Airwell

Just feel well

Service Manual

ODU VRF EEVA Series

R410A

English Manual

IMPORTANT NOTE:

Read this manual carefully before installing or operating your new air conditioning unit. Make sure to save this manual for future reference.

22.AW.EEVA.250-2400.R410A.SM.EN.04.28.Rev01

CONTENTS

Part 1 . Outdoor unit

1. Safety considerations

Cautions and warnings

Read these SAFETY CONSIDERATIONS carefully before installing air conditioning equipment, and be sure to install it correctly. After completing the installation, make sure that the unit operates properly during the start-up operation.
Instruct the customer how to operate and maintain the unit.
Inform customers that they should store this Installation Manual with the Operation Manual for future reference.
Always use a licensed installer or contractor to install this product. Improper installation can result in water or refrigerant leakage, electrical shock, fire, or explosion.
Meanings of DANGER, WARNING, CAUTION, and NOTE Symbols:

⚠ DANGER ..... Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING ..... Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

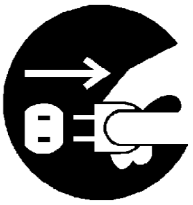
⚠ CAUTION ..... Indicates a potentially hazardous situation, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

⚠ NOTE .....Indicates situations that may result in equipment or property-damage accidents only. Be sure to read the following safety cautions before conducting repair work.

1.1 Caution in repair

⚠ Warning	
Be sure to disconnect the power cable plug from the plug socket before disassembling the equipment for a repair. Working on the equipment that is connected to a power supply can cause an electrical shock. If it is necessary to supply power to the equipment to conduct the repair or inspecting the circuits, do not touch any electrically charged sections of the equipment.	
If the refrigerant gas discharges during the repair work, do not touch the discharging refrigerant gas. The refrigerant gas can cause frostbite.	
When disconnecting the suction or discharge pipe of the compressor at the welded section, release the refrigerant gas completely at a well-ventilated place first. If there is a gas remaining inside the compressor, the refrigerant gas or refrigerating machine oil discharges when the pipe is disconnected, and it can cause injury.	

⚠ Warning	
If the refrigerant gas leaks during the repair work, ventilate the area. The refrigerant gas can generate toxic gases when it contacts flames.	
The step-up capacitor supplies high-voltage electricity to the electrical components of the outdoor unit. Be sure to discharge the capacitor completely before conducting repair work. A charged capacitor can cause an electrical shock.	
Do not start or stop the air conditioner operation by plugging or unplugging the power cable plug. Plugging or unplugging the power cable plug to operate the equipment can cause an electrical shock or fire.	

⚠ Caution	
Do not repair the electrical components with wet hands. Working on the equipment with wet hands can cause an electrical shock.	
Do not clean the air conditioner by splashing water. Washing the unit with water can cause an electrical shock.	
Be sure to provide the grounding when repairing the equipment in a humid or wet place, to avoid electrical shocks.	
Be sure to turn off the power switch and unplug the power cable when cleaning the equipment. The internal fan rotates at a high speed, and can cause injury.	
Do not tilt the unit when removing it. The water inside the unit can spill and wet the furniture and floor.	
Be sure to check that the refrigerating cycle section has cooled down sufficiently before conducting repair work. Working on the unit when the refrigerating cycle section is hot can cause burns.	
Use the welder in a well-ventilated place. Using the welder in an enclosed room can cause oxygen deficiency.	

1.2 Cautions regarding rroducts after repair

⚠ Warning	
Be sure to use parts listed in the service parts list of the applicable model and appropriate tools to conduct repair work. Never attempt to modify the equipment. The use of inappropriate parts or tools can cause an electrical shock, excessive heat generation or fire.	
When relocating the equipment, make sure that the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength and if the installation work is not conducted securely, the equipment can fall and cause injury.	
Be sure to use an exclusive power circuit for the equipment, and follow the technical standards related to the electrical equipment, the internal wiring regulations and the instruction manual for installation when conducting electrical work. Insufficient power circuit capacity and improper electrical work can cause an electrical shock or fire.	
Be sure to use the specified cable to connect between the indoor and outdoor units. Make the connections securely and route the cable properly so that there is no force pulling the cable at the connection terminals. Improper connections can cause excessive heat generation or fire.	
When connecting the cable between the indoor and outdoor units, make sure that the terminal cover does not lift off or dismount because of the cable. If the cover is not mounted properly, the terminal connection section can cause an electrical shock, excessive heat generation or fire.	
Do not damage or modify the power cable. Damaged or modified power cable can cause an electrical shock or fire. Placing heavy items on the power cable, and heating or pulling the power cable can damage the cable.	

⚠ Warning	
Do not mix air or gas other than the specified refrigerant (R-410A) in the refrigerant system. If air enters the refrigerating system, an excessively high pressure results, causing equipment damage and injury.	
If the refrigerant gas leaks, be sure to locate the leak and repair it before charging the refrigerant. After charging refrigerant, make sure that there is no refrigerant leak. If the leak cannot be located and the repair work must be stopped, be sure to perform pump-down and close the service valve, to prevent the refrigerant gas from leaking into the room. The refrigerant gas itself is harmless, but it can generate toxic gases when it contacts flames, such as fan and other heaters, stoves and ranges.	
When replacing the coin battery in the remote controller, be sure to dispose of the old battery to prevent children from swallowing it. If a child swallows the coin battery, see a doctor immediately.	

⚠ Caution	
Installation of a leakage breaker is necessary in some cases depending on the conditions of the installation site, to prevent electrical shocks.	
Do not install the equipment in a place where there is a possibility of combustible gas leaks. If a combustible gas leaks and remains around the unit, it can cause a fire.	
Be sure to install the packing and seal on the installation frame properly. If the packing and seal are not installed properly, water can enter the room and wet the furniture and floor.	For integral units only

1.3 Inspection after repair

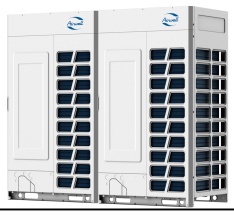
⚠ Warning	
Check to make sure that the power cable plug is not dirty or loose, then insert the plug into a power outlet all the way. If the plug has dust or loose connection, it can cause an electrical shock or fire.	
If the power cable and lead wires have scratches or have deteriorated, be sure to replace them. Damaged cable and wires can cause an electrical shock, excessive heat generation or fire.	
Do not use a joined power cable or extension cable, or share the same power outlet with other electrical appliances, since it can cause an electrical shock, excessive heat generation or fire.	

⚠ Caution	
Check to see if the parts and wires are mounted and connected properly, and if the connections at the soldered or crimped terminals are secure. Improper installation and connections can cause excessive heat generation, fire or an electrical shock.	
If the installation platform or frame has corroded, replace it. Corroded installation platform or frame can cause the unit to fall, resulting in injury.	
Check the grounding, and repair it if the equipment is not properly grounded. Improper grounding can cause an electrical shock.	
Be sure to measure the insulation resistance after the repair, and make sure that the resistance is 1 ohm or higher. Faulty insulation can cause an electrical shock.	
Be sure to check the drainage of the indoor unit after the repair. Faulty drainage can cause the water to enter the room and wet the furniture and floor.	

2. General Information

2.1. Products lineup

Outdoor units

Appearance	Power supply (Ph, V, Hz)	Model	Capacity(kW)	Refrigerant
	3Ph,380-415V, 50/60Hz	VVEA-250R-01T32	22.4	R410A
		VVEA-280R-01T32	28	
		VVEA-335R-01T32	33.5	
		VVEA-400R-01T32	40	
		VVEA-450R-01T32	45	
		VVEA-504R-01T32	50	
		VVEA-560R-01T32	56	
		VVEA-615R-01T32	63	
		VVEA-670R-01T32	67	
		VVEA-735R-01T32	73.5	
		VVEA-800R-01T32	80	
		VVEA-850R-01T32	85	
		VVEA-900R-01T32	90	
		VVEA-950R-01T32	95	
		VVEA-1000R-01T32	100	
		VVEA-1060R-01T32	106	
		VVEA-1120R-01T32	112	
		VVEA-1160R-01T32	119	
		VVEA-1200R-01T32	126	
		VVEA-1300R-01T32	130	

Appearance	Power supply (Ph, V, Hz)	Model	Capacity(kW)	Refrigerant
	3Ph,380-415V, 50/60Hz	VVEA-1350R-01T32	135	R410A
		VVEA-1400R-01T32	140	
		VVEA-1450R-01T32	145	
		VVEA-1500R-01T32	150	
		VVEA-1560R-01T32	156	
		VVEA-1620R-01T32	162	
		VVEA-1680R-01T32	168	
		VVEA-1720R-01T32	175	
		VVEA-1760R-01T32	182	
		VVEA-1800R-01T32	189	
		VVEA-1900R-01T32	190	
		VVEA-1950R-01T32	195	
		VVEA-2000R-01T32	200	
		VVEA-2060R-01T32	206	
		VVEA-2120R-01T32	212	
		VVEA-2180R-01T32	218	
		VVEA-2240R-01T32	224	
		VVEA-2280R-01T32	231	
		VVEA-2320R-01T32	238	
		VVEA-2360R-01T32	245	
		VVEA-2400R-01T32	252	

2.2. Combination of Outdoor Units

Model Name	VVEA-250R-01T32	VVEA-280R-01T32	VVEA-335R-01T32	VVEA-400R-01T32
Oudoor unit 1	VVEA-250R-01T32	VVEA-280R-01T32	VVEA-335R-01T32	VVEA-400R-01T32

Model Name	VVEA-450R-01T32	VVEA-504R-01T32	VVEA-560R-01T32	VVEA-615R-01T32
Oudoor unit 1	VVEA-450R-01T32	VVEA-504R-01T32	VVEA-560R-01T32	VVEA-615R-01T32

Model Name	VVEA-670R-01T32	VVEA-735R-01T32	VVEA-800R-01T32	VVEA-850R-01T32	VVEA-900R-01T32
Oudoor unit 1	VVEA-335R-01T32	VVEA-335R-01T32	VVEA-400R-01T32	VVEA-400R-01T32	VVEA-450R-01T32
Oudoor unit 2	VVEA-335R-01T32	VVEA-400R-01T32	VVEA-400R-01T32	VVEA-450R-01T32	VVEA-450R-01T32

Model Name	VVEA-950R-01T32	VVEA-1000R-01T32	VVEA-1060R-01T32	VVEA-1120R-01T32	VVEA-1160R-01T32	VVEA-1200R-01T32
Oudoor unit 1	VVEA-450R-01T32	VVEA-504R-01T32	VVEA-504R-01T32	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-615R-01T32
Oudoor unit 2	VVEA-504R-01T32	VVEA-504R-01T32	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-615R-01T32	VVEA-615R-01T32

Model Name	VVEA-1300R-01T32	VVEA-1350R-01T32	VVEA-1400R-01T32	VVEA-1450R-01T32	VVEA-1500R-01T32
Oudoor unit 1	VVEA-400R-01T32	VVEA-450R-01T32	VVEA-450R-01T32	VVEA-450R-01T32	VVEA-504R-01T32
Oudoor unit 2	VVEA-450R-01T32	VVEA-450R-01T32	VVEA-450R-01T32	VVEA-504R-01T32	VVEA-504R-01T32
Oudoor unit 3	VVEA-450R-01T32	VVEA-450R-01T32	VVEA-504R-01T32	VVEA-504R-01T32	VVEA-504R-01T32

Model Name	VVEA-1560R-01T32	VVEA-1620R-01T32	VVEA-1680R-01T32	VVEA-1720R-01T32	VVEA-1760R-01T32	VVEA-1800R-01T32
Oudoor unit 1	VVEA-504R-01T32	VVEA-504R-01T32	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-615R-01T32
Oudoor unit 2	VVEA-504R-01T32	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-615R-01T32	VVEA-615R-01T32
Oudoor unit 3	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-615R-01T32	VVEA-615R-01T32	VVEA-615R-01T32

Model Name	VVEA-1900R-01T32	VVEA-1950R-01T32	VVEA-2000R-01T32	VVEA-2060R-01T32	VVEA-2120R-01T32
Oudoor unit 1	VVEA-450R-01T32	VVEA-450R-01T32	VVEA-504R-01T32	VVEA-504R-01T32	VVEA-504R-01T32
Oudoor unit 2	VVEA-450R-01T32	VVEA-504R-01T32	VVEA-504R-01T32	VVEA-504R-01T32	VVEA-504R-01T32
Oudoor unit 3	VVEA-450R-01T32	VVEA-504R-01T32	VVEA-504R-01T32	VVEA-504R-01T32	VVEA-560R-01T32
Oudoor unit 4	VVEA-450R-01T32	VVEA-504R-01T32	VVEA-504R-01T32	VVEA-560R-01T32	VVEA-560R-01T32

Model Name	VVEA-2180R-01T32	VVEA-2240R-01T32	VVEA-2280R-01T32	VVEA-2320R-01T32	VVEA-2360R-01T32	VVEA-2400R-01T32
Oudoor unit 1	VVEA-504R-01T32	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-615R-01T32
Oudoor unit 2	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-615R-01T32	VVEA-615R-01T32
Oudoor unit 3	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-615R-01T32	VVEA-615R-01T32	VVEA-615R-01T32
Oudoor unit 4	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-560R-01T32	VVEA-615R-01T32	VVEA-615R-01T32	VVEA-615R-01T32

System capacity		Number of Units	Module							
HP	kW		8	10	12	14	16	18	20	22
8	22.4	1	●							
10	28	1		●						
12	33.5	1			●					
14	40	1				●				
16	45	1					●			
18	50	1						●		
20	56	1							●	
22	63	1								●
24	67	2			●●					
26	73.5	2			●	●				
28	80	2				●●				
30	85	2				●	●			
32	90	2					●●			
34	95	2					●	●		
36	100	2					●●			
38	106	2						●	●	
40	112	2							●●	
42	119	2							●	●
44	126	2								●●
46	130	3				●	●●			
48	135	3					●●●			
50	140	3					●●	●		
52	145	3					●	●●		
54	150	3						●●●		
56	156	3						●●	●	
58	162	3						●	●●	
60	168	3							●●●	
62	175	3							●●	●
64	182	3							●	●●
66	189	3								●●●
68	190	4					●●	●●		
70	195	4					●	●●●		
72	200	4						●●●●		
74	206	4						●●●	●	
76	212	4						●●	●●	
78	218	4						●	●●●	
80	224	4							●●●●	
82	231	4						●●●	●	
84	238	4							●●	●●
86	245	4							●	●●●
88	252	4								●●●●

Indoor units

4-WAY CASSETTE TYPE/PB-700IB

CVQA-025/022/015N-01M22
CVQA-050/045/035N-01M22

4-WAY CASSETTE TYPE/CCV PANEL 90X90

AWSI-CCV018-N11
AWSI-CCV024-N11

AWSI-CCV030-N11
AWSI-CCV038-N11
AWSI-CCV048-N11

2-WAY CASSETTE TYPE/ P1B-1055IB

CVOA-025N-01M22
CVOA-035N-01M22
CVOA-040/050-01M22

ROUND-WAY SMART AIR FLOW CASSETTE/
Panel for CVTA

CVTA-025/022N-01M22
CVTA-035N-01M22
CVTA-050/045N-01M22
CVTA-070N-01M22
CVTA-110/090N-01M22
CVTA-160/140N-01M22

ONE WAY CASSETTE TYPE/Panel for CVPAto s12

CVPA-035N-01M22
CVPA-025/022N-01M22

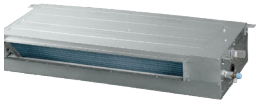
Indoor units

SLIM LOW ESP DUCT

DVLA-025/022-01M22

DVLA-035N-01M22

DVLA-040N-01M22



MED ESP DUCT TYPE (50/100Pa)

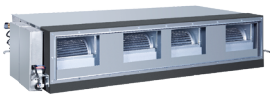
DVMA-090N-01M22
DVMA-110N-01M22
DVMA-160/140N-01M22

HIGH ESP DUCT TYPE

DVMA-050N-01M22
DVMA-080/070N-01M22

DVMA-090N-01M22
DVMA-110N-01M22
DVMA-160/140N-01M22

DVHA-280/220N-01M22



CONVERTIBLE TYPE

FVVA-025N-01M22
FVVA-050/045/035N-01M22

FVVA-090/080/070N-01M22
FVVA-140/110N-01M22

N HIGH WALL HVVA-025/022N-01M22 HVVA-035N-01M22 HVVA-050/045N-01M22 HVVA-070N-01M22  HVVA-090N-01M22 	**MED ESP DUCT TYPE (50/100Pa)** DVMA-015N-01M22 DVMA-022N-01M22 DVMA-025N-01M22 DVMA-035N-01M22 DVMA-045N-01M22  DVMA-050N-01M22 DVMA-080/070N-01M22 
HRV AWSI-HRV0800-N11 AWSI-HRV1000-N11 	**CONSOLE** XVVA-050/035/025N-01M22 

Note: The indoor unit connected to Flow Logic IV must be the new indoor manufactured after January 1, 2019 (the PCB is upgraded program)

3. Specification

Model			VVEA-250R-01T32	VVEA-280R-01T32
HP			8	10
Combination			/	/
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	22.4	28
	Rated capacity	kBtu/h	76.43	95.54
	Rated power input	kW	5.63	7.67
	Max. power input	kW	12.80	13.80
	Rated current	A	9.29	12.67
	Max. current	A	21.14	22.79
	EER		3.98	3.65
	SEER		7.05	6.68
Heating	Rated capacity	kW	22.4	28
	Rated capacity	kBtu/h	76.43	95.54
	Rated power input	kW	5.15	6.67
	Max. power input	kW	11.50	12.50
	Rated current	A	8.50	11.01
	Max. current	A	18.99	20.64
	COP		4.35	4.20
	SCOP		4.02	3.94
	Capacity at low temperature	kW	21	25.6
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB66FVAMT	ANB66FVAMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		1INV	1INV
	Capacity	W	21500	21500
	Power Input	W	6500	6500
	Rated current(RLA)	A	19.6	19.6
	Speed	rps	60	60
	Crankcase Heater	W	66	66
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	2300+1500	2300+1500
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D000001	ZWK924D000001
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/1	DC/1
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	1600	1600
	Output	W	1350	1350
	Rated current	A	5.2	5.2
	Capacitor	μF	/	/
	Speed	rpm	0~1090	0~1090
Outdoor fan	Brand		Guo En	Guo En
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ700	Φ700
	Height	mm	204	204

	Model		VVEA-250R-01T32	VVEA-280R-01T32
Outdoor coil	Number of rows		2	2
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	2294*1260+2206*1260	2294*1260+2206*1260
	Number of circuits		22	22
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	12000	12000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	57	58
Outdoor sound level(sound power level) (H)		dB(A)	81	82
Outdoor unit	Dimension(W*D*H)	mm	980/750/1690	980/750/1690
	Packing (W*D*H)	mm	1070/850/1838	1070/850/1838
	Net weight	kg	246	246
	Gross weight	kg	271	271
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	9.52	9.52
	Gas pipe	mm	19.05	22.22
	High gas pipe	mm	19.05	19.05
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	13	16
MCA			21.14	22.79
MFA			32.0	32.0
Connection wiring	Max. fuse current	A	32.0	32.0
	Min. wiring current	A	21.14	22.79
	Power wiring	mm2	4	4
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB. Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.

The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-335R-01T32	VVEA-400R-01T32
HP			12	14
Combination			/	/
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	33.5	40
	Rated capacity	kBtu/h	114.30	136.48
	Rated power input	kW	9.57	12.31
	Max. power input	kW	18.20	19.20
	Rated current	A	15.81	20.33
	Max. current	A	30.06	31.71
	EER		3.50	3.25
	SEER		6.58	6.37
Heating	Rated capacity	kW	33.5	40
	Rated capacity	kBtu/h	114.30	136.48
	Rated power input	kW	8.38	10.53
	Max. power input	kW	17.40	18.40
	Rated current	A	13.83	17.38
	Max. current	A	28.74	30.39
	COP		4.00	3.80
	SCOP		4.08	3.86
	Capacity at low temperature	kW	29	38
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB78FVAMT	ANB78FVAMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		1INV	1INV
	Capacity	W	25400	25400
	Power Input	W	7640	7640
	Rated current(RLA)	A	26	26
	Speed	rps	60	60
	Crankcase Heater	W	66	66
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	2300+1500	2300+1500
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D000001	ZWK924D000001
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/1	DC/1
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	1600	1600
	Output	W	1350	1350
	Rated current	A	5.2	5.2
	Capacitor	μF	/	/
	Speed	rpm	0~1090	0~1090
Outdoor fan	Brand		Guo En	Guo En
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ700	Φ700
	Height	mm	204	204

Model			VVEA-335R-01T32	VVEA-400R-01T32
Outdoor coil	Number of rows		3	3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	2245*1260+2158*1260 +2065*1260	2245*1260+2158*1260 +2065*1260
	Number of circuits		30	30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	13500	13500
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	60	61
Outdoor sound level(sound power level) (H)		dB(A)	88	88
Outdoor unit	Dimension(W*D*H)	mm	980/750/1690	980/750/1690
	Packing (W*D*H)	mm	1070/850/1838	1070/850/1838
	Net weight	kg	257	257
	Gross weight	kg	282	282
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	12.7	12.7
	Gas pipe	mm	25.4	25.4
	High gas pipe	mm	22.22	22.22
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	20	24
MCA			30.06	31.71
MFA			40.0	40.0
Connection wiring	Max. fuse current	A	40.0	40.0
	Min. wiring current	A	30.06	31.71
	Power wiring	mm2	10	10
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-450R-01T32	VVEA-504R-01T32
HP			16	18
Combination			/	/
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	45	50
	Rated capacity	kBtu/h	153.54	170.60
	Rated power input	kW	14.06	16.13
	Max. power input	kW	25.10	28.50
	Rated current	A	23.22	26.64
	Max. current	A	41.45	47.07
	EER		3.20	3.10
	SEER		6.86	6.48
Heating	Rated capacity	kW	45	50
	Rated capacity	kBtu/h	153.54	170.60
	Rated power input	kW	11.39	13.70
	Max. power input	kW	22.70	25.50
	Rated current	A	18.81	22.62
	Max. current	A	37.49	42.11
	COP		3.95	3.65
	SCOP		4.21	3.99
	Capacity at low temperature	kW	41.5	43.7
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB52FKQMT	ANB52FKQMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		2INV	2INV
	Capacity	W	34400	34400
	Power Input	W	10500	10500
	Rated current(RLA)	A	37	37
	Speed	rps	60	60
	Crankcase Heater	W	132	132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2	(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002	ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2	DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320	2320
	Output	W	1800	1800
	Rated current	A	8	8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da	Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642	Φ642
	Height	mm	198	198

Model			VVEA-450R-01T32	VVEA-504R-01T32
Outdoor coil	Number of rows		3	3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	2843*1260+2757*1260 +2669*1260	2843*1260+2757*1260 +2669*1260
	Number of circuits		30	30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	17000	17000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	62	63
Outdoor sound level(sound power level) (H)		dB(A)	88	88
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690	1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838	1515/850/1838
	Net weight	kg	366	366
	Gross weight	kg	395	395
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	12.7	15.88
	Gas pipe	mm	28.58	28.58
	High gas pipe	mm	25.4	25.4
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	27	30
MCA			41.45	47.07
MFA			50.0	63.0
Connection wiring	Max. fuse current	A	50.0	63.0
	Min. wiring current	A	41.45	47.07
	Power wiring	mm2	16	16
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-560R-01T32	VVEA-615R-01T32
HP			20	22
Combination			/	/
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	56	60
	Rated capacity	kBtu/h	191.07	204.72
	Rated power input	kW	17.23	20.00
	Max. power input	kW	32.00	33.00
	Rated current	A	28.46	33.03
	Max. current	A	52.85	54.50
	EER		3.25	3.00
	SEER		5.90	5.74
Heating	Rated capacity	kW	56	60
	Rated capacity	kBtu/h	191.07	204.72
	Rated power input	kW	15.78	17.91
	Max. power input	kW	29.40	30.40
	Rated current	A	26.05	29.58
	Max. current	A	48.55	50.21
	COP		3.55	3.35
	SCOP		3.93	3.76
	Capacity at low temperature	kW	48.7	53.3
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB78FVAMT	ANB78FVAMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		2INV	2INV
	Capacity	W	50800	50800
	Power Input	W	15280	15280
	Rated current(RLA)	A	52	52
	Speed	rps	60	60
	Crankcase Heater	W	132	132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2	(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002	ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2	DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320	2320
	Output	W	1800	1800
	Rated current	A	8	8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da	Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642	Φ642
	Height	mm	198	198

Model			VVEA-560R-01T32	VVEA-615R-01T32
Outdoor coil	Number of rows		3	3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	2843*1260+2757*1260 +2669*1260	2843*1260+2757*1260 +2669*1260
	Number of circuits		30	30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	19000	19000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	63	64
Outdoor sound level(sound power level) (H)		dB(A)	88	90
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690	1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838	1515/850/1838
	Net weight	kg	375	375
	Gross weight	kg	404	404
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	15.88	15.88
	Gas pipe	mm	28.58	28.58
	High gas pipe	mm	25.4	25.4
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	33	36
MCA			52.85	54.50
MFA			63.0	63.0
Connection wiring	Max. fuse current	A	63.0	63.0
	Min. wiring current	A	52.85	54.50
	Power wiring	mm2	16	25
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-670R-01T32	VVEA-735R-01T32
HP			24	26
Combination			12+12	12+14
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	67.0	73.5
	Rated capacity	kBtu/h	228.60	250.78
	Rated power input	kW	19.1	21.9
	Max. power input	kW	36.4	37.4
	Rated current	A	31.61	36.13
	Max. current	A	60.11	61.77
	EER		3.50	3.36
	SEER		6.58	6.46
Heating	Rated capacity	kW	67.0	73.5
	Rated capacity	kBtu/h	228.60	250.78
	Rated power input	kW	16.8	18.9
	Max. power input	kW	34.8	35.8
	Rated current	A	27.66	31.22
	Max. current	A	57.47	59.12
	COP		4.00	3.89
	SCOP		4.08	3.94
	Capacity at low temperature	kW	58.0	67.0
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB78FVAMT+ANB78FVAMT	ANB78FVAMT+ANB78FVAMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		2INV	2INV
	Capacity	W	25400+25400	25400+25400
	Power Input	W	7640+7640	7640+7640
	Rated current(RLA)	A	26+26	26+26
	Speed	rps	60	60
	Crankcase Heater	W	66+66	66+66
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	2300+1500+2300+1500	2300+1500+2300+1500
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D000001+ ZWK924D000001	ZWK924D000001+ ZWK924D000001
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/1+DC/1	DC/1+DC/1
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	1600+1600	1600+1600
	Output	W	1350+1350	1350+1350
	Rated current	A	5.2+5.2	5.2+5.2
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Guo En+Guo En	Guo En+Guo En
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ700+Φ700	Φ700+Φ700
	Height	mm	204+204	204+204

Model			VVEA-670R-01T32	VVEA-735R-01T32
Outdoor coil	Number of rows		3+3	3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2245*1260+2158*1260+2065*1260)+(2245*1260+2158*1260+2065*1260)	(2245*1260+2158*1260+2065*1260)+(2245*1260+2158*1260+2065*1260)
	Number of circuits		30+30	30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	27000	27000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	63	64
Outdoor sound level(sound power level) (H)		dB(A)	91	91
Outdoor unit	Dimension(W*D*H)	mm	980/750/1690+980/750/1690	980/750/1690+980/750/1690
	Packing (W*D*H)	mm	1070/850/1838+1070/850/1838	1070/850/1838+ 1070/850/1838
	Net weight	kg	514	514
	Gross weight	kg	564	564
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	15.88	15.88
	Gas pipe	mm	28.58	28.58
	High gas pipe	mm	25.4	25.4
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	40	43
MCA			60.11	61.77
MFA			40+40	40+40
Connection wiring	Max. fuse current	A	40+40	40+40
	Min. wiring current	A	60.11	61.77
	Power wiring	mm2	10+10	10+10
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-800R-01T32	VVEA-850R-01T32
HP			28	30
Combination			14+14	14+16
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	80.0	85.0
	Rated capacity	kBtu/h	272.96	290.02
	Rated power input	kW	24.6	26.4
	Max. power input	kW	38.4	44.3
	Rated current	A	40.65	43.55
	Max. current	A	63.42	73.16
	EER		3.25	3.22
	SEER		6.37	6.61
Heating	Rated capacity	kW	80.0	85.0
	Rated capacity	kBtu/h	272.96	290.02
	Rated power input	kW	21.1	21.9
	Max. power input	kW	36.8	41.1
	Rated current	A	34.77	36.20
	Max. current	A	60.78	67.88
	COP		3.80	3.88
	SCOP		3.86	4.02
	Capacity at low temperature	kW	76.0	79.5
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB78FVAMT+ANB78FVAMT	ANB78FVAMT+ANB52FKQMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		2INV	3INV
	Capacity	W	25400+25400	25400+34400
	Power Input	W	7640+7640	7640+10500
	Rated current(RLA)	A	26+26	26+37
	Speed	rps	60	60
	Crankcase Heater	W	66+66	66+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	2300+1500+2300+1500	2300+1500+(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D000001+ ZWK924D000001	ZWK924D000001+ ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/1+DC/1	DC/1+DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	1600+1600	1600+2320
	Output	W	1350+1350	1350+1800
	Rated current	A	5.2+5.2	5.2+8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Guo En+Guo En	Guo En+Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ700+Φ700	Φ700+Φ642
	Height	mm	204+204	204+198

Model			VVEA-800R-01T32	VVEA-850R-01T32
Outdoor coil	Number of rows		3+3	3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2245*1260+2158*1260+2065*1260)+(2245*1260+2158*1260+2065*1260)	(2245*1260+2158*1260+2065*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30	30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	27000	30500
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	64	65
Outdoor sound level(sound power level) (H)		dB(A)	91	91
Outdoor unit	Dimension(W*D*H)	mm	980/750/1690+980/750/1690	980/750/1690+1410/750/1690
	Packing (W*D*H)	mm	1070/850/1838+1070/850/1838	1070/850/1838+ 1515/850/1838
	Net weight	kg	514	623
	Gross weight	kg	564	677
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	15.88	19.05
	Gas pipe	mm	28.58	31.8
	High gas pipe	mm	25.4	28.58
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	46	50
MCA			63.42	73.16
MFA			40+40	40+50
Connection wiring	Max. fuse current	A	40+40	40+50
	Min. wiring current	A	63.42	73.16
	Power wiring	mm2	10+10	10+16
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-900R-01T32	VVEA-950R-01T32
HP			32	34
Combination			16+16	16+18
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	90.0	95.0
	Rated capacity	kBtu/h	307.08	324.14
	Rated power input	kW	28.1	30.2
	Max. power input	kW	50.2	53.6
	Rated current	A	46.45	49.86
	Max. current	A	82.91	88.52
	EER		3.20	3.15
	SEER		6.86	6.64
Heating	Rated capacity	kW	90.0	95.0
	Rated capacity	kBtu/h	307.08	324.14
	Rated power input	kW	22.8	25.1
	Max. power input	kW	45.4	48.2
	Rated current	A	37.63	41.44
	Max. current	A	74.98	79.60
	COP		3.95	3.79
	SCOP		4.21	4.08
	Capacity at low temperature	kW	83.0	85.2
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB52FKQMT+ANB52FKQMT	ANB52FKQMT+ANB52FKQMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		4INV	4INV
	Capacity	W	34400+34400	34400+34400
	Power Input	W	10500+10500	10500+10500
	Rated current(RLA)	A	37+37	37+37
	Speed	rps	60	60
	Crankcase Heater	W	132+132	132+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2+(2300+1500)*2	(2300+1500)*2+(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002+ ZWK924D500002	ZWK924D500002+ ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2+DC/2	DC/2+DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320+2320	2320+2320
	Output	W	1800+1800	1800+1800
	Rated current	A	8+8	8+8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da+Tian Da	Tian Da+Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642+Φ642	Φ642+Φ642
	Height	mm	198+198	198+198

Model			VVEA-900R-01T32	VVEA-950R-01T32
Outdoor coil	Number of rows		3+3	3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30	30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	34000	34000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	65	66
Outdoor sound level(sound power level) (H)		dB(A)	91	91
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690+1410/750/1690	1410/750/1690+ 1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838+1515/850/1838	1515/850/1838+ 1515/850/1838
	Net weight	kg	732	732
	Gross weight	kg	790	790
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	19.05	19.05
	Gas pipe	mm	31.8	31.8
	High gas pipe	mm	28.58	28.58
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	53	57
MCA			82.91	88.52
MFA			50+50	50+63
Connection wiring	Max. fuse current	A	50+50	50+63
	Min. wiring current	A	82.91	88.52
	Power wiring	mm2	16+16	16+16
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-1000R-01T32	VVEA-1060R-01T32
HP			36	38
Combination			18+18	18+20
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	100.0	106.0
	Rated capacity	kBtu/h	341.20	361.67
	Rated power input	kW	32.3	33.4
	Max. power input	kW	57.0	60.5
	Rated current	A	53.27	55.09
	Max. current	A	94.14	99.92
	EER		3.10	3.18
	SEER		6.48	6.15
Heating	Rated capacity	kW	100.0	106.0
	Rated capacity	kBtu/h	341.20	361.67
	Rated power input	kW	27.4	29.5
	Max. power input	kW	51.0	54.9
	Rated current	A	45.25	48.68
	Max. current	A	84.23	90.67
	COP		3.65	3.60
	SCOP		3.99	3.96
	Capacity at low temperature	kW	87.4	92.4
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB52FKQMT+ ANB52FKQMT	ANB52FKQMT+ ANB78FVAMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		4INV	4INV
	Capacity	W	34400+34400	34400+50800
	Power Input	W	10500+10500	10500+15280
	Rated current(RLA)	A	37+37	37+52
	Speed	rps	60	60
	Crankcase Heater	W	132+132	132+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2+ (2300+1500)*2	(2300+1500)*2+(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002+ ZWK924D500002	ZWK924D500002+ ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2+DC/2	DC/2+DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320+2320	2320+2320
	Output	W	1800+1800	1800+1800
	Rated current	A	8+8	8+8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da+Tian Da	Tian Da+Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642+Φ642	Φ642+Φ642
	Height	mm	198+198	198+198

