,65	19,81	5,1
	-5	-5,6	24,58	6,02	24,58	6,15	24,58	6,28	23,61	6,01	22,63	5,73	20,68	5,18
	-3	-3,7	25,62	6,11	25,62	6,24	25,62	6,37	24,60	6,09	23,58	5,81	21,55	5,26
	0	-0,7	27,17	6,24	27,17	6,38	27,17	6,51	26,09	6,22	25,02	5,94	22,86	5,37
	3	2,2	28,73	6,38	28,73	6,51	28,73	6,65	27,59	6,36	26,45	6,07	24,17	5,48
	5	4,1	29,77	6,46	29,77	6,6	29,77	6,74	28,58	6,44	27,40	6,15	25,05	5,56
	7	6	30,80	6,55	30,80	6,69	30,80	6,83	29,58	6,53	28,36	6,23	25,92	5,63
	9	7,9	30,80	6,33	30,80	6,47	30,80	6,6	29,58	6,31	28,36	6,02	25,92	5,45
	11	9,8	30,80	6,11	30,80	6,24	30,80	6,37	29,58	6,09	28,36	5,81	25,92	5,26
	13	11,8	30,80	5,89	30,80	6,02	30,80	6,14	29,58	5,87	28,36	5,6	25,92	5,07
	15	13,7	30,80	5,67	30,80	5,79	30,80	5,91	29,58	5,65	28,36	5,4	25,92	4,88
110%	-14,7	-15	19,56	5,76	19,56	5,88	19,56	6	18,78	5,74	18,00	5,48	16,45	4,95
	-12,6	-13	20,65	5,85	20,65	5,98	20,65	6,1	19,83	5,83	19,01	5,57	17,37	5,03
	-10,5	-11	21,74	5,95	21,74	6,07	21,74	6,2	20,87	5,93	20,01	5,66	18,28	5,11
	-9,5	-10	22,26	5,99	22,26	6,12	22,26	6,25	21,36	5,97	20,48	5,7	18,72	5,15
	-8,5	-9,1	22,78	6,04	22,78	6,17	22,78	6,29	21,86	6,02	20,96	5,74	19,16	5,19
	-7	-7,6	23,54	6,1	23,54	6,24	23,54	6,37	22,61	6,09	21,68	5,81	19,81	5,25
	-5	-5,6	24,58	6,2	24,58	6,33	24,58	6,46	23,61	6,18	22,63	5,89	20,68	5,33
	-3	-3,7	25,62	6,29	25,62	6,42	25,62	6,55	24,60	6,27	23,58	5,98	21,55	5,41
	0	-0,7	27,17	6,42	27,17	6,56	27,17	6,7	26,09	6,4	25,02	6,11	22,86	5,52
	3	2,2	28,73	6,56	28,73	6,7	28,73	6,84	27,59	6,54	26,45	6,24	24,17	5,64
	5	4,1	29,77	6,65	29,77	6,79	29,77	6,93	28,58	6,63	27,40	6,32	25,05	5,72
	7	6	30,80	6,74	30,80	6,88	30,80	7,03	29,58	6,72	28,36	6,41	25,92	5,8

	9	7,9	30,80	6,51	30,80	6,65	30,80	6,79	29,58	6,49	28,36	6,2	25,92	5,6
	11	9,8	30,80	6,29	30,80	6,42	30,80	6,55	29,58	6,27	28,36	5,98	25,92	5,41
	13	11,8	30,80	6,06	30,80	6,19	30,80	6,32	29,58	6,04	28,36	5,77	25,92	5,21
	15	13,7	30,80	5,83	30,80	5,96	30,80	6,08	29,58	5,82	28,36	5,55	25,92	5,02
100%	-14,7	-15	17,78	5,08	17,78	5,19	17,78	5,3	17,07	5,06	16,37	4,83	14,96	4,37
	-12,6	-13	18,77	5,16	18,77	5,27	18,77	5,38	18,03	5,15	17,28	4,91	15,79	4,44
	-10,5	-11	19,76	5,25	19,76	5,36	19,76	5,47	18,97	5,23	18,19	4,99	16,63	4,51
	-9,5	-10	20,22	5,29	20,22	5,4	20,22	5,51	19,43	5,27	18,63	5,03	17,02	4,55
	-8,5	-9,1	20,70	5,33	20,70	5,44	20,70	5,55	19,88	5,31	19,06	5,07	17,41	4,58
	-7	-7,6	21,41	5,39	21,41	5,5	21,41	5,62	20,56	5,37	19,71	5,12	18,00	4,63
	-5	-5,6	22,35	5,47	22,35	5,58	22,35	5,7	21,46	5,45	20,58	5,2	18,80	4,7
	-3	-3,7	23,29	5,55	23,29	5,67	23,29	5,78	22,37	5,53	21,45	5,28	19,59	4,77
	0	-0,7	24,70	5,67	24,70	5,79	24,70	5,91	23,73	5,65	22,74	5,39	20,78	4,87
	3	2,2	26,11	5,79	26,11	5,91	26,11	6,03	25,08	5,77	24,04	5,5	21,98	4,98
	5	4,1	27,06	5,87	27,06	5,99	27,06	6,12	25,99	5,85	24,91	5,58	22,76	5,04
	7	6	28,00	5,95	28,00	6,07	28,00	6,2	26,89	5,93	25,78	5,66	23,55	5,11
	9	7,9	28,00	5,75	28,00	5,87	28,00	5,99	26,89	5,73	25,78	5,47	23,55	4,94
	11	9,8	28,00	5,55	28,00	5,67	28,00	5,78	26,89	5,53	25,78	5,28	23,55	4,77
	13	11,8	28,00	5,35	28,00	5,46	28,00	5,58	26,89	5,33	25,78	5,09	23,55	4,6
	15	13,7	28,00	5,15	28,00	5,26	28,00	5,37	26,89	5,13	25,78	4,9	23,55	4,43
90%	-14,7	-15	16,00	4,5	16,00	4,6	16,00	4,7	15,37	4,49	14,73	4,28	13,46	3,87
	-12,6	-13	16,89	4,58	16,89	4,68	16,89	4,77	16,22	4,56	15,55	4,36	14,21	3,94
	-10,5	-11	17,79	4,65	17,79	4,75	17,79	4,85	17,08	4,64	16,37	4,43	14,96	4
	-9,5	-10	18,20	4,69	18,20	4,79	18,20	4,89	17,49	4,67	16,76	4,46	15,32	4,03
	-8,5	-9,1	18,63	4,72	18,63	4,82	18,63	4,92	17,89	4,71	17,15	4,49	15,67	4,06
	-7	-7,6	19,27	4,78	19,27	4,88	19,27	4,98	18,50	4,76	17,73	4,54	16,21	4,11
	-5	-5,6	20,11	4,85	20,11	4,95	20,11	5,05	19,31	4,83	18,51	4,61	16,93	4,17
	-3	-3,7	20,96	4,92	20,96	5,02	20,96	5,13	20,13	4,9	19,30	4,68	17,63	4,23
	0	-0,7	22,24	5,02	22,24	5,13	22,24	5,24	21,35	5,01	20,47	4,78	18,71	4,32
	3	2,2	23,50	5,13	23,50	5,24	23,50	5,35	22,58	5,12	21,64	4,88	19,78	4,41
	5	4,1	24,35	5,2	24,35	5,31	24,35	5,42	23,39	5,19	22,42	4,95	20,49	4,47
	7	6	25,20	5,27	25,20	5,38	25,20	5,5	24,21	5,26	23,20	5,02	21,20	4,53
	9	7,9	25,20	5,1	25,20	5,2	25,20	5,31	24,21	5,08	23,20	4,85	21,20	4,38
	11	9,8	25,20	4,92	25,20	5,02	25,20	5,13	24,21	4,9	23,20	4,68	21,20	4,23
	13	11,8	25,20	4,74	25,20	4,84	25,20	4,94	24,21	4,73	23,20	4,51	21,20	4,08
	15	13,7	25,20	4,56	25,20	4,66	25,20	4,76	24,21	4,55	23,20	4,34	21,20	3,93
80%	-14,7	-15	14,22	3,95	14,22	4,04	14,22	4,12	13,66	3,94	13,10	3,76	11,97	3,4
	-12,6	-13	15,02	4,02	15,02	4,11	15,02	4,19	14,42	4,01	13,82	3,82	12,63	3,46
	-10,5	-11	15,81	4,09	15,81	4,17	15,81	4,26	15,18	4,07	14,55	3,89	13,30	3,51
	-9,5	-10	16,18	4,12	16,18	4,2	16,18	4,29	15,54	4,1	14,90	3,92	13,62	3,54
	-8,5	-9,1	16,56	4,15	16,56	4,24	16,56	4,32	15,90	4,13	15,25	3,95	13,93	3,57
	-7	-7,6	17,12	4,19	17,12	4,28	17,12	4,37	16,45	4,18	15,76	3,99	14,41	3,61
	-5	-5,6	17,88	4,26	17,88	4,35	17,88	4,44	17,17	4,24	16,46	4,05	15,04	3,66
	-3	-3,7	18,64	4,32	18,64	4,41	18,64	4,5	17,89	4,31	17,15	4,11	15,67	3,71
	0	-0,7	19,77	4,41	19,77	4,51	19,77	4,6	18,98	4,4	18,19	4,2	16,63	3,79
	3	2,2	20,90	4,51	20,90	4,6	20,90	4,7	20,07	4,49	19,24	4,29	17,58	3,87
	5	4,1	21,64	4,57	21,64	4,66	21,64	4,76	20,78	4,55	19,93	4,35	18,21	3,93
	7	6	22,40	4,63	22,40	4,73	22,40	4,83	21,51	4,62	20,63	4,4	18,84	3,98
	9	7,9	22,40	4,47	22,40	4,57	22,40	4,67	21,51	4,46	20,63	4,26	18,84	3,85
	11	9,8	22,40	4,32	22,40	4,41	22,40	4,5	21,51	4,31	20,63	4,11	18,84	3,71
	13	11,8	22,40	4,16	22,40	4,25	22,40	4,34	21,51	4,15	20,63	3,96	18,84	3,58

	15	13,7	22,40	4,01	22,40	4,09	22,40	4,18	21,51	4	20,63	3,81	18,84	3,45
70%	-14,7	-15	12,45	3,41	12,45	3,48	12,45	3,55	11,95	3,4	11,46	3,24	10,48	2,93
	-12,6	-13	13,14	3,46	13,14	3,54	13,14	3,61	12,62	3,45	12,09	3,29	11,06	2,98
	-10,5	-11	13,84	3,52	13,84	3,59	13,84	3,67	13,29	3,51	12,74	3,35	11,64	3,03
	-9,5	-10	14,16	3,54	14,16	3,62	14,16	3,7	13,60	3,53	13,04	3,37	11,92	3,05
	-8,5	-9,1	14,49	3,57	14,49	3,65	14,49	3,72	13,92	3,56	13,34	3,4	12,19	3,07
	-7	-7,6	14,99	3,61	14,99	3,69	14,99	3,77	14,40	3,6	13,79	3,44	12,61	3,11
	-5	-5,6	15,64	3,67	15,64	3,74	15,64	3,82	15,03	3,65	14,41	3,49	13,16	3,15
	-3	-3,7	16,30	3,72	16,30	3,8	16,30	3,88	15,66	3,71	15,01	3,54	13,72	3,2
	0	-0,7	17,29	3,8	17,29	3,88	17,29	3,96	16,60	3,79	15,92	3,61	14,55	3,27
	3	2,2	18,28	3,88	18,28	3,96	18,28	4,05	17,56	3,87	16,83	3,69	15,38	3,34
	5	4,1	18,94	3,93	18,94	4,02	18,94	4,1	18,19	3,92	17,43	3,74	15,94	3,38
	7	6	19,60	3,99	19,60	4,07	19,60	4,16	18,82	3,97	18,05	3,79	16,49	3,43
	9	7,9	19,60	3,85	19,60	3,94	19,60	4,02	18,82	3,84	18,05	3,67	16,49	3,31
	11	9,8	19,60	3,72	19,60	3,8	19,60	3,88	18,82	3,71	18,05	3,54	16,49	3,2
	13	11,8	19,60	3,59	19,60	3,66	19,60	3,74	18,82	3,57	18,05	3,41	16,49	3,08
	15	13,7	19,60	3,45	19,60	3,53	19,60	3,6	18,82	3,44	18,05	3,28	16,49	2,97
60%	-14,7	-15	10,67	2,86	10,67	2,92	10,67	2,98	10,25	2,85	9,82	2,72	8,97	2,46
	-12,6	-13	11,26	2,9	11,26	2,97	11,26	3,03	10,82	2,89	10,37	2,76	9,47	2,5
	-10,5	-11	11,85	2,95	11,85	3,01	11,85	3,08	11,39	2,94	10,91	2,81	9,98	2,54
	-9,5	-10	12,13	2,97	12,13	3,04	12,13	3,1	11,66	2,96	11,17	2,83	10,22	2,56
	-8,5	-9,1	12,42	3	12,42	3,06	12,42	3,12	11,93	2,99	11,44	2,85	10,44	2,58
	-7	-7,6	12,84	3,03	12,84	3,09	12,84	3,16	12,33	3,02	11,82	2,88	10,81	2,61
	-5	-5,6	13,41	3,07	13,41	3,14	13,41	3,21	12,88	3,07	12,34	2,92	11,28	2,64
	-3	-3,7	13,97	3,12	13,97	3,19	13,97	3,25	13,42	3,11	12,87	2,97	11,76	2,68
	0	-0,7	14,82	3,19	14,82	3,25	14,82	3,32	14,24	3,18	13,65	3,03	12,47	2,74
	3	2,2	15,67	3,25	15,67	3,32	15,67	3,39	15,05	3,24	14,43	3,1	13,18	2,8
	5	4,1	16,23	3,3	16,23	3,37	16,23	3,44	15,59	3,29	14,95	3,14	13,66	2,84
	7	6	16,80	3,34	16,80	3,42	16,80	3,49	16,14	3,33	15,46	3,18	14,14	2,88
	9	7,9	16,80	3,23	16,80	3,3	16,80	3,37	16,14	3,22	15,46	3,07	14,14	2,78
	11	9,8	16,80	3,12	16,80	3,19	16,80	3,25	16,14	3,11	15,46	2,97	14,14	2,68
	13	11,8	16,80	3,01	16,80	3,07	16,80	3,14	16,14	3	15,46	2,86	14,14	2,59
	15	13,7	16,80	2,9	16,80	2,96	16,80	3,02	16,14	2,89	15,46	2,75	14,14	2,49
50%	-14,7	-15	8,89	2,31	8,89	2,36	8,89	2,41	8,54	2,3	8,18	2,2	7,48	1,98
	-12,6	-13	9,39	2,35	9,39	2,4	9,39	2,45	9,01	2,34	8,64	2,23	7,89	2,02
	-10,5	-11	9,88	2,38	9,88	2,43	9,88	2,49	9,49	2,38	9,10	2,27	8,31	2,05
	-9,5	-10	10,11	2,4	10,11	2,45	10,11	2,5	9,72	2,39	9,31	2,28	8,50	2,07
	-8,5	-9,1	10,35	2,42	10,35	2,47	10,35	2,52	9,94	2,41	9,53	2,3	8,71	2,08
	-7	-7,6	10,70	2,45	10,70	2,5	10,70	2,55	10,28	2,44	9,85	2,33	9,00	2,1
	-5	-5,6	11,17	2,48	11,17	2,54	11,17	2,59	10,73	2,48	10,29	2,36	9,40	2,14
	-3	-3,7	11,65	2,52	11,65	2,57	11,65	2,63	11,18	2,51	10,72	2,4	9,80	2,17
	0	-0,7	12,35	2,57	12,35	2,63	12,35	2,68	11,86	2,57	11,37	2,45	10,39	2,21
	3	2,2	13,06	2,63	13,06	2,68	13,06	2,74	12,54	2,62	12,02	2,5	10,98	2,26
	5	4,1	13,53	2,67	13,53	2,72	13,53	2,78	13,00	2,66	12,46	2,54	11,39	2,29
	7	6	14,00	2,7	14,00	2,76	14,00	2,82	13,44	2,69	12,89	2,57	11,78	2,32
	9	7,9	14,00	2,61	14,00	2,67	14,00	2,72	13,44	2,6	12,89	2,48	11,78	2,25
	11	9,8	14,00	2,52	14,00	2,57	14,00	2,63	13,44	2,51	12,89	2,4	11,78	2,17
	13	11,8	14,00	2,43	14,00	2,48	14,00	2,53	13,44	2,42	12,89	2,31	11,78	2,09
	15	13,7	14,00	2,34	14,00	2,39	14,00	2,44	13,44	2,33	12,89	2,22	11,78	2,01

HCSU 3001 XRV

TC: total capacity **PI**: power input

Combination (Capacity index)	Outdoor air temp,		Indoor temperature(°C DB)											
			16		18		20		21		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	°C DB	°C WB	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	-14,7	-15	23,05	6,77	23,05	6,91	23,05	7,06	22,14	6,75	21,22	6,44	19,39	5,82
	-12,6	-13	24,33	6,88	24,33	7,03	24,33	7,17	23,36	6,86	22,40	6,55	20,47	5,92
	-10,5	-11	25,62	6,99	25,62	7,14	25,62	7,29	24,60	6,97	23,58	6,65	21,55	6,01
	-9,5	-10	26,22	7,05	26,22	7,2	26,22	7,35	25,19	7,02	24,14	6,7	22,06	6,06
	-8,5	-9,1	26,83	7,1	26,83	7,25	26,83	7,4	25,77	7,08	24,70	6,75	22,58	6,11
	-7	-7,6	27,75	7,18	27,75	7,33	27,75	7,49	26,65	7,16	25,55	6,83	23,34	6,17
	-5	-5,6	28,97	7,29	28,97	7,44	28,97	7,6	27,83	7,26	26,67	6,93	24,38	6,27
	-3	-3,7	30,19	7,39	30,19	7,55	30,19	7,71	29,00	7,37	27,79	7,03	25,41	6,36
	0	-0,7	32,03	7,55	32,03	7,71	32,03	7,87	30,76	7,53	29,48	7,18	26,95	6,49
	3	2,2	33,86	7,71	33,86	7,88	33,86	8,04	32,52	7,69	31,17	7,34	28,49	6,63
	5	4,1	35,08	7,82	35,08	7,99	35,08	8,15	33,69	7,79	32,30	7,44	29,51	6,72
	7	6	36,30	7,92	36,30	8,09	36,30	8,26	34,87	7,9	33,42	7,54	30,54	6,82
	9	7,9	36,30	7,66	36,30	7,82	36,30	7,99	34,87	7,64	33,42	7,29	30,54	6,59
	11	9,8	36,30	7,39	36,30	7,55	36,30	7,71	34,87	7,37	33,42	7,03	30,54	6,36
	13	11,8	36,30	7,13	36,30	7,28	36,30	7,43	34,87	7,11	33,42	6,78	30,54	6,13
	15	13,7	36,30	6,86	36,30	7,01	36,30	7,15	34,87	6,84	33,42	6,53	30,54	5,9
120%	-14,7	-15	23,05	6,97	23,05	7,12	23,05	7,27	22,14	6,95	21,22	6,63	19,39	5,99
	-12,6	-13	24,33	7,08	24,33	7,23	24,33	7,39	23,36	7,06	22,40	6,74	20,47	6,09
	-10,5	-11	25,62	7,2	25,62	7,35	25,62	7,51	24,60	7,18	23,58	6,85	21,55	6,19
	-9,5	-10	26,22	7,25	26,22	7,41	26,22	7,56	25,19	7,23	24,14	6,9	22,06	6,24
	-8,5	-9,1	26,83	7,31	26,83	7,46	26,83	7,62	25,77	7,29	24,70	6,95	22,58	6,28
	-7	-7,6	27,75	7,39	27,75	7,55	27,75	7,71	26,65	7,37	25,55	7,03	23,34	6,36
	-5	-5,6	28,97	7,5	28,97	7,66	28,97	7,82	27,83	7,48	26,67	7,13	24,38	6,45
	-3	-3,7	30,19	7,61	30,19	7,77	30,19	7,93	29,00	7,59	27,79	7,24	25,41	6,54
	0	-0,7	32,03	7,77	32,03	7,94	32,03	8,11	30,76	7,75	29,48	7,4	26,95	6,69
	3	2,2	33,86	7,94	33,86	8,11	33,86	8,28	32,52	7,91	31,17	7,55	28,49	6,83
	5	4,1	35,08	8,05	35,08	8,22	35,08	8,39	33,69	8,02	32,30	7,66	29,51	6,92
	7	6	36,30	8,16	36,30	8,33	36,30	8,51	34,87	8,13	33,42	7,76	30,54	7,02
	9	7,9	36,30	7,88	36,30	8,05	36,30	8,22	34,87	7,86	33,42	7,5	30,54	6,78
	11	9,8	36,30	7,61	36,30	7,77	36,30	7,93	34,87	7,59	33,42	7,24	30,54	6,54
	13	11,8	36,30	7,34	36,30	7,49	36,30	7,65	34,87	7,31	33,42	6,98	30,54	6,31
	15	13,7	36,30	7,06	36,30	7,21	36,30	7,36	34,87	7,04	33,42	6,72	30,54	6,07
110%	-14,7	-15	23,05	7,17	23,05	7,32	23,05	7,47	22,14	7,15	21,22	6,82	19,39	6,16
	-12,6	-13	24,33	7,29	24,33	7,44	24,33	7,6	23,36	7,26	22,40	6,93	20,47	6,27
	-10,5	-11	25,62	7,4	25,62	7,56	25,62	7,72	24,60	7,38	23,58	7,04	21,55	6,37
	-9,5	-10	26,22	7,46	26,22	7,62	26,22	7,78	25,19	7,44	24,14	7,1	22,06	6,42
	-8,5	-9,1	26,83	7,52	26,83	7,68	26,83	7,84	25,77	7,49	24,70	7,15	22,58	6,46
	-7	-7,6	27,75	7,6	27,75	7,76	27,75	7,93	26,65	7,58	25,55	7,23	23,34	6,54
	-5	-5,6	28,97	7,71	28,97	7,88	28,97	8,04	27,83	7,69	26,67	7,34	24,38	6,63
	-3	-3,7	30,19	7,83	30,19	7,99	30,19	8,16	29,00	7,8	27,79	7,45	25,41	6,73
	0	-0,7	32,03	8	32,03	8,17	32,03	8,34	30,76	7,97	29,48	7,61	26,95	6,88
	3	2,2	33,86	8,17	33,86	8,34	33,86	8,51	32,52	8,14	31,17	7,77	28,49	7,02
	5	4,1	35,08	8,28	35,08	8,45	35,08	8,63	33,69	8,25	32,30	7,88	29,51	7,12
	7	6	36,30	8,39	36,30	8,57	36,30	8,75	34,87	8,37	33,42	7,98	30,54	7,22
	9	7,9	36,30	8,11	36,30	8,28	36,30	8,46	34,87	8,08	33,42	7,71	30,54	6,97

	11	9,8	36,30	7,83	36,30	7,99	36,30	8,16	34,87	7,8	33,42	7,45	30,54	6,73
	13	11,8	36,30	7,55	36,30	7,71	36,30	7,87	34,87	7,52	33,42	7,18	30,54	6,49
	15	13,7	36,30	7,26	36,30	7,42	36,30	7,57	34,87	7,24	33,42	6,91	30,54	6,25
100%	-14,7	-15	20,95	6,32	20,95	6,46	20,95	6,59	20,13	6,31	19,29	6,02	17,63	5,44
	-12,6	-13	22,12	6,43	22,12	6,57	22,12	6,7	21,25	6,41	20,37	6,12	18,61	5,53
	-10,5	-11	23,29	6,53	23,29	6,67	23,29	6,81	22,36	6,51	21,44	6,22	19,59	5,62
	-9,5	-10	23,84	6,58	23,84	6,72	23,84	6,86	22,89	6,56	21,95	6,26	20,05	5,66
	-8,5	-9,1	24,40	6,63	24,40	6,77	24,40	6,92	23,43	6,61	22,46	6,31	20,52	5,7
	-7	-7,6	25,23	6,71	25,23	6,85	25,23	6,99	24,23	6,69	23,23	6,38	21,23	5,77
	-5	-5,6	26,34	6,81	26,34	6,95	26,34	7,1	25,29	6,79	24,25	6,48	22,16	5,85
	-3	-3,7	27,45	6,91	27,45	7,05	27,45	7,2	26,36	6,89	25,27	6,57	23,09	5,94
	0	-0,7	29,11	7,06	29,11	7,21	29,11	7,36	27,96	7,03	26,80	6,71	24,49	6,07
	3	2,2	30,78	7,21	30,78	7,36	30,78	7,51	29,55	7,18	28,34	6,85	25,90	6,2
	5	4,1	31,89	7,3	31,89	7,46	31,89	7,62	30,62	7,28	29,36	6,95	26,83	6,28
	7	6	33,00	7,4	33,00	7,56	33,00	7,72	31,69	7,38	30,38	7,04	27,76	6,37
	9	7,9	33,00	7,16	33,00	7,31	33,00	7,46	31,69	7,13	30,38	6,81	27,76	6,15
	11	9,8	33,00	6,91	33,00	7,05	33,00	7,2	31,69	6,89	30,38	6,57	27,76	5,94
	13	11,8	33,00	6,66	33,00	6,8	33,00	6,94	31,69	6,64	30,38	6,33	27,76	5,73
	15	13,7	33,00	6,41	33,00	6,55	33,00	6,68	31,69	6,39	30,38	6,1	27,76	5,51
90%	-14,7	-15	18,86	5,61	18,86	5,73	18,86	5,85	18,11	5,59	17,36	5,33	15,86	4,82
	-12,6	-13	19,91	5,7	19,91	5,82	19,91	5,94	19,12	5,68	18,32	5,42	16,75	4,9
	-10,5	-11	20,95	5,79	20,95	5,92	20,95	6,04	20,13	5,78	19,30	5,51	17,63	4,98
	-9,5	-10	21,46	5,84	21,46	5,96	21,46	6,09	20,61	5,82	19,75	5,55	18,05	5,02
	-8,5	-9,1	21,96	5,88	21,96	6,01	21,96	6,13	21,09	5,86	20,21	5,59	18,47	5,06
	-7	-7,6	22,70	5,95	22,70	6,07	22,70	6,2	21,80	5,93	20,90	5,66	19,10	5,11
	-5	-5,6	23,71	6,04	23,71	6,16	23,71	6,29	22,77	6,02	21,82	5,74	19,95	5,19
	-3	-3,7	24,70	6,12	24,70	6,25	24,70	6,39	23,72	6,11	22,74	5,83	20,79	5,27
	0	-0,7	26,20	6,26	26,20	6,39	26,20	6,52	25,17	6,24	24,13	5,95	22,04	5,38
	3	2,2	27,70	6,39	27,70	6,52	27,70	6,66	26,60	6,37	25,50	6,08	23,31	5,49
	5	4,1	28,71	6,48	28,71	6,61	28,71	6,75	27,56	6,46	26,42	6,16	24,15	5,57
	7	6	29,70	6,56	29,70	6,71	29,70	6,85	28,53	6,55	27,34	6,25	24,99	5,65
	9	7,9	29,70	6,34	29,70	6,48	29,70	6,62	28,53	6,33	27,34	6,04	24,99	5,46
	11	9,8	29,70	6,12	29,70	6,25	29,70	6,39	28,53	6,11	27,34	5,83	24,99	5,27
	13	11,8	29,70	5,9	29,70	6,03	29,70	6,16	28,53	5,89	27,34	5,62	24,99	5,08
	15	13,7	29,70	5,68	29,70	5,8	29,70	5,93	28,53	5,67	27,34	5,41	24,99	4,89
80%	-14,7	-15	16,76	4,92	16,76	5,03	16,76	5,13	16,10	4,91	15,43	4,68	14,10	4,23
	-12,6	-13	17,70	5,01	17,70	5,11	17,70	5,22	16,99	4,99	16,29	4,76	14,89	4,3
	-10,5	-11	18,63	5,09	18,63	5,2	18,63	5,3	17,89	5,07	17,15	4,84	15,67	4,37
	-9,5	-10	19,07	5,13	19,07	5,23	19,07	5,34	18,31	5,11	17,56	4,88	16,05	4,41
	-8,5	-9,1	19,52	5,16	19,52	5,27	19,52	5,38	18,74	5,15	17,97	4,91	16,42	4,44
	-7	-7,6	20,18	5,22	20,18	5,33	20,18	5,45	19,38	5,21	18,59	4,97	16,98	4,49
	-5	-5,6	21,07	5,3	21,07	5,41	21,07	5,53	20,23	5,28	19,40	5,04	17,73	4,56
	-3	-3,7	21,96	5,38	21,96	5,49	21,96	5,61	21,09	5,36	20,22	5,12	18,47	4,62
	0	-0,7	23,29	5,49	23,29	5,61	23,29	5,73	22,37	5,48	21,45	5,23	19,59	4,72
	3	2,2	24,62	5,61	24,62	5,73	24,62	5,85	23,65	5,59	22,67	5,34	20,71	4,82
	5	4,1	25,51	5,69	25,51	5,81	25,51	5,93	24,50	5,67	23,49	5,41	21,47	4,89
	7	6	26,40	5,76	26,40	5,89	26,40	6,01	25,35	5,75	24,31	5,48	22,21	4,96
	9	7,9	26,40	5,57	26,40	5,69	26,40	5,81	25,35	5,55	24,31	5,3	22,21	4,79
	11	9,8	26,40	5,38	26,40	5,49	26,40	5,61	25,35	5,36	24,31	5,12	22,21	4,62
	13	11,8	26,40	5,18	26,40	5,29	26,40	5,41	25,35	5,17	24,31	4,93	22,21	4,46
	15	13,7	26,40	4,99	26,40	5,1	26,40	5,2	25,35	4,98	24,31	4,75	22,21	4,29

70%	-14,7	-15	14,67	4,24	14,67	4,33	14,67	4,42	14,08	4,23	13,50	4,03	12,34	3,65
	-12,6	-13	15,48	4,31	15,48	4,4	15,48	4,49	14,87	4,3	14,26	4,1	13,02	3,71
	-10,5	-11	16,30	4,38	16,30	4,47	16,30	4,57	15,65	4,37	15,00	4,17	13,71	3,77
	-9,5	-10	16,69	4,41	16,69	4,51	16,69	4,6	16,03	4,4	15,36	4,2	14,04	3,8
	-8,5	-9,1	17,08	4,45	17,08	4,54	17,08	4,64	16,40	4,43	15,73	4,23	14,36	3,82
	-7	-7,6	17,66	4,5	17,66	4,59	17,66	4,69	16,96	4,48	16,26	4,28	14,86	3,87
	-5	-5,6	18,44	4,56	18,44	4,66	18,44	4,76	17,71	4,55	16,97	4,34	15,52	3,92
	-3	-3,7	19,21	4,63	19,21	4,73	19,21	4,83	18,45	4,62	17,68	4,41	16,17	3,98
	0	-0,7	20,38	4,73	20,38	4,83	20,38	4,93	19,57	4,72	18,76	4,5	17,15	4,07
	3	2,2	21,55	4,83	21,55	4,93	21,55	5,04	20,69	4,82	19,83	4,6	18,12	4,15
	5	4,1	22,33	4,9	22,33	5	22,33	5,11	21,44	4,88	20,56	4,66	18,78	4,21
	7	6	23,10	4,96	23,10	5,07	23,10	5,18	22,19	4,95	21,27	4,72	19,43	4,27
	9	7,9	23,10	4,8	23,10	4,9	23,10	5	22,19	4,78	21,27	4,56	19,43	4,13
	11	9,8	23,10	4,63	23,10	4,73	23,10	4,83	22,19	4,62	21,27	4,41	19,43	3,98
	13	11,8	23,10	4,46	23,10	4,56	23,10	4,65	22,19	4,45	21,27	4,25	19,43	3,84
	15	13,7	23,10	4,3	23,10	4,39	23,10	4,48	22,19	4,28	21,27	4,09	19,43	3,7
60%	-14,7	-15	12,57	3,56	12,57	3,63	12,57	3,71	12,07	3,55	11,58	3,38	10,58	3,06
	-12,6	-13	13,27	3,62	13,27	3,69	13,27	3,77	12,75	3,6	12,22	3,44	11,17	3,11
	-10,5	-11	13,98	3,67	13,98	3,75	13,98	3,83	13,42	3,66	12,87	3,5	11,75	3,16
	-9,5	-10	14,30	3,7	14,30	3,78	14,30	3,86	13,73	3,69	13,17	3,52	12,04	3,18
	-8,5	-9,1	14,64	3,73	14,64	3,81	14,64	3,89	14,06	3,72	13,47	3,55	12,31	3,21
	-7	-7,6	15,14	3,77	15,14	3,85	15,14	3,93	14,54	3,76	13,93	3,59	12,74	3,24
	-5	-5,6	15,80	3,83	15,80	3,91	15,80	3,99	15,18	3,82	14,55	3,64	13,29	3,29
	-3	-3,7	16,47	3,88	16,47	3,97	16,47	4,05	15,82	3,87	15,16	3,7	13,86	3,34
	0	-0,7	17,46	3,97	17,46	4,05	17,46	4,14	16,77	3,96	16,08	3,77	14,70	3,41
	3	2,2	18,47	4,05	18,47	4,14	18,47	4,23	17,74	4,04	17,00	3,85	15,54	3,48
	5	4,1	19,13	4,11	19,13	4,2	19,13	4,28	18,38	4,1	17,61	3,91	16,10	3,53
	7	6	19,80	4,16	19,80	4,25	19,80	4,34	19,02	4,15	18,23	3,96	16,66	3,58
	9	7,9	19,80	4,02	19,80	4,11	19,80	4,2	19,02	4,01	18,23	3,83	16,66	3,46
	11	9,8	19,80	3,88	19,80	3,97	19,80	4,05	19,02	3,87	18,23	3,7	16,66	3,34
	13	11,8	19,80	3,74	19,80	3,82	19,80	3,9	19,02	3,73	18,23	3,56	16,66	3,22
	15	13,7	19,80	3,6	19,80	3,68	19,80	3,76	19,02	3,59	18,23	3,43	16,66	3,1
50%	-14,7	-15	10,48	2,87	10,48	2,93	10,48	3	10,06	2,86	9,65	2,73	8,81	2,47
	-12,6	-13	11,06	2,92	11,06	2,98	11,06	3,05	10,62	2,91	10,18	2,78	9,30	2,51
	-10,5	-11	11,64	2,97	11,64	3,03	11,64	3,09	11,18	2,96	10,72	2,82	9,80	2,55
	-9,5	-10	11,92	2,99	11,92	3,05	11,92	3,12	11,45	2,98	10,97	2,85	10,03	2,57
	-8,5	-9,1	12,19	3,01	12,19	3,08	12,19	3,14	11,71	3	11,23	2,87	10,26	2,59
	-7	-7,6	12,61	3,05	12,61	3,11	12,61	3,18	12,11	3,04	11,61	2,9	10,61	2,62
	-5	-5,6	13,17	3,09	13,17	3,16	13,17	3,22	12,65	3,08	12,12	2,94	11,08	2,66
	-3	-3,7	13,72	3,14	13,72	3,2	13,72	3,27	13,18	3,13	12,63	2,98	11,55	2,7
	0	-0,7	14,56	3,21	14,56	3,27	14,56	3,34	13,98	3,2	13,40	3,05	12,25	2,76
	3	2,2	15,39	3,27	15,39	3,34	15,39	3,41	14,78	3,26	14,16	3,11	12,95	2,81
	5	4,1	15,95	3,32	15,95	3,39	15,95	3,46	15,32	3,31	14,68	3,16	13,41	2,85
	7	6	16,50	3,36	16,50	3,44	16,50	3,51	15,85	3,35	15,19	3,2	13,88	2,89
	9	7,9	16,50	3,25	16,50	3,32	16,50	3,39	15,85	3,24	15,19	3,09	13,88	2,8
	11	9,8	16,50	3,14	16,50	3,2	16,50	3,27	15,85	3,13	15,19	2,99	13,88	2,7
	13	11,8	16,50	3,02	16,50	3,09	16,50	3,15	15,85	3,02	15,19	2,88	13,88	2,6
	15	13,7	16,50	2,91	16,50	2,97	16,50	3,04	15,85	2,9	15,19	2,77	13,88	2,5

HCSU 3501 XRV

TC: total capacity **PI**: power input

Combination (Capacity index)	Outdoor air temp,		Indoor temperature(°C DB)											
			16		18		20		21		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	°C DB	°C WB	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	-14,7	-15	26,54	7,98	26,54	8,15	26,54	8,32	25,49	7,96	24,43	7,59	22,32	6,86
	-12,6	-13	28,02	8,11	28,02	8,28	28,02	8,46	26,91	8,09	25,79	7,72	23,57	6,98
	-10,5	-11	29,50	8,24	29,50	8,42	29,50	8,59	28,32	8,22	27,16	7,84	24,82	7,09
	-9,5	-10	30,20	8,31	30,20	8,48	30,20	8,66	29,00	8,28	27,80	7,9	25,41	7,14
	-8,5	-9,1	30,90	8,37	30,90	8,55	30,90	8,73	29,67	8,34	28,45	7,96	25,99	7,2
	-7	-7,6	31,95	8,46	31,95	8,64	31,95	8,82	30,69	8,44	29,42	8,05	26,88	7,28
	-5	-5,6	33,36	8,59	33,36	8,77	33,36	8,95	32,04	8,56	30,72	8,17	28,07	7,39
	-3	-3,7	34,77	8,71	34,77	8,9	34,77	9,09	33,39	8,69	32,01	8,29	29,25	7,49
	0	-0,7	36,88	8,9	36,88	9,09	36,88	9,28	35,42	8,88	33,95	8,47	31,03	7,66
	3	2,2	38,98	9,09	38,98	9,28	38,98	9,48	37,44	9,06	35,89	8,65	32,80	7,82
	5	4,1	40,39	9,22	40,39	9,41	40,39	9,61	38,79	9,19	37,19	8,77	33,98	7,93
	7	6	41,80	9,34	41,80	9,54	41,80	9,74	40,14	9,31	38,49	8,89	35,16	8,03
	9	7,9	41,80	9,03	41,80	9,22	41,80	9,41	40,14	9	38,49	8,59	35,16	7,76
	11	9,8	41,80	8,71	41,80	8,9	41,80	9,09	40,14	8,69	38,49	8,29	35,16	7,49
	13	11,8	41,80	8,4	41,80	8,58	41,80	8,76	40,14	8,38	38,49	7,99	35,16	7,22
	15	13,7	41,80	8,09	41,80	8,26	41,80	8,43	40,14	8,06	38,49	7,69	35,16	6,95
120%	-14,7	-15	26,54	8,21	26,54	8,39	26,54	8,56	25,49	8,19	24,43	7,81	22,32	7,06
	-12,6	-13	28,02	8,35	28,02	8,53	28,02	8,71	26,91	8,32	25,79	7,94	23,57	7,18
	-10,5	-11	29,50	8,49	29,50	8,67	29,50	8,85	28,32	8,46	27,16	8,07	24,82	7,3
	-9,5	-10	30,20	8,55	30,20	8,73	30,20	8,91	29,00	8,52	27,80	8,13	25,41	7,35
	-8,5	-9,1	30,90	8,61	30,90	8,8	30,90	8,98	29,67	8,59	28,45	8,2	25,99	7,41
	-7	-7,6	31,95	8,71	31,95	8,9	31,95	9,08	30,69	8,69	29,42	8,29	26,88	7,49
	-5	-5,6	33,36	8,84	33,36	9,03	33,36	9,22	32,04	8,81	30,72	8,41	28,07	7,6
	-3	-3,7	34,77	8,97	34,77	9,16	34,77	9,35	33,39	8,94	32,01	8,53	29,25	7,71
	0	-0,7	36,88	9,16	36,88	9,36	36,88	9,55	35,42	9,14	33,95	8,72	31,03	7,88
	3	2,2	38,98	9,36	38,98	9,56	38,98	9,76	37,44	9,33	35,89	8,9	32,80	8,05
	5	4,1	40,39	9,49	40,39	9,69	40,39	9,89	38,79	9,46	37,19	9,03	33,98	8,16
	7	6	41,80	9,62	41,80	9,82	41,80	10,03	40,14	9,59	38,49	9,15	35,16	8,27
	9	7,9	41,80	9,29	41,80	9,49	41,80	9,69	40,14	9,27	38,49	8,84	35,16	7,99
	11	9,8	41,80	8,97	41,80	9,16	41,80	9,35	40,14	8,94	38,49	8,53	35,16	7,71
	13	11,8	41,80	8,65	41,80	8,83	41,80	9,02	40,14	8,62	38,49	8,23	35,16	7,44
	15	13,7	41,80	8,32	41,80	8,5	41,80	8,68	40,14	8,3	38,49	7,92	35,16	7,16
110%	-14,7	-15	26,54	8,45	26,54	8,63	26,54	8,81	25,49	8,42	24,43	8,04	22,32	7,27
	-12,6	-13	28,02	8,59	28,02	8,77	28,02	8,95	26,91	8,56	25,79	8,17	23,57	7,39
	-10,5	-11	29,50	8,73	29,50	8,91	29,50	9,1	28,32	8,7	27,16	8,3	24,82	7,51
	-9,5	-10	30,20	8,79	30,20	8,98	30,20	9,17	29,00	8,77	27,80	8,37	25,41	7,56
	-8,5	-9,1	30,90	8,86	30,90	9,05	30,90	9,24	29,67	8,83	28,45	8,43	25,99	7,62
	-7	-7,6	31,95	8,96	31,95	9,15	31,95	9,34	30,69	8,93	29,42	8,52	26,88	7,71
	-5	-5,6	33,36	9,09	33,36	9,29	33,36	9,48	32,04	9,07	30,72	8,65	28,07	7,82
	-3	-3,7	34,77	9,23	34,77	9,42	34,77	9,62	33,39	9,2	32,01	8,78	29,25	7,93
	0	-0,7	36,88	9,43	36,88	9,63	36,88	9,83	35,42	9,4	33,95	8,97	31,03	8,11
	3	2,2	38,98	9,63	38,98	9,83	38,98	10,04	37,44	9,6	35,89	9,16	32,80	8,28
	5	4,1	40,39	9,76	40,39	9,97	40,39	10,17	38,79	9,73	37,19	9,28	33,98	8,39
	7	6	41,80	9,89	41,80	10,1	41,80	10,31	40,14	9,86	38,49	9,41	35,16	8,51
	9	7,9	41,80	9,56	41,80	9,76	41,80	9,97	40,14	9,53	38,49	9,09	35,16	8,22

	11	9,8	41,80	9,23	41,80	9,42	41,80	9,62	40,14	9,2	38,49	8,78	35,16	7,93
	13	11,8	41,80	8,89	41,80	9,08	41,80	9,27	40,14	8,87	38,49	8,46	35,16	7,65
	15	13,7	41,80	8,56	41,80	8,75	41,80	8,93	40,14	8,54	38,49	8,15	35,16	7,36
100%	-14,7	-15	24,13	7,45	24,13	7,61	24,13	7,77	23,17	7,43	22,21	7,09	20,30	6,41
	-12,6	-13	25,47	7,58	25,47	7,74	25,47	7,9	24,46	7,56	23,45	7,21	21,42	6,52
	-10,5	-11	26,81	7,7	26,81	7,87	26,81	8,03	25,75	7,68	24,69	7,33	22,56	6,62
	-9,5	-10	27,45	7,76	27,45	7,93	27,45	8,09	26,37	7,74	25,27	7,38	23,09	6,67
	-8,5	-9,1	28,09	7,82	28,09	7,99	28,09	8,15	26,98	7,79	25,86	7,44	23,63	6,72
	-7	-7,6	29,05	7,91	29,05	8,08	29,05	8,24	27,90	7,88	26,74	7,52	24,44	6,8
	-5	-5,6	30,33	8,02	30,33	8,2	30,33	8,37	29,12	8	27,92	7,63	25,52	6,9
	-3	-3,7	31,61	8,14	31,61	8,31	31,61	8,49	30,35	8,12	29,10	7,74	26,59	7
	0	-0,7	33,52	8,32	33,52	8,49	33,52	8,67	32,19	8,29	30,87	7,91	28,20	7,15
	3	2,2	35,45	8,49	35,45	8,67	35,45	8,86	34,04	8,47	32,63	8,08	29,81	7,3
	5	4,1	36,72	8,61	36,72	8,79	36,72	8,98	35,27	8,58	33,81	8,19	30,90	7,4
	7	6	38,00	8,73	38,00	8,91	38,00	9,1	36,49	8,7	34,98	8,3	31,97	7,51
	9	7,9	38,00	8,43	38,00	8,61	38,00	8,79	36,49	8,41	34,98	8,02	31,97	7,25
	11	9,8	38,00	8,14	38,00	8,32	38,00	8,49	36,49	8,12	34,98	7,75	31,97	7
	13	11,8	38,00	7,85	38,00	8,02	38,00	8,18	36,49	7,82	34,98	7,47	31,97	6,75
	15	13,7	38,00	7,56	38,00	7,72	38,00	7,88	36,49	7,53	34,98	7,19	31,97	6,5
90%	-14,7	-15	21,72	6,61	21,72	6,75	21,72	6,89	20,86	6,59	19,99	6,29	18,27	5,68
	-12,6	-13	22,92	6,72	22,92	6,86	22,92	7,01	22,01	6,7	21,11	6,39	19,28	5,78
	-10,5	-11	24,13	6,83	24,13	6,97	24,13	7,12	23,18	6,81	22,21	6,5	20,30	5,87
	-9,5	-10	24,71	6,88	24,71	7,03	24,71	7,17	23,72	6,86	22,75	6,55	20,78	5,92
	-8,5	-9,1	25,28	6,93	25,28	7,08	25,28	7,23	24,28	6,91	23,28	6,59	21,27	5,96
	-7	-7,6	26,15	7,01	26,15	7,16	26,15	7,31	25,11	6,99	24,07	6,67	22,00	6,03
	-5	-5,6	27,30	7,11	27,30	7,27	27,30	7,42	26,22	7,09	25,13	6,77	22,96	6,12
	-3	-3,7	28,45	7,22	28,45	7,37	28,45	7,53	27,32	7,2	26,19	6,87	23,94	6,21
	0	-0,7	30,18	7,37	30,18	7,53	30,18	7,69	28,97	7,35	27,78	7,02	25,39	6,34
	3	2,2	31,90	7,53	31,90	7,69	31,90	7,85	30,63	7,51	29,37	7,16	26,83	6,48
	5	4,1	33,05	7,63	33,05	7,8	33,05	7,96	31,74	7,61	30,43	7,26	27,81	6,57
	7	6	34,20	7,74	34,20	7,9	34,20	8,07	32,84	7,72	31,49	7,36	28,77	6,65
	9	7,9	34,20	7,48	34,20	7,64	34,20	7,8	32,84	7,46	31,49	7,11	28,77	6,43
	11	9,8	34,20	7,22	34,20	7,37	34,20	7,53	32,84	7,2	31,49	6,87	28,77	6,21
	13	11,8	34,20	6,96	34,20	7,11	34,20	7,26	32,84	6,94	31,49	6,62	28,77	5,98
	15	13,7	34,20	6,7	34,20	6,84	34,20	6,98	32,84	6,68	31,49	6,37	28,77	5,76
80%	-14,7	-15	19,30	5,8	19,30	5,93	19,30	6,05	18,53	5,79	17,77	5,52	16,23	4,99
	-12,6	-13	20,38	5,9	20,38	6,03	20,38	6,15	19,57	5,88	18,76	5,61	17,15	5,07
	-10,5	-11	21,45	6	21,45	6,12	21,45	6,25	20,60	5,98	19,75	5,7	18,05	5,16
	-9,5	-10	21,96	6,04	21,96	6,17	21,96	6,3	21,09	6,02	20,22	5,75	18,47	5,2
	-8,5	-9,1	22,48	6,09	22,48	6,22	22,48	6,35	21,58	6,07	20,69	5,79	18,91	5,23
	-7	-7,6	23,24	6,16	23,24	6,29	23,24	6,42	22,31	6,14	21,39	5,86	19,55	5,29
	-5	-5,6	24,26	6,25	24,26	6,38	24,26	6,51	23,30	6,23	22,33	5,94	20,41	5,37
	-3	-3,7	25,28	6,34	25,28	6,47	25,28	6,61	24,28	6,32	23,28	6,03	21,27	5,45
	0	-0,7	26,82	6,48	26,82	6,61	26,82	6,75	25,76	6,46	24,70	6,16	22,57	5,57
	3	2,2	28,35	6,61	28,35	6,75	28,35	6,89	27,23	6,59	26,10	6,29	23,85	5,69
	5	4,1	29,38	6,7	29,38	6,85	29,38	6,99	28,21	6,68	27,05	6,38	24,72	5,76
	7	6	30,40	6,8	30,40	6,94	30,40	7,09	29,20	6,77	27,99	6,46	25,58	5,84
	9	7,9	30,40	6,57	30,40	6,71	30,40	6,85	29,20	6,55	27,99	6,25	25,58	5,65
	11	9,8	30,40	6,34	30,40	6,47	30,40	6,61	29,20	6,32	27,99	6,03	25,58	5,45
	13	11,8	30,40	6,11	30,40	6,24	30,40	6,37	29,20	6,09	27,99	5,81	25,58	5,25
	15	13,7	30,40	5,88	30,40	6,01	30,40	6,13	29,20	5,86	27,99	5,6	25,58	5,06

70%	-14,7	-15	16,89	5	16,89	5,11	16,89	5,21	16,22	4,98	15,55	4,76	14,21	4,3
	-12,6	-13	17,83	5,08	17,83	5,19	17,83	5,3	17,13	5,07	16,42	4,83	15,00	4,37
	-10,5	-11	18,77	5,16	18,77	5,27	18,77	5,38	18,03	5,15	17,28	4,91	15,79	4,44
	-9,5	-10	19,21	5,2	19,21	5,31	19,21	5,42	18,45	5,19	17,69	4,95	16,16	4,47
	-8,5	-9,1	19,66	5,24	19,66	5,35	19,66	5,47	18,88	5,23	18,10	4,99	16,54	4,51
	-7	-7,6	20,34	5,3	20,34	5,41	20,34	5,53	19,53	5,29	18,72	5,04	17,11	4,56
	-5	-5,6	21,23	5,38	21,23	5,49	21,23	5,61	20,39	5,36	19,55	5,12	17,87	4,63
	-3	-3,7	22,12	5,46	22,12	5,57	22,12	5,69	21,25	5,44	20,37	5,19	18,62	4,69
	0	-0,7	23,47	5,58	23,47	5,7	23,47	5,81	22,54	5,56	21,61	5,3	19,74	4,8
	3	2,2	24,81	5,69	24,81	5,82	24,81	5,94	23,82	5,68	22,84	5,42	20,88	4,9
	5	4,1	25,71	5,77	25,71	5,9	25,71	6,02	24,69	5,76	23,66	5,49	21,63	4,96
	7	6	26,60	5,85	26,60	5,98	26,60	6,1	25,55	5,83	24,49	5,57	22,38	5,03
	9	7,9	26,60	5,66	26,60	5,78	26,60	5,9	25,55	5,64	24,49	5,38	22,38	4,86
	11	9,8	26,60	5,46	26,60	5,58	26,60	5,69	25,55	5,44	24,49	5,19	22,38	4,69
	13	11,8	26,60	5,26	26,60	5,37	26,60	5,49	25,55	5,25	24,49	5,01	22,38	4,53
	15	13,7	26,60	5,07	26,60	5,17	26,60	5,28	25,55	5,05	24,49	4,82	22,38	4,36
60%	-14,7	-15	14,48	4,19	14,48	4,28	14,48	4,37	13,90	4,18	13,33	3,99	12,18	3,61
	-12,6	-13	15,28	4,26	15,28	4,35	15,28	4,44	14,67	4,25	14,07	4,05	12,86	3,67
	-10,5	-11	16,09	4,33	16,09	4,42	16,09	4,52	15,45	4,32	14,82	4,12	13,54	3,72
	-9,5	-10	16,47	4,36	16,47	4,46	16,47	4,55	15,82	4,35	15,16	4,15	13,85	3,75
	-8,5	-9,1	16,85	4,4	16,85	4,49	16,85	4,58	16,18	4,38	15,51	4,18	14,18	3,78
	-7	-7,6	17,43	4,45	17,43	4,54	17,43	4,64	16,74	4,43	16,05	4,23	14,66	3,82
	-5	-5,6	18,20	4,51	18,20	4,61	18,20	4,71	17,47	4,5	16,75	4,29	15,31	3,88
	-3	-3,7	18,96	4,58	18,96	4,68	18,96	4,77	18,21	4,56	17,46	4,36	15,95	3,94
	0	-0,7	20,12	4,68	20,12	4,78	20,12	4,88	19,31	4,66	18,51	4,45	16,92	4,02
	3	2,2	21,27	4,78	21,27	4,88	21,27	4,98	20,42	4,76	19,58	4,54	17,89	4,11
	5	4,1	22,03	4,84	22,03	4,95	22,03	5,05	21,16	4,83	20,29	4,61	18,53	4,16
	7	6	22,80	4,91	22,80	5,01	22,80	5,12	21,90	4,89	20,99	4,67	19,18	4,22
	9	7,9	22,80	4,74	22,80	4,84	22,80	4,95	21,90	4,73	20,99	4,51	19,18	4,08
	11	9,8	22,80	4,58	22,80	4,68	22,80	4,77	21,90	4,56	20,99	4,36	19,18	3,94
	13	11,8	22,80	4,41	22,80	4,51	22,80	4,6	21,90	4,4	20,99	4,2	19,18	3,8
	15	13,7	22,80	4,25	22,80	4,34	22,80	4,43	21,90	4,24	20,99	4,04	19,18	3,65
50%	-14,7	-15	12,06	3,39	12,06	3,46	12,06	3,53	11,58	3,38	11,11	3,22	10,15	2,91
	-12,6	-13	12,74	3,44	12,74	3,52	12,74	3,59	12,23	3,43	11,72	3,28	10,71	2,96
	-10,5	-11	13,41	3,5	13,41	3,57	13,41	3,65	12,87	3,49	12,34	3,33	11,28	3,01
	-9,5	-10	13,73	3,53	13,73	3,6	13,73	3,68	13,18	3,51	12,64	3,35	11,55	3,03
	-8,5	-9,1	14,05	3,55	14,05	3,63	14,05	3,7	13,49	3,54	12,93	3,38	11,82	3,05
	-7	-7,6	14,52	3,59	14,52	3,67	14,52	3,75	13,94	3,58	13,38	3,42	12,22	3,09
	-5	-5,6	15,16	3,65	15,16	3,72	15,16	3,8	14,56	3,63	13,96	3,47	12,76	3,13
	-3	-3,7	15,81	3,7	15,81	3,78	15,81	3,86	15,18	3,69	14,55	3,52	13,30	3,18
	0	-0,7	16,76	3,78	16,76	3,86	16,76	3,94	16,10	3,77	15,43	3,59	14,11	3,25
	3	2,2	17,72	3,86	17,72	3,94	17,72	4,02	17,01	3,85	16,32	3,67	14,91	3,32
	5	4,1	18,36	3,91	18,36	4	18,36	4,08	17,63	3,9	16,90	3,72	15,44	3,36
	7	6	19,00	3,97	19,00	4,05	19,00	4,13	18,25	3,95	17,49	3,77	15,98	3,41
	9	7,9	19,00	3,83	19,00	3,91	19,00	4	18,25	3,82	17,49	3,65	15,98	3,3
	11	9,8	19,00	3,7	19,00	3,78	19,00	3,86	18,25	3,69	17,49	3,52	15,98	3,18
	13	11,8	19,00	3,57	19,00	3,64	19,00	3,72	18,25	3,55	17,49	3,39	15,98	3,07
	15	13,7	19,00	3,43	19,00	3,51	19,00	3,58	18,25	3,42	17,49	3,27	15,98	2,95

HCSU 4001 XRV

TC: total capacity **PI**: power input

Combination (Capacity index)	Outdoor air temp,		Indoor temperature(°C DB)											
			16		18		20		21		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	°C DB	°C WB	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	-14,7	-15	31,43	9,8	31,43	10,01	31,43	10,22	30,18	9,77	28,93	9,33	26,44	8,43
	-12,6	-13	33,18	9,97	33,18	10,18	33,18	10,39	31,86	9,94	30,54	9,48	27,91	8,57
	-10,5	-11	34,93	10,13	34,93	10,34	34,93	10,56	33,54	10,1	32,15	9,63	29,38	8,71
	-9,5	-10	35,76	10,2	35,76	10,42	35,76	10,64	34,34	10,17	32,92	9,71	30,08	8,78
	-8,5	-9,1	36,59	10,28	36,59	10,5	36,59	10,72	35,14	10,25	33,69	9,78	30,78	8,84
	-7	-7,6	37,84	10,4	37,84	10,62	37,84	10,84	36,34	10,37	34,84	9,89	31,83	8,94
	-5	-5,6	39,51	10,55	39,51	10,78	39,51	11	37,94	10,52	36,37	10,04	33,24	9,07
	-3	-3,7	41,17	10,71	41,17	10,93	41,17	11,16	39,54	10,67	37,9	10,18	34,64	9,21
	0	-0,7	43,67	10,94	43,67	11,17	43,67	11,4	41,94	10,9	40,2	10,4	36,74	9,41
	3	2,2	46,17	11,17	46,17	11,41	46,17	11,64	44,34	11,13	42,5	10,62	38,84	9,6
	5	4,1	47,83	11,32	47,83	11,56	47,83	11,81	45,94	11,29	44,04	10,77	40,24	9,74
	7	6	49,5	11,48	49,5	11,72	49,5	11,97	47,54	11,44	45,57	10,92	41,64	9,87
	9	7,9	49,5	11,09	49,5	11,33	49,5	11,56	47,54	11,06	45,57	10,55	41,64	9,54
	11	9,8	49,5	10,71	49,5	10,93	49,5	11,16	47,54	10,67	45,57	10,18	41,64	9,21
	13	11,8	49,5	10,32	49,5	10,54	49,5	10,76	47,54	10,29	45,57	9,82	41,64	8,88
	15	13,7	49,5	9,94	49,5	10,15	49,5	10,36	47,54	9,91	45,57	9,45	41,64	8,54
120%	-14,7	-15	31,43	10,09	31,43	10,31	31,43	10,52	30,18	10,06	28,93	9,6	26,44	8,68
	-12,6	-13	33,18	10,26	33,18	10,48	33,18	10,7	31,86	10,23	30,54	9,76	27,91	8,82
	-10,5	-11	34,93	10,42	34,93	10,65	34,93	10,87	33,54	10,39	32,15	9,92	29,38	8,96
	-9,5	-10	35,76	10,5	35,76	10,73	35,76	10,95	34,34	10,47	32,92	9,99	30,08	9,03
	-8,5	-9,1	36,59	10,58	36,59	10,81	36,59	11,04	35,14	10,55	33,69	10,07	30,78	9,1
	-7	-7,6	37,84	10,7	37,84	10,93	37,84	11,16	36,34	10,67	34,84	10,18	31,83	9,2
	-5	-5,6	39,51	10,86	39,51	11,09	39,51	11,32	37,94	10,83	36,37	10,33	33,24	9,34
	-3	-3,7	41,17	11,02	41,17	11,26	41,17	11,49	39,54	10,99	37,9	10,48	34,64	9,48
	0	-0,7	43,67	11,26	43,67	11,5	43,67	11,74	41,94	11,22	40,2	10,71	36,74	9,68
	3	2,2	46,17	11,5	46,17	11,74	46,17	11,99	44,34	11,46	42,5	10,94	38,84	9,89
	5	4,1	47,83	11,66	47,83	11,9	47,83	12,15	45,94	11,62	44,04	11,09	40,24	10,02
	7	6	49,5	11,81	49,5	12,07	49,5	12,32	47,54	11,78	45,57	11,24	41,64	10,16
	9	7,9	49,5	11,42	49,5	11,66	49,5	11,9	47,54	11,38	45,57	10,86	41,64	9,82
	11	9,8	49,5	11,02	49,5	11,26	49,5	11,49	47,54	10,99	45,57	10,48	41,64	9,48
	13	11,8	49,5	10,62	49,5	10,85	49,5	11,08	47,54	10,59	45,57	10,11	41,64	9,14
	15	13,7	49,5	10,23	49,5	10,45	49,5	10,66	47,54	10,2	45,57	9,73	41,64	8,8
110%	-14,7	-15	31,43	10,38	31,43	10,6	31,43	10,82	30,18	10,35	28,93	9,87	26,44	8,93
	-12,6	-13	33,18	10,55	33,18	10,78	33,18	11	31,86	10,52	30,54	10,04	27,91	9,07
	-10,5	-11	34,93	10,72	34,93	10,95	34,93	11,18	33,54	10,69	32,15	10,2	29,38	9,22
	-9,5	-10	35,76	10,8	35,76	11,03	35,76	11,27	34,34	10,77	32,92	10,28	30,08	9,29
	-8,5	-9,1	36,59	10,89	36,59	11,12	36,59	11,35	35,14	10,85	33,69	10,36	30,78	9,36
	-7	-7,6	37,84	11,01	37,84	11,24	37,84	11,48	36,34	10,98	34,84	10,47	31,83	9,47
	-5	-5,6	39,51	11,17	39,51	11,41	39,51	11,65	37,94	11,14	36,37	10,63	33,24	9,61
	-3	-3,7	41,17	11,34	41,17	11,58	41,17	11,82	39,54	11,3	37,9	10,78	34,64	9,75
	0	-0,7	43,67	11,58	43,67	11,83	43,67	12,07	41,94	11,55	40,2	11,02	36,74	9,96
	3	2,2	46,17	11,83	46,17	12,08	46,17	12,33	44,34	11,79	42,5	11,25	38,84	10,17
	5	4,1	47,83	11,99	47,83	12,24	47,83	12,5	45,94	11,95	44,04	11,4	40,24	10,31
	7	6	49,5	12,15	49,5	12,41	49,5	12,67	47,54	12,12	45,57	11,56	41,64	10,45
	9	7,9	49,5	11,74	49,5	11,99	49,5	12,24	47,54	11,71	45,57	11,17	41,64	10,1

	11	9,8	49,5	11,34	49,5	11,58	49,5	11,82	47,54	11,3	45,57	10,78	41,64	9,75
	13	11,8	49,5	10,93	49,5	11,16	49,5	11,39	47,54	10,89	45,57	10,4	41,64	9,4
	15	13,7	49,5	10,52	49,5	10,74	49,5	10,97	47,54	10,49	45,57	10,01	41,64	9,05
100%	-14,7	-15	28,57	9,16	28,57	9,35	28,57	9,55	27,44	9,13	26,3	8,71	24,04	7,88
	-12,6	-13	30,16	9,31	30,16	9,51	30,16	9,71	28,96	9,28	27,77	8,86	25,37	8,01
	-10,5	-11	31,75	9,46	31,75	9,66	31,75	9,87	30,49	9,43	29,23	9	26,71	8,14
	-9,5	-10	32,51	9,53	32,51	9,74	32,51	9,94	31,22	9,5	29,93	9,07	27,35	8,2
	-8,5	-9,1	33,27	9,61	33,27	9,81	33,27	10,02	31,95	9,58	30,63	9,14	27,99	8,26
	-7	-7,6	34,4	9,71	34,4	9,92	34,4	10,13	33,04	9,68	31,67	9,24	28,94	8,35
	-5	-5,6	35,92	9,86	35,92	10,07	35,92	10,28	34,49	9,83	33,06	9,38	30,21	8,48
	-3	-3,7	37,43	10	37,43	10,22	37,43	10,43	35,94	9,97	34,46	9,51	31,49	8,6
	0	-0,7	39,7	10,22	39,7	10,44	39,7	10,65	38,13	10,19	36,55	9,72	33,4	8,79
	3	2,2	41,97	10,43	41,97	10,66	41,97	10,88	40,31	10,4	38,64	9,93	35,31	8,97
	5	4,1	43,49	10,58	43,49	10,8	43,49	11,03	41,76	10,55	40,03	10,06	36,58	9,1
	7	6	45	10,72	45	10,95	45	11,18	43,21	10,69	41,43	10,2	37,86	9,22
	9	7,9	45	10,36	45	10,58	45	10,8	43,21	10,33	41,43	9,86	37,86	8,91
	11	9,8	45	10	45	10,22	45	10,43	43,21	9,97	41,43	9,52	37,86	8,6
	13	11,8	45	9,64	45	9,85	45	10,05	43,21	9,61	41,43	9,17	37,86	8,29
	15	13,7	45	9,28	45	9,48	45	9,68	43,21	9,25	41,43	8,83	37,86	7,98
90%	-14,7	-15	25,71	8,12	25,71	8,29	25,71	8,47	24,69	8,1	23,67	7,73	21,63	6,98
	-12,6	-13	27,15	8,26	27,15	8,43	27,15	8,61	26,07	8,23	24,99	7,85	22,84	7,1
	-10,5	-11	28,58	8,39	28,58	8,57	28,58	8,75	27,44	8,36	26,31	7,98	24,04	7,21
	-9,5	-10	29,26	8,45	29,26	8,63	29,26	8,81	28,1	8,43	26,94	8,04	24,61	7,27
	-8,5	-9,1	29,94	8,52	29,94	8,7	29,94	8,88	28,75	8,49	27,56	8,1	25,19	7,32
	-7	-7,6	30,96	8,61	30,96	8,8	30,96	8,98	29,73	8,59	28,5	8,19	26,05	7,41
	-5	-5,6	32,32	8,74	32,32	8,93	32,32	9,11	31,04	8,71	29,76	8,32	27,19	7,52
	-3	-3,7	33,69	8,87	33,69	9,06	33,69	9,25	32,35	8,84	31,01	8,44	28,34	7,63
	0	-0,7	35,73	9,06	35,73	9,25	35,73	9,45	34,31	9,03	32,89	8,62	30,06	7,79
	3	2,2	37,77	9,25	37,77	9,45	37,77	9,65	36,28	9,22	34,78	8,8	31,78	7,96
	5	4,1	39,14	9,38	39,14	9,58	39,14	9,78	37,58	9,35	36,03	8,92	32,93	8,07
	7	6	40,5	9,51	40,5	9,71	40,5	9,91	38,89	9,48	37,29	9,04	34,07	8,18
	9	7,9	40,5	9,19	40,5	9,38	40,5	9,58	38,89	9,16	37,29	8,74	34,07	7,9
	11	9,8	40,5	8,87	40,5	9,06	40,5	9,25	38,89	8,84	37,29	8,44	34,07	7,63
	13	11,8	40,5	8,55	40,5	8,73	40,5	8,91	38,89	8,52	37,29	8,13	34,07	7,35
	15	13,7	40,5	8,23	40,5	8,41	40,5	8,58	38,89	8,21	37,29	7,83	34,07	7,08
80%	-14,7	-15	22,86	7,13	22,86	7,28	22,86	7,44	21,95	7,11	21,04	6,78	19,23	6,13
	-12,6	-13	24,13	7,25	24,13	7,4	24,13	7,56	23,17	7,23	22,21	6,9	20,3	6,23
	-10,5	-11	25,4	7,37	25,4	7,52	25,4	7,68	24,39	7,34	23,38	7,01	21,37	6,33
	-9,5	-10	26,01	7,42	26,01	7,58	26,01	7,74	24,97	7,4	23,94	7,06	21,88	6,38
	-8,5	-9,1	26,61	7,48	26,61	7,64	26,61	7,8	25,56	7,46	24,5	7,11	22,39	6,43
	-7	-7,6	27,52	7,56	27,52	7,72	27,52	7,89	26,43	7,54	25,34	7,19	23,15	6,5
	-5	-5,6	28,73	7,68	28,73	7,84	28,73	8	27,59	7,65	26,45	7,3	24,17	6,6
	-3	-3,7	29,94	7,79	29,94	7,95	29,94	8,12	28,76	7,76	27,57	7,41	25,19	6,7
	0	-0,7	31,76	7,96	31,76	8,13	31,76	8,3	30,5	7,93	29,24	7,57	26,72	6,84
	3	2,2	33,58	8,12	33,58	8,3	33,58	8,47	32,25	8,1	30,91	7,73	28,25	6,99
	5	4,1	34,79	8,24	34,79	8,41	34,79	8,59	33,41	8,21	32,03	7,84	29,27	7,08
	7	6	36	8,35	36	8,53	36	8,7	34,57	8,32	33,14	7,94	30,29	7,18
	9	7,9	36	8,07	36	8,24	36	8,41	34,57	8,04	33,14	7,68	30,29	6,94
	11	9,8	36	7,79	36	7,95	36	8,12	34,57	7,76	33,14	7,41	30,29	6,7
	13	11,8	36	7,51	36	7,67	36	7,83	34,57	7,48	33,14	7,14	30,29	6,46
	15	13,7	36	7,23	36	7,38	36	7,54	34,57	7,21	33,14	6,88	30,29	6,21

70%	-14,7	-15	20	6,14	20	6,27	20	6,4	19,21	6,12	18,41	5,84	16,83	5,28
	-12,6	-13	21,11	6,24	21,11	6,38	21,11	6,51	20,28	6,22	19,44	5,94	17,76	5,37
	-10,5	-11	22,23	6,34	22,23	6,48	22,23	6,61	21,34	6,32	20,46	6,03	18,7	5,46
	-9,5	-10	22,76	6,39	22,76	6,53	22,76	6,66	21,85	6,37	20,95	6,08	19,14	5,5
	-8,5	-9,1	23,29	6,44	23,29	6,58	23,29	6,72	22,36	6,42	21,44	6,13	19,59	5,54
	-7	-7,6	24,08	6,51	24,08	6,65	24,08	6,79	23,13	6,49	22,17	6,2	20,26	5,6
	-5	-5,6	25,14	6,61	25,14	6,75	25,14	6,89	24,14	6,59	23,15	6,29	21,15	5,68
	-3	-3,7	26,2	6,71	26,2	6,85	26,2	6,99	25,16	6,69	24,12	6,38	22,04	5,77
	0	-0,7	27,79	6,85	27,79	7	27,79	7,14	26,69	6,83	25,58	6,52	23,38	5,89
	3	2,2	29,38	7	29,38	7,15	29,38	7,29	28,21	6,98	27,05	6,66	24,72	6,02
	5	4,1	30,44	7,09	30,44	7,24	30,44	7,4	29,23	7,07	28,02	6,75	25,61	6,1
	7	6	31,5	7,19	31,5	7,34	31,5	7,5	30,25	7,17	29	6,84	26,5	6,18
	9	7,9	31,5	6,95	31,5	7,1	31,5	7,24	30,25	6,93	29	6,61	26,5	5,97
	11	9,8	31,5	6,71	31,5	6,85	31,5	6,99	30,25	6,69	29	6,38	26,5	5,77
	13	11,8	31,5	6,47	31,5	6,6	31,5	6,74	30,25	6,45	29	6,15	26,5	5,56
	15	13,7	31,5	6,22	31,5	6,36	31,5	6,49	30,25	6,2	29	5,92	26,5	5,35
60%	-14,7	-15	17,14	5,15	17,14	5,26	17,14	5,37	16,46	5,14	15,78	4,9	14,42	4,43
	-12,6	-13	18,1	5,24	18,1	5,35	18,1	5,46	17,38	5,22	16,66	4,98	15,22	4,5
	-10,5	-11	19,05	5,32	19,05	5,43	19,05	5,55	18,29	5,31	17,54	5,06	16,03	4,58
	-9,5	-10	19,5	5,36	19,5	5,48	19,5	5,59	18,73	5,35	17,96	5,1	16,41	4,61
	-8,5	-9,1	19,96	5,4	19,96	5,52	19,96	5,63	19,17	5,39	18,38	5,14	16,79	4,65
	-7	-7,6	20,64	5,46	20,64	5,58	20,64	5,7	19,82	5,45	19	5,2	17,36	4,7
	-5	-5,6	21,55	5,54	21,55	5,66	21,55	5,78	20,69	5,53	19,84	5,27	18,13	4,77
	-3	-3,7	22,46	5,63	22,46	5,75	22,46	5,87	21,57	5,61	20,68	5,35	18,89	4,84
	0	-0,7	23,82	5,75	23,82	5,87	23,82	5,99	22,88	5,73	21,93	5,47	20,04	4,94
	3	2,2	25,18	5,87	25,18	5,99	25,18	6,12	24,18	5,85	23,18	5,58	21,19	5,05
	5	4,1	26,09	5,95	26,09	6,08	26,09	6,2	25,06	5,93	24,02	5,66	21,95	5,12
	7	6	27	6,03	27	6,16	27	6,29	25,93	6,01	24,86	5,74	22,71	5,19
	9	7,9	27	5,83	27	5,95	27	6,08	25,93	5,81	24,86	5,54	22,71	5,01
	11	9,8	27	5,63	27	5,75	27	5,87	25,93	5,61	24,86	5,35	22,71	4,84
	13	11,8	27	5,42	27	5,54	27	5,65	25,93	5,41	24,86	5,16	22,71	4,66
	15	13,7	27	5,22	27	5,33	27	5,44	25,93	5,2	24,86	4,97	22,71	4,49
50%	-14,7	-15	14,29	4,16	14,29	4,25	14,29	4,34	13,72	4,15	13,15	3,96	12,02	3,58
	-12,6	-13	15,08	4,23	15,08	4,32	15,08	4,41	14,48	4,22	13,88	4,02	12,69	3,64
	-10,5	-11	15,88	4,3	15,88	4,39	15,88	4,48	15,25	4,29	14,62	4,09	13,36	3,7
	-9,5	-10	16,25	4,33	16,25	4,42	16,25	4,52	15,61	4,32	14,96	4,12	13,67	3,72
	-8,5	-9,1	16,63	4,36	16,63	4,46	16,63	4,55	15,97	4,35	15,31	4,15	13,99	3,75
	-7	-7,6	17,2	4,41	17,2	4,51	17,2	4,6	16,52	4,4	15,84	4,2	14,47	3,8
	-5	-5,6	17,96	4,48	17,96	4,57	17,96	4,67	17,24	4,47	16,53	4,26	15,11	3,85
	-3	-3,7	18,71	4,54	18,71	4,64	18,71	4,74	17,97	4,53	17,23	4,32	15,74	3,91
	0	-0,7	19,85	4,64	19,85	4,74	19,85	4,84	19,06	4,63	18,27	4,42	16,7	3,99
	3	2,2	20,99	4,74	20,99	4,84	20,99	4,94	20,15	4,73	19,32	4,51	17,65	4,08
	5	4,1	21,74	4,81	21,74	4,91	21,74	5,01	20,88	4,79	20,02	4,57	18,29	4,13
	7	6	22,5	4,87	22,5	4,98	22,5	5,08	21,61	4,86	20,71	4,63	18,93	4,19
	9	7,9	22,5	4,71	22,5	4,81	22,5	4,91	21,61	4,69	20,71	4,48	18,93	4,05
	11	9,8	22,5	4,54	22,5	4,64	22,5	4,74	21,61	4,53	20,71	4,32	18,93	3,91
	13	11,8	22,5	4,38	22,5	4,47	22,5	4,57	21,61	4,37	20,71	4,17	18,93	3,77
	15	13,7	22,5	4,22	22,5	4,31	22,5	4,4	21,61	4,2	20,71	4,01	18,93	3,63

HCSU 4501 XRV

TC: total capacity **PI**: power input

Combination (Capacity index)	Outdoor air temp,		Indoor temperature(°C DB)											
			16		18		20		21		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	°C DB	°C WB	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	-14,7	-15	34,92	11,05	34,92	11,28	34,92	11,52	33,54	11,01	32,15	10,51	29,38	9,5
	-12,6	-13	36,86	11,23	36,86	11,47	36,86	11,71	35,4	11,2	33,94	10,68	31,01	9,66
	-10,5	-11	38,81	11,41	38,81	11,66	38,81	11,9	37,27	11,38	35,73	10,86	32,65	9,81
	-9,5	-10	39,73	11,5	39,73	11,75	39,73	11,99	38,16	11,47	36,58	10,94	33,43	9,89
	-8,5	-9,1	40,66	11,59	40,66	11,83	40,66	12,08	39,04	11,55	37,43	11,02	34,2	9,96
	-7	-7,6	42,05	11,72	42,05	11,97	42,05	12,22	40,38	11,68	38,71	11,15	35,37	10,08
	-5	-5,6	43,9	11,89	43,9	12,15	43,9	12,4	42,15	11,86	40,41	11,31	36,93	10,23
	-3	-3,7	45,75	12,07	45,75	12,32	45,75	12,58	43,93	12,03	42,12	11,48	38,49	10,38
	0	-0,7	48,52	12,33	48,52	12,59	48,52	12,85	46,6	12,29	44,67	11,73	40,82	10,6
	3	2,2	51,3	12,59	51,3	12,86	51,3	13,12	49,26	12,55	47,23	11,97	43,16	10,82
	5	4,1	53,15	12,76	53,15	13,03	53,15	13,31	51,04	12,72	48,93	12,14	44,71	10,97
	7	6	55	12,93	55	13,21	55	13,49	52,82	12,9	50,63	12,3	46,27	11,12
	9	7,9	55	12,5	55	12,77	55	13,03	52,82	12,46	50,63	11,89	46,27	10,75
	11	9,8	55	12,07	55	12,32	55	12,58	52,82	12,03	50,63	11,48	46,27	10,38
	13	11,8	55	11,63	55	11,88	55	12,13	52,82	11,6	50,63	11,07	46,27	10
	15	13,7	55	11,2	55	11,44	55	11,67	52,82	11,16	50,63	10,65	46,27	9,63
120%	-14,7	-15	34,92	11,37	34,92	11,62	34,92	11,86	33,54	11,34	32,15	10,82	29,38	9,78
	-12,6	-13	36,86	11,56	36,86	11,81	36,86	12,05	35,4	11,53	33,94	11	31,01	9,94
	-10,5	-11	38,81	11,75	38,81	12	38,81	12,25	37,27	11,71	35,73	11,18	32,65	10,1
	-9,5	-10	39,73	11,84	39,73	12,09	39,73	12,34	38,16	11,8	36,58	11,26	33,43	10,18
	-8,5	-9,1	40,66	11,93	40,66	12,18	40,66	12,44	39,04	11,89	37,43	11,35	34,2	10,26
	-7	-7,6	42,05	12,06	42,05	12,32	42,05	12,58	40,38	12,03	38,71	11,47	35,37	10,37
	-5	-5,6	43,9	12,24	43,9	12,5	43,9	12,76	42,15	12,2	40,41	11,65	36,93	10,53
	-3	-3,7	45,75	12,42	45,75	12,69	45,75	12,95	43,93	12,38	42,12	11,82	38,49	10,68
	0	-0,7	48,52	12,69	48,52	12,96	48,52	13,23	46,6	12,65	44,67	12,07	40,82	10,91
	3	2,2	51,3	12,96	51,3	13,23	51,3	13,51	49,26	12,92	47,23	12,33	43,16	11,14
	5	4,1	53,15	13,14	53,15	13,42	53,15	13,7	51,04	13,1	48,93	12,5	44,71	11,3
	7	6	55	13,31	55	13,6	55	13,88	52,82	13,27	50,63	12,67	46,27	11,45
	9	7,9	55	12,87	55	13,14	55	13,42	52,82	12,83	50,63	12,24	46,27	11,07
	11	9,8	55	12,42	55	12,69	55	12,95	52,82	12,38	50,63	11,82	46,27	10,68
	13	11,8	55	11,97	55	12,23	55	12,48	52,82	11,94	50,63	11,39	46,27	10,3
	15	13,7	55	11,53	55	11,77	55	12,02	52,82	11,49	50,63	10,97	46,27	9,91
110%	-14,7	-15	34,92	11,7	34,92	11,95	34,92	12,2	33,54	11,66	32,15	11,13	29,38	10,06
	-12,6	-13	36,86	11,89	36,86	12,15	36,86	12,4	35,4	11,86	33,94	11,31	31,01	10,23
	-10,5	-11	38,81	12,08	38,81	12,34	38,81	12,6	37,27	12,05	35,73	11,5	32,65	10,39
	-9,5	-10	39,73	12,18	39,73	12,44	39,73	12,7	38,16	12,14	36,58	11,58	33,43	10,47
	-8,5	-9,1	40,66	12,27	40,66	12,53	40,66	12,79	39,04	12,23	37,43	11,67	34,2	10,55
	-7	-7,6	42,05	12,41	42,05	12,67	42,05	12,94	40,38	12,37	38,71	11,8	35,37	10,67
	-5	-5,6	43,9	12,59	43,9	12,86	43,9	13,13	42,15	12,55	40,41	11,98	36,93	10,83
	-3	-3,7	45,75	12,77	45,75	13,05	45,75	13,32	43,93	12,74	42,12	12,15	38,49	10,99
	0	-0,7	48,52	13,05	48,52	13,33	48,52	13,61	46,6	13,01	44,67	12,42	40,82	11,22
	3	2,2	51,3	13,33	51,3	13,61	51,3	13,9	49,26	13,29	47,23	12,68	43,16	11,46
	5	4,1	53,15	13,51	53,15	13,8	53,15	14,09	51,04	13,47	48,93	12,85	44,71	11,62
	7	6	55	13,7	55	13,99	55	14,28	52,82	13,65	50,63	13,03	46,27	11,78
	9	7,9	55	13,24	55	13,52	55	13,8	52,82	13,2	50,63	12,59	46,27	11,38

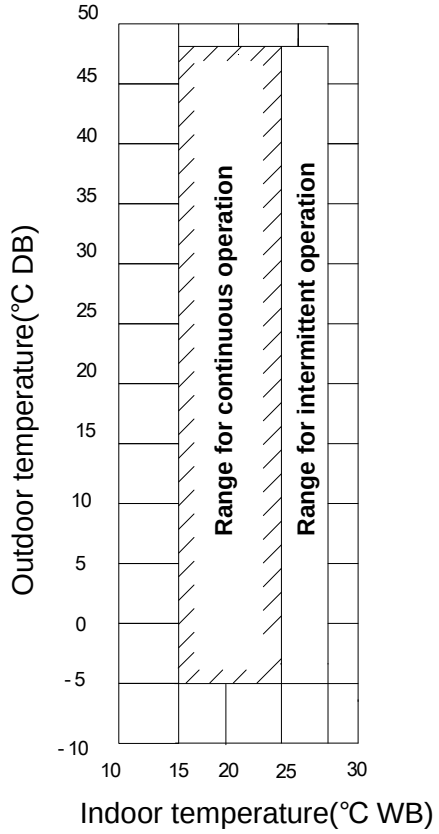
	11	9,8	55	12,78	55	13,05	55	13,32	52,82	12,74	50,63	12,15	46,27	10,99
	13	11,8	55	12,32	55	12,58	55	12,84	52,82	12,28	50,63	11,72	46,27	10,59
	15	13,7	55	11,86	55	12,11	55	12,36	52,82	11,82	50,63	11,28	46,27	10,2
100%	-14,7	-15	31,75	10,32	31,75	10,54	31,75	10,76	30,49	10,29	29,23	9,82	26,71	8,88
	-12,6	-13	33,51	10,49	33,51	10,72	33,51	10,94	32,18	10,46	30,85	9,98	28,19	9,02
	-10,5	-11	35,28	10,66	35,28	10,89	35,28	11,12	33,88	10,63	32,48	10,14	29,68	9,17
	-9,5	-10	36,12	10,74	36,12	10,97	36,12	11,2	34,69	10,71	33,25	10,22	30,39	9,24
	-8,5	-9,1	36,96	10,83	36,96	11,06	36,96	11,29	35,49	10,79	34,03	10,3	31,09	9,31
	-7	-7,6	38,22	10,95	38,22	11,18	38,22	11,41	36,71	10,91	35,19	10,41	32,16	9,41
	-5	-5,6	39,91	11,11	39,91	11,35	39,91	11,58	38,32	11,08	36,74	10,57	33,57	9,55
	-3	-3,7	41,59	11,27	41,59	11,51	41,59	11,75	39,94	11,24	38,29	10,72	34,99	9,69
	0	-0,7	44,11	11,52	44,11	11,76	44,11	12,01	42,36	11,48	40,61	10,96	37,11	9,9
	3	2,2	46,64	11,76	46,64	12,01	46,64	12,26	44,78	11,72	42,93	11,19	39,23	10,11
	5	4,1	48,32	11,92	48,32	12,18	48,32	12,43	46,4	11,89	44,48	11,34	40,65	10,25
	7	6	50	12,08	50	12,34	50	12,6	48,02	12,05	46,03	11,5	42,06	10,39
	9	7,9	50	11,68	50	11,93	50	12,18	48,02	11,64	46,03	11,11	42,06	10,04
	11	9,8	50	11,27	50	11,51	50	11,75	48,02	11,24	46,03	10,72	42,06	9,69
	13	11,8	50	10,87	50	11,1	50	11,33	48,02	10,83	46,03	10,34	42,06	9,35
	15	13,7	50	10,46	50	10,68	50	10,91	48,02	10,43	46,03	9,95	42,06	9
90%	-14,7	-15	28,57	9,15	28,57	9,35	28,57	9,54	27,44	9,12	26,3	8,71	24,04	7,87
	-12,6	-13	30,16	9,3	30,16	9,5	30,16	9,7	28,96	9,28	27,77	8,85	25,37	8
	-10,5	-11	31,75	9,45	31,75	9,66	31,75	9,86	30,49	9,43	29,23	8,99	26,71	8,13
	-9,5	-10	32,51	9,53	32,51	9,73	32,51	9,93	31,22	9,5	29,93	9,06	27,35	8,19
	-8,5	-9,1	33,27	9,6	33,27	9,8	33,27	10,01	31,95	9,57	30,63	9,13	27,99	8,25
	-7	-7,6	34,4	9,71	34,4	9,91	34,4	10,12	33,04	9,68	31,67	9,23	28,94	8,35
	-5	-5,6	35,92	9,85	35,92	10,06	35,92	10,27	34,49	9,82	33,06	9,37	30,21	8,47
	-3	-3,7	37,43	9,99	37,43	10,21	37,43	10,42	35,94	9,96	34,46	9,51	31,49	8,6
	0	-0,7	39,7	10,21	39,7	10,43	39,7	10,65	38,13	10,18	36,55	9,71	33,4	8,78
	3	2,2	41,97	10,43	41,97	10,65	41,97	10,87	40,31	10,4	38,64	9,92	35,31	8,97
	5	4,1	43,49	10,57	43,49	10,8	43,49	11,02	41,76	10,54	40,03	10,06	36,58	9,09
	7	6	45	10,71	45	10,94	45	11,17	43,21	10,68	41,43	10,19	37,86	9,21
	9	7,9	45	10,36	45	10,58	45	10,8	43,21	10,32	41,43	9,85	37,86	8,9
	11	9,8	45	10	45	10,21	45	10,42	43,21	9,97	41,43	9,51	37,86	8,6
	13	11,8	45	9,64	45	9,84	45	10,05	43,21	9,61	41,43	9,17	37,86	8,29
	15	13,7	45	9,28	45	9,47	45	9,67	43,21	9,25	41,43	8,82	37,86	7,98
80%	-14,7	-15	25,4	8,04	25,4	8,21	25,4	8,38	24,39	8,01	23,38	7,65	21,37	6,91
	-12,6	-13	26,81	8,17	26,81	8,34	26,81	8,52	25,75	8,14	24,68	7,77	22,55	7,03
	-10,5	-11	28,22	8,3	28,22	8,48	28,22	8,66	27,1	8,28	25,98	7,9	23,74	7,14
	-9,5	-10	28,9	8,37	28,9	8,54	28,9	8,72	27,75	8,34	26,6	7,96	24,31	7,19
	-8,5	-9,1	29,57	8,43	29,57	8,61	29,57	8,79	28,4	8,4	27,22	8,02	24,88	7,25
	-7	-7,6	30,58	8,52	30,58	8,71	30,58	8,89	29,37	8,5	28,15	8,11	25,72	7,33
	-5	-5,6	31,92	8,65	31,92	8,83	31,92	9,02	30,66	8,62	29,39	8,23	26,86	7,44
	-3	-3,7	33,27	8,78	33,27	8,96	33,27	9,15	31,95	8,75	30,63	8,35	27,99	7,55
	0	-0,7	35,29	8,97	35,29	9,16	35,29	9,35	33,89	8,94	32,49	8,53	29,69	7,71
	3	2,2	37,31	9,16	37,31	9,35	37,31	9,55	35,83	9,13	34,35	8,71	31,39	7,87
	5	4,1	38,65	9,28	38,65	9,48	38,65	9,68	37,12	9,25	35,59	8,83	32,52	7,98
	7	6	40	9,41	40	9,61	40	9,81	38,41	9,38	36,83	8,95	33,65	8,09
	9	7,9	40	9,09	40	9,29	40	9,48	38,41	9,07	36,83	8,65	33,65	7,82
	11	9,8	40	8,78	40	8,96	40	9,15	38,41	8,75	36,83	8,35	33,65	7,55
	13	11,8	40	8,46	40	8,64	40	8,82	38,41	8,44	36,83	8,05	33,65	7,28
	15	13,7	40	8,14	40	8,32	40	8,49	38,41	8,12	36,83	7,75	33,65	7

70%	-14,7	-15	22,22	6,92	22,22	7,07	22,22	7,22	21,34	6,9	20,46	6,58	18,69	5,95
	-12,6	-13	23,46	7,04	23,46	7,19	23,46	7,34	22,53	7,01	21,6	6,69	19,74	6,05
	-10,5	-11	24,7	7,15	24,7	7,3	24,7	7,45	23,72	7,13	22,74	6,8	20,78	6,15
	-9,5	-10	25,28	7,2	25,28	7,36	25,28	7,51	24,28	7,18	23,28	6,85	21,27	6,2
	-8,5	-9,1	25,87	7,26	25,87	7,41	25,87	7,57	24,85	7,24	23,82	6,91	21,77	6,24
	-7	-7,6	26,76	7,34	26,76	7,5	26,76	7,65	25,69	7,32	24,63	6,98	22,51	6,31
	-5	-5,6	27,93	7,45	27,93	7,61	27,93	7,77	26,83	7,43	25,72	7,09	23,5	6,41
	-3	-3,7	29,11	7,56	29,11	7,72	29,11	7,88	27,96	7,54	26,8	7,19	24,49	6,5
	0	-0,7	30,88	7,72	30,88	7,89	30,88	8,05	29,65	7,7	28,43	7,35	25,98	6,64
	3	2,2	32,64	7,88	32,64	8,05	32,64	8,22	31,35	7,86	30,05	7,5	27,46	6,78
	5	4,1	33,82	7,99	33,82	8,16	33,82	8,33	32,48	7,97	31,14	7,6	28,45	6,87
	7	6	35	8,1	35	8,28	35	8,45	33,61	8,08	32,22	7,71	29,44	6,97
	9	7,9	35	7,83	35	8	35	8,16	33,61	7,81	32,22	7,45	29,44	6,73
	11	9,8	35	7,56	35	7,72	35	7,88	33,61	7,54	32,22	7,19	29,44	6,5
	13	11,8	35	7,29	35	7,44	35	7,6	33,61	7,26	32,22	6,93	29,44	6,27
	15	13,7	35	7,01	35	7,16	35	7,31	33,61	6,99	32,22	6,67	29,44	6,03
60%	-14,7	-15	19,05	5,81	19,05	5,93	19,05	6,05	18,29	5,79	17,54	5,52	16,02	4,99
	-12,6	-13	20,11	5,9	20,11	6,03	20,11	6,15	19,31	5,88	18,51	5,61	16,92	5,07
	-10,5	-11	21,17	6	21,17	6,12	21,17	6,25	20,33	5,98	19,49	5,71	17,81	5,16
	-9,5	-10	21,67	6,04	21,67	6,17	21,67	6,3	20,81	6,02	19,95	5,75	18,23	5,2
	-8,5	-9,1	22,18	6,09	22,18	6,22	22,18	6,35	21,3	6,07	20,42	5,79	18,66	5,24
	-7	-7,6	22,93	6,16	22,93	6,29	22,93	6,42	22,02	6,14	21,11	5,86	19,29	5,29
	-5	-5,6	23,94	6,25	23,94	6,38	23,94	6,51	22,99	6,23	22,04	5,94	20,14	5,37
	-3	-3,7	24,95	6,34	24,95	6,47	24,95	6,61	23,96	6,32	22,97	6,03	20,99	5,45
	0	-0,7	26,47	6,48	26,47	6,61	26,47	6,75	25,42	6,46	24,37	6,16	22,27	5,57
	3	2,2	27,98	6,61	27,98	6,75	27,98	6,9	26,87	6,59	25,76	6,29	23,54	5,69
	5	4,1	28,99	6,7	28,99	6,85	28,99	6,99	27,84	6,68	26,69	6,38	24,39	5,77
	7	6	30	6,8	30	6,94	30	7,09	28,81	6,78	27,62	6,47	25,24	5,84
	9	7,9	30	6,57	30	6,71	30	6,85	28,81	6,55	27,62	6,25	25,24	5,65
	11	9,8	30	6,34	30	6,48	30	6,61	28,81	6,32	27,62	6,03	25,24	5,45
	13	11,8	30	6,11	30	6,24	30	6,37	28,81	6,09	27,62	5,81	25,24	5,26
	15	13,7	30	5,88	30	6,01	30	6,13	28,81	5,87	27,62	5,6	25,24	5,06
50%	-14,7	-15	15,87	4,69	15,87	4,79	15,87	4,89	15,24	4,68	14,61	4,46	13,35	4,03
	-12,6	-13	16,76	4,77	16,76	4,87	16,76	4,97	16,09	4,75	15,43	4,53	14,1	4,1
	-10,5	-11	17,64	4,84	17,64	4,95	17,64	5,05	16,94	4,83	16,24	4,61	14,84	4,17
	-9,5	-10	18,06	4,88	18,06	4,99	18,06	5,09	17,34	4,87	16,63	4,64	15,19	4,2
	-8,5	-9,1	18,48	4,92	18,48	5,02	18,48	5,13	17,75	4,9	17,01	4,68	15,55	4,23
	-7	-7,6	19,11	4,97	19,11	5,08	19,11	5,19	18,35	4,96	17,59	4,73	16,08	4,28
	-5	-5,6	19,95	5,05	19,95	5,16	19,95	5,26	19,16	5,03	18,37	4,8	16,79	4,34
	-3	-3,7	20,79	5,12	20,79	5,23	20,79	5,34	19,97	5,11	19,14	4,87	17,49	4,4
	0	-0,7	22,06	5,23	22,06	5,34	22,06	5,46	21,18	5,22	20,31	4,98	18,55	4,5
	3	2,2	23,32	5,34	23,32	5,46	23,32	5,57	22,39	5,33	21,47	5,08	19,62	4,59
	5	4,1	24,16	5,42	24,16	5,53	24,16	5,65	23,2	5,4	22,24	5,15	20,32	4,66
	7	6	25	5,49	25	5,61	25	5,72	24,01	5,47	23,02	5,22	21,03	4,72
	9	7,9	25	5,31	25	5,42	25	5,53	24,01	5,29	23,02	5,05	21,03	4,56
	11	9,8	25	5,12	25	5,23	25	5,34	24,01	5,11	23,02	4,87	21,03	4,4
	13	11,8	25	4,94	25	5,04	25	5,15	24,01	4,92	23,02	4,7	21,03	4,25
	15	13,7	25	4,75	25	4,85	25	4,96	24,01	4,74	23,02	4,52	21,03	4,09

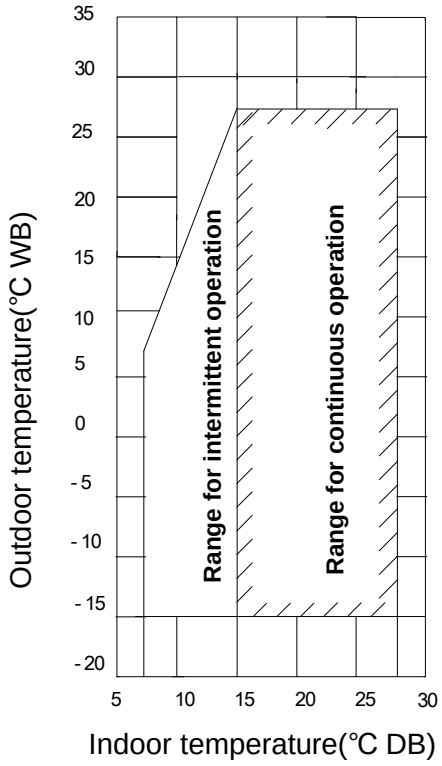
11. Operation Limits

Item / Model	Cooling mode			Heating mode	
	Outdoor temperature	Indoor temperature	Room relative humidity	Outdoor temperature	Indoor temperature
All model	-5°C~48°C	≥17°C	Below 80%	-15°C~27°C	≤30°C

Cooling



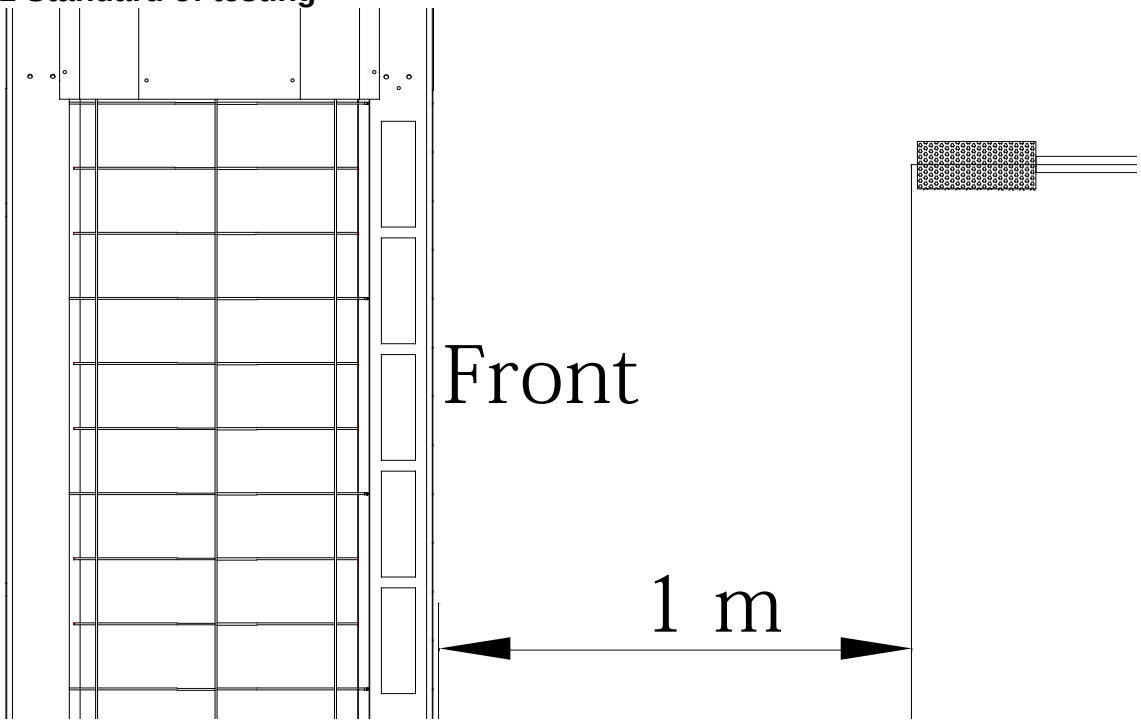
Heating



Notes: These figures assume the following operation conditions (Indoor and outdoor units):
1. Equivalent pipe length: 10m
2. Height difference: 0m

12. Sound Levels

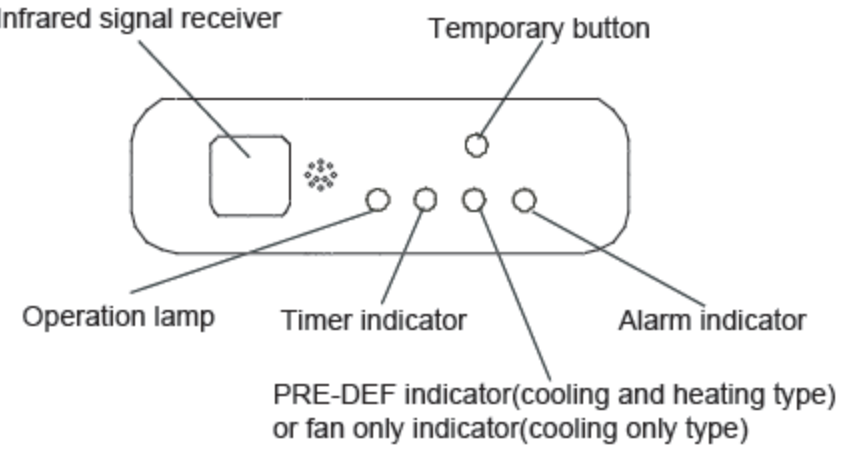
12.1 Standard of testing



Note: H = (h+1) / 2

13. Troubleshooting

13.1 Indoor Units lamp flashes:



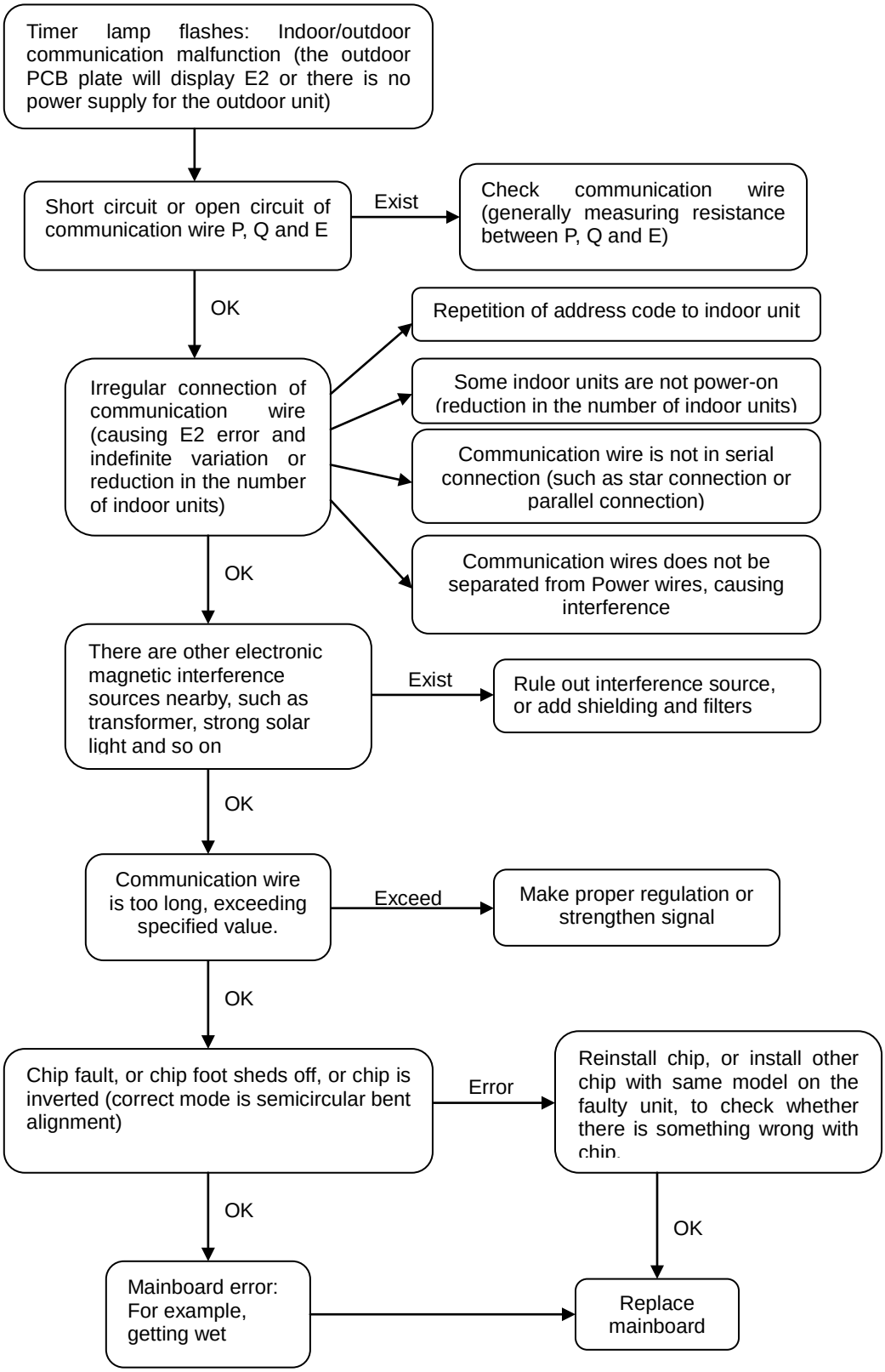
No	Display Contents	Explanation of Malfunction
1	All lamps are off	Standing-by
2	Operation lamp is on	ON
3	PRE./DEF. lamp is on	Anti-cooling or Defrosting
4	Timer lamp is on	Timer function is on
5	Timer lamp flashes	Indoor/outdoor communication malfunction
6	Operation lamp flashes	Indoors temp. Sensor abnormal
7	PRE/DEF. Lamp flashes	Mode-confliction malfunction
8	Alarm lamp flashes quickly	Water-level switch abnormal
9	Alarm lamp flashes slowly	Outdoor malfunction or protection

LED and LCD display on the new panel of 4-way cassette

No.	Error or Protection	Operation	Timer	DEF/FAN	Alarm	Recoverable or not	Code
1	Room temperature sensor checking channel is abnormal	X	□	X	X	Yes	**E2**
2	Evaporator temperature sensor checking channel is abnormal	□	X	X	X	Yes	**E3**
3	Condenser temperature sensor checking channel is abnormal	X	X	□	X	Yes	**E4**
4	Pump sensor malfunction	X	X	X	□	Yes	**E5**
5	Outdoor protection (lack of phase, phase sequence, etc.)	□	□	□	□	Yes	**E6**
6	EEPROM malfunction	□	□	X	X	No	**E7**
7	Water level alarm	X	X	X	□	Yes or No (if last for 3 min the error hasn't been eliminated yet)	**E8**
8	Communication malfunction					Yes	**E1**

(X stands for Elimination(OFF), ☆ stands for flashing at 5Hz)

① Timer lamp flashes: Indoor/outdoor communication malfunction



Note:

1. Press the “manual” button on remote control receiver of indoor unit in turn (display the address code of this indoor unit when pressing and holding for 5 seconds (display capacity code when pressing and holding for 10 seconds), check all address codes.

Codes to be inspected are as follows:

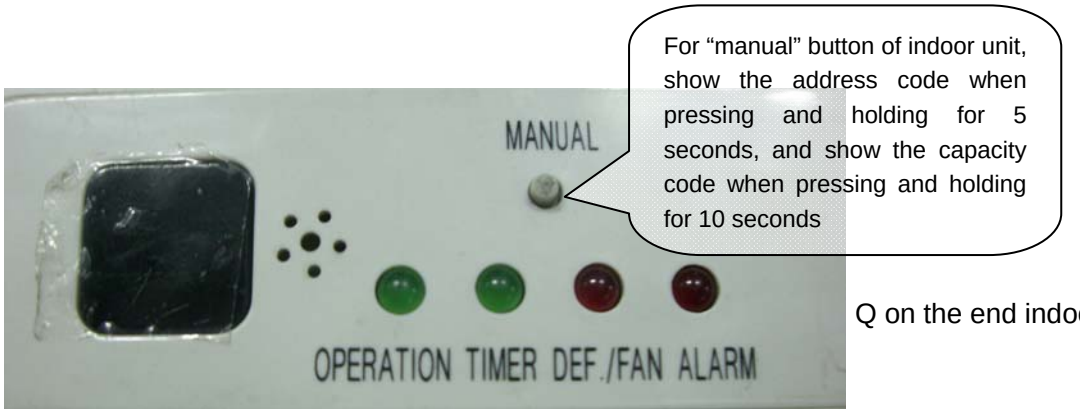
Indicator	OPERATION	TIMER	DEF / FAN	ALARM
Code	8	4	2	1

Address code	0	1	2	3	4	5	6	7	8	9
Capacity (x 100W)	22	28	36	45	56	71	80	90	112	140
Horsepower (HP)	0.8	1.0	1.2	1.6	2.0	2.5	3.0	3.2	4.0	5.0

For example: After pressing and holding for 5 seconds, "Operation" light and "Alarm" light is constant-on, which indicates that the address code is (8 + 1) = 9;

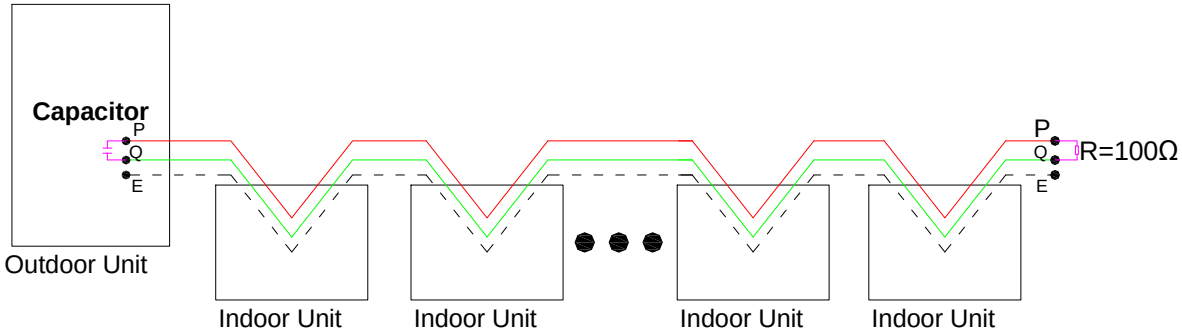
(Note: If the indicator is constant-on, calculate according to the above-mentioned formula. If the indicator is flashing, add 16 to the original calculated code, for example: After pressing and holding for 5 seconds, "Operation" light and "Alarm" light is flashing, which indicates that the address code is 16 + (8 + 1) = 25.)

After pressing and holding for 10 seconds, "Operation" light and "Alarm" light is constant-on, which indicates that the address code is (4 + 1) = 5; indicating the capacity of this unit is 71 × 100W (2.5 HP).

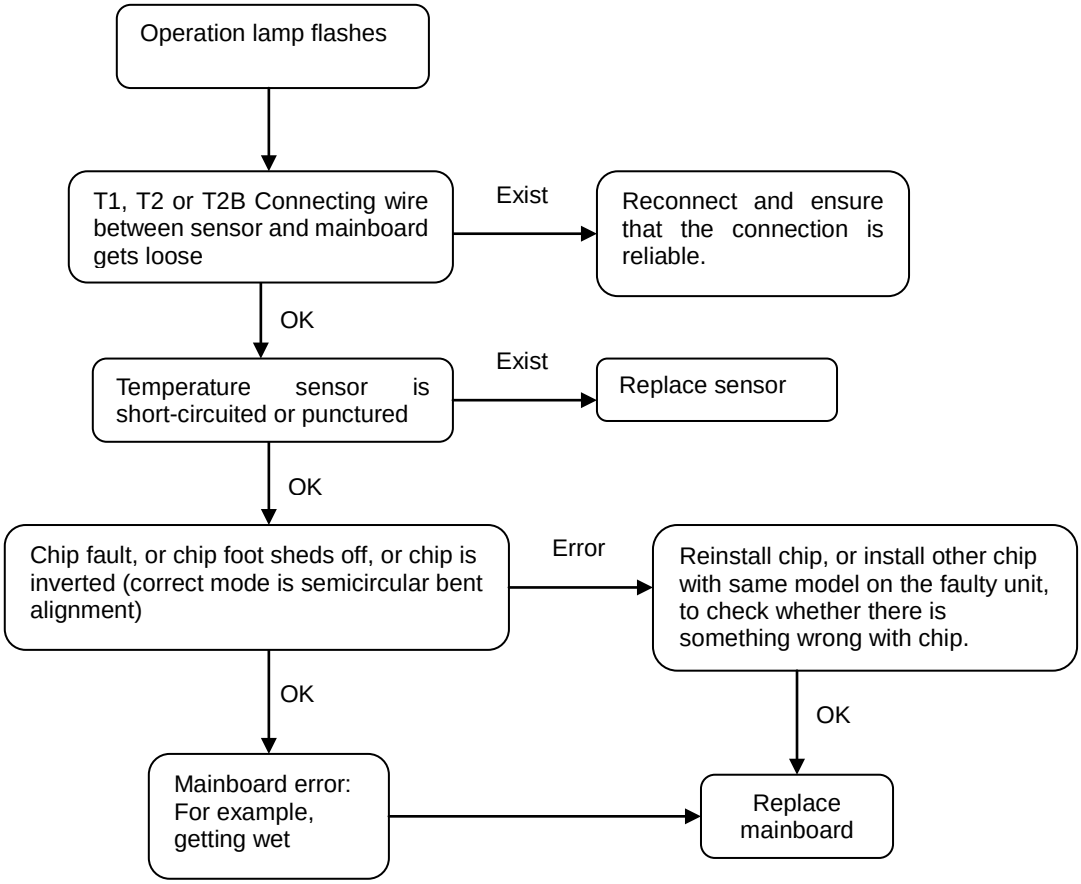
2. 

Q on the end indoor unit in serial, or connect

Signal wire must be shielded wire; indoor units must be connected in serial. At the end, connect a resistor on indoor unit or a capacitor between P and Q on outdoor unit.



② Operation lamp flashes: Indoors temp. Sensor abnormal



Caution: There are three temp. sensors in indoor unit, i.e. T1, T2 and T2B, of which fault in any one will cause operation light flashing and report error.

③ DEF. Lamp flashes：Mode-confliction malfunction

In the below table, “Yes” indicates existing mode conflict, “No” indicates no mode conflict.

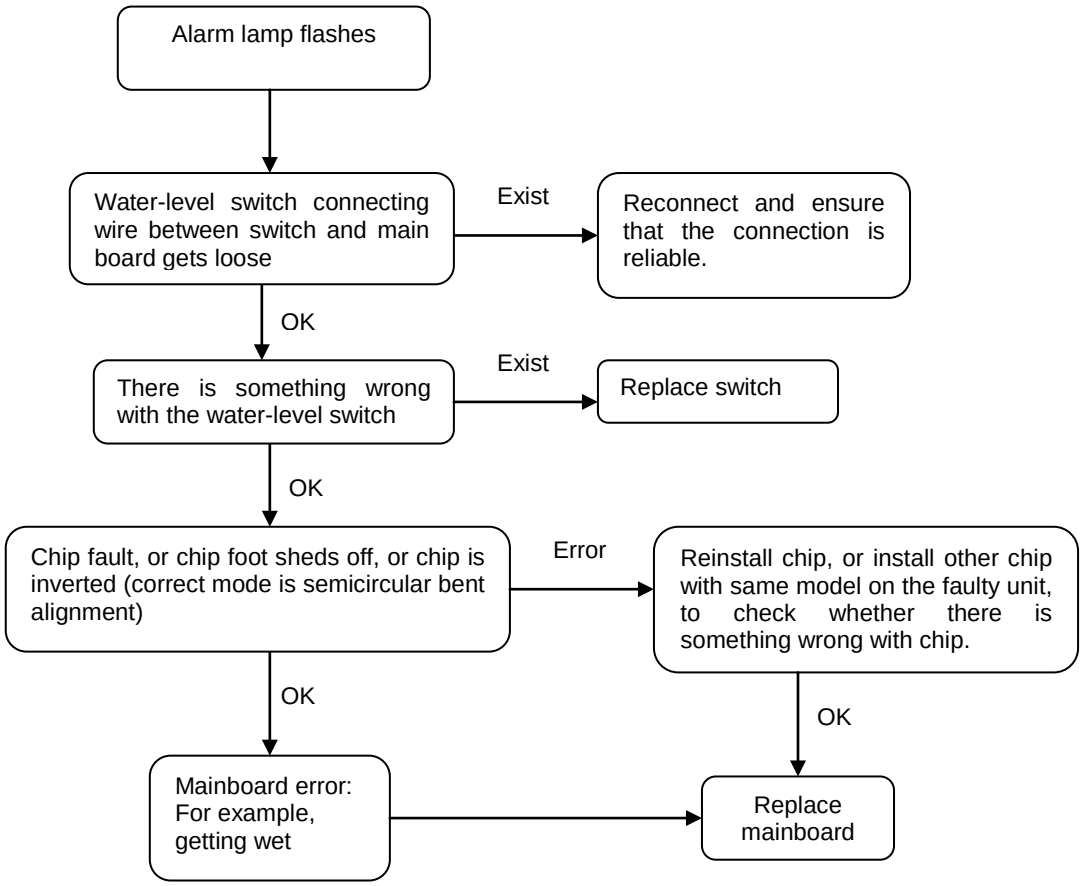
	Cooling	Heating	Air-supply	OFF
Cooling	No	Yes	No	No
Heating	Yes	No	Yes	No
Air-supply	No	Yes	No	No
OFF	No	No	No	No

When indoor unit receiving heating operation instruction, it will transmit the operation mode signal to outdoor unit to conduct prior heating control, including:

In process of cooling and air-supply mode operation: After receiving the heating operation instruction, outdoor unit stops cooling and supplying air, and transfers to heating mode three minutes later after the shutdown of compressor; indoor unit required to conduct cooling and air-supply mode operation is on standby mode and displays mode conflict fault.

In process of heating mode operation: Ignore cooling and air-supply mode operation instruction, outdoor unit keeps on operating according to heating mode; Indoor unit with cooling and air-supply mode operation displays mode conflict fault. If heating mode operation stops (except that indoor unit reaches setting temperature because of heating), cooling and air-supply mode restarts up and conducts operation three minutes later.