Model			VVEA-1000R-01T32	VVEA-1060R-01T32
Outdoor coil	Number of rows		3+3	3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30	30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	34000	34000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	65	66
Outdoor sound level(sound power level) (H)		dB(A)	91	91
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690+1410/750/1690	1410/750/1690+ 1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838+1515/850/1838	1515/850/1838+ 1515/850/1838
	Net weight	kg	732	732
	Gross weight	kg	790	790
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	19.05	19.05
	Gas pipe	mm	31.8	31.8
	High gas pipe	mm	28.58	28.58
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	53	57
MCA			82.91	88.52
MFA			50+50	50+63
Connection wiring	Max. fuse current	A	50+50	50+63
	Min. wiring current	A	82.91	88.52
	Power wiring	mm2	16+16	16+16
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-1120R-01T32	VVEA-1160R-01T32
HP			40	42
Combination			20+20	20+22
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	112.0	116.0
	Rated capacity	kBtu/h	382.14	395.79
	Rated power input	kW	34.5	37.2
	Max. power input	kW	64.0	65.0
	Rated current	A	56.91	61.49
	Max. current	A	105.70	107.35
	EER		3.25	3.12
	SEER		5.90	5.81
Heating	Rated capacity	kW	112.0	116.0
	Rated capacity	kBtu/h	382.14	395.79
	Rated power input	kW	31.6	33.7
	Max. power input	kW	58.8	59.8
	Rated current	A	52.11	55.63
	Max. current	A	97.11	98.76
	COP		3.55	3.44
	SCOP		3.93	3.83
	Capacity at low temperature	kW	97.4	102.0
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB78FVAMT+ ANB78FVAMT	ANB78FVAMT+ANB78FVAMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		4INV	4INV
	Capacity	W	50800+50800	50800+50800
	Power Input	W	15280+15280	15280+15280
	Rated current(RLA)	A	52+52	52+52
	Speed	rps	60	60
	Crankcase Heater	W	132+132	132+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2+ (2300+1500)*2	(2300+1500)*2+ (2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002+ ZWK924D500002	ZWK924D500002+ ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2+DC/2	DC/2+DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320+2320	2320+2320
	Output	W	1800+1800	1800+1800
	Rated current	A	8+8	8+8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da+Tian Da	Tian Da+Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642+Φ642	Φ642+Φ642
	Height	mm	198+198	198+198

Model			VVEA-1120R-01T32	VVEA-1160R-01T32
Outdoor coil	Number of rows		3+3	3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30	30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	38000	38000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	66	67
Outdoor sound level(sound power level) (H)		dB(A)	91	92
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690+1410/750/1690	1410/750/1690+ 1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838+1515/850/1838	1515/850/1838+ 1515/850/1838
	Net weight	kg	750	750
	Gross weight	kg	808	808
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	19.05	19.05
	Gas pipe	mm	38.1	38.1
	High gas pipe	mm	34.9	34.9
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	64	64
MCA			105.70	107.35
MFA			63+63	63+63
Connection wiring	Max. fuse current	A	63+63	63+63
	Min. wiring current	A	105.70	107.35
	Power wiring	mm2	16+16	16+25
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-1200R-01T32	VVEA-1300R-01T32
HP			44	46
Combination			22+22	14+16+16
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	120.0	130.0
	Rated capacity	kBtu/h	409.44	443.56
	Rated power input	kW	40.0	40.4
	Max. power input	kW	66.0	69.4
	Rated current	A	66.06	66.77
	Max. current	A	109.00	114.61
	EER		3.00	3.22
	SEER		5.74	6.70
Heating	Rated capacity	kW	120.0	130.0
	Rated capacity	kBtu/h	409.44	443.56
	Rated power input	kW	35.8	33.3
	Max. power input	kW	60.8	63.8
	Rated current	A	59.16	55.01
	Max. current	A	100.41	105.37
	COP		3.35	3.90
	SCOP		3.76	4.08
	Capacity at low temperature	kW	106.6	121.0
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB78FVAMT+ ANB78FVAMT	ANB78FVAMT+ANB52FKQMT+ANB52FKQMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		4INV	5INV
	Capacity	W	50800+50800	25400+34400+34400
	Power Input	W	15280+15280	7640+10500+10500
	Rated current(RLA)	A	52+52	26+37+37
	Speed	rps	60	60
	Crankcase Heater	W	132+132	66+132+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2 +(2300+1500)*2	2300+1500+(2300+1500)*2+(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002+ ZWK924D500002	ZWK924D000001+ZWK924D500002+ ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2+DC/2	DC/1+DC/2+DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320+2320	1600+2320+2320
	Output	W	1800+1800	1350+1800+1800
	Rated current	A	8+8	5.2+8+8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da+Tian Da	Guo En+Tian Da+Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642+Φ642	Φ700+Φ642+Φ642
	Height	mm	198+198	204+198+198

Model			VVEA-1200R-01T32	VVEA-1300R-01T32
Outdoor coil	Number of rows		3+3	3+3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)	(2245*1260+2158*1260+2065*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30	30+30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	38000	47500
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	67	66
Outdoor sound level(sound power level) (H)		dB(A)	93	93
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690+1410/750/1690	980/750/1690+1410/750/1690+1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838+1515/850/1838	1070/850/1838+1515/850/1838+1515/850/1838
	Net weight	kg	750	989
	Gross weight	kg	808	1072
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	19.05	19.05
	Gas pipe	mm	38.1	38.1
	High gas pipe	mm	34.9	34.9
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	64	64
MCA			109.00	114.61
MFA			63+63	40+50+50
Connection wiring	Max. fuse current	A	63+63	40+50+50
	Min. wiring current	A	109.00	114.61
	Power wiring	mm2	25+25	10+16+16
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-1350R-01T32	VVEA-1400R-01T32
HP			48	50
Combination			16+16+16	16+16+18
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	135.0	140.0
	Rated capacity	kBtu/h	460.62	477.68
	Rated power input	kW	42.2	44.3
	Max. power input	kW	75.3	78.7
	Rated current	A	69.67	73.09
	Max. current	A	124.36	129.97
	EER		3.20	3.16
	SEER		6.86	6.70
Heating	Rated capacity	kW	135.0	140.0
	Rated capacity	kBtu/h	460.62	477.68
	Rated power input	kW	34.2	36.5
	Max. power input	kW	68.1	70.9
	Rated current	A	56.44	60.25
	Max. current	A	112.47	117.09
	COP		3.95	3.84
	SCOP		4.21	4.12
	Capacity at low temperature	kW	124.5	126.7
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB52FKQMT+ANB52FKQMT+ANB52FKQMT	ANB52FKQMT+ANB52FKQMT+ANB52FKQMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		6INV	6INV
	Capacity	W	34400+34400+34400	34400+34400+34400
	Power Input	W	10500+10500+10500	10500+10500+10500
	Rated current(RLA)	A	37+37+37	37+37+37
	Speed	rps	60	60
	Crankcase Heater	W	132+132+132	132+132+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002+ZWK924D500002+ZWK924D500002	ZWK924D500002+ZWK924D500002+ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2+DC/2+DC/2	DC/2+DC/2+DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320+2320+2320	2320+2320+2320
	Output	W	1800+1800+1800	1800+1800+1800
	Rated current	A	8+8+8	8+8+8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da+Tian Da+Tian Da	Tian Da+Tian Da+Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642+Φ642+Φ642	Φ642+Φ642+Φ642
	Height	mm	198+198+198	198+198+198

Model			VVEA-1350R-01T32	VVEA-1400R-01T32
Outdoor coil	Number of rows		3+3+3	3+3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30+30	30+30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	51000	51000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	67	67
Outdoor sound level(sound power level) (H)		dB(A)	93	93
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690+1410/750/1690+1410/750/1690	1410/750/1690+1410/750/1690+1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838+1515/850/1838+1515/850/1838	1515/850/1838+1515/850/1838+1515/850/1838
	Net weight	kg	1098	1098
	Gross weight	kg	1185	1185
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	19.05	19.05
	Gas pipe	mm	38.1	38.1
	High gas pipe	mm	34.9	34.9
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	64	64
MCA			124.36	129.97
MFA			50+50+50	50+50+63
Connection wiring	Max. fuse current	A	50+50+50	50+50+63
	Min. wiring current	A	124.36	129.97
	Power wiring	mm2	16+16+16	16+16+16
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-1450R-01T32	VVEA-1500R-01T32
HP			52	54
Combination			16+18+18	18+18+18
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	145.0	150.0
	Rated capacity	kBtu/h	494.74	511.80
	Rated power input	kW	46.3	48.4
	Max. power input	kW	82.1	85.5
	Rated current	A	76.50	79.91
	Max. current	A	135.59	141.20
	EER		3.13	3.10
	SEER		6.58	6.48
Heating	Rated capacity	kW	145.0	150.0
	Rated capacity	kBtu/h	494.74	511.80
	Rated power input	kW	38.8	41.1
	Max. power input	kW	73.7	76.5
	Rated current	A	64.06	67.87
	Max. current	A	121.72	126.34
	COP		3.74	3.65
	SCOP		4.05	3.99
	Capacity at low temperature	kW	128.9	131.1
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB52FKQMT+ANB52FKQMT+ANB52FKQMT	ANB52FKQMT+ANB52FKQMT+ANB52FKQMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		6INV	6INV
	Capacity	W	34400+34400+34400	34400+34400+34400
	Power Input	W	10500+10500+10500	10500+10500+10500
	Rated current(RLA)	A	37+37+37	37+37+37
	Speed	rps	60	60
	Crankcase Heater	W	132+132+132	132+132+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002+ZWK924D500002+ZWK924D500002	ZWK924D500002+ZWK924D500002+ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2+DC/2+DC/2	DC/2+DC/2+DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320+2320+2320	2320+2320+2320
	Output	W	1800+1800+1800	1800+1800+1800
	Rated current	A	8+8+8	8+8+8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da+Tian Da+Tian Da	Tian Da+Tian Da+Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642+Φ642+Φ642	Φ642+Φ642+Φ642
	Height	mm	198+198+198	198+198+198

Model			VVEA-1450R-01T32	VVEA-1500R-01T32
Outdoor coil	Number of rows		3+3+3	3+3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30+30	30+30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	51000	51000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	67	68
Outdoor sound level(sound power level) (H)		dB(A)	93	93
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690+1410/750/1690+1410/750/1690	1410/750/1690+1410/750/1690+1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838+1515/850/1838+1515/850/1838	1515/850/1838+1515/850/1838+1515/850/1838
	Net weight	kg	1098	1098
	Gross weight	kg	1185	1185
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	19.05	19.05
	Gas pipe	mm	38.1	38.1
	High gas pipe	mm	34.9	34.9
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	64	64
MCA			135.59	141.20
MFA			50+63+63	63+63+63
Connection wiring	Max. fuse current	A	50+63+63	63+63+63
	Min. wiring current	A	135.59	141.20
	Power wiring	mm2	16+16+16	16+16+16
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-1560R-01T32	VVEA-1620R-01T32
HP			56	58
Combination			18+18+20	18+20+20
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	156.0	162.0
	Rated capacity	kBtu/h	532.27	552.74
	Rated power input	kW	49.5	50.6
	Max. power input	kW	89.0	92.5
	Rated current	A	81.73	83.55
	Max. current	A	146.98	152.76
	EER		3.15	3.20
	SEER		6.25	6.06
Heating	Rated capacity	kW	156.0	162.0
	Rated capacity	kBtu/h	532.27	552.74
	Rated power input	kW	43.2	45.2
	Max. power input	kW	80.4	84.3
	Rated current	A	71.30	74.73
	Max. current	A	132.78	139.22
	COP		3.61	3.58
	SCOP		3.97	3.95
	Capacity at low temperature	kW	136.1	141.1
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB52FKQMT+ANB52FKQMT+ANB78FVAMT	ANB52FKQMT+ANB78FVAMT+ANB78FVAMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		6INV	6INV
	Capacity	W	34400+34400+50800	34400+50800+50800
	Power Input	W	10500+10500+15280	10500+15280+15280
	Rated current(RLA)	A	37+37+52	37+52+52
	Speed	rps	60	60
	Crankcase Heater	W	132+132+132	132+132+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002+ZWK924D500002+ZWK924D500002	ZWK924D500002+ZWK924D500002+ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2+DC/2+DC/2	DC/2+DC/2+DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320+2320+2320	2320+2320+2320
	Output	W	1800+1800+1800	1800+1800+1800
	Rated current	A	8+8+8	8+8+8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da+Tian Da+Tian Da	Tian Da+Tian Da+Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642+Φ642+Φ642	Φ642+Φ642+Φ642
	Height	mm	198+198+198	198+198+198

Model			VVEA-1560R-01T32	VVEA-1620R-01T32
Outdoor coil	Number of rows		3+3+3	3+3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30+30	30+30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	53000	55000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	68	68
Outdoor sound level(sound power level) (H)		dB(A)	93	93
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690+1410/750/1690+1410/750/1690	1410/750/1690+1410/750/1690+1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838+1515/850/1838+1515/850/1838	1515/850/1838+1515/850/1838+1515/850/1838
	Net weight	kg	1107	1116
	Gross weight	kg	1194	1203
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	19.05	19.05
	Gas pipe	mm	38.1	41.3
	High gas pipe	mm	34.9	38.1
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	64	64
MCA			146.98	152.76
MFA			63+63+63	63+63+63
Connection wiring	Max. fuse current	A	63+63+63	63+63+63
	Min. wiring current	A	146.98	152.76
	Power wiring	mm2	16+16+16	16+16+16
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-1680R-01T32	VVEA-1720R-01T32
HP			60	62
Combination			20+20+20	20+20+22
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	168.0	172.0
	Rated capacity	kBtu/h	573.22	586.86
	Rated power input	kW	51.7	54.5
	Max. power input	kW	96.0	97.0
	Rated current	A	85.37	89.94
	Max. current	A	158.54	160.20
	EER		3.25	3.16
	SEER		5.90	5.84
Heating	Rated capacity	kW	168.0	172.0
	Rated capacity	kBtu/h	573.22	586.86
	Rated power input	kW	47.3	49.5
	Max. power input	kW	88.2	89.2
	Rated current	A	78.16	81.68
	Max. current	A	145.66	147.31
	COP		3.55	3.48
	SCOP		3.93	3.86
	Capacity at low temperature	kW	146.1	150.7
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB78FVAMT+ANB78FVAMT+ANB78FVAMT	ANB78FVAMT+ANB78FVAMT+ANB78FVAMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		6INV	6INV
	Capacity	W	50800+50800+50800	50800+50800+50800
	Power Input	W	15280+15280+15280	15280+15280+15280
	Rated current(RLA)	A	52+52+52	52+52+52
	Speed	rps	60	60
	Crankcase Heater	W	132+132+132	132+132+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002+ZWK924D500002+ZWK924D500002	ZWK924D500002+ZWK924D500002+ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2+DC/2+DC/2	DC/2+DC/2+DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320+2320+2320	2320+2320+2320
	Output	W	1800+1800+1800	1800+1800+1800
	Rated current	A	8+8+8	8+8+8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da+Tian Da+Tian Da	Tian Da+Tian Da+Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642+Φ642+Φ642	Φ642+Φ642+Φ642
	Height	mm	198+198+198	198+198+198

Model			VVEA-1680R-01T32	VVEA-1720R-01T32
Outdoor coil	Number of rows		3+3+3	3+3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30+30	30+30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	57000	57000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	68	68
Outdoor sound level(sound power level) (H)		dB(A)	93	94
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690+1410/750/1690+1410/750/1690	1410/750/1690+1410/750/1690+1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838+1515/850/1838+1515/850/1838	1515/850/1838+1515/850/1838+1515/850/1838
	Net weight	kg	1125	1125
	Gross weight	kg	1212	1212
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	19.05	19.05
	Gas pipe	mm	41.3	41.3
	High gas pipe	mm	38.1	38.1
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	64	64
MCA			158.54	160.20
MFA			63+63+63	63+63+63
Connection wiring	Max. fuse current	A	63+63+63	63+63+63
	Min. wiring current	A	158.54	160.20
	Power wiring	mm2	16+16+16	16+16+25
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-1760R-01T32	VVEA-1800R-01T32
HP			64	66
Combination			20+22+22	22+22+22
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	176.0	180.0
	Rated capacity	kBtu/h	600.51	614.16
	Rated power input	kW	57.2	60.0
	Max. power input	kW	98.0	99.0
	Rated current	A	94.52	99.09
	Max. current	A	161.85	163.50
	EER		3.08	3.00
	SEER		5.79	5.74
Heating	Rated capacity	kW	176.0	180.0
	Rated capacity	kBtu/h	600.51	614.16
	Rated power input	kW	51.6	53.7
	Max. power input	kW	90.2	91.2
	Rated current	A	85.21	88.74
	Max. current	A	148.97	150.62
	COP		3.41	3.35
	SCOP		3.81	3.76
	Capacity at low temperature	kW	155.3	159.9
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB78FVAMT+ANB78FVAMT+ANB78FVAMT	ANB78FVAMT+ANB78FVAMT+ANB78FVAMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		6INV	6INV
	Capacity	W	50800+50800+50800	50800+50800+50800
	Power Input	W	15280+15280+15280	15280+15280+15280
	Rated current(RLA)	A	52+52+52	52+52+52
	Speed	rps	60	60
	Crankcase Heater	W	132+132+132	132+132+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002+ZWK924D500002+ZWK924D500002	ZWK924D500002+ZWK924D500002+ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2+DC/2+DC/2	DC/2+DC/2+DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320+2320+2320	2320+2320+2320
	Output	W	1800+1800+1800	1800+1800+1800
	Rated current	A	8+8+8	8+8+8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da+Tian Da+Tian Da	Tian Da+Tian Da+Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642+Φ642+Φ642	Φ642+Φ642+Φ642
	Height	mm	198+198+198	198+198+198

Model			VVEA-1760R-01T32	VVEA-1800R-01T32
Outdoor coil	Number of rows		3+3+3	3+3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30+30	30+30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	57000	57000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	68	69
Outdoor sound level(sound power level) (H)		dB(A)	94	95
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690+1410/750/1690+1410/750/1690	1410/750/1690+1410/750/1690+1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838+1515/850/1838+1515/850/1838	1515/850/1838+1515/850/1838+1515/850/1838
	Net weight	kg	1125	1125
	Gross weight	kg	1212	1212
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	19.05	19.05
	Gas pipe	mm	41.3	41.3
	High gas pipe	mm	38.1	38.1
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	64	64
MCA			161.85	163.50
MFA			63+63+63	63+63+63
Connection wiring	Max. fuse current	A	63+63+63	63+63+63
	Min. wiring current	A	161.85	163.50
	Power wiring	mm2	16+25+25	25+25+25
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-1760R-01T32	VVEA-1800R-01T32
HP			64	66
Combination			20+22+22	22+22+22
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	176.0	180.0
	Rated capacity	kBtu/h	600.51	614.16
	Rated power input	kW	57.2	60.0
	Max. power input	kW	98.0	99.0
	Rated current	A	94.52	99.09
	Max. current	A	161.85	163.50
	EER		3.08	3.00
	SEER		5.79	5.74
Heating	Rated capacity	kW	176.0	180.0
	Rated capacity	kBtu/h	600.51	614.16
	Rated power input	kW	51.6	53.7
	Max. power input	kW	90.2	91.2
	Rated current	A	85.21	88.74
	Max. current	A	148.97	150.62
	COP		3.41	3.35
	SCOP		3.81	3.76
	Capacity at low temperature	kW	155.3	159.9
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB78FVAMT+ANB78FVAMT+ANB78FVAMT	ANB78FVAMT+ANB78FVAMT+ANB78FVAMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		6INV	6INV
	Capacity	W	50800+50800+50800	50800+50800+50800
	Power Input	W	15280+15280+15280	15280+15280+15280
	Rated current(RLA)	A	52+52+52	52+52+52
	Speed	rps	60	60
	Crankcase Heater	W	132+132+132	132+132+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002+ZWK924D500002+ZWK924D500002	ZWK924D500002+ZWK924D500002+ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2+DC/2+DC/2	DC/2+DC/2+DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320+2320+2320	2320+2320+2320
	Output	W	1800+1800+1800	1800+1800+1800
	Rated current	A	8+8+8	8+8+8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da+Tian Da+Tian Da	Tian Da+Tian Da+Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642+Φ642+Φ642	Φ642+Φ642+Φ642
	Height	mm	198+198+198	198+198+198

Model			VVEA-1760R-01T32	VVEA-1800R-01T32
Outdoor coil	Number of rows		3+3+3	3+3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30+30	30+30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	57000	57000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	68	69
Outdoor sound level(sound power level) (H)		dB(A)	94	95
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690+1410/750/1690+1410/750/1690	1410/750/1690+1410/750/1690+1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838+1515/850/1838+1515/850/1838	1515/850/1838+1515/850/1838+1515/850/1838
	Net weight	kg	1125	1125
	Gross weight	kg	1212	1212
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	19.05	19.05
	Gas pipe	mm	41.3	41.3
	High gas pipe	mm	38.1	38.1
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	64	64
MCA			161.85	163.50
MFA			63+63+63	63+63+63
Connection wiring	Max. fuse current	A	63+63+63	63+63+63
	Min. wiring current	A	161.85	163.50
	Power wiring	mm2	16+25+25	25+25+25
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-1900R-01T32	VVEA-1950R-01T32
HP			68	70
Combination			16+16+18+18	16+18+18+18
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	190.0	195.0
	Rated capacity	kBtu/h	648.28	665.34
	Rated power input	kW	60.4	62.4
	Max. power input	kW	107.2	110.6
	Rated current	A	99.72	103.14
	Max. current	A	177.04	182.66
	EER		3.15	3.12
	SEER		6.64	6.55
Heating	Rated capacity	kW	190.0	195.0
	Rated capacity	kBtu/h	648.28	665.34
	Rated power input	kW	50.2	52.5
	Max. power input	kW	96.4	99.2
	Rated current	A	82.88	86.68
	Max. current	A	159.21	163.83
	COP		3.79	3.72
	SCOP		4.08	4.04
	Capacity at low temperature	kW	170.4	172.6
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB52FKQMT+ANB52FKQMT+ ANB52FKQMT+ANB52FKQMT	ANB52FKQMT+ANB52FKQMT+ANB52FKQMT+ANB52FKQMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		8INV	8INV
	Capacity	W	34400+34400+34400+34400	34400+34400+34400+34400
	Power Input	W	10500+10500+10500+10500	10500+10500+10500+10500
	Rated current(RLA)	A	37+37+37+37	37+37+37+37
	Speed	rps	60	60
	Crankcase Heater	W	132+132+132+132	132+132+132+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2+(2300+1500)*2	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2+(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002+ZWK924D500002+ZWK924D500002+ZWK924D500002	ZWK924D500002+ZWK924D500002+ZWK924D500002+ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2+DC/2+DC/2+DC/2	DC/2+DC/2+DC/2+DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320+2320+2320+2320	2320+2320+2320+2320
	Output	W	1800+1800+1800+1800	1800+1800+1800+1800
	Rated current	A	8+8+8+8	8+8+8+8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da+Tian Da+Tian Da+Tian Da	Tian Da+Tian Da+Tian Da+Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642+Φ642+Φ642+Φ642	Φ642+Φ642+Φ642+Φ642
	Height	mm	198+198+198+198	198+198+198+198

Model			VVEA-1900R-01T32	VVEA-1950R-01T32
Outdoor coil	Number of rows		3+3+3+3	3+3+3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30+30+30	30+30+30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	68000	68000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	69	69
Outdoor sound level(sound power level) (H)		dB(A)	94	94
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690+1410/750/1690+1410/750/1690+1410/750/1690	1410/750/1690+1410/750/1690+1410/750/1690+1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838+1515/850/1838+1515/850/1838+1515/850/1838	1515/850/1838+1515/850/1838+1515/850/1838+1515/850/1838
	Net weight	kg	1464	1464
	Gross weight	kg	1580	1580
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	22.2	22.2
	Gas pipe	mm	44.5	44.5
	High gas pipe	mm	41.3	41.3
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	64	64
MCA			177.04	182.66
MFA			50+50+63+63	50+63+63+63
Connection wiring	Max. fuse current	A	50+50+63+63	50+63+63+63
	Min. wiring current	A	177.04	182.66
	Power wiring	mm2	16+16+16+16	16+16+16+16
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-2000R-01T32	VVEA-2060R-01T32
HP			72	74
Combination			18+18+18+18	18+18+18+20
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	200.0	206.0
	Rated capacity	kBtu/h	682.40	702.87
	Rated power input	kW	64.5	65.6
	Max. power input	kW	114.0	117.5
	Rated current	A	106.55	108.37
	Max. current	A	188.27	194.05
	EER		3.10	3.14
	SEER		6.48	6.30
Heating	Rated capacity	kW	200.0	206.0
	Rated capacity	kBtu/h	682.40	702.87
	Rated power input	kW	54.8	56.9
	Max. power input	kW	102.0	105.9
	Rated current	A	90.49	93.92
	Max. current	A	168.45	174.89
	COP		3.65	3.62
	SCOP		3.99	3.98
	Capacity at low temperature	kW	174.8	179.8
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB52FKQMT+ANB52FKQMT+ ANB52FKQMT+ANB52FKQMT	ANB52FKQMT+ANB52FKQMT+ANB5 2FKQMT+ANB78FVAMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		8INV	8INV
	Capacity	W	34400+34400+34400+34400	34400+34400+34400+50800
	Power Input	W	10500+10500+10500+10500	10500+10500+10500+15280
	Rated current(RLA)	A	37+37+37+37	37+37+37+52
	Speed	rps	60	60
	Crankcase Heater	W	132+132+132+132	132+132+132+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2+(2300+1500)*2	(2300+1500)*2+(2300+1500)*2+(2300 +1500)*2+(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002+ZWK924D50 0002+ZWK924D500002+ZWK92 4D500002	ZWK924D500002+ZWK924D500002+ ZWK924D500002+ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2+DC/2+DC/2+DC/2	DC/2+DC/2+DC/2+DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320+2320+2320+2320	2320+2320+2320+2320
	Output	W	1800+1800+1800+1800	1800+1800+1800+1800
	Rated current	A	8+8+8+8	8+8+8+8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da+Tian Da+Tian Da+Tian Da	Tian Da+Tian Da+Tian Da+Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642+Φ642+Φ642+Φ642	Φ642+Φ642+Φ642+Φ642
	Height	mm	198+198+198+198	198+198+198+198

Model			VVEA-2000R-01T32	VVEA-2060R-01T32
Outdoor coil	Number of rows		3+3+3+3	3+3+3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30+30+30	30+30+30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	68000	70000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	69	69
Outdoor sound level(sound power level) (H)		dB(A)	94	94
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690+1410/750/1690+1410/750/1690+1410/750/1690	1410/750/1690+1410/750/1690+1410/750/1690+1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838+1515/850/1838+1515/850/1838+1515/850/1838	1515/850/1838+1515/850/1838+1515/850/1838+1515/850/1838
	Net weight	kg	1464	1473
	Gross weight	kg	1580	1589
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	22.2	22.2
	Gas pipe	mm	44.5	44.5
	High gas pipe	mm	41.3	41.3
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	64	64
MCA			188.27	194.05
MFA			63+63+63+63	63+63+63+63
Connection wiring	Max. fuse current	A	63+63+63+63	63+63+63+63
	Min. wiring current	A	188.27	194.05
	Power wiring	mm2	16+16+16+16	16+16+16+16
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-2120R-01T32	VVEA-2180R-01T32
HP			76	78
Combination			18+18+20+20	18+20+20+20
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	212.0	218.0
	Rated capacity	kBtu/h	723.34	743.82
	Rated power input	kW	66.7	67.8
	Max. power input	kW	121.0	124.5
	Rated current	A	110.19	112.01
	Max. current	A	199.83	205.61
	EER		3.18	3.21
	SEER		6.15	6.02
Heating	Rated capacity	kW	212.0	218.0
	Rated capacity	kBtu/h	723.34	743.82
	Rated power input	kW	58.9	61.0
	Max. power input	kW	109.8	113.7
	Rated current	A	97.35	100.78
	Max. current	A	181.34	187.78
	COP		3.60	3.57
	SCOP		3.96	3.94
	Capacity at low temperature	kW	184.8	189.8
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB52FKQMT+ANB52FKQMT+ANB78FVAMT+ANB78FVAMT	ANB52FKQMT+ANB78FVAMT+ANB78FVAMT+ANB78FVAMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		8INV	8INV
	Capacity	W	34400+34400+50800+50800	34400+50800+50800+50800
	Power Input	W	10500+10500+15280+15280	10500+15280+15280+15280
	Rated current(RLA)	A	37+37+52+52	37+52+52+52
	Speed	rps	60	60
	Crankcase Heater	W	132+132+132+132	132+132+132+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2+(2300+1500)*2	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2+(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002+ZWK924D500002+ZWK924D500002+ZWK924D500002	ZWK924D500002+ZWK924D500002+ZWK924D500002+ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2+DC/2+DC/2+DC/2	DC/2+DC/2+DC/2+DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320+2320+2320+2320	2320+2320+2320+2320
	Output	W	1800+1800+1800+1800	1800+1800+1800+1800
	Rated current	A	8+8+8+8	8+8+8+8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da+Tian Da+Tian Da+Tian Da	Tian Da+Tian Da+Tian Da+Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642+Φ642+Φ642+Φ642	Φ642+Φ642+Φ642+Φ642
	Height	mm	198+198+198+198	198+198+198+198

Model			VVEA-2120R-01T32	VVEA-2180R-01T32
Outdoor coil	Number of rows		3+3+3+3	3+3+3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30+30+30	30+30+30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	72000	74000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	69	69
Outdoor sound level(sound power level) (H)		dB(A)	94	94
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690+1410/750/1690+1410/750/1690+1410/750/1690	1410/750/1690+1410/750/1690+1410/750/1690+1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838+1515/850/1838+1515/850/1838+1515/850/1838	1515/850/1838+1515/850/1838+1515/850/1838+1515/850/1838
	Net weight	kg	1482	1491
	Gross weight	kg	1598	1607
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	22.2	22.2
	Gas pipe	mm	44.5	44.5
	High gas pipe	mm	41.3	41.3
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	64	64
MCA			199.83	205.61
MFA			63+63+63+63	63+63+63+63
Connection wiring	Max. fuse current	A	63+63+63+63	63+63+63+63
	Min. wiring current	A	199.83	205.61
	Power wiring	mm2	16+16+16+16	16+16+16+16
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-2240R-01T32	VVEA-2280R-01T32
HP			80	82
Combination			20+20+20+20	20+20+20+22
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	224.0	228.0
	Rated capacity	kBtu/h	764.29	777.94
	Rated power input	kW	68.9	71.7
	Max. power input	kW	128.0	129.0
	Rated current	A	113.83	118.40
	Max. current	A	211.39	213.04
	EER		3.25	3.18
	SEER		5.90	5.86
Heating	Rated capacity	kW	224.0	228.0
	Rated capacity	kBtu/h	764.29	777.94
	Rated power input	kW	63.1	65.2
	Max. power input	kW	117.6	118.6
	Rated current	A	104.21	107.74
	Max. current	A	194.22	195.87
	COP		3.55	3.50
	SCOP		3.93	3.88
	Capacity at low temperature	kW	194.8	199.4
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB78FVAMT+ANB78FVAMT+ANB78FVAMT+ANB78FVAMT	ANB78FVAMT+ANB78FVAMT+ANB78FVAMT+ANB78FVAMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		8INV	8INV
	Capacity	W	50800+50800+50800+50800	50800+50800+50800+50800
	Power Input	W	15280+15280+15280+15280	15280+15280+15280+15280
	Rated current(RLA)	A	52+52+52+52	52+52+52+52
	Speed	rps	60	60
	Crankcase Heater	W	132+132+132+132	132+132+132+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2+(2300+1500)*2	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2+(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002+ZWK924D500002+ZWK924D500002+ZWK924D500002	ZWK924D500002+ZWK924D500002+ZWK924D500002+ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2+DC/2+DC/2+DC/2	DC/2+DC/2+DC/2+DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320+2320+2320+2320	2320+2320+2320+2320
	Output	W	1800+1800+1800+1800	1800+1800+1800+1800
	Rated current	A	8+8+8+8	8+8+8+8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da+Tian Da+Tian Da+Tian Da	Tian Da+Tian Da+Tian Da+Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642+Φ642+Φ642+Φ642	Φ642+Φ642+Φ642+Φ642
	Height	mm	198+198+198+198	198+198+198+198

Model			VVEA-2240R-01T32	VVEA-2280R-01T32
Outdoor coil	Number of rows		3+3+3+3	3+3+3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30+30+30	30+30+30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	836000	76000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	69	69
Outdoor sound level(sound power level) (H)		dB(A)	94	95
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690+1410/750/1690+1410/750/1690+1410/750/1690	1410/750/1690+1410/750/1690+1410/750/1690+1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838+1515/850/1838+1515/850/1838+1515/850/1838	1515/850/1838+1515/850/1838+1515/850/1838+1515/850/1838
	Net weight	kg	1500	1500
	Gross weight	kg	1616	1616
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	22.2	22.2
	Gas pipe	mm	44.5	44.5
	High gas pipe	mm	41.3	41.3
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	64	64
MCA			211.39	213.04
MFA			63+63+63+63	63+63+63+63
Connection wiring	Max. fuse current	A	63+63+63+63	63+63+63+63
	Min. wiring current	A	211.39	213.04
	Power wiring	mm2	16+16+16+16	16+16+16+25
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-2320R-01T32	VVEA-2360R-01T32
HP			84	86
Combination			20+20+22+22	20+22+22+22
Power supply		Ph/V/Hz	3/380~415/50/60	3/380~415/50/60
Cooling	Rated capacity	kW	232.0	236.0
	Rated capacity	kBtu/h	791.58	805.23
	Rated power input	kW	74.5	77.2
	Max. power input	kW	130.0	131.0
	Rated current	A	122.97	127.55
	Max. current	A	214.70	216.35
	EER		3.12	3.06
	SEER		5.81	5.77
Heating	Rated capacity	kW	232.0	236.0
	Rated capacity	kBtu/h	791.58	805.23
	Rated power input	kW	67.4	69.5
	Max. power input	kW	119.6	120.6
	Rated current	A	111.26	114.79
	Max. current	A	197.52	199.17
	COP		3.44	3.40
	SCOP		3.83	3.79
	Capacity at low temperature	kW	204.0	208.6
Compressor	Brand		"MITSUBISHI ELECTRIC"	"MITSUBISHI ELECTRIC"
	Model		ANB78FVAMT+ANB78FVAMT+ANB78FVAMT+ANB78FVAMT	ANB78FVAMT+ANB78FVAMT+ANB78FVAMT+ANB78FVAMT
	Type		DC INV. SCROLL	DC INV. SCROLL
	Compressor quantity		8INV	8INV
	Capacity	W	50800+50800+50800+50800	50800+50800+50800+50800
	Power Input	W	15280+15280+15280+15280	15280+15280+15280+15280
	Rated current(RLA)	A	52+52+52+52	52+52+52+52
	Speed	rps	60	60
	Crankcase Heater	W	132+132+132+132	132+132+132+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD	IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D	FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2+(2300+1500)*2	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2+(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN	BROAD-OCEAN
	Model		ZWK924D500002+ZWK924D500002+ZWK924D500002+ZWK924D500002	ZWK924D500002+ZWK924D500002+ZWK924D500002+ZWK924D500002
	Voltage		DC650V	DC650V
	IP Class		IP44	IP44
	Type / quantity		DC/2+DC/2+DC/2+DC/2	DC/2+DC/2+DC/2+DC/2
	Insulation class		B	B
	Safe class		I	I
	Power Input	W	2320+2320+2320+2320	2320+2320+2320+2320
	Output	W	1800+1800+1800+1800	1800+1800+1800+1800
	Rated current	A	8+8+8+8	8+8+8+8
	Capacitor	μF	/	/
	Speed	rpm	0~1180	0~1180
Outdoor fan	Brand		Tian Da+Tian Da+Tian Da+Tian Da	Tian Da+Tian Da+Tian Da+Tian Da
	Model		/	/
	Material		ABS+20%GF	ABS+20%GF
	Type		Axial	Axial
	Diameter	mm	Φ642+Φ642+Φ642+Φ642	Φ642+Φ642+Φ642+Φ642
	Height	mm	198+198+198+198	198+198+198+198