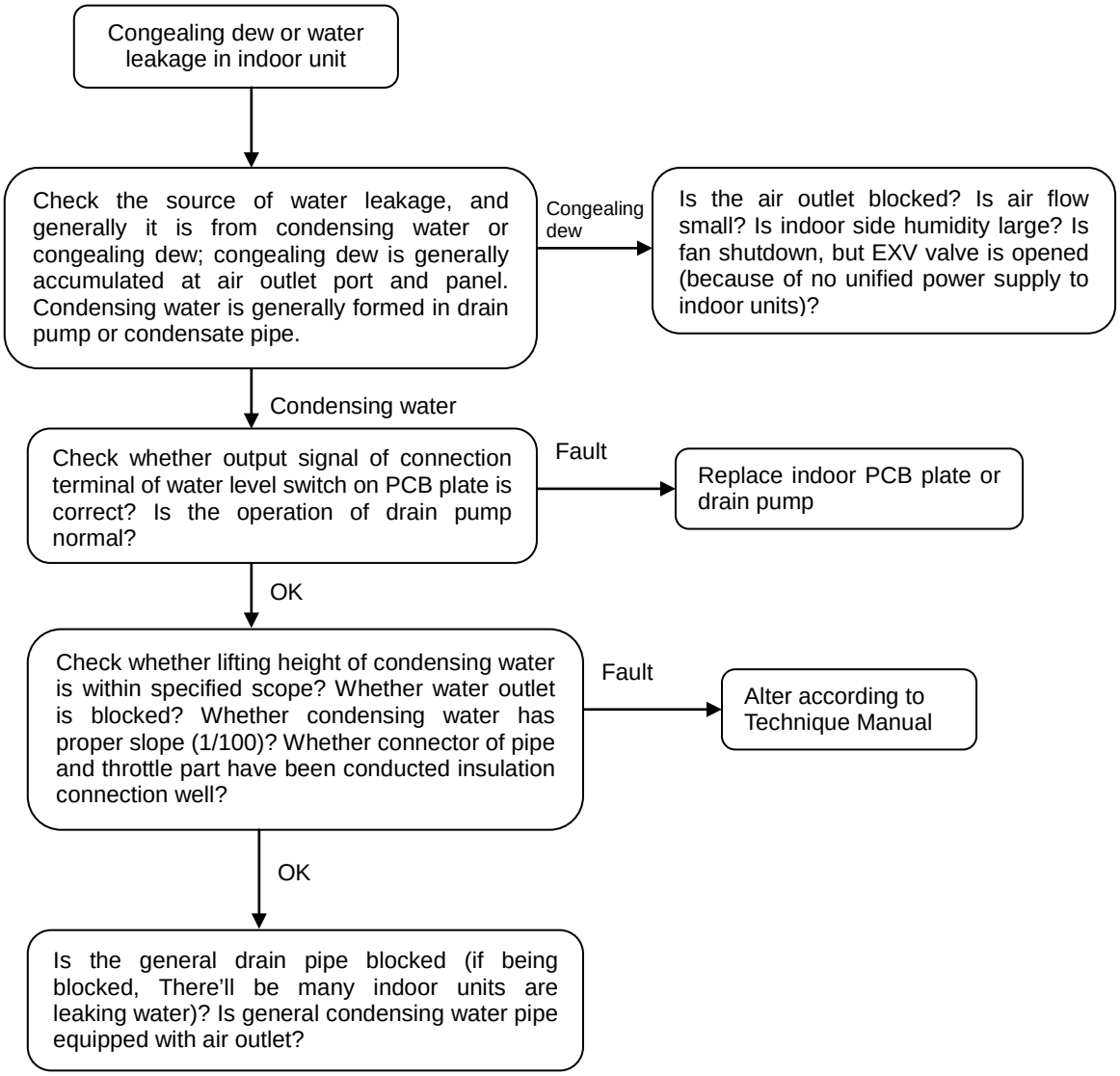
④ Alarm lamp flashes: Water-level switch abnormal



⑤ Alarm lamp flashes slowly: Outdoor malfunction or protection

Examine outdoor unit, and analyze according to actual condition

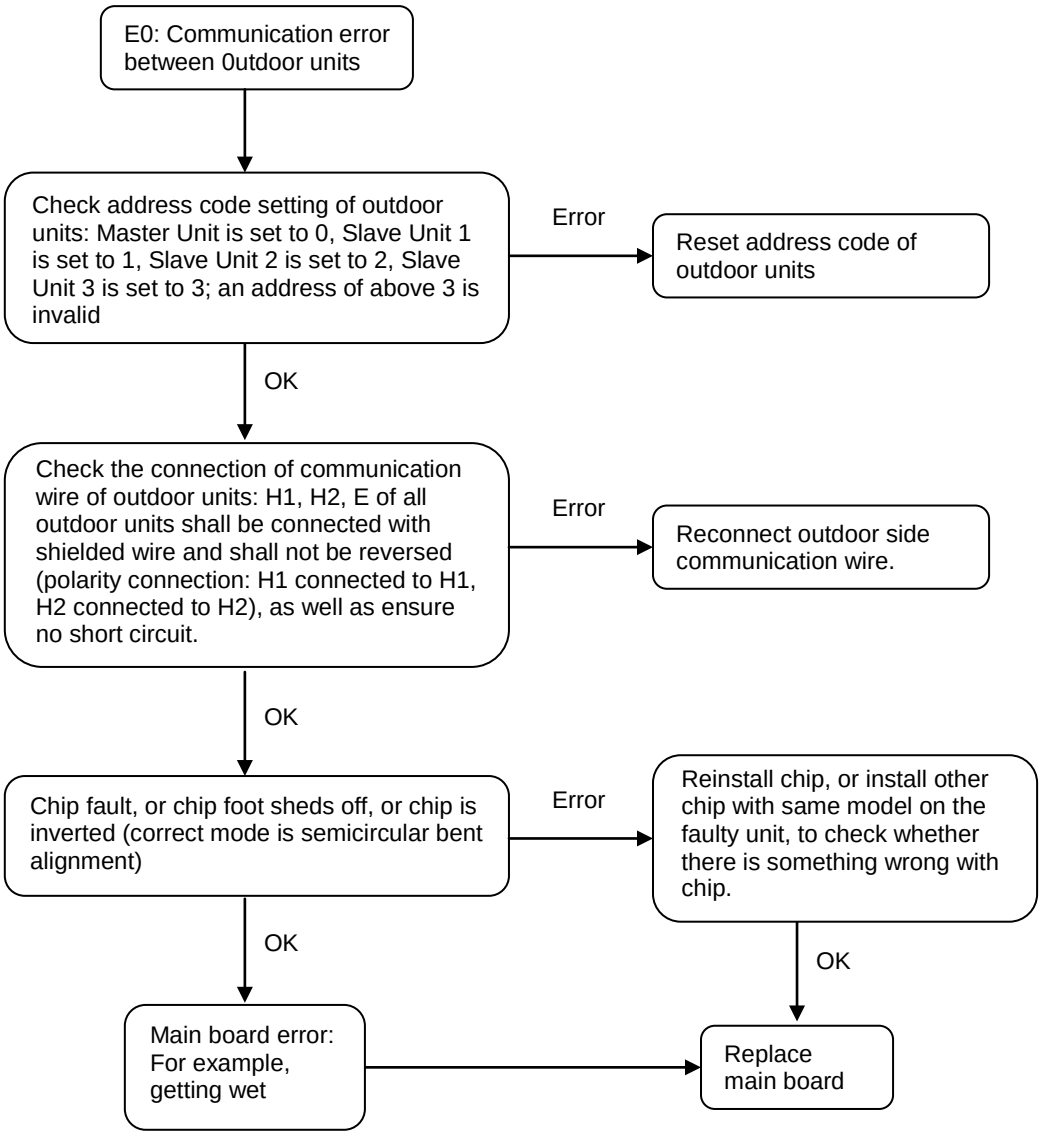
⑥ Congealing Dew or Water Leakage in Indoor Units



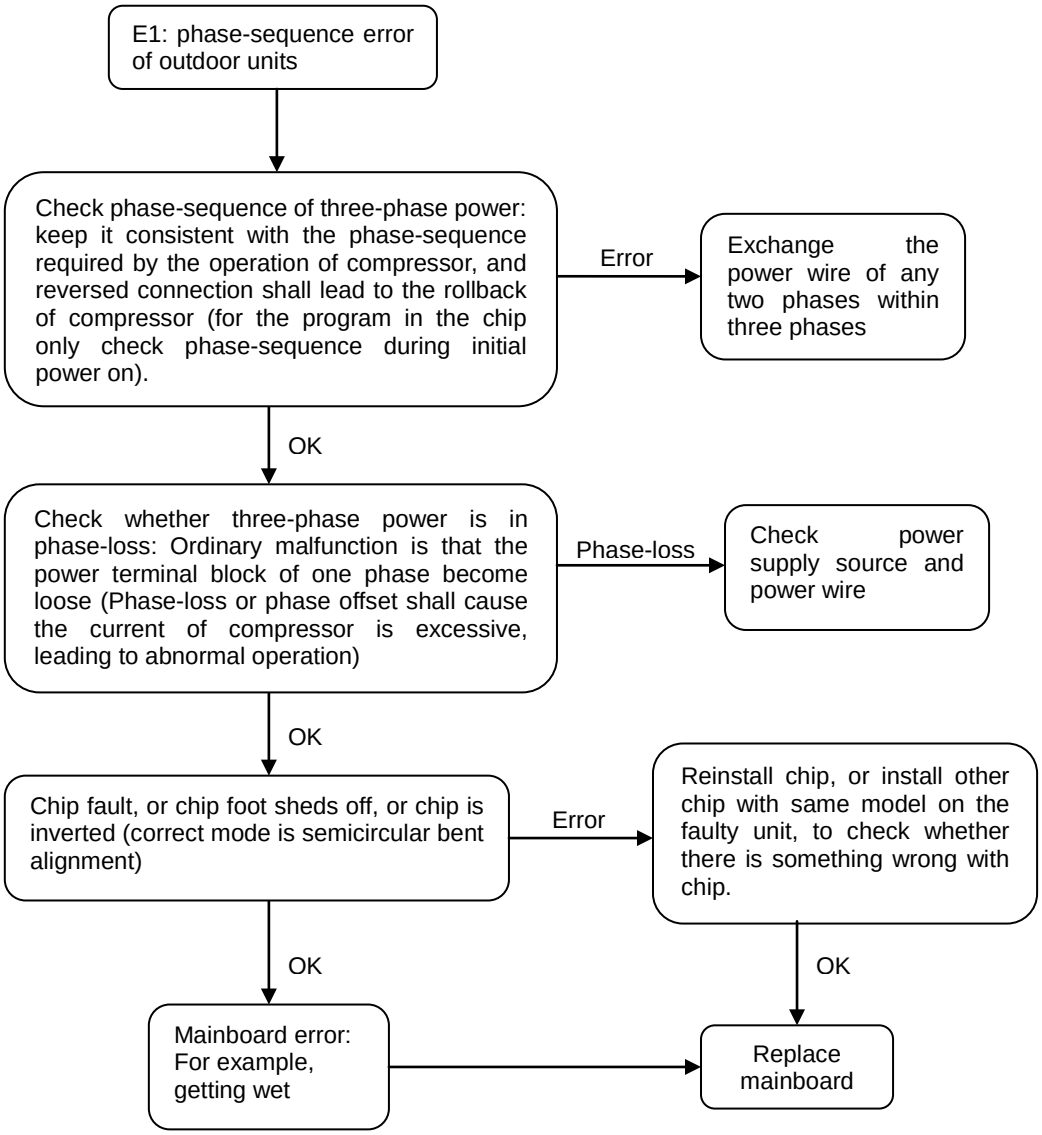
13.2 Outdoor unit's LED indication:

No	Display	Malfunction or Protection	Remark
1	**E0**	Communication error between outdoor units	Only slave unit display
2	**E1**	Phase protection	All the outdoor units display
3	**E2**	Communication error between indoor unit and master unit	All the outdoor units display
4	**E4**	Outdoor temperature sensor error	All the outdoor units display
5	**E8**	Outdoor unit address error	All the outdoor units display
6	**E9**	Power volt. Error	All the outdoor units display
7	**H0**	Communication malfunction between DSP and 780034	All the outdoor units display
8	**H1**	Communication malfunction between 9177 and 780034	All the outdoor units display
9	**H2**	Quantity of outdoor unit decreases	Only master unit display
10	**H3**	Quantity of outdoor unit increases	Only master unit display
11	**P0**	Inverter compressor top temperature protection	All the outdoor units display
12	**P1**	Hi-pressure protection	All the outdoor units display
13	**P2**	Low-pressure protection	All the outdoor units display
14	**P3**	Compressor current Protection	All the outdoor units display
15	**P4**	Compressor discharge temperature protection	All the outdoor units display
16	**P5**	Outdoor condenser high temperature protection	All the outdoor units display
17	**P6**	Inverter module protection	All the outdoor units display
18	**P7**	Current protection, No.1 fixed compressor	All the outdoor units display
19	**P8**	Current protection, No.2 fixed compressor	14/16HP outdoor units display

E0: Communication error between outdoor units

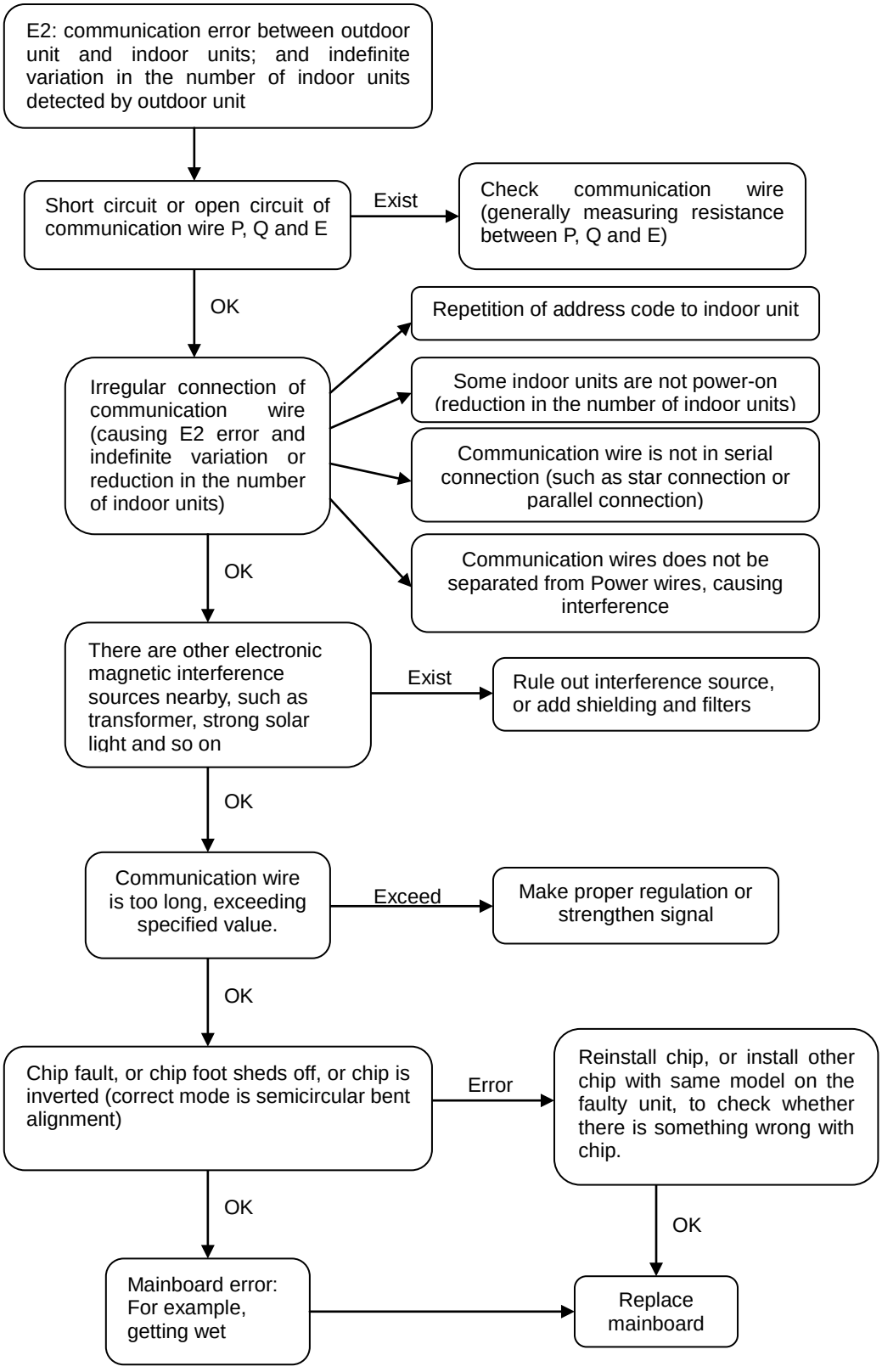


E1: Phase-sequence Error



Note: Because all electric motors of MDV outdoor units are connected to phase C, if each outdoor unit is connected according to normal phase-sequence of A, B, and C. when the number of outdoor units is large, current difference between phase C and other two phases at main power supply shall be very large too, leading to disconnection of the air breaker at power distribution cabinet or fusing of terminal blocks. Therefore, when the number of outdoor units is large, the phase sequence shall be shifted for evenly distributing motor current to three phases.

E2: Communication Error between Outdoor Unit and Indoor Units; and indefinite variation in the number of indoor unit detected by outdoor unit



Note:

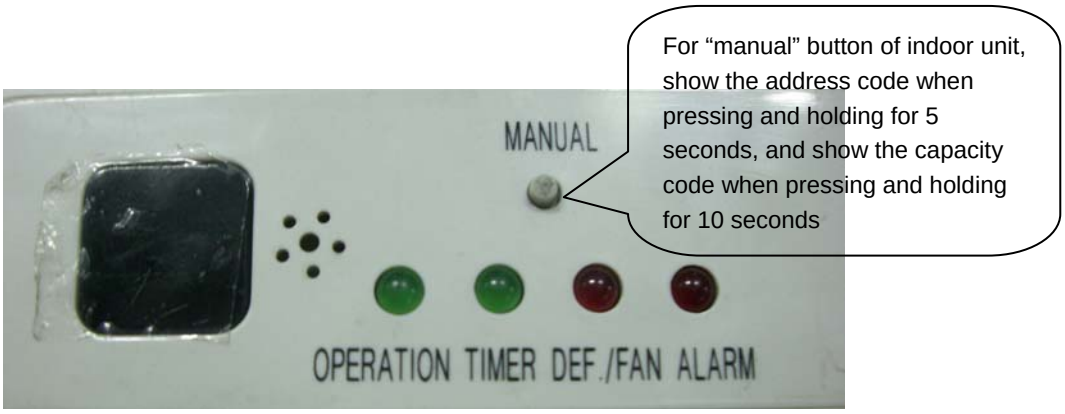
1. Press the “manual” button on remote control receiver of indoor unit in turn (display the address code of this indoor unit when pressing and holding for 5 seconds (display capacity code when pressing and holding for 10 seconds), check all address codes.

Codes to be inspected are as follows:

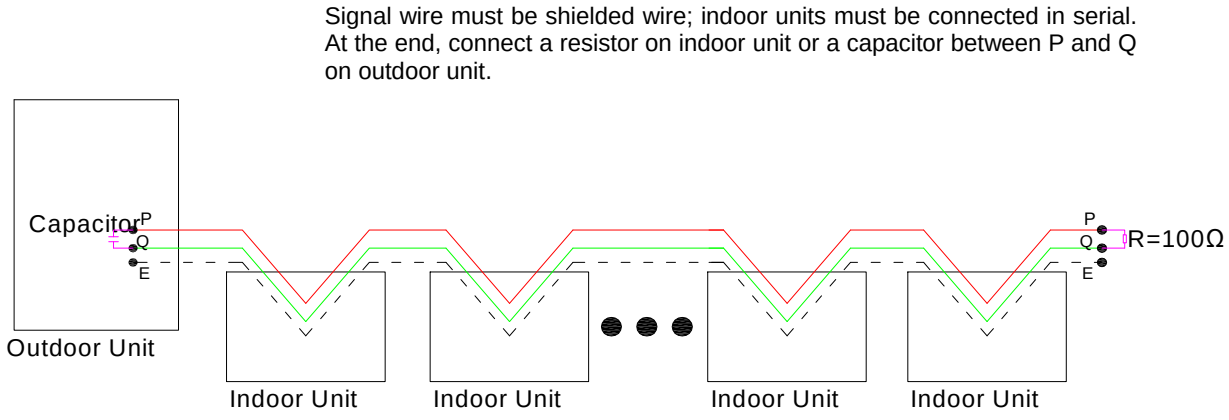
Indicator	OPERATION	TIMER	DEF / FAN	ALARM
Code	8	4	2	1

Address code	0	1	2	3	4	5	6	7	8	9
Capacity (x 100W)	22	28	36	45	56	71	80	90	112	140
Horsepower (HP)	0.8	1.0	1.2	1.6	2.0	2.5	3.0	3.2	4.0	5.0

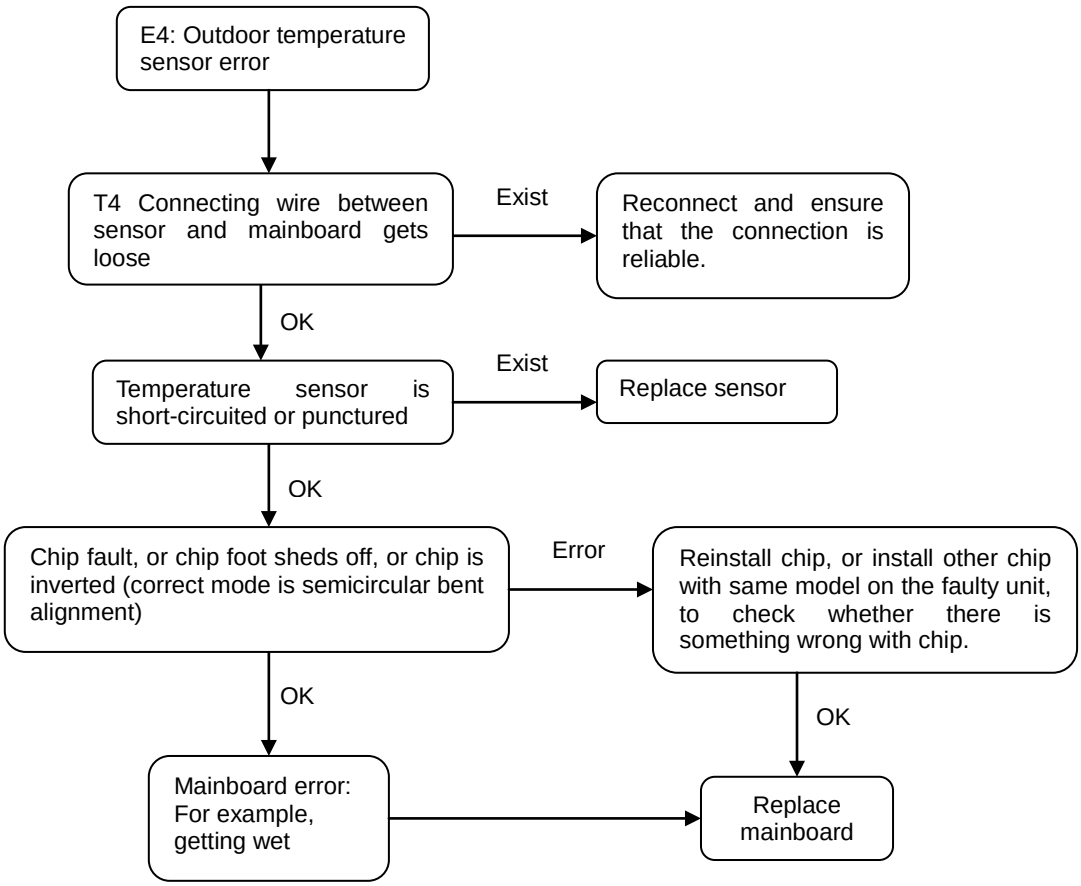
For example: After pressing and holding for 5 seconds, "Operation" light and "Alarm" light is constant-on, which indicates that the address code is (8 + 1) = 9;
(Note: If the indicator is constant-on, calculate according to the above-mentioned formula.
If the indicator is flashing, add 16 to the original calculated code, for example: After pressing and holding for 5 seconds, "Operation" light and "Alarm" light is flashing, which indicates that the address code is 16 + (8 + 1) = 25.)
After pressing and holding for 10 seconds, "Operation" light and "Alarm" light is constant-on, which indicates that the address code is (4 + 1) = 5; indicating the capacity of this unit is 71 × 100W (2.5 HP).



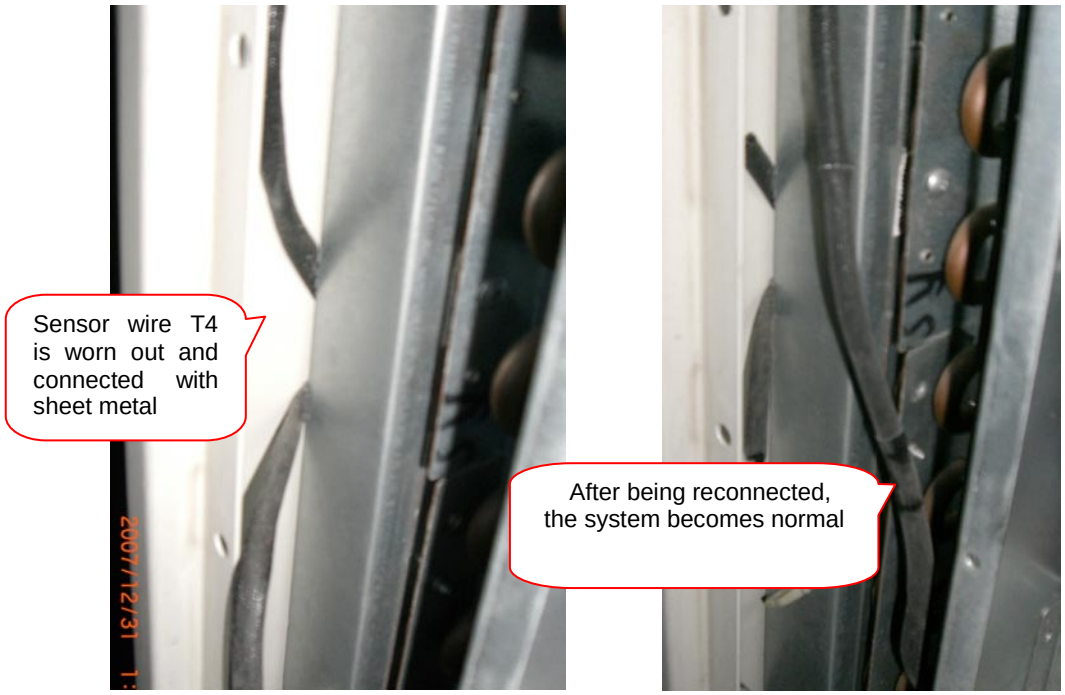
2. If the signal is weak, connect 100 Ω resistor between terminal P and Q on the end indoor unit in serial, or connect a small capacitor between terminal P and Q on outdoor unit in serial (as follows).



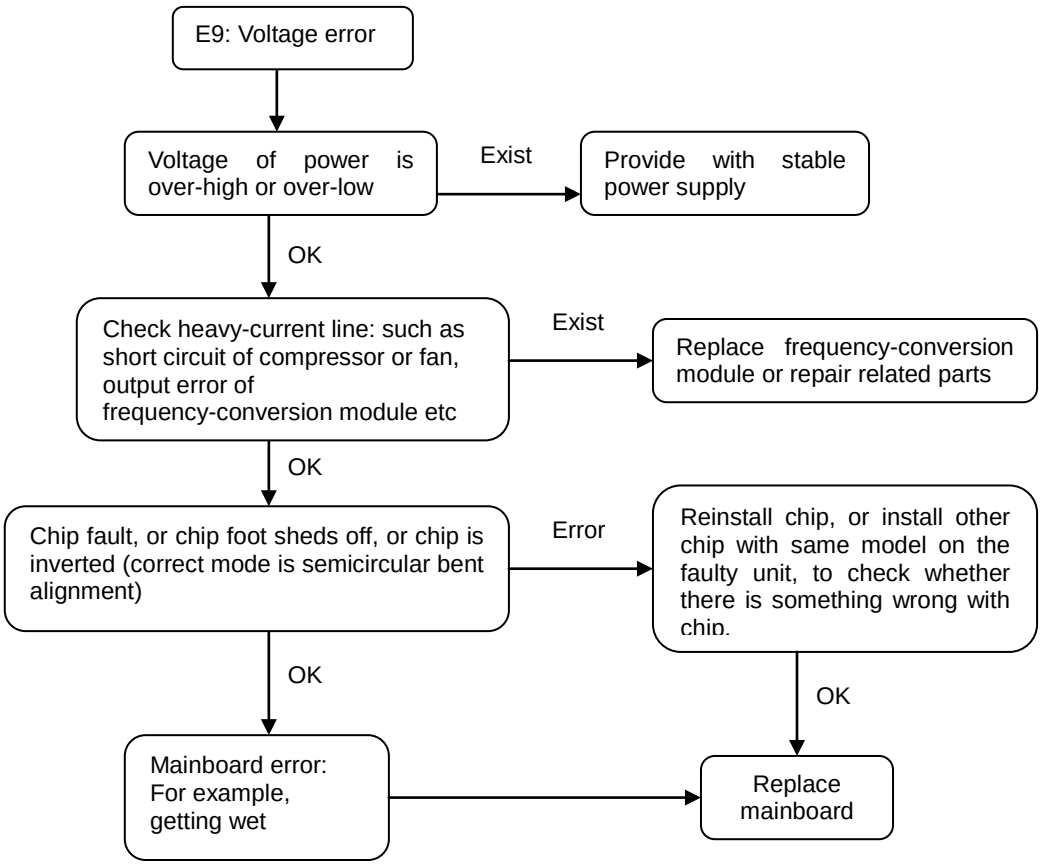
E4: Outdoor temperature sensor error



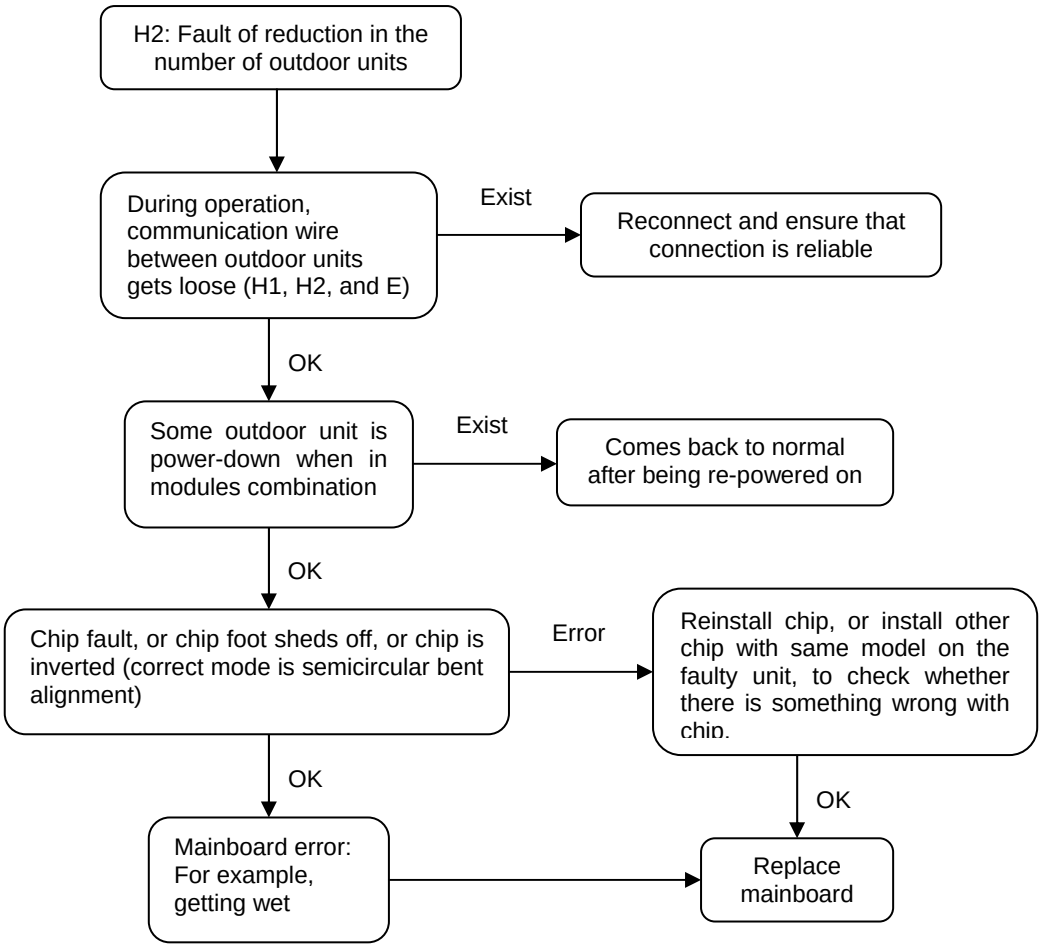
Case: There is no display on PCB of one system, and the problem still exists after replacing mainboard. Voltage values on measuring plate (such as 220V, 5V, 12V, etc) are normal; after measuring resistance value of sensor, find that T4 thermo-bulb is earth-continuity, and further discover that the thermal cable of T4 sensor is punched by bolt, as follows:



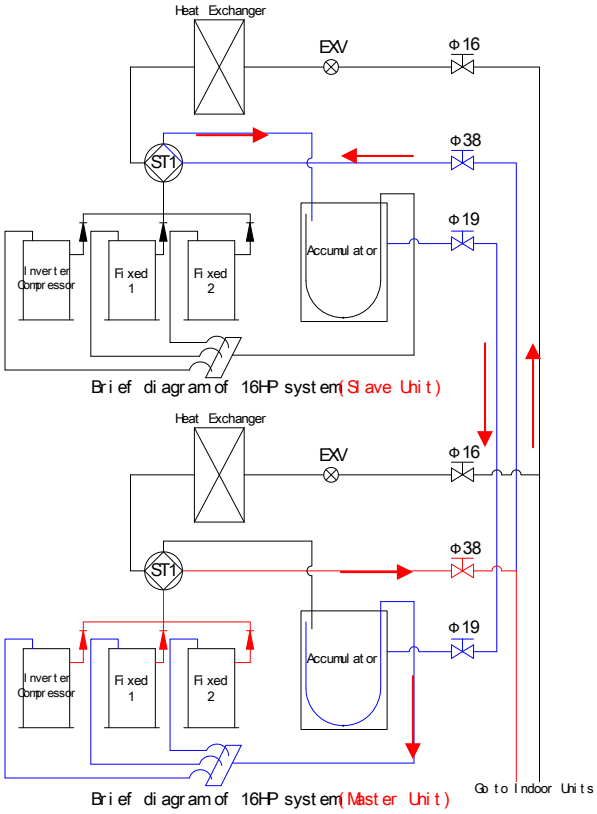
E9: Voltage error



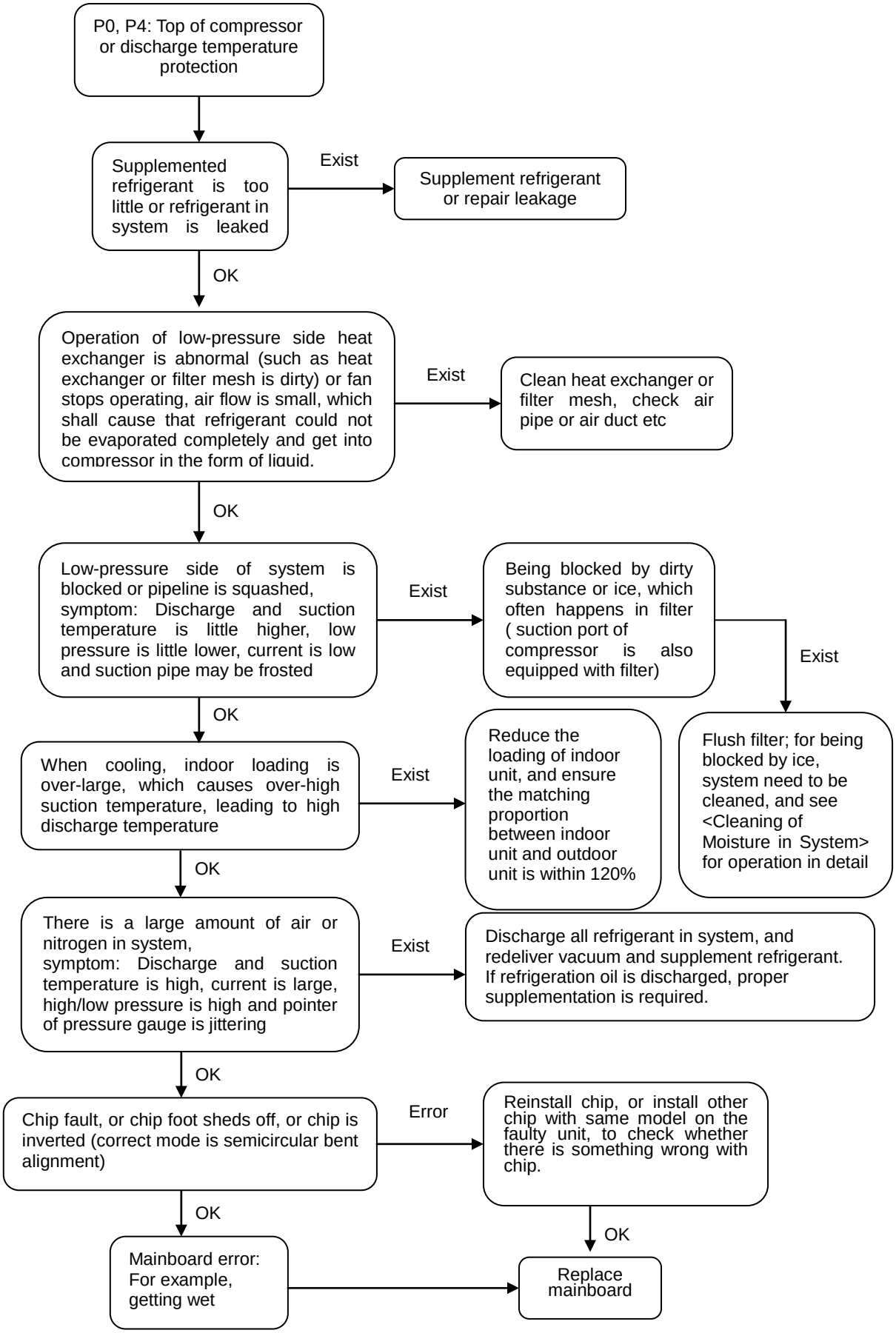
H2: Fault of Reduction in the Number of Outdoor Units



Note: For modules combination, slave unit shall not be started up due to power failure of one slave unit, damage of PCB or no communication between master unit and slave unit. Then under heating mode, the high-pressure gas discharged from gas pipe of master unit goes through gas pipe of slave unit, accumulator of slave unit, gas balance pipe, accumulator of master unit and then comes back to the suction pipe of compressors of master unit (as shown in blue solid line of right figure); That is equal to the high-temperature & high-pressure refrigerant after being discharged by master unit directly comes back to the suction side of compressor, which shall lead to the over-loading operation of compressors of master unit and even being burned out.



P0, P4: Temperature Protection for Top of Compressor or Discharge Temperature Protection (P0 refers to inverter compressor protection)



Case:

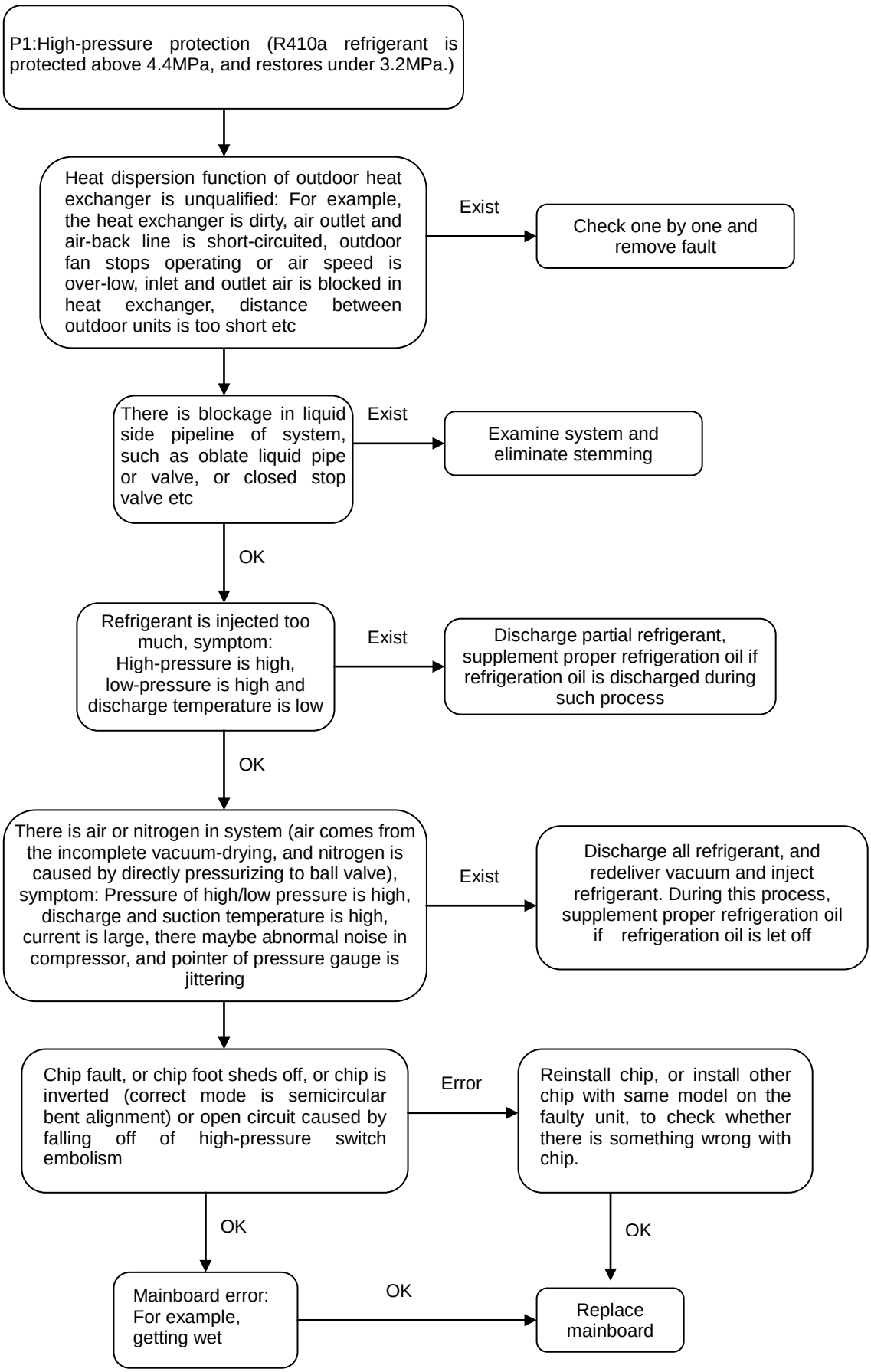
For V4 system, most feedback from market is that P4 protection is very usual, and its ultimate reason lies in lack of gas suction of compressor or no gas suction. To sum up, there are the following four reasons:

1) System is short of refrigerant.
   Symptom: Top temperature of all compressors and discharge temperature is higher, suction pipe may be frosted, high and low pressure is low, and current is low.
   Solution: Supplement refrigerant.
2) Filter mesh of suction pipe of one compressor is blocked by dirty substance.
   Symptom: Top temperature of the compressor is too high and P4 protection happens, but discharge temperature maybe not high, top temperature of other one or several compressors is very low. The reason is that this compressor in fault could not suck in refrigerant, which makes that the refrigerant flows into other compressors, leading to over-large air suction capacity of other compressors.
   Solution: Take out the filter mesh of suction pipe of the compressor in fault, and clean (located in suction port of compressor, and belongs to self-contained part of compressor).

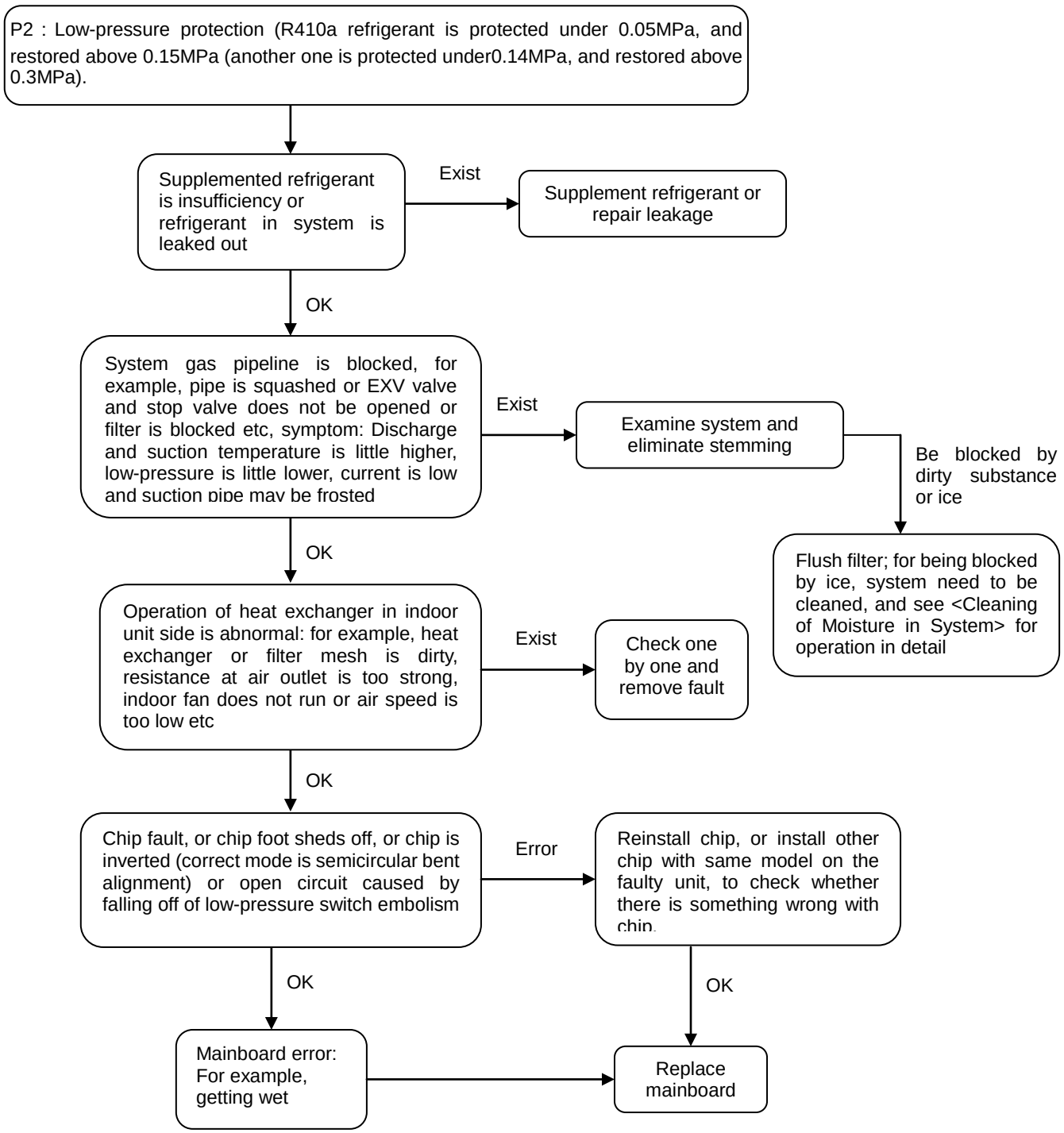
3) Filter mesh in general suction pipe of outdoor unit is blocked.

   Symptom: Top temperature of all compressors is over-high, while discharged air almost has no temperature and pressure, and could not push four-way valve to change direction when heating; pressure at two stop valves of gas and liquid pipe is basically identical; Suction pipe is frosted completely after passing through filter.
   Solution: If it is blocked buy dirty substance, just clean filter mesh of general air return pipe; if it is blocked by ice, use a filter to eliminate moisture in system.
4) Filter mesh of air return pipe of one compressor is blocked by ice.
   Symptom: Top temperature of the compressor is too high and P4 protection happens, but discharge temperature is not high, top temperature of other one or several compressors is very low. After being restarted, moisture may move to the filter mesh of another compressor, causing P4 protection.
   Solution: Make use of filter to eliminate moisture in system (see <Cleaning of System Moisture>).

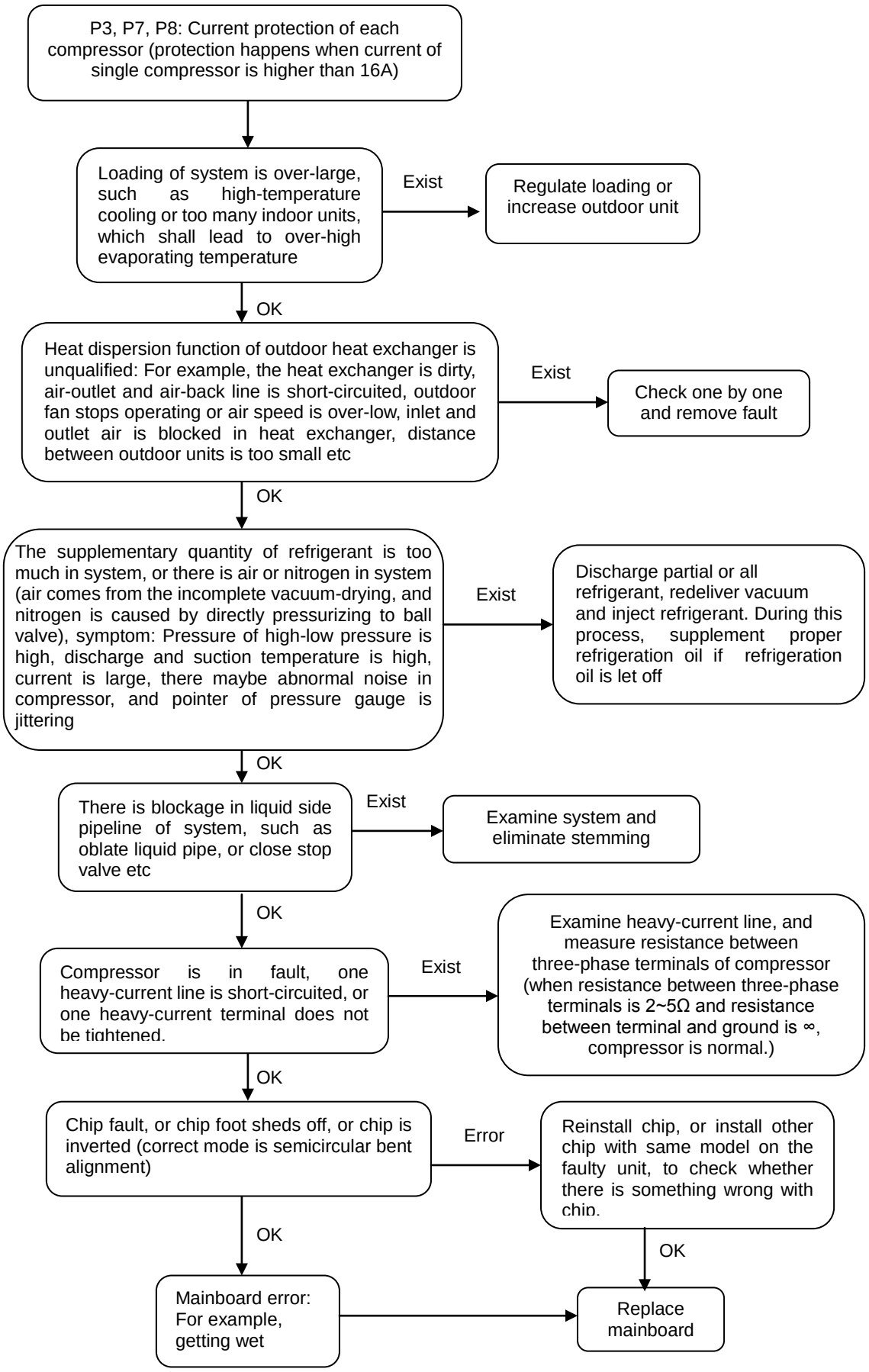
P1: High-pressure Protection



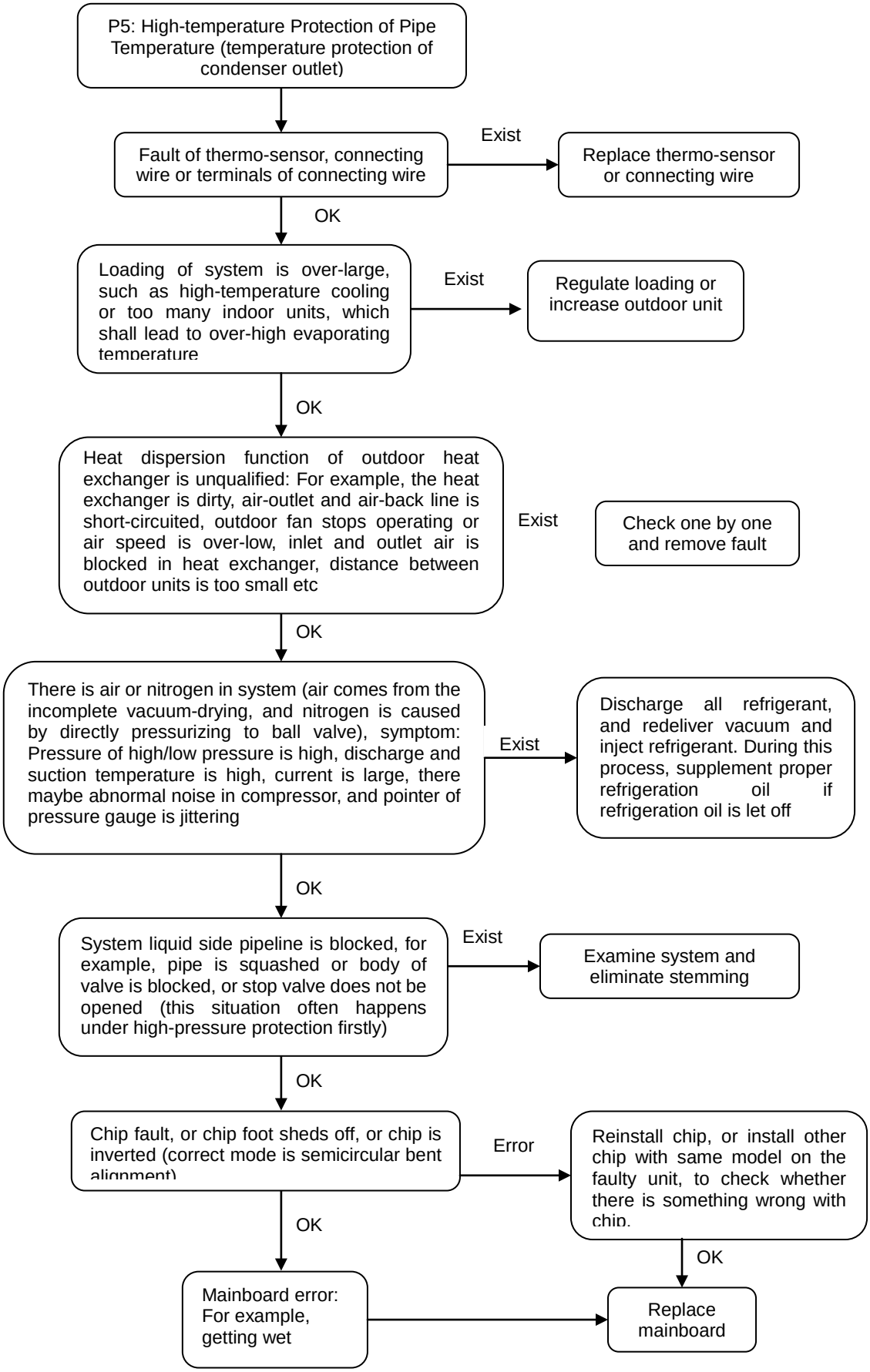
P2: Low-pressure Protection



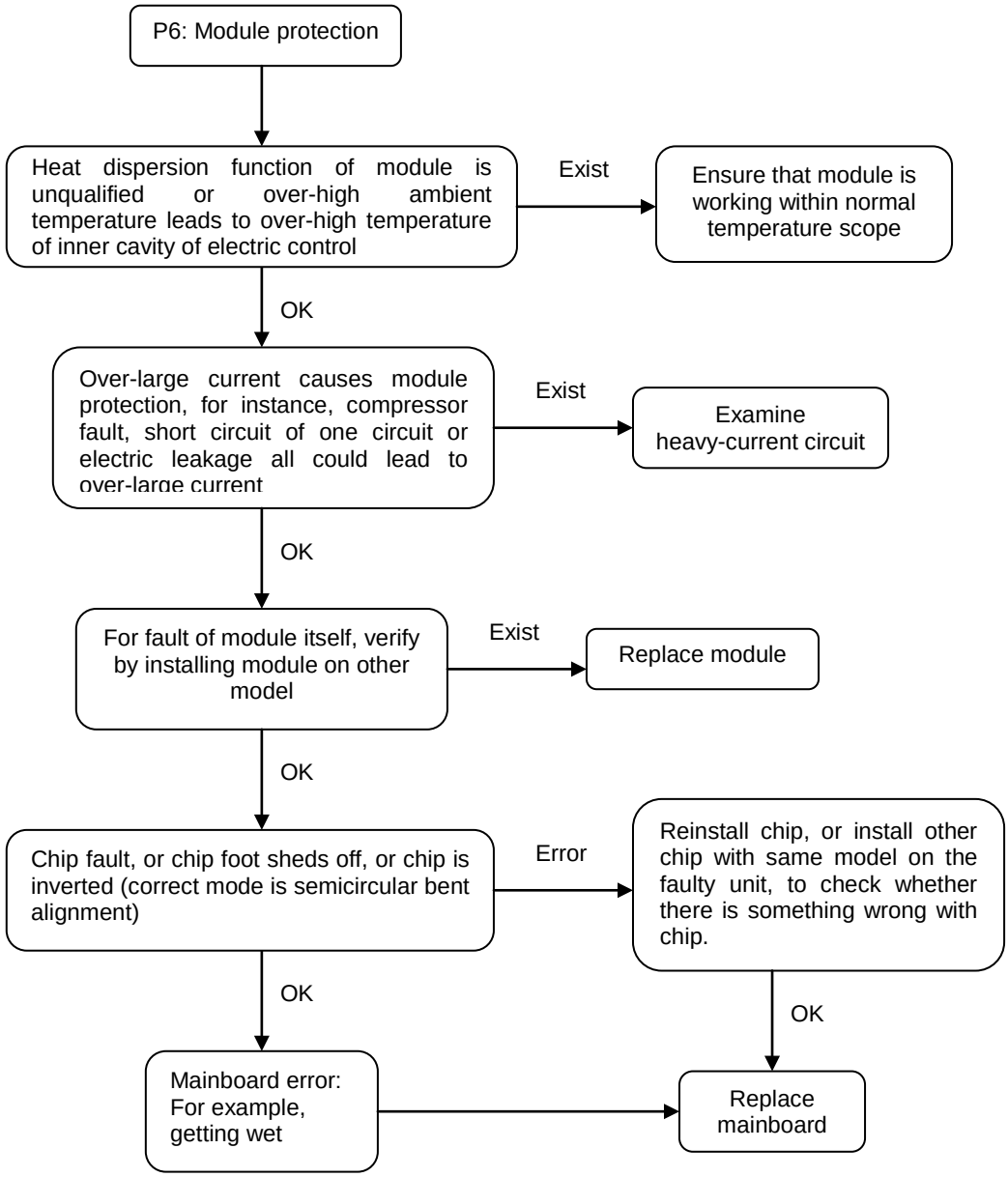
P3, P7, P8: Current Protection of Each Compressor



P5: High-temperature Protection of Pipe Temperature



P6: Inverter module protection



Note:

①. Other protection: such as H0 (communication error between DSP and 780034), H1 (communication error between 9177 and 780034). General solution is to replace PCB plate.

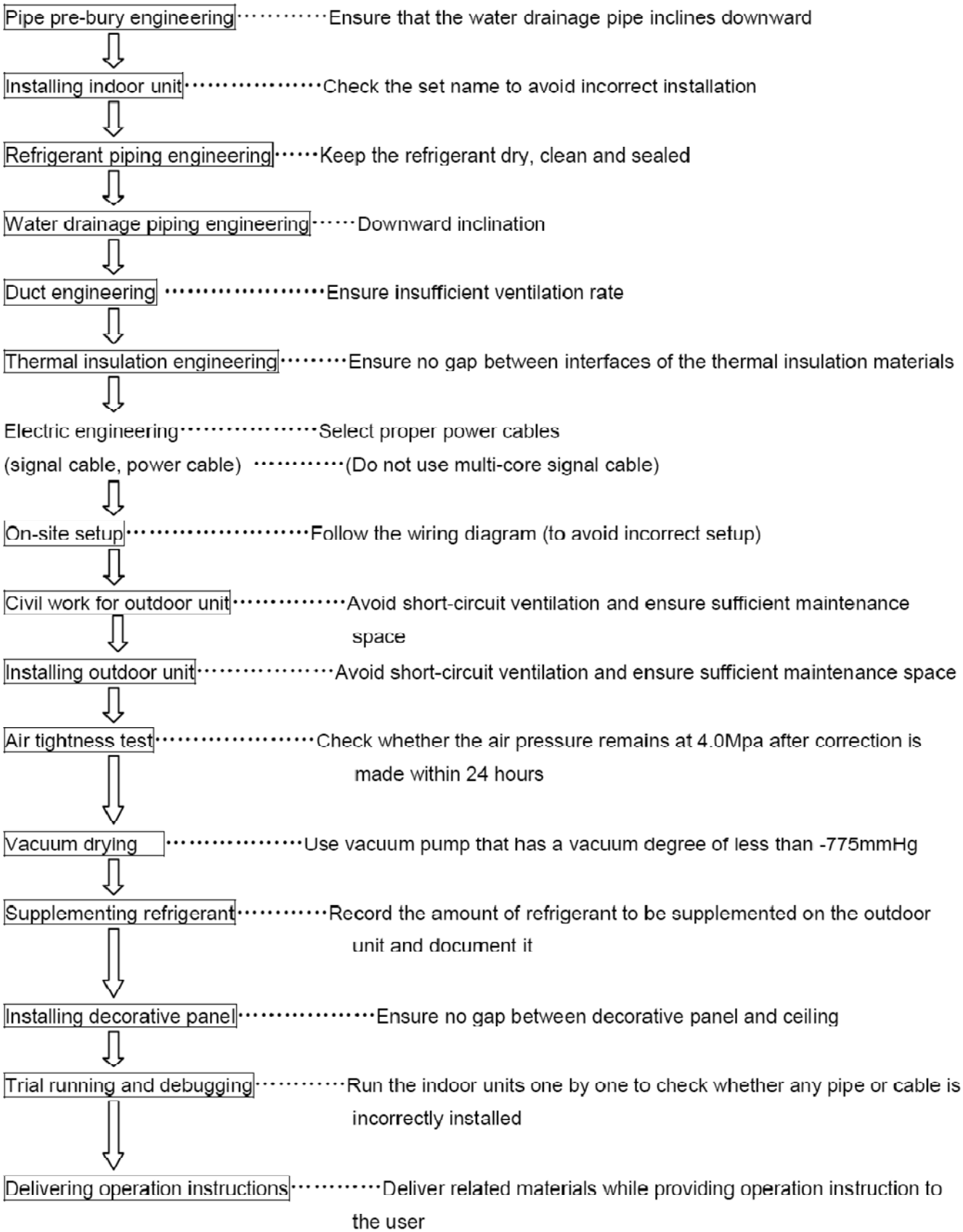
②. H3 (Fault of Increase in the Number of Outdoor Units):This fault can resume itself after 3 minutes.

Part 4
Installation

Sommario

1. Summarize of Installation

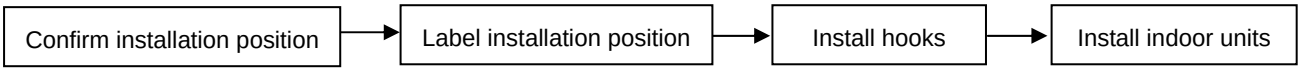
1.1 Installation Procedure



Note: The general procedure for refrigerant machine is subject to change according to the situation.

1.2 Install indoor units

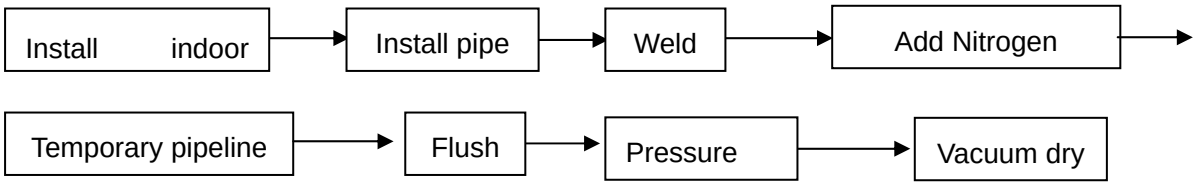
Procedure:



Note:
1. The hook must strong enough to sustain the weight of indoor unit.
2. Check the models of indoor units before installation.
3. Pay attention to the main devices, such as the pipeline.
4. Hold enough places for maintenance.

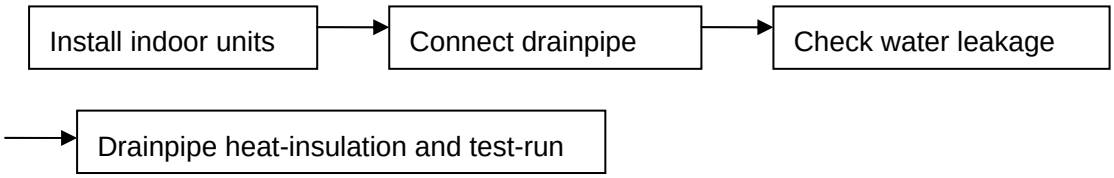
1.3 Refrigerant pipe

Procedure:



1.4 Drainage pipe

Procedure:



Note: It is no need to insulate the drainpipe if you choose the plastic pipe as drainpipe.

1.5 Electric wiring

1.5.1 Please select power supply for indoor unit and outdoor unit separately. Both indoor units and outdoor units should be grounded well.

1.5.2 The power supply should have specified branch circuit with leakage protector and manual switch.

1.5.3 Please put the connective wiring system between indoor unit and outdoor unit with refrigerant piping system together.

1.5.4 Power wiring should be done by professional electrician and complied with relevant National Electric Standard.

1.5.5 The power supply, leakage protector and manual of all the indoor units connecting to the same outdoor unit should be universal. (Please set all the indoor unit power supply of one system into the same circuit.)

1.5.6 It is suggested to use 3-core shielded wire as signal wire between indoor and outdoor units, multi-core wire is unavailable. Pay attention to the consistency. When signal wire parallel to the power wire, please keep enough distance (about 300mm at least) to prevent interference.

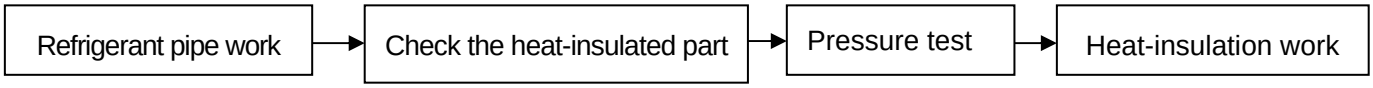
1.5.7 The power wire and signal wire can’t be enlaced together.

1.6 Lay the indoor pipeline

Note: Collocate the air-outlet reasonably to prevent airflow short-circuit. Check the static pressure whether in the allowable range. The air filters should be easy to unpick and wash. Do pressure test on pipeline.

1.7 Heat-insulation

Procedure:



Note: For welding part, flare part and branch pipe, heat-insulation work must be done after finished the pressure test.

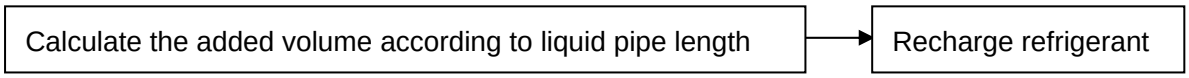
1.8 Install outdoor unit

Note: 1. Gutter must be set around the foundation to drain the condensation water.

2. When installing outdoor units at the roof, please check the strength of the roof and pay attention not to destroy the waterproof of the roof.

1.9 Recharge refrigerant

Procedure:



Note: Please calculate the additional amount of refrigerant according to the formula that we supply to you, and the calculation result must be correct

1.10 Main points of test running and debugging

Please check the following issues before turning on the power:

1. Vacuum dry:

   Make sure the vacuum degree accord with our requirement about 10^{-5}.

2. Wiring:

   Includes the power wiring and communication wiring; Recheck the connection according to our corresponding wire diagrams. Especially, please remember our communication wire is polar; it means you must connect the communication wire correspondingly to the terminal block.

3. Additional charge of refrigerant:

   Recheck the calculation formula and recalculate the total recharge volume according to our supplied formula.

4. Open the stop-valve of gas and liquid pipe with Allen key; Check leakage of stop-valve with soap water.

   Please confirm whether the outdoor unit has been connected to the power for 12hr before start test running.

Test running:

Turn on all of the indoor units with cooling mode and set the temperature in 17degree with high fan speed first, after the system operated, test following operation parameters of the system, including indoor units and outdoor units parameters.

Indoor units' parameter:

1. Air-inlet and air-outlet temperature of indoor units: generally, the temperature difference between them should be 10 degree according to and depended on the outdoor ambient temperature, we think it is normal.
2. Fan speed of air-outlet of indoor units: Generally, for the duct type indoor units, the fan speed of air-outlet should be 3m/s roughly.
3. Noise level: for the indoor units should be 40dB(A) roughly.

Outdoor units' parameter:

Ambient temperature; Air-outlet of units; Discharge temperature of compressor; voltage; current; discharge pressure; air-inlet pressure; air-inlet pipe temperature and compressor current.

After tested all of the cooling parameters, transfer the cooling mode to heating mode, then repeat the above process.

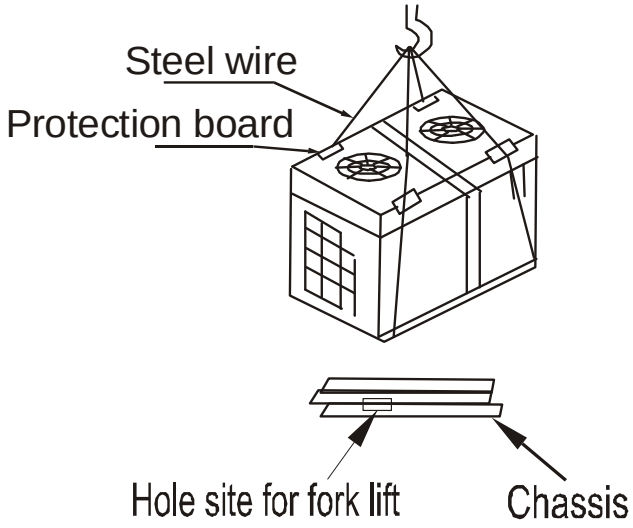
Note: Do not make forced running, otherwise the protection device will not work, which is very dangerous.

2. Installation of Outdoor unit

2.1 Hanging and Transportation

2.1.1 Sling the outdoor unit and carry it in with 4 steel wires (φ6mm or more)

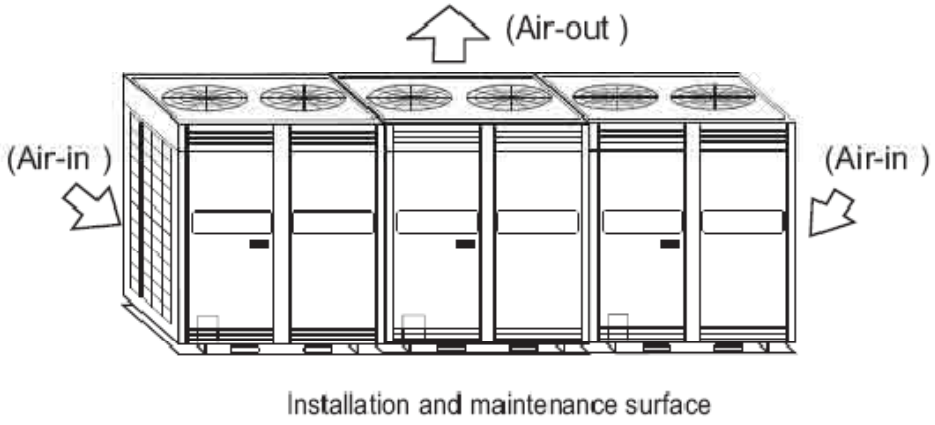
2.1.2 Use soft board to protect the unit surface from scratch and distortion where contact the steel wire.



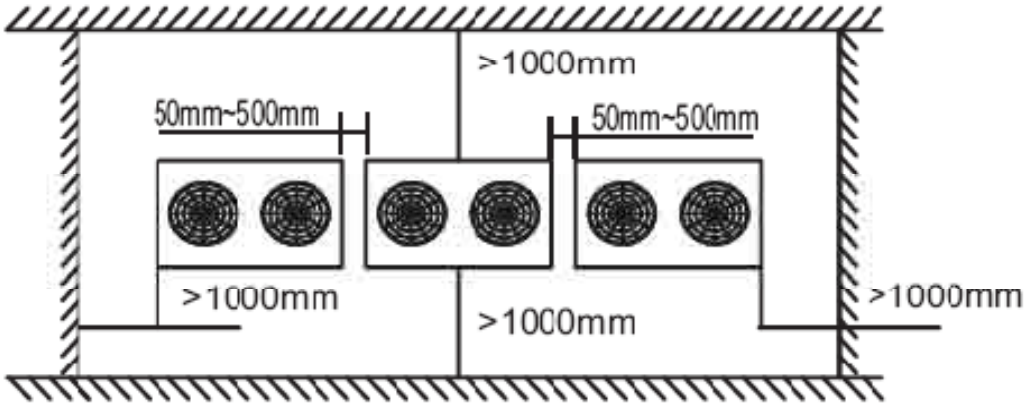
2.2 Required Installation Place and Installation Dimension

2.2.1 Power supply equipment is preferred to be installed by the side of the outdoor unit;

2.2.2 Ensure there is sufficient space for the maintenance of the outdoor unit. The modules in the same system must be on the same height.



2.2.3 Proper space between outdoor units should be kept;



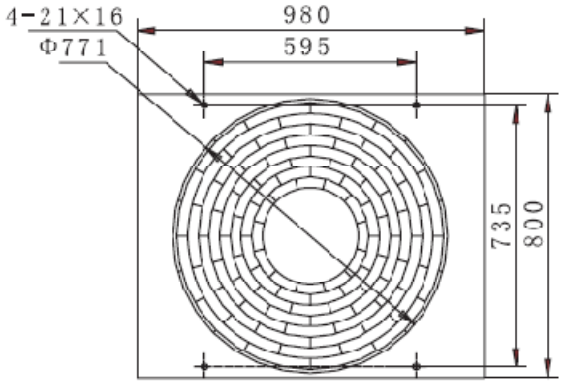
Top view of the outdoor unit

2.2.4 Distance between ground bolt is shown below: (Note: Outdoor units in the same system should be located in the same level.

(Unit: mm)

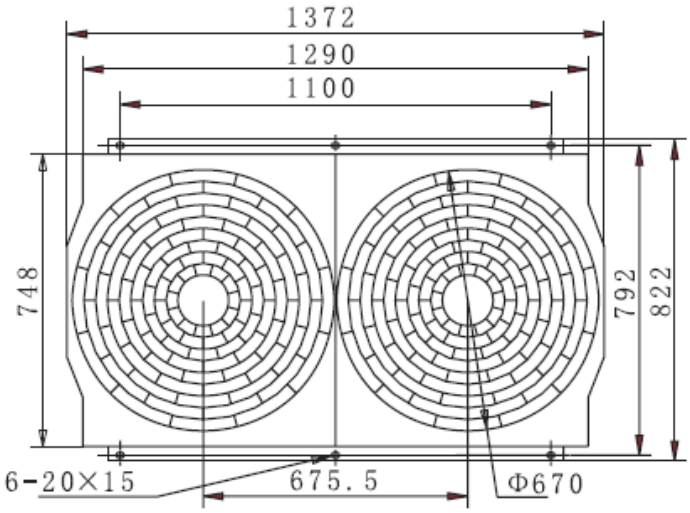
HCSU 2501 XRV HCSU 3001 XRV

Outline Planform(Hight 1615)



HCSU 3501 XRV HCSU 4001 XRV HCSU 4501 XRV

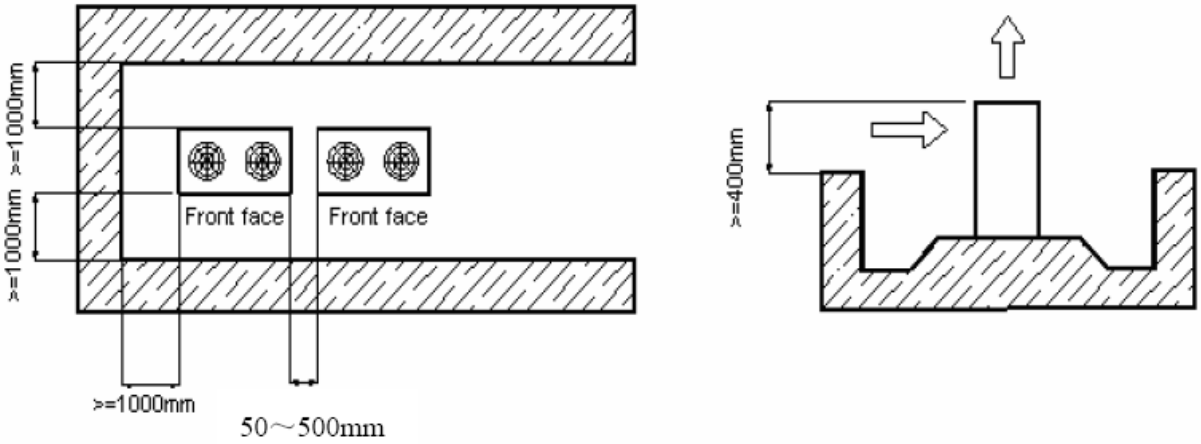
Outline Planform(Hight 1630)



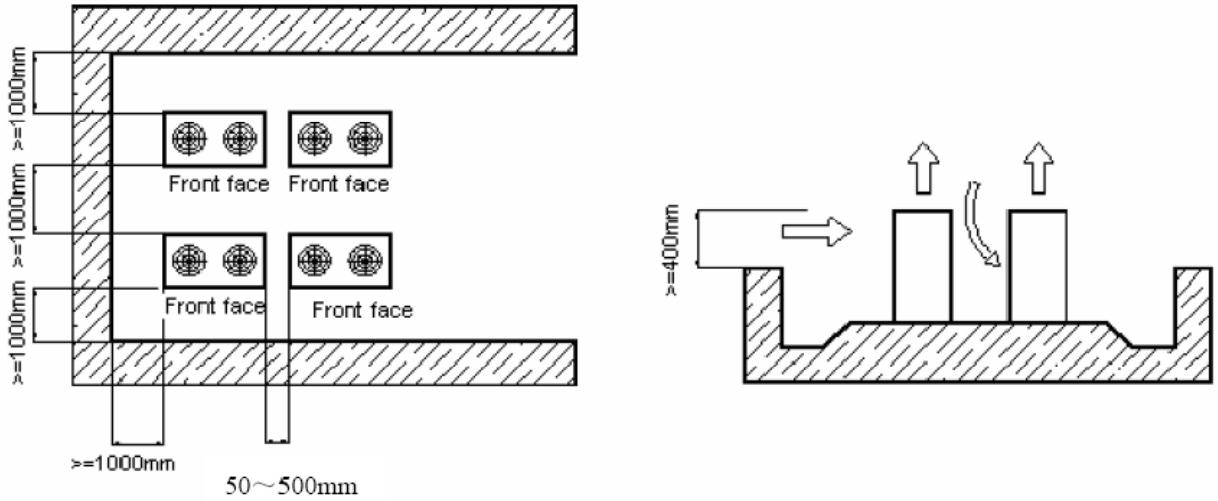
2.2.5 Outdoor unit arrangement

Outdoor units are higher than the surrounding buildings

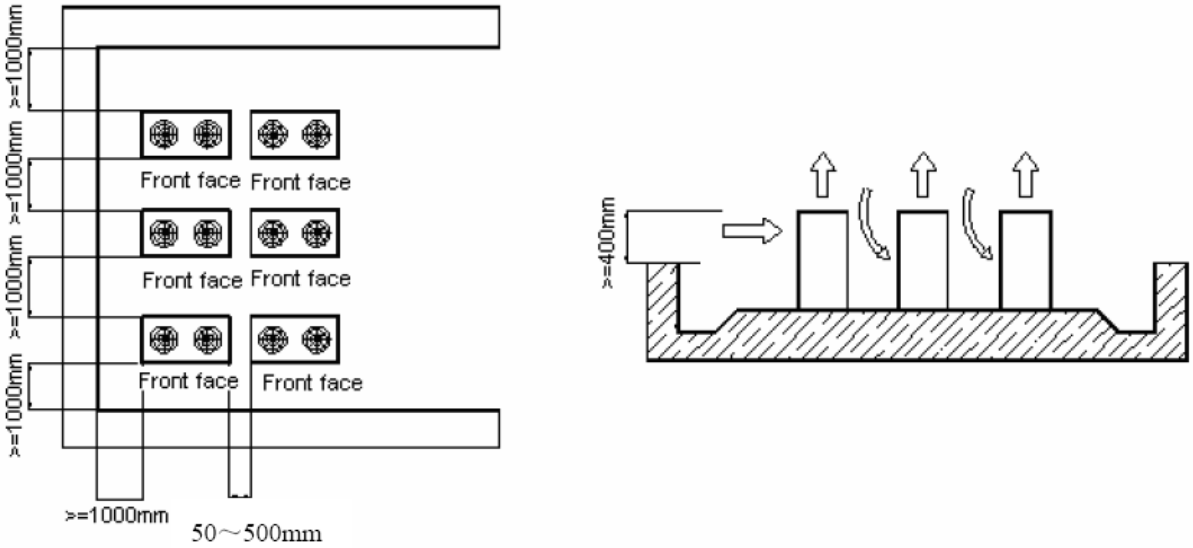
Outdoor units are aligned in one line



Outdoor units are aligned in two lines



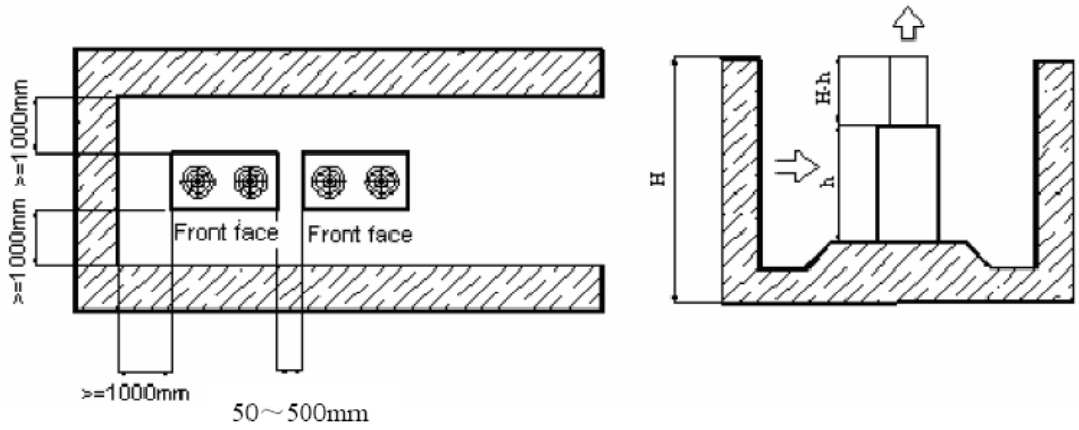
More than 2 lines of outdoor units



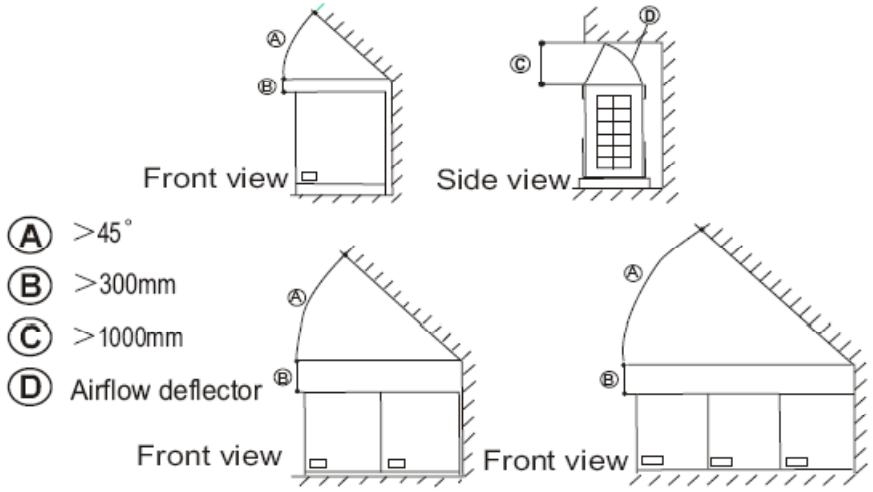
2.2.6 Outdoor units are lower than the surrounding obstacles

If the outdoor units are lower than the surrounding obstacles, in order to ensure an effective “heat exchange “a conduit is strongly recommended to help the heat emission and avoid the discharging air being absorbed into the system again. The conduit is made on the installation spot with the height

HD=H-h.（Note：Because the outdoor fan motor has no enough static pressure, the Max. Length should be less than 3meters.）



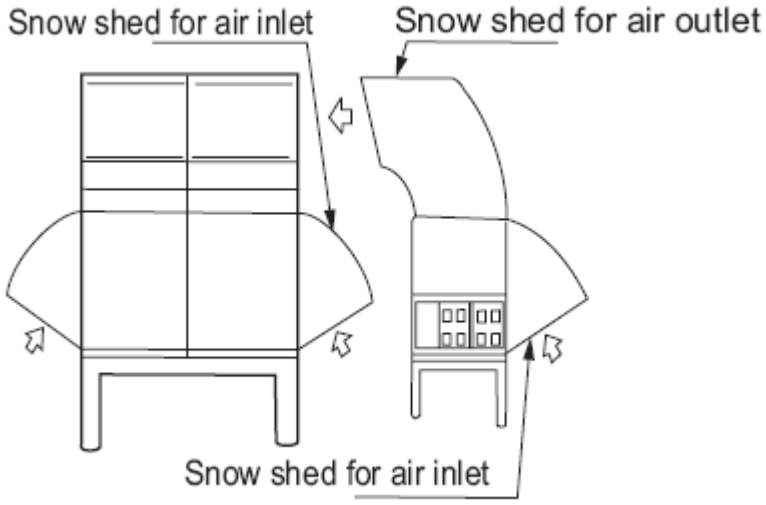
2.2.7 When there are obstacles above the outdoor unit:



The top of any pile around the outdoor unit should be at least 800mm below the unit top, unless there is mechanism for air discharging.

2.3 Snow areas

In snowy areas, facilities should be installed to prevent snow. (See the chart below)(Defective facilities may cause malfunction.) Please lift the bracket higher and install snow shed at the air inlet and air outlet.



3. Installation of Indoor unit

3.1 Hanging and Transportation

Please refer to Installation Manual of Indoor unit.

3.2 Required Installation Place

3.2.1 Cassette Type

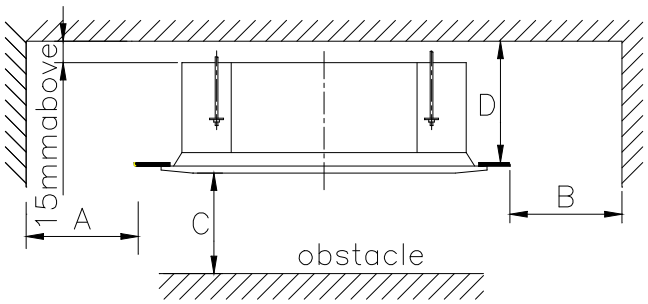
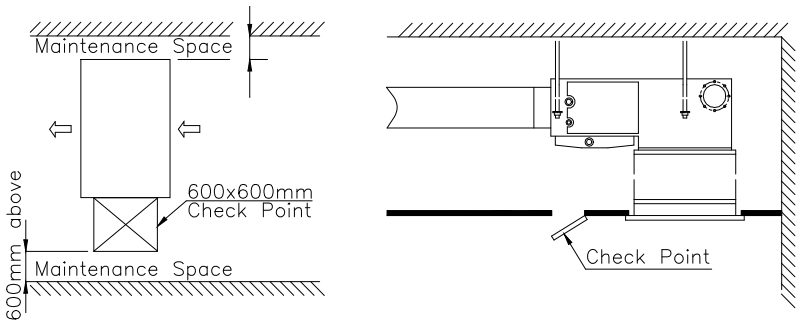


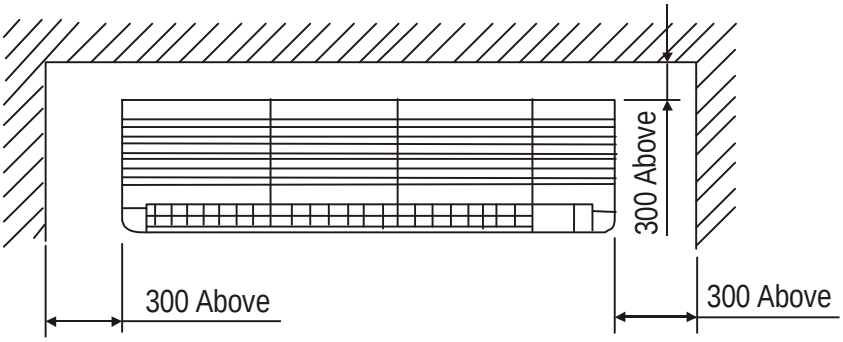
Table 4-1

Dimension / model	A	B	C
Four-way Cassette	1000mm above		2300mm above

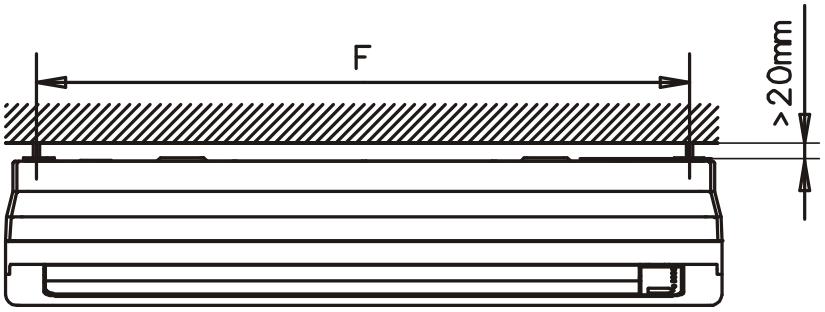
3.2.2 Duct Type



3.2.3 Wall Mounted Type



3.2.4 Ceiling and floor



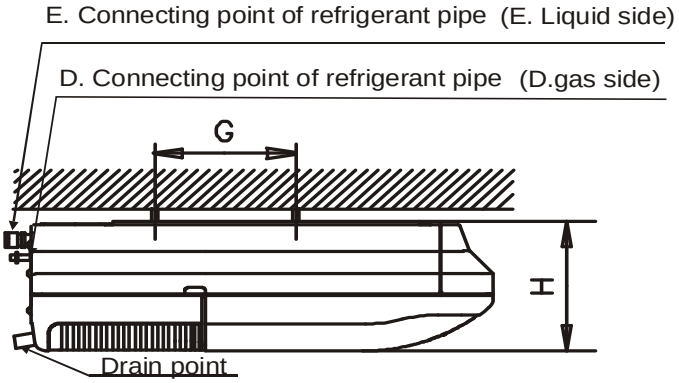
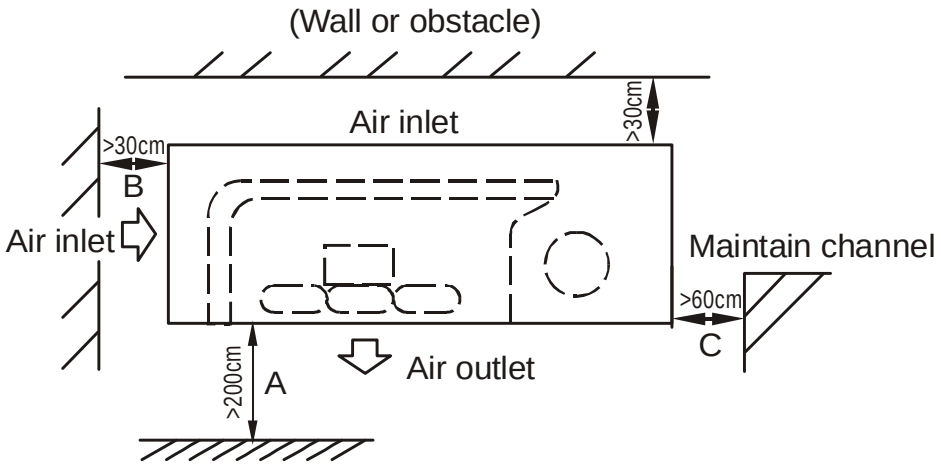


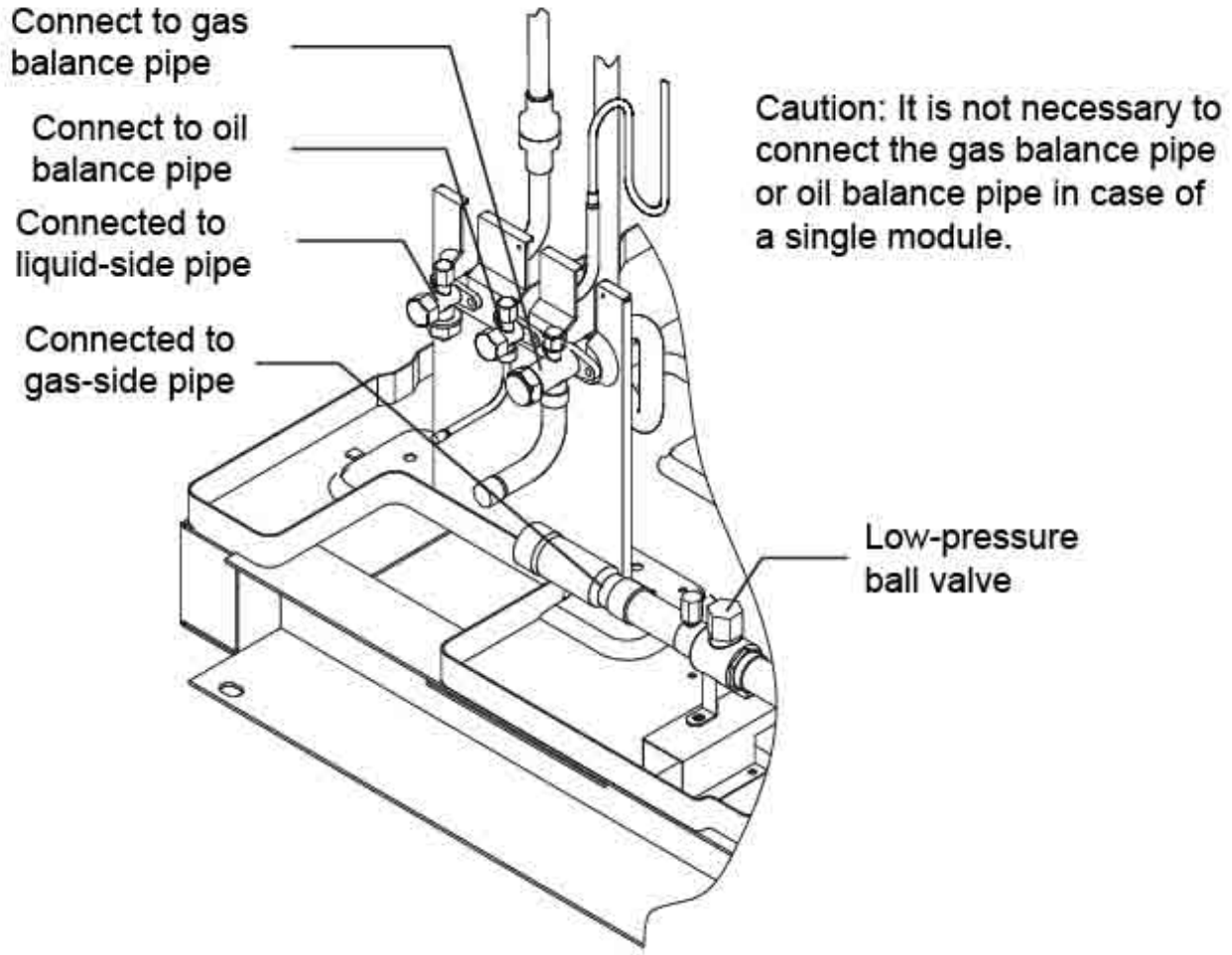
Table 4-2

Capacity (KW)	A	B	C	D	E	F	G	H
2.2-8.0 KW	990	660	206	505	506	907	200	203
9.0-11.2 KW	1280	660	206	795	506	1195	200	203
14.0 KW	1670	680	224	1070	450	1542	200	240



4. Installation of Refrigerant Pipe

- The refrigerant pipe adapter is located inside the outdoor unit. So remove the lower front board first.
- The pipe can be connected from the front left lower side or the bottom notch of the outdoor unit.
- In case the pipe is connected from the front side, lead out the pipe through the wiring panel of the pipes, and then install the refrigerant manifold pipe leftward or rightward.
- In case the pipe is connected from the bottom notch, install the refrigerant manifold pipe leftward, rightward or backward after connecting it out.
- In case of leading from the front side, remove the guard board at the corresponding notch location on the panel in advance, and then lead the pipe out.



Caution: When welding the refrigerant pipe, in order to prevent internal oxidation of the pipe, nitrogen must be filled in. Otherwise, the oxidized chips may block cooling circulatory system.

4.1 The permitted length and drop difference of refrigerant pipe

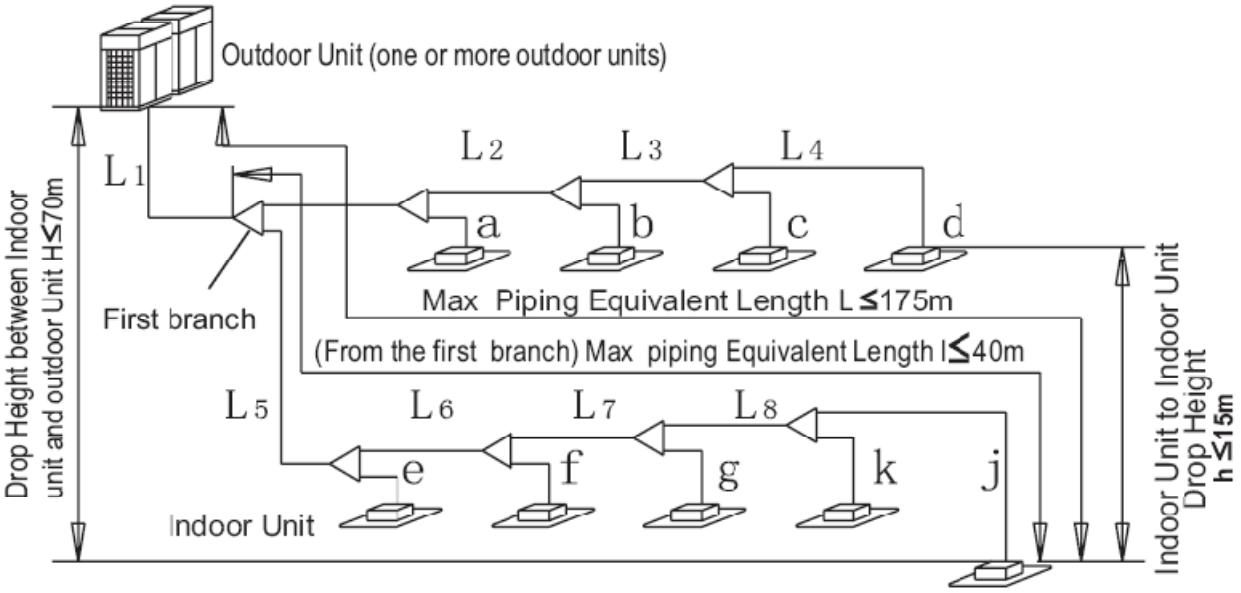


Table 4-3

			Permitted length		Pipe
Pipe length	Pipe total length (actual length)		≤30HP	≤350 m	L1+L2+L3+L4+L5+L6+L7+L8 + a+b+c+d+e+f+g+k+j
			> 30HP	≤500 m	
	Farthest pipe length(m)	Actual length	≤150m		L1+L5+L6+L7+L8+j
		Equivalent length	≤175m		
	Equivalent length L of pipe from the first branch to the farthest one (m)		≤40m		L5+L6+L7+L8+j
Drop height	Drop height between indoor unit and outdoor unit	Outdoor unit up	≤70m		——
		Outdoor unit down	≤40m		——
	Drop height between indoor unit and indoor unit		≤15m		——

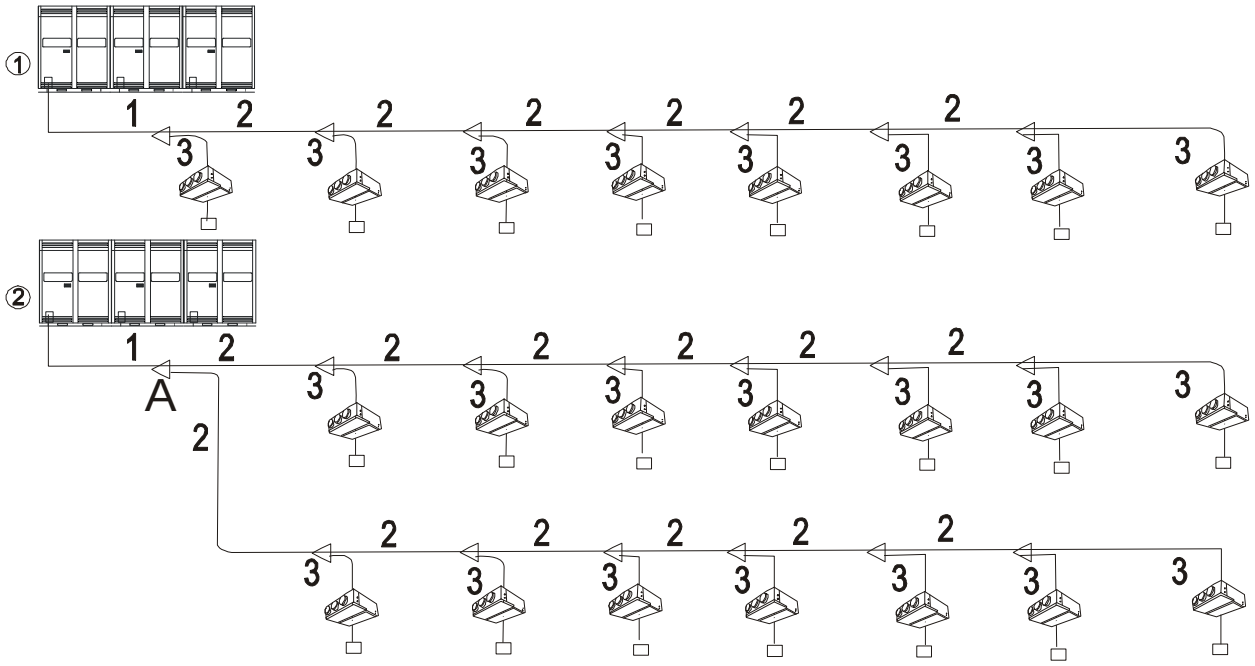
Conversion of the equivalent length: Convert into the direct pipe length

4.2 Pipe installation

4.2.1 Nomenclature of the refrigerant pipe

Table 4-4

Type of the pipe	Connecting part	No.
Main pipe	Between outdoor unit and first branch joint	1, 2
	Between branch joints	
Branch pipe	Between branch joint and indoor unit	3



Remark: if using the second connection method, please make sure the capacity of the two side of the branch part A is nearly the same.

The diameter of gas pipe and liquid pipe of single module are listed at the Table 4-5:

Table 4-5

Model	Gas Side	Liquid Side
HCSU 2501 XRV	Φ25.4	Φ12.7
HCSU 3001 XRV	Φ25.4	Φ12.7
HCSU 3501 XRV	Φ25.4	Φ12.7
HCSU 4001 XRV	Φ28.6	Φ15.9
HCSU 4501 XRV	Φ28.6	Φ15.9

4.2.2 Select main pipe between outdoor side and first branch joint

According to the total capacity of outdoor units **(see the table below)**.

Single Module: Dimension and connecting method of the main pipes of outdoor side and first branch joint to indoor unit.

Table 4-6

The capacity A(HP) of outdoor unit	The Max. equivalent length of tubing < 90m		The 1st branch joint for indoor unit	The Max. equivalent length of tubing ≥ 90m		The 1st branch joint for indoor unit
	Gas Side	Liquid Side		Gas Side	Liquid Side	
8	Φ19.1	Φ9.5	DIS-22-1T	φ22.2	φ12.7	DIS-22-1T
10	Φ22.2	Φ9.5	DIS-180-1T	φ25.4	φ12.7	DIS-180-1T
12	Φ28.6	Φ12.7	DIS-371-1T	φ31.8	φ15.9	DIS-371-1T
14	Φ28.6	Φ12.7	DIS-371-1T	φ31.8	φ15.9	DIS-371-1T
16	Φ28.6	Φ12.7	DIS-371-1T	φ31.8	φ15.9	DIS-371-1T

Note: In case the joint size of outdoor unit is different from the main pipe, a diameter reducer union should added transiting for it.

Several Modules: Dimension of the main pipes of more than one modules and the first branch joint to indoor unit.

Table 4-7

The capacity A(HP) of outdoor unit	The Max. equivalent length of tubing < 90m		The 1st branch joint for indoor unit	The Max. equivalent length of tubing ≥ 90m		The 1st branch joint for indoor unit
	Gas Side	Liquid Side		Gas Side	Liquid Side	
18≤A≤22	φ28.6	φ15.9	DIS-371-1T	φ31.8	φ19.1	DIS-371-1T
A=22	φ34.9	φ15.9	DIS-371-1T	φ38.1	φ19.1	DIS-371-1T
26≤A≤32	φ34.9	φ19.1	DIS-540-1H	φ38.1	φ22.2	DIS-540-1H
34≤A≤48	φ41.3	φ19.1	DIS-540-1H	φ41.3	φ22.2	DIS-540-1H
50≤A≤64	φ44.5	φ22.2	DIS-1344-1H	φ44.5	φ25.4	DIS-1344-1H

18≤A≤22 and the Max. equivalent length of tubing≥90m, gas pipe: Φ34.9→Φ31.8;

26≤A≤32 and the Max. equivalent length of tubing≥90m, gas pipe: Φ41.3→Φ38.1;

34≤A≤48 and the Max. equivalent length of tubing<90m, gas pipe: Φ22.2→Φ19.1.

Note: 1. All the outdoor units in one combination must be in the same level.

2. Any other branch joints should not be bigger than the first branch joint.

4.2.3 Select the dimension of main pipe and the branch joint of indoor side according to the total capacity of indoor units following main pipe.

Table 4-8

A: Total capacity (×100W)) of indoor units following main pipe of indoor side	Main pipe (Gas Side / Liquid Side)	Branch joint
A≤168	Φ15.9/Φ9.5	DIS-22-1T
168<A≤224	Φ19.1/Φ9.5	DIS-180-1T
224<A≤330	Φ22.2/Φ9.5	DIS-180-1T
330<A≤470	Φ28.6/Φ12.7	DIS-371-1T
470<A≤710	Φ28.6/Φ15.9	DIS-371-1T
710<A≤1040	Φ34.9/Φ19.1	DIS-540-1H
1040<A≤1340	Φ41.3/Φ19.1	DIS-540-1H
1340<A	Φ44.5/Φ22.2	DIS-1344-1H

4.2.4 Pipe between outdoor units (outdoor unit tubing) and the size selection for branch joint, which parallel connect outdoor units:

Table 4-9

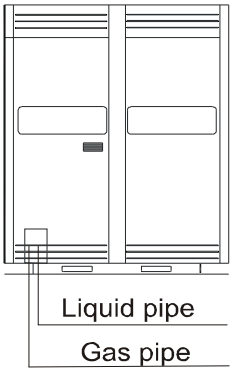
A: Total capacity (HP)	Tubing size (mm)	Three-way tube
A≤12	Φ25.4/Φ12.7	Single outdoor unit
14≤A≤16	Φ34.9/Φ15.9	Single outdoor unit
18≤A≤24	Φ38.1/Φ19.1	DIS-540-1H
26≤A≤32	Φ41.3/Φ22.2	DIS-1344-1H
34≤A≤48	Φ44.5/Φ22.2	DIS-1344-1H
50≤A	Refer to main pipe	MDV-BY104A

4.2.5 Size of branch joint for indoor unit:

The selection is according to the capacity of indoor units. In case the capacity of indoor units exceed the total of outdoor one, select size according to outdoor one.

4.2.6 Select the T-shape three-way pipes and Y-shape three-way pipes

4.2.6.1 Single module



Note: it needn't gas balance pipe and the gas balance pipe must be sealed.

Table 4-10

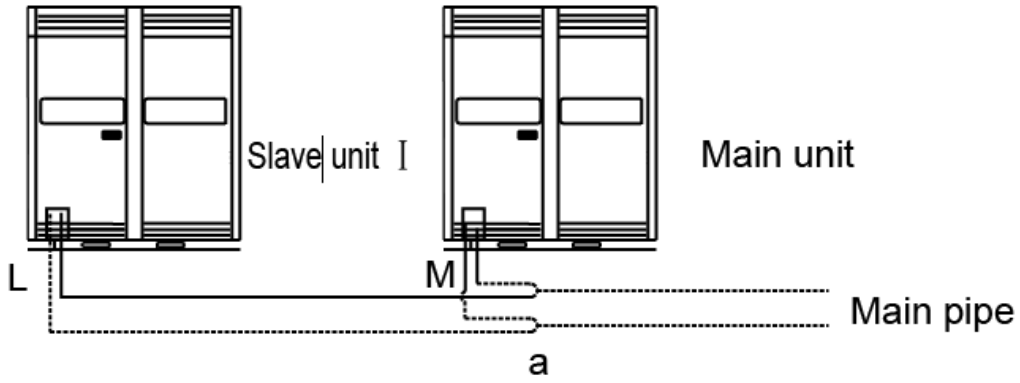
The capacity A(HP) of outdoor unit	The Max. equivalent length of tubing < 90m		The 1st branch joint for indoor unit	The Max. equivalent length of tubing ≥ 90m		The 1st branch joint for indoor unit
	Gas Side	Liquid Side		Gas Side	Liquid Side	
8	Φ19.1	Φ9.5	DIS-22-1T	φ22.2	φ12.7	DIS-180-1T
10	Φ22.2	Φ9.5	DIS-180-1T	φ25.4	φ12.7	DIS-371-1T
12	Φ28.6	Φ12.7	DIS-371-1T	φ31.8	φ15.9	DIS-371-1T
14	Φ28.6	Φ12.7	DIS-371-1T	φ31.8	φ15.9	DIS-371-1T
16	Φ28.6	Φ12.7	DIS-371-1T	φ31.8	φ15.9	DIS-371-1T

Note: In case the joint size of outdoor unit is different from the main pipe, a diameter reducer union should added transiting for it.

4.2.6.2 Two modules combination

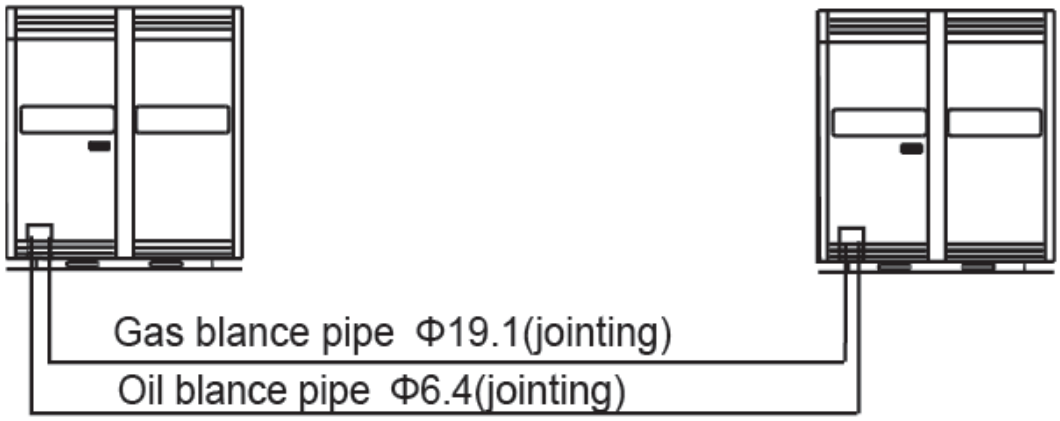
18Hp≤capacity≤32Hp

4.2.6.2.1 The dimension pipe of liquid side and gas side



Note: Size of L, M and a refer to table.4-8. Size of main pipe refers to table.4-6.

4.2.6.2.2 Connection of gas and oil balance pipes

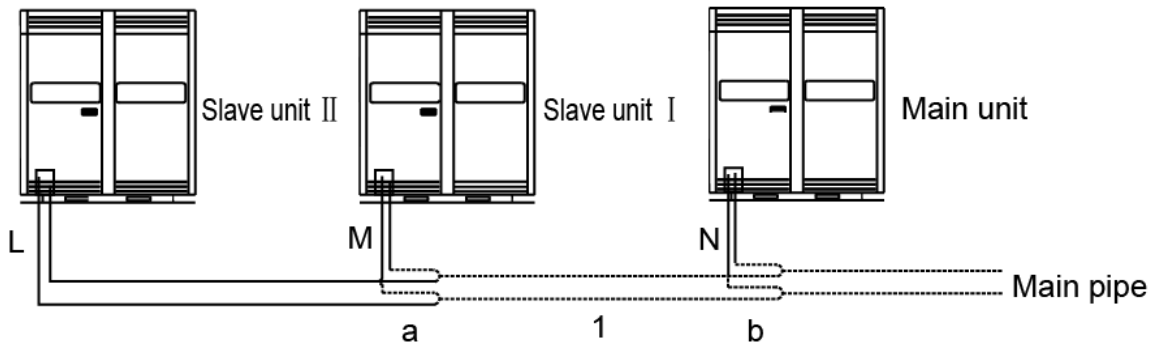


Please use wet cloth to prevent the valve from breaking when welding.

4.2.6.3 Three modules combination

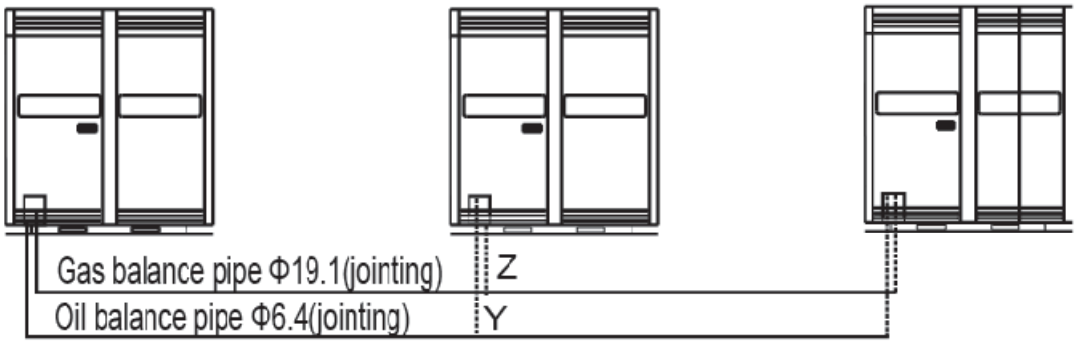
34HP≤capacity≤48HP

4.2.6.3.1 The pipe dimension of liquid side and gas side



Note: Size of L, M, N and a, b, 1 refers to table.4-8. Size of main pipe refers to table.4-6.

4.2.6.3.2 Connection of gas and oil balance pipes

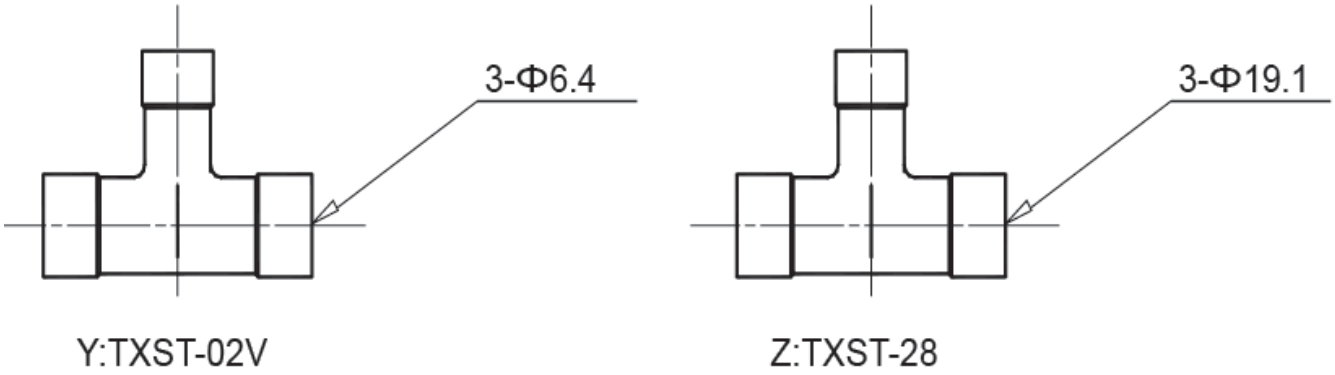


Note:

Y: T-shape three-way pipe of the gas balance pipe 1.

Z: T-shape three-way pipe of the gas balance pipe 2.

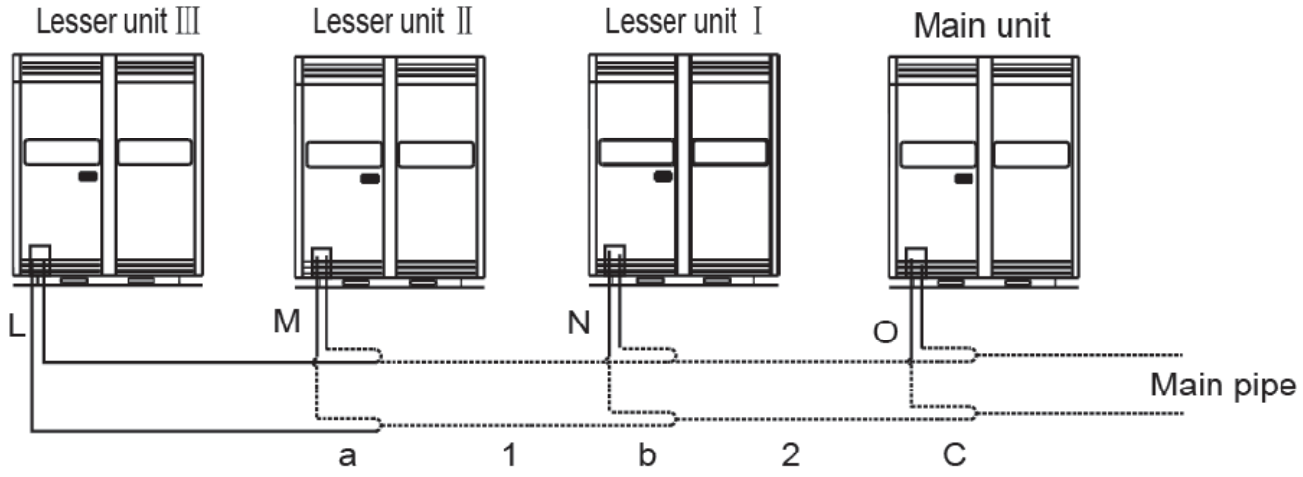
See following chart for size of T-shaped pipes Z and Y connecting with gas pipe.



4.2.6.4 Four modules combination

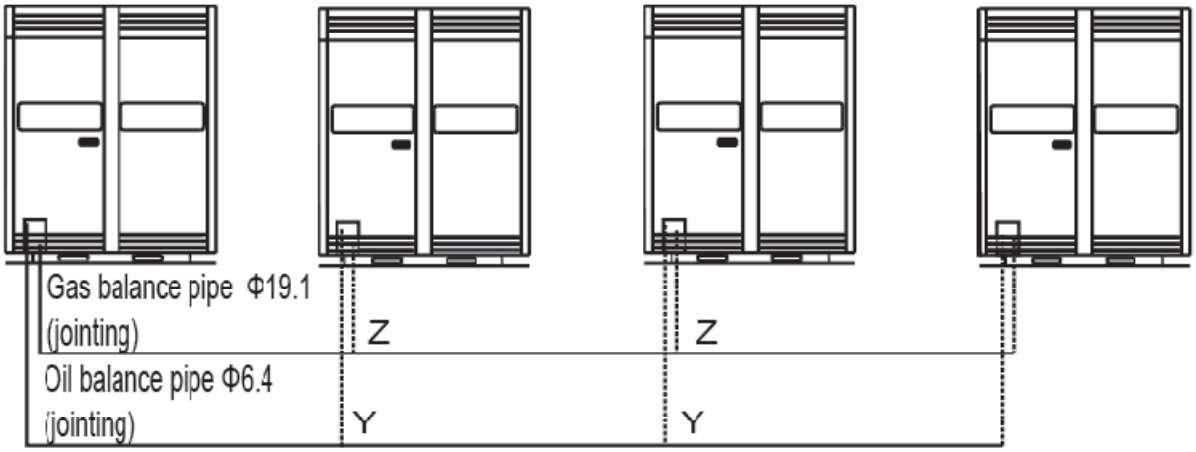
50HP≤capacity≤64HP

4.2.6.4.1 The pipe dimension of liquid side and gas side



Note: Size of L, M, N, O and a, b, c, 1, 2 refers to table.4-8. Size of main pipe refers to table.4-6.

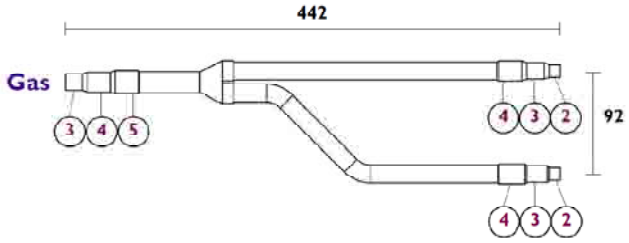
4.2.6.4.2 Connection of gas and oil balance pipes

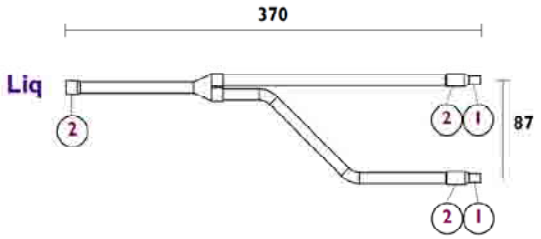


Note: the T-shape three-way pipes Y and Z are same as that of three modules combination.