Model			VVEA-2320R-01T32	VVEA-2360R-01T32
Outdoor coil	Number of rows		3+3+3+3	3+3+3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186	21×18.186
	Fin spacing	mm	1.60	1.60
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer	Clear lacquer
	Salt Spray Test Duration	Hour	168	168
	Tube outside dia.and type		INNERGROOVE TUBE	INNERGROOVE TUBE
		mm	Φ7	Φ7
	Coil length x height	mm	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30+30+30	30+30+30+30
Cabinet coating	Coating type		Powder Coating	Powder Coating
	Salt Spray Test Duration	Hour	72	72
	Sheet Metal Material		Hot zinc plate	Hot zinc plate
	Sheet Metal Thickness	mm	1	1
Control panel enclosure IP class		standard	IP24	IP24
Outdoor air flow (cooling / heating)		m3/h	76000	76000
External static pressure		Pa	110	110
Outdoor sound level(sound pressure level)(H)		dB(A)	70	70
Outdoor sound level(sound power level) (H)		dB(A)	95	96
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690+1410/750/1690+1410/750/1690+1410/750/1690	1410/750/1690+1410/750/1690+1410/750/1690+1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838+1515/850/1838+1515/850/1838+1515/850/1838	1515/850/1838+1515/850/1838+1515/850/1838+1515/850/1838
	Net weight	kg	1500	1500
	Gross weight	kg	1616	1616
Refrigerant	Type		R410A	R410A
	Charged volume	kg	10	10
Throttle type			EXV	EXV
Design pressure		MPa	4.15	4.15
Refrigerant piping	Liquid pipe	mm	22.2	25.4
	Gas pipe	mm	44.5	50.8
	High gas pipe	mm	41.3	44.5
	Oil pipe	mm	/	/
	Total pipe length	m	1000	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90	110/90
	Standard Diff. indoor/outdoor unit	m	50/40	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18	30/18
Connectable indoor unit ratio		%	50~130	50~130
Maximum indoor units		Piece	64	64
MCA			214.70	216.35
MFA			63+63+63+63	63+63+63+63
Connection wiring	Max. fuse current	A	63+63+63+63	63+63+63+63
	Min. wiring current	A	214.70	216.35
	Power wiring	mm2	16+16+25+25	16+25+25+25
	Signal wiring	mm2	2× 0.75	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB.
Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.
The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.
*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

Model			VVEA-2400R-01T32
HP			88
Combination			22+22+22+22
Power supply		Ph/V/Hz	3/380~415/50/60
Cooling	Rated capacity	kW	240.0
	Rated capacity	kBtu/h	818.88
	Rated power input	kW	80.0
	Max. power input	kW	132.0
	Rated current	A	132.12
	Max. current	A	218.00
	EER		3.00
	SEER		5.74
Heating	Rated capacity	kW	240.0
	Rated capacity	kBtu/h	818.88
	Rated power input	kW	71.6
	Max. power input	kW	121.6
	Rated current	A	118.31
	Max. current	A	200.82
	COP		3.35
	SCOP		3.76
	Capacity at low temperature	kW	213.2
Compressor	Brand		"MITSUBISHI ELECTRIC"
	Model		ANB78FVAMT+ANB78FVAMT+ANB78FVAMT+ANB78FVAMT
	Type		DC INV. SCROLL
	Compressor quantity		8INV
	Capacity	W	50800+50800+50800+50800
	Power Input	W	15280+15280+15280+15280
	Rated current(RLA)	A	52+52+52+52
	Speed	rps	60
	Crankcase Heater	W	132+132+132+132
	Refrigerant oil brand		IDEMITSUKOSAN CO.,LTD
	Refrigerant oil type		FVC68D
	Refrigerant oil charge	ml	(2300+1500)*2+(2300+1500)*2+(2300+1500)*2+(2300+1500)*2
Outdoor fan motor	Brand		BROAD-OCEAN
	Model		ZWK924D500002+ZWK924D500002+ZWK924D500002+ZWK924D500002
	Voltage		DC650V
	IP Class		IP44
	Type / quantity		DC/2+DC/2+DC/2+DC/2
	Insulation class		B
	Safe class		I
	Power Input	W	2320+2320+2320+2320
	Output	W	1800+1800+1800+1800
	Rated current	A	8+8+8+8
	Capacitor	μF	/
	Speed	rpm	0~1180
Outdoor fan	Brand		Tian Da+Tian Da+Tian Da+Tian Da
	Model		/
	Material		ABS+20%GF
	Type		Axial
	Diameter	mm	Φ642+Φ642+Φ642+Φ642
	Height	mm	198+198+198+198

Model			VVEA-2400R-01T32
Outdoor coil	Number of rows		3+3+3+3
	Tube pitch(a)x row pitch(b)	mm	21×18.186
	Fin spacing	mm	1.60
	Fin type (code)		Hydrophilic aluminum
	Fin Coating Type	Optional	Clear lacquer
	Salt Spray Test Duration	Hour	168
	Tube outside dia.and type		INNERGROOVE TUBE
		mm	Φ7
	Coil length x height	mm	(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)+(2843*1260+2757*1260+2669*1260)
	Number of circuits		30+30+30+30
Cabinet coating	Coating type		Powder Coating
	Salt Spray Test Duration	Hour	72
	Sheet Metal Material		Hot zinc plate
	Sheet Metal Thickness	mm	1
Control panel enclosure IP class		standard	IP24
Outdoor air flow (cooling / heating)		m3/h	76000
External static pressure		Pa	110
Outdoor sound level(sound pressure level)(H)		dB(A)	70
Outdoor sound level(sound power level) (H)		dB(A)	96
Outdoor unit	Dimension(W*D*H)	mm	1410/750/1690+1410/750/16901410/750/1690+1410/750/1690
	Packing (W*D*H)	mm	1515/850/1838+1515/850/1838+1515/850/1838+1515/850/1838
	Net weight	kg	1500
	Gross weight	kg	17616
Refrigerant	Type		R410A
	Charged volume	kg	10
Throttle type			EXV
Design pressure		MPa	4.15
Refrigerant piping	Liquid pipe	mm	25.4
	Gas pipe	mm	50.8
	High gas pipe	mm	44.5
	Oil pipe	mm	/
	Total pipe length	m	1000
	Max. pipe length(Equivalent/ Actual)	m	260/220
	Max. Diff. indoor/outdoor unit*1	m	110/90
	Standard Diff. indoor/outdoor unit	m	50/40
	Max. / standard Diff. indoor/indoor unit*1	m	30/18
Connectable indoor unit ratio		%	50~130
Maximum indoor units		Piece	64
MCA			218.00
MFA			63+63+63+63
Connection wiring	Max. fuse current	A	63+63+63+63
	Min. wiring current	A	218.00
	Power wiring	mm2	25+25+25+25
	Signal wiring	mm2	2× 0.75
Operation Range		°C	Cooling: -5~50°C Cooling:Heating:-10~20°C Heating: -23~21°C

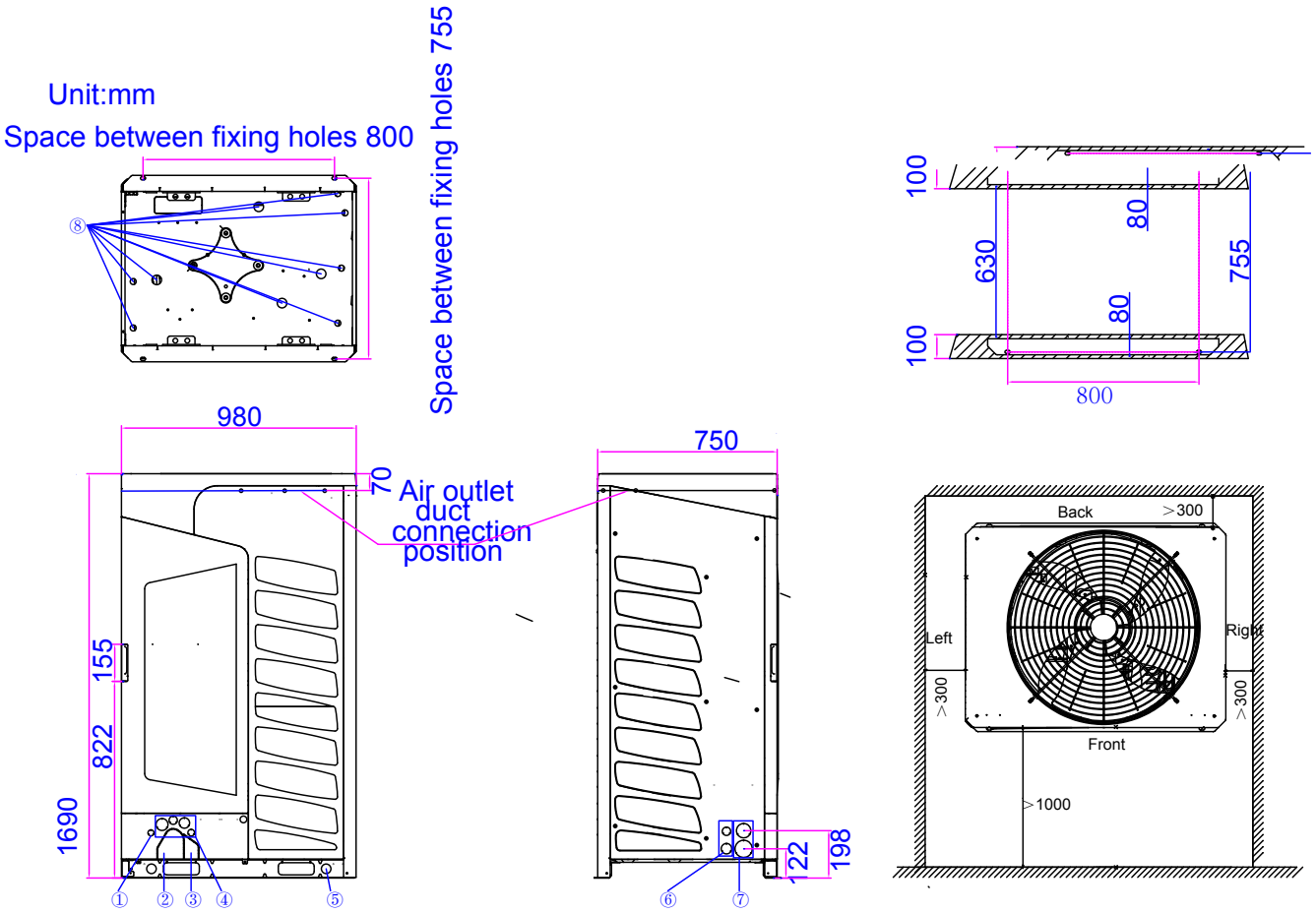
Norminal condition: indoor temperature (cooling): 27°C DB/19°C WB, indoor temperature (heating): 20°C DB/14.5°C WB. Outdoor temperature(cooling): 35°C DB/24°C WB, outdoor temperature(heating): 7°C DB/6°C WB The data is measured with 7.5m equivalent pipe and 0 m height difference.

The noise level will be measured in the third octave band limited values in the semi-anechoic chamber, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.

*1 If the total pipe length is from 500 to 1000m or the height difference between the outdoor and indoor units is from 50 to 110m or the height difference between the indoor units is from 18 to 30m, you Must contact your local distributor/dealer for individual design and production.

4. Dimension

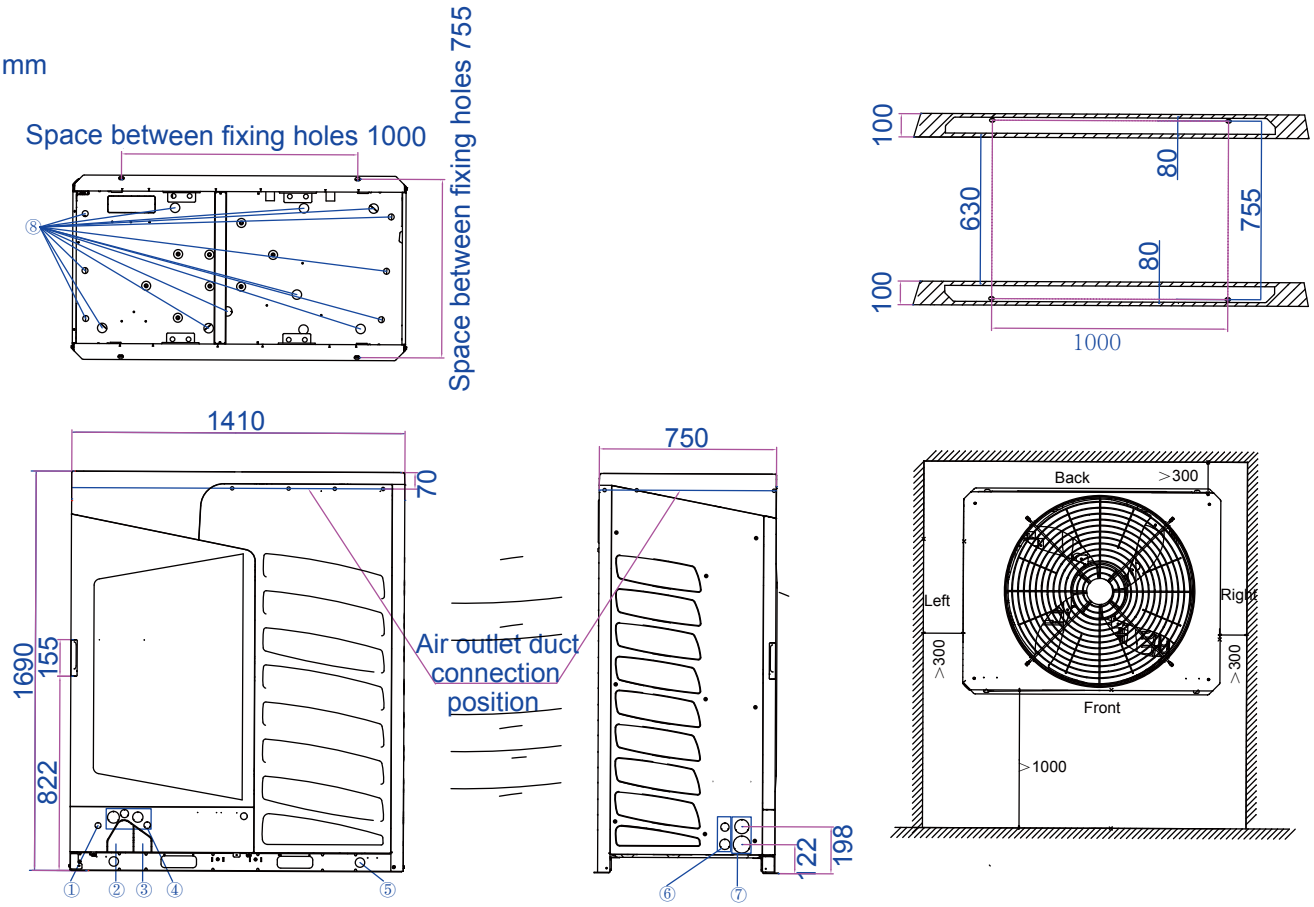
VVEA-250/280/335/400R-01T32



No.	Name	Remark
1	Signal line hole(Ø25)	Using the rubber plug in the unit's attachment for protection
2	Pipe outlet for 2-pipe system	
3	Pipe outlet for 3-pipe system	
4	Power supply hole	hole,and using the line sheath in the unit's attachment for protectionAccording to the wire diameter size to choose the appropriate line
5	Hoisting hole	
6	Power supply of signal line hole	
7	Refrigerant pipe outlet	
8	Drain hole	

VVEA-450/504/560/615R-01T32

Unit:mm



No.	Name	Remark
1	Signal line hole(Ø25)	Using the rubber plug in the unit's attachment for protection
2	Pipe outlet for 2-pipe system	
3	Pipe outlet for 3-pipe system	
4	Power supply hole	hole,and using the line sheath in the unit's attachment for protectionAccording to the wire diameter size to choose the appropriate line
5	Hoisting hole	
6	Power supply of signal line hole	
7	Refrigerant pipe outlet	
8	Drain hole	

5. Center of gravity

VVEA-250/280/335/400R-01T32

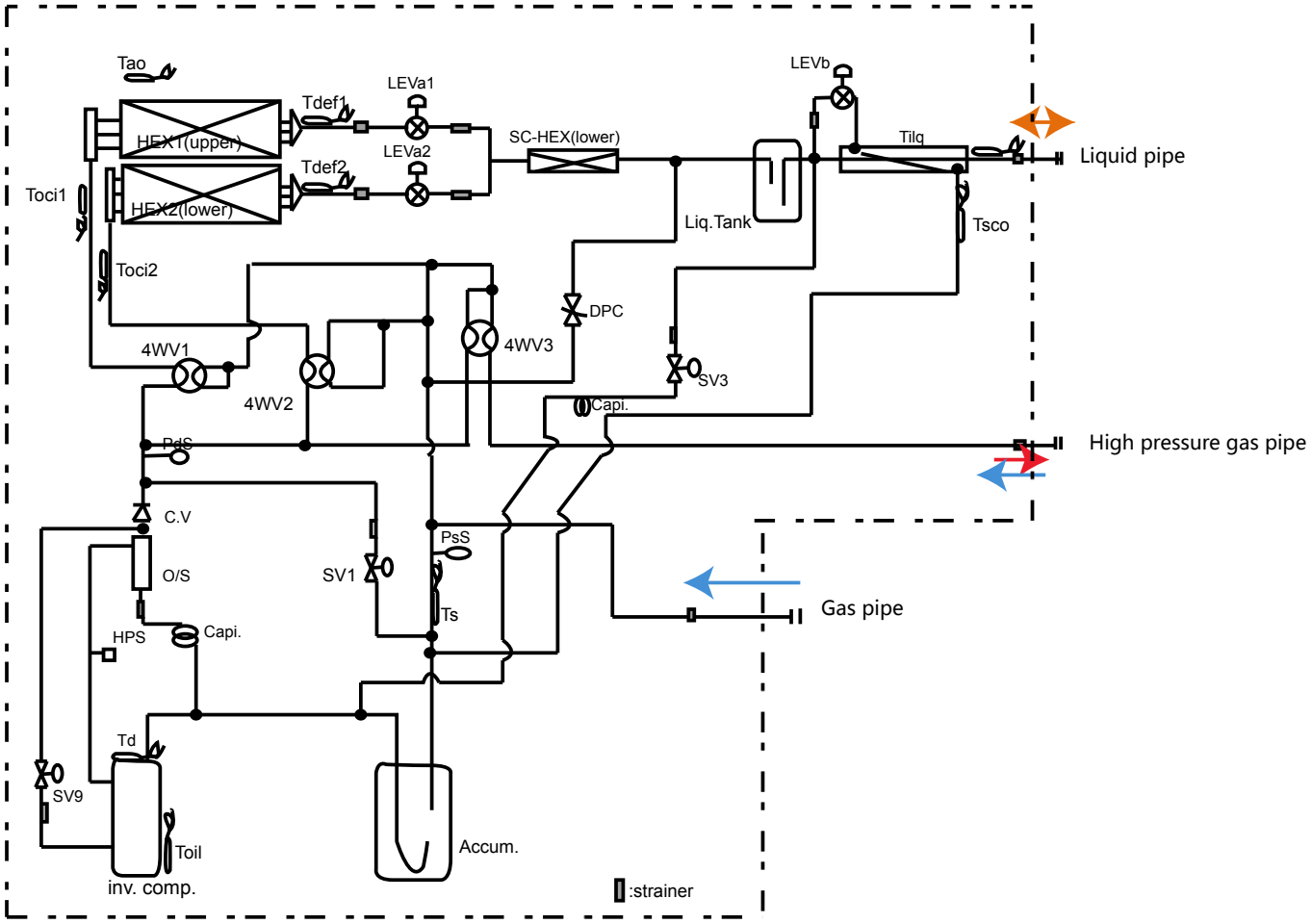
Single Fan

VVEA-450/504/560/615R-01T32

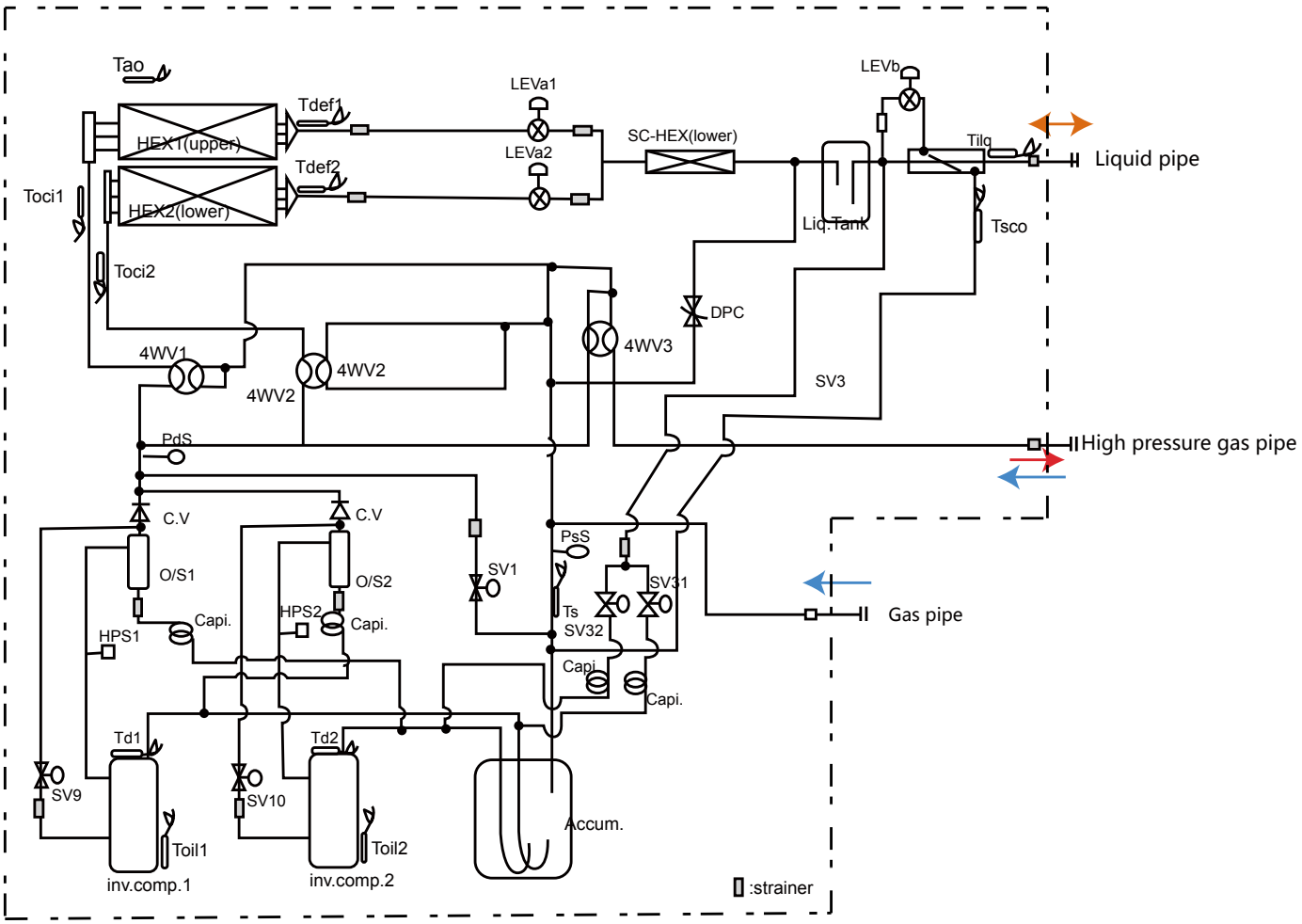
Double Fan

6. Piping diagram

VVEA-250/280/335/400R-01T32



VVEA-450/504/560/615R-01T32

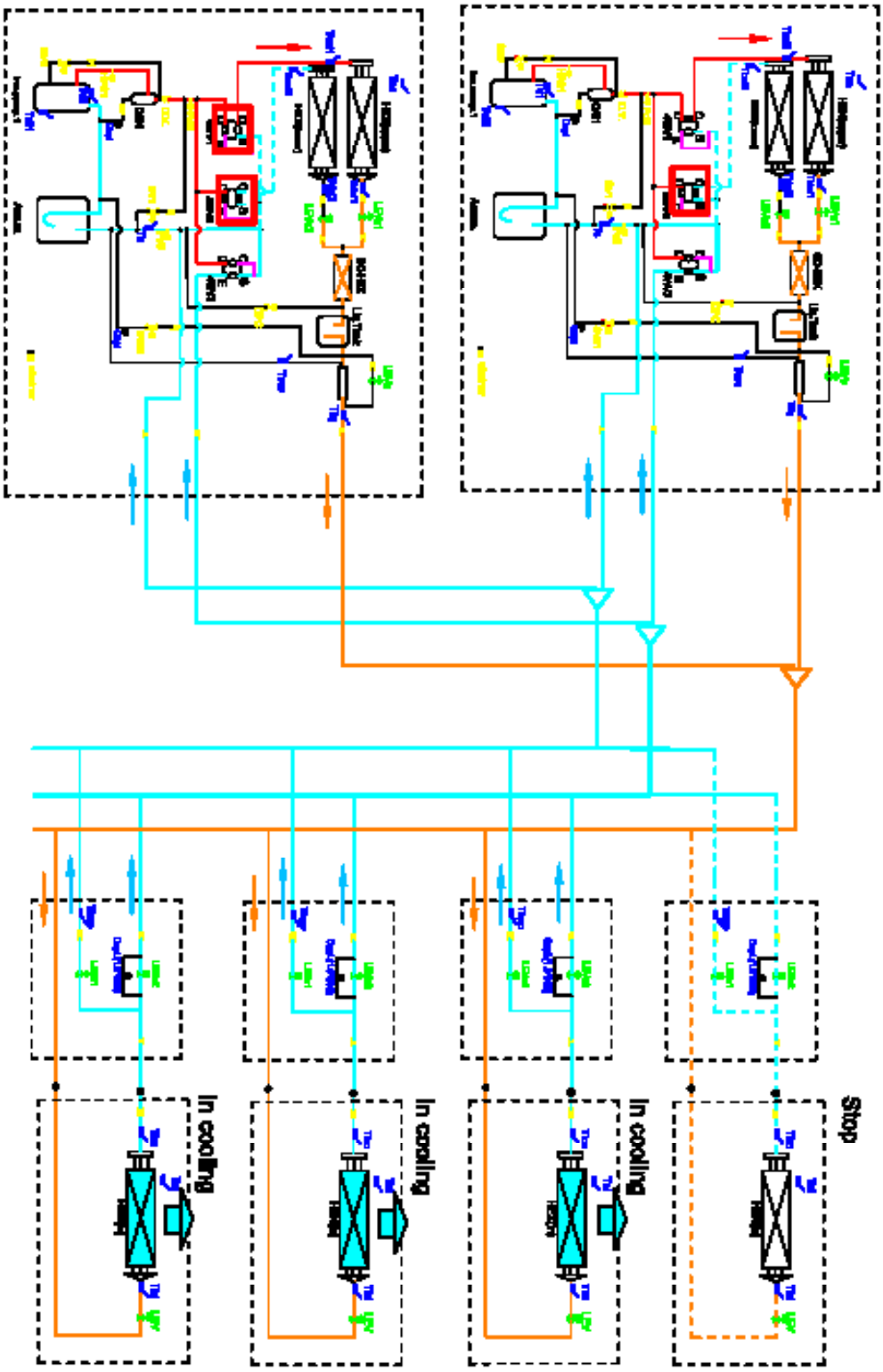


Part name	Sign	Function	Data	Remark
Compressor	/	"Capacity control, to meet indoor load through frequency adjustment."	ANB52FKQMT: 0.302Ω	20°C
			ANB66FVAMT: 0,23Ω	
			ANB78FVAMT: 0,23Ω	
Pressure switch	HPs1/2	Protection control for high pressure	4.15Mpa, OFF setting	
Pressure sensor	Pd1	In heating , compressor frequency adjustment and protection control for abnormal pressure	0~4.15MPa	
	Ps	In cooling , compressor frequency adjustment and protection control for abnormal pressure	0~1.7MPa	
Electronic expansion valve	LEVa1, 2	Refrigerant flow control in heating	8-14HP:Ø3.0 16-22HP:Ø4.0	
	LEVb	Sub-cooling valve, in cooling, be controlled as the Tliqsc target.	8-22HP:Ø2.5	
Solenoid valve	SV1	1. Balance between high and low pressures when the compressor starts and stops;	AC220V	2A
		2. Protection to prevent high and low pressures.		
	SV3	Started when the compressor discharging temperature and oil temperature are too high to carry out temperature reduction by refrigerant spraying.	AC220V	2A
	SV10	Outdoor unit SV10 for oil suction starts during oil balance; for pressure relief to prevent explosion of pipe group.	AC220V	2A
	SV9	The outdoor unit for oil discharging starts SV9 for oil balancing during oil balance among modules.	AC220V	2A
Four-way valve	4WV1	Switch between cooling and heating	AC220V Power on during heating and power off during cooling or defrosting.	
	4WV2	Switch between cooling and heating		
	4WV3	Change over between cooling and heating	AC220V, power on in heating; power off in cooling or defrosting	
Unloading valve	DPC	Avoid the oil equalization circuit being blocked by liquid seal.	Opened when the circuit's pressure is over 4.1MPa	
Temperature sensor	Toil1/2	To detect the temperature of refrigeration lubricant at the compressor bottom.	"R (80°C) = 50K B (25/80°C)=4450K	
	Tsacc	To detect the inlet temperature of gas-liquied seperator		
	Td1/Td2	To detect the top temperature of inverter/ON-OFF compressor.		
	Tdef1 Tdef2	To detect the frosting of outdoor heat exchanger.	R(25°C)=10K, B(25°C /50°C) =3700 K	
	Toci1 Toci2	To detect the temperature of condenser main gas pipe to control LEVa1, 2 during heating.		
	Tao	To detect ambient temperature and control the initial air speed and defrosting conditions.		
	Tsco	Detect the branch outlet pipe's temp. of heat regenerator in order to control LEVb during cooling.		
	Tliqsc	Detect the main outlet pipe's temp. of heat regenerator in order to control LEVb during cooling.		
	CH1/2	Used to heat the compressor oil in the inverter compressor.	33W, 220V, 2 pieces/ compressor	

7. Refrigerant flow

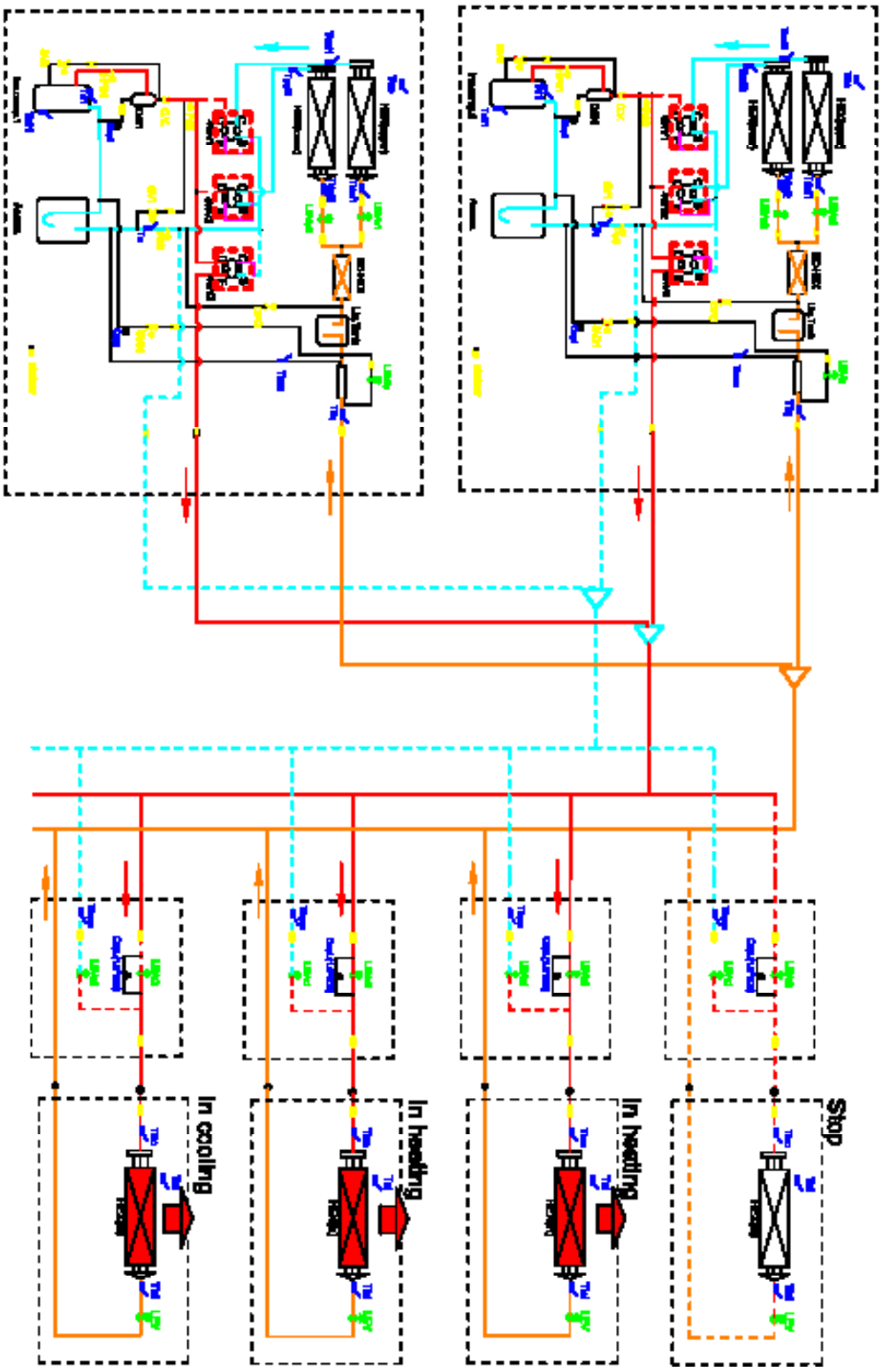
All cooling

High temperature, high pressure gas
Low temperature, low pressure gas
High temperature, high pressure liquid