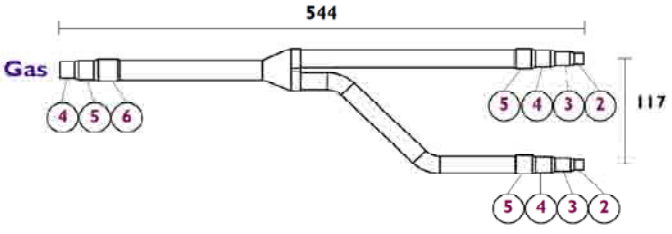
4.2.7 The dimension of branch part:

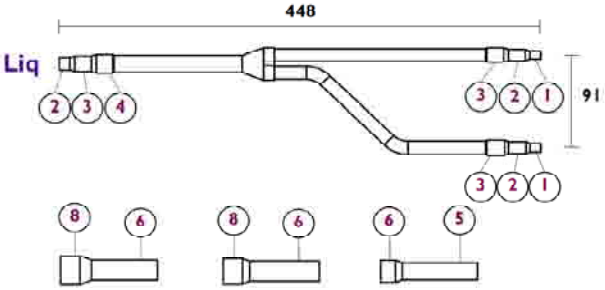
1) DIS-22-1T





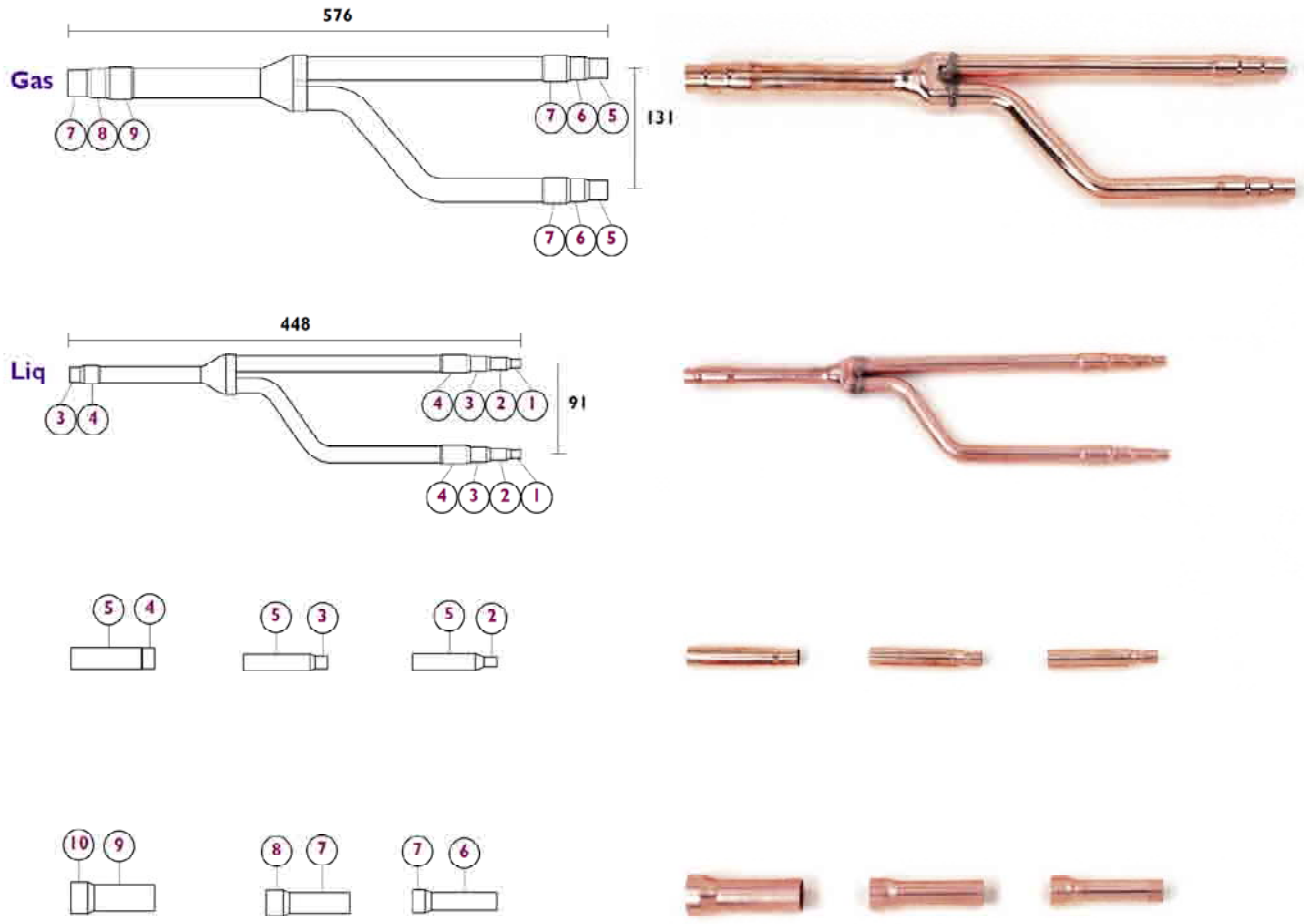
2) DIS-180-1T



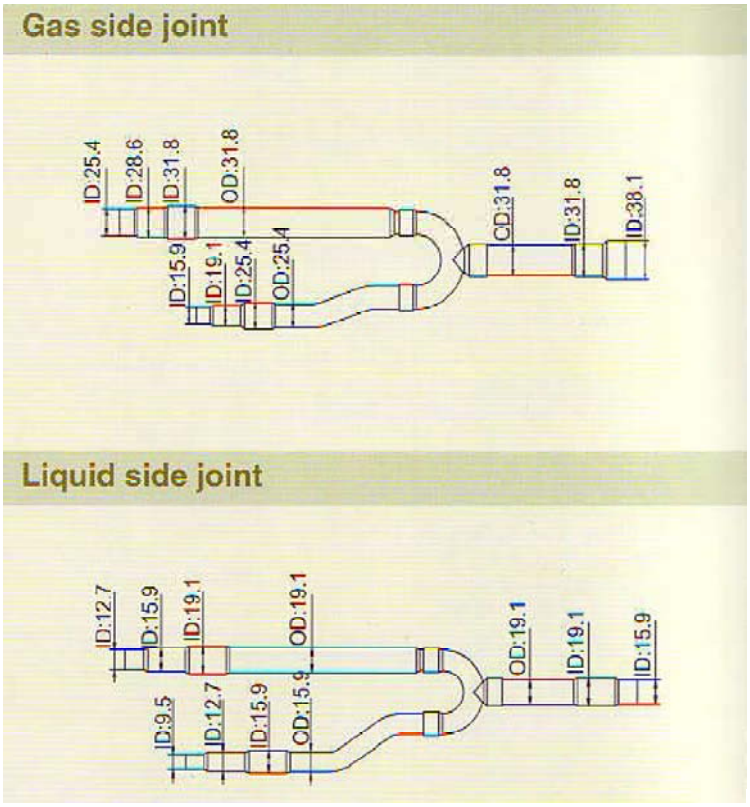


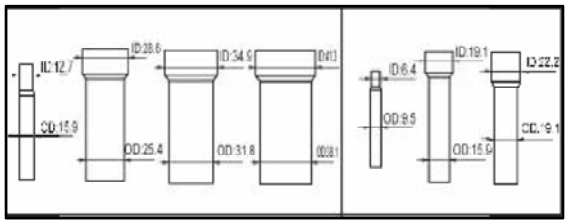
Diametri / Diameters												
1	6,35 mm	1/4"	5	19,05 mm	3/4"	9	31,75 mm	1"1/4	13	44,45 mm	1"3/4
2	9,52 mm	3/8"	6	22,40 mm	7/8"	10	34,92 mm	1"3/8	14	50,80 mm	2"
3	12,70 mm	1/2"	7	25,40 mm	1"	11	38,10 mm	1"1/2			
4	15,88 mm	5/8"	8	28,57 mm	1"1/8	12	41,28 mm	1"5/8			

3) DIS-371-1T

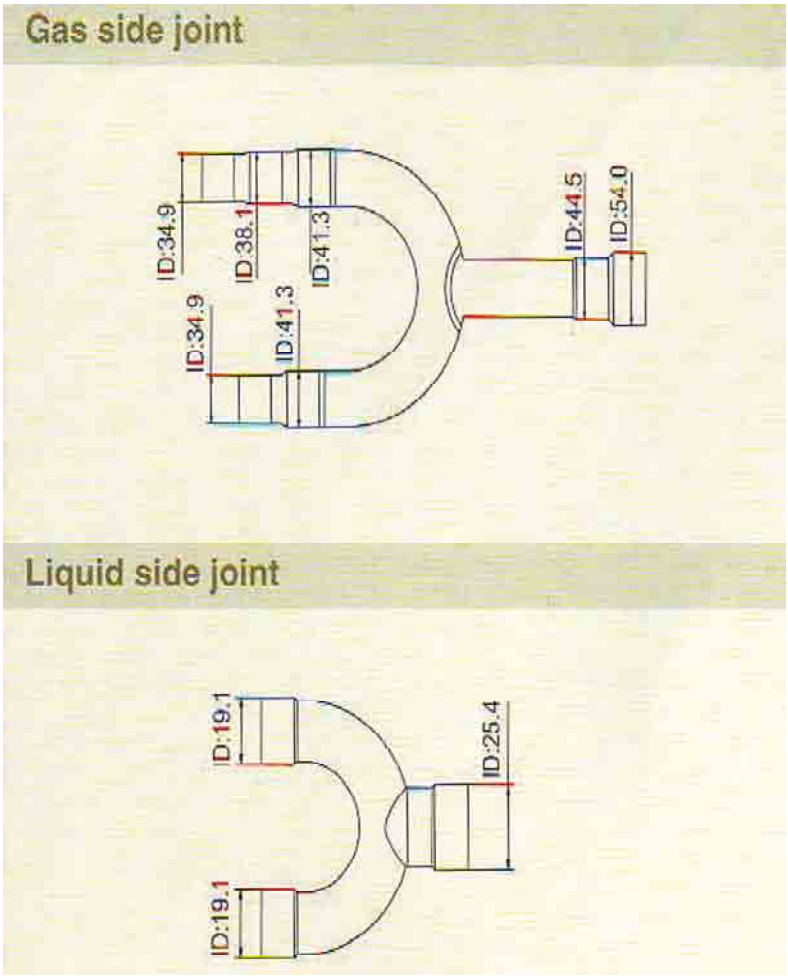


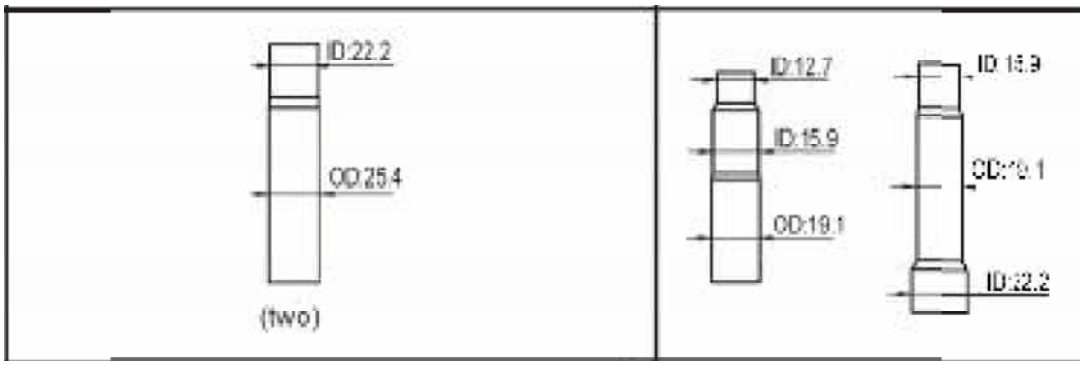
4) DIS-540-1H



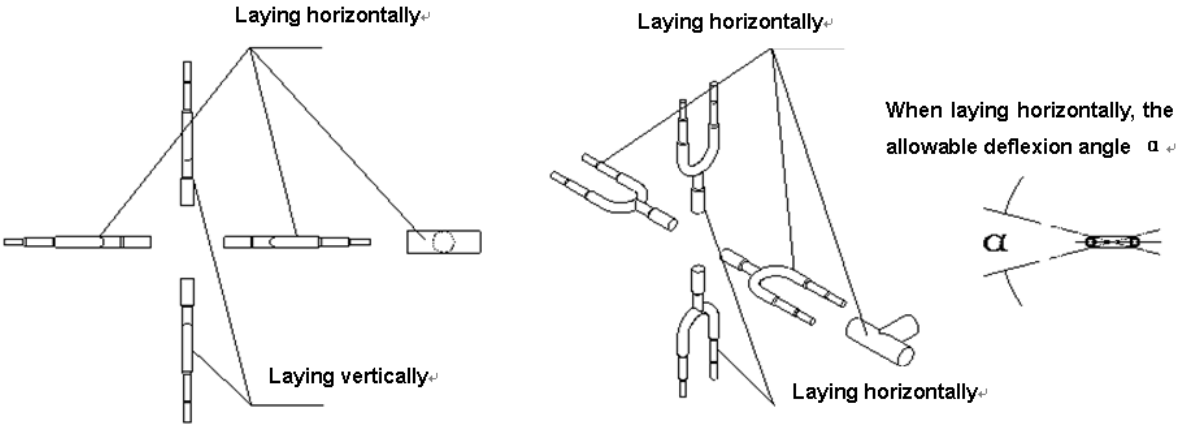


5) DIS-1344-1H


Gas side joint
ID:34.9
ID:38.1
ID:41.3
ID:34.9
ID:41.3
ID:44.5
ID:54.0
Liquid side joint
ID:19.1
ID:19.1
ID:25.4


ID:22.2
OD:25.4
(two)
ID:12.7
ID:15.9
OD:19.1
ID:15.9
OD:19.1
ID:22.2

The laying of branch part:



At the same system, the laying form of shunt-wound outdoor units: the outdoor units are on the same level, the branch joints for the outdoor units are on the same level, the T-shaped pipes for connecting the balance pipes are installed vertically.

The laying form of Y-shaped branch pipes for shunt-wound outdoor units: Laying horizontally.
The laying form of T-shaped branch pipes for shunt-wound outdoor units: Laying horizontally.

The laying form of Y-shaped branch pipes for indoor units:

1) Laying horizontally. (the allowable deflexion angle α=30° (-15° ~ +15°)

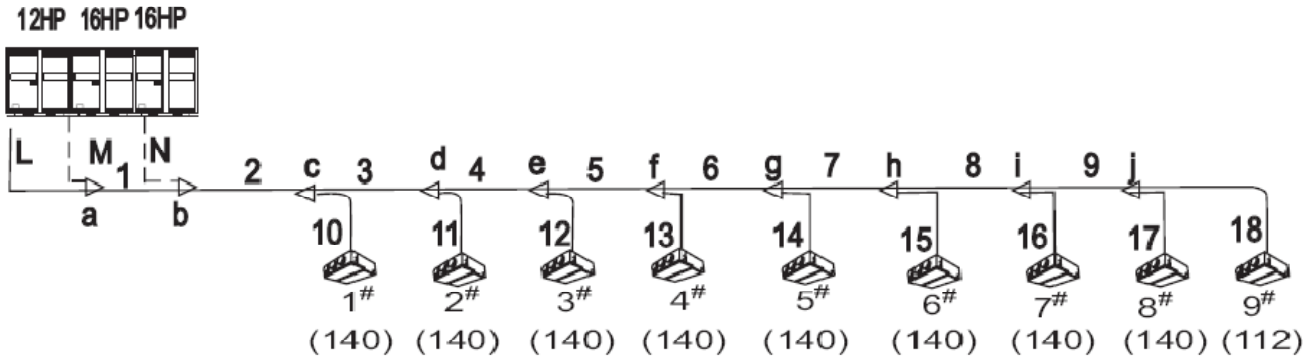
2) Laying horizontally

4.2.8 Size of tubing connection

Table 4-11

Capacity of indoor units(HP)	Gas side	Liquid side
≥56	Φ15.9(Flaring nut)	Φ9.5 (Flaring nut)
≤45	Φ12.7(Flaring nut)	Φ6.4(Flaring nut)

4.2.9 Take (12+16+16) HP outdoor unit as example:



Parallel outdoor unit:

1). Outdoor pipes: No. L, M, N, refer to Table 4-9 the size is Φ25.4/Φ12.7、Φ34.9/Φ15.9、Φ34.9/Φ15.9.

According to the corresponding outdoor units ability.

2). Pipe 1, total HP is 16+12≤32HP, refer to Table 4-9, pipe size is Φ38.1/Φ19.1. pipe 2 , total HP is 16+16+12=44HP, refer to Table 4-6, pipe size is Φ41.3/Φ22.2

3). Refer to Table 4-9, Model of branch joint: a, type DIS-1344-1H, b choose DIS-1344-1H.

Room inside:

1). Branch pipes are 10--18, refer to Table 4-11, the size is:Φ15.9/Φ9.5

2). Subordinate indoor units of pipe 9 are 8#, 9#, total horsepower is 140+112=252≤330, pipe 9 size isΦ 22.0/Φ9.5, model of branch joint j: DIS-371-1T. Subordinate indoor units of pipe 8 are 7#,8#,9#, total horsepower is 140+140+112=392≤470, pipe 8 size is Φ28.6/Φ12.7, model of branch joint i : DIS-371-1T

4).Subordinate indoor units of pipe 7 are 6#~9#, total horsepower is 140+140+140+112=532≤710, pipe 7 size is Φ28.6/Φ15.9, model of branch joint h : DIS-371-1T

5).Subordinate indoor units of pipe 6 are 5#~9#, total horsepower is 140+140+140+140+112=672≤710, pipe 6 size is Φ28.6/Φ15.9, model of branch joint j : DIS-371-1T

6).Subordinate indoor units of pipe 5 are 4#~9#, total horsepower is 140+140+140+140+140+112=812≤ 1040, pipe 5 size is Φ34.9/Φ19.1, model of branch joint f : DIS-540-1H

7).Subordinate indoor units of pipe 4 are 3#~9#, total horsepower is 140+140+140+140+140+140+112=952 ≤1040, pipe 4 size is Φ34.9/Φ19.1, model of branch joint e: DIS-540-1H

8).Subordinate indoor units of pipe 3 are 2#~9#, total horsepower is 140+140+140+140+140+140+140+112=1092≤1340, pipe 3 size is Φ41.3/Φ19.1, model of branch joint d : DIS-1344-1H

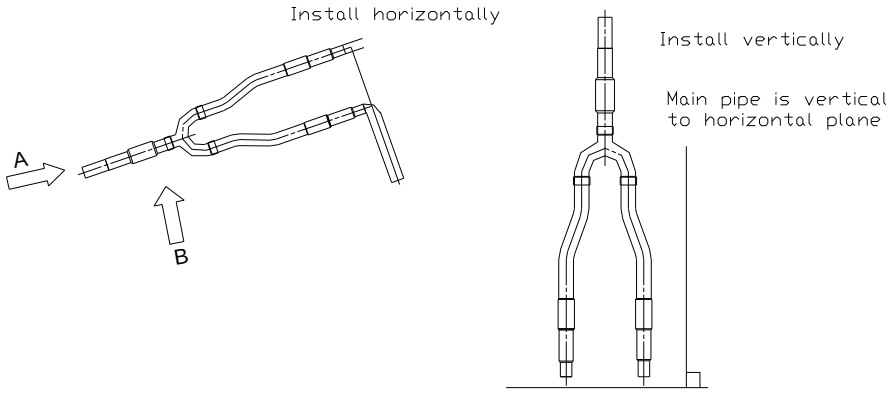
9).Pipe2 is the main pipe; the size of pipe 2 and branch c refer to the outdoor unit. refer to Table 4-7, pipe 2 size is Φ41.3/Φ22.2, model of branch joint c : DIS-1344-1H

Note: Y type branch joint a, b must be the level laying, otherwise can cause the cold intermediary assignment to be uneven! And parallel outdoor unit must be in the identical altitude.

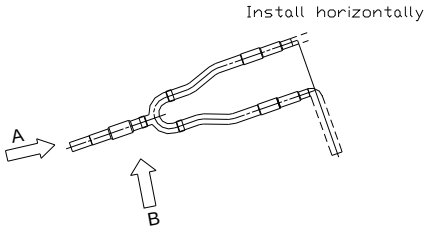
4.3 Precautions:

4.3.1 Refrigerant pipe must use the pipe with specified diameter.

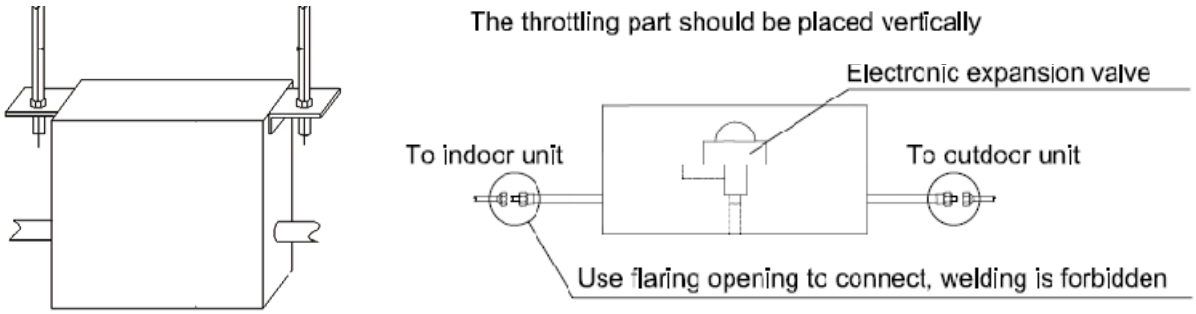
4.3.2 Branch Part should be installed in horizontal mode or vertical mode.



4.3.2 Y shape three-way pipe should be installed in horizontal mode with ground.



4.3.4 Horizontal installation of throttling unit (throttling unit is an external unit, so it need be connected on site)



Caution:

a. Install the throttling part upright, and ensure that it does not incline or is reversed.

b. Use two spanners to connect the electronic throttling part with the pipes of the indoor and outdoor units, so as to avoid the copper pipe from deforming or getting broken.

c. Use flaring opening to connect the electronic throttling part with the pipes of the indoor and outdoor units. Do not use welding for the connection, because the heat caused during the welding process will be transferred to the electronic expansion valve via the copper pipe, which may damage the electronic expansion valve.

d. Pay attention to the connection direction (refer to the label on the electronic throttling part).

e. For the installation size of the electronic throttling part, see the above figure.

4.3.5 Refrigerant fastness, the Refrigerant fastness, the distance between the supports of the cross direction tube (copper tube):

Table 4-12

Nominal diameter	Below 16	16—25	Above 32
Max. Distance (m)	1.0	1.5	2.0

4.3.6 Calculation of the pipe length

(1) Available length of pipe = pipe length + the amounts of branch × branch equivalent length +the amounts of elbow × elbow equivalent length.

(2) Conversion of the branch equivalent length: Convert into the direct pipe length according to branch part 0.5m/l

(3) Conversion of elbow equivalent length.

Table 4-13

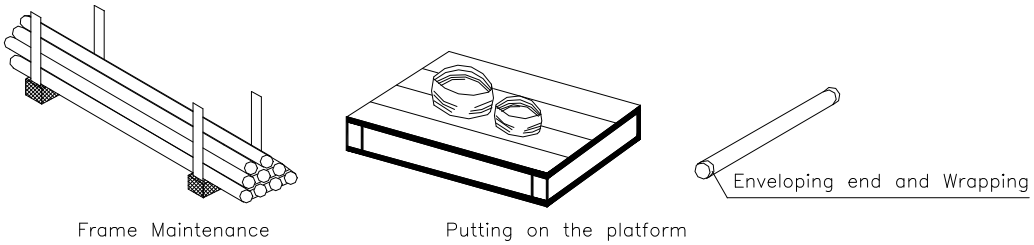
Liquid pipe dimension	Φ6.35	Φ9.5	Φ12.7	Φ15.9	Φ19.0	Φ22.0	Φ25.0	Φ28.6	Φ38.0	Φ45.0	Φ54.0	Φ67
Junction(90°elbow)	0.1	0.15	0.2	0.25	0.3	0.4	0.45	0.5	0.55	0.6	0.65	0.7

4.4 Installation work of Refrigerant pipe

4.4.1 Protection of Refrigerant pipe material

(1) Transportation and storing of refrigerant pipe

When transporting the pipes, please protect the pipes from wending and distortion. Please place a cap at the open end of the pipe in order to prevent water and mud entering, and store in the appointed site.

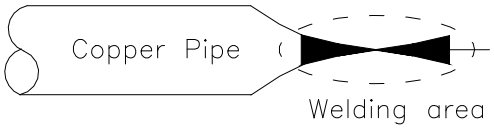


(2) All the open tips of the pipes need to be protected. The best feasible means is Enveloping End, and you can select the easy means of Wrapping. Refer to the following table to select the means used in different sites.

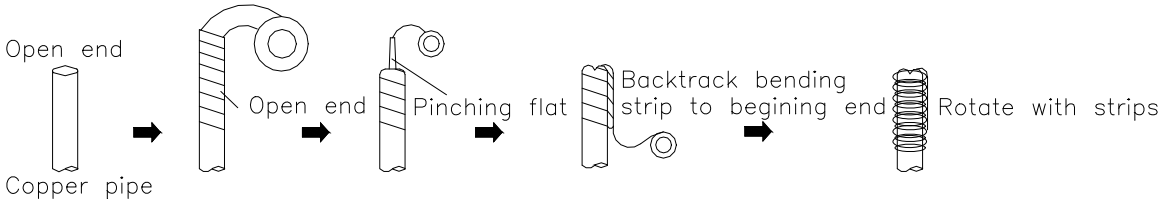
Table 4-14

Site	Period	Maintenance Means
Outdoor	Above three months	Envelop End
	Below three months	Envelop End or Wrapping
Indoor	No limit	Envelop End or Wrapping

① Envelop End: Welding the leak while clamping the end of the pipe.

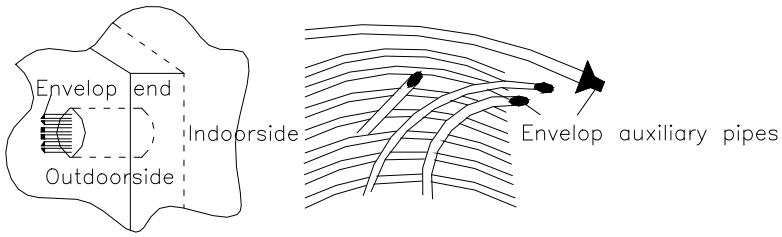


② Wrapping: Wrapping the pipe with polyethylene insulation tape.



③ The following operation should be noted:

●When putting the pipe through the hole, filth can easily enter into the pipe.



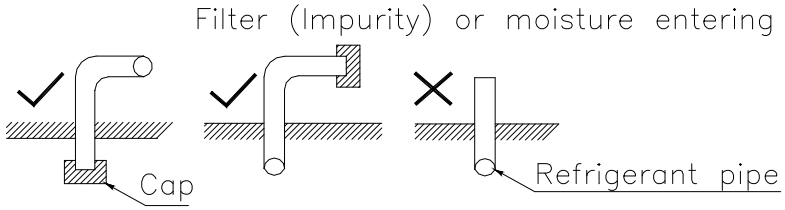
●When the pipe is outside, rainwater can easily enter into the pip, especially when the pipe is placed vertically.

(3) Precautions:

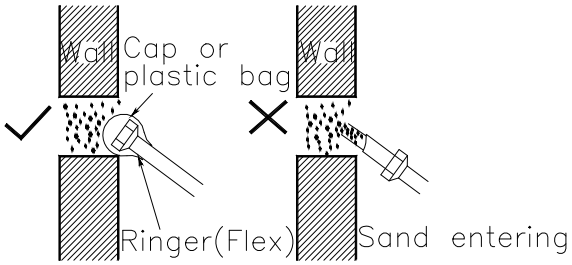
① Protect the open end of the pipe against moisture, dust and litter.

●Before finishing pipe connection, place a cap at the open end of the pipe.

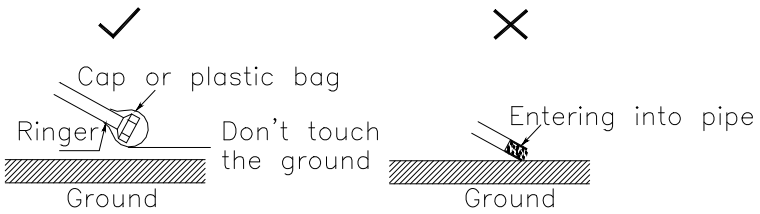
●Try to make the open end of the pipe thwart or downward.



② A cap must be placed on the end of the pipe when the pipe crosses the hole in the wall.

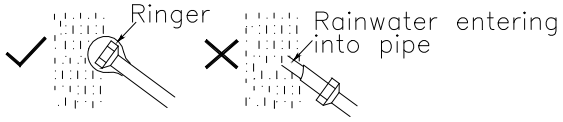


③ Don’t place the pipe on the ground directly or scratch with the ground.



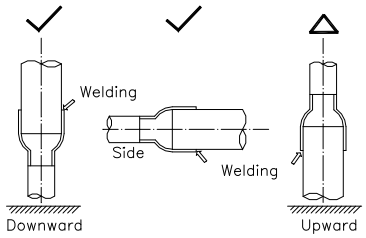
Cut the pipe and remove burrs with the cut surface downward.

Be sure to place a cap when raining.



4.4.2 Welding

⑴ Be sure to weld horizontally or downward, not upward.



⑵Pay attention to the installation direction and angle to prevent oil-return or oil-accumulation..

⑶ It's necessary to charge nitrogen when welding.

① Be far away from fire and prepare fire extinguishers and water to prevent fire on field.

② Be careful not to injure people.

③ Confirm the proper clearance between pipe and connector..

④ Check if the supporting structural members are strong enough.

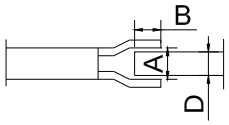
- The traverse distances between supporting structural members are as follows:

Table 4-15

Diameter (mm)	Below 20	25~40	50
Max. Distance (m)	1.0	1.5	2.9

- Min. inserting depth and clearance between connectors. Unit: mm

Table 4-16

	Out .Diameter. (D)	Min. Inserting depth (B)	Clearance (A~D)
	5 < D < 8	6	0.050~0.21
	8 < D < 12	7	
	11 < D < 16	8	0.050~0.27
	16 < D < 25	10	
	25 < D < 35	12	0.050~0.35
	35 < D < 45	14	

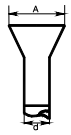
4.4.3 Flare Connection

(1) Before flaring, the auxiliary pipe must be annealed.

(2) Use incision machine.

(3) Dimension:

Table 4-17

Shape	Diameter	O.D.	A
	3/8"	9.5	0.05—0.21
	1/2"	12.7	
	5/8"	15.9	0.05—0.27
	3/4"	19.1	

(4) Smear oil at flaring part.

① Be careful to get rid of burr.

② Use two torques.

③ Use proper torque to fasten nut.

Table 4-18

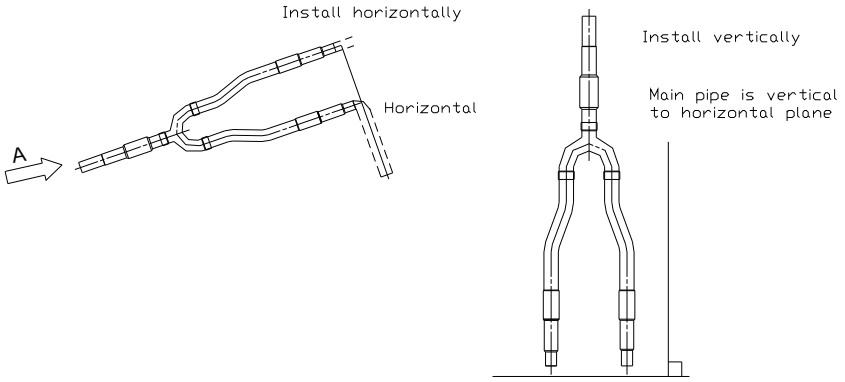
Dimension	Torque	
	(kgf ·m)	(N·cm)
1/4"(Φ6.4)	144—176	1440—1720
3/8"(Φ9.5)	133—407	3270—3990
1/2"(Φ12.7)	504—616	4950—6030
5/8"(Φ15.9)	630—770	6180—7540
3/4"(Φ19.0)	990—1210	9270—11860

4.4.4 Laying

(1) Laying the refrigerant pipes

① Mark the system clearly in every distance to prevent wrong connection.

② The plane where the two branches locate should be parallel to the horizontal plane, or the main pipe of the branch part is vertical to the horizontal plane, which can avoid bad effect due to uneven distribution of gas and liquid.



(2) Protection of outdoors refrigerant pipes

Sudden dandification also should be considered except heat-insulated layer. If the length of bare part is over 1m, a buckle-board must be added to the bare part.

(3) Laying principle of MDV refrigerant pipes

① Centralized laying, laying along the wall, and trying to make full of use of corridor.

② After finishing laying, binding up the refrigerant pipes with white binding-strap. After finishing winding-up every pipe separately, please try to binding up all pipes together according to the diameters and the degree of tightness should be based on no feeling of flexible.

③ When installing the connection pipes and electric wires(power wire, control wire), they should be laid along the wall, turn the corner logically, flat and straight, parallel with each other and packed together. And try to avoid striding over and blocking the traffic.

④ The connection pipes and electric wires should be as short as possible.

⑤ Try to bind up all pipes and no bareness is allowed at the connecting part.

(4) Precautions about laying refrigerant pipes

① Pulling pipe: Mark the system No. in the pipes to prevent wrong connection.

② Make sure the support of the pipes is firm enough.

4.4.5 Refrigerant pipe Flushing

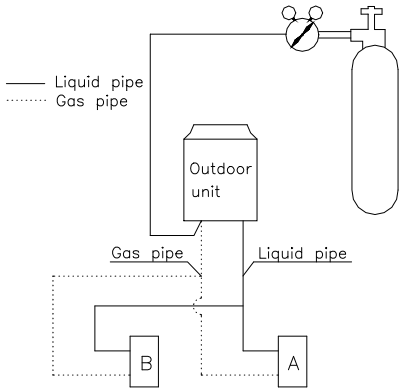
Refrigerant pipe flushing is a method to eliminate filter. It has three main functions:

- When nitrogen is insufficient, flushing can eliminate oxide air bubble.
- When the end of the pipe can't seal well, flushing can eliminate filter and humidity.
- Flushing can check the indoor/outdoor pipe connection.

Main procedure is as the following:

(1) Install pressure modulation valve at the nitrogen cylinder. And the gas used must be nitrogen. Carbon Dioxide will probably condense. And Oxygen will probably cause explosion.

(2) Use charge pipe to connect pressure modulation valve and outdoor liquid pipe.



(3) Jam well all the connection part in liquid side except indoor unit A.

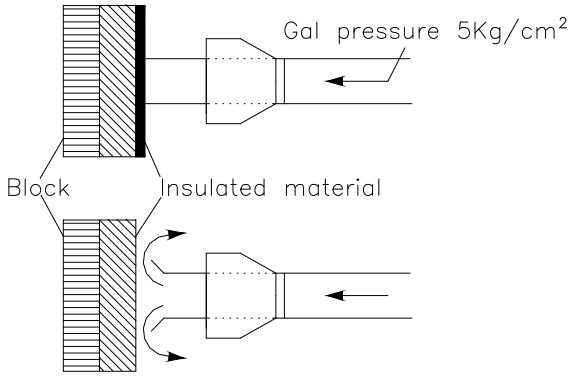
(4) Open the valve of nitrogen cylinder to 5kgf/cm^2.

(5) Check if there is nitrogen in liquid pipe of indoor unit A.

(6) Flushing

① Use the insulating material in hand to resist the nozzle of gas main pipe of the indoor unit.

② When the pressure can't be resisted, release the insulating material quickly (flushing for the first time), then use the insulating material to resist the nozzle again (flushing for the second time).



③The dunghill can be checked by putting a piece of cloth in the nozzle loosely. Occasionally, some dampness can be found, please dry the pipe thoroughly. Do as follows:

- Scouring the inner part of the pipes with nitrogen until no dampness.
- Do the vacuum drying procedure (see the MDV refrigerant pipes vacuum drying in detail)

(7) Close the nitrogen main valve.

(8) Repeat the above operations.

(9) After finishing flushing the liquid pipes, then flushing the gas pipes.

4.4.6 Refrigerant pipe Pressure Test

(1) Adding pressure operation

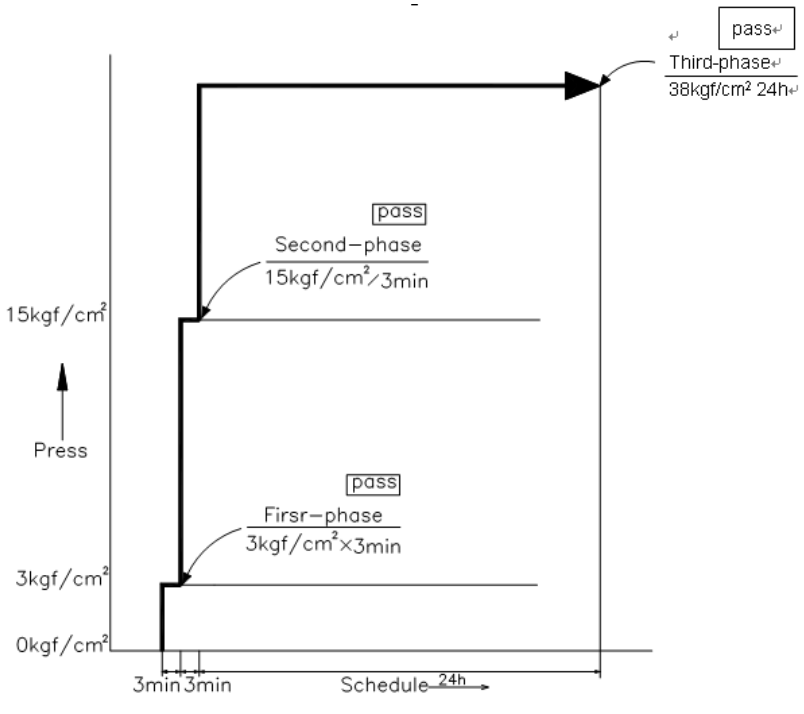
① During pressure test, the valves on gas side and liquid side should be full-closed.
Because nitrogen may enter into the outdoor circulation system, strengthening the valves before adding pressure operation.

② For every refrigerant system, add pressure slowly and orderly from gas and liquid side.

③ And the gas used must be nitrogen. Carbon Dioxide will probably condense. And Oxygen will probably cause explosion.

④ The time must be over 24h in the third-phase of adding pressure.

⑤ Sketch map of adding pressure.



(2) Control diagram for adding pressure by stages

Table 4-19

No.	Phase (add pressure by stages)	Standard
1	Add pressure 3.0kgf/cm^{2}G for more than 3 minutes to check big leakage.	No pressure falling
2	Add pressure 15.0kgf/cm^{2}G for more than 3 minutes to check big leakage.	
3	Add pressure 38.0kgf/cm^{2}G for more than 24 hours to check small leakage.	

(3) Observe the pressure

① Add and keep pressure 38.0kgf/cm^{2}G for more than 24 hours, pass if there's no pressure drop. If the pressure falls, it should be corrected. After that, if the pressure is still lower than that when adding pressure, the leakage should be checked out and corrected.

② Correcting method

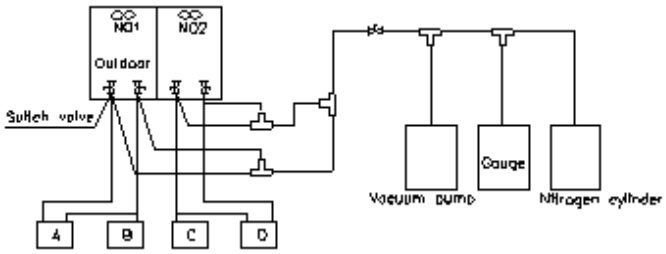
If there's 1℃ difference in temperature, there will be 0.1kgf/cm^2 difference in pressure.

Correcting formula: actual value = pressure in the stage of adding pressure + (temperature in the stage of adding pressure – observed temperature) x 0.1 kgf/cm^2

Compare the correcting value and adding pressure value to see whether the pressure falls.

③ Look up the leakage point in three phases when the pressure falls.

- Check the leakage by ears---can hear loud noise of the leakage.
- Check the leakage by hands---put the hands in the pipe connection to check the leakage.
- Check the leakage by suds---the leakage point will emit air bubble.
- Check the leakage by halogen detector.
- Use halogen detector when finding the tiny leakage point or pressure falls but no leakage point can be found during the adding pressure test.
- Place the nitrogen under 3.0 kgf/cm^2.
- Add fluorine to the point 5.0 kgf/cm^2 (mixed state of fluorine and nitrogen).
- Check by halogen detector, alkyl detector, electric detector and so on.
- If no leakage can be found, continue to add pressure to 38.0 kgf/cm^2, then check again.



(4) Precautions

① The maximum pressure in gas proof test should not exceed 38.0 kgf/cm^2.

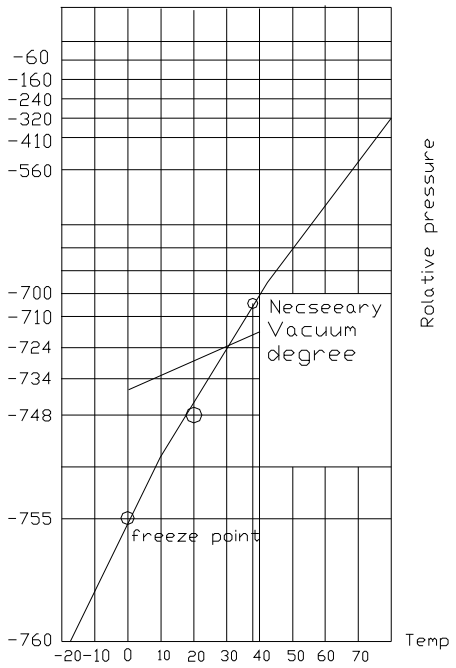
② If the pipe is too long, check by sections.

- Indoor side
- Indoor side + Vertical pipe
- Indoor side+ Vertical pipe + Outdoor side

4.4.7 Vacuum Dry for Refrigerant pipe

(1) Vacuum Dry: Use vacuum pump to change the moisture (liquid) into steam (gas) in the pipe and discharge it out of the pipe to make the pipe dry. Under one atmospheric pressure, the boiling point of water (steam temperature) is 100℃. Use vacuum pump to make the pressure in the pipe near vacuum

state, the boiling point of water falls relatively. When it falls under outdoor temperature, the moisture in the pipe will be vaporized.



(2) Selection of vacuum pump

① Select the vacuum pump. (Normally the anticipative demand achieves -755mmHg)

② Big discharge volume (over 40l/min). Check the vacuum calculator before operation to make sure its measure range achieve below -755mmHg.

Table 4-20

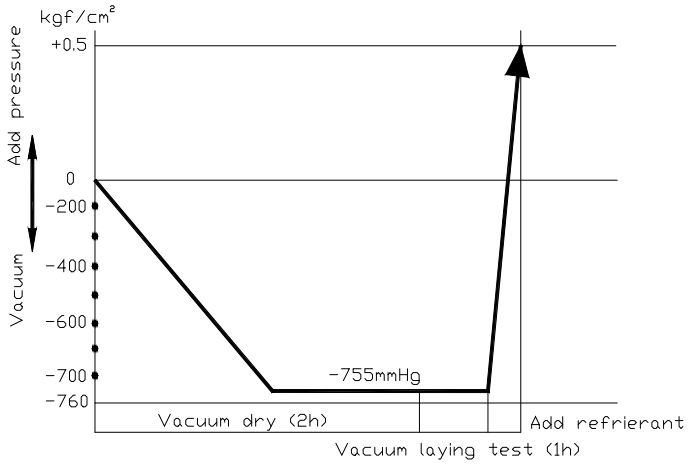
Boiling point of water (℃)	Gas pressure (mmHg)	Vacuum degree (mmHg)
40	55	-705
30	36	-724
26.7	25	-735
24.4	23	-737
22.2	20	-740
20.6	18	-742
17.8	15	-745
15.0	13	-747
11.7	10	-750
7.2	8	-752
0	5	-755

⑶ Vacuum dry procedure

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

① Common vacuum dry procedure

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



② Special vacuum dry procedure

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

③Vacuum destroy for the second time …… Fill nitrogen to 0.5Kgf/cm2

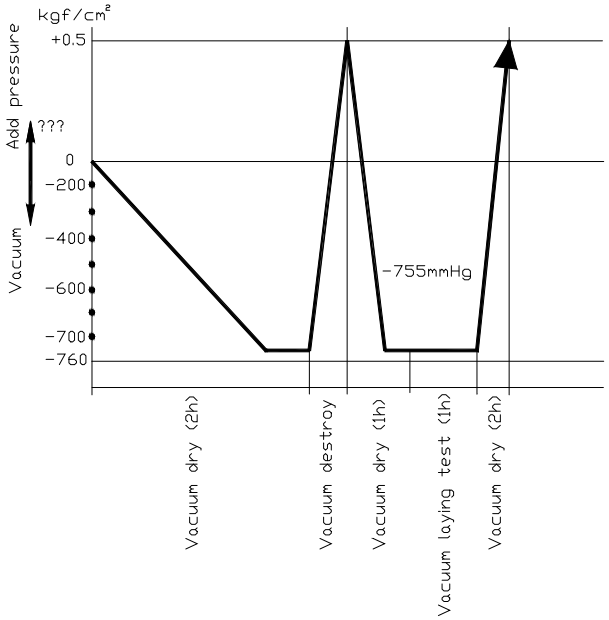
Because nitrogen is for drying gas, it has vacuum drying effect during vacuum destroy. But if the moisture is too much, this method can't dry thoroughly. So, please pay more attention to prevent water entering and forming condensation water.

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

Determinant: Pass if achieving below -755mmHg. If -755mmHg can't be achieved in 2h, repeat procedure ③ and ④.

⑤ Vacuum placing test …… 1h

⑥ Sketch map of special vacuum dry procedure



4.5 Additional Charge of Refrigerant

Procedure

Calculate refrigerant volume according to liquid pipe length → Recharge refrigerant

(1)The refrigerant needed by the pipes installed on fields is not filled in the factory.
After finishing installation, add refrigerant when the length of liquid pipe on field is over 0 m.

(2)Calculation

Pipe type		Formula	Value
Liquid pipe	P1=Total real length of Φ6.35 liquid pipe (m)	V1=P1×0.022 kg/m	V1
	P2=Total real length of Φ9.53 liquid pipe (m)	V2=P2×0.060 kg/m	V2
	P3=Total real length of Φ12.7 liquid pipe (m)	V3=P3×0.110 kg/m	V3
	P4=Total real length of Φ15.9 liquid pipe (m)	V4=P4×0.170kg/m	V4
	P5=Total real length of Φ19.0 liquid pipe (m)	V5=P5×0.250kg/m	V5
	P6=Total real length of Φ22.0 liquid pipe (m)	V6=P6×0.350kg/m	V6
	P7=Total real length of Φ25.0 liquid pipe (m)	V7=P7×0.520kg/m	V7
	P8=Total real length of Φ28.6 liquid pipe (m)	V8=P8×0.680kg/m	V8
Branch joint	B1=quantity of branch part of DIS-371-1T	V9=B1×0.100 kg	V9
	B2=quantity of branch part of DIS-540-1H	V10=B2×0.145 kg	V10
	B3=quantity of branch part of DIS-1344-1H	V11=B3×0.190 kg	V11
Y-shape Three-way pipe	Y1= quantity of branch	V13=Y1×0.230 kg/m	V13
Total refill volume (kg)		V=V1+V2……V12+V13	V

- Write the added volume in the outdoor nameplate.
- The added volume must be measured with electron scale.
- The total real length includes two parts: one is total pipe length; the other is the equivalent length of curves or elbows.

5. Processing & Installation of Drainage Pipe

5.1 Gradients and Supporting

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

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

Table 4-22

	Diameter	Distance between the prop stands
Hard PVC pipe	25~40mm	1.5~2m

(3) Precautions

① The diameter of drainpipe should meet the drainage requirement at least.

② the drainpipe should be heat-insulated to prevent atomization.

③ Drain pipe should be installed before installing indoor unit. After powering on, there is some water in water-receiver plate. Please check if the drain pump can act correctly.

④ All connection should be firm.

⑤ Wipe color on PVC pipe to note connection.

⑥ Climbing, horizontal and bending conditions are prohibited.

⑦ The dimension of drainpipe can't less than the connecting dimension of indoor drainpipe.

⑧ Heat-insulation should be done well to prevent condensation.

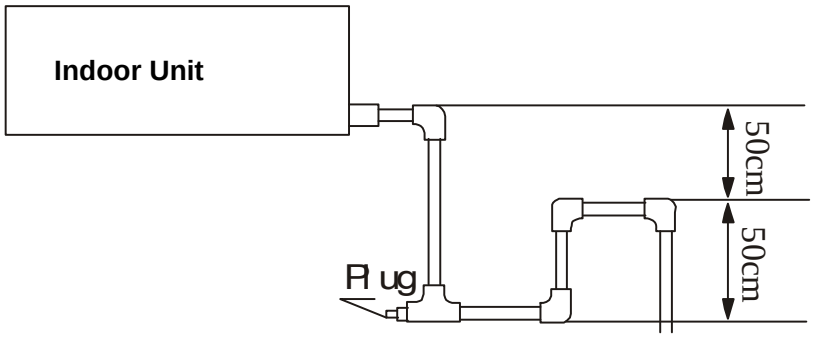
⑨ Indoor units with different drainage type can't share one convergent drainpipe.

5.2 Drainpipe Trap

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

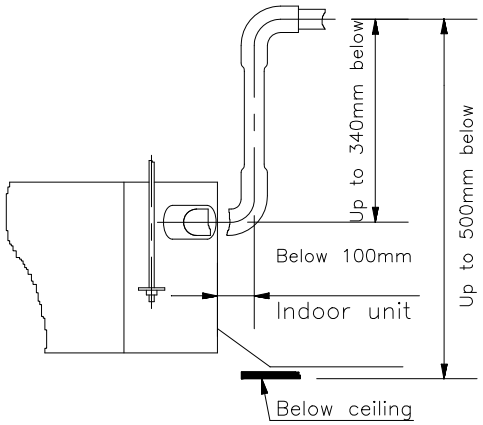
(2) Every indoor unit needs one drainpipe trap.

(3) A plug should be designed to do cleaning.



5.3 Upward drainage (drain pump)

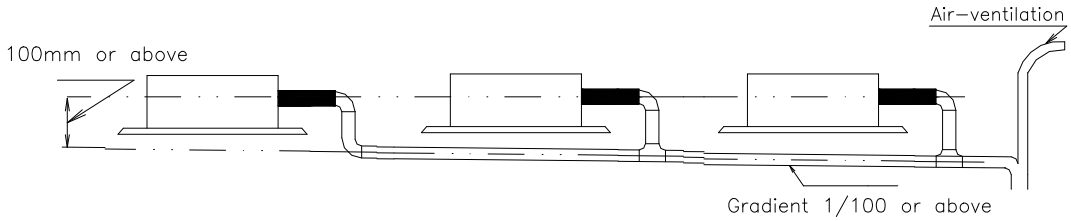
To ensure the gradient 1/100, the drainpipe can be lifted to 340mm. After upwards, place downwards, or it will cause malfunction to drain pump.



5.4 Convergent drainage

(1) The number of indoor units should be as small as possible to prevent the traverse main pipe overlong.

(2) Indoor unit with drain pump and indoor unit without drain pump should be in different drainage system.



(3)selection the diameter

Number of connecting indoor units → Calculate drainage volume → Select the diameter

Calculate allowed volume =Total cooling capacity of indoor units (HP) ×2 (l/ hr)

Table 4-23

Model	Allowed volume(lean 1/100) (l/ hr)	I.D. (mm)	Thick
Hard PVC	~≤14	¢ 25	3.0
Hard PVC	14 < ~≤88	¢ 30	3.5
Hard PVC	88 < ~≤334	¢ 40	4.0
Hard PVC	175 < ~≤334	¢ 50	4.5
Hard PVC	334 < ~	¢ 80	6.0

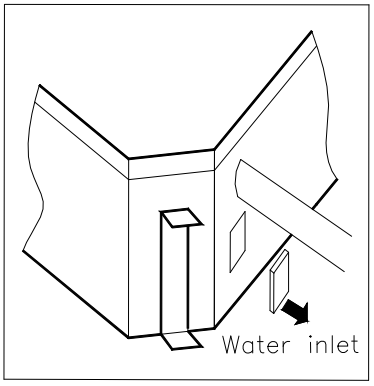
5.5 Drainage test

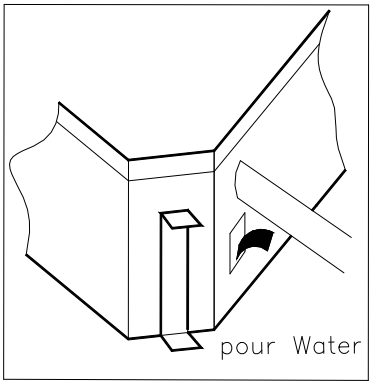
(1) Drainage without drain pump

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

(2) Drainage with drain pump

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





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

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

- Stop the air conditioner. After 3 minutes, check if it has abnormity. If the collocation of drainpipes is illogical, the water will flow back overfull, which will cause the alarm lamp flashes, even circumfluence from the water plate.
- Keep on pouring water until it gives an alarm signal for high water level, check if the pump drains water at once. If the water level can't fall below the alarmed water level after 3 minutes, the air conditioner will stop (means this indoor unit stops, stand-by, but the outdoor unit still work if there is capacity requirement). Turn off the power and drain the remained water, then turn on the air conditioner.

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

6. XRV Insulation Work

6.1 Insulation material and thickness

(1) Insulation material

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

Example: Heat pump type----Heat-resistant Polyethylene foam (withstand above 120℃)

Cooling only type---- Polyethylene foam (withstand above 100℃)

(2)Thickness choice for insulation material

Insulation material thickness is as follows:

Table 4-24

	Pipe diameter (mm)	Adiabatic material thickness
Refrigerant pipe	Φ6.4—Φ25.4	10mm
	Φ28.6—Φ38.0	15mm
	Φ38.0—Φ67.0	20mm
Drainage pipe	Inner diameterΦ20—Φ32	6mm

6.2 Refrigerant pipe insulation

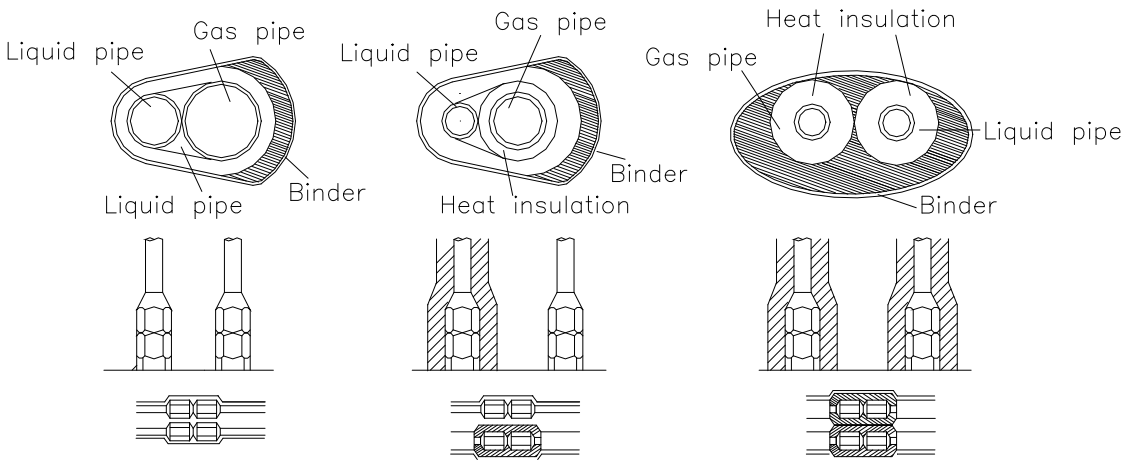
(1) Work Procedure

① Before laying the pipes, the non-jointing parts and non-connection parts should be heat insulated.

② After the gas proof test is eligible, the jointing area, expanding area and the flange area should be heat insulated

(2) Insulation for non-jointing parts and non-connection parts.

Wrong	Right	
Gas pipe and liquid pipe should not be put together to insulate	Insulate the gas pipe (Cooling only)	Insulate the gas pipe and the liquid pipe

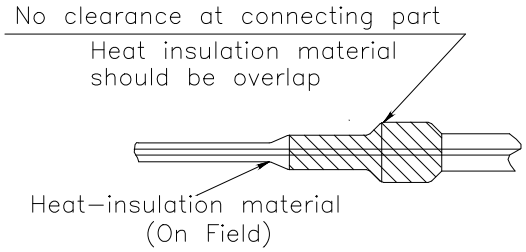


For construction convenience, before laying pipes, use insulation material to insulate the pipes to be deal with, at the same time, at two tips of the pipe, remains some length not to be insulated, in order to be welded and check the leakage after laying the pipes.

(3) Insulate for the jointing area, expanding area and the flange area

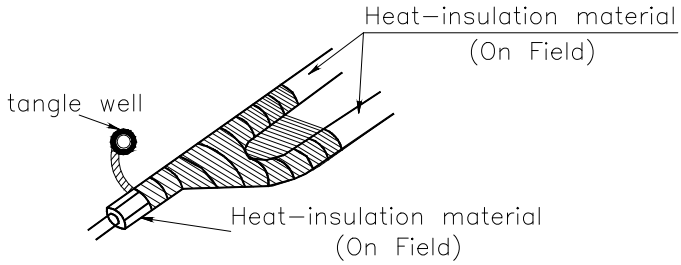
① Insulate for the jointing area, expanding area and the flange area should be done after checking leakage of the pipes

② Make sure there's no clearance in the joining part of the accessorial insulation material and local preparative insulation material.



(4) Enswathe disposal

After insulation of the pipes, do the enswathe disposal with binding belt, make sure it's tight.



6.3 Drainage pipe insulation

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

6.4 Note

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

(2) The gas and liquid pipe should be heat insulated individually, the connecting part should be heat insulated individually.

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

7. Pipeline Installation

7.1 Pipeline facture

(1) The material of the pipeline

Standard: lubricity inside; small friction resistance; not absorbing moisture; incombustibility; erosion resistance; longevity; lightness; good sealing; no accumulation; easily cleaning. Normally, we can select galvanization steel, aluminum, and plastic. For short pipeline, we can also select aluminum foil board.

(2) The process of the piping

The process of the piping should meet the requirements of the design. The process can be done in subsection. And every subsection's length is about between 1.8m and 4m. In order to improve the pipeline's rigid, a rib often be added at the outer surface. The pipeline usually adopts the flange to connect and add the asbestos washer with thickness 3mm to prevent air leakage. At present, the sealant and adhesive tape are also used to seal.

(3) The shape of the pipeline

①Type of the pipeline

The pipeline has ground and directs shape. The compare is as follows:

Ground pipeline	Square pipeline
less material, need large space, its' bending pipe and three-way pipe need long distance	need small space, can be equipped easily, adopt direct pipeline with the rate below 2.5 between length and width

② Specification of the pipeline

Ground pipeline should first adopt the basic series; the ratio of the long side and the short side of the direct pipeline should not be larger than 4:1. Pipeline should be outer diameter or outer border. Brick and concrete pipeline should be inner diameter or inner border.

Table 4-25

Pipeline diameter					
Basic series	Accessorial series	Basic series	Accessorial series	Basic series	Accessorial series
100	80/90/100	300	300/320	900	850/900
120	110/120	360	340/360	1000	950/1000
140	130/140	400	380/400	1120	1060/1120
160	150/160	450	420/450	1250	1180/1250
180	170/180	500	480/500	1400	1320/1400
200	190/200	560	530/560	1600	1500/1600
220	210/220	630	600/630	1800	1700/1800
250	240/250	700	670/700	2000	1900/2000
280	260/280	800	750/800		

(4) The thickness of the pipeline

The following table takes steel pipeline as an example, the other thickness of the pipeline material can be looked up in the correlative standard of the book <construction and accept criterion>

Table 4-26

Type Pipeline diameter (long border) dimension	Ground pipeline	Square pipeline	
		Middle and low pressure system	High pressure system
80—320	0.5	0.5	0.8
340—450	0.6	0.6	
480—630	0.8	0.6	
670—1000	0.8	0.8	
1120—1250	1.0	1.0	1.0
1320—2000	1.2	1.0	1.2
2500—4000	1.2	1.2	1.2

7.2 Pipeline Installation

(1) When the pipeline and its accessories pass through wall, board and roof, holes should be reserved in advance, and the dimension and location should meet the design demand.

(2) The configure of the spot pipeline connection should not reduce its valid section.

(3) The hanger can't be set at the air-outlet, valve, and examination-port and automatic control machine. And the suspender isn't suitable to be fixed at the flange.

(4) The configure of the spot pipeline connection should not reduce its valid section.

Table 4-27

	Horizontal installation	Vertical installation
Unconcealed Installation	δ≤3mm/m Δ≤20mm	δ≤2mm/m Δ≤20mm
Concealed Installation	Installation correct, no obvious tolerance	

δ—tolerance /meter Δ—total tolerance

(5) The hanger of insulated pipeline should set outside the insulation layer and can't injure the insulation layer.

(6) The distance between hangers:

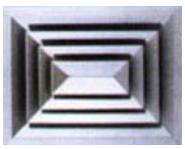
Table 4-28

	Diameter (long border) dimension< 400mm	Diameter (long border) dimension≥ 400mm
Horizontal distance	≤4mm	≤3mm
Vertical distance	≤4mm，the part for fixing of every vertical pipeline should not less than 2	

7.3 Posit the air-outlet

(1)Type

Familiar outlet type: Louver outlet, disperser and linear outlet.

Louver outlet	Linear outlet
	 

(2) Specification

The specification of the air-outlet should be based on outer-diameter and outer-line.

allowed tolerance of round air-outlet (mm)

Table 4-29

Diameter	≤250	>250
Allowed tolerance	0 ~ -2	0 ~ -3

allowed tolerance of rectangle air-outlet (mm)

Table 4-30

Diameter	<300	300 ~ 800	>800
Allowed tolerance	0 ~ -1	0 ~ -2	0 ~ -3
Diagonal length	<300	300 ~ 500	>500
Two diagonal length	≤1	≤2	≤3

(3) Posit the outlet

Air-outlet:

In the design and construction, no matter cooling and heating, cooling and heating are sent to places through air-outlet, so it's important to select the right air-outlet.

Many factors limit the selection of air-outlet, for example:

① Indoor fitment

② Airflow in the room

③ Installation and connection type of the air-outlet

The following issues should be noted:

① Try to assure the equality of the indoor parameters (especially the temperature)

② Prevent short-circuit of the air-inlet and air-outlet

③ prevent bolding cold air directly to people in summer

Air-inlet:

①The air-inlet shouldn't be set at places where people stays long to prevent short-circuit and open-circuit. If adopting side-sending, it is suitable to set at the same side of the air-outlet.

②For side air-inlet, normally, it is set under the same side. If adopting parallel air-sending, the air-inlet also is set underside mostly. In order to avoid dust and filter, the height from the underline of the air-inlet to the ground should at least keep 0.15m. For high big workshops, it is suitable to add air-inlet or discharge air-let to discharge surplus-heat.

③The distance from the air-inlet of the scatter setting to the wall should not less than half of the space between scatter settings.

Fresh air-let:

①Fresh air-let should be set at clean places and far away from discharge air-let.

②Fresh air-let should be set upside the discharge air-let.

③Fresh air-let should be set in the shade and avoid roof and west-wall. The distance from the ground is at least 2m and 1m in case of green ground. And shutter is needed under the air-let.

(4) Facture and installation

①Please use Midea's brand inlet panel.

②Set a static-pressure box in the outlet to eliminate some noise

③Pay attention to the insulation of pipeline and the condensing water in the outlet.

④The appearance of the air-outlet hasn't obvious impress, nick and spot. The color should be consistent and welding points should be lubricous.

⑤The match between inner sphere and outer sphere of sphericity air-outlet should rotate freely and isn't flexible after orientation.

⑥The diffusing loop and modulation loop of the scatter setting should be at the same axis and space distributing in radial direction should be even.

8. Electric Installation

※ Electric installation must be carried out according to National Standard.

※ This chapter is just for reference.

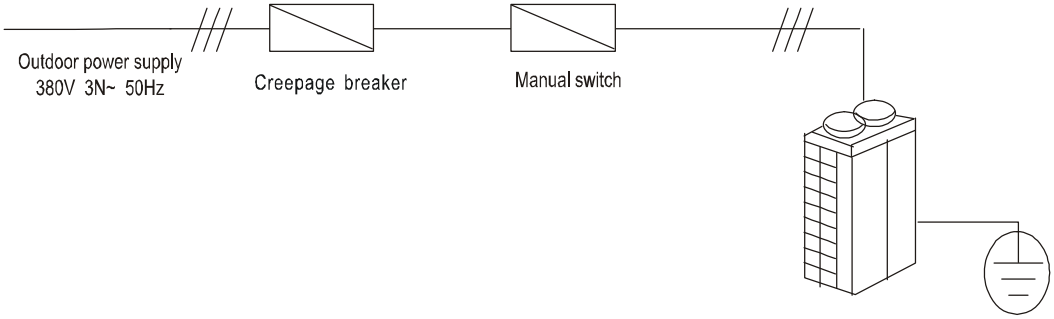
8.1 Brief Introduction

- Please select power supply for indoor unit and outdoor unit separately.
- The power supply should have specified branch circuit with leakage protector and manual switch.
- The power supply, leakage protector and manual of all the indoor units connecting to the same outdoor unit should be universal. (Please set all the indoor unit power supply of one system into the same circuit.)
- It is suggested to use 3-core shielded wire as signal wire between indoor and outdoor units, multi-core wire is unavailable.
- Please put the connective wiring system between indoor unit and outdoor unit with refrigerant piping system together.
- Please comply with relevant National Electric Standard.
- Power wiring should be done by professional electrician.

8.2 Power circuitry installation

8.2.1 Outdoors power supply wiring

(1) Separate Power Supply (without power facility)



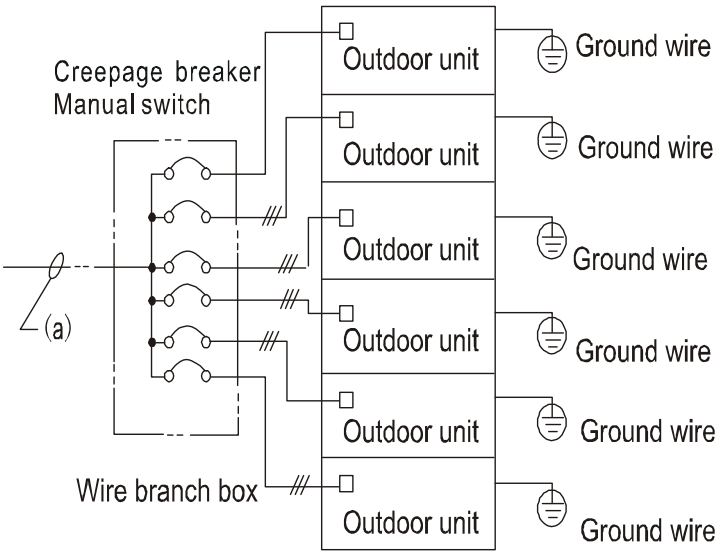
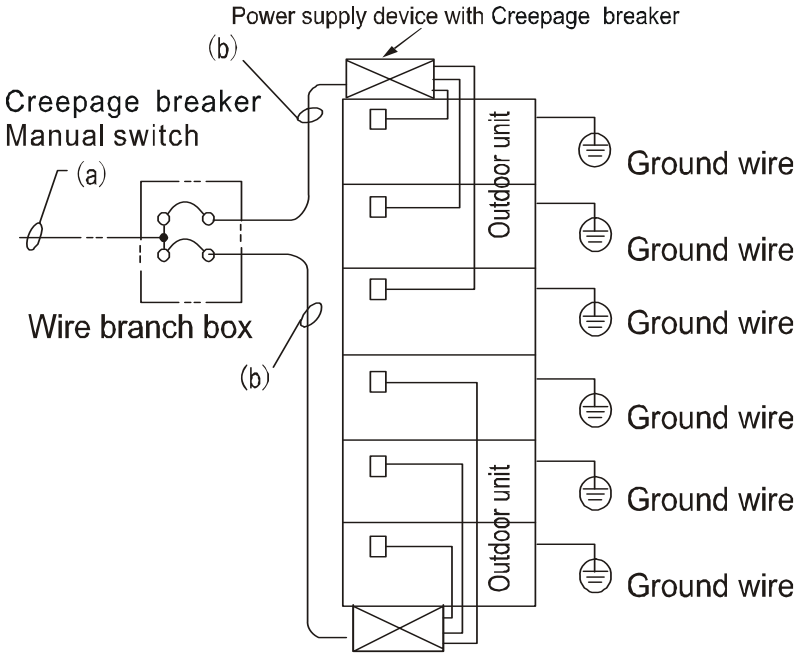


Table 4-31

Item / Model	Power supply	Minimum thickness (mm2) (wiring s of metal and synthetic resin pipe)		manual switch (A)		Creepage breaker
		Continuous wire length ≤ 20m (≤50m)`	Grounding wire	Capacity	Fuse	
HCSU 2501 XRV	380V 3N-50Hz	16(29) 25(46) 35(78)	16	60	50	100mA 0.1sec or less
HCSU 3001 XRV						
HCSU 3501 XRV						
HCSU 4001 XRV	380V 3N-50Hz		16	80	70	
HCSU 4501 XRV						

Note: The wiring diameter and the length in the table indicate the condition that the voltage dropping range is within 2%. If the length exceeds the above figure, please select the wire diameter according to relevant standard.

2) With power facilities



(3) Selection the dimension of the wiring.

Power wiring means the main power supply wiring (a) and the wiring between Wire Branch Box and outdoor unit. Follow the following methods to select the dimension of wiring.

a) The dimension of the main power wiring (a).

Calculate the total capacity of all outdoor units (HP) and according the following table to select the dimension of the wiring.

b) The dimension of branch wiring (b) between Wire Branch Box and outdoor unit.

In condition that no more than 4 outdoor units are combined, the dimension is the same as main power wiring. When more than 4 units are combined, the electric control box of power device is divided into two, and then selects the dimension of the wiring according to the following table.

Table 4-32

Total capacity (HP)	Mini. dimension of wiring (mm^2)		Total capacity (HP)	Dimension of wiring (mm^2)	
	Below 20 m	20 to 50 m		Below 20 m	20 to 50 m
8	10	25	38	70	95
10	10	25	40	70	95
12	16	25	42	70	95
14	25	35	44	70	95
16	25	35	46	70	95
18	25	35	48	70	95
20	25	35	50	95	120
22	35	70	52	95	120
24	35	70	54	95	120
26	35	70	56	95	120
28	35	70	58	95	120
30	50	70	60	95	120
32	50	70	62	95	120
34	50	70	64	95	120
36	50	70			

Note: the data in the above table is under the condition that the voltage decreases no more than 2%. If the length of wiring is more than the data in the diagram, please select wires according to certain standards.

(4) Selection the fuse and manual switch of wire branch box.

Table 4-33

Total capacity of outdoor units	Manual switch (A)	Fuse (A)		Total capacity of outdoor units	Manual switch (A)	Fuse (A)
10~14(HP)	100	75		37~47(HP)	300	250
15~18(HP)	100	100		48~50(HP)	300	300
19~28(HP)	150	150		52～64(HP)	400	400
29~36(HP)	200	200				

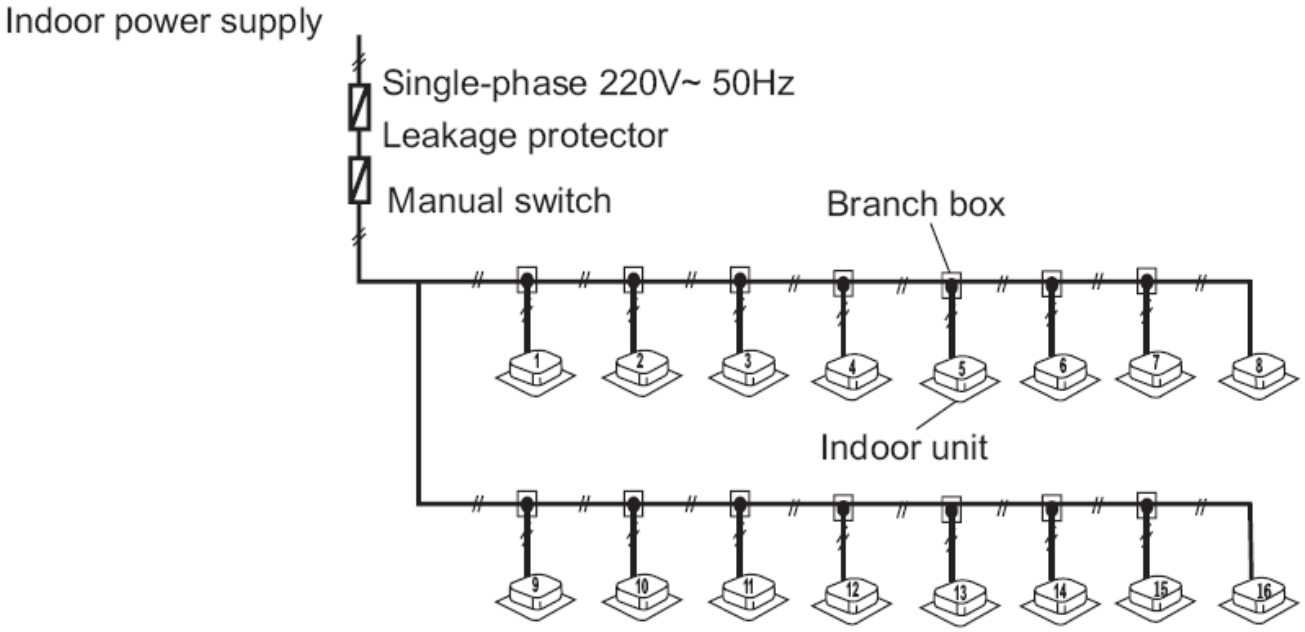
8.2.2 Indoor power supply wiring

The dimension of indoor power supply wiring

Table 4-34

Item / Model	Power supply	The minimal dimension of wiring (mm2)		manual switch （A）		Creepage breaker
		Continuous wire length ≤20m (≤ 50m)	Ground wire	Capacity	Fuse	30mA under 0.1sec
All indoor units	220V 1N-50Hz	2.5 (3.5)	φ1.6mm	30	15	

Note: The length in the table equals the value of power cord connecting parallel indoor units, indicating the condition that the voltage dropping range is within 2%. If the length exceeds the above figure, please select the wire diameter according to relevant standard.

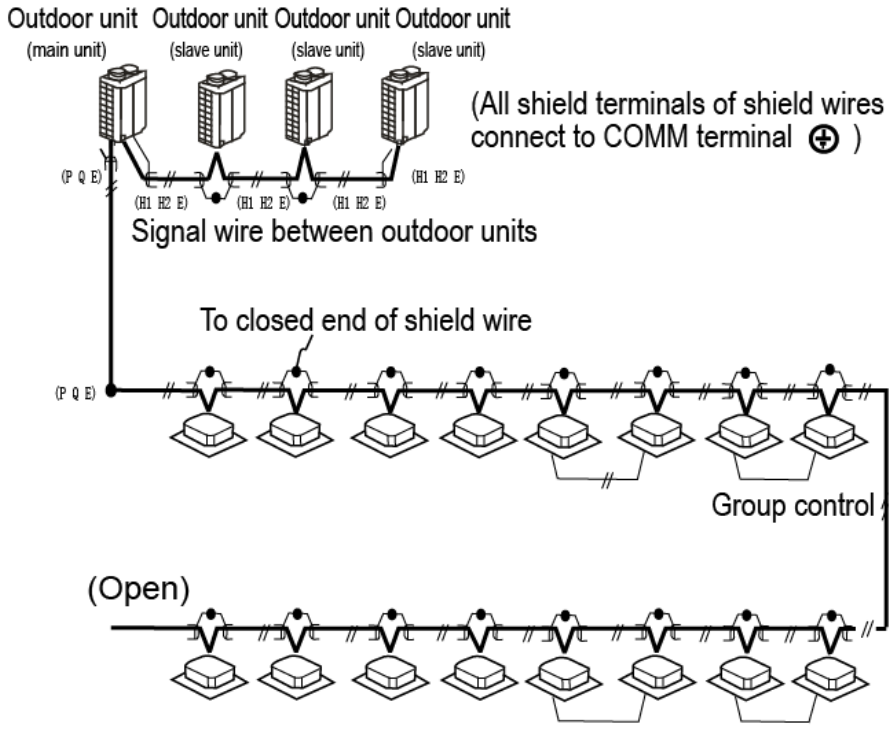


Note:

1. Set refrigerant piping system, signal wires between indoor-indoor unit, and that between outdoor-outdoor unit into one system.
2. Please do not put the signal wire and power wire in the same wire tube; keep distance between the two tubes. (Current capacity of power supply: less than 10A--300mm, less than 50A--500mm.)
3. Make sure to set address of outdoor unit in case of parallel multi-outdoor units.

8.2.3 Signal wire of indoor/outdoor unit

Signal wire of indoor/outdoor unit adopts 3-core shielded wire (≥0.75mm^2) which has polarity, please connect it correctly.



8.2.4 Selection wiring specification

The following wiring specification just aim at Fluorine resinous insulating wire, if use others, please Refer to the concerning national standard.

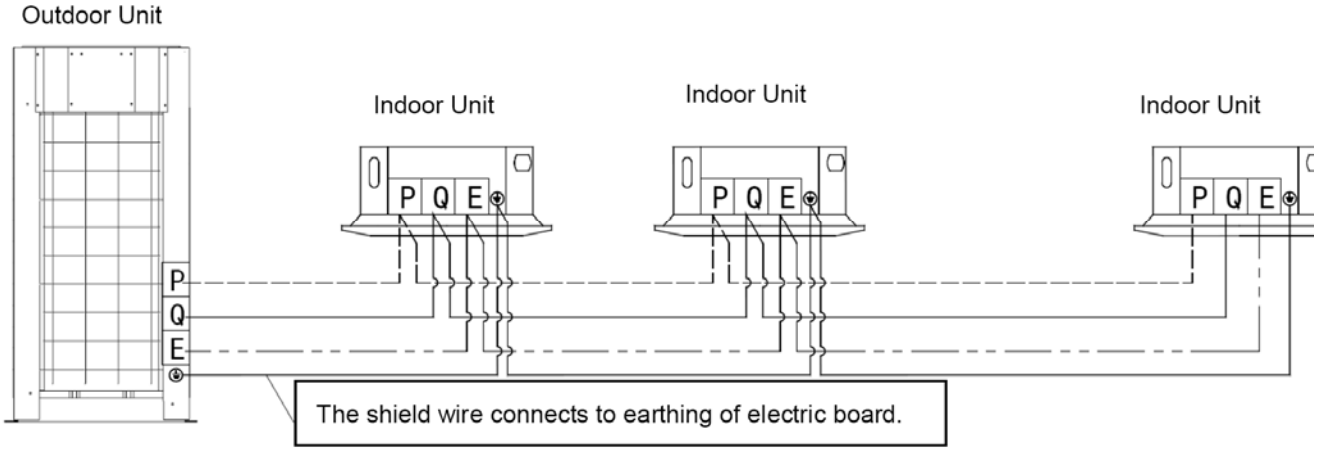
① Normal Fluorine resinous insulating wire

Model	Name
BV	Fluorine resinous insulating wire, copper-core
BLV	Fluorine resinous insulating wire, aluminum-core
BVR	Fluorine resinous insulating soft wire, copper-core
BVV	Fluorine resinous insulating wire, copper-core, round-type
BLVV	Fluorine resinous insulating wire, aluminum-core, round-type
BVVB	Fluorine resinous insulating wire, copper-core, flat-type
BLVVB	Fluorine resinous insulating wire, aluminum-core, flat-type
BV-105	Fluorine resinous insulating wire, copper-core, heat-endurance 105℃

Model	Name
RV	Fluorine resinous insulating connecting soft wire, copper-core
RVB	Fluorine resinous insulating connecting wire, copper-core, flat-type
RVS	Fluorine resinous insulating connecting wire, copper-core, twist-type
RVV	Fluorine resinous insulating connecting soft wire, copper-core, round-type
RVVB	Fluorine resinous insulating connecting soft wire, copper-core, flat-type
RV-105	Fluorine resinous insulating connecting soft wire, copper-core, heat-endurance 105℃

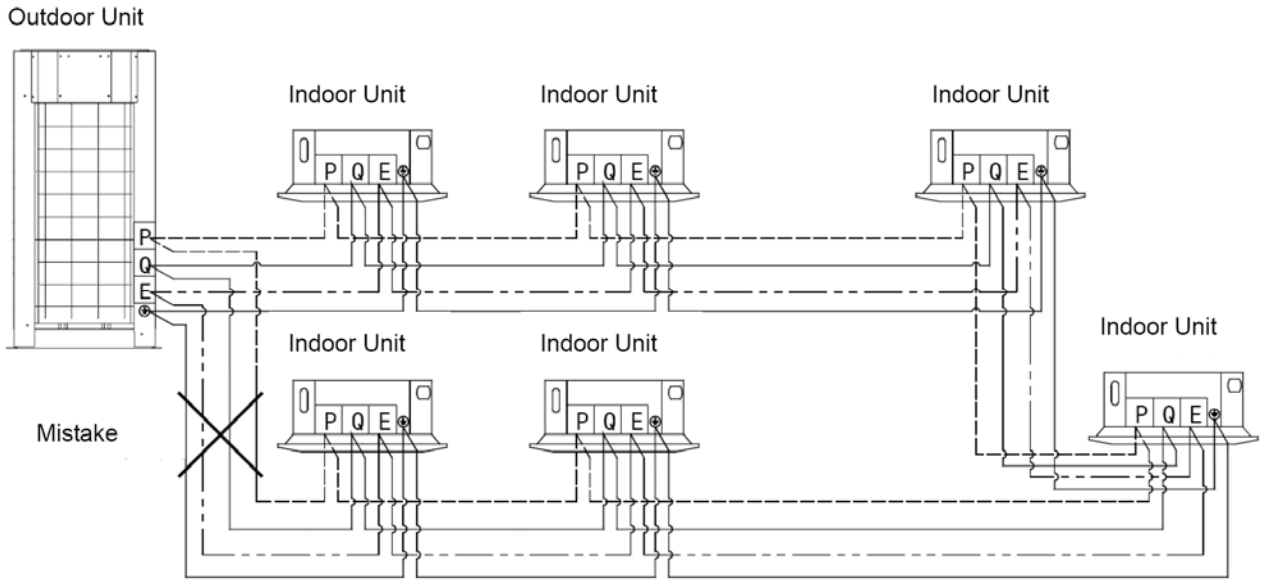
8.3 Control Wiring Connection Method

1) Correct connection



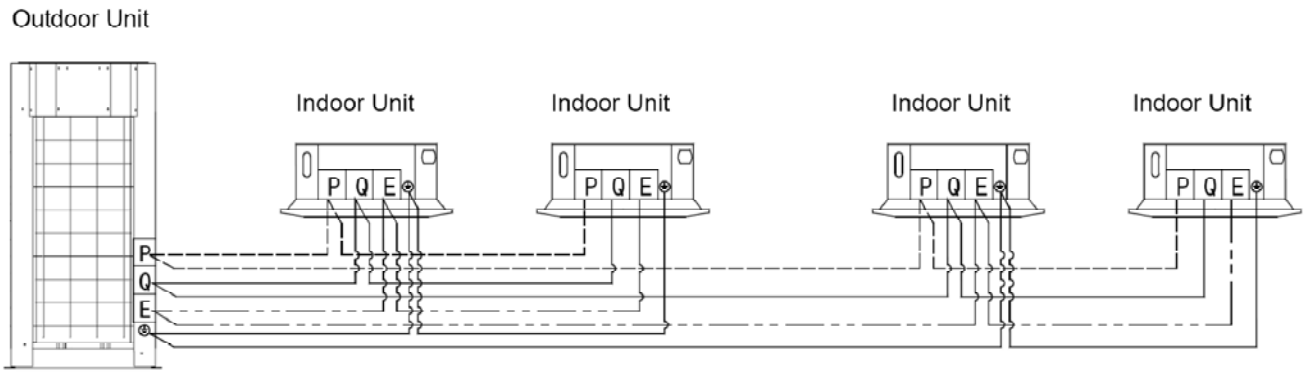
2) Typical wrong connection

a. Annular connection of signal line

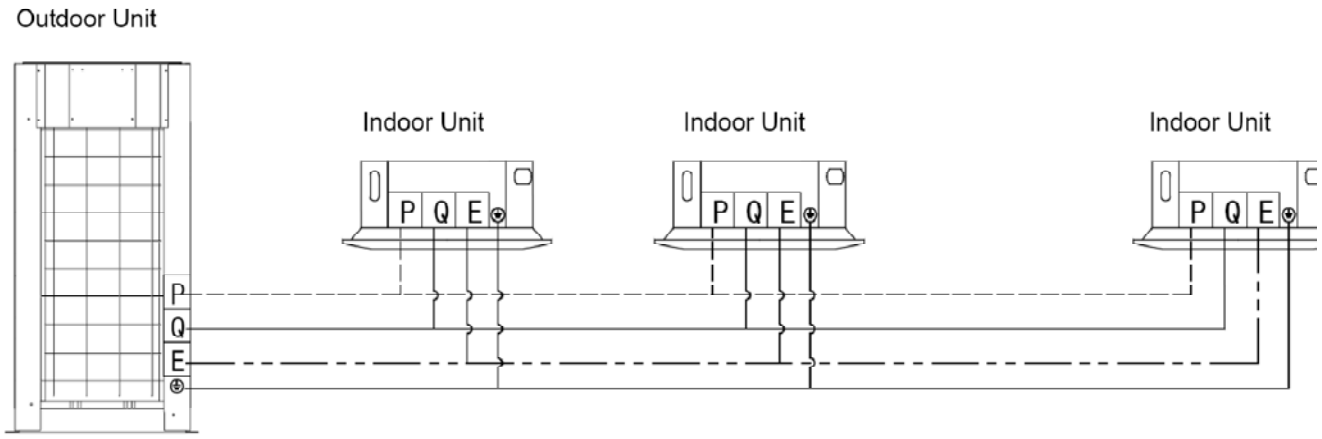


b. Star connection of signal line

● Star connection of part signal line

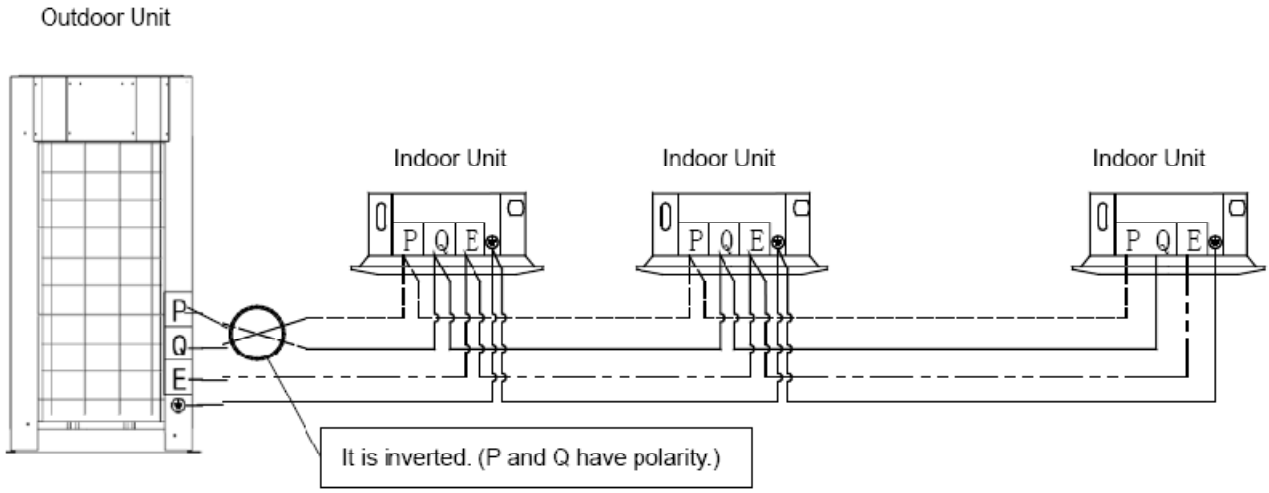


● Star connection of all signal line

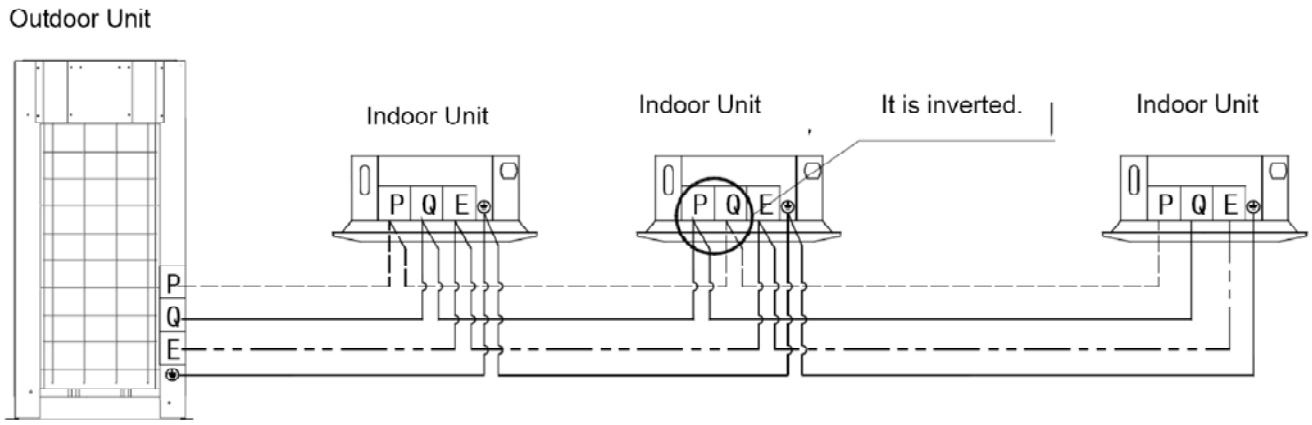


c. Reverse connection of signal line

● Outdoor unit — indoor unit



●Indoor unit — indoor unit



Caution: shielded layer shall be connected to electrical panel.

6.2.2 Specification of Control Wiring

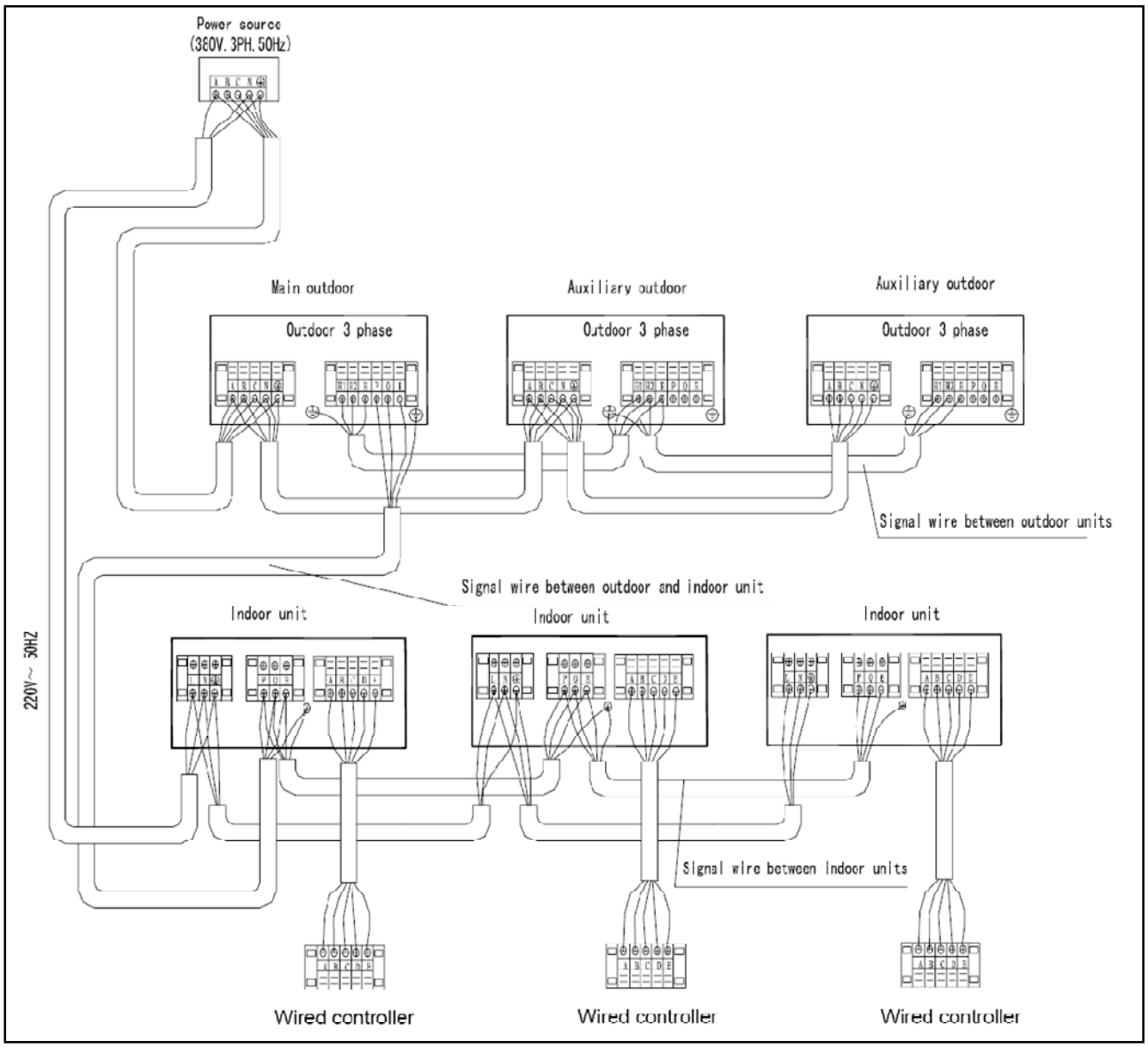
Normal shield wires are as following:

Model	Item
AVP	Copper core PVC insulated shield wire
AVP-105	Heat-resistant 105 PVC insulated shield wire
RVP	PVC insulated shielded flexible wire
RVP-105	Heat-resistant 105 PVC insulated shielded flexible wire
RVVP	Copper core PVC-insulated PVC-sheathed metal shielded flexible cable
RVVP1	Copper core PVC-insulated PVC-sheathed metal twisted shielded flexible cable

Note:

1) Communication wire should be 3-core shield wire; there should be metal-shield layer twist. Otherwise it will be easily interfered and bring wrong action.
2) And the size should be above 0.75mm^2 (Diameter.)
3) The material is RVVP (copper core PVC-insulated PVC-sheathed metal shielded flexible cable) or RVVP1(copper core PVC-insulated PVC-sheathed metal twisted shielded flexible cable) series
4) It has three cores (X, Y, E) inside, and E is a 5V layer.
5) The metal layer should be grounded well indoor control box in order to prevent interference.

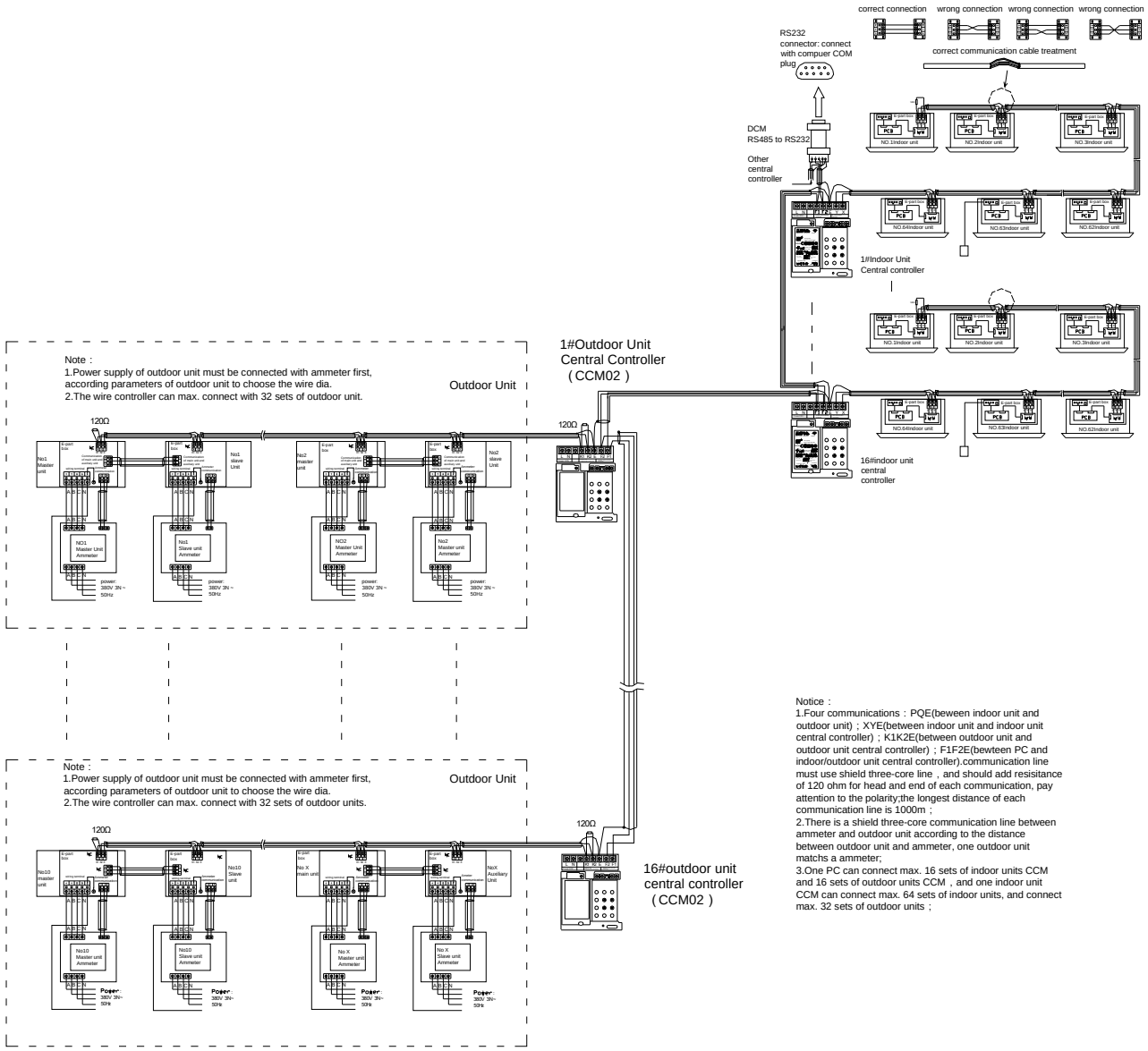
8.4 Connection of control wire (taking multi-connected unit for example)



Note:

1. The signal connecting line between outdoor units, indoor and outdoor units and indoor units has polarity. When connecting, be careful to prevent error connection.
2. Signal line shall adopt three-core shielded wire with an area above 0.75 mm^2.
3. Do not bind signal line and copper pipe together with belting.

8.5 Wiring Diagram (Indoor/CENTRAL CONTROL)



Note: The 120 ohm resistance can be cancelled because we have strengthened the anti- interfere capacity in the program.

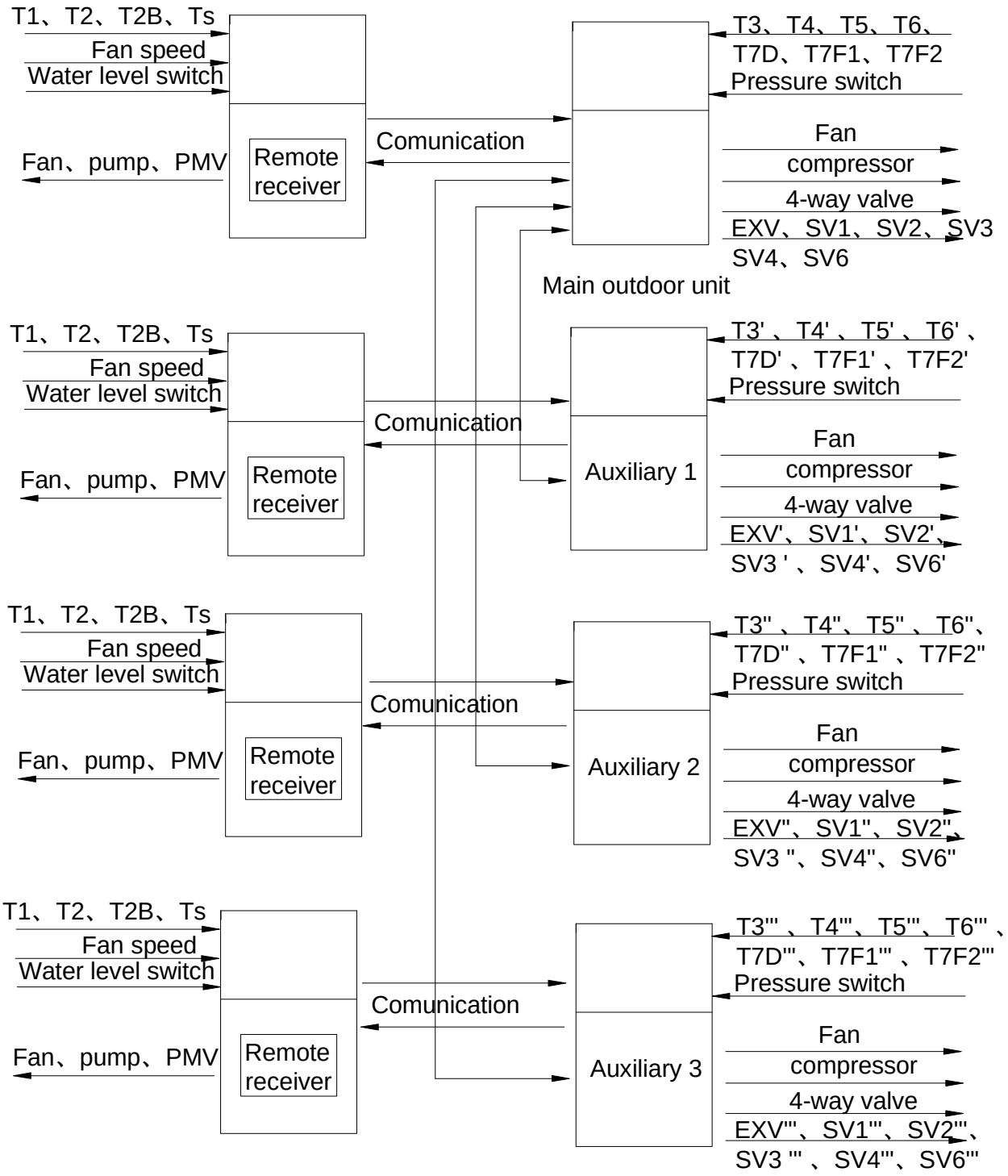
Part 5
Control System

Sommario

1. Brief introduction about controlling system

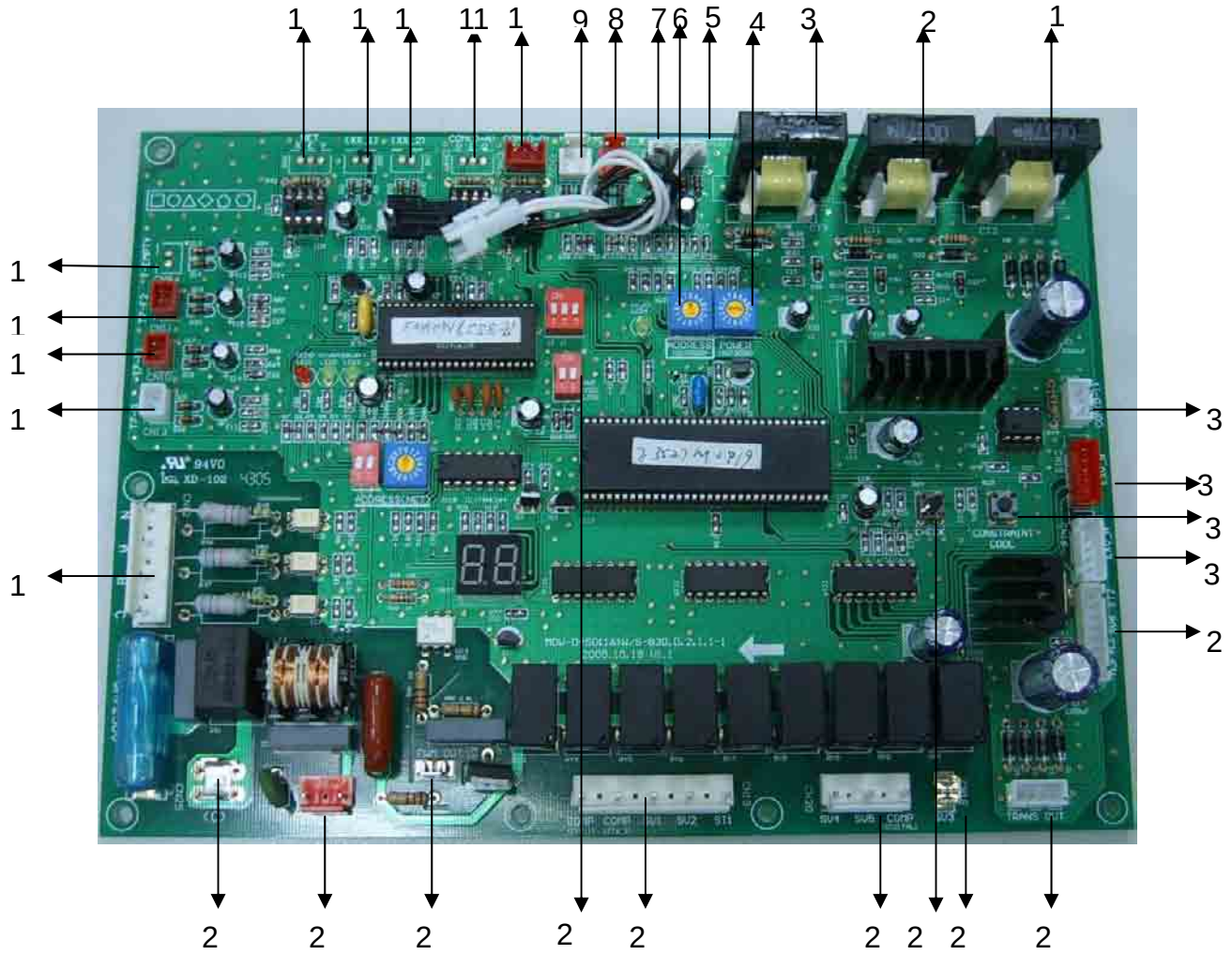
The control system adopts modular design, that is, all indoor units communicate with outdoor units, refer to the following figures for the control structure between indoor units and outdoor units. In the structure, the indoor control board receives the information from users (for exam. set temp., fan speed etc.) and environment (ex, indoor coil temp., indoor temp. etc.) ,and organize it to control the action of relevant parts such as EXV, four-way valve etc , then transmits the signals to outdoor control board through the following communication circuit. Outdoor main control board can deal with the information from indoor unit and figure out the best running mode, then transfer the instruction to the outdoor auxiliary units and indoor units to carry out it.

The four units combination control structure as following:



T1	Indoor ambient temp.
T2	Indoor evaporator middle part temp.
T2B	Indoor evaporator outlet pipe temp.
Ts	Indoor setting temp.
T3	Main outdoor heat-exchanger outlet pipe temp. (Cooling mode)
T3’	No.1 auxiliary outdoor heat-exchanger outlet pipe temp. (Cooling mode)
T3’’	No.2 auxiliary outdoor heat-exchanger outlet pipe temp. (Cooling mode)
T3’’’	No.2 auxiliary outdoor heat-exchanger outlet pipe temp. (Cooling mode)
T4	Main outdoor ambient temp.
T4’	Auxiliary outdoor 1 ambient temp.
T4’’	Auxiliary outdoor 2 ambient temp.
T4’’’	Auxiliary outdoor 3 ambient temp.
T5	Digital scroll compressor discharge temp.
T5’	Auxiliary outdoor 1 digital scroll compressor discharge temp.
T5’’	Auxiliary outdoor 2 digital scroll compressor discharge temp.
T5’’’	Auxiliary outdoor 3 digital scroll compressor discharge temp.
T6	Main outdoor heat-exchanger inlet temp. (Cooling mode)
T6’	Auxiliary outdoor 1 heat-exchanger inlet temp. (Cooling mode)
T6’’	Auxiliary outdoor 2 heat-exchanger inlet temp. (Cooling mode)
T6’’’	Auxiliary outdoor 3 heat-exchanger inlet temp. (Cooling mode)
T7D	Main digital scroll compressor discharge temp.
T7D’	Auxiliary outdoor 1 digital scroll compressor discharge temp.
T7D’’	Auxiliary outdoor 2 digital scroll compressor discharge temp.
T7D’’’	Auxiliary outdoor 3 digital scroll compressor discharge temp.
T7F1	Main fix-speed Compressor F1 discharge temp. Fix-speed
T7F1’	Auxiliary outdoor 1 fix-speed Compressor F1 discharge temp. Fix-speed
T7F1’’	Auxiliary outdoor 2 fix-speed Compressor F1 discharge temp. Fix-speed
T7F1’’’	Auxiliary outdoor 3 fix-speed Compressor F1 discharge temp. Fix-speed
T7F2	Main fix-speed Compressor F2 discharge temp.
T7F2’	Auxiliary 1 fix-speed Compressor F2 discharge temp.
T7F2’’	Auxiliary 1 fix-speed Compressor F2 discharge temp.
T7F2’’’	Auxiliary 1 fix-speed Compressor F2 discharge temp.

1.1 Outdoor electric control board



1—Current detector, used for No.2 fixed compressor

2—Current detector, used for No.1 fixed compressor

3—Current detector, used for Digital Scroll compressor

4—Outdoor Power dial switch

Power setting

Power dial switch	Capacity
0	8HP
1	10HP
2	12HP
3	14HP
4	16HP
>=5	Error

5—T4(Outdoor ambient temperature) sensor port

6—Outdoor Address dial switch

Main and auxiliary outdoor units setting

When outdoor units electrified, begin to detect the amount of outdoor units. According to outdoor address dial switch to fix on main or auxiliary unit. Please identify the main , auxiliary unit and capacity according to the following table:

Address dial switch	Main or auxiliary units	
0	Main unit	
1	Auxiliary unit 1	
2	Auxiliary unit 2	
3	Auxiliary unit 3	
>=4	Error	

7—T3(Condenser temperature) sensor port

8—Low pressure detect port

9—High pressure detect port

10—communication between outdoor units, RS-485 signal

11—Reserved

12—Reserved

13—Reserved

14—Reserved

15—Reserved

16—NO.2 Fixed compressor discharge temperature detect port

17—NO.1 Fixed compressor discharge temperature detect port

18—Digital scroll compressor discharge temperature detect port

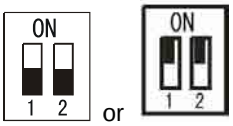
19—Power Supply: 380V,3N.Phase sequence detect port

20—Phase C Power

21—Transformer input, 220V AC

22—load output to PWM Value of digital scroll compressor

23—Mode Lock dial switch

SW5 Mode setting			
	Cooling	Heating	Auto (default in factory)

24—Load output port for Fixed Compressors(NO1,NO2),SV1,SV2,Four-way valve ST1

25—Load output port for Digital Scroll Compressor,SV5

26—Point Check Switch

Sequence	Display contents	Remarks
1	Address of outdoor unit	0, 1, 2, 3
2	This outdoor unit capacity	8, 10, 12, 14, 16
3	Amount of modular outdoor units	Available for main unit
4	Total capacity of outdoor units	
5	Total capacity demand of indoor units	Available in main unit
6	Total capacity demand after main unit modified	Available in main unit
7	Running mode	0, 1, 2, 3, 4
8	This outdoor unit actual running capacity	
9	Outdoor Fan speed	
10	Average T2	Actual value
11	T3	Actual value
12	T4	Actual value
13	T7D	Actual value
14	T7F1	Actual value
15	T7F2	Actual value
16	Current of digital scroll compressor	Actual value
17	Current of No.1 fixed compressor	Actual value
18	Current of No.2 fixed compressor	Actual value
19	Degree of Electric expansion valve A	Actual value X 8
20	Degree of Electric expansion valve B	Actual value X 8
21	Amount of indoor units	Actual value
22	The last error or protection code	Display “00” if no error or protection
23	____	End of check

Remarks: When the check is end (step 23), if you press the check button again, LED will normally display. If you press the check button over again, the whole check process will be cycled display.

Normally display: When stand by, LED displaying the amount of indoor units which communicate with outdoor units; When operation, LED displayed open degree of PWM valve of digital scroll compressor.

Running mode: 0---Turn off; 1---fan only; 2---Cooling; 3---Heating; 4---Forced cooling

Outdoor fan speed: 0---Turn off; 1---Low speed; 2---High speed

27—load output for SV3

28—Transformer output:14V AC

29—load output for high/low speed of two fan motors,SV6,Auxiliary Four-way Valve ST2

30—Electrical expansion valve drive port: EXV_A

31—Forced cooling: After pressing this button, the indoor and outdoor units start, and indoor/outdoor fan and EXV open at a fixed degree. Normally it is not used

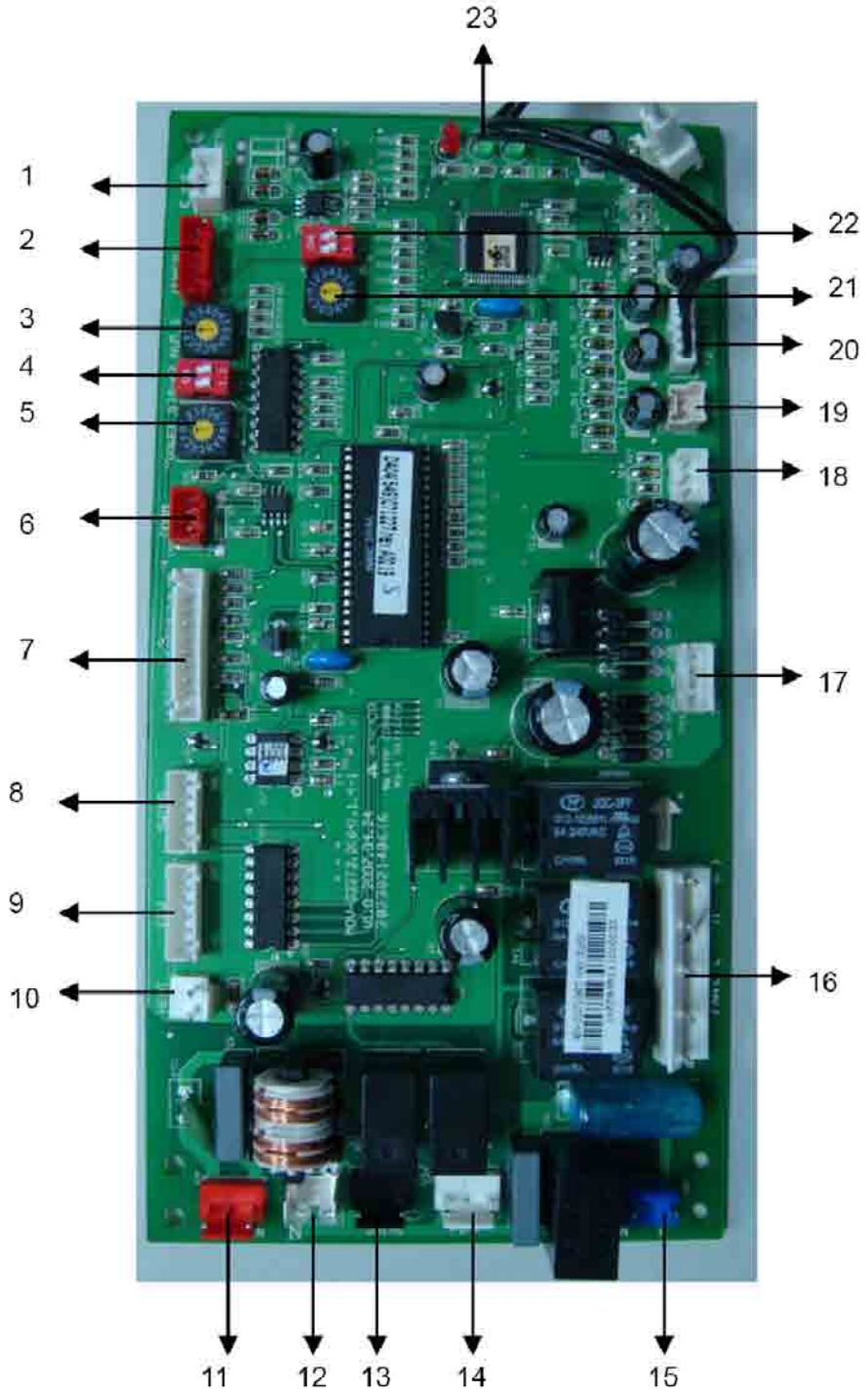
32—Electrical expansion valve drive port: EXV_B

33—Communication between indoor/outdoor units, RS-485 signal

Malfunction Code of Outdoor unit

Display	Malfunction or Protection	Remark
E0	Communication malfunction between outdoor units	Only auxiliary unit display
E1	Phase sequence error	
E2	Communication malfunction between indoor/outdoor units	
E3	T3 temperature sensor malfunction	
E4	T4 temperature sensor malfunction	
E5	T7D temperature sensor malfunction	
E8	Outdoor Unit address setting error	
H0	Mode conflict malfunction	Only main unit display
H1	Communication malfunction between 780034 and 9177	
H2	Amount of indoor units decrease malfunction	Only main unit display
H3	Amount of indoor units increase malfunction	Only main unit display
P1	High pressure protection	
P2	Low pressure protection	
P3	Digital Scroll Compressor current protection	
P4	Compressor discharge temperature protection	
P5	Condenser high temperature protection	
P7	NO.1 Fixed Compressor current protection	
P8	NO.2 Fixed Compressor current protection	

1.2 Indoor electric control (take Q4, T2 as example)



1—EXY (NET) — Net control socket

X, Y, E of all air-conditioners are connected together in Bus to the X, Y, E of CENTRAL CONTROL MONITOR.

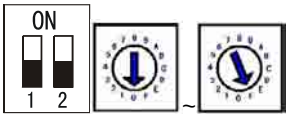
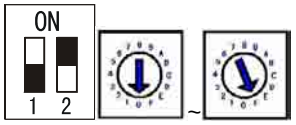
2—CN15 (ENC2) — Number Setting port from outside

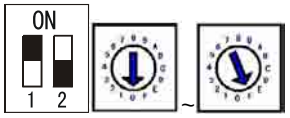
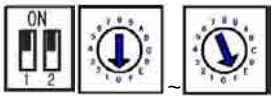
It has same function as ENC2 ((NUM_S) — Number Setting (for outdoor), the difference is that it is suitable for some special indoor unit such as one-way cassette (compact), which has no enough space to operate ENC2 ((NUM_S) — Number Setting (for outdoor), so we support this port to extend Number Setting Switch outside.