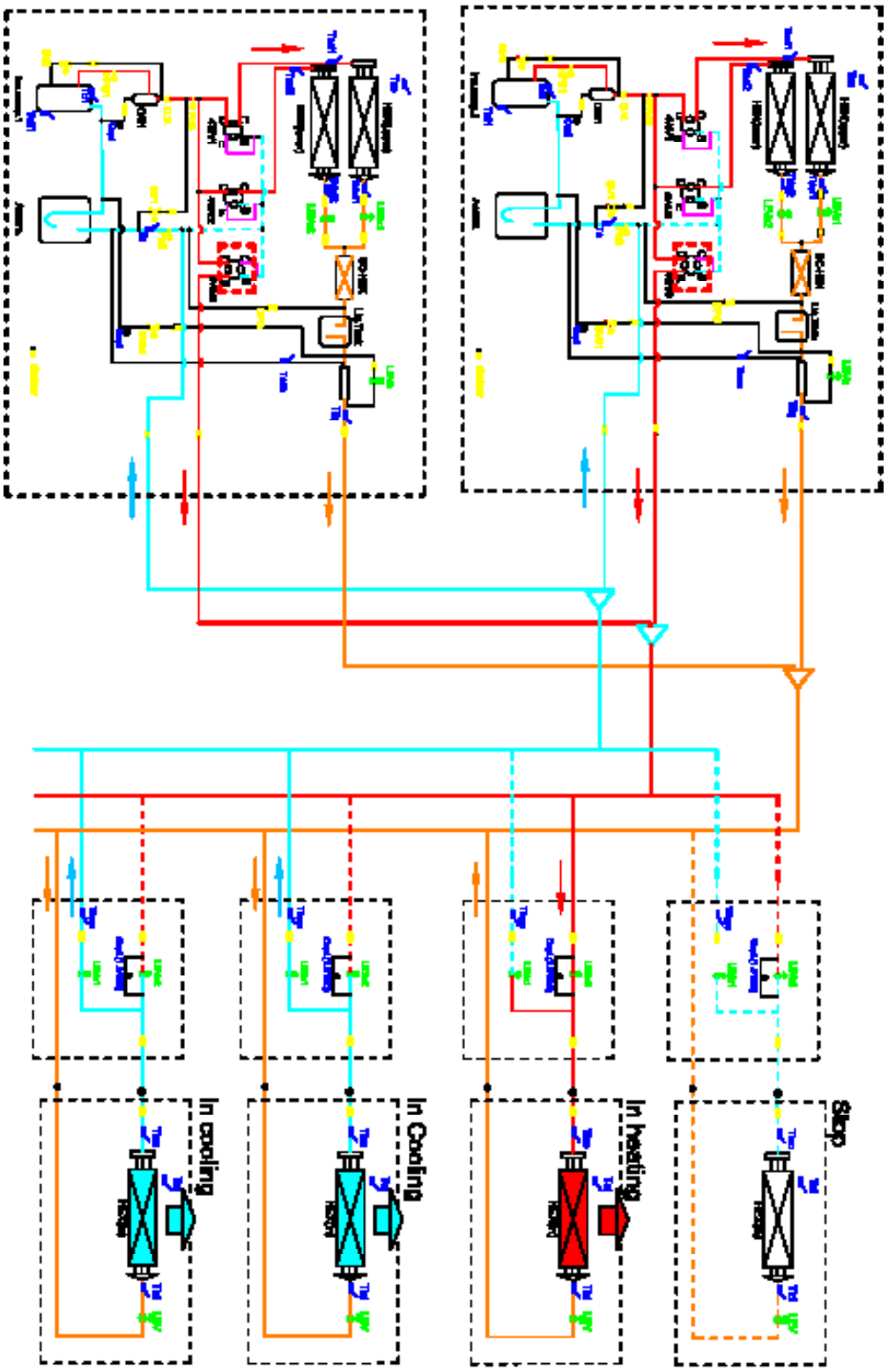
All heating

High temperature, high pressure gas
Low temperature, low pressure gas
High temperature, high pressure liquid



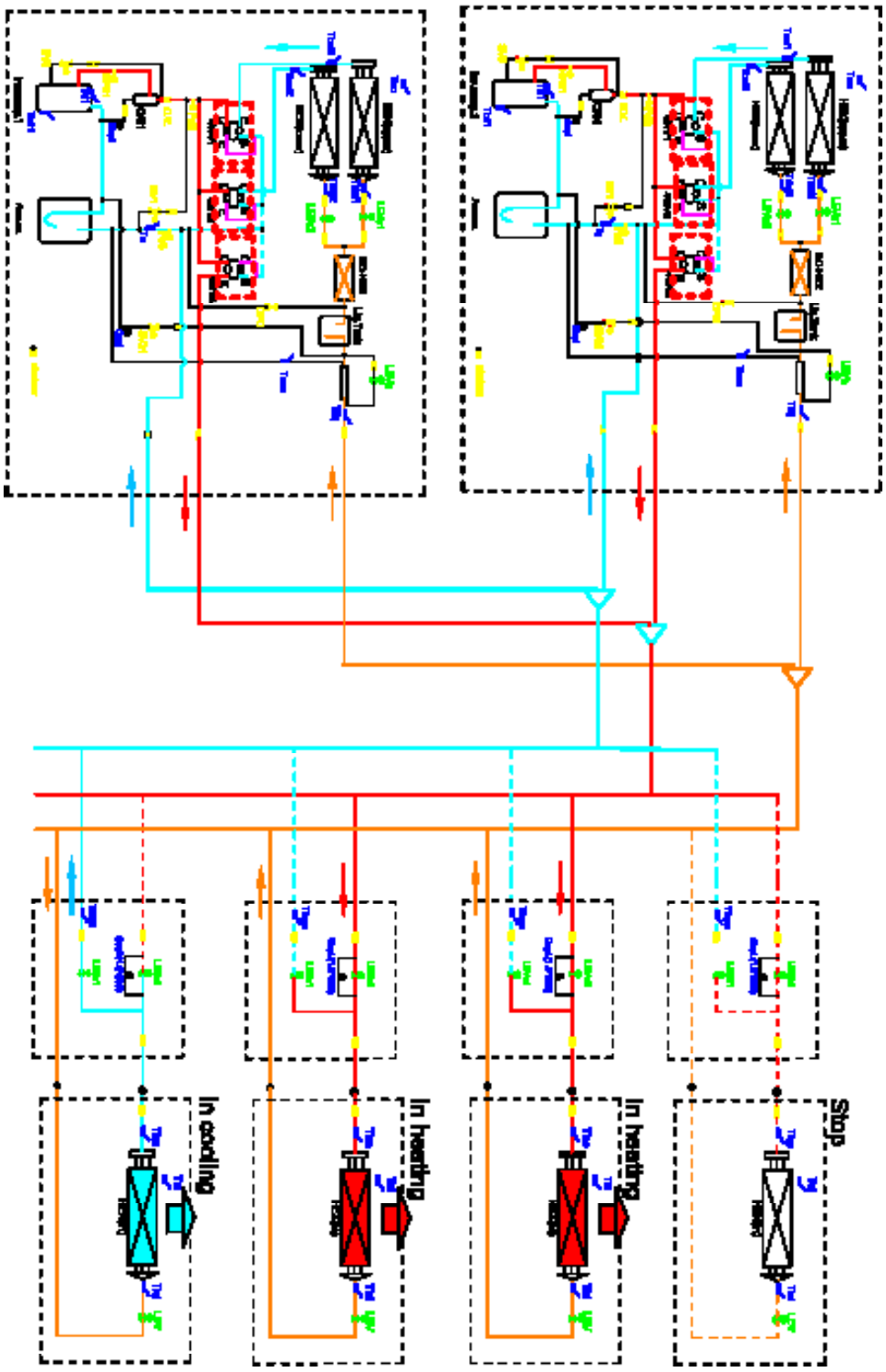
Cooling> heating circuit

High temperature, high pressure gas
Low temperature, low pressure gas
High temperature, high pressure liquid



Cooling< heating circuit

High temperature, high pressure gas
Low temperature, low pressure gas
High temperature, high pressure liquid



8. Functional parts layout

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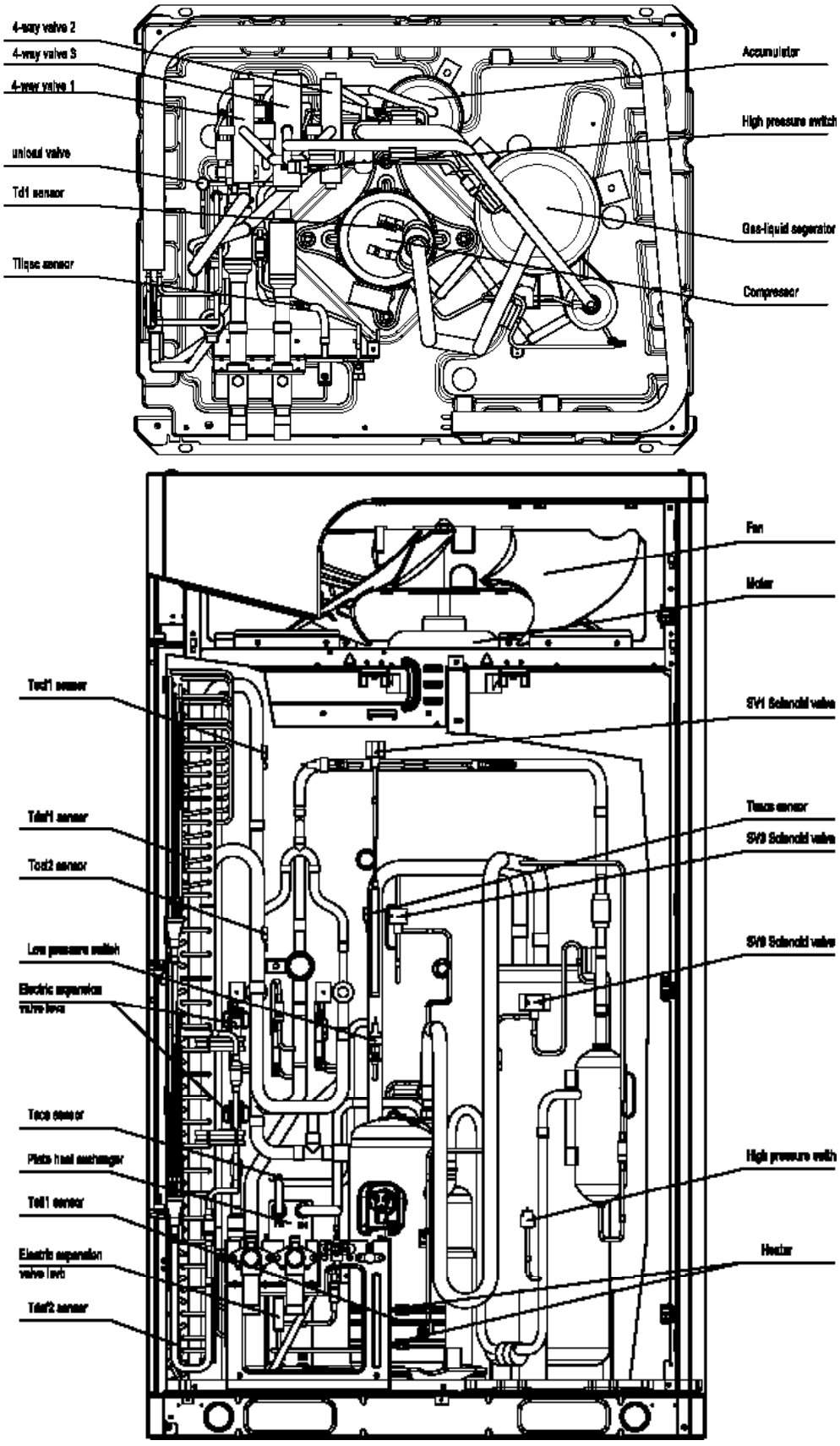
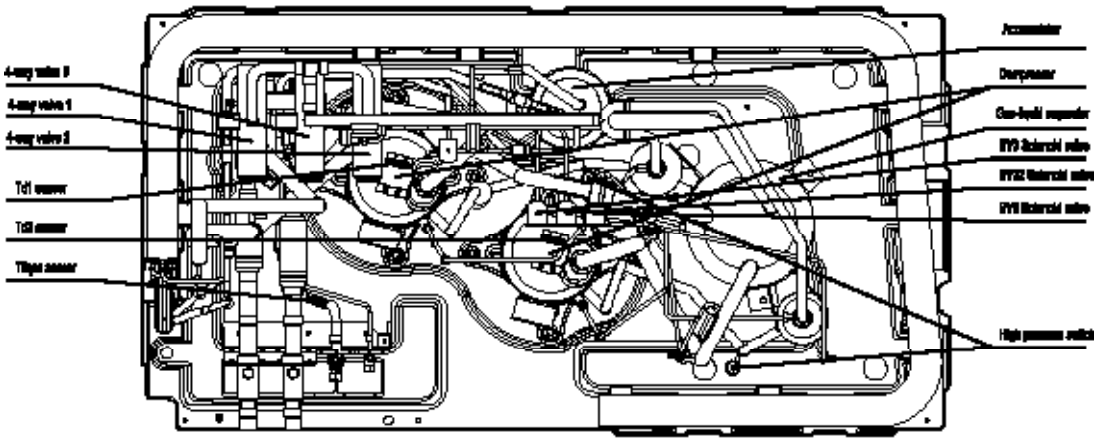
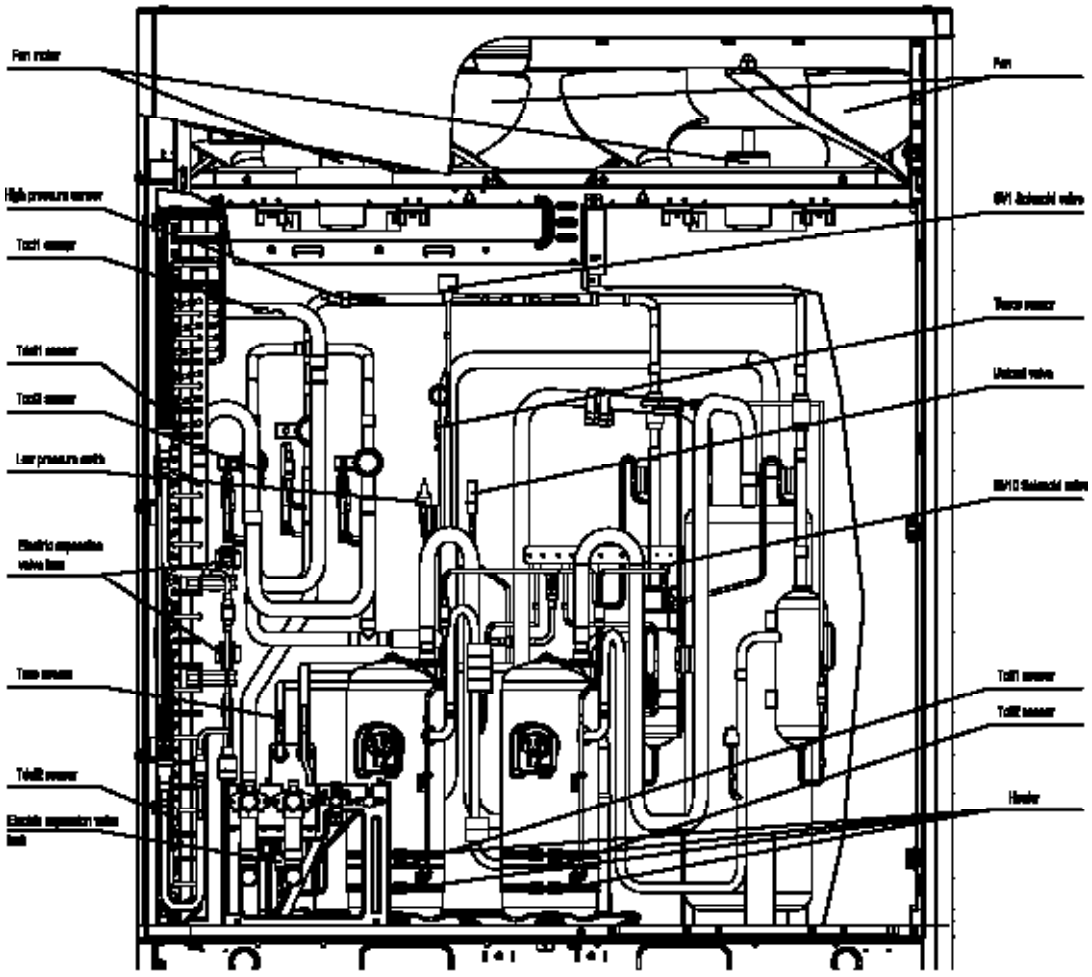


VVEA-450/504/560/615R-01T32

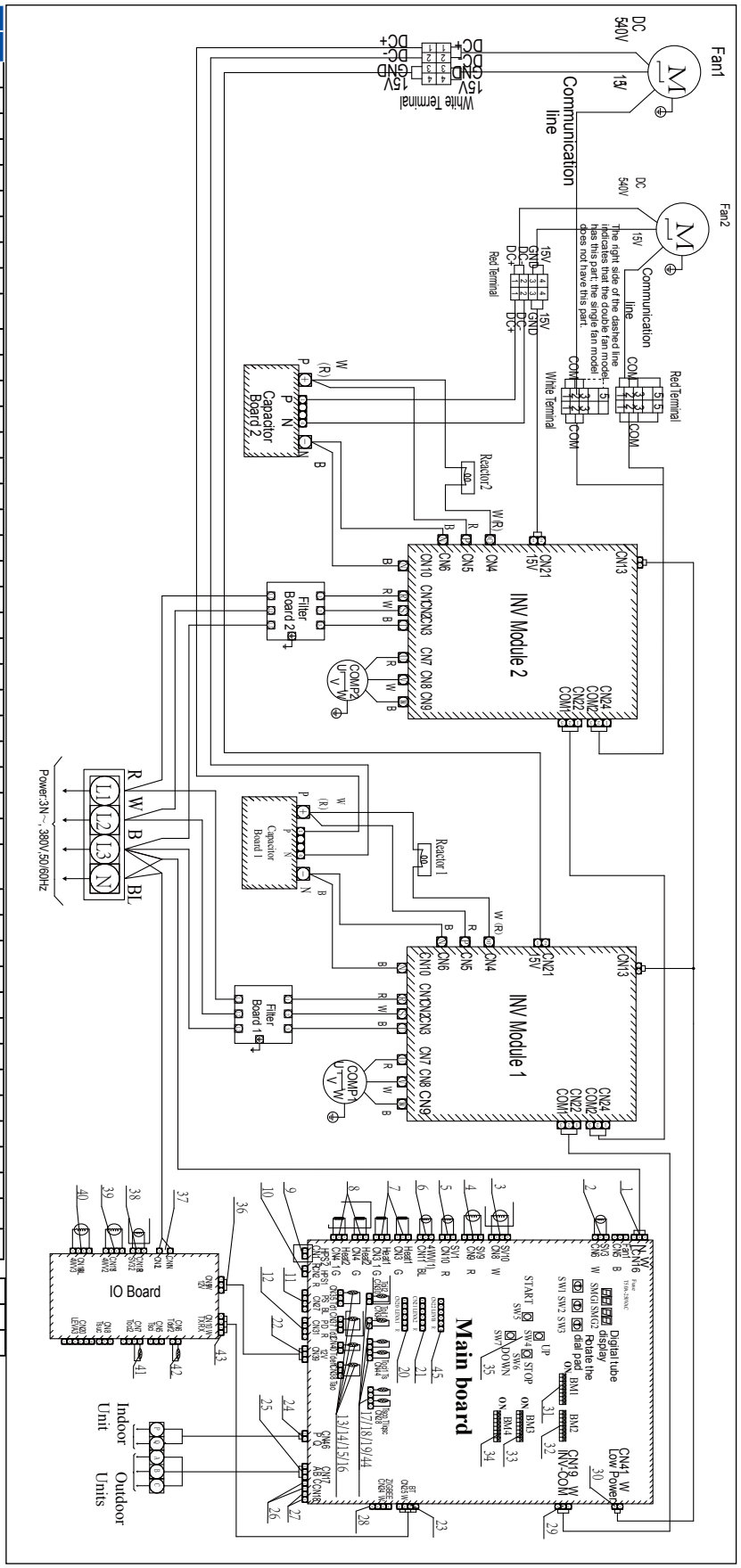




9. Wiring diagram

Description of the Main-board Port definition		
No.	Port	Port description
1	L/N/G	AC Power Input
2	SV3	Liquid Jetting to compressor 1
3	SV10	Drain the oil from compressor 2
4	SV9	Drain the oil from compressor 1
5	SV1	Balance pressure(Load-OFF)
6	4WV	Hot and cold switching
7	HEAT1	Heating band of compressor 1
8	HEAT2	Heating band of compressor 2
9	HPS2	High pressure switch of compressor 2
10	HPS1	High pressure switch of compressor 1
11	Ps	Low pressure sensor
12	Pd	High pressure sensor
13	Td1	Exhaust temperature of compressor1
14	Td2	Exhaust temperature of compressor2
15	Tdef1	Detect the defrosting temp
16	Tao	Ambient temperature
17	Toil2	Detect the oil temp. of compressor 2
18	Toil1	Detect the oil temp. of compressor 1
19	Toci1/Ts	Detect SH temp. in heating
20	LEVA1	SH control in heating
21	LEVA2	SH control in heating
22	DC12V	Output DC12V
23	BT	Output DC5V/Communication
24	P/Q	Indoor/outdoor unit com. port
25	A/B/C	Outdoor unit com. port
26	Bus-B/A	Centralized control port
27	Stop	Emergency stop port
28	ZIGBEE	Wireless module com. port
29	INV-COM	INV module com. port
30	Low Power	Low standby power consumption
31	BM1	Outdoor and indoor searching Outdoor address setting
32	BM2	Wireless communication
33	BM3	HP setting of outdoor units
34	BM4	Set the control address
35	SW4/5/6/7	Special function control keys
36	DC12V	Input DC12V
37	L/N	AC Power Input
38	SV32	Liquid jetting to compressor 2
39	4WV2	Hot and cold switching
40	4WV3	Hot and cold switching
41	Toci2	Detect SH temp. in heating
42	Tdef2	Detect the defrosting temp
43	Tx Rx	Input DC5V/communication
44	Tliqsc/Tsco	Detect SH temp. of subcooler
45	LEVB	Contral subcooler

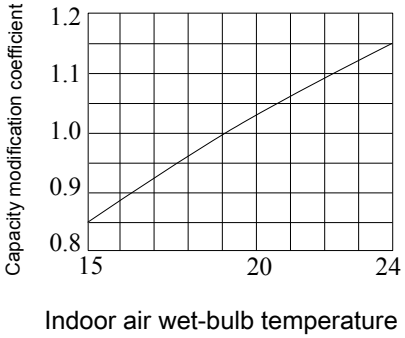
Note:
B:Black G:Green W:White BL:Blue R:Red Y:Yellow
The component in the dotted box is used for 16 to 22HP



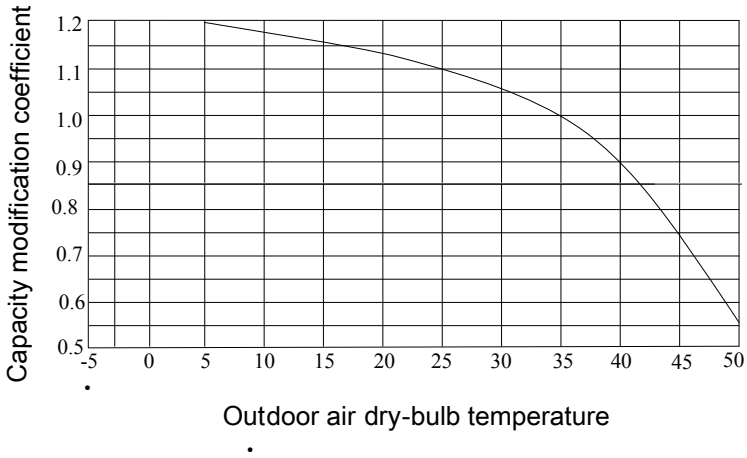
10. Capacity calculation due to capacity modification coefficient

(1) Calculation method of cooling capacity---Refrigerating capacity to be known=Refrigerating capacity x(AxBxCxDxE) W

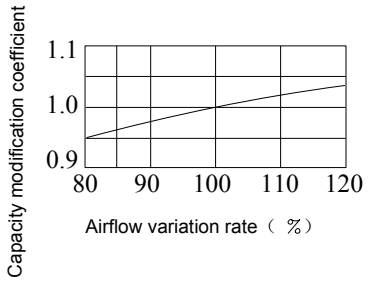
A Capacity compensation coefficient of indoor air wet-bulb temperature condition.



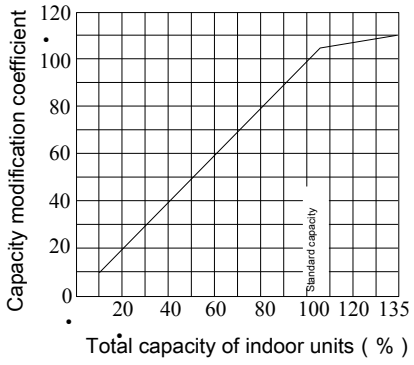
B Capacity compensation coefficient of outdoor air dry-bulb temperature condition.



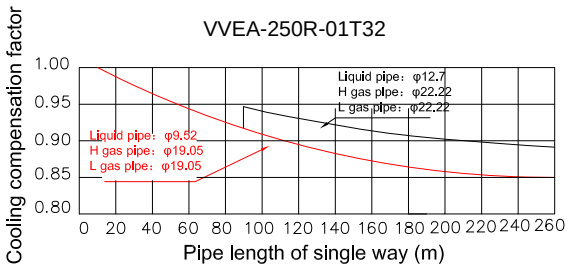
C Capacity modification coefficient under airflow variation rate of indoor unit group(only for duct unit)

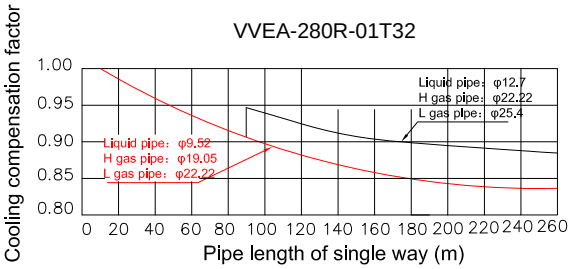


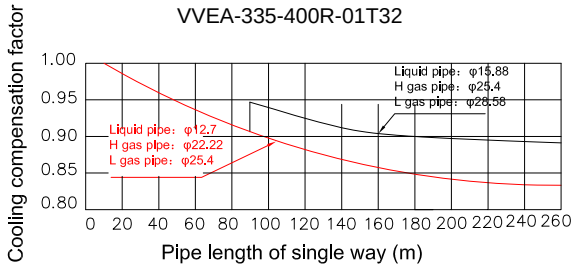
D Capacity compensation suitable for total capability of indoor unit group (cooling)

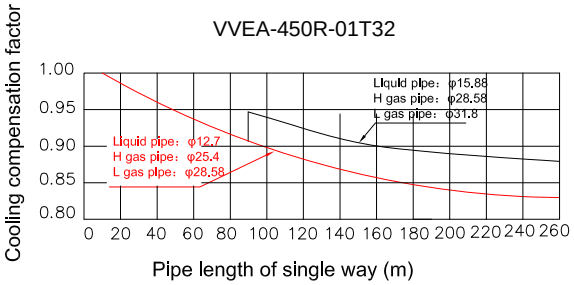


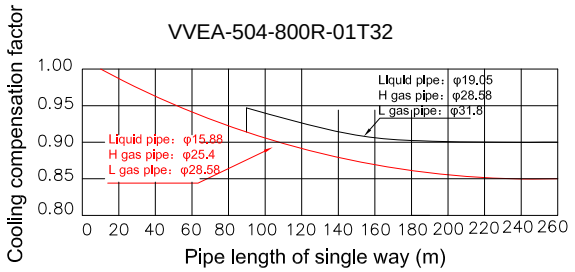
E: Capacity compensation value at different piping length and drop

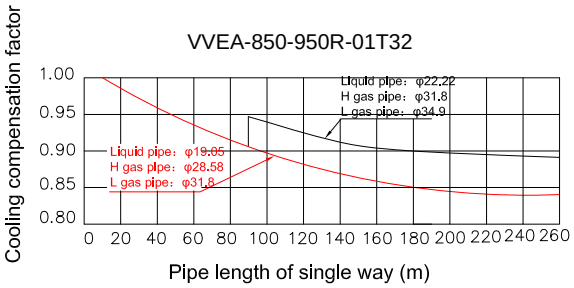


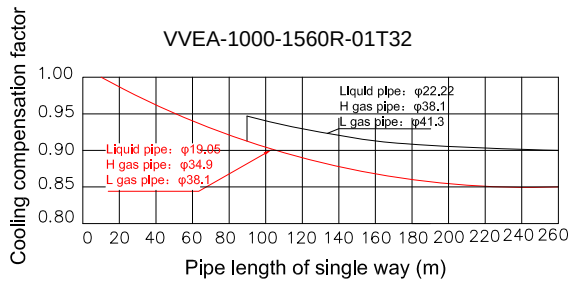


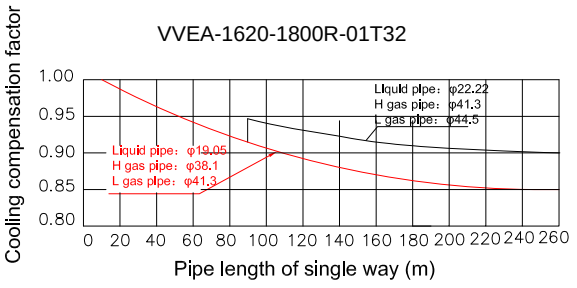


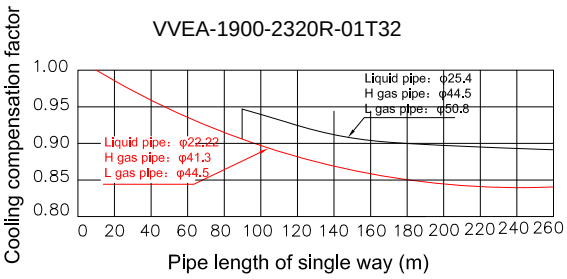


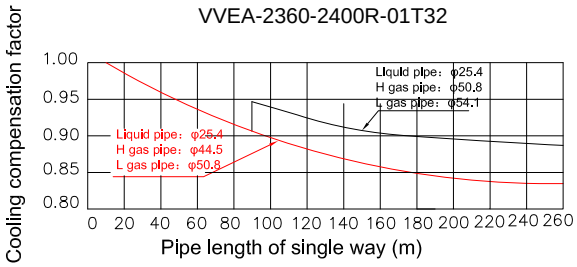












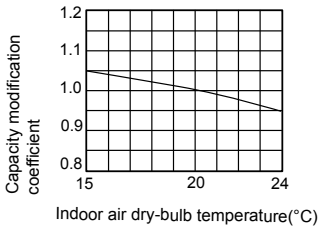
Note:

1. The refrigerant pipe should be thickened when the single way length is over 90m.
2. When in cooling mode, outdoor is lower than indoor; or when in heating mode, outdoor is higher than indoor, the compensation factor should be decreased the below value from the above figure.

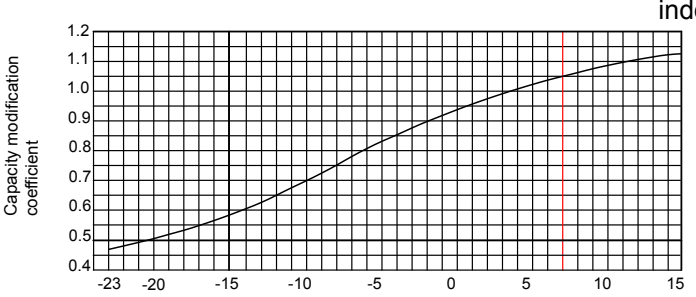
Vertical height drop between indoor and outdoor	5m	10m	15m	20m	25m	30m	35m	40m	45m	50m	60m	70m	80m	90m	100m	110m
Adjustment factor	0.003	0.006	0.009	0.012	0.015	0.018	0.021	0.024	0.027	0.03	0.033	0.036	0.039	0.042	0.045	0.05

(2) Calculation method of heating capacity---Heating capacity to be known=Heating capacity x(AxBxCxDxExF) W

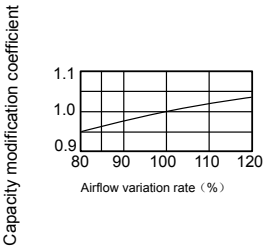
A. Capacity modification value under indoor air dry-bulb temperature condition.



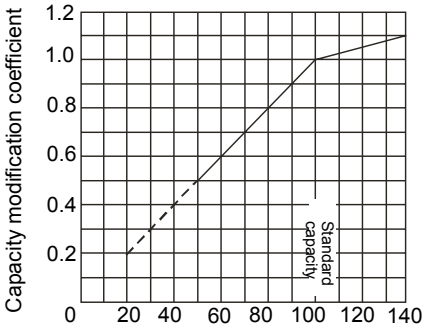
B. Capacity modification value under outdoor air wet-bulb temperature condition.



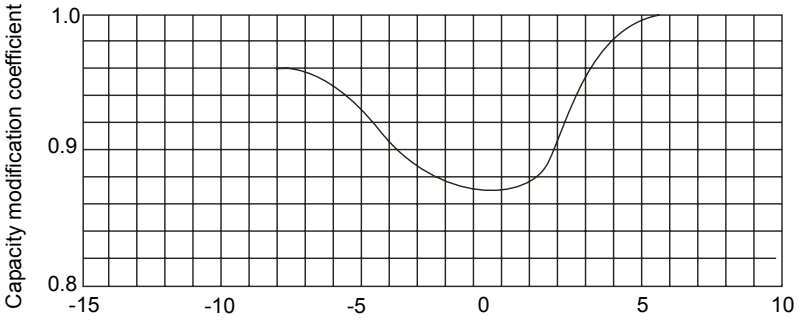
C. Capacity modification value under airflow variation rate of indoor unit group.