3—ENC2 ((NUM_S) — Number Setting (for outdoor)

The present address setting has been put outside the electric control board for convenient setting. The range is 0-F. Before indoor units are power on, the address setting must be finished and the address setting of indoor units that match with the same outdoor unit can't be repeated, or it may cause compressor

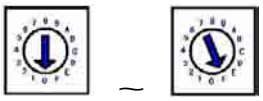
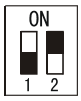
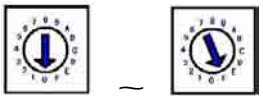
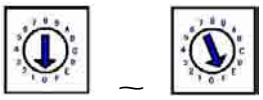
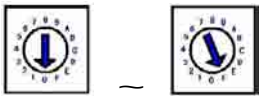
jumping-down, indoor EXV can't open, indoor fan motor jumping-down, and so on. After finishing address setting, indoor units must be power on again and address setting must be checked again to ensure no repeated setting. The checking method is as follows: press the button on the display board for 5 seconds, the display board will display address setting, continue to press for 5 seconds, the display board will display power setting. The setting is as follows:

Buzzer	Operation lamp	Timer lamp	Defrosting lamp	Alarm lamp	Communication Address	Indoor HP
Buzzer doesn't alarm	OFF	OFF	OFF	OFF	 0	0.8HP
	OFF	OFF	OFF	ON	1	1.0HP
	OFF	OFF	ON	OFF	2	1.2 HP
	OFF	OFF	ON	ON	3	1.5 HP
	OFF	ON	OFF	OFF	4	2 HP
	OFF	ON	OFF	ON	5	2.5 HP
	OFF	ON	ON	OFF	6	3 HP
	OFF	ON	ON	ON	7	3.2 HP
	ON	OFF	OFF	OFF	8	4 HP
	ON	OFF	OFF	ON	9	5 HP
	ON	OFF	ON	OFF	10	
	ON	OFF	ON	ON	11	
	ON	ON	OFF	OFF	12	
	ON	ON	OFF	ON	13	
	ON	ON	ON	OFF	14	
	ON	ON	ON	ON	15	
	OFF	OFF	OFF	OFF	 16	0.8 HP
	OFF	OFF	OFF	Flash	17	1.0 HP
	OFF	OFF	Flash	OFF	18	1.2 HP
	OFF	OFF	Flash	Flash	19	1.5 HP
	OFF	Flash	OFF	OFF	20	2 HP
	OFF	Flash	OFF	Flash	21	2.5 HP
	OFF	Flash	Flash	OFF	22	3 HP
	OFF	Flash	Flash	Flash	23	3.2 HP
	Flash	OFF	OFF	OFF	24	4 HP
	Flash	OFF	OFF	Flash	25	5 HP
	Flash	OFF	Flash	OFF	26	
	Flash	OFF	Flash	Flash	27	
	Flash	Flash	OFF	OFF	28	
	Flash	Flash	OFF	Flash	29	
	Flash	Flash	Flash	OFF	30	
	Flash	Flash	Flash	Flash	31	

Buzzer alarm.	OFF	OFF	OFF	OFF	 32	0.8 HP
	OFF	OFF	OFF	ON	33	1.0 HP
	OFF	OFF	ON	OFF	34	1.2 HP
	OFF	OFF	ON	ON	35	1.5 HP
	OFF	ON	OFF	OFF	36	2 HP
	OFF	ON	OFF	ON	37	2.5 HP
	OFF	ON	ON	OFF	38	3 HP
	OFF	ON	ON	ON	39	3.2 HP
	ON	OFF	OFF	OFF	40	4 HP
	ON	OFF	OFF	ON	41	5 HP
	ON	OFF	ON	OFF	42	
	ON	OFF	ON	ON	43	
	ON	ON	OFF	OFF	44	
	ON	ON	OFF	ON	45	
	ON	ON	ON	OFF	46	
	ON	ON	ON	ON	47	
	OFF	OFF	OFF	OFF	 48	0.8 HP
	OFF	OFF	OFF	Flash	49	1.0 HP
	OFF	OFF	Flash	OFF	50	1.2 HP
	OFF	OFF	Flash	Flash	51	1.5 HP
	OFF	Flash	OFF	OFF	52	2 HP
	OFF	Flash	OFF	Flash	53	2.5 HP
	OFF	Flash	Flash	OFF	54	3 HP
	OFF	Flash	Flash	Flash	55	3.2 HP
	Flash	OFF	OFF	OFF	56	4 HP
	Flash	OFF	OFF	Flash	57	5 HP
	Flash	OFF	Flash	OFF	58	
	Flash	OFF	Flash	Flash	59	
	Flash	Flash	OFF	OFF	60	
	Flash	Flash	OFF	Flash	61	
	Flash	Flash	Flash	OFF	62	
	Flash	Flash	Flash	Flash	63	

4—SW1 (0-15, 16-31, 32-47, 48-63) — Number Setting Switch (for outdoor)

Match with NUM_S.

Address Set		Address Code
		00 ~ 15
		16 ~ 31
		32 ~ 47
		48 ~ 63

5—ENC1 (POWER_S) — Power Setting

The range is 0~9. In normal case, the power setting of indoor units has been set well.

The matching capacity of indoor units is as follows:

Power setting	Capacity of indoor units
0	0.8 (2200W)
1	1.0 (2800W)
2	1.2 (3600W)
3	1.7 (4500W)
4	2.0 (5600W)
5	2.5 (7100W)
6	3.0 (8000W)
7	3.2 (9000W)
8	4.0 (11200W)
9	5.0(14000W)

6—CN9 — Communication port (COM)

The indoor and outdoor units adopt RS-485 communication standard. P and Q is for communication and have polarity. E is shield layer and is connected to +5V on the display board to strengthen the anti-jamming ability of the communication wire. When the indoor and outdoor units can't communicate for 1 minute, it will display communication malfunction.

7—CN10—Display board socket

The display board in digital scroll system is just to display running conditions and malfunction information. The manual button is just to check the address code and power code of indoor units

8—CN14—SWING

9—CN8 —Indoor EXV

12V weak-electricity control. After the compressor starts, the EXV of the matching indoor units under ON mode will be open at certain opening-degree, and the EXV of the matching indoor units under OFF, standing-by, Fan mode or Mode confliction will be close.

When forced-cooling, all indoor EXV will be forced open.

The action of EXV can be seen from a 5-core or 6-core step-motor that is connected here to replace EXV.

10—CN12—Auxiliary electric-heater, 220V AC.

11—CN1—Transformer input socket (TRANS IN), 220V strong-electricity.

The power supply of 220V passes the fuse, anti-jamming inductance and PTC protector and then connects to the terminal in the PCB.

12—N — Zero-wire output socket.

Supply to indoor fan motor that needs separate zero-wire.

13—CN13—SWING

Output 220V. Use 220V in-phase swing-motor. The action is as same as CN14 step-motor.

14—CN3—PUMP

220V output. When indoor unit starts to cooling operation, the pump starts at once and running continue until stopping this mode. At any time, if the water-level in the water receiver raises to the position point of the water-level switch, that is, the water-level switch signal is cut down, the pump will start at once and forced running. If the water level falls to below the alarm water-level (the drain pump delay 1 minute to be off), operation recovers according to former setting mode. On the otherwise, after 3 minutes, indoor unit stops(including pump) and display water-level alarm signal, and indoor unit takes part in the whole system operation according to standing-by mode. When again checking the water-level alarm signal is off, the protection will be released and recover operation according to former setting.

15—CN2—Power input 220V (L, N)

16—CN4—Indoor Fan output

220V output. There are four relays in the electric control board and four-speed output (High/Middle/Low/breeze). The Low speed and Breeze speed have been short-connected, and the indoor breeze speed have been deleted, so even the relay of breeze speed suck-in, the indoor fan motor still operates in Low speed. That is, all indoor units have only three fan speeds, even operate in Low speed in heating anti-cooling and oil-return period

17—CN11—Transformer output (TRANS OUT)

12V AC output. Input 220V AC to transformer, then output 12V AC, and then input to the electric board. There are two commute filter circuits, one is 7805, output 5V to the chip, the other one is 7812, output 12V to 2003 and relays.

18—CN5—Water-level switch (WATER)

Disconnect when full of water and be close when water level recovers normal. For indoor units without water-level switch, this switch needs be short connected.

19—CN7—Evaporator outlet temp. (T2B)

20—CN6—T1, T2

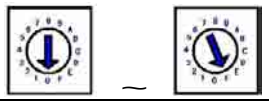
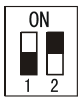
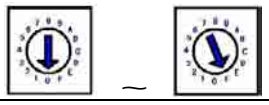
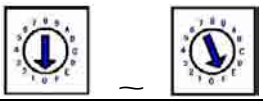
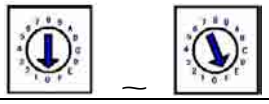
21—S2 —Address Setting (for CENTRAL CONTROL MONITOR)

This setting presents the address relative to a CENTRAL CONTROL MONITOR, match with S1 switch, the address range is 0-63, Before using a CENTRAL CONTROL MONITOR to group control indoor units or using Hokkaido Intelligent Network Air-Condition Control& Monitor System to control indoor units, the address setting must be finished and the address setting of indoor units that match with the same CENTRAL CONTROL MONITOR can’t be repeated.

22—S1 —Address Setting Switch (for CENTRAL CONTROL MONITOR)

Match with S2 — Address Setting (for CENTRAL CONTROL MONITOR), setting indoor unit address relative to a CENTRAL CONTROL MONITOR.

Address Set	Address Code

		00 ~ 15
		16 ~ 31
		32 ~ 47
		48 ~ 63

23—LED's for Intelligent A/C control and monitor system.

From the left side:

LED1 (Run): When the AC communicated well with the NIM, it will be light; otherwise it will be extinguished. But when the system stayed in the remote controller lock mode and mode lock state, it will flash with frequency of 1Hz.

LED2 (Link): It will be light when there is any communication between the AC and Intelligent A/C control and monitor system including any receiving and sending the signal.

LED3 (ERR): It will flash with frequency of 1Hz when the communication malfunction occurs between the AC and Intelligent A/C control and monitor system or other malfunctions come from the NIM. It will extinguish in normality.

Indoor LED Malfunction Code

Display Contents	Explanation of Malfunction
All lamps are off	Standing-by
Operation lamp is on	ON
PRE./DEF. lamp is on	Anti-cooling or Defrosting
Timer lamp is on	Timer function is on
Timer lamp flashes	Indoor/outdoor communication malfunction
Operation lamp flashes	Indoors temp. Sensor abnormal
Alarm lamp flashes quickly	Water-level switch abnormal
DEF. Lamp flashes	Mode-confliction malfunction
Alarm lamp flashes slowly	Outdoor malfunction

2. Indoor Unit Central Control Monitor System

2.1 Network Interface Module

1) Basic Requirements

1-1 Applicable Power Voltage Range: Input Voltage 220VAC±10%.

1-2 AC Input Power Frequency: 50Hz/60Hz.

1-3 Working Ambient Temp: -10 ~+43 .

1-4 Working Ambient Humidity: RH40%~RH90%.

1-5 CENTRAL CONTROL MONITOR with Model CENTRAL CONTROL MONITOR01/E is applicable to all models of Hokkaido Air-conditioners.

2) Function Description of NIM

NIM means network interface monitor, it is integrated in the indoor PCB.

The CENTRAL CONTROL MONITOR, Electric Control of air-conditioners, PC and Communication Wire together compose he network control system of air-conditioners. The CENTRAL CONTROL MONITOR can connect up to max 64 indoor units, which together compose one LAN (Local Area Network), thus the CENTRAL CONTROL MONITOR can central control to all air-conditioners in the LAN, including sending every kind of control order to every air-conditioner and setting running states of every air-conditioner. And the control signal of CENTRAL CONTROL MONITOR can arrive to the farthest 1200 meters, which can meet various control requirements for customers.

2.2 AUTORESTART function

It's a standard function of digital scroll system.

2-2-1 System will not carry out the AUTORESTART function for the first time power on.

2-2-2 During operating or stand-by, if power failure occurs, previous settings will restore after supplying power again.

2-2-3 The following settings can be restored after power failure occurs: ON/OFF, MODE, FAN SPEED, TEMP. LOCK by CENTRAL CONTROL MONITOR and so on. And the following can't be remembered: ECONOMIC, TIMER ON, TIMER OFF, AUXILIARY Function and so on.

2-2-4 AUTORESTART is only valid to the remote control signal receiving through NIM or information set by distance-control. It doesn't remember the operation by manual button and forced button. If power failure occurs and the air-conditioners are in operation by manual button or forced button, after supplying power again, no AUTORESTART signal will be sent to air-conditioners and the air-conditioners will be in stand-by.

2-2-5 AUTORESTART has time-delay start function, which can avoid all air-conditioners start at the same time when power on. The delay time is decided according to the address code in LAN. And the calculation formula is 180s+n*2s, where, n means the address code and the effective range is 0-63, and "s" means time unit Second. When the set delay time is arrived, send AUTORESTART signal to PCB.

2-2-6 During AUTORESTART time-delay, if the air-conditioners receive the Mode set operation by users, including distance-control and local-control, the air-conditioners will cancel AUTORESTART and run according to the present operation by users.

2.3 Communicating with CENTRAL CONTROL MONITOR RS485 and Data Treatment

The CENTRAL CONTROL MONITOR RS485 and NIM adopt main-auxiliary response communication. All NIM that connect with air-conditioners in network are auxiliary unit, and CENTRAL CONTROL MONITOR is main unit. The NIM first deals with the order from CENTRAL CONTROL MONITOR, then send signal to PCB. The CENTRAL CONTROL MONITOR can lock the running mode of air-conditioners by sending signal to NIM to avoid mode confliction (focus on commercial multi system).

2.4 Communicating with PCB

The NIM receives communication data sent by PCB and adopt asynchronous serial communication. In normal case, the PCB doesn't send data. Only when the remote control signal interface receives the remote control signal from NIM, the PCB will reply response data at once.

2.5 Receiving and treatment of remote control signal

The NIM can receive the remote control signal that conforms to the criterion of R51 Series Remote Controller. A t the same time, NIM will deal with the data of remote control signal, then send signal to PCB.

2.6 Malfunction Warning

If the signal sent by CENTRAL CONTROL MONITOR can't be received for 1 minute, it thinks communication malfunction between NIM and CENTRAL CONTROL MONITOR and malfunction code will be sent when responding to the communication data of PC. The malfunction will relieve after receiving the response information from PCB.

2.7 Forced by outside

Air-conditioners can be forced ON/OFF through sending Forced ON/OFF to NIM by PC in network.

2.8 CENTRAL CONTROL MONITOR Lock

2-8-1 If receiving CENTRAL CONTROL MONITOR Lock information from PC, the air-conditioners can only be central controlled by PC. The NIM will not transfer and distinguish all remote control signals, but reject directly. And the remote control signal from remote controller and wire controller can't control the running state of air-conditioners.

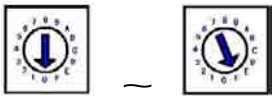
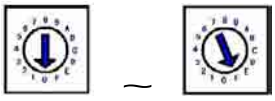
2-8-2 For operation by manual switch and forced button of air-conditioner that don't pass the passage of remote controller, the CENTRAL CONTROL MONITOR Lock is invalid.

2-8-3 When receiving CENTRAL CONTROL MONITOR Unlock information from PC, the NIM will restore to deal with and transfer the remote control signal.

3) Operation and State Indication of NIM

Address Setting

It must be set address before using NIM. Every air-conditioner in CENTRAL CONTROL MONITOR has only one CENTRAL CONTROL MONITOR address to distinguish each other. Address code of air-conditioner in CENTRAL CONTROL MONITOR is set by code switch S1 port on PCB, and the set range is 0-63.

Address Set	Address Code
 	00 ~ 15
 	16 ~ 31
 	32 ~ 47
 	48 ~ 63

2.9 Summary of CENTRAL CONTROL MONITOR

1) Basic Requirements

1-1 Applicable Power Voltage Range: Input Voltage 220~240VAC±10%.

1-2 AC Input Power Frequency: 50Hz/60Hz.1-3Working Ambient Temp.: -10 ~+43 .

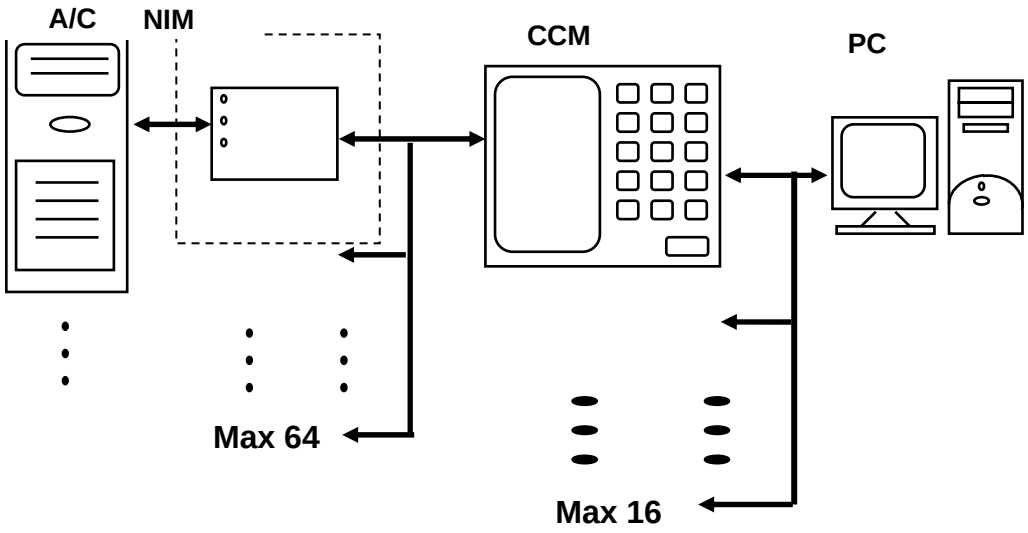
1-3 Working Ambient Humidity: RH40%~RH90%.

1-4 CENTRAL CONTROL MONITOR with Model MD-CENTRAL CONTROL MONITOR01 is applicable to all models of Hokkaido Air-conditioners.

2) Components of Central Control Monitor System

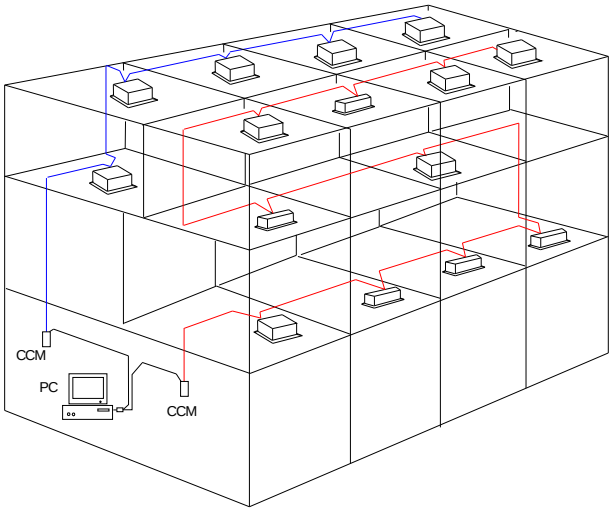
The Central Control Monitor System consists of CENTRAL CONTROL MONITOR, (NIM), Electric Control, PC and Communication Wire. All of the NIM are inside the indoor PCB and needn't set separately. (Please refer to the technical information of indoor units.)

The CENTRAL CONTROL MONITOR can connect up to max 64 indoor units, which together compose one



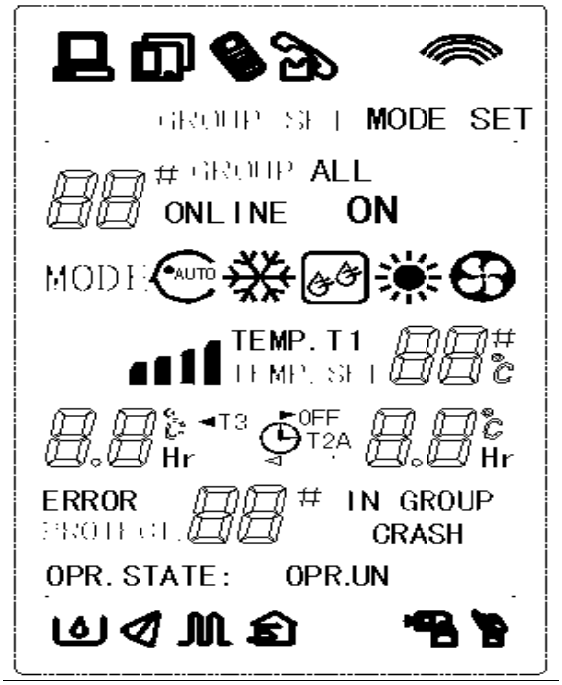
LAN (Local Area Network), thus the CENTRAL CONTROL MONITOR can central control to all air-conditioners in the LAN, including sending every kind of control order to every air-conditioner and setting running states of every air-conditioner. And the control signal of CENTRAL CONTROL MONITOR can arrive to the farthest 1200 meters, which can meet various control requirements for customers.

Through interfacing with PC or Gateway, the CENTRAL CONTROL MONITOR can realize central management control, parameters setting and states query to all air-conditioners in the LAN by PC. And every PC or Gateway can connect max. 16 CENTRAL CONTROL MONITOR.



Installation Sketch Map of Network Air-condition Building

2.10 Name and Function of Indicators on CENTRAL CONTROL MONITOR LCD Screen



1) Common Display Data

Common display data will be indicated in all display pages.

a. Figure means CENTRAL CONTROL MONITOR is in network control with PC or Gateway.

b. Figure means CENTRAL CONTROL MONITOR is in communication connection with Function Module.

c. Figure means CENTRAL CONTROL MONITOR is in communication connection with Message Remote Control Module.

d. Figure means CENTRAL CONTROL MONITOR is in communication connection with Telephone Remote Control Module.

e. If CENTRAL CONTROL MONITOR is in normal communication with NIM, then (Blank), •, , will be displayed in dynamic circulation. Otherwise, no any display.

f. Lock Symbol means the CENTRAL CONTROL MONITOR is in Lock state or the buttons are in Lock state. ON means the buttons are in Lock state or both CENTRAL CONTROL MONITOR and Buttons are in Lock state, and 0.5 second flash means the CENTRAL CONTROL MONITOR is in Lock state.

g. When setting page layout, if the selected air-conditioner is in Remote Controller Lock state (in case that several air-conditioners are in operation, if only one is in Remote Controller Lock state, then that means in Lock state.), symbol will display steadily. If in Mode Lock state, symbol will flash in 0.5Hz.

If Remote Controller Lock state and Mode Lock state exist at the same time, symbol will display steadily.

2) Display Data Treatment

Data Display area adopts 7-segment code, and there are 5 groups of 2-digital 7-segment display.

a. **TEMP.** Display

TEMP. display is applicable to the following: Set Temp. Ts(17-30), Indoor Return Air Temp. T1, Evaporator Pipe Temp. T2A, Evaporator Middle Pipe Temp. T2B, Condenser Pipe Temp. T3. And the allowable data display range is 0 -99 . If higher than 99 , then display 99 . If lower than 0 , then display 0 . What's more, the real display range also has relationship with the PCB temperature checking range. If no effective data, then display "-" and Unit symbol will be ON.

b. **CURRENT** Display

CURRENT display is applicable to Compressor Current. The allowable range is 0A-99A. If no effective data, then display "-" and Unit symbol A mp. will be ON.

c. **TIMER** Display

TIMER is used to display the time of TIMER ON and TIMER OFF. The unit symbol Hr will be ON at the same time.

d. **ERROR** code display

ERROR is used to display malfunction warning data of the air-conditioner or the CENTRAL CONTROL MONITOR. The display range of ERROR code is E0-EF, where, E means ERROR, 0-F means ERROR code, or Network ERROR display 00-0F#. If no EERROR, then display "E-" and # will be ON.

e. **PROTECT.** code display

PROTECT. is used to display malfunction warning data of the air-conditioner or the CENTRAL CONTROL MONITOR. The display range of PROTECT. code is P0-PF, where, P means PROTECT., 0-F means

PROTECT. Code. If no PROTECT., then display "P-" and # will be ON.

f. **ADDRESS** display

ADDRESS is used to display the ADDRESS code of the present selected air-conditioner. The display range is 0-63, and at the same time # will be ON.

g. Number Display of Online air-conditioners and ON/OFF air-conditioners

It is used to display the number of online air-conditioners in **LAN** and **ON/OFF** air-conditioners at present. The display range is 0-64.

h. Auxiliary function display

 Means ECONOMIC RUNNING,  means SWING,  means Auxiliary Heater,  means VENT.

i. Mode Confliction Display

Function Confliction display will flash at interval 1 second.

3) Stand-by Page Display

Stand-by page data consist of several pages and the page number is not fixed.

Stand-by page can display the total number of air-conditioners in network, under ON state and under OFF state. If one or more air-conditioners in network have malfunction, or the CENTRAL CONTROL MONITOR checks other malfunctions, the Stand-by page will display the first ERROR Code from small to big according to the number. Other malfunctions can be queried by buttons "+" and "-". If no malfunction and one or more online air-conditioners in network are in ON state, the Stand-by page will display present main Running Mode, Set Temp. and Indoor Fan Speed. If no malfunction and all air-conditioners in network are in OFF state, ERROR Code nor Running mode will not be displayed.

4) Query Page Display

Query Page data consist of several pages and the page number is not fixed.

a. When first entering into Query Page Display, the address of the first online air-conditioner will be selected in default and the data of the first page will be displayed.

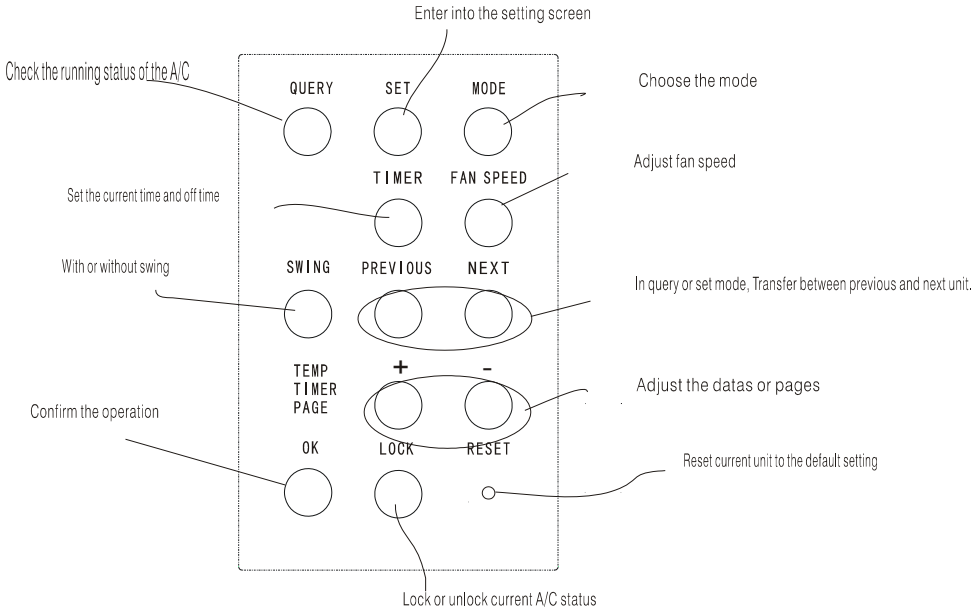
b. The data of other pages can be displayed in circulation by pressing buttons "+" or "-".

c. The running state data of different air-conditioners can be queried by pressing "Previous" or "Next" to select the address.

5) Running Mode Setting Page Display

Running Mode Setting Display only has one page. And display the selected mode, auxiliary function and the selected operation state.

2.11 Name and Function of Buttons on CENTRAL CONTROL MONITOR



ON/OFF Button: Pressing ON/OFF Button at any time, all present online air-conditioners in CENTRAL CONTROL MONITOR network will be ON/OFF.

2.12 Operation and Performance of CENTRAL CONTROL MONITOR

Before operating CENTRAL CONTROL MONITOR, please first confirm the wiring of CENTRAL CONTROL MONITOR, NIM, address setting of CENTRAL CONTROL MONITOR and the setup of the PC A/C Monitor Soft are in right state.

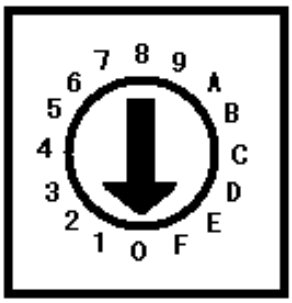
1) First Power On, Address Setting and State Display

1-1 Display when First Power On or Restore

After the CENTRAL CONTROL MONITOR is power on or restore, first all display segment on LCD will be on and last 2 seconds, then all will be off. 1 second later, the system enters into normal display state, the CENTRAL CONTROL MONITOR is in the main page and display the data in the first page. When first power on, it only can operate the buttons after 10 seconds.

1-2 Network Area Address Setting

The PC or gateway can connect max. 16 CENTRAL CONTROL MONITOR. Every CENTRAL CONTROL MONITOR can be viewed as one network area and be distinguished by dialing setting. The setting range is 0-15(0-F).



1-3 Indicator Display

If there is button to set the running state of air-conditioner, the indicator lamp will be on when sending signal and will be off after finishing setting.

If the online air-conditioner in network has malfunction, or the CENTRAL CONTROL MONITOR network itself has malfunction, the indicator lamp will flash in 2Hz.

If one or more online air-conditioners in network are in running state, including Timer On/Timer Off setting running, the indicator lamp will be on. Otherwise, the indicator lamp will be off.

2) Basic Function

2-1 Network Control Function

The CENTRAL CONTROL MONITOR can control and adjust the states, parameters and ON/OFF of one or all indoor units in network.

2-2 Lock Functions of CENTRAL CONTROL MONITOR and Remote Controller

When receiving CENTRAL CONTROL MONITOR Lock order from PC, the CENTRAL CONTROL MONITOR will not allow ON/OFF operation and Mode Setting operation. At the same time, PC will send order of Remote Control Lock to all air-conditioners in CENTRAL CONTROL MONITOR network. When

receiving Unlock order from PC, ON/OFF operation will be carried out by CENTRAL CONTROL MONITOR. At the same time, PC will send order to relieve the Remote Control Lock of all air-conditioners.

Remote Control Lock: it can be Locked or Unlocked by PC separately, or it can be Locked or Unlocked by the Lock button of CENTRAL CONTROL MONITOR. When pressing Lock button of CENTRAL CONTROL MONITOR, for one or more indoor units, if the prior state is Lock, then Unlock; if the prior state is not Lock, then Lock.

2-3 Mode Lock Function

When receiving Mode Lock from PC to operate ON/OFF, first send the order to air-conditioners, and the CENTRAL CONTROL MONITOR allow selecting ON operation method of Locked Mode without confliction. After receiving order of relieving Mode Lock, it can freely select ON operation method.

2-4 Urgent Stop and Forced ON

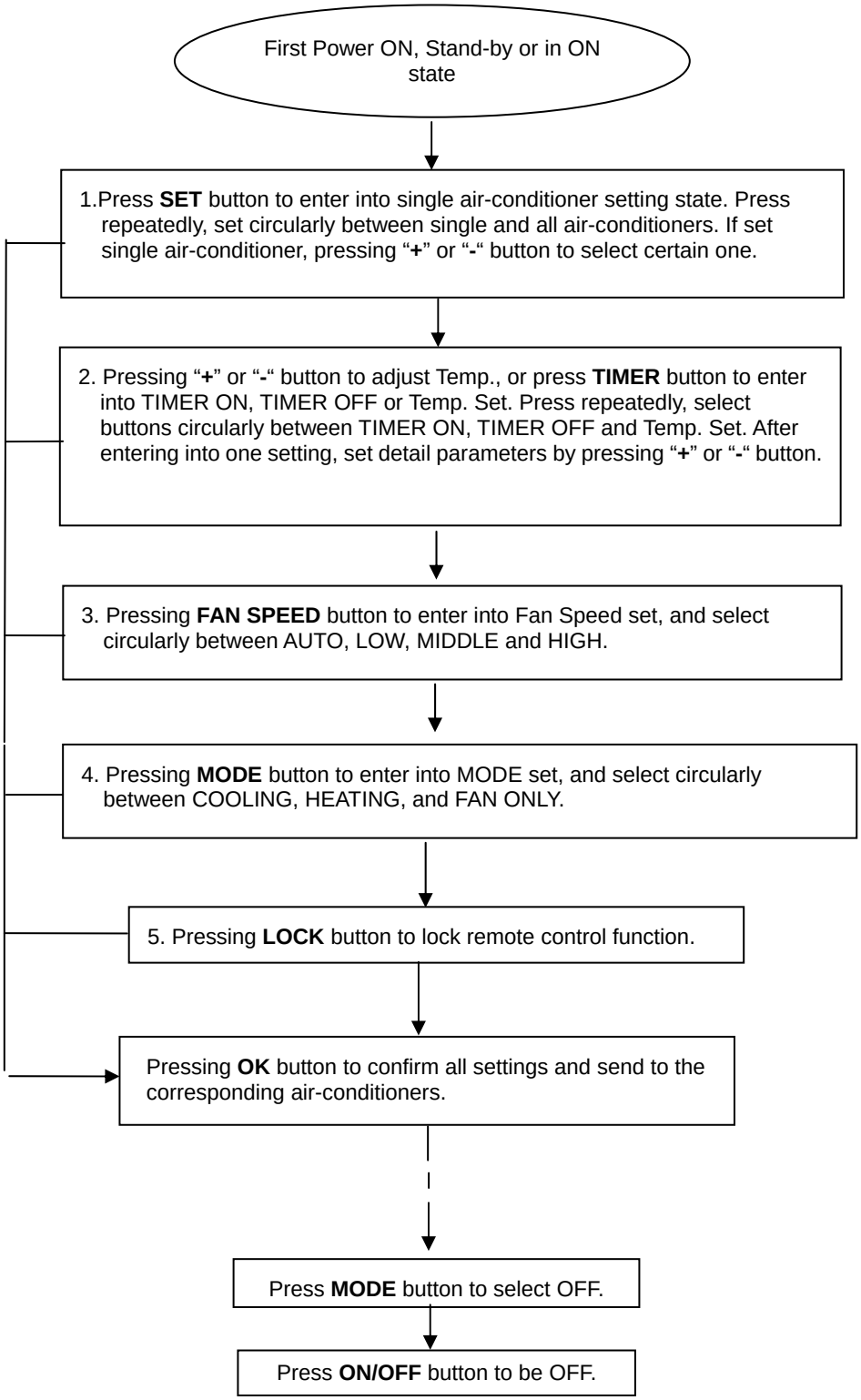
When the Urgent Stop switch of CENTRAL CONTROL MONITOR (CN3 on Power Board) is closed, all air-conditioners in CENTRAL CONTROL MONITOR network will be forced OFF, and CENTRAL CONTROL MONITOR, PC and all function modules will forbid ON/OFF operation until the switch is open.

When the Forced ON switch of CENTRAL CONTROL MONITOR (CN2 on Power Board) is closed, all air-conditioners in CENTRAL CONTROL MONITOR network will be forced ON and in cooling operation in default, and ON/OFF operation will be forbidden by CENTRAL CONTROL MONITOR, PC and all function modules until the switch is open. (CENTRAL CONTROL MONITOR, PC and function modules only send ON order to air-conditioners, not effect operation by remote controller.)

If both are closed at the same time, Urgent Stop switch takes priority.

3) ON/OFF Operation

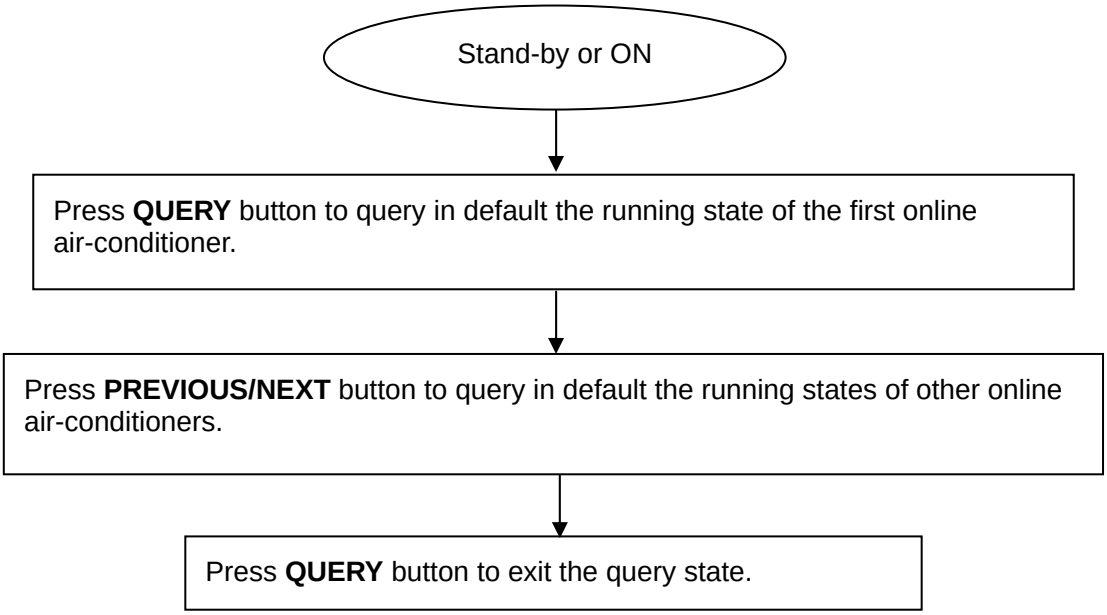
At any time, all online air-conditioners in CENTRAL CONTROL MONITOR network will be carried out ON/OFF operation by directly pressing ON/OFF button. If some or all air-conditioners need to be carried out ON operation after Mode Setting, Parameter Setting and so on, please refer to the following procedure.



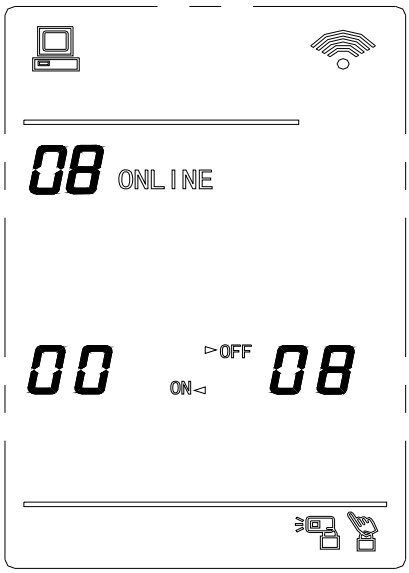
In above procedure, the step 1, 2, 3, 4,5 can be carried out separately and needn't be done in turn. After setting one step, press OK button; then set next step and press OK button. It can also set all or only set one step, then press OK button.

In case of non-set page, press SET button or MODE button to enter into Set Page.

4) Query Operation

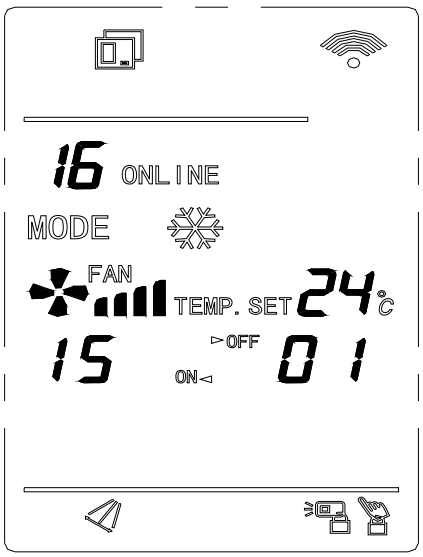


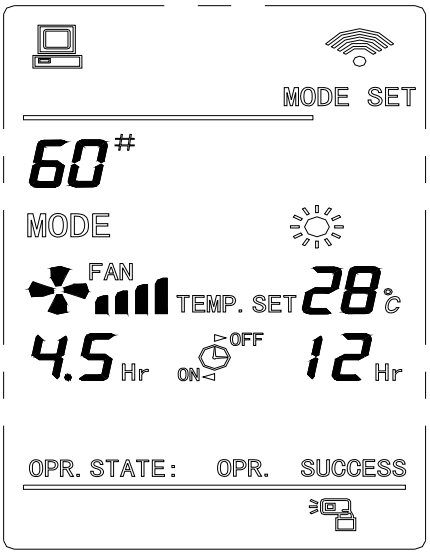
5) Display Examples



Stand-by state:

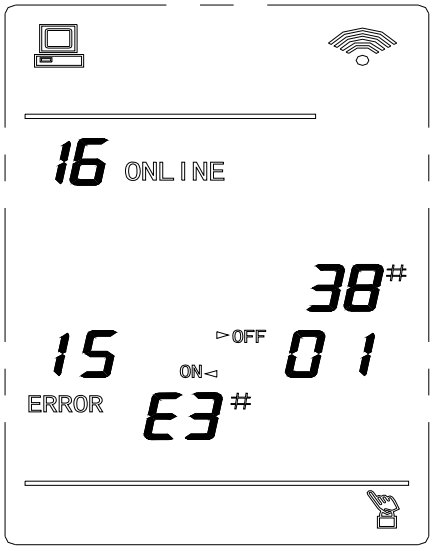
In communication with **PC**, 8 indoor units online are in Stand-by state.





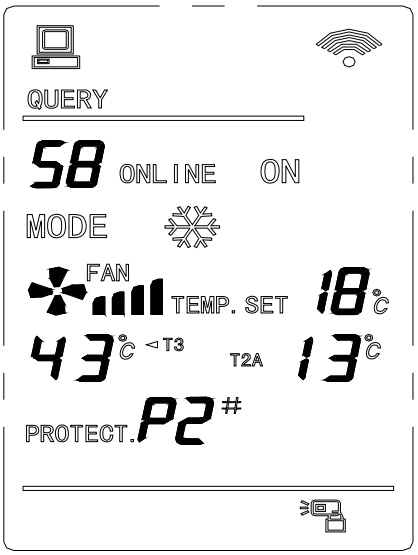
MODE SET state:

In communication with PC, NO.60 indoor unit in network is in Heating mode, Set Temp. 28 , Middle Fan Speed, 4.5 hours Timer-On,12 hours Timer-Off.



ON and **ERROR** :

In communication with **PC**, among 16 indoor units online,15 indoor units are starting or running. NO.38 indoor unit is in **ERROR.** (E3).



QUERY state:

In communication with **PC**,58 indoor units online are ON in Cooling mode, Set Temp. 18 , High Fan Speed, T3 (43)

and T2A(13). **E**NO. 39 indoor unit is in PROTECT.(P2).

6) Operation Precautions

a. MODE button: when operating single unit with cooling only type, it can't select Heating mode. When controlling all, if only there is one heat-pump unit, then it can select Heating mode. But if there are other units with cooling only type among the selected units, then function confliction will be pointed out, but mode setting operation will not be limited.

b. If the set time is 0, then it means no TIMER operation. When first entering to TIMER operation, the default time is 0, that is, no timer.

c. VENT. Auxiliary function is selected to start or close only by Auxiliary Function Button. If there is only one unit that supports the selected auxiliary function, then this function can start. Or, it can't start. If there is only one unit that doesn't support the selected started auxiliary function, then function confliction will be pointed out, but mode setting operation will not be limited.

d. When first entering into the setting page, it thinks single unit in default. If the air-conditioners are in OFF state, then they will start according to COOLING mode, Set Temp. 24℃, HIGH fan speed, no TIMER and SWING function in default.

e. At any time, if pressing ON/OFF button, all present online air-conditioners will be carried out ON/OFF operation. If only one online air-conditioner is in ON state, including ON/OFF setting by delay, after pressing ON/OFF button, all online air-conditioners will be off. If all present online air-conditioners are in OFF state, then it will send ON order as follows: if pressing at Mode Setting Page, then it will carry out ON operation according to the present selected Mode, Fan Speed, Set Temp., Timer and Auxiliary Function; if pressing at other time and no selected Mode Setting data, then it will carry out ON operation according to COOLING mode, Set Temp. 24℃, HIGH fan speed, no TIMER and SWING function in default.

7) Communicating with NIM

The CENTRAL CONTROL MONITOR and NIM adopt main-auxiliary response communication. At any time, continuously query the running state of one air-conditioner in network 10 times, if not receiving the feedback data, then it thinks this air-conditioner is power off or doesn't exist, and no malfunction warning occurs. If receiving the feedback data, but the communication data is wrong, then it thinks communication malfunction exists between CENTRAL CONTROL MONITOR and NIM, and malfunction code "01#" will be displayed. After normal communication, malfunction will relieve. Or malfunction code will be eliminated after judging the air-conditioner is power off or doesn't exist.

8) Communicate with Epigyny PC

If receiving data from Epigyny PC, then enter into network control state. If not receiving data from Epigyny PC for 1 minute, then exit network control state. If data communication has frame mistake or data check has mistake, CENTRAL CONTROL MONITOR/PC communication malfunction will occur and display malfunction code "**03#**". Malfunction will relieve after communication restores to normal state or exiting network control state.

9) Data Communicate with other Function Modules

If receiving data from function module, then display the network information of the corresponding function module. If not receiving data from corresponding function module for 1 minute, then exit network control state. If data communication has frame mistake or data check has mistake, CENTRAL CONTROL MONITOR/PC communication malfunction will occur and display malfunction code "02#". Malfunction will relieve after communication restores to normal state or exiting network control state.

2.6 Malfunction and Protection Code Table

ERROR Code	ERROR Contents	PROTECT. Code	PROTECT. Contents
EF	Other malfunction	PF	Other Protection
EE	Water level checking malfunction	PE	Reserve
ED	Outdoor protection	PD	Reserve
EC	Clear malfunction	PC	Reserve
EB	Inverter Module Protection	PB	Reserve
EA	Compressor Over-current (4 times)	PA	Reserve
E9	Communication malfunction between PCB and Display board	P9	Reserve
E8	Fan motor checking out of control	P8	Compressor Over-current
E7	EEPROM malfunction	P7	Power Lack/Over Volt Protection
E6	Over-zero checking malfunction	P6	Discharge Low-pressure Protection
E5	T3 sensor malfunction	P5	Discharge High-pressure Protection
E4	T2B sensor malfunction	P4	Discharge Pipe Temp. Protection
E3	T2A sensor malfunction	P3	Compressor Temp. Protection
E2	T1 sensor malfunction	P2	Condenser High Temp. Protection
E1	Communication malfunction	P1	Anti-cooling or Defrost Protection
E0	Phase sequence or lack of phase	P0	Evaporator Temp. Protection
03#	CENTRAL CONTROL MONITOR/PC(gateway) Communication Malfunction		
02#	CENTRAL CONTROL MONITOR/Function Module Communication Malfunction		
01#	CENTRAL CONTROL MONITOR/NIM Communication Malfunction		
00#	CENTRAL CONTROL MONITOR/PCB Communication Malfunction		

2.7 Technical Index and Requirement

EMC and EMI should conform to the requirement of CE Certification.

3. Outdoor Unit Central Monitor System

3.1 Summarize of outdoor CENTRAL CONTROL MONITOR

The functional only can be realized when the system is in normal operation.

1) Central Monitor can realize the central control and data query to outdoor units. One outdoor CENTRAL CONTROL MONITOR can connect max. 32 outdoor units by communication ports in outdoor PCB. And it adopts wire-connecting method communication to realize central control to the outdoor units in the same network.
2) CENTRAL CONTROL MONITOR can communicate with PC through RS485/RS232 converter. One PC can connect max. 16 outdoor CENTRAL CONTROL MONITOR and 16 indoor CENTRAL CONTROL MONITOR. And PC can realize central control to outdoor units, central control to indoor units. Central control to indoor units and outdoor units, management, status query and so on.
3) The CENTRAL CONTROL MONITOR and outdoor units, PC and CENTRAL CONTROL MONITOR adopt main-auxiliary communication. In the network of CENTRAL CONTROL MONITOR and outdoor units, CENTRAL CONTROL MONITOR is the main unit and outdoor units are the auxiliary units.

3.2 Basic Requirements

1) Applicable Power Voltage Range: Input Voltage 220~240V/AC.
2) AC Input Power Frequency:50Hz/60Hz.
3) Working Ambient Temp.:-15°C -+43°C
4) Working Ambient Humidity:RH40%~RH90%.

1.3.3 Operation

1) Key Words and Basic Functions

◆ Power on or restore

After the CENTRAL CONTROL MONITOR is power on or restore, first all display segment on LCD will be on and last 3 seconds. Then all will be off 2 seconds later, the system enters into normal display state, the CENTRAL CONTROL MONITOR is in the main page and display the data in the first page.

◆ Network Area Address Setting

The PC or gateway can connect max. 16 sets CENTRAL CONTROL MONITOR. Every CENTRAL CONTROL MONITOR can be viewed as one network area and be distinguished by address set through the address setting button in keyboard. The setting range is 16-31.

Address setting method:

Pressing the Address set button repeatedly, the address will be increased one by one. When the address is equal MAX. 31 and you press once more, the address will restart from 16.

◆ Indicator Display

Indicator lamp will be on when the CENTRAL CONTROL MONITOR is power on.

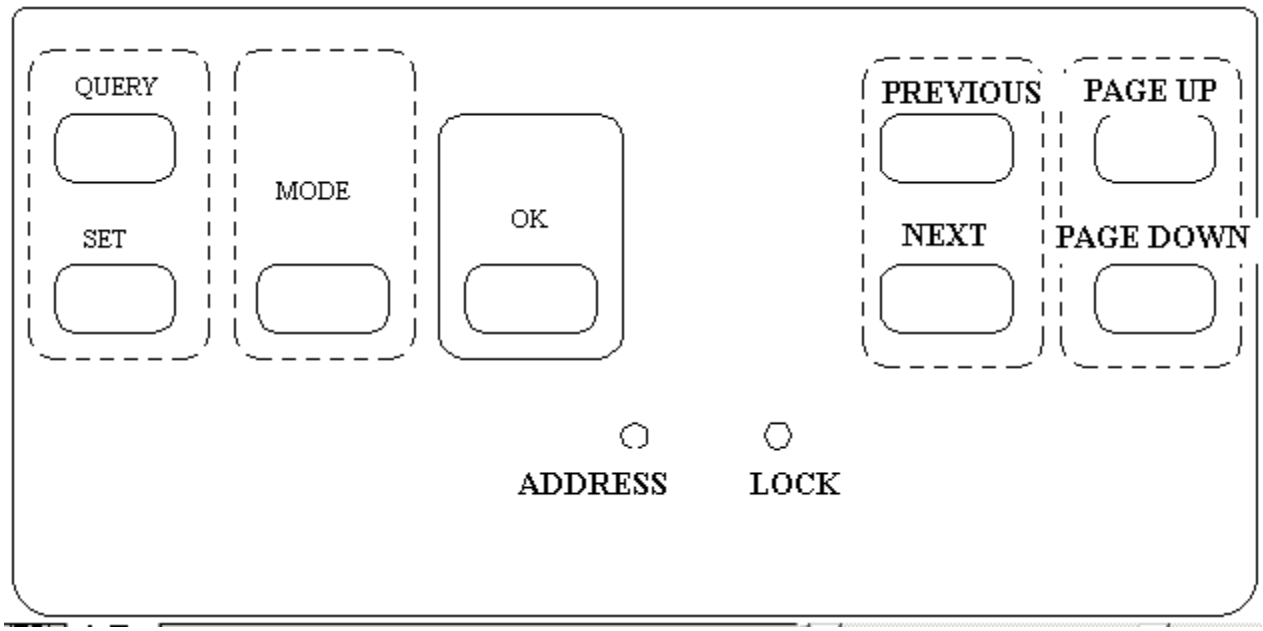
◆ CENTRAL CONTROL MONITOR Locked

All the other button will not be on controlled anytime when pushing the CENTRAL CONTROL MONITOR is locked. And unlock happens when receiving the lock.

◆ Electric energy consumption query

The Electric energy consumption can be queried through CENTRAL CONTROL MONITOR when the outdoor unit has its ammeter.

2)Figure and Function



2-1 Query Button

Push it to enter into the query state.

2-2 Previous Button

On the query state, push it to query in default the running states of other online air-conditioners.

2-3 Next Button

On the query state, push it to query in default the running states of other online air-conditioners.

2-4 Page Up Button

Pushing the Page Up button when choosing a online air-conditioner on the query state can display the parameters in previous page, and this can be cycled.

2-5 Page Down Button

Pushing the Page Down button when choosing a online air-conditioner on the query state can display the parameters in next page, and this can be cycled.

2-6 Set Button

Press Set button enter into Set Page.

2-7 Mode Button

Pressing OK button to enter into Mode Set, and select circularly between Forced Cooling and OFF state.

2-8 OK Button

Pressing OK button to confirm all setting and send to the corresponding air-conditioners.

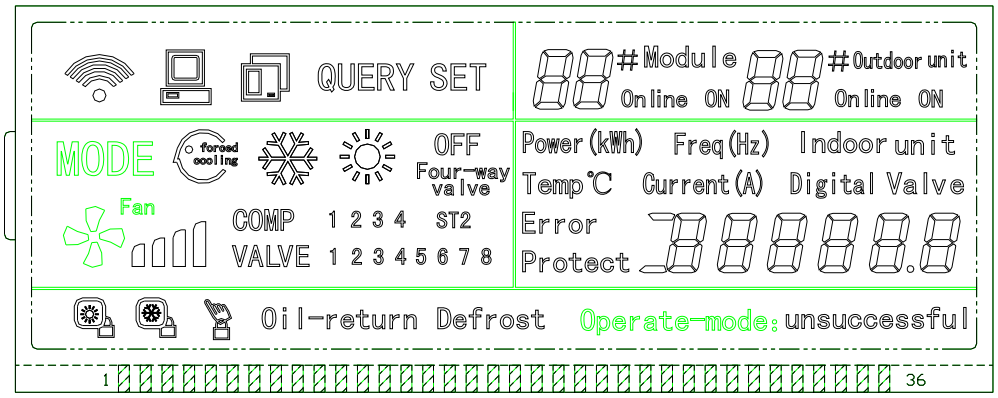
2-9 Lock Button

All the other button will not be on controlled anytime when pushing the button, and unlock happens when push it again.

2-10 Address Set Button

In Set page, pressing the Set button repeatedly, the address will be increased one by one. When the address is equal 31 and you press once more, the address will restart from 16.

3) Data



3-1 Common Display Data:

3-1-1 Figure means CENTRAL CONTROL MONITOR is sending query order.

3-1-2 Figure means CENTRAL CONTROL MONITOR is in communication with PC, and it will be off in 20 seconds with no communication.

3-1-3 Figure means CENTRAL CONTROL MONITOR is in communication connection with outdoor unit, and it will be off in 20 seconds with no communication.

3-1-4 Press the OK button in setting page and waiting for 4 seconds, “success” or “fail” will be shown in the operation state area.

3-2Stand-by Page Display:

3-2-1 Figure #Module Online ON means the total number of online modules

3-2-2 Figure #Outdoor unit Online ON means the total number of online units

3-2-3 Stand-by Page can display the address of CENTRAL CONTROL MONITOR with the address format of “Addr XX”, here ”XX” equals the real address of CENTRAL CONTROL MONITOR plus 16,so the range of “XX” is 16-31.

3-3 Query Page Display:

3-3-1 Query Page Display the symbol of query

3-3-2 Displaying the address of selected outdoor unit with #Module and #Outdoor unit

3-3-3 Mode display : means cool, means heat, OFF means shut off, means locked cool, means locked heat.

3-3-4 Fan Speed Display: Fan means low speed, Fan means middle speed, Fan means high speed.

3-3-5 Compressor State Display: “COMP. 1 2 3 4 5 6”

3-3-6 Electromagnetism Valve Display: “EMV. 1 2 3 4 5 6”

3-3-7 4-Way Valve Display “4-ways valve” St2

3-3-8 Defrost Display: “Defrost”

3-3-9 Oil Return Display: “OIL RETURN”

3-3-10 Page 0 displays the consumption of electric energy with “ELECTRIC ENERGY Kw/h” and the number.

3-3-11 Page 1 displays the input power frequency with “Frequency Hz” and the number.

3-3-12 Page 2 displays the total number of indoor units.

3-3-13 Page 3 displays the temperature symbol T3 with “TEMP.℃”, “T3” and the number.

3-3-14 Page 4 displays the temperature symbol T4 with “TEMP.℃”, “T4” and the number.

3-3-15 Page 5 displays the temperature symbol T6 with “TEMP.℃”, “T6” and the number.

3-3-16 Page 6 displays the discharge temperature of compressor symbol C1 with “TEMP.℃”, “C1” and the number.

3-3-17 Page 7 displays the discharge temperature of compressor symbol C2 with “TEMP.℃”, “C2” and the number.

3-3-18 Page 8 displays the discharge temperature of compressor symbol C3 with “TEMP.℃”, “C3” and the number.

3-3-19 Page 9 displays the compressor current symbol 1 with “CURRENT A”, “1” and the number.

3-3-20 Page 10 displays the compressor current symbol 2 with “CURRENT A”, “2” and the number.

3-3-21 Page 11 displays the compressor current symbol 3 with “CURRENT A”, “3” and the number.

3-3-22 Page 12 displays the digital capacity with “DIGITAL CAPACITY” and the number.

3-3-23 Page 13 displays the openness of electromagnetism valve symbol 1 with “VALVE OPENNESS”,”1” and the number.

3-3-24 Page 14 displays the openness of electromagnetism valve symbol 2 with “VALVE OPENNESS”,”2” and the number.

3-3-25 Page 15 displays the most advanced malfunction with “MALFUNCTION” and the code.

3-3-26 Page 16 displays the most advanced protection with “PROTECTION” and the code.

NOTE:

The page will increase or decrease by 1 every time you press “PAGE UP” or “PAGE DOWN”.

Select the online outdoor unit by push the “previous” or “next” freely.

3-4 SET PAGE DISPLAY:

3-4-1 Set Page Displays” Set”

3-4-2 Mode display: Pressing MODE button to enter into MODE set, and select circularly between Forced Cooling  and OFF state.

3-4-3 Set page displays the address of selected outdoor units and module.

3-4-4 Pressing OK button to confirm all setting and send to the corresponding air-conditioners.

3-4-5 “Successful” or “Unsuccessful” shown in the operation state area indicates whether the transmission is confirmed or not.