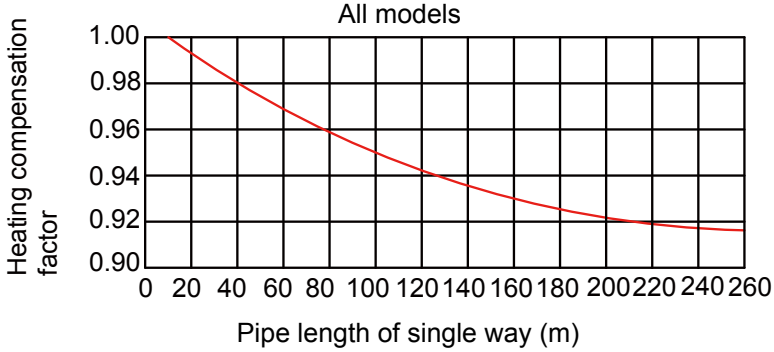
D. Capacity compensation suitable for total capability of indoor unit group(heating)



E. Capacity compensation coefficient for defrost capability of outdoor heat exchanger.



F. Heating compensation factor at different pipe length

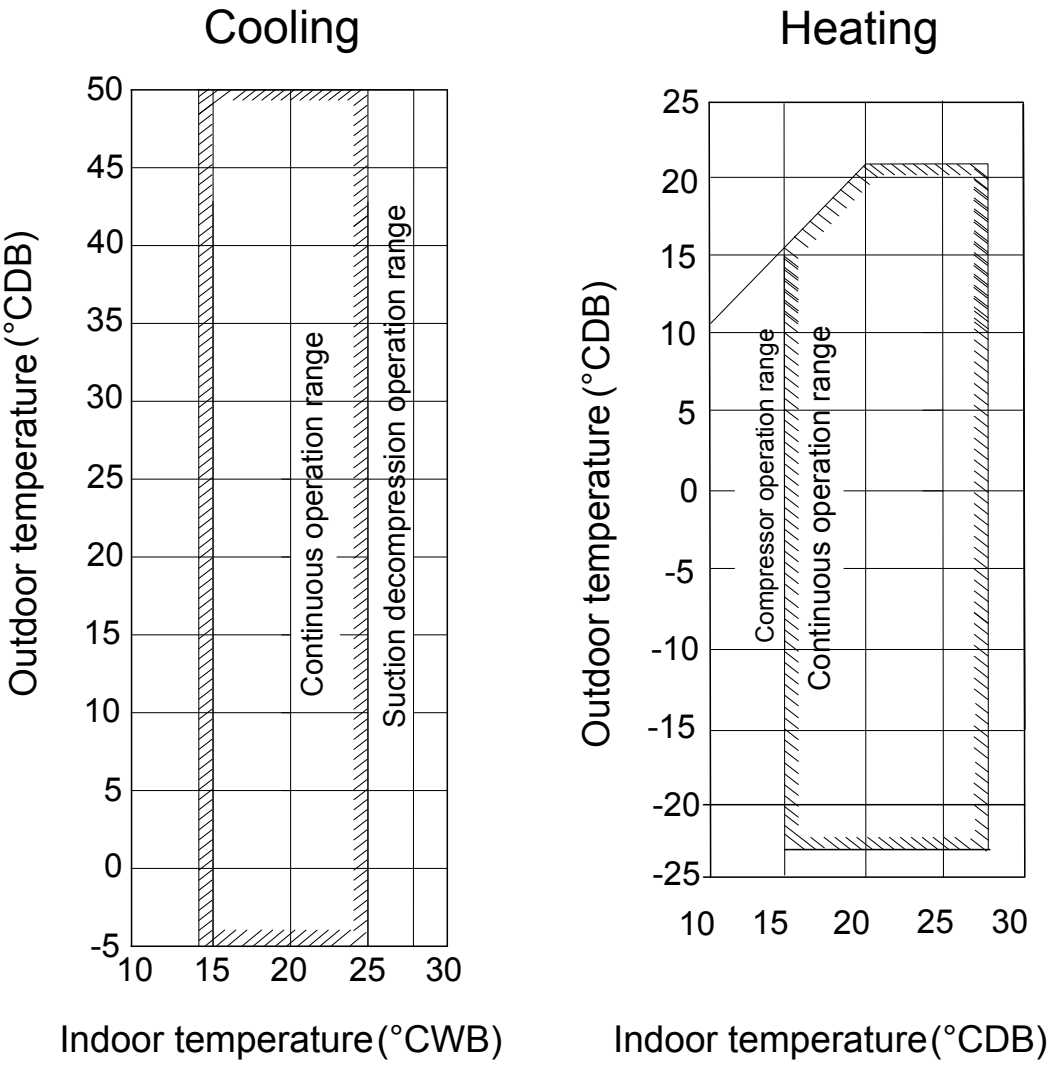


(3) Calculation method of refrigeration capacity-Only one indoor unit running

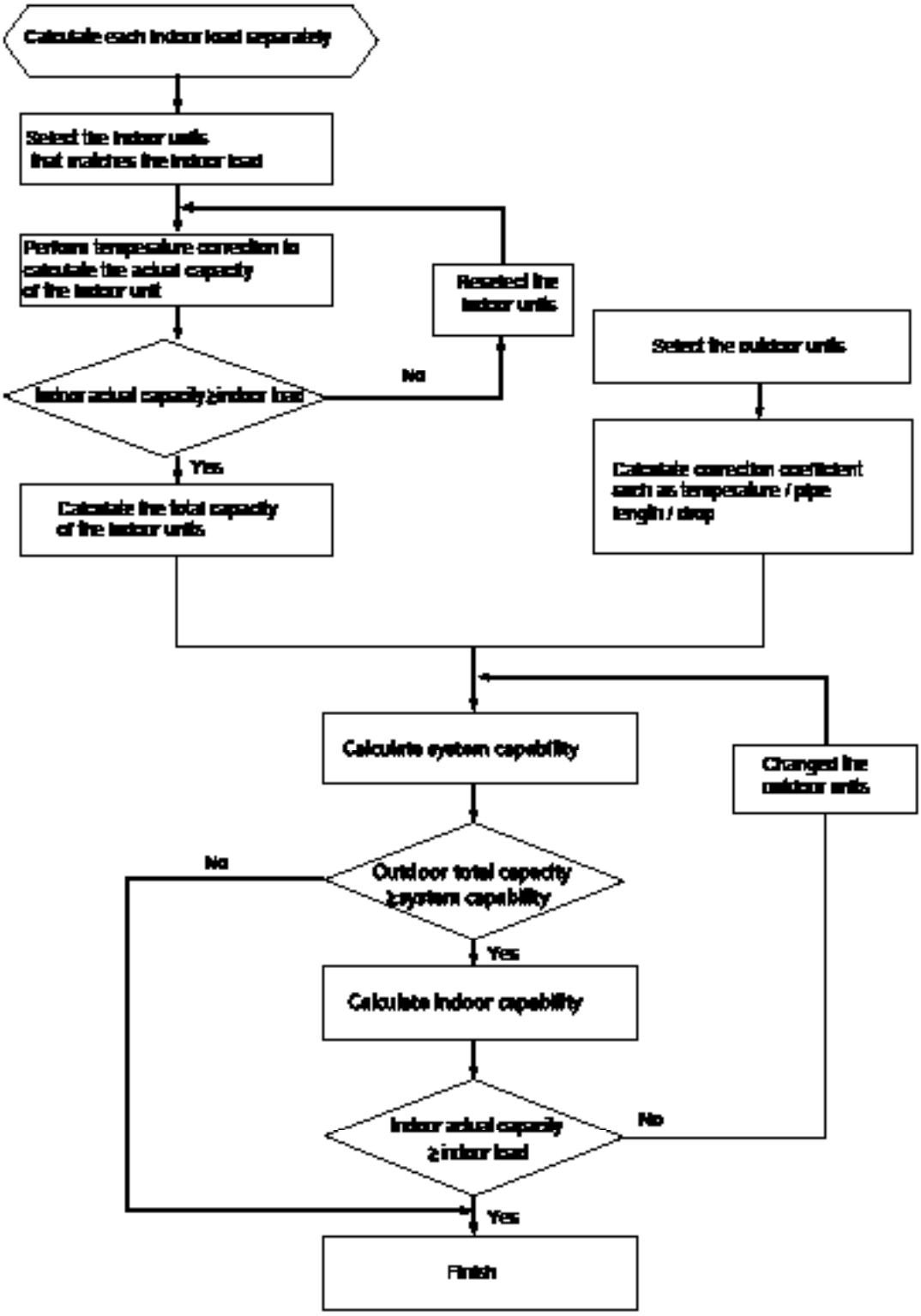
Outdoor modified capacity with a single indoor running=outdoor modified capacity* $\frac{\text{stand by indoor normal capacity}}{\text{indoor total normal capacity.}}$

Outdoor modified capacity heating or outdoor capacity after modify item 1 and 2)

11. Operation range



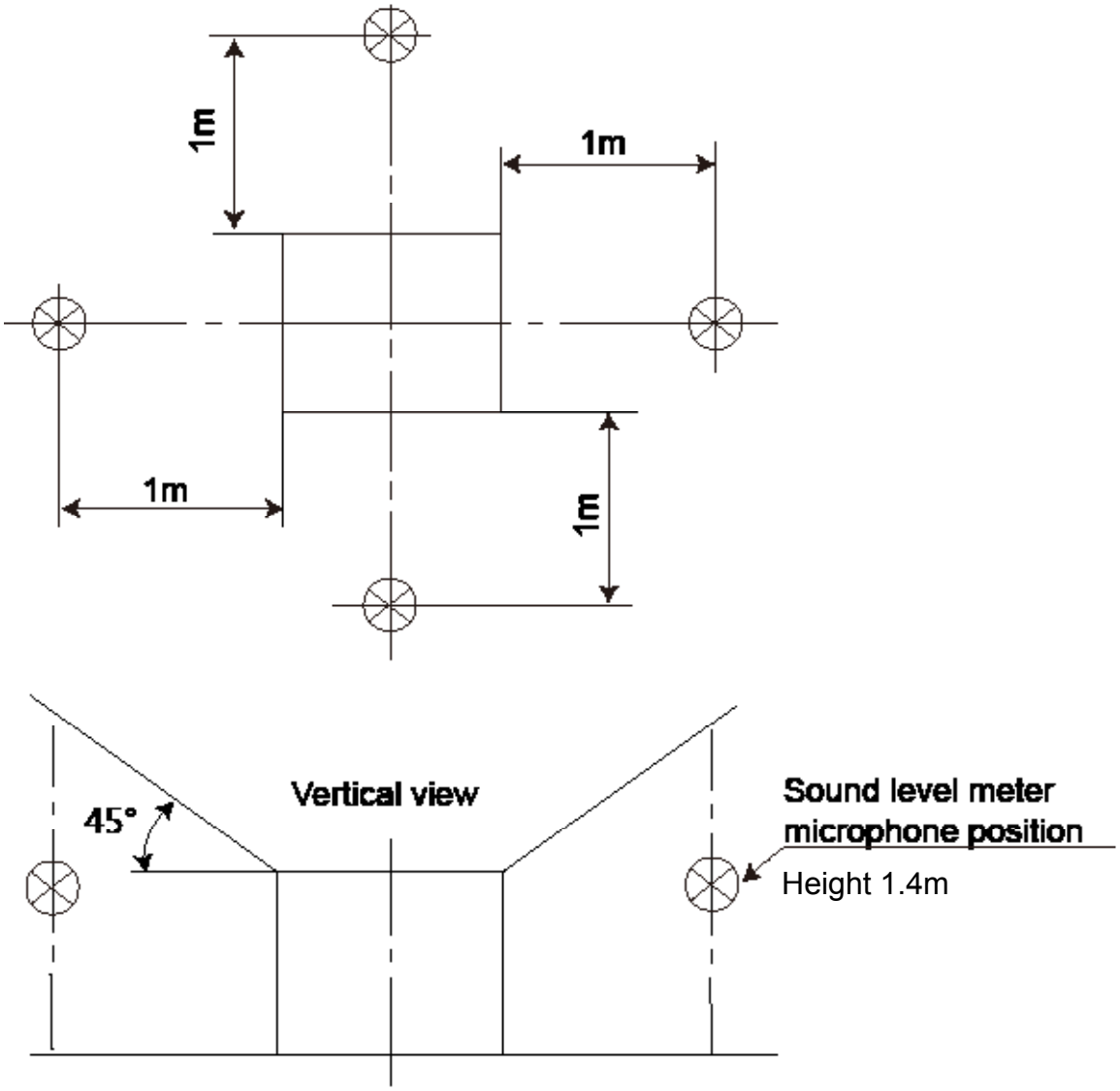
12. Selection procedure



13. Noise level

13.1. Testing illustrate

1) Testing illustrate



13.2. Octave band level

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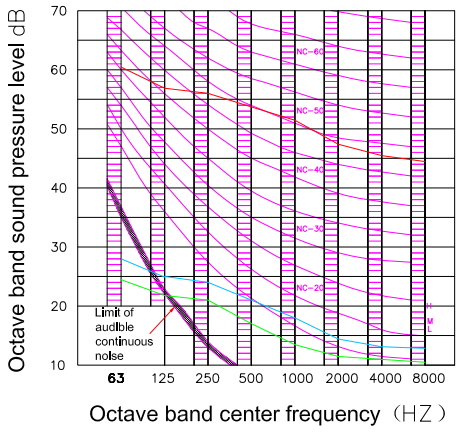
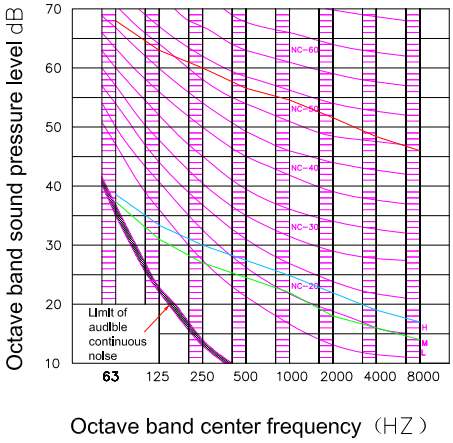
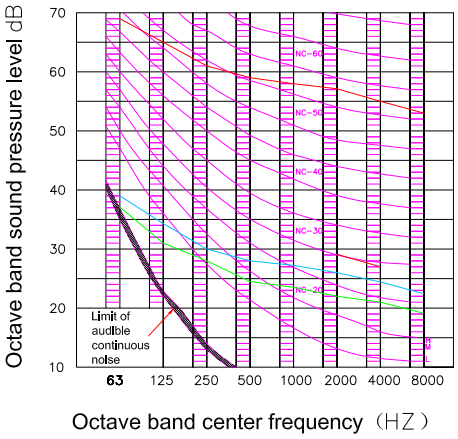


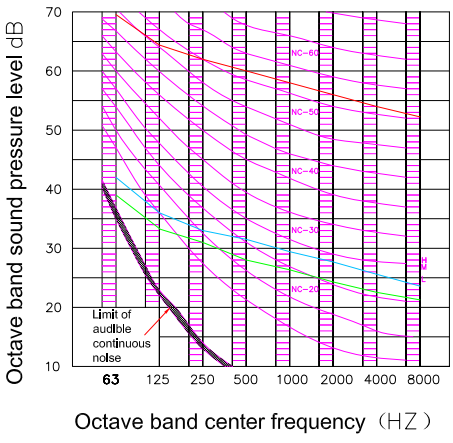
VVEA-335/400R-01T32



VVEA-450/504R-01T32



VVEA-560/615R-01T32



14. Installation

14.1. Safety

- If the air conditioner is transferred to the others, this manual should be tranferred together.
- Before installation, please read "Safety precaution" carefully to confirm the correct installation.
- The mentioned precaustion includes "⚠WARNING" and "⚠CAUTION". The precausion caused death or heavy injury for faulty installation will be listed in "⚠WARNING". Even the cautions listed in "⚠CAUTION" also may cause serious accident. So both of them are related to the safety, and should be executed severely.
- After installation, perform a trial and confirm everything normal, then introduce the operation manual to the user. Besides, put the manual to the user and ask them to preserve it carefully.

⚠WARNING

- The installation or the maintenance should be performed by the authorized agency. Or the non-specialized operation will cause water leakage, electric shock or fire etc accidents.
- The installation should be executed as per the manual, or the faulty installation will cause water leakage, electric shock or fire etc accidents.
- Please install the unit at the space which can bear the weight. Or the unit will drop down to cause the human injury.
- The installation should defend against the typhoon, and the earthquake etc. Abnormal installation will cause the unit fall down.
- Use the correct cable and make reliable earthing. Fix the terminal firmly and the loose connection will cause heating or fire etc accident.
- The wiring should be in shape and can not be raised. Be earthed firmly and can not be clipped by the electric box cover or the other plate. The incorrect installation will cause heating or fire.
- When setting or transferring the unit, there should not be other air into the refrigerant system except for R410A. The gas mixture will cause the abnormal high pressure which will cause break or human injury etc accidents.
- When installation, please use the accessories with the unit or the special parts, or it will cause water leakage, electric shock, fire, refrigerant leakage etc accidents.
- Don't lead the water drainage pipe into the drainage groove with the poisonous gas, such as sulphur. Or the poisonous gas will enter indoor.
- In installation or after installation, please confirm if there is refriegerant leakage, please take measures for ventilation. The refrigerant will cause poisonous gas as meeting fire.
- Don't install the unit at the place where there may be flammable gas leakage. In case the gas leaks and gather around the unit, it will cause fire.
- The drainage pipe should be installed as per the manual to confirm the fluent drainage. Also take measures for heat insulation against dew drop. Incorrect water pipe installation will cause water leakage even and make the things wet.
- For the liquid pipe and the gas pipe, take measures for heat insulation too. If there is no heat insulation, the dew drop will wet the things.
- This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.
- The A-weighted sound pressure level is below 70 dB.
- Details of type and rating of fuses, or rating of circuit breakers / ELB is detailed in below part.
- The method of connection of the appliance to the electrical supply and interconnection of separate components is detailed in below part. The wiring diagram with a clear indication of the connections and wiring to external control devices and supply cord is detailed in below part. The cord of the H07RN-F type or the electrically equivalent type must be used for power connection and interconnection between outdoor unit and indoor unit. The size of the cord is detailed in below part.
- During service and when replacing parts, be sure to disconnect the appliance from its power source. If the disconnection is not foreseen, a disconnection with a locking system in the isolated position shall be provided.
- The information of dimensions of the space necessary for correct installation of the appliance including the minimum permissible distances to adjacent structures is detailed in below part.

⚠CAUTION

- Execute earthing for the unit. But the earthing wire can not be connected to the gas pipe, water pipe, lightening rod or the telephone earthing wire. Improper earthing will cause electric shock.
- Don't install the unit at the place where leaks the flammable gas. Or it will cause fire.
- Execute the water drainage pipe according to the manual, improper installation will cause water leakage to wet the family things.
- The outdoor fan can not face to the flower or the other vegetable, or the blowing gas will make the flower dried up.
- Please ensure the maintenance room, if not, it will cause the maintenance person damaged.
- When installing the unit on the roof or the other high place, to prevent the person falling down, please set the fixed ladder and the railing at the passage.
- Use the two-end spanner, and fasten the nut at proper torque. Don't fasten the nut excessively against the flared setion broken. Or it will cause refrigerant leakage and lack of oxygen.
- Take measures for heat insulation to the refrigerant pipe, or there will be water leakage or dew drop to wet the family things.
- After finishing the refrigerant pipe, make leakage test by charging the nitrogen. In case the refrigerant leaks in a small room and exceeds the limited concentration, it will cause lack of oxygen.
- Don't use the other refrigerant except for R410A. The R410A pressure is 1.6 times higher than R22 pressure. The refrigerant R410A tank is marked with pink sign.
- Against charging different refrigerant, we changed the stop valve diameter of the R410A unit. To enhance the compression consistance, we also changed the flared pipe dimension. Prepare the R410A specially tools according to the below table.

	R-410A specified tools	Remarks
1	Gauge manifold	Range: HP>4.5MPa, LP<2MPa
2	Charge hose	Pressure: HP: 5.3MPa, LP: 3.5MPa
3	Electronic balance for charging R410A	Can not use the measurable charging tank
4	Torque spanner	
5	Flare tool	
6	Copper pipe gauge for adjusting projecting margin	
7	Vacuum pump adapter	Must be with reverse stop valve
8	Leakage detector	Can not use freon leakage detector, but the He detector

- When charging refrigerant, the refrigerant must be taken out as liquid state from the tank.
- When installing indoor unit, outdoor, power cable and connecting wire, leave them at least 1m away from the TV set or the radio against interference for the image or the noise.
- In the room with fluorescent lamp (reverse phase or rapid start type), the remote signal may be not reach the pre-set distance. The farther that indoor is away from fluorescent lamp, the better.
- The tightening torque of the stop valve refer to the following table

Operating valve size (mm)	Fastening torque (N.m)	Fastening angle (°)	Recommended tool length (mm)
Ø6.35	14~18	45~60	150
Ø9.52	34~42	30~45	200
Ø12.7	49~61	30~45	250
Ø15.88	68~82	15~20	300
Ø19.05	84~98	15~20	300

- When loaded into a refrigerant, be sure to take it out of the tank.
- Installation of indoor, outdoor, power lines and connections must be at least 1m away from the TV or radio to avoid image interference or noise.
- In a room equipped with fluorescent lamps (RP or fast start), the remote control signal transmission distance may not reach a predetermined value. The farther away the indoor machine is, the better it is.

14.2. Installation instruction

In installation, please check specially the below items:

- If the connected units quantity and the total capacity is in the allowable range?
- If the refrigerant pipe length is in the limited range?
- If the pipe size is proper? And if the pipe is installed horizontally?
- If the branch pipe is installed horinzontally or vertically?
- If the additional refrigerant is counted correctly and weighed by the standard balance?
- If there is refrigerant leakage?
- If all the indoor power supplies can be on/off simultaneously?
- If the power voltage is in compliance with the data marked on the rating label?
- If the address of indoors and outdoors has been set?

Before installation

1) Before installation, check if the model, power supply, pipe, wires and parts purchased respectively are correct.
2) Check if the indoors and outdoors can be combined as the following.

Outdoor			Indoor		
HP	Capacity (100W)	Combination type	Indoor Qty	Total indoor capacity (HP)	Gather pipe
8	224	Single (8HP)	1~15	4~10.4	-
10	280	Single (10HP)	1~17	5~13	-
12	335	Single (12HP)	1~20	6~15.6	-
14	400	Single (14HP)	1~24	7~18.2	-
16	450	Single (16HP)	1~27	8~20.8	-
18	504	Single (18HP)	1~30	9~23.4	-
20	560	Single (20HP)	1~33	10~26	-
22	615	Single (22HP)	1~36	11~28.6	-
24	680	Combination (335+335)	1~40	12~31.2	TBS20HR
26	735	Combination (335+400)	1~43	13~33.8	
28	800	Combination (400+400)	1~46	14~36.4	
30	850	Combination (400+450)	1~50	15~39	
32	900	Combination (450+450)	1~53	16~41.6	
34	954	Combination (450+504)	1~57	17~44.2	
36	1008	Combination (504+504)	1~60	18~46.8	
38	1064	Combination (504+560)	1~64	19~49.4	
40	1120	Combination (560+560)	1~64	20~52	
42	1175	Combination (560+615)	1~64	21~54.6	
44	1230	Combination (615+615)	1~64	22~57.2	
46	1300	Combination (400+450+450)	1~64	23~59.8	TBS30HR
48	1350	Combination (450+450+450)	1~64	24~62.4	
50	1404	Combination (450+450+504)	1~64	25~65	
52	1458	Combination (450+504+504)	1~64	26~67.6	
54	1512	Combination (504+504+504)	1~64	27~70.2	
56	1568	Combination (504+504+560)	1~64	28~72.8	
58	1624	Combination (504+560+560)	1~64	29~75.4	
60	1680	Combination (560+560+560)	1~64	30~78	
62	1735	Combination (560+560+615)	1~64	31~80.6	
64	1790	Combination (560+615+615)	1~64	32~83.2	
66	1845	Combination (615+615+615)	1~64	33~85.8	

Outdoor			Indoor		
HP	Capacity (100W)	Combination type	Indoor Qty	Total indoor capacity (HP)	Gather pipe
68	1908	Combination (450+450+504+504)	1~64	34~88.4	TBS40HR
70	1962	Combination (450+504+504+504)	1~64	35~91	
72	2016	Combination (504+504+504+504)	1~64	36~93.6	
74	2072	Combination (504+504+504+560)	1~64	37~96.2	
76	2128	Combination (504+504+560+560)	1~64	38~98.8	
78	2184	Combination (504+560+560+560)	1~64	39~101.4	
80	2240	Combination (560+560+560+560)	1~64	40~104	
82	2295	Combination (560+560+560+615)	1~64	41~106.6	
84	2350	Combination (560+560+615+615)	1~64	42~109.2	
86	2405	Combination (560+615+615+615)	1~64	43~111.8	
88	2460	Combination (615+615+615+615)	1~64	44~114.4	

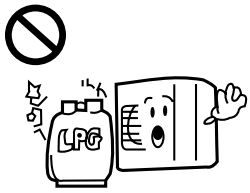
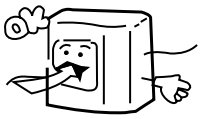
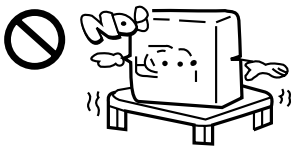
Note:

a. If all the indoor units operate at the same time in one system, the total indoor units capacity should be less than or equal to the total outdoor units capacity. Otherwise,overloading operations may occur in bad operating condition or some special conditions. If all the indoor units don't operate at the same time in one system,the total indoor units capacity should be no more than 130% of the total outdoor units capacity.

c. If the system operates in high heat load or cold area (Ambient Temperature below -10°C), the total indoor units capacity should be less than the total outdoor units capacity.

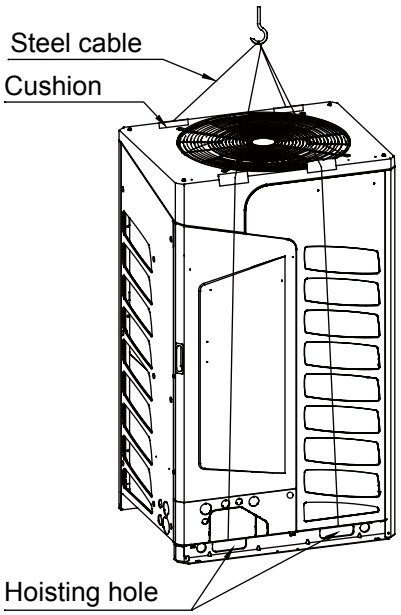
d. To choose combinations' wires and air switches according to the Max. operating current of the combinations.

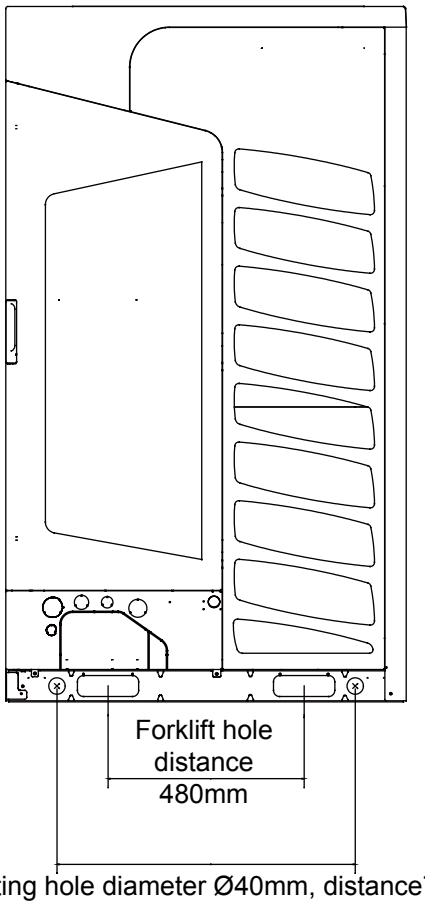
Installation place selection

Air-conditioner can't be installed in the place with inflammable gas. Or it will cause fire hazard. 	The unit should be installed at the place with good ventilation. No obstacle at the air inlet/outlet. And no strong wind blows the unit.  The installation space refers to the latter info.	The unit should be installed at the strong enough place. Or it will cause vibration and noise. 
The unit should be installed at the place where the cold/hot air or noise will not interfere the neighbours. 	• The place where the water can flow fluently. • The place where no other heat source will affect the unit. • Pay attention to the snow against clogging the outdoor. • In installation, install the anti-vibration rubber between the unit and the bracket.	• The unit is better not be installed at the below places, or it will cause damage. • The place where there is corrosive gas (spa area etc). • The place blowing salty air (seaside etc). • Exsits the strong coal smoke. • The place with high humidity. • The place where there is device emitting Hertzian waves. • The place where voltage changes greatly.

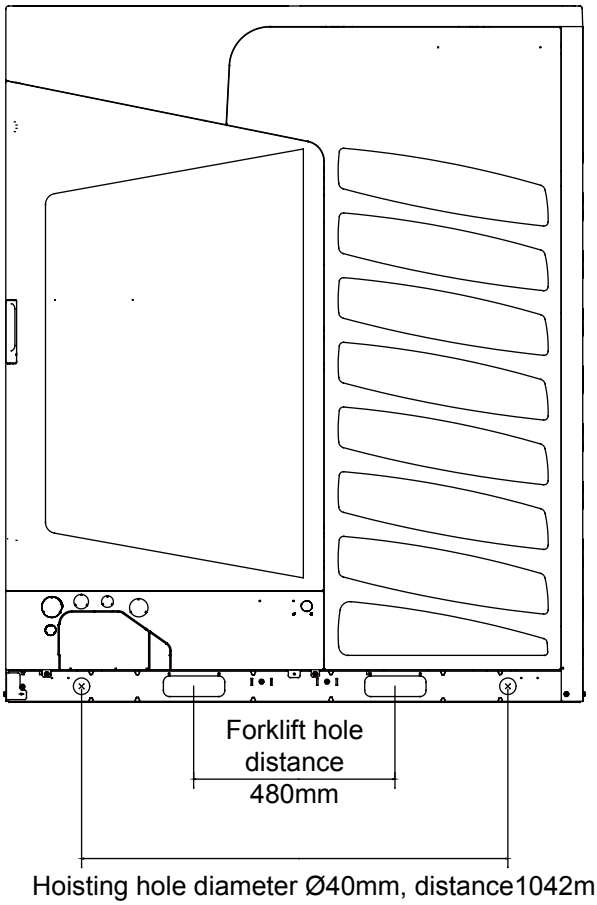
Transportation

- In transportation, please don't dismantle the packaging, and move the unit to the installation location as closely as possible.
- Don't hang the unit only at two points. When hanging the unit, don't sit on the unit. The unit should be upright. When removing the unit with the forklift, put the fork into the special hole at bottom of the unit. When being hanged, the rope should be 4 pieces of steel cable with over 8mm diameter. Put the cushion at the contact section between steel cable and the unit against the distortion or damage.
- When ring unit use hosting hole at base of unit. Protect unit against riging damage by using cusion.





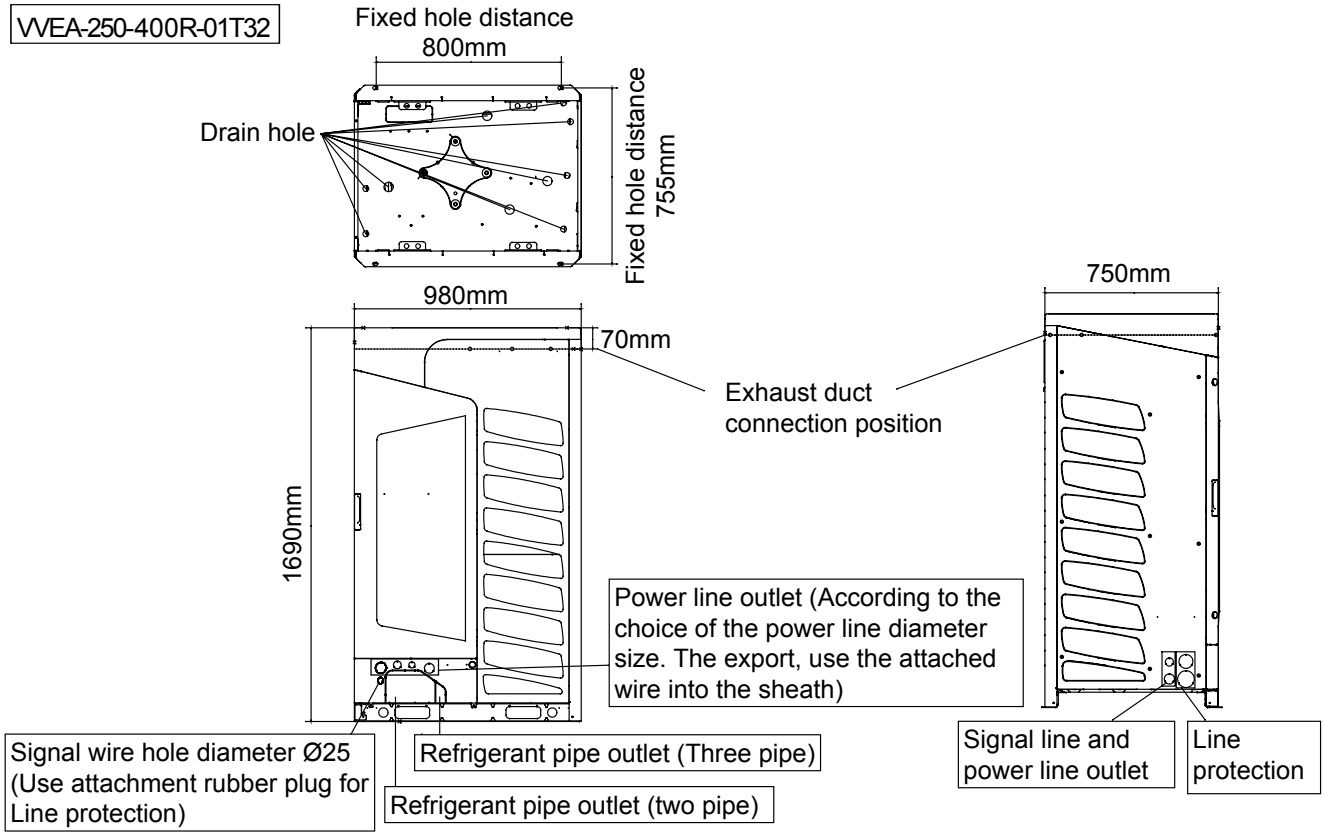
Hoisting hole diameter Ø40mm, distance730mm
VVEA-250-400R-01T32



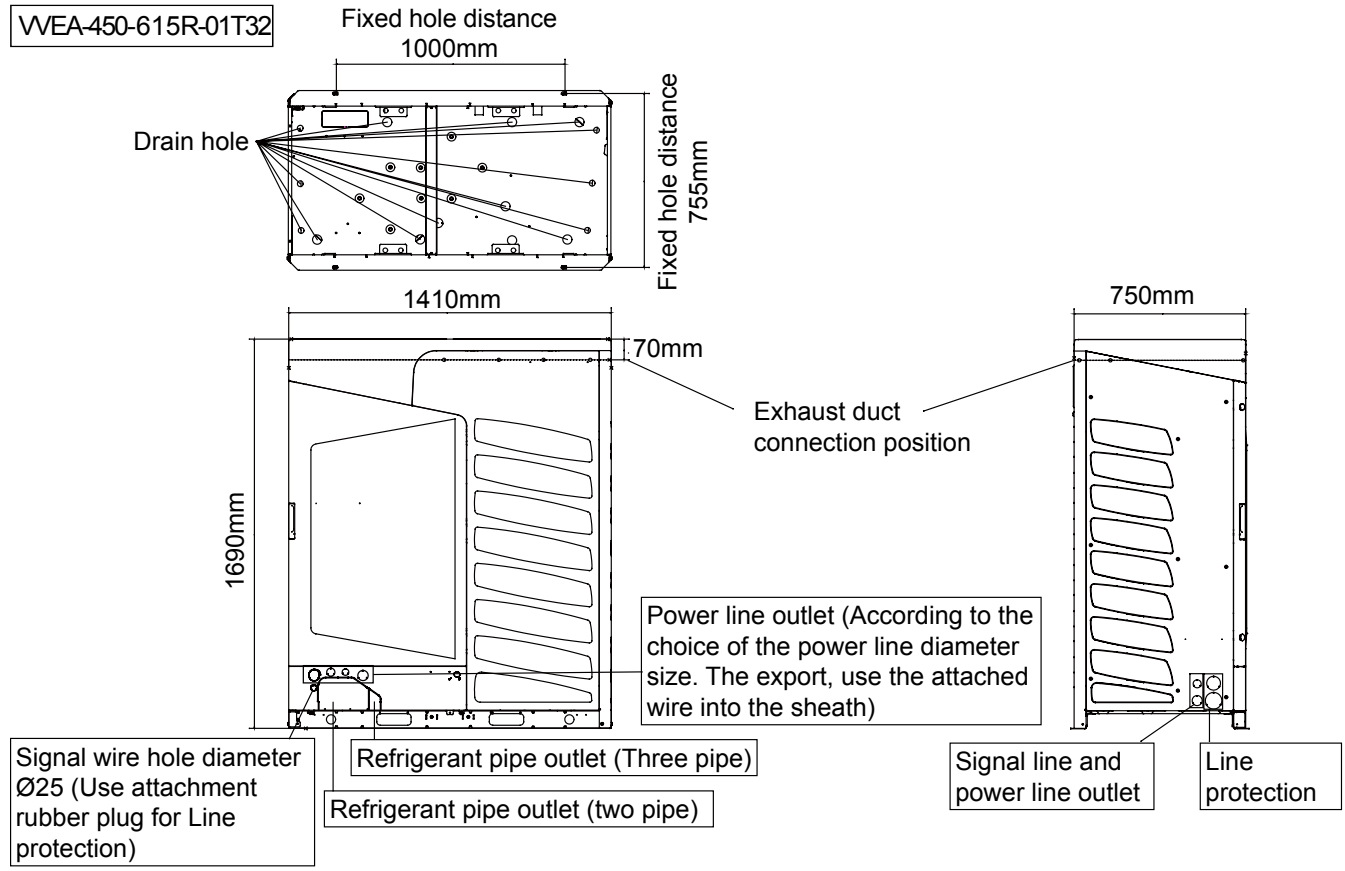
Hoisting hole diameter Ø40mm, distance1042mm
VVEA-450-615R-01T32

Outline and installation dimensions

VVEA-250-400R-01T32



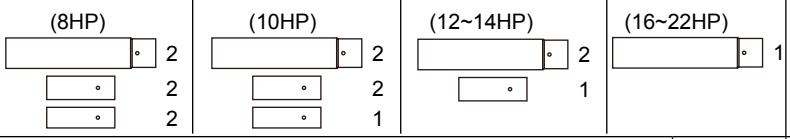
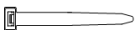
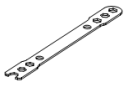
VVEA-450-615R-01T32



Outdoor unit installation

Standard accessories

Please check the attachment is complete, please be sure to use.

No.	definition	Graphic	Quantity	Remarks	Place position
1	Installation instruction		1		Accessory bag
4	Rubber plug		1	Signal line protection	Accessory bag
5	sheath		1	Power line protection	Accessory bag
6	Reducing pipe	 (8HP) 2 2 2 (10HP) 2 2 1 (12~14HP) 2 1 (16~22HP) 1		Reducing pipe	Accessory bag
7	wiring harness		4	Gas liquid pipe insulation binding	Accessory bag
8	Wrench		1	Remove service panel	The outdoor machine foot beam

1. Choose a place that can carry the weight of the unit to install and fix, so that the unit will not shake or fall. The unit shall be installed in a flat area (below 1/100).
2. Do not install the unit in the areas where there may be flammable, explosive, corrosive gas leakage.
3. Indoor and outdoor machines should be close to each other as much as possible to reduce the length of the refrigerant pipeline and the number of bends.
4. The installation should be to ensure that units from the sun and rain, dust, typhoon, earthquake proof place. In the area of snow, the machine should be installed in the frame or under the snow cover, so as to avoid the machine snow. See Figure 1
5. Make sure that there is enough room for maintenance
6. Measures should be taken to avoid contact with children
7. The refrigerant pipe by the unit below should be used when the overhead, overhead part height 200mm above. See Figure 2

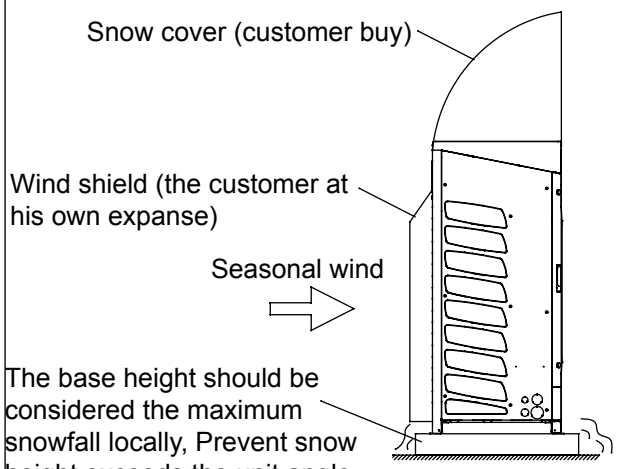
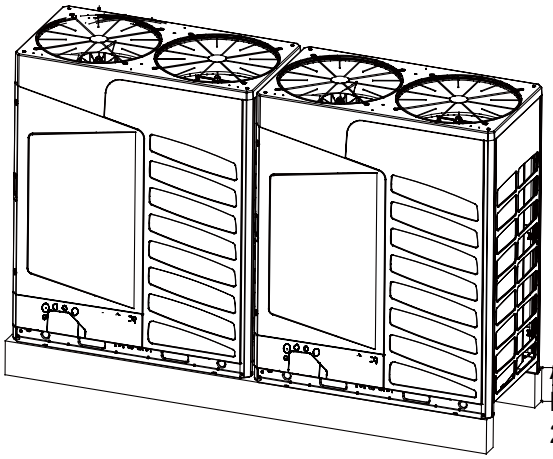


Figure 1



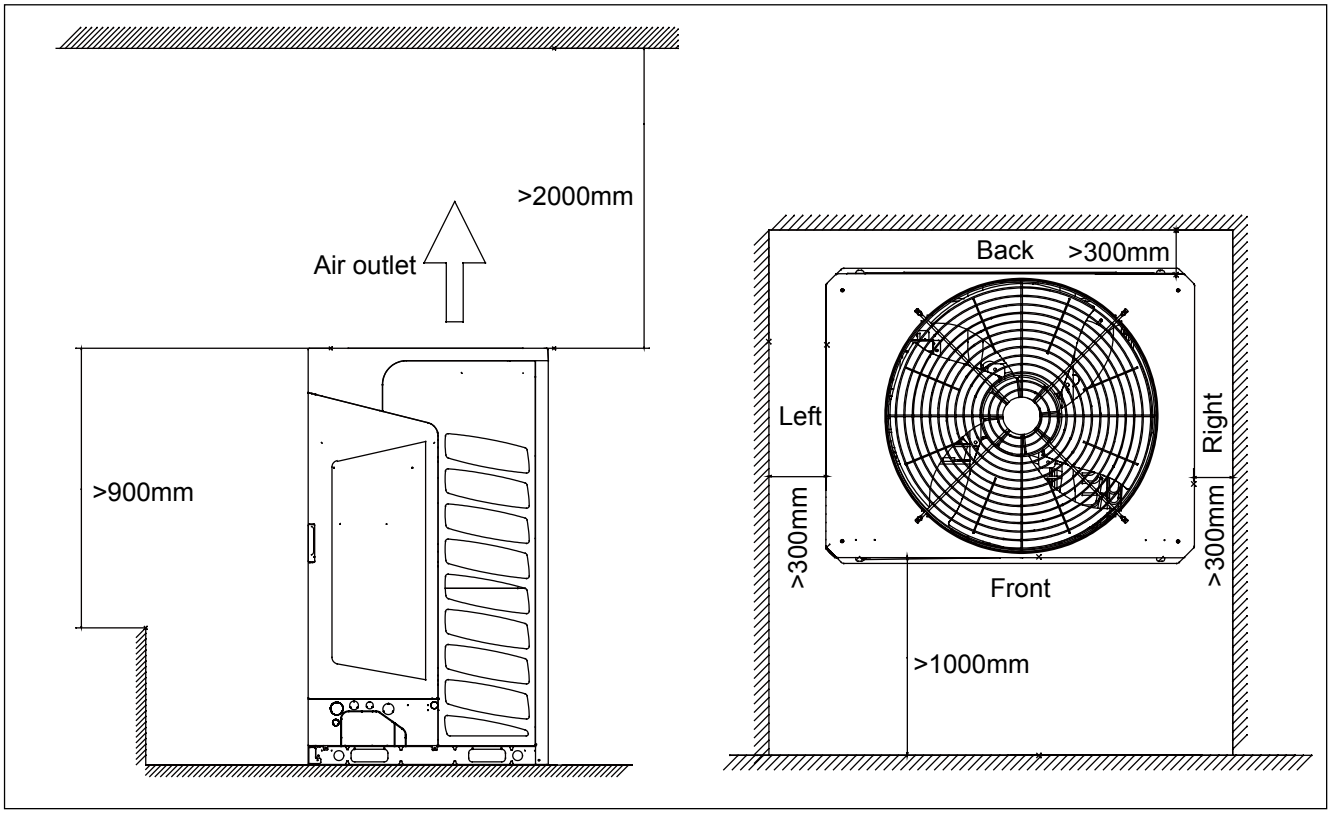
Please use M12 fixed ancher bolts, each machine 4, and use shock absorbers or cusions to reduce noise

Figure 2

Combination installation dimensions

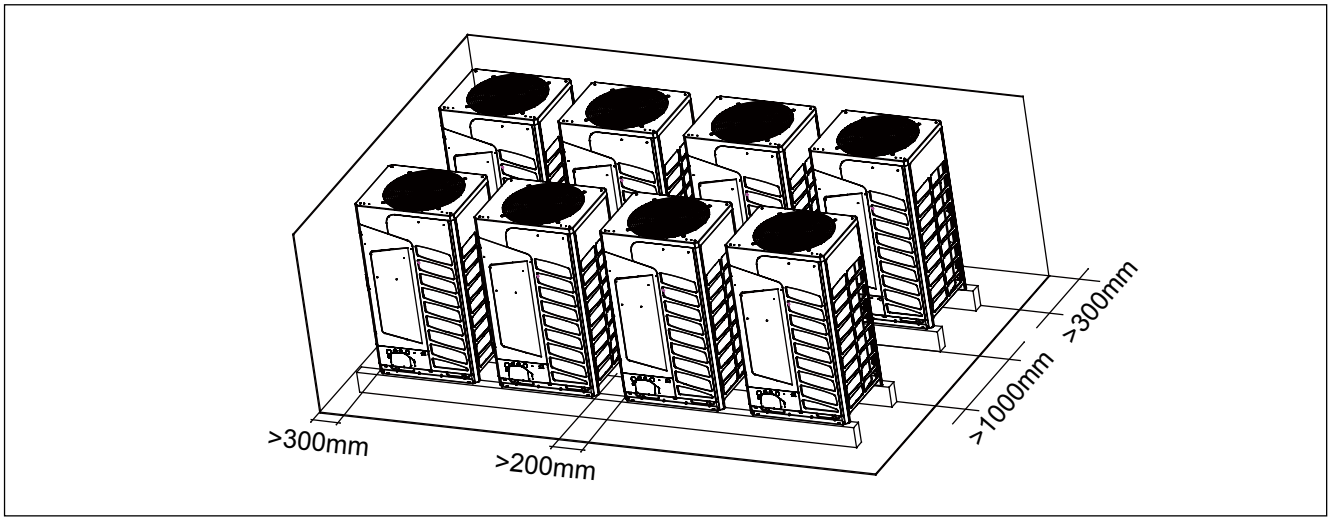
- There should be no obstacles in 2000mm above the top of outdoor unit;
- Obstacles around outdoor should be greater than 900mm to the bottom of unit.
- When multiple modules are installed, the outdoor should be in ranked as the capacity, the larger capacity is closer to the main pipe of gather pipe.

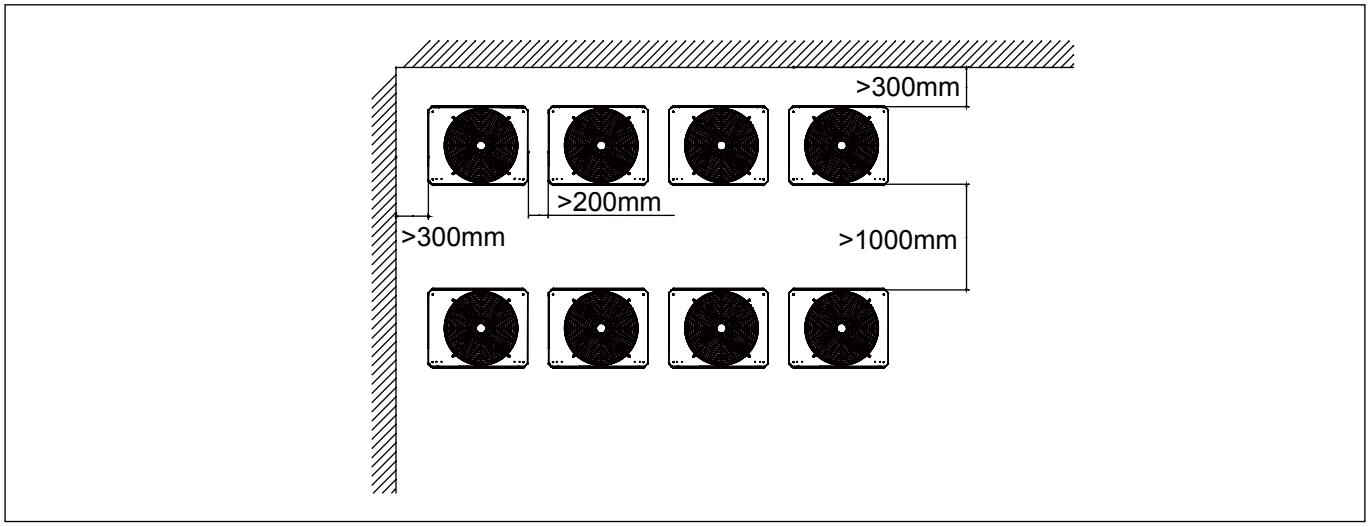
1. Single installation



2. combination installation

Unit can be installed in the same or opposite direction





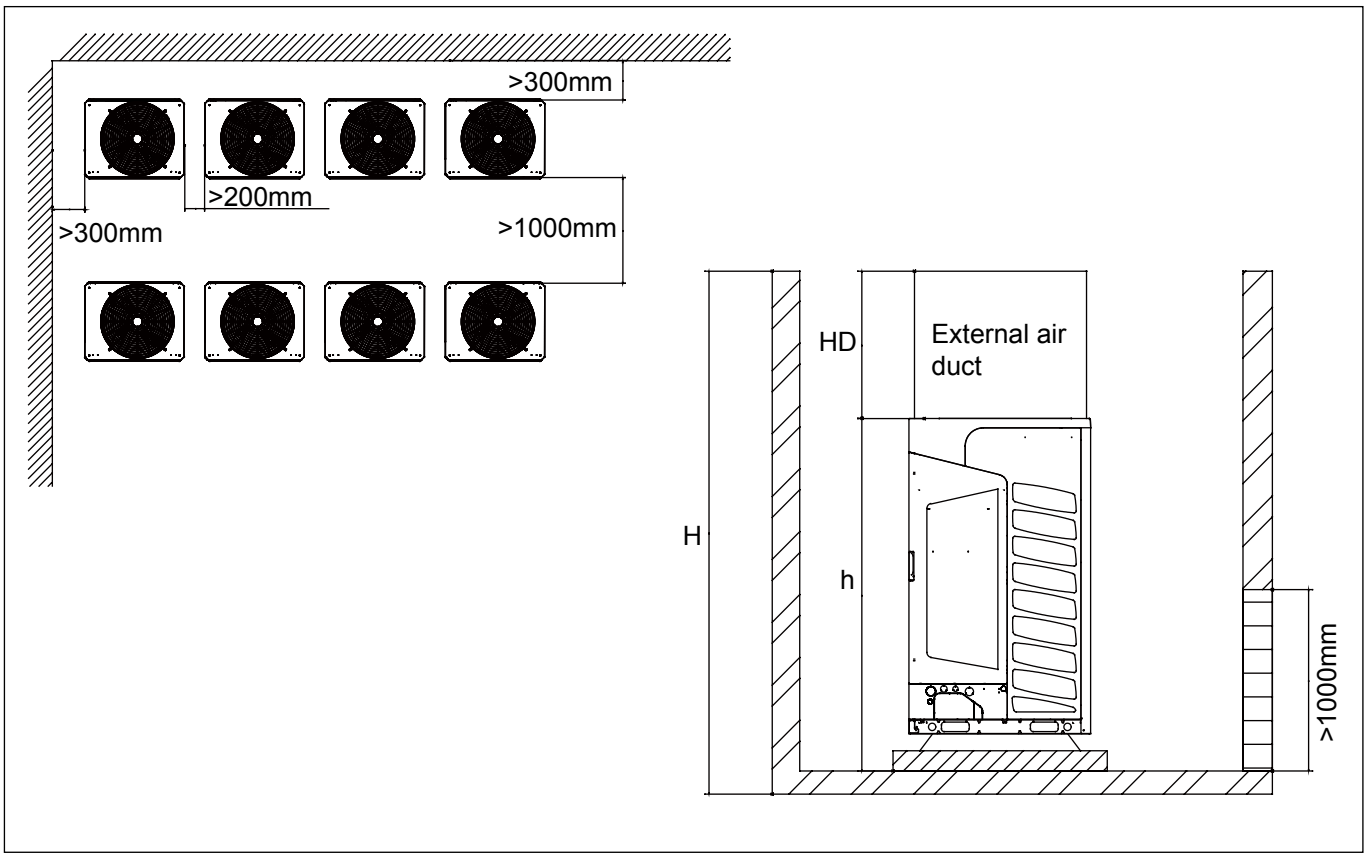
3. Wall higher than the outdoor condenser

Place with air inlet hole

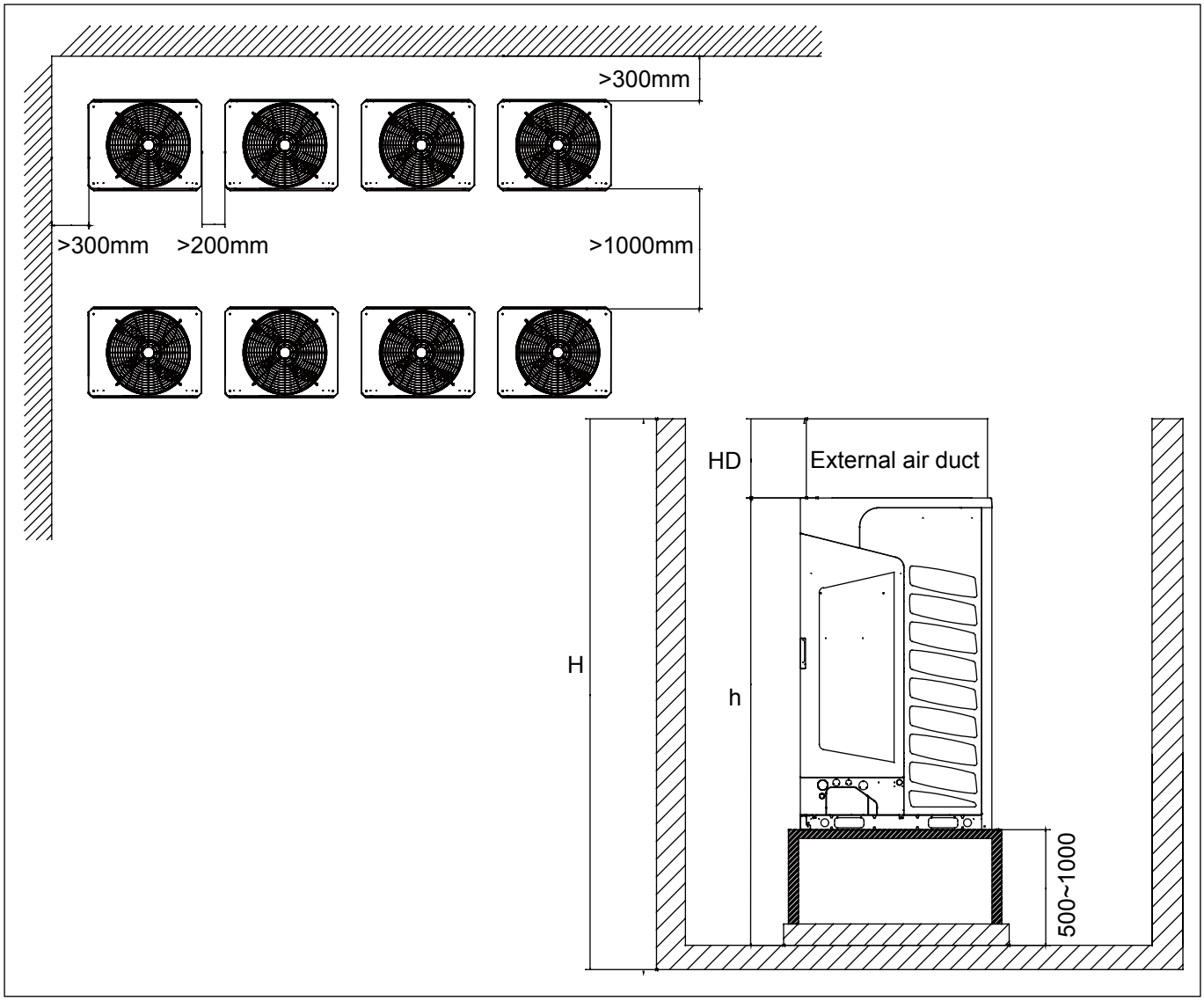
Notes:

a. Fan speed Vs at air inlet is 1.5m/s or below.

b. Air outlet height HD=H-h and below 1m.



Place without air inlet hole
Notes:
a. Set a 500~1000mm bracket.
b. Air outlet height HD=H-h and below 1m.



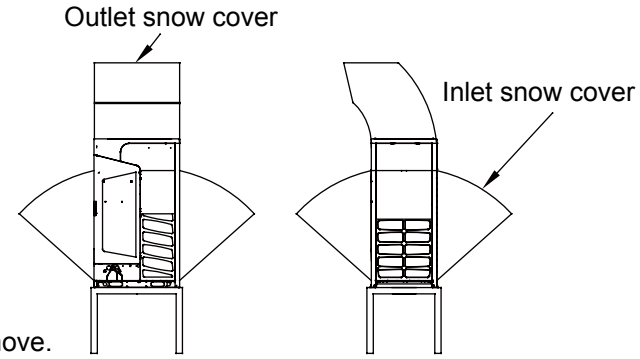
4. The outdoor machine installation should consider the impact of seasonal wind, don't let the wind directly into the unit return air, otherwise it will affect the unit defrosting and related functions

5. Must be arranged to follow the following principles in the exhaust duct

- Install exhaust duct before the machine must be taken out of the wind protection network, otherwise it will affect the output of the unit, and then lead to the decline in performance, and even cause failure
- Increase the blinds, the unit will affect the air out of the air, reduce performance, and therefore do not recommend the use of shutters. To use the shutter angle control at 15 degrees below, the distance between the control of 80mm above
- The exhaust duct is only allowed to have one elbow, otherwise it will cause bad operation of the machine
- Please install the soft connection between the unit and the air duct to prevent vibration and noise
- The exhaust air duct of each machine must be installed independently, and the exhaust hood of the machine is prohibited to be assembled in parallel in any form, otherwise it may cause the failure of the unit.

Install snow cover

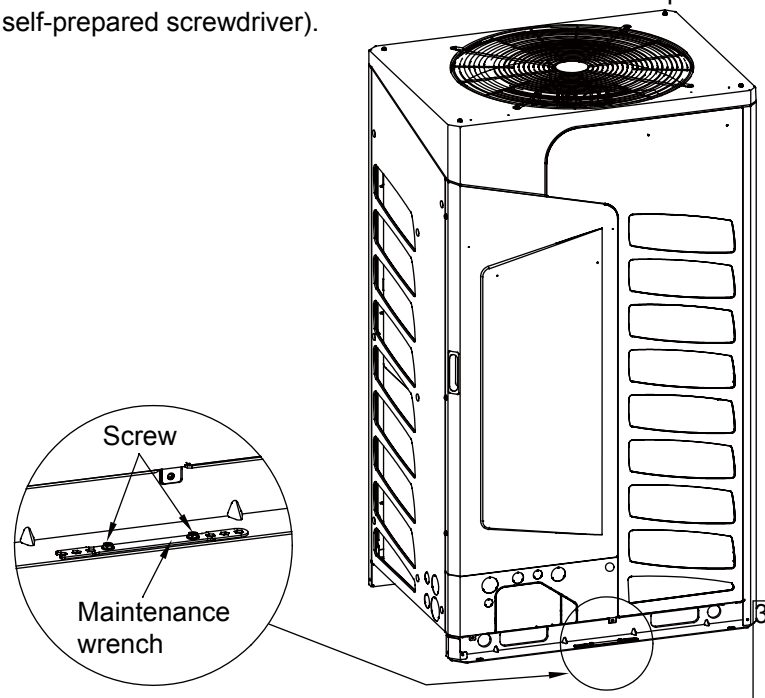
Snowfall area, please install snow cover, see the right picture,To be unaffected by the snow, it is important to set up a high platform, which is calculated according to the maximum amount of snow in the area. At the same time, the outdoor external machine defrost setting change to be easy to frost setting, detailed see the digital tube setting.



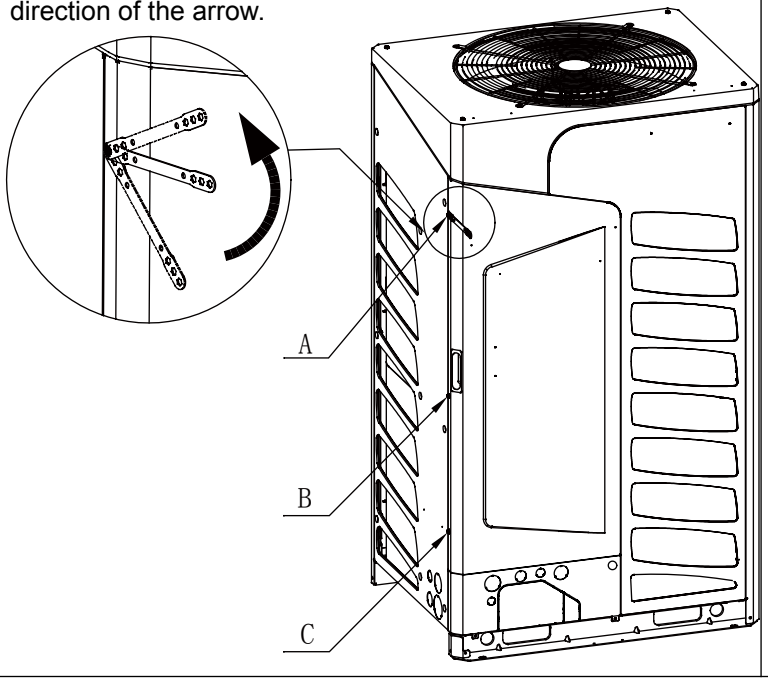
Panel disassembly instruction

Please refer to the following figure for the repair board to remove.

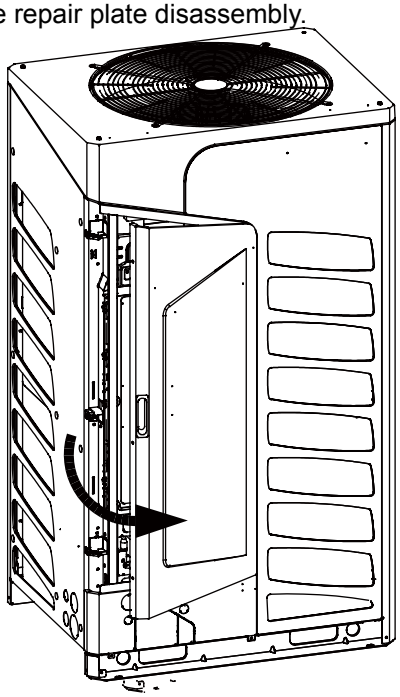
1. Remove the screw with a screwdriver and remove the repair wrench from the bottom of the machine (or use a self-prepared screwdriver).



2. Remove the screw A, B, and C by rotating the wrench in the direction of the arrow.



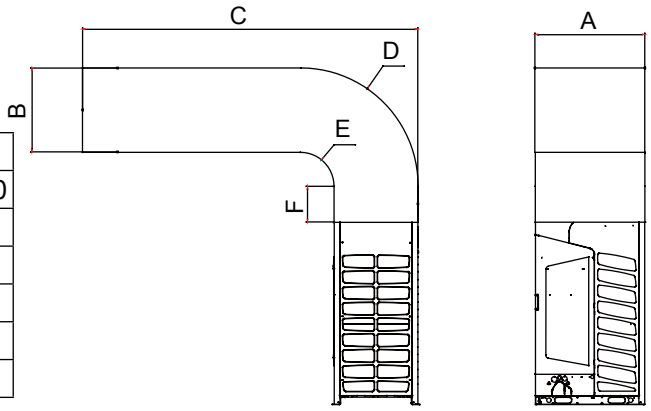
3. Along the direction of the arrow, after repair plate rotating about 40 °, the maintenance from the fixed orifice plate on the right side of card claw, can complete repair plate disassembly.



Install air ducting

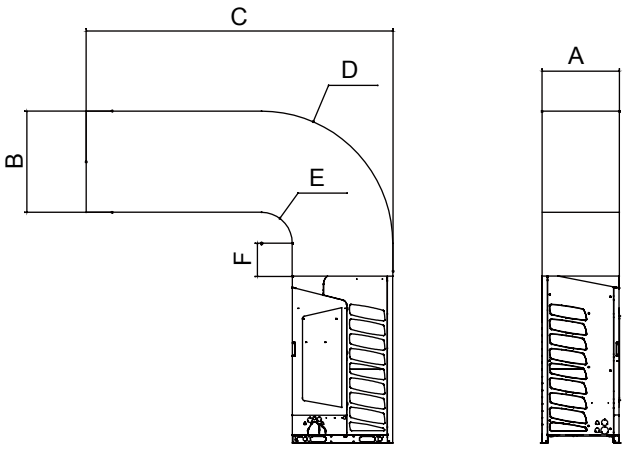
There are no obstacles in the 2000mm above the outdoor unit; When there are obstacles in the outer plane, there must be a pilot channel, and the wind will be free, the wind will not beshort-circuited, and the external static pressure will be less than 110Pa. Airway design dimensions are as follows:

Channel size (pattern 1)



	VVEA-250-400R-01T32	VVEA-450-615R-01T32
A	The inner diameter 980	The inner diameter 1410
B	The inner diameter750	The inner diameter 750
C	≤10000	≤10000
D	E+750	E+750
E	≥300	≥300
F	≥320	≥320

Channel size (pattern 2)



	VVEA-250-400R-01T32	VVEA-450-615R-01T32
A	The inner diameter 750	The inner diameter 750
B	The inner diameter 980	The inner diameter 1410
C	≤10000	≤10000
D	E+980	E+1410
E	≥300	≥300
F	≥320	≥320

Note:
Before installing the wind channel, the unit should be removed from the wind protection network. At the same time, the outdoor air tube static press is set up to "have static pressure" mode. The above is just an example, the length of the wind tunnel should be calculated according to the shape of the wind channel.

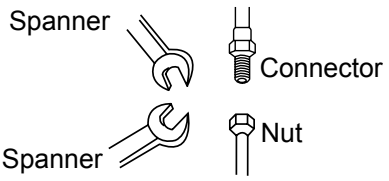
14.3. Installation procedure

A. Refrigerant pipe connection

Pipe connection method:

- To ensure the efficiency, the pipe should be as short as possible.
- Daub the refrigerant oil on the connector and the flare nut.
- When bending the pipe, the bending semi-diameter should be as large as possible against the pipe being broken or bent.
- When connecting the pipe, aim at the center to thread the nut by hand and tighten it with the double spanners.
- Fastening torque please refers to "pipe specs and fastening torque" on page 15.
- Don't let the impurity such as sand, water etc into the pipe. Antifouling measures refer to Page 13.

When fastening and loosing the nut, operate with double spanners, because only one spanner cannot execute firmly.



If threading the nut as not aiming at the center, the screw thread will be damaged, further it will cause leakage.

Cautions in piping installation:

1. When welding the pipe with hard solder, charge nitrogen into the pipe against oxidation. The pressure gauge should be set at 0.02MPa.Perform the procedure with nitrogen circulation. Otherwise, the oxide film in the pipe may clog the capillary and expansion valve resulting in accident.
2. The refrigerant pipe should be clean. If the water and the other impurity enter the pipe, charge the nitrogen to clean the pipe. The nitrogen should flow under the pressure of about 0.5MPa and when charging the nitrogen, stop up the end of the pipe by hand to enhance the pressure in the pipe, then loose the hand (meanwhile stop up the other end).
3. The piping installation should be executed after closing the stop valves.
4. When welding the valve and the pipe, cool down the valve with wet towel.
5. When the connection pipe and the branch pipe need to be cut down, please use the special shears and do not use the saw.
6. When welding copper pipe, use the phosphor copper welding rod without any welding flux. (welding flux will damage the piping system. The welding flux containing chlorine will corrode pipe, especially, the welding flux with fluorin will damage refrigeration oil.)

Pipe material and specs selection

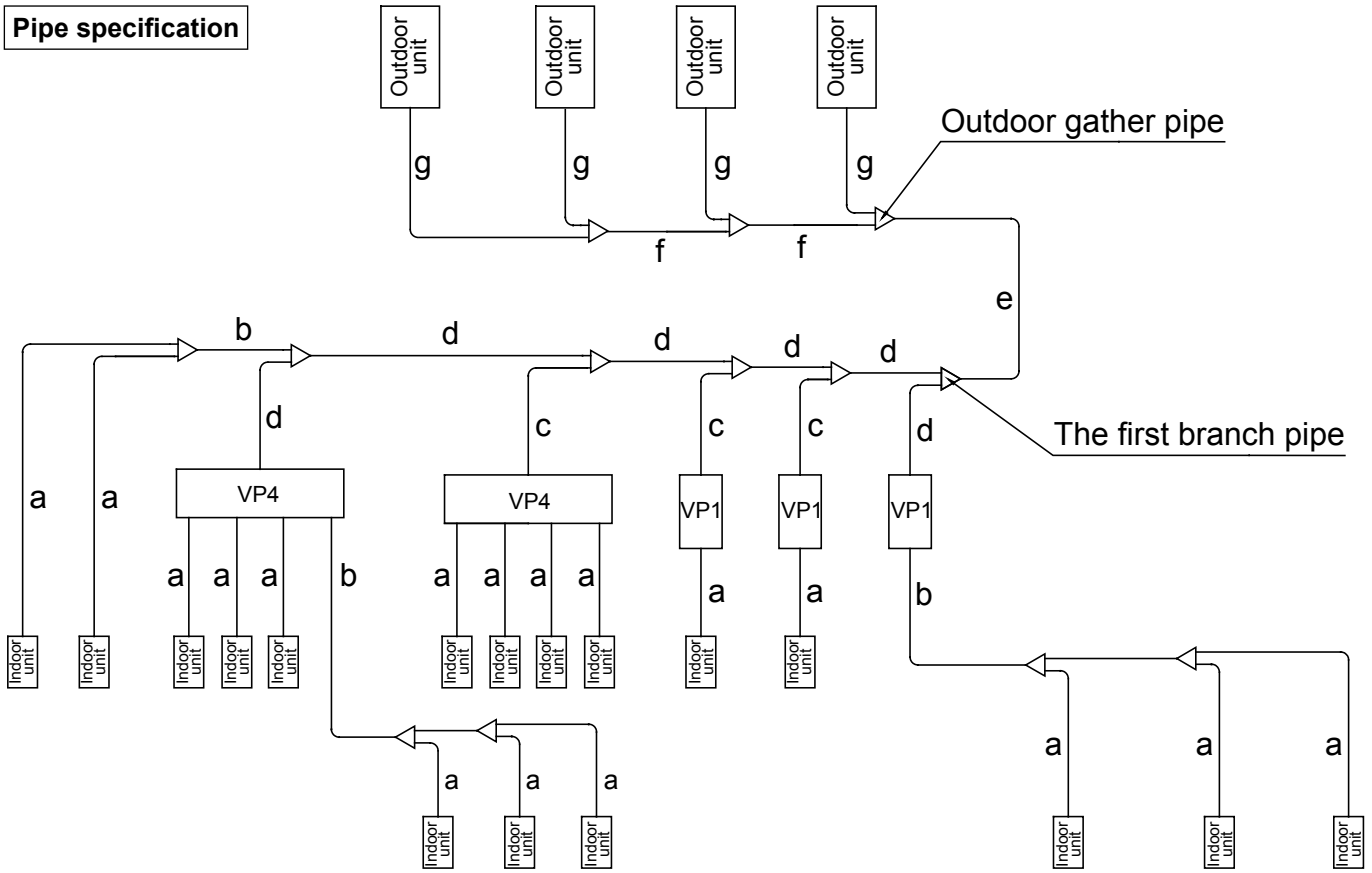
1. Please select the refrigerant pipe of the below material.
   Material: the phosphoric oxidize seamless copper pipe,
   model: C1220T-1/2H (diameter is over 19.05); C1220T-0(diameter is below 15.88).
2. Thickness and specs:
   Confirm the pipe thickness and specs according to the pipe selection method(the unit is with R410A, if the pipe over 19.05 is O-type, the pressure preservation will be bad, thus it must be 1/2H type and over the min. thickness.
3. The branch pipe and the gather pipe must be from Airwell.
4. When installing the stop valve, refer to the relative operation instruction.
5. The pipe installation should be in the allowable range.
6. The installation of branch pipe and gather pipe should be performed according to the relative manual.