4) Malfunction and Protection Code Table

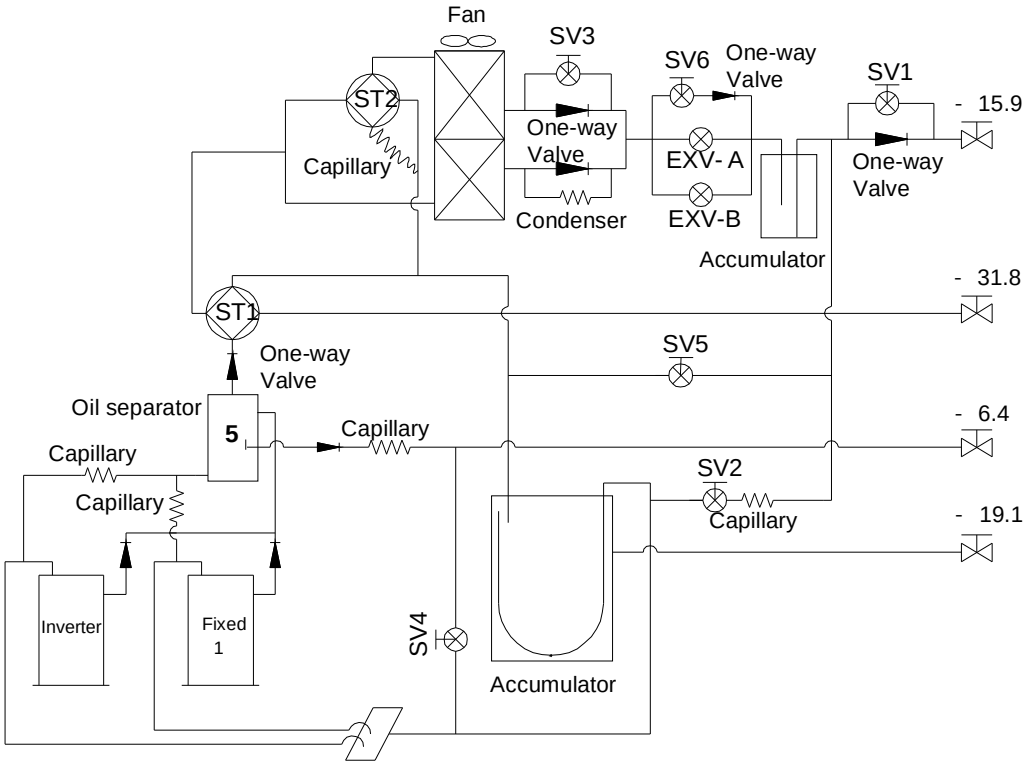
ERROR Code	ERROR Contents	Description	ERROR Code	ERROR Contents	Description
H3	Outdoor adding malfunction (valid for host unit)		PA	Defrost Protection	
H2	Outdoor decreasing malfunction (valid for host unit)		P8	Compressor Current 3rd Protection	
H1	Net communication malfunction		P7	Compressor Current 2nd Protection	
EF	Other malfunction		P5	Condenser High Temp. Protection	
E4T4	Temp. Sensor malfunction		P4	Discharge Pipe Temp. Protection	
E3T3	Temp. Sensor malfunction		P3	Compressor Current 1st Protection	
E2	Sensor malfunction		P2	Discharge Low-pressure Protection	
E1	Phase sequence or lack of phase		P1	Discharge High-pressure Protection	
E0	Communication malfunction		P0	Compressor High Temp. Protection	
PF	Other Protection				
PE	Oil Balance				
PD	Oil Return				

Part 6
Functions

1. Refrigerant Circuit

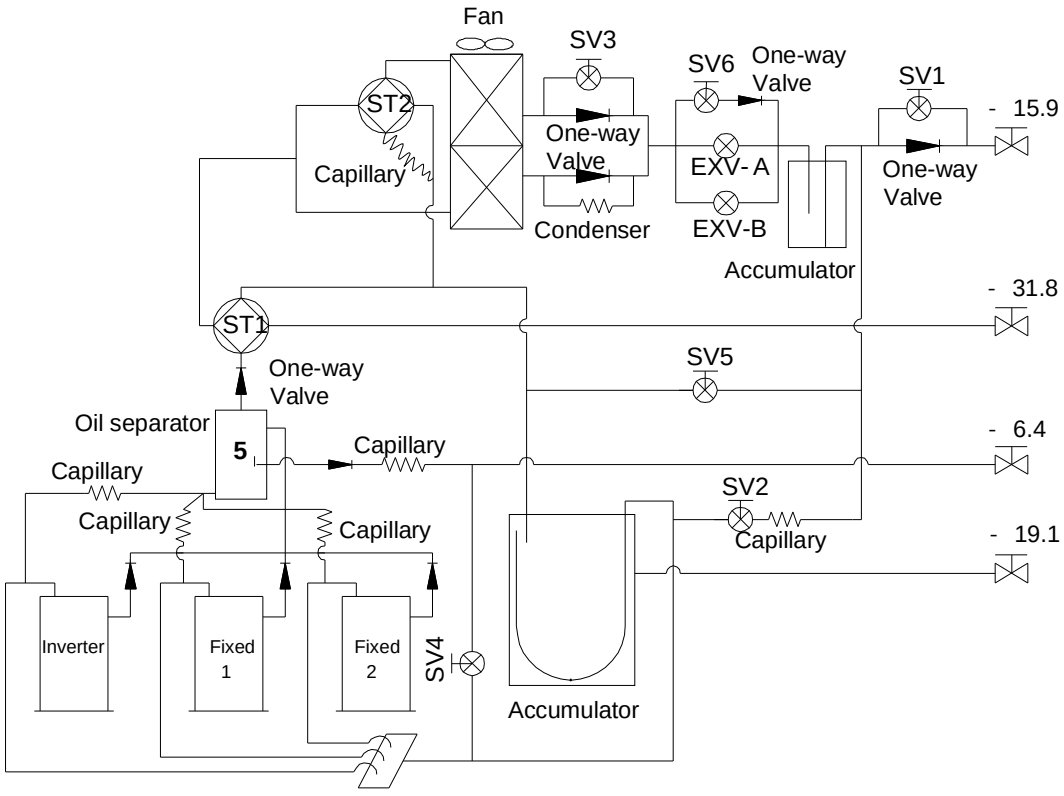
1.1 HCSU 2501 XRV,HCSU 3001 XRV, HCSU 3501 XRV

Name	Function
Inverter compressor	The inverter compressor inputs a variety of frequency through the converter, and the fixed compressor only operates under the commercial power supply.
Fixed compressors	
One-way valve	To prevent backflow when the compressor stops
One-way solenoid valve ） SV5*	Used when the system is in defrost mode
Discharge temp. sensor	To prevent the compressor discharge temperature too high
High pressure switch	To prevent the compressor discharge pressure too high to damage the compressor. This switch is activated at high pressure of 4.4 MPa or more to stop the compressor operation and recovers at the high pressure of 3.2MPa or less.
Oil separator	To separate the oil discharging from the compressors.
Auxiliary four-way valve ） ST2*	Change the heat-exchanger area in cooling mode. Closes in heating mode. Opens when the capacity demand is less than 4HP and closes when the capacity demand is higher than 4HP after inverter compressor starts to run for 3 minutes.
Main four-way valve ） ST1*	To change the operation mode between cooling and heating
One-way solenoid valve (SV3)	To change the heat-exchanger area in heating mode. Opens when the average temp. of evaporator is less than 46 + Closes when the average temp. of evaporator is higher than 52 . Closes in cooling mode.
One-way solenoid valve (SV6)	Adjust the refrigerant flux in cooling mode. Closes when the unit is standby or in heating mode. Opens when the discharge temperature is higher than 90 in cooling mode or force cooling mode.
Electronic expansion valve (EXV-A)	Adjust the refrigerant flux in cooling mode to make sure the discharge temp. range within 85-90, . In heating mode, mainly used to throttle and also can adjust the refrigerant flux.
Electronic expansion valve (EXV-B)	
One-way solenoid valve (SV1)	Cut off the refrigerant between outdoor units in multi-outdoor combination system. Open if outdoor unit is running, close if outdoor unit is off.
One-way solenoid valve (SV2)	Spray valve, when the discharge temperature higher than 100 , it opens to cool down the compressor.
Low pressure switch	To make a low pressure protection for the compressor. This switch is activated at low pressure of 0.05 MPa or less to stop the compressor operation and recovered at the low pressure of 0.15MPa or more
One-way solenoid valve (SV4)	Balance the oil among the modules, open for 3 minutes per 20 minutes during unit running
Stop valve	Gas balance valve
Stop valve	High pressure valve
Stop valve	Low pressure valve
Stop valve	Oil balance valve



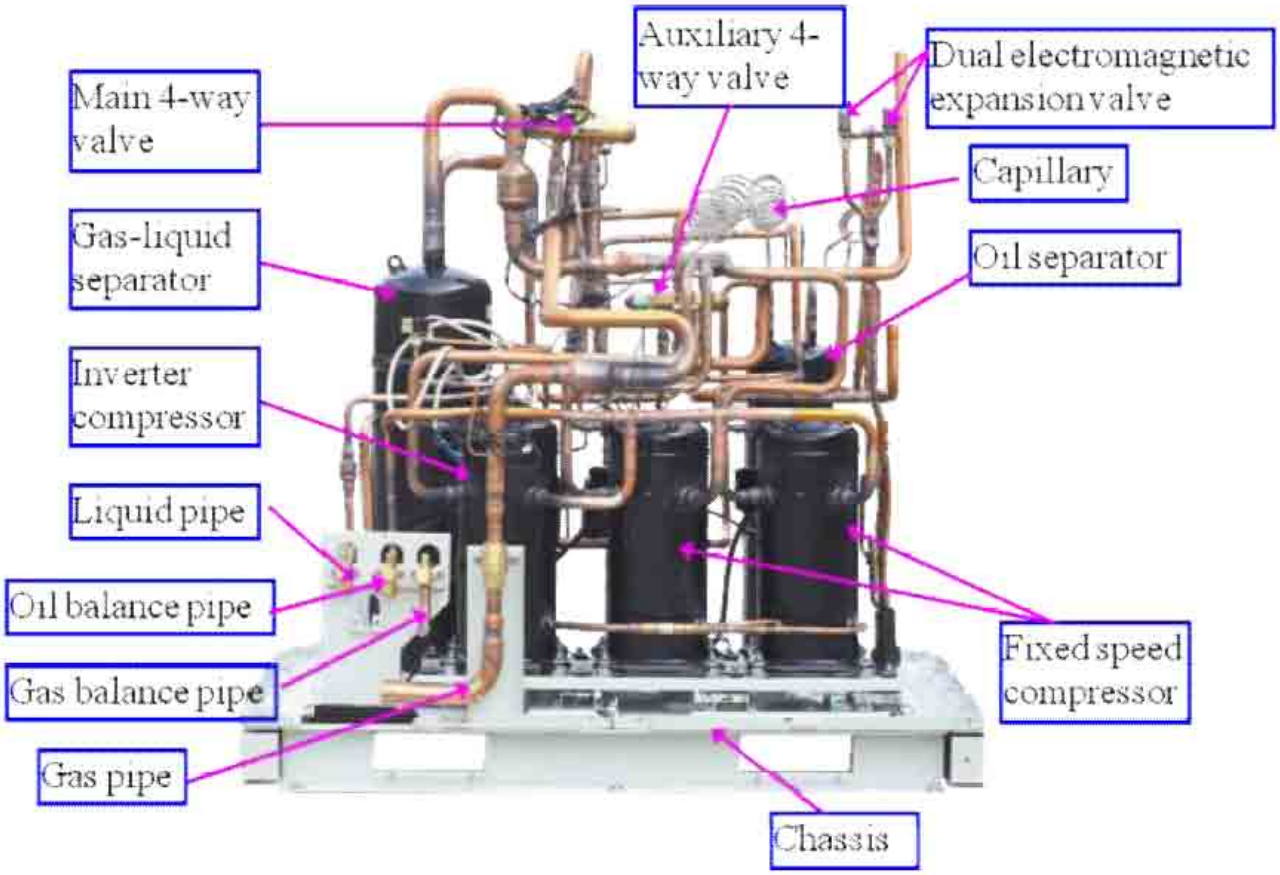
1.2 HCSU 4001 XRV, HCSU 4501 XRV

Name	Function
Inverter compressor	The inverter compressor inputs a variety of frequency through the converter, and the fixed compressor only operates under the commercial power supply.
Fixed compressors	
One-way valve	To prevent backflow when the compressor stops
One-way solenoid valve ） SV5*	Used when the system is in defrost mode
Discharge temp. sensor	To prevent the compressor discharge temperature too high
High pressure switch	To prevent the compressor discharge pressure too high to damage the compressor. This switch is activated at high pressure of 4.4 MPa or more to stop the compressor operation and recovers at the high pressure of 3.2MPa or less.
Oil separator	To separate the oil discharging from the compressors.
Auxiliary four-way valve ） ST2*	Change the heat-exchanger area in cooling mode. Closes in heating mode. Opens when the capacity demand is less than 4HP and closes when the capacity demand is higher than 4HP after inverter compressor starts to run for 3 minutes.
Main four-way valve ） ST1*	To change the operation mode between cooling and heating
One-way solenoid valve (SV3)	To change the heat-exchanger area in heating mode. Opens when the average temp. of evaporator is less than 46 + Closes when the average temp. of evaporator is higher than 52 . Closes in cooling mode.
One-way solenoid valve (SV6)	Adjust the refrigerant flux in cooling mode. Closes when the unit is standby or in heating mode. Opens when the discharge temperature is higher than 90 in cooling mode or force cooling mode.
Electronic expansion valve (EXV-A)	Adjust the refrigerant flux in cooling mode to make sure the discharge temp. range within 85-90, . In heating mode, mainly used to throttle and also can adjust the refrigerant flux.
Electronic expansion valve (EXV-B)	
One-way solenoid valve (SV1)	Cut off the refrigerant between outdoor units in multi-outdoor combination system. Open if outdoor unit is running, close if outdoor unit is off.
One-way solenoid valve (SV2)	Spray valve, when the discharge temperature higher than 100 , it opens to cool down the compressor.
Low pressure switch	To make a low pressure protection for the compressor. This switch is activated at low pressure of 0.05 MPa or less to stop the compressor operation and recovered at the low pressure of 0.15MPa or more
One-way solenoid valve (SV4)	Balance the oil among the modules, open for 3 minutes per 20 minutes during unit running
Stop valve	Gas balance valve
Stop valve	High pressure valve
Stop valve	Low pressure valve
Stop valve	Oil balance valve



2. Functional Parts Layout

Take the 14HP as example



Function

1. Principle of DC Inverter Smart system

Indoor unit's PCB receives and collects the information from users (set temp., fan speed etc.) and environment (indoor coil temp., indoor temp. etc.), and organize them to control the action of relevant parts such as EXV, then transmits them to outdoor master unit's PCB.

Outdoor unit PCB works out the best running mode and sends the corresponding order to slave outdoor units and indoor units.

2. Outdoor unit control

2.1 Solenoid Valve Control

SV1: For cutting off the refrigerant flow between modules in case of multi outdoor connection system

- If the outdoor is operating, the SV1 opens, if the outdoor unit is off, it closes.
- It opens 2 minutes if the outdoor unit is first electrified.
- It opens 2 minutes if all the outdoor units stop, then closes.

SV2: Spray valve, for cooling down the compressor.

- It opens when the discharge temperature of any compressor is over 100 .

SV3: For varying the heat-exchanger area in heating mode

- It opens when the average temp. of evaporator is less than 46 , closes when the average temp. of evaporator is higher than 52 . It closes in cooling mode.

SV4: For oil equalizing control

- If the system is first time startup, SV4 opens when the inverter compressor continual works 5 minutes, closes when the inverter compressor continual works15 minutes.
- Single unit, it opens for 3 minutes per 20 minutes during unit running
- Multi-system, after the inverter compressor of master unit operates 20minutes, the SV4 of master unit opens 3 minutes, and after 5 seconds, the SV4 of slave unit1 opens for 3 minutes, then the SV4 of slave unit2 and slave unit3 perform the action in series. Every 20 minutes, the SV4 performs the above action.

SV5: Used in defrosting mode

- In defrosting mode, the opening of SV5 can cut the refrigerant flowing circle, so the defrosting process will take less time.

SV6: For refrigerant volume adjustment

- It closes when the unit is standby or in heating mode
- It opens when the discharge temperature is higher than 90in cooling mode or force cooling mode,.

2.2 Electronic Expansion Valve Control

Every outdoor unit has two same EXVs, the maximum opening angle is 480 pulse of each EXV.

When the outdoor unit is electrified, the EXV closes 700 pulses first, then opens to 350 pluses to standby. When outdoor unit starts, it opens to the right pulse.

During the operating, the open or stop of units are controlled by the capacity demand of the system. If the capacity demand decreasing and needs to stop the salve module, the slave unit stops first, then closes its EXV. After the EXV of slave unit closed, if the system needs to stop the master unit, the master unit stops first, then its EXV closes, after few seconds, the EXV of both salve unit and master unit open to stand by.

During operating, the opening degree of EXV is decided by the capacity demand of the system.

2.3 Four-way valve Control

[Main Four-way valve: ST1]

- It opens in heating mode, closes in cooling mode.

[Auxiliary Four-way valve: ST2]: For varying the heat exchanger area in cooling mode.

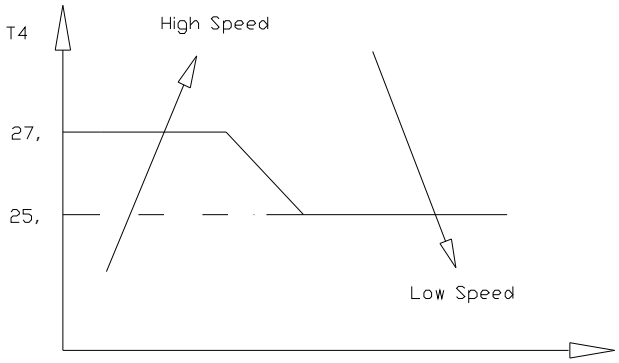
- It closes in heating mode.
- It opens when the capacity demand is less than 4HP and closes when the capacity demand is higher than 4HP after inverter compressor starts to run for 3 minutes.

2.4 Operation Fan Control

The 8HP and 10HP outdoor units have one fan, the 12HP, 14HP and 16HP outdoor units have 2 fans.Each fan has two speeds, high and low speed.

[Cooling]

After the outdoor unit started up, the outdoor fan keeps working, except the defrosting mode.



T4: Outdoor ambient temp.

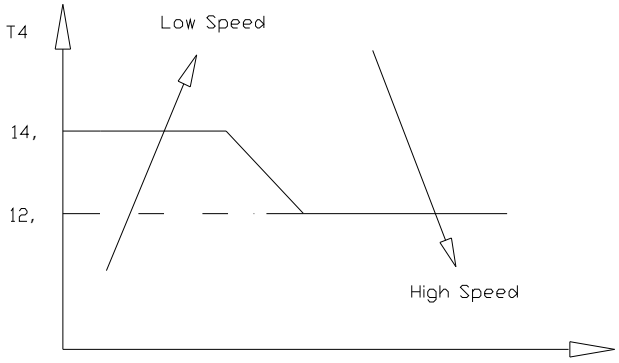
When the temperature is increasing and more than 27, , outdoor fan motor switches to high speed.

When the temperature is decreasing and less than 25, , outdoor fan motor switches to low speed.

When T4≤15, and T3>25, , outdoor fan works in low speed, if T3 lower than 20, , outdoor fan stops.

[Heating]

After the outdoor unit starts up, the outdoor fan keeps working, except the average evaporator temp. is more than 54, .



T4: Outdoor ambient temperature

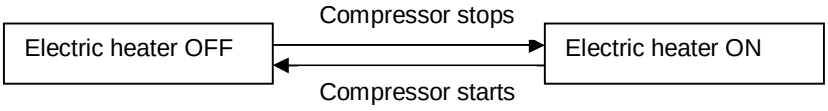
When the temperature is increasing and higher than 14, , the outdoor fan motor switches to low speed.

When the temperature is decreasing and lower than 12, , the outdoor fan motor switches to high speed.

When the evaporator temperature is higher than 54, , the outdoor fan stops.

2.5 Electric heater of Compressor control

The electric heater is used to prevent the refrigerant dissolved into compressor oil when compressor stops.



2.6 Oil Return Operation Control

In order to prevent the running-out of refrigerating machine oil in the compressor, the oil flowing out from the compressor to the system side is collected through the oil return operation.

2.6.1 Oil Return Operation in Cooling Operation

[Starting conditions]

The compressor works continuously more than 4 hours.

[End conditions]

Oil return operation performs continue 3 minutes

* In the case of multi-outdoor-unit system, all the outdoor units perform the operation.

*** Indoor unit action during oil return operation**

Indoor unit		Cooling oil return operation	After cooling oil return operation
Fan	Cooling operating unit	Keep the fan speed	Keep the fan speed
	Fan only operating unit	Keep the fan speed	Keep the fan speed
	OFF unit	Breeze	Stop
Electronic expansion valve	Cooling operating unit	Keep the open step	Keep the open step
	Fan only operating unit	Open to 300 step	Closed
	OFF unit	Open to 300 step	Closed

2.6.2 Oil Return Operation in Heating Operation

[Starting conditions]

The compressor works continuously more than 4 hours.

[End conditions]

Oil return operation performs 3 minutes

* In the case of multi-outdoor-unit system, all the outdoor units perform the operation.

*** Indoor unit action during oil return operation**

Indoor unit		Heating oil return operation	After heating oil return operation
Fan	Heating operating unit	Keep the fan speed	Keep the fan speed
	Fan only operating unit	Keep the fan speed	Keep the fan speed
	OFF unit	Breeze	Stop
Electronic expansion valve	Heating operating unit	Keep the open step	Keep the open step
	Fan only operating unit	Open to 480 step	EXV close and clear the counter then open to 96 step
	OFF unit	Open to 480 step	EXV close and clear the counter then open to 96 step

2.7 Defrosting Operation Control

In order to melt the frost accumulated on the heat exchanger during heating operation,

Defrost operation is performed to restore the heating capacity.

[Starting conditions]

Continue compressor operating and T3≤0 last 40 min (if the compressor stops, timer again)

[Ending conditions]

Defrosting operation mode has been performed more than 10 min and T3 more than 15,

* In the case of multi-outdoor-unit system, all the outdoor units perform the operation.

2.8 Pressure Equalizing Control

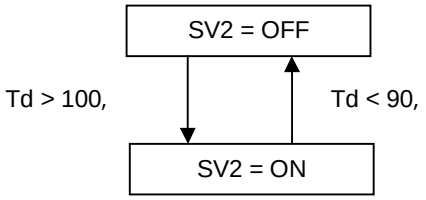
Thanks to the adjustment of the outdoor EXVs, the resistance of refrigerant of each system and the suction pressure of the each compressor are the same.

2.9 Restart Control

The system has 3 minutes delay restart function to prevent the compressor from damage.

2.10 Refrigerant spray control

It's used to control the liquid gas flow back to the suction side to cool down the discharge temperature, thereby to protect the compressor, when the discharge temperature is going up.



Td: Discharge temperature

2.11 Start-up control

2.11.1 One outdoor system

When receives the start-up signal, outdoor unit calculates the capacity demand of indoor side.

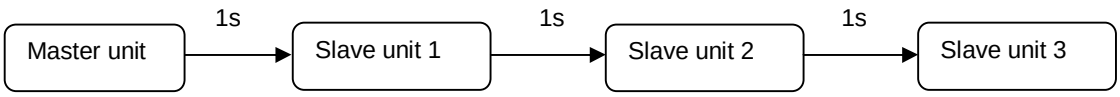
* If the capacity demand of indoor side is lower than the capacity of inverter compressor output, only inverter compressor starts up and inverter compressor adjusts the output according to the capacity demand.
* If the capacity demand of indoor side is higher than the capacity of inverter compressor output, after inverter compressor starts up, the fixed compressor starts up, for the 14HP and 16HP outdoor units, the fixed compressor starts up in 5s gap, and inverter compressor according adjusts the output to the capacity demand.

2.11.2 Multi-outdoor-unit system

When receives the start-up signal, outdoor units calculate the capacity demand of indoor side.

* If the capacity demand of indoor side is lower than the capacity of master unit, the master unit performs the above operation.
* If the capacity demand of indoor side is higher than the capacity of master unit, the slave units also need to open.

The start up sequence is as follows:



3. Indoor unit control

3.1 Condensing water Pump Control.

The condensing water pump is controlled by the water level float switch of the pump.

When the unit starts cooling mode, the pump works at once and continue works until the cooling mode stops.

In any condition, if the water lever reaches the water level float switch position, the water lever float switch signal cut off, then the pump works immediately. When the water level falls down and lower than the position of water level float switch, the pump stops working after one min. Otherwise this indoor unit and the pump will stop after 3 minutes and the display indicates the water level alarm, but the other indoor units keep working. When the water level float switch closes again, the indoor unit recovers to work.

3.2 Louver Control

3.2.1 Louver auto swing angle

If the auto swing signal is sent when the step motor is swinging, the signal will be action after the motor finishes the swing.

If the auto swing signal is sent when the step motor is performing the auto swing order, the louver stops at the current position.

3.2.2 The louver angle control

Once pressing the air direction button, the louver turns 6°.

3.2.3 The step motor of the not working indoor unit will open to the standard position during oil return mode, and recover to the previous position after the oil return mode end.

3.3 Thermostat Sensor in Wired Remote Controller

If set the indoor unit in follow me function, the indoor unit will only distinguish the temperature from the sensor installed in the controller and use this temperature to instead of the T1 (air intake temperature of indoor unit) to adjust the capacity demand. If the system does not receive the signal from the follow me sensor in 7 minutes, the system will conceal the follow me function automatically and starts to read the T1.

3.4 Electronic expansion valve control of indoor unit

When indoor unit powers on, the indoor EXV closes to - 700 pulse first (Clear the counter), then open to 300 pulses degree to stand by, after the compressors starts up, it opens to target step according to the capacity requirement.

When the compressors stops, the indoor EVX closes to -160 pulse first (clear the counter), then opens to 300 pulses degree to stand by, after the compressors restarts, it opens to target step according to the capacity requirement.

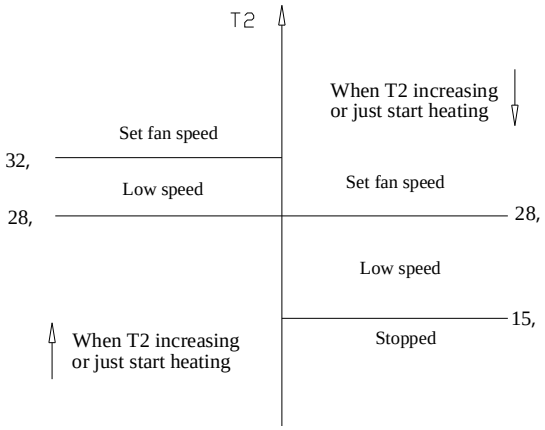
When all the indoor units are in fan only mode, stand by mode or reached the set temperature condition, namely the compressors stop, the indoor EXV opens to 300 pulse step.

In cooling mode, the indoor units in Fan only mode, Off, or reached the set temperature condition, the EXV closes to -160 pulse step and clears the counter. The EXV of working indoor units are adjusted by the T2B (the temperature at the outlet pipe of indoor coil).

In heating mode, the indoor units in Mode conflict mode(Fan only mode, cooling mode), Off, or reached the set temperature condition, the EXV closes to -160 pulse step and clears the counter, then opens to 96 pulse step. The EXV of working indoor units are adjusted by the T2 (the temperature at the mid of indoor coil).

3.5 Freeze Prevention

The fan speeds are adjusted according to the Evaporator pipe temperature to prevent the cold air.



T2: The temperature at the middle of indoor

3.6 Outlet air temperature control

[Cooling mode]

When the room temperature is going down and 1,℃ lower than setting temperature, the EXV of this indoor unit closes and the fan stops. When the room temperature is going up and equals to the set temperature, the EXV opens and adjusts the opening step according to the capacity demand and the fan recovers to work.

[Heating mode]

When the room temperature is going up and 4,℃ higher than settig temperature, the EXV of this indoor unit opens to 96 pulse step and the fan stops. When the room temperature is going down and 3,° or less higher than setting temperature, the EXV opens and adjusts the opening steps according to the capacity demand, and the fan recovers to work.

3.7 Auto Restart control

This function is selected by the wire jump on the PCB.

If the power cuts off during the unit is operating or standby, after the power recovers, the unit restarts in the previous working mode.

The auto restart function can memorize and recover the following modes: stop/open the unit, set mode, set fan speed, set temperature, wireless remote controller function locked. It can not memorize the following functions: economy function, timer on, timer off and auxiliary function operation condition.

Only the signal from the controller and PC are transmitted by the NIM is in effect.

It can not memorize the operation by operated directly on the air conditioner, such as manual button operation and force operation. If the units are in the above modes when power off, after power on, the air conditioner will be standby but not sends the auto restart information.

The outdoor unit will start 3 minutes delay after the power recovers, and the indoor units will restart according to the following formula:

Trs=180s+n*2s.

Trs: restart time after the power recovered.

n: the address of indoor unit for outdoor unit

Unit: second

The auto restart signal is a remote control signal sent to the PCB, it can inspect whether the PCB answers the signal or not, if the PCB doer not respond the signal, it will send the signal again, if the PCB does not respond the signal 3 times, it will not send the restart signal again, thereby the unit can not restart automatically.

If the air conditioner receives the signal from the user during the auto restart time delay period, the air conditioner responds the signal sent by the user and conceals the auto restart function.

3.8 Mode Conflict Control

The heating mode has the priority in default.

In cooling or fan only mode.

If the system receives heating signal when it's in cooling mode or fan only mode, the outdoor unit will stop and restart to heating after 3 minutes. The indoor unit which was in cooling or fan only mode will display corresponding error code or the DEF/FAN lamp of the indoor unit will quick flash.

In heating mode.

If the system receives cooling or fan only signal when the system is in heating mode, the system will ignore the order and these units will display corresponding error code or the DEF/FAN lamp of the indoor unit will quick flash. If the system stops not because the indoor side reaches the setting temperature, it will start cooling or fan only mode operation after 3 minutes.

4. Protection Control

4.1 High Pressure Protection Control

This high pressure protection control is used to prevent the activation of protection devices due to abnormal increase of high pressure and to protect compressors against the transient increase of high pressure.

" When the high pressure is higher than 4.4MPa, the high pressure switch cuts off, when the high pressure lower than 3.2MPa, the high pressure switch recovery.

In the case of multi-outdoor-unit system, each outdoor unit performs this control individually.

4.2 Low Pressure Protection Control

This low pressure protection control is used to protect compressors against the transient decrease of low pressure.

" When the low pressure lower than 0.05MPa, the low pressure switch cuts off, when the low pressure higher than 0.15MPa, the low pressure switch recovery.

In the case of multi-outdoor-unit system, each outdoor unit performs this control individually.

4.3 Discharge Pipe Protection Control

This discharge pipe protection control is used to protect the compressor internal temperature against a malfunction or transient increase of discharge pipe temperature.

" Each compressor performs the discharge pipe temperature protection control individually.

When the discharge temperature is higher than 125, , the compressor stops, and recover when the temperature is lower than 90, .

4.4 Inverter Protection Control

The protection current of the inverter module is 75A.

4.5 STD Compressor Overload Protection

The compressor has an inner overload protector, the open temperature is 145±5 , the close temperature is 52~70 .

4.6 Low Temperature Protection Control of Indoor Evaporator

Only active in cooling mode

[Starting condition]

When T2 < 2 for 3 minutes, closes the EXV and clear the counter.

[Ending condition]

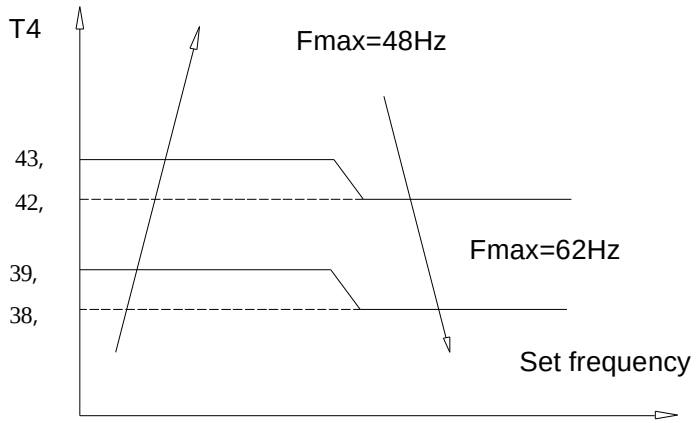
When T2 ≥7 , recovers to work.

4.7 Over-current Protection of the Compressor

The system detects the current after the compressor starts 2 minutes. When the current is more than 16A, the compressor stops, and recovers after 3 minutes.

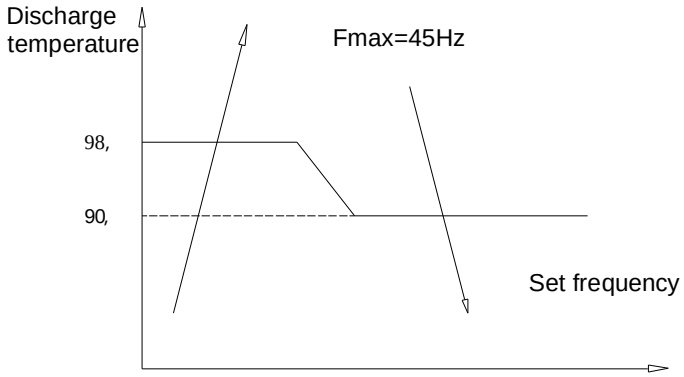
4.8 Inverter Compressor Upper limit Frequency Control

4.8.1 Limit Frequency Control caused by Outdoor ambient temperature (T4):

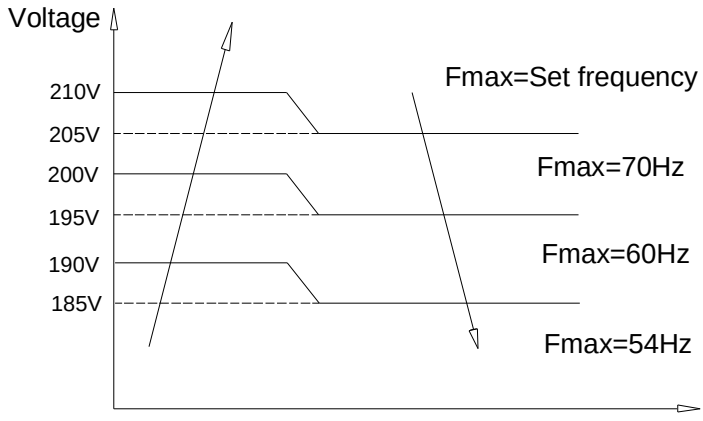


4.8.2 Limit Frequency Control caused by discharge temperature

In cooling or heating mode, when the discharge temperature more than 98 , the maximum frequency of inverter compressor is 45Hz.When the temperature decreasing and lower than 90 , it recovers to normal control:



4.8.3 Limit Frequency Control caused by voltage

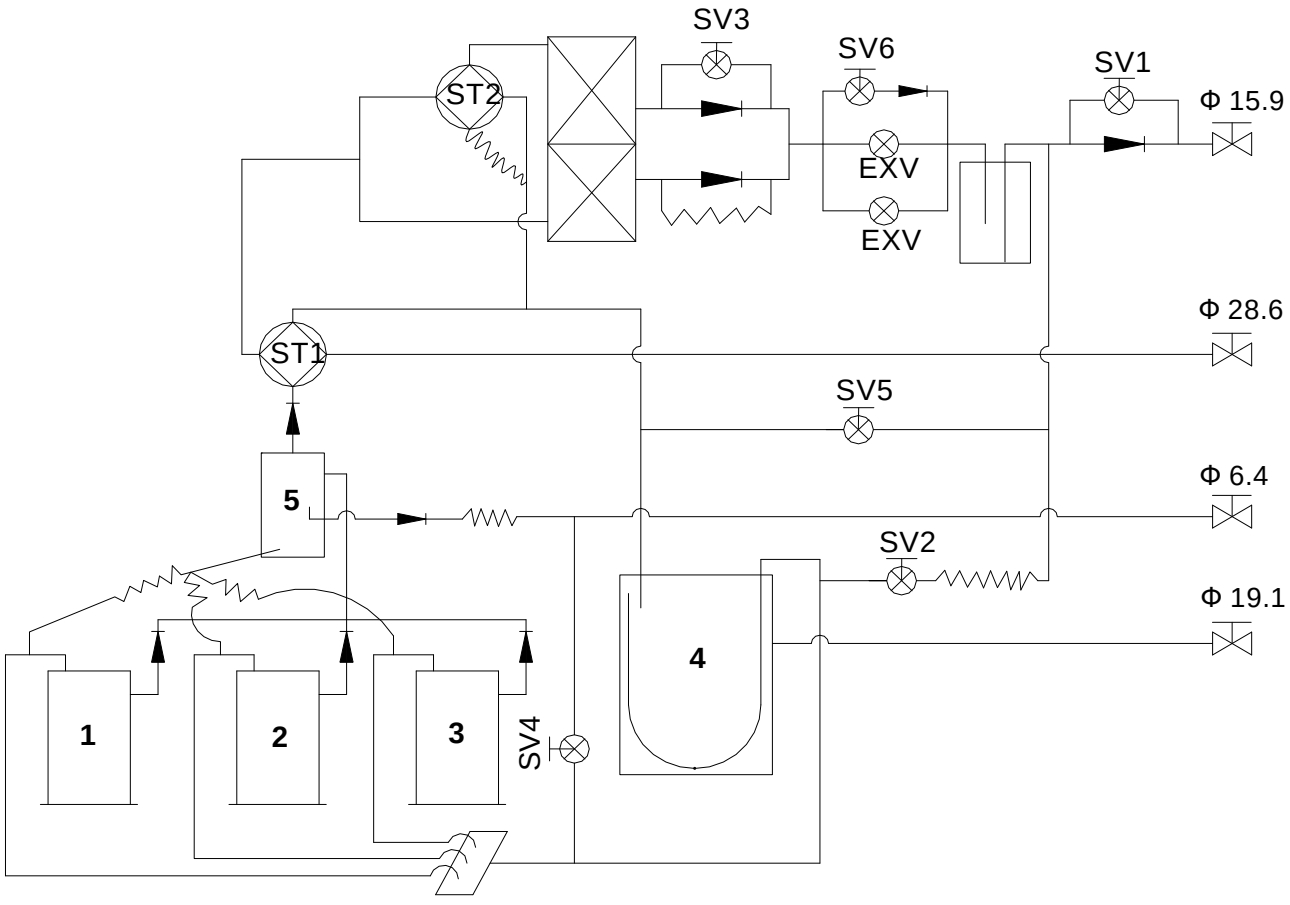


PART 7

TROUBLESHOOTING

1. PIPING DIAGRAM

Take HCSU 4001 XRV for example:



Remark:

1: DC Inverter compressor

2/3: Fixed compressor

4: Gas-liquid separator

5: Oil separator

Note: Model HCSU 2501 XRV、HCSU 3001 XRV、HCSU 3501 XRV has only one fixed compressor, ,model HCSU 4001 XRV、HCSU 4501 XRV have two fixed compressors.

EXV (electromagnetic expand valve) control:

1) Every outdoor unit has two same EXV.

2) Max. Open degree is 480 pulses.

3) Generally when system is electrified the EXV closes 700pulse first, then opens to 350 pulse and stand by. Then the unit is started, it opens to the right pulse.

4) When the running outdoor unit receives OFF signal, the EXV of auxiliary unit will stop while main unit is running and auxiliary unit is stopped at the same time. If all outdoor units are stopped, the EXV will close first, then open to the pulse of stand-by.

5) **SV1:** Opens when outdoor unit starts. Closes when unit stops.

6) **SV2:** for spraying a little refrigerant to cool compressor down.

Opens if any compressor discharge temp. is higher than 100℃.

7) **SV3:** for changing the heat-exchanged areas on heating mode.

Opens when the average temp. of all indoor evaporators is less than 46℃.

Closes while the average temp. of all indoor evaporators more than 52℃

OFF on cooling mode

8) **SV4:** oil returning valve.

Opens when the unit is running for every 20 minutes and last 3 minutes

9) **SV5:** for defrost.

In defrosting mode, the opening of SV5 can cut the refrigerant flowing circle, so the defrosting process will takes less time.

10) **SV6:** for by-pass.

Closes when the unit stands by and system in heating mode.

Opens when the discharge temperature is too high in cooling mode.

Four-way valve control:

1) **ST1:** Main 4-way valve

Closes in cooling mode and opens in heating mode

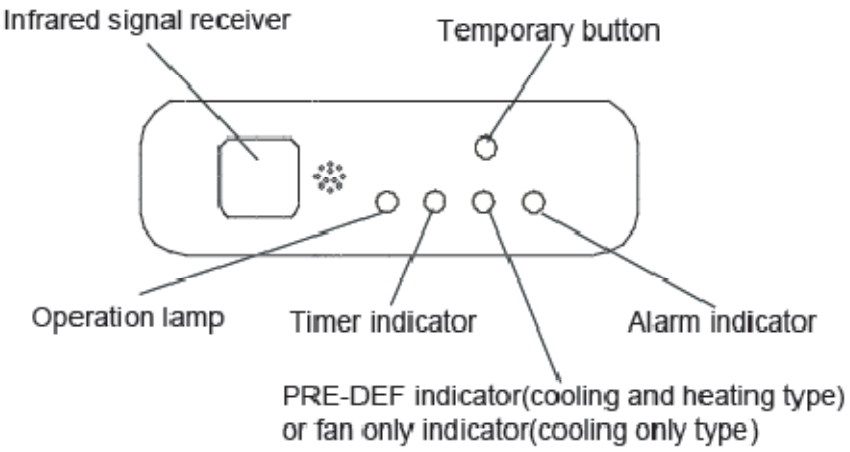
2) **ST2:** Auxiliary 4-way valve, for changing the heat-exchanger areas in cooling mode.

Opens when in part load mode and closes while in full load mode.

Closes in heating mode.

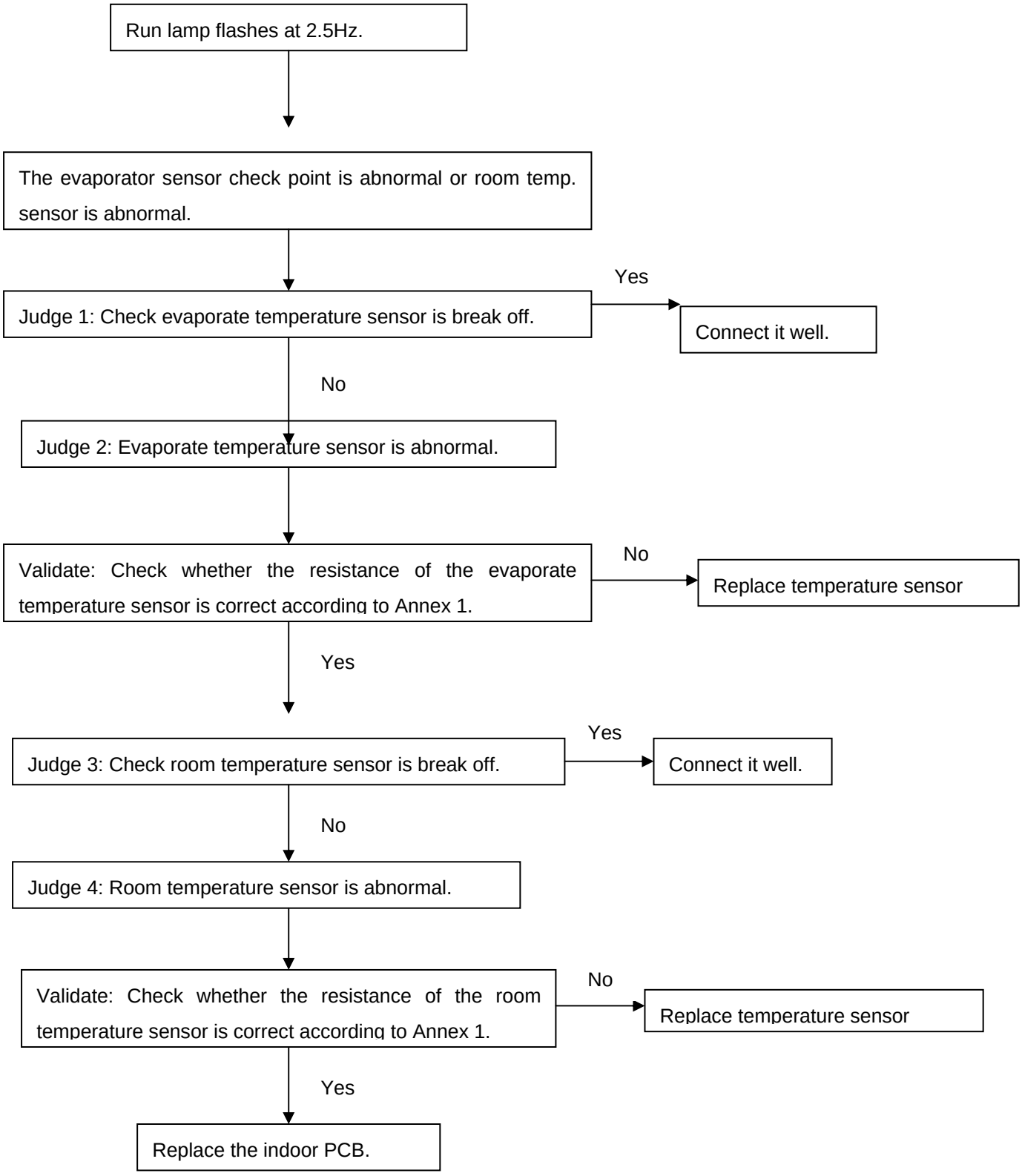
2. TROUBLESHOOTING

2.1 Indoor Units lamp flashes:

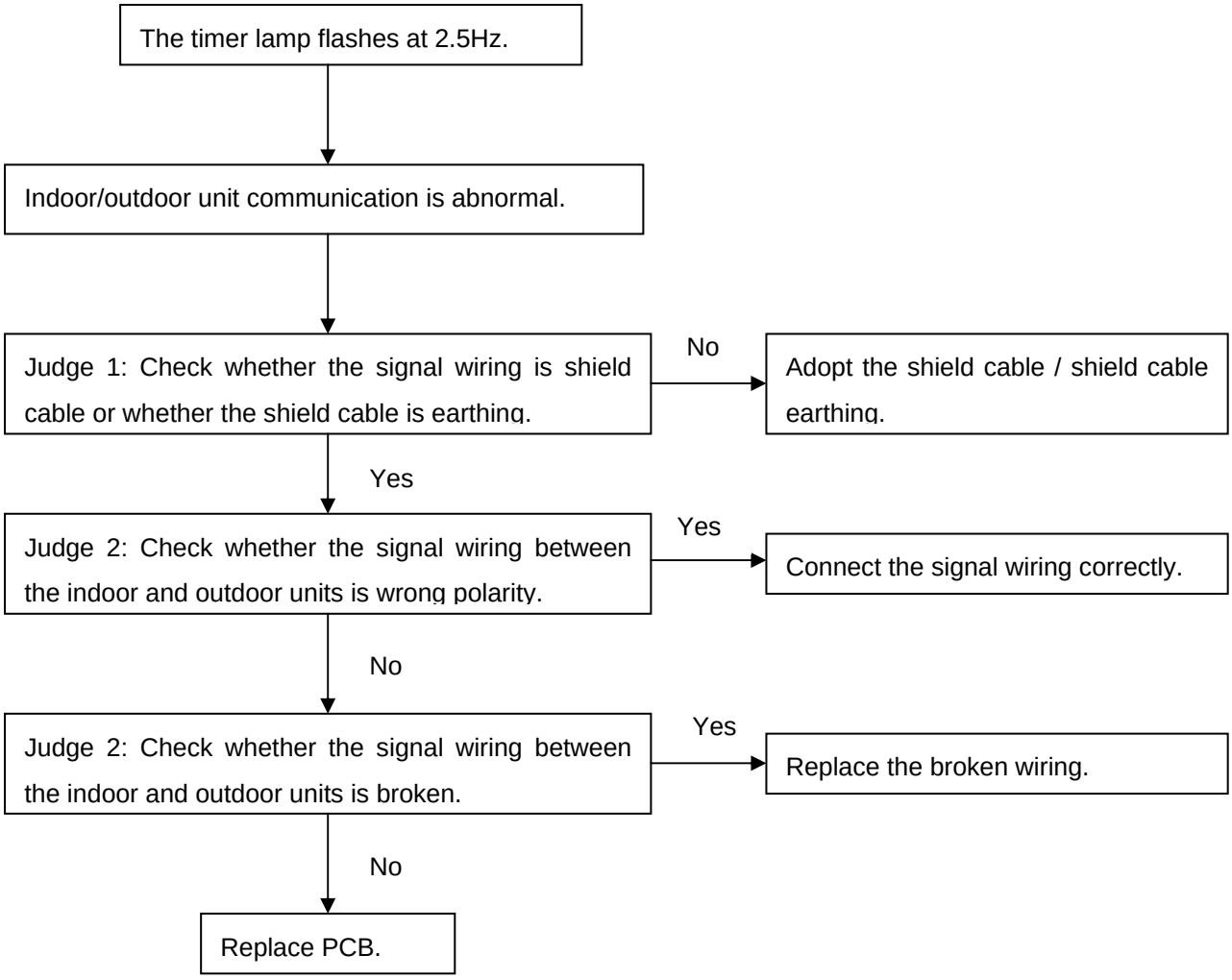


No	Type	Contents	LED Lamp flash	Remarks
1	Malfunction	The evaporator sensor check point is abnormal or room temp. sensor is abnormal.	Run lamp flashes at 2.5Hz.	After the malfunctions disappear, it restores automatically.
2	Malfunction	Indoor/outdoor unit communication is abnormal.	The timer lamp flashes at 2.5Hz.	After the malfunctions disappear, it restores automatically.
3	Malfunction	Condenser sensor check point is abnormal or outdoor temp. sensor is abnormal.	All the indoor alarm lamps flash at 0.5Hz.	After the malfunctions disappear, it restores automatically.
4	Alarm	Mode conflict	Defrost lamp flashes at 2.5Hz.	When the indoor unit turns to heating mode or is turned off, the alarm will disappear.

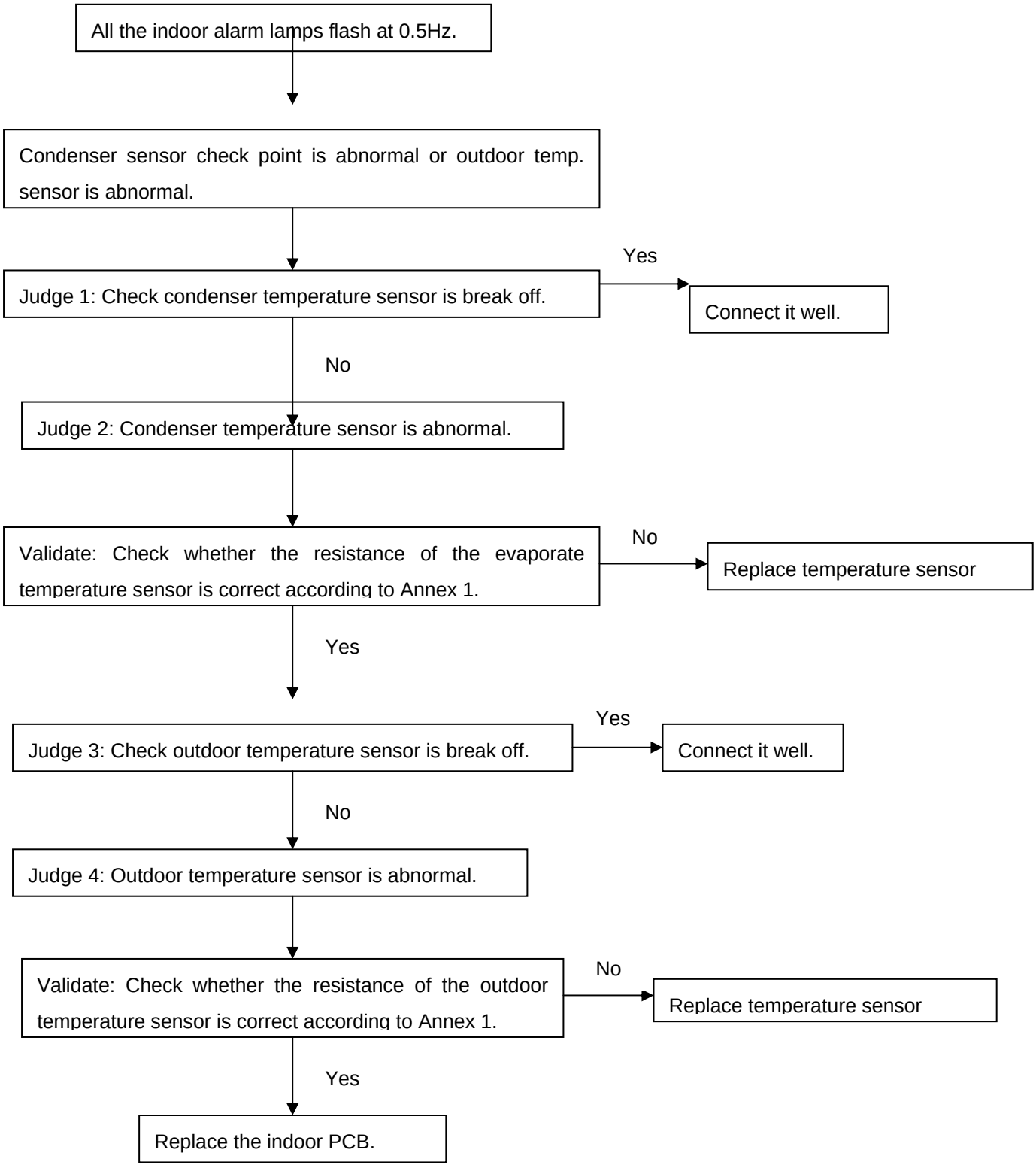
Operation lamp flashes:



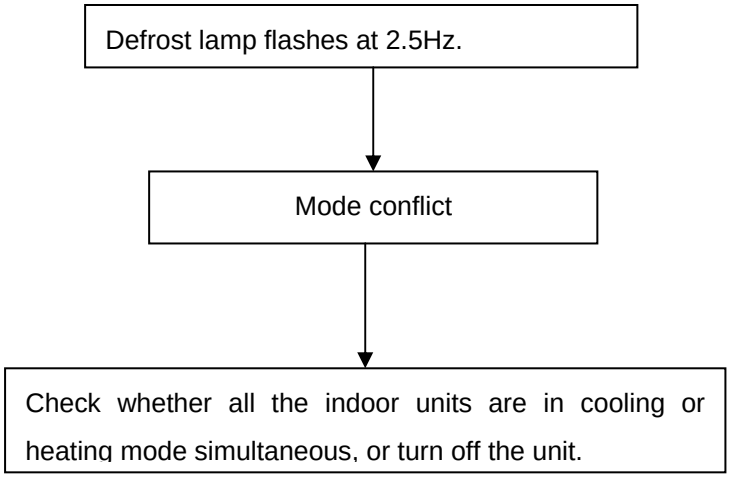
Operation lamp flashes:



Operation lamp flashes:



Operation lamp flashes:



2.2 Outdoor unit's LED indication:

No	Display	Malfunction or Protection	Remark
1	**E0**	Communication error between outdoor units	Only slave unit display
2	**E1**	Phase protection	All the outdoor units display
3	**E2**	Communication error between indoor unit and master unit	All the outdoor units display
4	**E4**	Outdoor temperature sensor error	All the outdoor units display
5	**E8**	Outdoor unit address error	All the outdoor units display
6	**E9**	Power volt. Error	All the outdoor units display
7	**H0**	Communication malfunction between DSP and 780034	All the outdoor units display
8	**H1**	Communication malfunction between 9177 and 780034	All the outdoor units display
9	**H2**	Quantity of outdoor unit decreases	Only master unit display
10	**H3**	Quantity of outdoor unit increases	Only master unit display
11	**P0**	Inverter compressor top temperature protection	All the outdoor units display
12	**P1**	Hi-pressure protection	All the outdoor units display
13	**P2**	Low-pressure protection	All the outdoor units display
14	**P3**	Compressor current Protection	All the outdoor units display
15	**P4**	Compressor discharge temperature protection	All the outdoor units display
16	**P5**	Outdoor condenser high temperature protection	All the outdoor units display
17	**P6**	Inverter module protection	All the outdoor units display
18	**P7**	Current protection, No.1 fixed compressor	All the outdoor units display

19	**P8**	Current protection, No.2 fixed compressor	14/16HP outdoor units display

2.2.1 THE AIR-CONDITIONER DOES NOT RUN AFTER PRESSING ON/OFF BUTTON.

2.2.1.1 Communication malfunction between outdoor units

Display: The outdoor unit digital diode is displaying “E0”

Solutions: ① Check if communication cable is broken off

② Exchange H1, H2 line if there is no broken circuit

2.2.1.2 Phase sequence error

Display: The outdoor unit digital diode is displaying “E1”

Solutions: ① Check if the voltage between the power line terminals A,B,C of outdoor units and N is normally 220v. If not please check whether the power lines are well connected.

② After checking the voltage without finding any error, please transpose any two of the outdoor units power lines (A,B.C.)

2.2.1.3 Communication trouble between indoor unit and outdoor unit

Display: Outdoor unit digital diode is displaying “E2” and the timer lamp on the display board of the indoor unit, which has the communication trouble blinks.

Solutions: ① Check if communication cable is broken off

② Exchange P, Q line if there is no broken circuit

2.2.1.4 Outdoor unit ambient temperature sensor abnormal

Display: Outdoor unit digital diode is displaying E4

Solutions: ① Measure T4 electric resistance respectively and replace the broken one if the electric resistance is not correct.

② If the electric resistance is normal, please test the outdoor PCB and change a new one if it does not work well.

2.2.1.5 The address of outdoor unit malfunction

Display: Outdoor unit digital diode display “E8”

Method: Check the address code of outdoor unit PCB and make sure the address code in the right position.

2.2.1.6 Voltage malfunction

Display: Outdoor unit digital diode is displaying “E9”

Method: Check the voltage of outdoor if it is between 352V and 418V, if not , please use a manostat.

2.2.2 AFTER RUNNING A WHILE THE SYSTEM STOPS TO PERFORM PROTECTION.

2.2.2.1 Water level alarming trouble

Display: Indoor unit alarm lamp blinks

Solutions: ① Check if water pump runs well

② Check if the drainpipe is broken

③ Check if the water level switch is blocked

④ If the above situations do not occur please change a new indoor PCB

2.2.2.2 High-pressure protection

Display: The outdoor unit digital diode is displaying:”P1”

Solutions: ① Check if the high-pressure protection switch is broken or loosen

② Test if the discharge temperature of the compressor is too high. If the discharge temperature is too high and the current is lower than the rated current, the system is probably lack of refrigerant and replenishes it.

③ Test if the pressure(high pressure) is too high or the current is overloaded. If so the possible causes are: the overcharge of refrigerant, the system air leakage, or bad ventilation conditions.

a. Let the surplus refrigerant out if refrigerant is too much

b. Let the entire refrigerant out, re-vacuumize the system and then replenish the refrigerant if air is penetrating into the system.

c. Improve the ventilation and heat-emission environment for the outdoor unit

2.2.2.3 Low-pressure protection

Display: The outdoor unit digital diode is displaying:”P2”

Solutions: ① Check if the low pressure protection switch is broken or loosen

② Test if the pressure(low pressure) is too low. The probable reasons are: the overcharge of refrigerant or system blockade.

2.2.2.4 Over current protection

Display: The outdoor unit diode. Is displaying:”P3”

Solutions: ① Check if the current is overloaded.

② The possible reasons for the over current are: the overcharge of refrigerant, air leakage, bad ventilation and heat-emission conditions.

2.2.2.5 Compressor discharge temperature protection, Condenser high temperature protection

Display: P4/ P5 is displayed on the outdoor unit diode

Solutions: ① Test digital discharge temperature, outdoor condenser T3 temperature

② Test system pressure

③ High digital discharge temperature is likely owing to the lack of refrigerant, air leakage or system blockade. Check the above items respectively to solve the problem.

④ Condenser high temperature protection owes to the overcharge of refrigerant, air leakage or bad ventilation and heat-emission conditions.

2.2.2.6 Module protection

Display: P6 is displayed on the outdoor unit diode

Solutions: guarantee the compressor and system is normal, otherwise the module must be changed.

2.2.2.7 Current protection of Fix1 compressor

Display: P7 is displayed on the outdoor unit diode

Solutions: Check if constant compressor 1 is damaged or blocked

2.2.2.8 Current protection of Fix2 compressor

Display: P8 is displayed on the outdoor unit diode

Solutions: Check if constant compressor2 is damaged or blocked

2.2.3 COOLING OR HEATING CAPACITY IS NOT ENOUGH.

2.2.3.1 Address setting for the indoor units is wrong

Solutions: Do spot check of the indoor unit address and reset for those repeated ones.

2.2.3.2 Capacity code setting for the indoor units is wrong

Solutions: Do spot check of the indoor unit capacity code and reset for those repeated ones.

2.2.3.3 Overcharge or lack of refrigerant

2.2.3.4 The system air leakage or alcidine leakage

2.2.3.5 4-way valve leakage / blockade

Solutions: Replace with a new 4-way valve

2.2.3.6 Compressor leakage/ wear and tear

Solutions: Replace with a new compressor

2.2.3.7 Outdoor units are overload because there are many indoor units in the combination. If all the indoor units are in operation, cooling/heating effect will be lowered.

Solutions: ① Avoid all the indoor units running simultaneously.

② Reduce the indoor units that connected in the system

2.2.4 THE WHOLE SYSTEM MAY RUN WELL WHILE A SPECIFIC INDOOR UNIT DOES NOT OPERATE QUITE WELL

2.2.4.1 Mode conflict: Indoor Defrost lamp link

If within one system some indoor units are in cooling mode, while some others are in heating mode, mode conflict will be displayed on those cooling units LED and as a result those units will be power off.

2.2.4.2 Indoor sensor electric resistance changing

When the indoor sensor electric resistance changes to a certain extent, under the control of the PCB, the indoor unit will stop running at the set temperature. Consequently the cooling effect is weakened

2.2.4.3 Electric throttle kit blockade

Solutions: Use new electric throttle kits

2.2.4.4 EXV trouble of the power off units

If the refrigerant is leaked owing to EXV trouble of the power off units, the refrigerant will run through that power-- off units. As a result the cooling/heating capacity of the operating units is lowered.

Solutions: Replace all the bad electric throttle kits

2.2.5 COMMUNICATION MALFUNCTION

2.5.1 Communication malfunction of DSP and 780034

Display: H0 is displayed on the outdoor unit diode

Solutions: change outdoor main control board

2.2.5.2 Communication malfunction of 9177 and 780034

Display: H1 is displayed on the outdoor unit diode

Solutions: change outdoor main control board

2.2.5.3 Malfunction that the quantity of outdoor unit is less than actual quantity

Display: H2 is displayed on the outdoor unit diode

Check the power supply of outdoor unit and communication wire between outdoor units

2.2.5.4 Malfunction that the quantity of outdoor unit is more than actual quantity

Display: H3 is displayed on the outdoor unit diode

Check the power supply of outdoor unit and communication wire between outdoor units.