Anti-fouling measures

First, clean the pipe.

Position	Installation period	Measures
Outdoor	More than 1 month	Flat the pipe end
	Less than 1 month	Flat the pipe end or seal with adhesive tape
Indoor	Nothing to do with period	

Pipe specification



1. Pipe "a" diameter (between indoor and branch pipe) (depends on indoor pipe)

Indoor (x100W)	Gas pipe(mm)	Liquid pipe(mm)
15~28	Ø9.52	Ø6.35
36~56	Ø12.7	Ø6.35
71~140	Ø15.88	Ø9.52
226~300	Ø25.4	Ø9.52
450~600	Ø28.58	Ø12.7

Note:
IDU 7k / 9k gas pipe / liquid pipe: Ø12.7mm/6.35mm. IDU 18K gas pipe / liquid pipe: Ø15.88mm/9.52mm.
From the indoor to the shortest branch pipe unit≥15m, please change specifications of pipe as per the table below.
① When rated refrigerating ≤5.6kW, change specifications of Gas pipe/Liquid pipe to Ø15.88mm/Ø9.52mm.
② When 5.6kW < rated refrigerating <16.8kW,change specifications of Gas pipe/Liquid pipe to Ø19.05mm/Ø9.52mm.
③ When rated refrigerating >16.8kW,change specifications of Liquid pipe to Ø12.7mm.

2. Pipe "b" diameter (between branch pipes)

Total indoor capacity after the branch pipe (kW)	Gas pipe (mm)	Liquid pipe (mm)
X<16.8kW	Ø15.88	Ø9.52
16.8kW≤X<22.4kW	Ø19.05	Ø9.52
22.4kW≤X<33.5kW	Ø22.22	Ø9.52
33.5kW≤X<47.0kW	Ø28.58	Ø12.7
47.0kW≤X<71.0kW	Ø28.58	Ø15.88
71.0kW≤X<101.0kW	Ø31.8	Ø19.05
≥101.0kW	Ø38.1	Ø19.05

Note: Adjust the diameter on field (changing pipe is needed)

3. Pipe "c" diameter (between VP and branch pipe) (depends on VP pipe)

VP	Suction gas pipe (mm)	HP gas pipe (mm)	Liquid pipe (mm)
112B	Ø15.88	Ø12.7	Ø9.52
180B	Ø15.88	Ø15.88	Ø9.52
280B	Ø22.22	Ø19.05	Ø9.52

4. Pipe "d" diameter (between VP branch pipes)

Total indoor capacity after the branch pipe (kW)	Suction gas pipe (mm)	HP gas pipe (mm)	Liquid pipe (mm)
X<16.8kW	Ø15.88	Ø12.7	Ø9.52
16.8kW≤X<22.4kW	Ø19.05	Ø15.88	Ø9.52
22.4kW≤X<33.5kW	Ø22.22	Ø19.05	Ø9.52
33.5kW≤X<47.0kW	Ø28.58	Ø25.4	Ø12.7
47.0kW≤X<71.0kW	Ø28.58	Ø25.4	Ø15.88
71.0kW≤X<101.0kW	Ø31.8	Ø28.58	Ø19.05
≥101.0kW	Ø38.1	Ø31.8	Ø19.05

5. Pipe "e" diameter (main pipe, between outdoor gather pipe and the first branch pipe)

Outdoor capacity (HP)	Outdoor capacity (kW)	Main pipe			Enlarged main pipe		
		Suction gas pipe(mm)	HP gas pipe(mm)	Liquid pipe(mm)	Suction gas pipe(mm)	HP gas pipe(mm)	Liquid pipe(mm)
8	22.4	Ø19.05	Ø19.05	Ø9.52	Ø22.22	Ø22.22	Ø12.70
10	28.0	Ø22.22	Ø19.05	Ø9.52	Ø25.40	Ø22.22	Ø12.70
12	33.5	Ø25.40	Ø22.22	Ø12.70	Ø28.58	Ø25.40	Ø15.88
14	40.0	Ø25.40	Ø22.22	Ø12.70	Ø28.58	Ø25.40	Ø15.88
16	45.0	Ø28.58	Ø25.40	Ø12.70	Ø31.80	Ø28.58	Ø15.88
18	50.4	Ø28.58	Ø25.40	Ø15.88	Ø31.80	Ø28.58	Ø19.05
20	56.0	Ø28.58	Ø25.40	Ø15.88	Ø31.80	Ø28.58	Ø19.05
22	61.5	Ø28.58	Ø25.40	Ø15.88	Ø31.80	Ø28.58	Ø19.05
24	68.0	Ø28.58	Ø25.40	Ø15.88	Ø31.80	Ø28.58	Ø19.05
26	73.5	Ø28.58	Ø25.40	Ø15.88	Ø31.80	Ø28.58	Ø19.05
28	80.0	Ø28.58	Ø25.40	Ø15.88	Ø31.80	Ø28.58	Ø19.05
30	85.0	Ø31.80	Ø28.58	Ø19.05	Ø34.90	Ø31.80	Ø22.22
32	90.0	Ø31.80	Ø28.58	Ø19.05	Ø34.90	Ø31.80	Ø22.22
34	95.4	Ø31.80	Ø28.58	Ø19.05	Ø34.90	Ø31.80	Ø22.22
36	100.8	Ø38.10	Ø34.90	Ø19.05	Ø41.30	Ø38.10	Ø22.22
38	106.4	Ø38.10	Ø34.90	Ø19.05	Ø41.30	Ø38.10	Ø22.22
40	112.0	Ø38.10	Ø34.90	Ø19.05	Ø41.30	Ø38.10	Ø22.22
42	117.5	Ø38.10	Ø34.90	Ø19.05	Ø41.30	Ø38.10	Ø22.22
44	123.0	Ø38.10	Ø34.90	Ø19.05	Ø41.30	Ø38.10	Ø22.22
46	130.0	Ø38.10	Ø34.90	Ø19.05	Ø41.30	Ø38.10	Ø22.22
48	135.0	Ø38.10	Ø34.90	Ø19.05	Ø41.30	Ø38.10	Ø22.22
50	140.4	Ø38.10	Ø34.90	Ø19.05	Ø41.30	Ø38.10	Ø22.22
52	145.8	Ø38.10	Ø34.90	Ø19.05	Ø41.30	Ø38.10	Ø22.22
54	151.2	Ø38.10	Ø34.90	Ø19.05	Ø41.30	Ø38.10	Ø22.22
56	156.8	Ø38.10	Ø34.90	Ø19.05	Ø41.30	Ø38.10	Ø22.22
58	162.4	Ø41.30	Ø38.10	Ø19.05	Ø44.50	Ø41.30	Ø22.22
60	168.0	Ø41.30	Ø38.10	Ø19.05	Ø44.50	Ø41.30	Ø22.22

Outdoor capacity (HP)	Outdoor capacity (kW)	Main pipe			Enlarged main pipe		
		Suction gas pipe(mm)	HP gas pipe(mm)	Liquid pipe(mm)	Suction gas pipe(mm)	HP gas pipe(mm)	Liquid pipe(mm)
62	173.5	Ø41.30	Ø38.10	Ø19.05	Ø44.50	Ø41.30	Ø22.22
64	179.0	Ø41.30	Ø38.10	Ø19.05	Ø44.50	Ø41.30	Ø22.22
66	184.5	Ø41.30	Ø38.10	Ø19.05	Ø44.50	Ø41.30	Ø22.22
68	190.8	Ø44.50	Ø41.30	Ø22.22	Ø50.80	Ø44.50	Ø25.40
70	196.2	Ø44.50	Ø41.30	Ø22.22	Ø50.80	Ø44.50	Ø25.40
72	201.6	Ø44.50	Ø41.30	Ø22.22	Ø50.80	Ø44.50	Ø25.40
74	207.2	Ø44.50	Ø41.30	Ø22.22	Ø50.80	Ø44.50	Ø25.40
76	212.8	Ø44.50	Ø41.30	Ø22.22	Ø50.80	Ø44.50	Ø25.40
78	218.4	Ø44.50	Ø41.30	Ø22.22	Ø50.80	Ø44.50	Ø25.40
80	224.0	Ø44.50	Ø41.30	Ø22.22	Ø50.80	Ø44.50	Ø25.40
82	229.5	Ø44.50	Ø41.30	Ø22.22	Ø50.80	Ø44.50	Ø25.40
84	235.0	Ø44.50	Ø41.30	Ø22.22	Ø50.80	Ø44.50	Ø25.40
86	240.5	Ø50.80	Ø44.50	Ø25.40	Ø54.10	Ø50.80	Ø25.40
88	246.0	Ø50.80	Ø44.50	Ø25.40	Ø54.10	Ø50.80	Ø25.40

Note: When the distance from outdoor to the longest indoor is over 90m, the main pipe should be the enlarged diameter.

6. Pipe "f" diameter (between gather pipes)

Total outdoor capacity before gather pipe	Suction gas pipe(mm)	HP gas pipe(mm)	Liquid pipe(mm)
16HP	Ø28.58	Ø25.40	Ø12.70
18~28HP	Ø28.58	Ø25.40	Ø15.88
30~34HP	Ø31.80	Ø28.58	Ø19.05
36~56HP	Ø38.10	Ø34.90	Ø19.05
58~66HP	Ø41.30	Ø38.10	Ø19.05
68~84HP	Ø44.50	Ø41.30	Ø22.22
86~88HP	Ø50.80	Ø44.50	Ø25.40

7. Pipe “g” diameter (between outdoor and the gather pipe)

Outdoor capacity	Suction gas pipe(mm)	HP gas pipe(mm)	Liquid pipe(mm)
8HP	Ø19.05	Ø19.05	Ø9.52
10HP	Ø22.22	Ø19.05	Ø9.52
12/14HP	Ø25.40	Ø22.22	Ø12.70
16HP	Ø28.58	Ø25.40	Ø12.70
18/20/22HP	Ø28.58	Ø25.40	Ø15.88

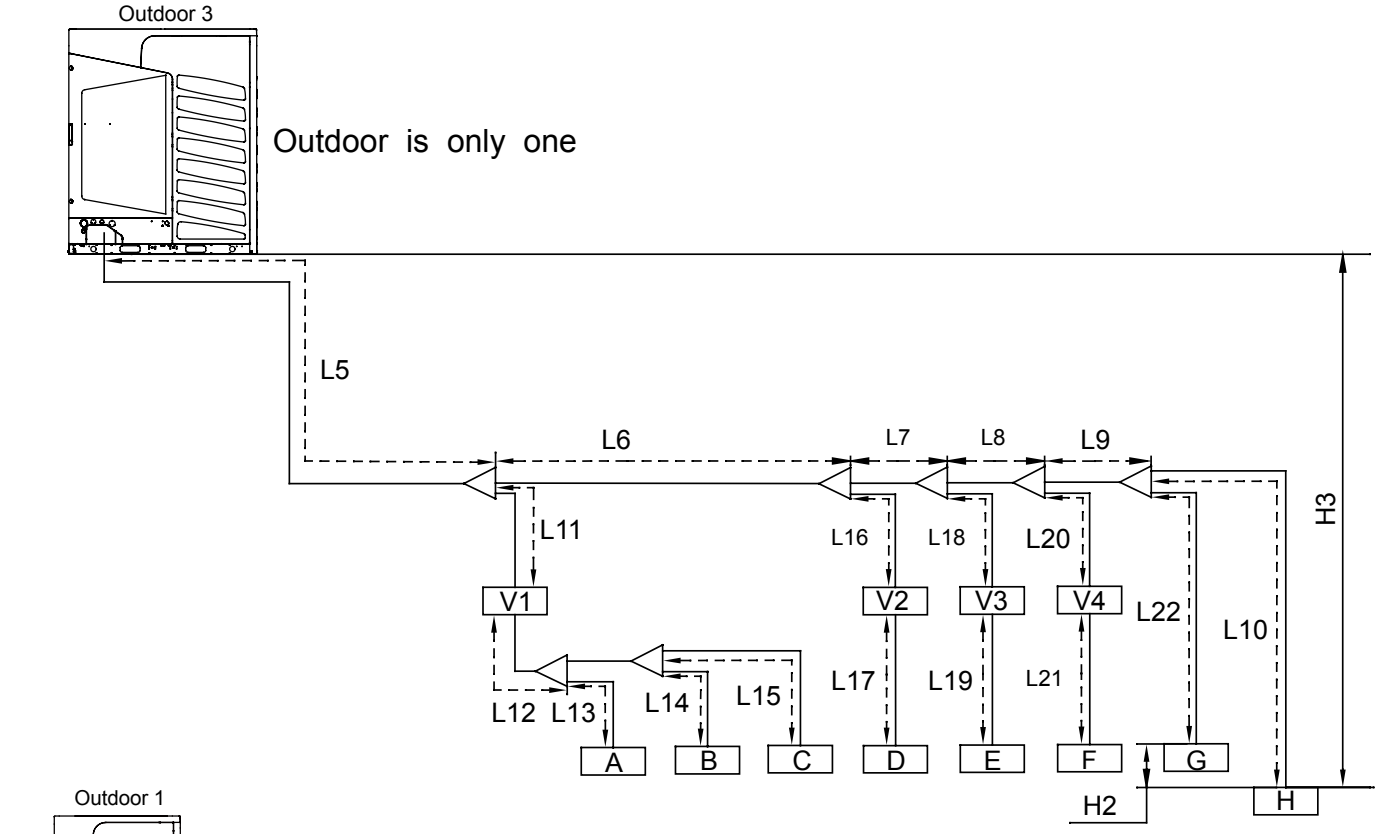
Copper pipe selection:

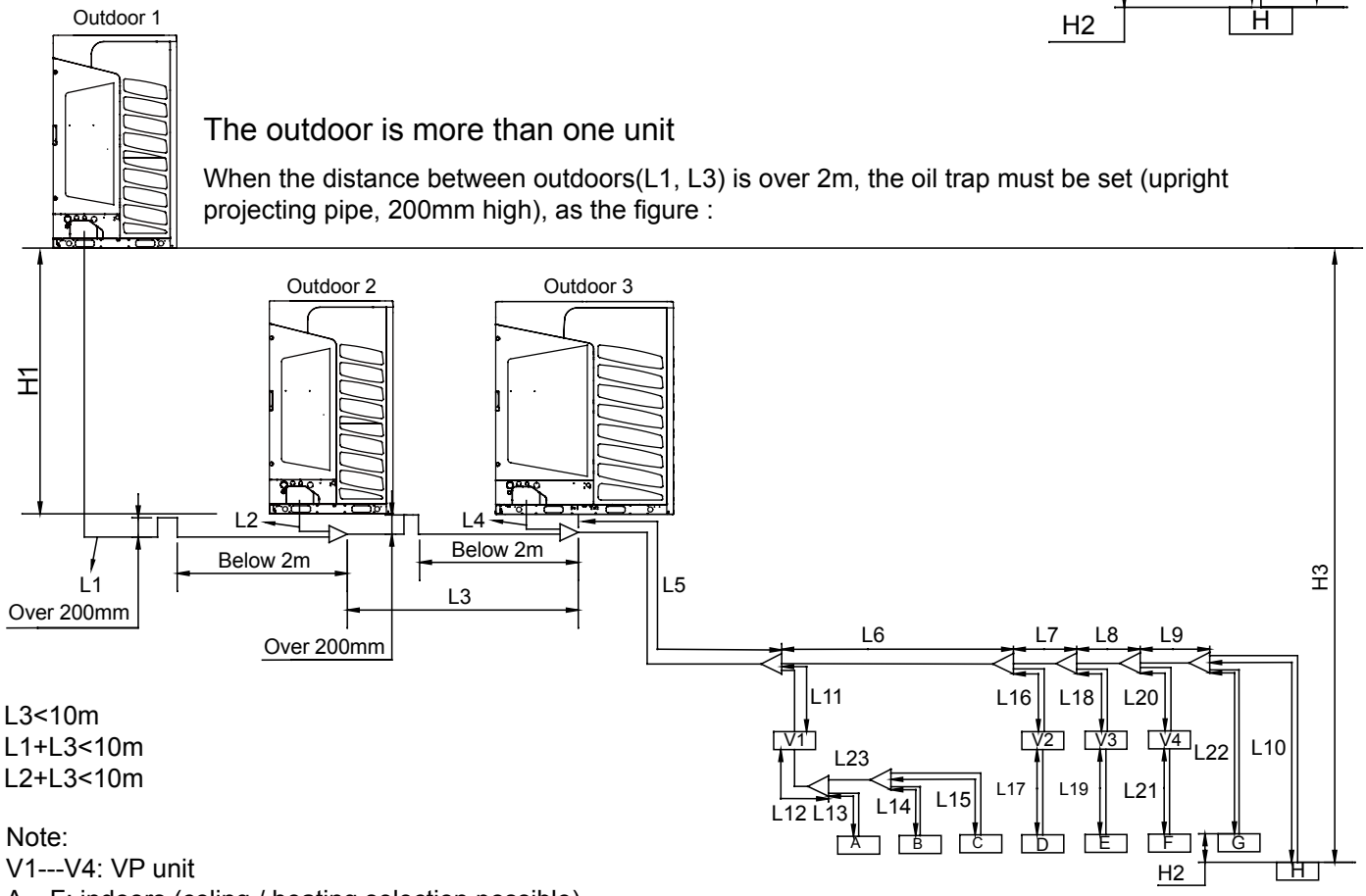
Material	O type pipe: Soft pipe				
Pipe diameter (mm)	Ø6.35	Ø9.52	Ø12.7	Ø15.88	Ø19.05
Thickness(mm)	0.8	0.8	1.0	1.0	1.1

Material	Hard pipe							
Pipe diameter (mm)	Ø19.05	Ø22.22	Ø25.4	Ø28.58	Ø31.8	Ø34.9	Ø38.1	Ø41.3
Thickness(mm)	1.0	1.0	1.0	1.0	1.1	1.3	1.4	1.5

Long pipe and high drop

1. Allowable piping length and drop between indoor and outdoor





L3<10m
L1+L3<10m
L2+L3<10m

Note:
V1---V4: VP unit
A---F: indoors (coling / heating selection possible)
G---H: indoors (cooling only)

2. Applicable range

Item	Model	All outdoors	Pipe in above figure
Single way total pipe length		1000 m (correspond length)	L5+2×(L6+L7+L8+L9+L11+L12+L23)+L10+L16+L17+L18+L19+L20+L21+L22+L13+L14+L15
Single way pipe length		Max. 165/190 (correspond length)	L1+L3+ L5+L6+L7+L8+L9+L10
Main pipe beween outdoor to 1st branch		Max.130 (correspond length)	L5
Height difference between indoor and outdoor	Outdoor is upper	Max. 40m	H3
	Outdoor is lower	Max. 50m	H3
Height difference between outdoors (in the same system)		Within 0.5 m (better be horizontal)	H1
Max. pipe length from 1st branch pipe to indoor		Max. 40m	L6+L7+L8+L9+L10
Height difference between indoors		Max. 15m	H2
Max.pipe length between indoors and thenearest branch pipe		Max. 30m	
When outdoor is only one, Single way max. pipe length = L5+L6+L7+L8+L9+L10≤190m; Single way total pipe length = L5+L6……+L22			

When the pipe between the outdoor unit and its furthest indoor unit is longer than 90m, the specification of master pipe (Gas pipe/ Liquid pipe) between outdoor unit and the first Y joint should be upgraded for one level. For more details, please refer to "*Outdoor pipe selection table*"

When the pipe between the first Y joint and its furthest indoor unit is longer than 40m,

(1) The specification of the master pipe (Gas pipe/ Liquid pipe) between the first Y joint and its furthest indoor unit should be upgraded for one level.

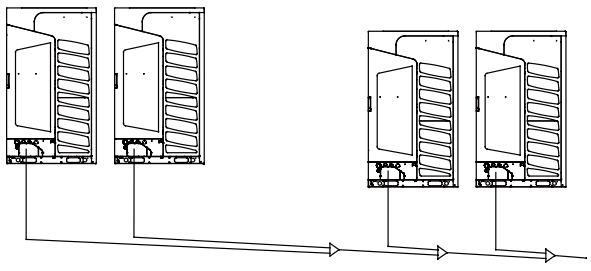
(2) The distance between the furthest indoor unit and the nearest one ≤ 40m.

3. Pipe length between outdoors

(1) The piping connecting outdoor unit must be placed horizontally or in accordance with the installation of a certain angle (level angle less than 15 degrees), connected with a concave not allowed.

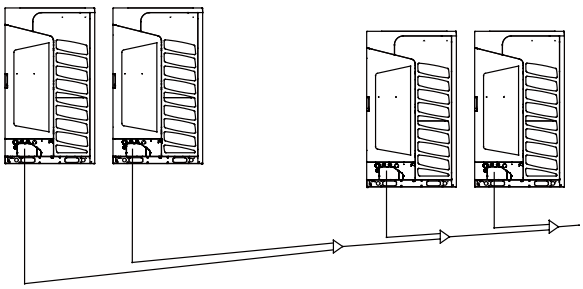
(2) All piping cannot connect the outdoor unit is higher than the height of the machine outlet (valve interface part).

Proper installation

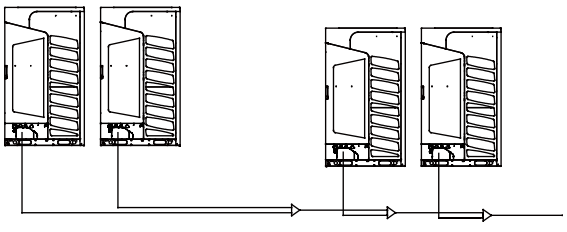


Wrong installation

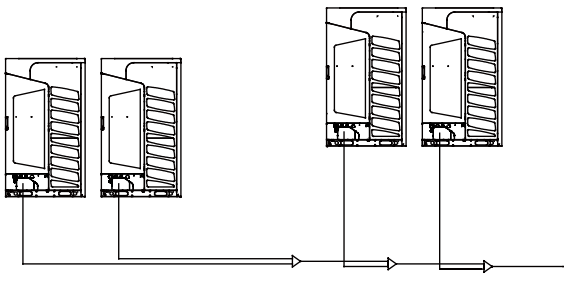
The lubricating oil will accumulate to the lowest outdoor unit

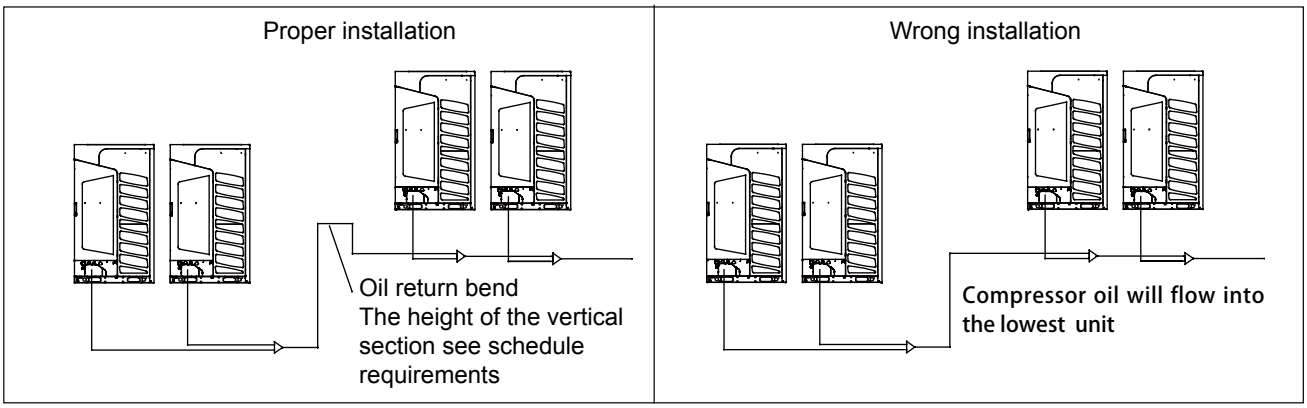


Proper installation

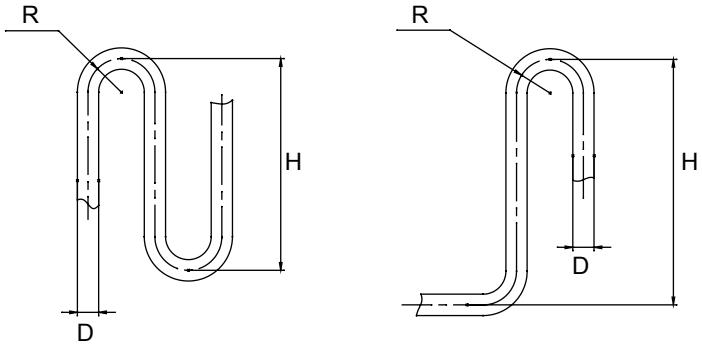


Proper installation



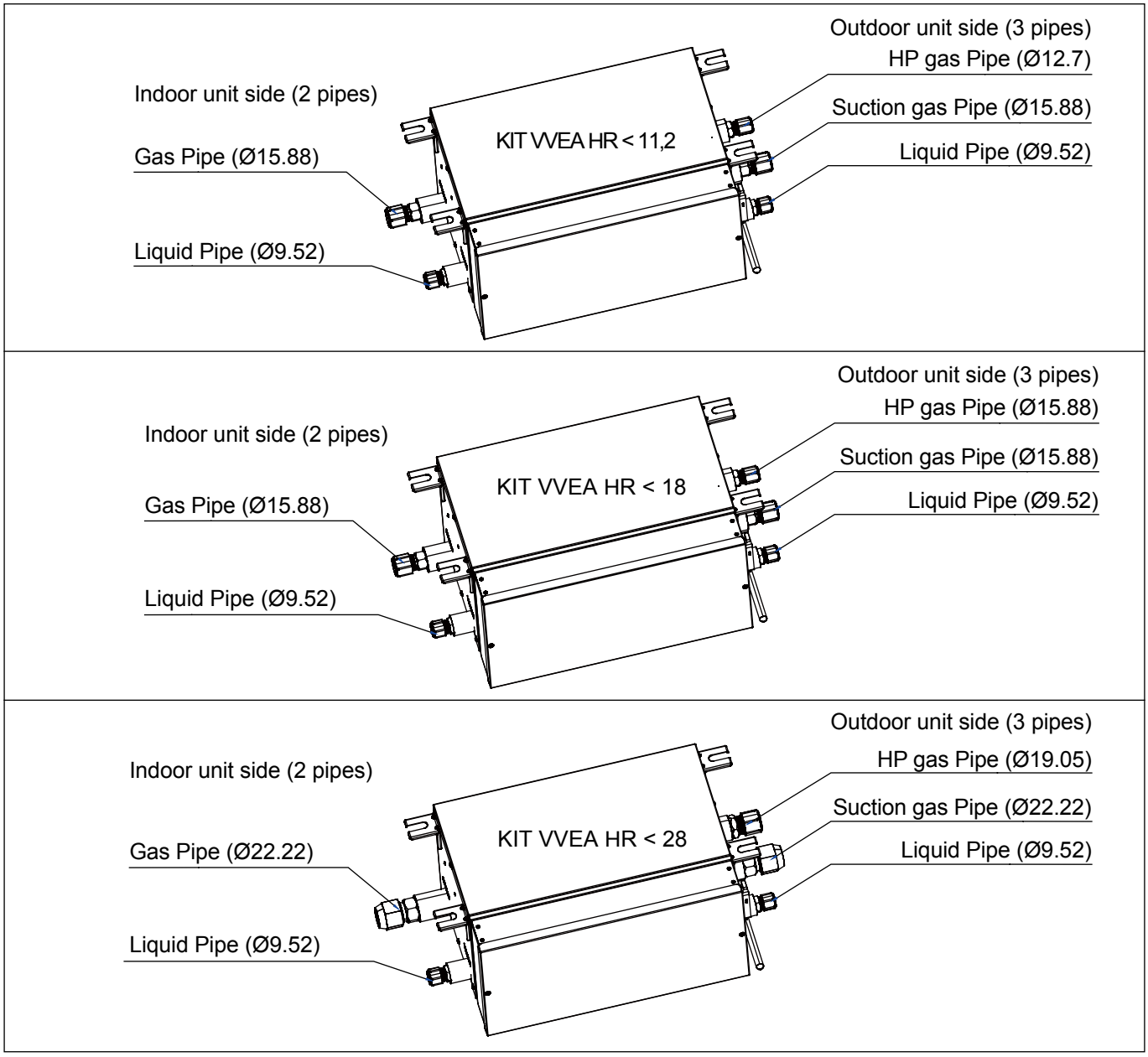


In order to avoid damage to the pipe, the size of the return bend is referred to as the drawing.



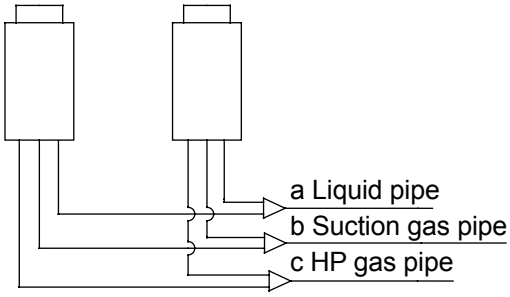
Pipe diameter D	Bending radius R	Vertical heigh H
Ø19.05	≥31	≤150
Ø22.22	≥31	≤150
Ø25.4	≥45	≤150
Ø28.58	≥45	≤150
Ø31.8	≥60	≤250
Ø38.1	≥60	≤350
Ø41.3	≥80	≤450
Ø44.5	≥80	≤500
Ø50.8	≥90	≤500
Ø54.1	≥90	≤500

4. Example of connection

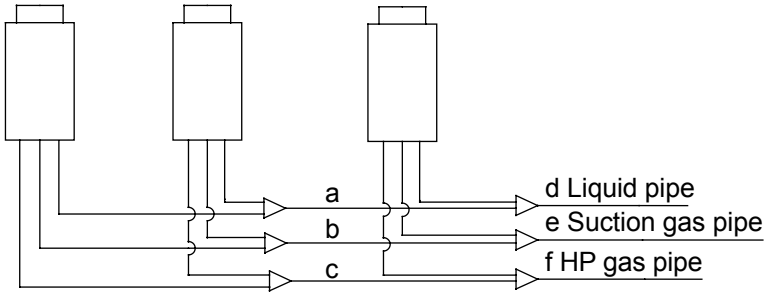


Outdoor pipe dimension

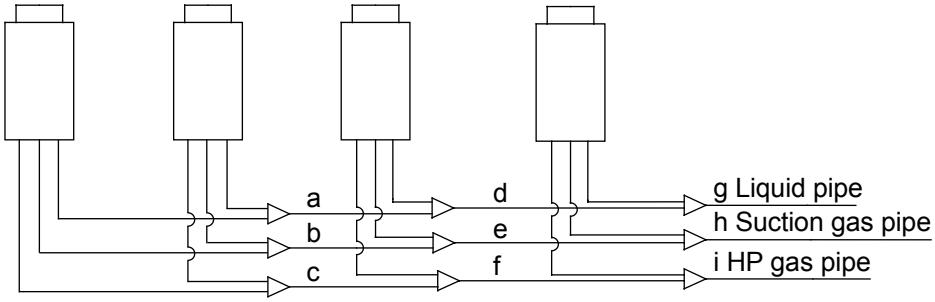
24~44HP



46~66HP



68~88HP



The pipe "a, b, c, d, e, f, g, h, i" should be confirmed as to the below table

Total outdoor capacity before gather pipe (kW)	Suction gas pipe (a,d,g) (mm)	HP gas pipe (b,e,h) (mm)	Liquid pipe (c,f,i) (mm)
45.0	φ28.58	φ25.40	φ12.70
50.4~80	φ28.58	φ25.40	φ15.88
85~95.4	φ31.80	φ28.58	φ19.05
100.8~156.8	φ38.10	φ34.90	φ19.05
162.4~184.5	φ41.30	φ38.10	φ19.05
191.0~236	φ44.50	φ41.30	φ22.22
241.5~248.0	φ50.80	φ44.50	φ25.40

Unit pipe spec and connection method (unit: mm)

A. Outdoor unit

Model	HP gas pip		Suction gas pip		Liquid pipe	
	Diameter (mm)	Connection method	Diameter (mm)	Connection method	Diameter (mm)	Connection method
VVEA-250R-01T32	Ø19.05	Flared	Ø19.05	Flared	Ø9.52	Flared
VVEA-280R-01T32	Ø19.05		Ø22.22	Braze	Ø9.52	
VVEA-335R-01T32	Ø22.22	Braze	Ø25.4		Ø12.7	
VVEA-400R-01T32	Ø22.22		Ø25.4		Ø12.7	
VVEA-450R-01T32	Ø25.4		Ø28.58		Ø12.7	
VVEA-504R-01T32	Ø25.4		Ø28.58		Ø15.88	
VVEA-560R-01T32	Ø25.4		Ø28.58		Ø15.88	
VVEA-615R-01T32	Ø25.4		Ø28.58		Ø15.88	

B. Indoor unit

Model	Gas pipe side		Liquid pipe side	
	Diameter (mm)	Connecting method	Diameter (mm)	Connecting method
07	Ø9.52	Flared	Ø6.35	Flared
09	Ø9.52		Ø6.35	
12	Ø12.7		Ø6.35	
16	Ø12.7		Ø6.35	
18	Ø12.7		Ø6.35	
24	Ø15.88		Ø9.52	
28	Ø15.88		Ø9.52	
30	Ø15.88		Ø9.52	
38	Ø15.88		Ø9.52	
48	Ø15.88		Ø9.52	

C. Pipe spec and the torque

Diameter (mm)	Torque(N·m)
Ø6.35	16~20
Ø9.52	40~50
Ø12.7	40~50
Ø15.88	90~120
Ø19.05	100~140
Not less than Ø22.22	No requirement, due to braze connector

Note:
IDU7K/9K gas pipe / liquid pipe: Ø12.7mm/6.35mm;
IDU18K gas pipe / liquid pipe: Ø15.88/9.52mm

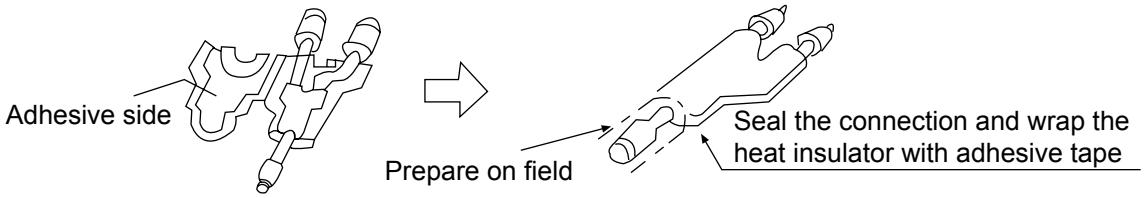
Branch pipe

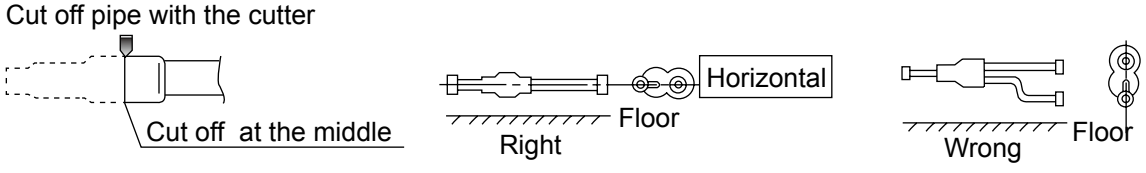
Branch pipe selection:

Total indoor capacity (100W)	Model(optional)	
	3 pipes	2 Pipes
X < 335	TAU335HR	TAU335
335 ≤ X < 506	TAU506HR	TAU506
506 ≤ X < 730	TAU730HR	TAU730
730 ≤ X < 1350	TAU1350HR	TAU1350
X ≥ 1350	TAU2040HR	TAU2040

Outdoor unit type
The master unit will choose the closest one to the 1st branch pipe.

Note:
1. When connecting the gather pipe and the outdoor, please pay attention to the outdoor pipe dimension.
2. When adjusting the diameter among gather pipes and among the units, please must execute at the branch pipe side.
3. Please install the gather pipe(gas/liqiud side) in horizontal or vertical direction.
4. When welding with hard solder, please must blow nitrogen. If not, a number of oxide will be produced and cause heavy damage.Besides,to prevent water and dust into the pipe, please make the brim as outer roll.



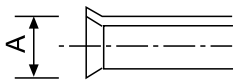


Pipe installation

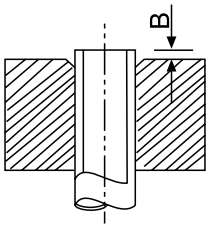
Important

- Please don't let the pipe and the parts in the unit collide each other.
- When connecting the pipes, close the valves fully.
- Protect the pipe end against the water, impurity into the pipes (welding after being flat, or being sealed with adhesive tape).
- Bend the pipe as large semi-diameter as possible(over 4 times of the pipe diameter).
- The connection between outdoor liquid pipe and the distributing pipe is flared type. Please expand the pipe with the special tool for R410A after installing the expanding nut. But if the projecting pipe length has been adjusted with the copper pipe gauge, you can use the original tool to expand the pipe.
- Since the unit is with R410A, the expanding oil is ester oil, not the mineral oil.
- When connecting the expanding pipe, fasten the pipes with double-spanner. The torque refers to the former info.

Expanding pipe: A(mm)



Pipe outer diameter (mm)	A $^{0}_{-0.4}$
Ø6.35	9.1
Ø9.52	13.2
Ø12.7	16.6
Ø15.88	19.7



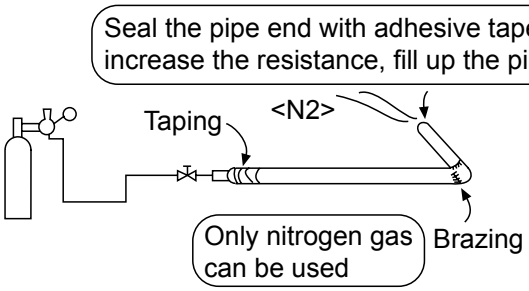
Projecting length of pipe to be expanded: B(mm)

Pipe outer diameter (mm)	When it is hard pipe	
	Special tool for R410A	The former tool
Ø6.35	0-0.5	1.0-1.5
Ø9.52		
Ø12.7		
Ø15.88		

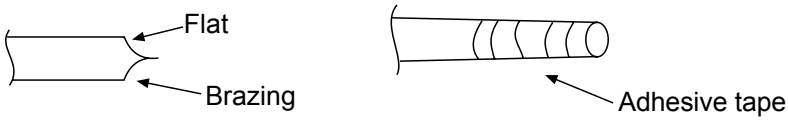
- The outdoor gas pipe and the refrigerant distributing pipe, as well the refrigerant distributing pipe and the branch pipe should be welded with hard solder.
- Weld the pipe at the same time charge the nitrogen. Or it will cause a number of impurity (a film of oxidation) to clog the capillary and the expansion valve, further cause the deadly failure.

Operation procedure

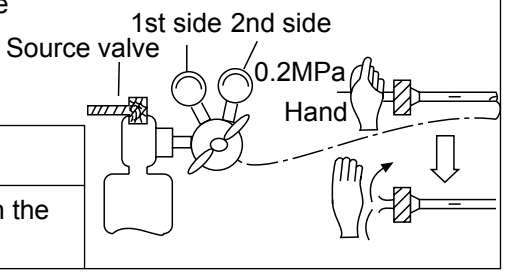
- Weld the pipe at the same time charge the nitrogen. Or it will cause a number of impurity (a film of oxidation) to clog the capillary and the expansion valve, further cause the deadly failure.



- Protect the pipe end against water and impurities (welding after being flatted, or being sealed with adhesive tape).



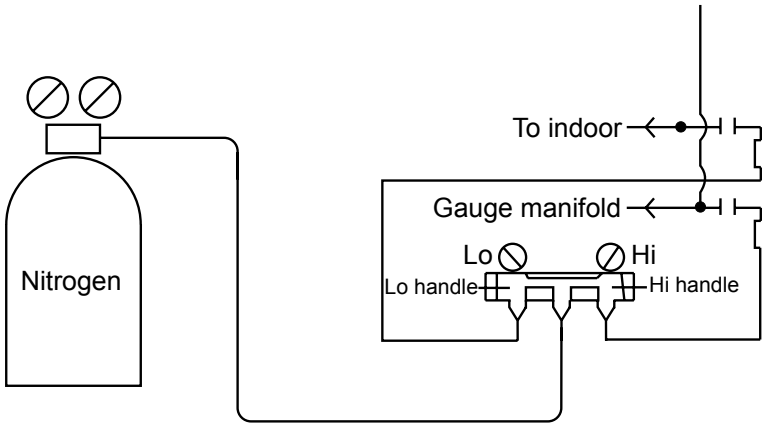
- The refrigerant pipe should be clean. The nitrogen should flow under the pressure of about 0.5MPa and when charging the nitrogen, stop up the end of the pipe by hand to enhance the pressure in the pipe, then loose the hand (meanwhile stop up the other end).



- When connecting the pipes, close the valves fully.
- When welding the valve and the pipes, use the wet cloth to cool down the valve and the pipes.

B. Leakage test

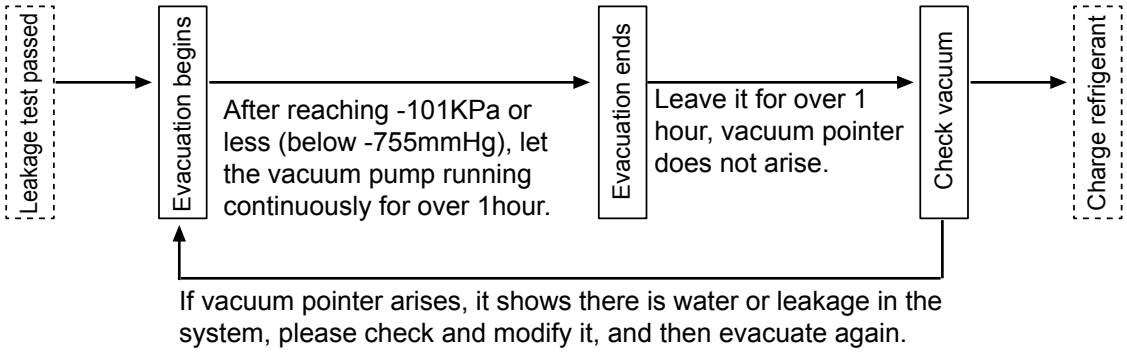
1. The outdoor unit has been executed the leakage test in the factory. The pipe should be executed leakage test individually and forbidden to test after connecting with stop valve.
2. Refer to the below figure to charge the nitrogen into the unit to take a test. Never use the chlorin, oxygen, flammable gas in the leakage test. Apply pressure both on the gas pipe and the liquid pipe.
3. Apply the pressure step by step to the target pressure.
   a. Apply the pressure to 0.5MPa for more than 5 minutes, confirm if pressure goes down.
   b. Apply the pressure to 1.5MPa for more than 5 minutes, confirm if pressure goes down.
   c. Apply the pressure to the target pressure (4.15MPa), record the temp. and the pressure.
   d. Leave it at 4.15MPa for over 1 day, if pressure does not go down, the test is passed. Meanwhile, when the temp. changes for 1degree, pressure will change 0.01MPa as well. Correct the pressure.
   e. After confirmation of a~d, if pressure goes down, there is leakage. Check the brazing position, flared position by laying on the soap. Modify the leakage point and take another leakage test.
4. After leakage test, do execute the evacuation.



C. Evacuation

Evacute at the check valve of liquid stop valve and both sides of the gas stop valve. The oil equalization pipe also must be vacuum (executed at the oil equalization pipe and check valve respectively).

Operation procedure:



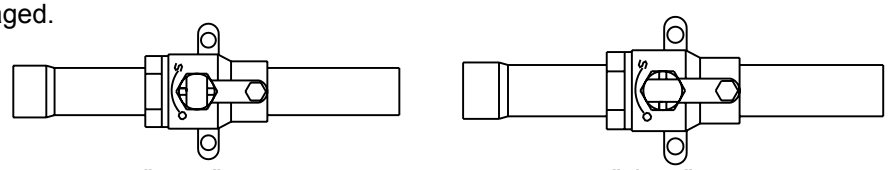
Because the unit is with refrigerant R410A, the below issues should be paid attention:

- To prevent the oil going into the pipe, please use the special tool for R410A, especially for gauge manifold and charging hose.
- To prevent the oil going into the refrigerant cycle, please use the anti-counter-flow adapter.
- When maintaining the outdoor, release refrigerant from check valve. When taking vacuum evacuation, set the relative dip switch. The details refer to Code section.

D. Check valve operation

Open/ close method: (The suction gas pipe stop valve for VVEA-250R-01T32, VVEA-280R-01T32, VVEA-335R-01T32, VVEA-400R-01T32,VVEA-450R-01T32,VVEA-504R-01T32,VVEA-560R-01T32,VVEA-615R-01T32)

- Take down the valve cap, suction gas pipe, HP gas pipe turns to "open"
- Turn the liquid pipe and the oil equalization pipe with hexangular spanner until it stops. If opening the valve strongly, the valve will be damaged.
- Tighten the valve cap.



"open"state　　"close"state

Tighten torque as the table below:

Tighten torque N·m			
	Shaft (valve body)	Cap (cover)	T-shape nut (check joint)
For suction gas pipe and HP gas pipe	Less than 7	Less than 30	13
For liquid pipe	7.85 (MAX15.7)	29.4 (MAX39.2)	8.8 (MAX14.7)
For oil equalization pipe	4.9 (MAX11.8)	16.2 (MAX24.5)	8.8 (MAX14.7)

E. Additional refrigerant charging

Charge the additional refrigerant as liquid state with the gauge.
If the additional refrigerant can not be charged totally when the outdoor stops, charge it at the trial mode.
If the unit runs for a long period in the state of lack of refrigerant, compressor will occur failure.
(the charging must be finished within 30 minutes especially when the unit is running, meanwhile charging the refrigerant).

The unit is charged only part of the refrigerant at the factory, also need additional refrigerant at the installation site.
W1: Refrigerant charging volume to outdoor unit at factory.
W2: Refrigerant charging volume to outdoor unit on site.
W3: Refrigerant charging volume to liquid pipe base on different piping length calculation.
W3=actual length of liquid pipe×additional amount per meter liquid pipe=
L1×0.35+L2×0.25+L3×0.17+L4×0.11+L5×0.054+L6×0.022

L1: Total length of 22.22 liquid pipe; L2: Total length of 19.05 liquid pipe;
L3: Total length of 15.88 liquid pipe; L4: Total length of 12.7 liquid pipe;
L5: Total length of 9.52 liquid pipe; L6: Total length of 6.35 liquid pipe;
Total refrigerant volume charging on site during installation=W2+W3
W: Total refrigerant volume charging on site for maintenance.

Refrigerant record form						
Model	W1: Refrigerant charging volume to outdoor unit at factory	W2: Refrigerant charging volume to outdoor unit on site	W3: Refrigerant charging volume to liquid pipe base on different piping length calculation		Total refrigerant volume charging on site during installation	W: Total refrigerant volume charging on site for maintenance
			Liquid pipe diameter (mm)	Additional refrigerant amount (kg)		
VVEA-250R-01T32	10kg	1.0kg	Ø9.52	0.054kg/m×__m=__kg	W2+W3=___kg	W1+W2+W3=___kg
VVEA-280R-01T32	10kg	1.0kg	Ø9.52	0.054kg/m×__m=__kg		
VVEA-335R-01T32	10kg	2.5kg	Ø12.7	0.11kg/m×__m=__kg		
VVEA-400R-01T32	10kg	2.5kg	Ø12.7	0.11kg/m×__m=__kg		
VVEA-450R-01T32	10kg	5.5kg	Ø12.7	0.11kg/m×__m=__kg		
VVEA-504R-01T32	10kg	5.5kg	Ø15.88	0.17kg/m×__m=__kg		
VVEA-560R-01T32	10kg	7.0kg	Ø15.88	0.17kg/m×__m=__kg		
VVEA-615R-01T32	10kg	7.0kg	Ø15.88	0.17kg/m×__m=__kg		
			W3=___kg			

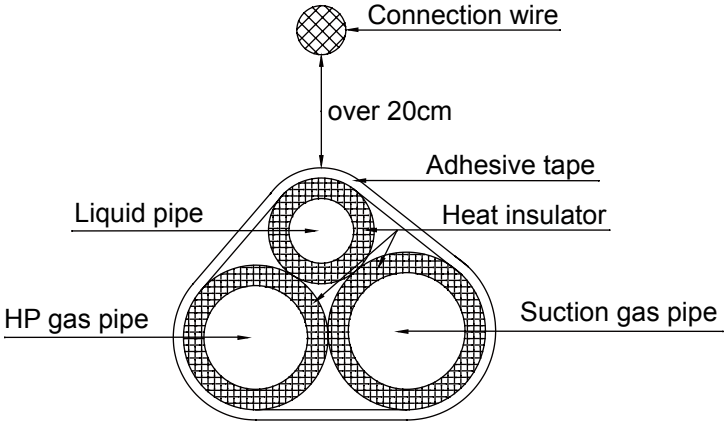
Note:

- To prevent the oil going into the pipe, please use the special tool for R410A, especially for gauge manifold and charging hose.
- Mark the refrigerant type in different colour on the tank. R410A is pink.
- Must not use the charging cylinder, because the R410A will change when transferring to the cylinder.
- When charging refrigerant, the refrigerant should be taken out from the tank as liquid state.
- Mark the counted refrigerant volume due to the distributing pipe length on the label.

GWP: 2088
The product contains fluorinated greenhouse gases and its functioning relies upon such gases.

Heat insulation

- HP gas pipe, Suction gas pipe and liquid pipe should be heat insulated separately.
- The material for HP gas pipe and Suction gas pipe should endure the high temperature over 120°C. That for liquid pipe should be over 70°C.
- The material thickness should be over 10mm, when ambient temp. is 30°C, and the relative humidity is over 80%, the material thickness should be over 20mm.
- The material should cling the pipe closely without gap, then be wrapped with adhesive tape. The connection wire can not be put together with the heat insulation material and should be far at least 20cm.



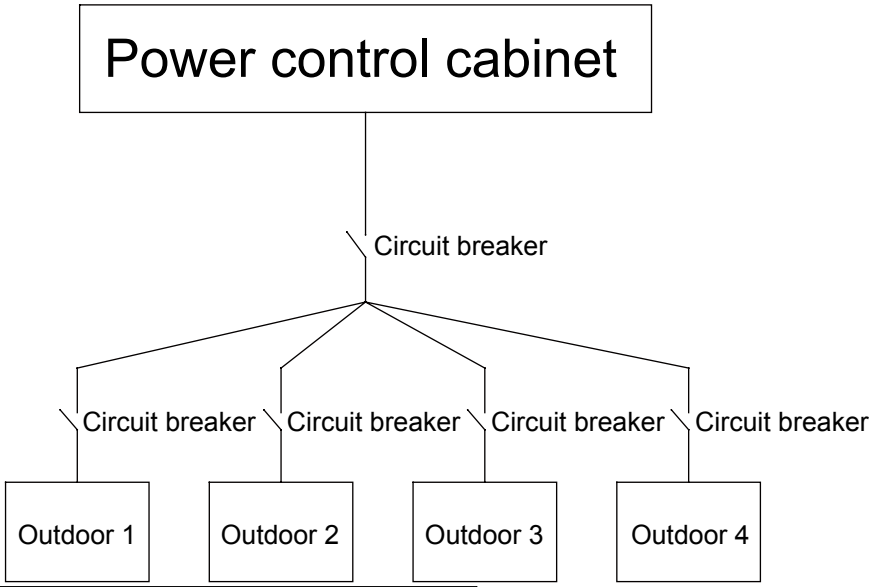
Fix the refrigerant pipe

- In operation, the pipe will vibrate and expand or shrink.
  If not being fixed, the refrigerant will focus on one part to cause the broken pipe.
- To prevent the stress concentration, fix the pipe for every 2-3m.

14.4. Electric wiring and the application

Note:
1. Please follow the national electrical standards, all provided parts, raw materials must comply with local laws and regulations. And please professional electrician installation.
2. Power supply must use the rated voltage and air conditioning unit dedicated power supply, power fluctuations in the power supply ratio of less than 2%, and were designed indoor unit, outdoor machine dedicated power.
3. The power cord should be reliably fastened to prevent the terminals from being stressed. Please do not force the power cord.
4. The power line diameter should be large enough, the ground wire should be reliable, should be connected to the building's special grounding device.
5. The air switch and earth leakage switch that can be cut off the entire system must be installed. Air switch should also have a magnetic trip and thermal trip function to ensure that short circuit and overload are protected, Should use "D" type circuit breaker.
6. Do not add the phase-connected capacitor to prevent overheating of the capacitor due to high frequency waves.
7. Please follow the instructions in accordance with the requirements of the power cord connection, so as to avoid a security incident.
8. The unit must be reliably grounded to meet the relevant requirements of GB 50169.
9. All electrical installations must be carried out by professionals in accordance with local laws, regulations and corresponding instructions.

Power



Outdoor unit leakage protection switch and circuit breaker

Model	Power source	Maximum load current (A)	Circuit breaker	Each module circuit breaker	Leakage current (mA) response time(S)	Minimum sectional area of power line (mm^2)	Minimum sectional area of earthing line (mm^2)
VVEA-250R-01T32	3N~, 380-415V, 50/60Hz	20.3	32	32	30mA, below0.1s	4	4
VVEA-280R-01T32		21.8	32	32		4	4
VVEA-335R-01T32		23.3	32	32		10	4
VVEA-400R-01T32		27.7	40	40		10	4
VVEA-450R-01T32		32.4	40	40		10	4
VVEA-504R-01T32		36.1	50	50		16	6
VVEA-560R-01T32		42.4	63	63		25	10
VVEA-615R-01T32		48.1	63	63		25	10

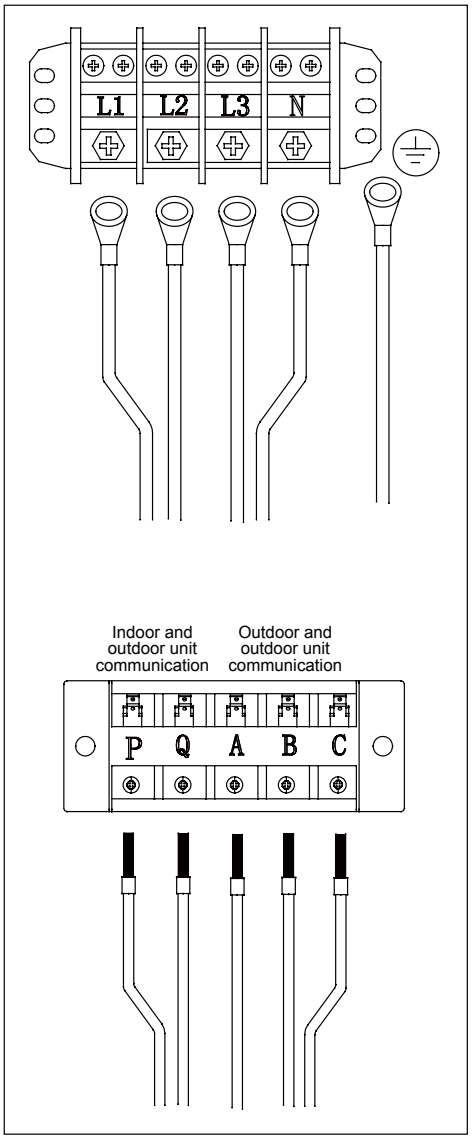
Note:
1. Main FUSE in appliance: 63A. The fuse shall be replaced by the professional person.
2. Select the power supply cabling of each outdoor unit from the following specifications: Cable 5-core, in conformance with design H07 RN-F or 60245 IEC 66. The operating temperature can not be greater than its specified value.

3. If the power cord length is greater than 20m, please increase the cable cross-sectional area, so as to avoid overload caused by the accident.
4. When the voltage drop at the power supply line exceeds 2%, increase the wire diameter appropriately.
5. The air switch and power line is calculated according to the maximum power of the unit, and the combination in accordance with the provisions of the combination of different combinations of modules need to follow the specific parameters of the combination module. The new calculation and calculation method refer to the electrician manual.

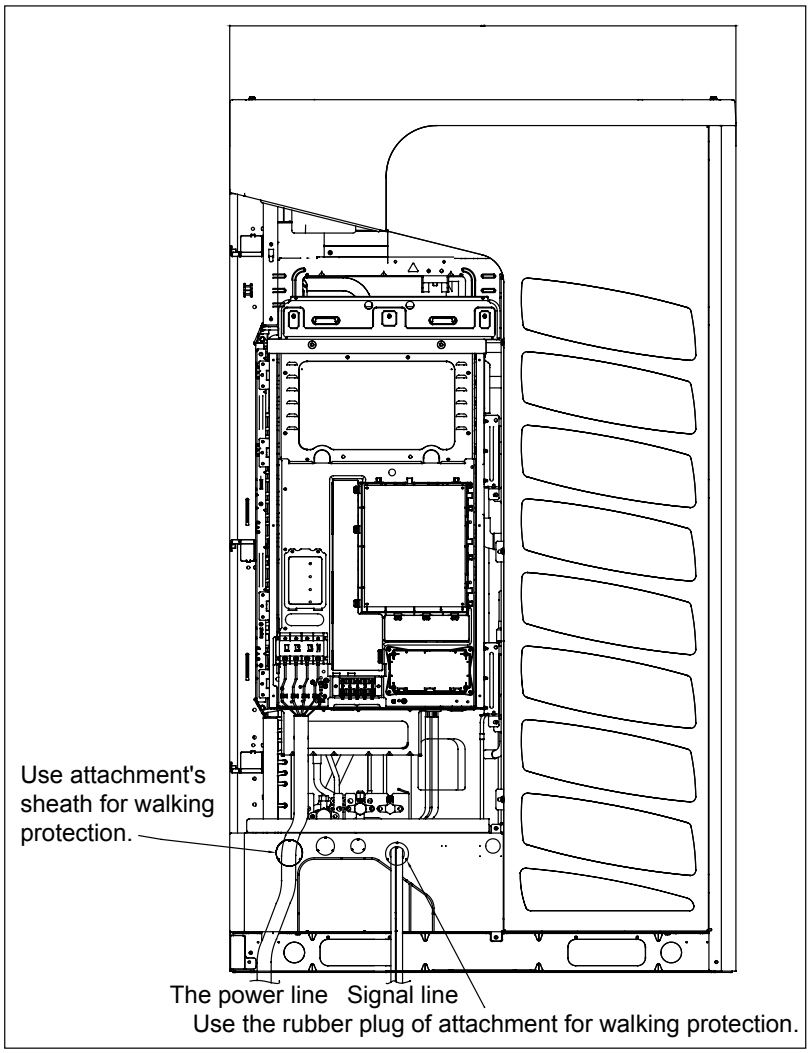
Power line installation instructions

1. Air conditioning unit is Ⅰ class appliance, please be sure to take reliable grounding measures.
2. Earth resistance should meet the national standard GB 50169 requirement.
3. The yellow and green double color line of air conditioning unit is ground wire, do not move for other use, do not cut it. Cannot be fixed with self-tapping screw. Otherwise, the risk of electric shock will be electric.
4. The user's power supply must provide reliable grounding. Please don't connect the ground wire to the following paces. (1) water pipe (2) gas pipe; (3) drainage pipe; (4) The other places where professionals think are unreliable.
5. The power cord and the communication line should not be interwoven together, the distance should be greater than 20cm apart, or it may cause the crew communication to be abnormal.

Please follow the following guidelines:



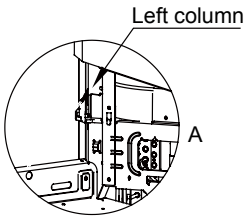
Note:
Please connect the power cord with the appropriate circular terminal.
PQ is non-polar, ABC has polarity, must be correct when connecting.
The route is as follows:

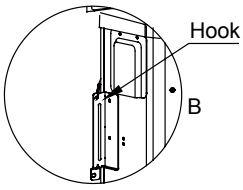


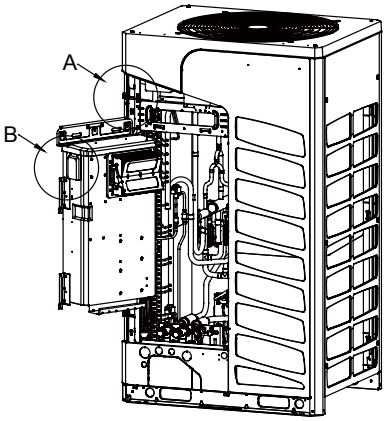
Power line installation instructions

Note:
When connecting the power cord, please be sure to set aside enough length in the outdoor, which is convenient for turning over the electrical box.

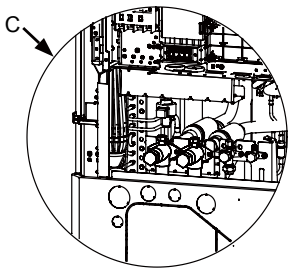
After the maintenance, remove the 5 fixing screws, the electric appliance box body is lifted up slightly, and the box body is rotated to the left, and the steel wire rope in the column is used to check the box to prevent the turning.

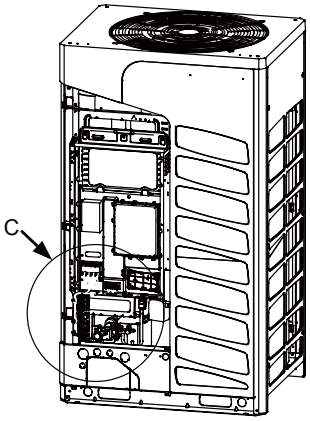




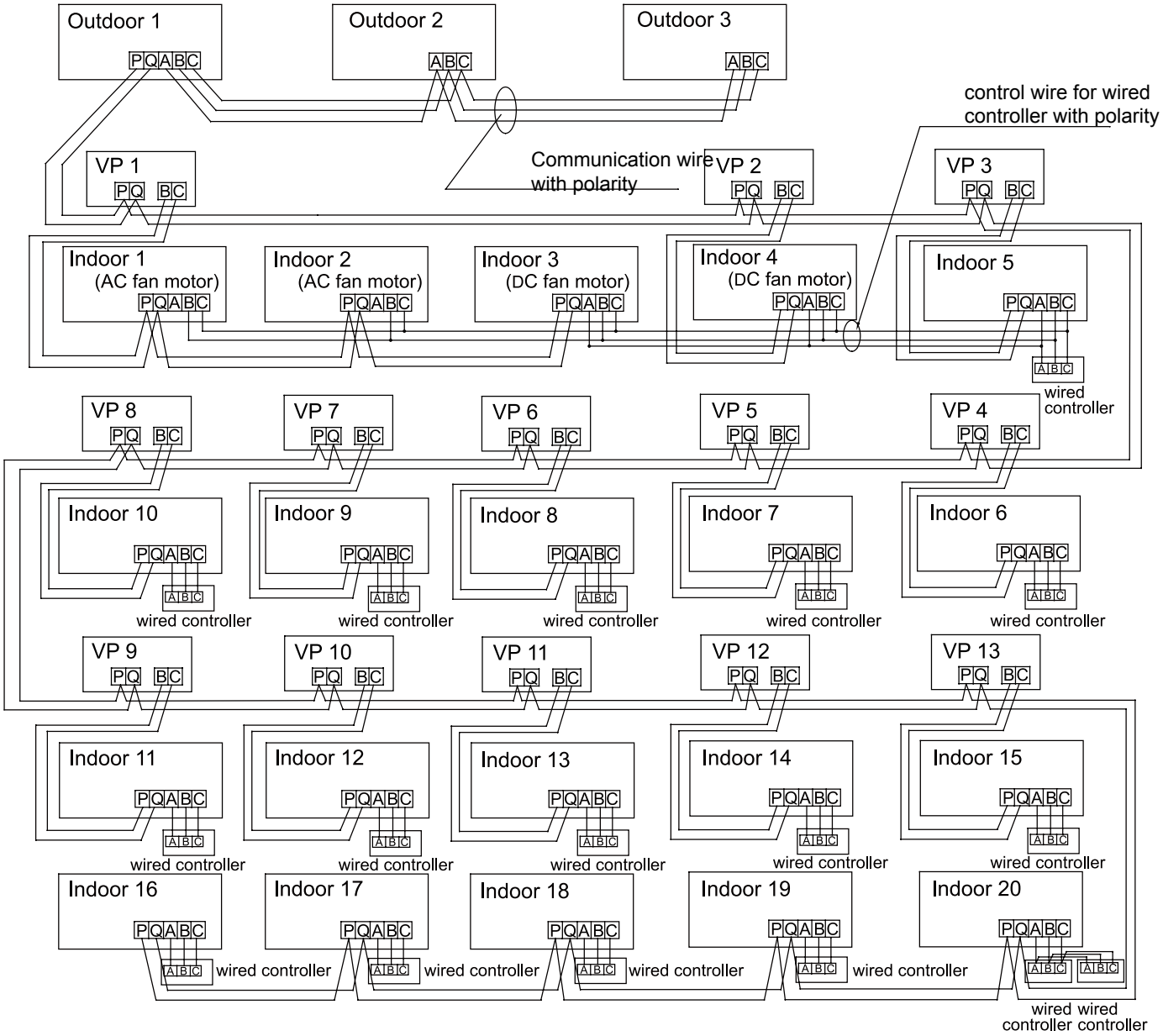


When connecting the power cord, please be sure to set aside enough length in the outdoor, which is convenient for turning over the electrical box.





Communication wiring figure (Wired)



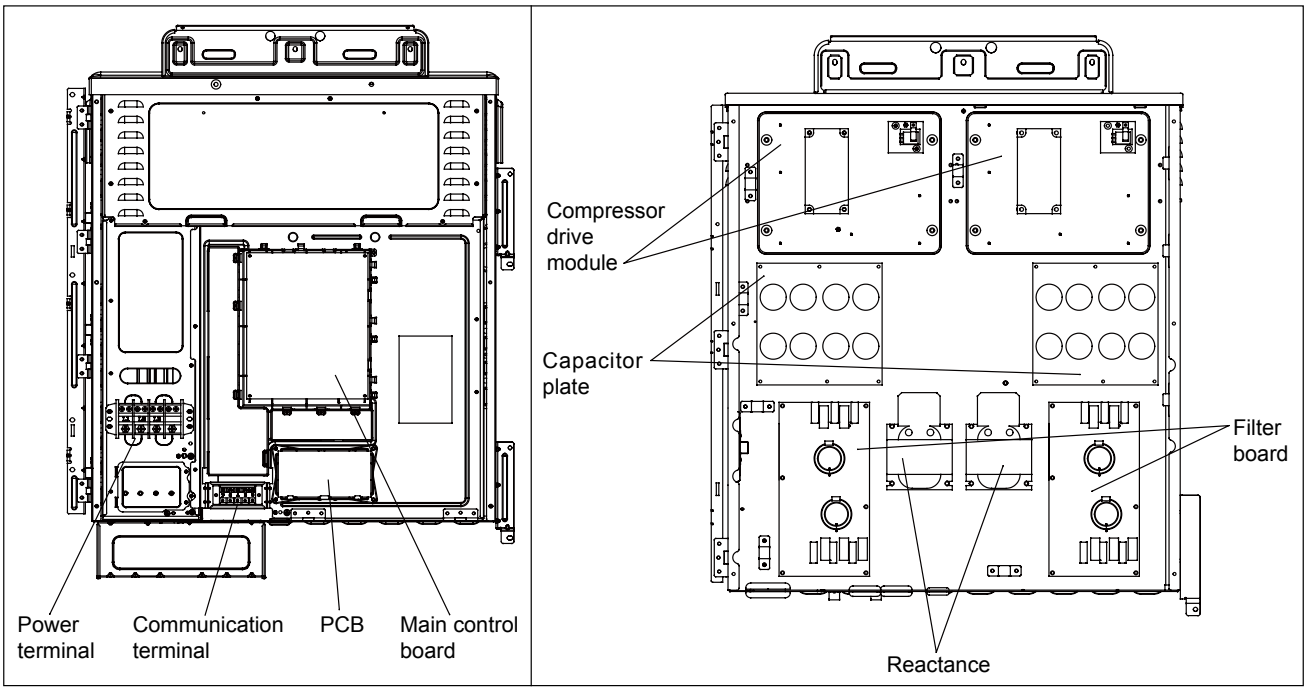
Note:

- Outdoor units are in parallel through 3 polar wires. The outdoor and all VP (cooling and heating switching device) and all indoor units are in parallel through 2 non-polar wires.
- Each VP can be connected to 1~8 indoor units. For the wiring, please refer to the above picture: VP1 is connected to Indoor 1~3, and the capacity of all the indoor units can not be more than the VP's. Indoor units which are not connected to VP just have cooling operation, and the wiring can be referred to Indoor 16~20 on the above picture.
- The communication line must be hand-in-hand serial connection, not using star connection.
- When the length of the single line of communication is not sufficient, the joint connection must be pressed or solder.
- There are three connecting ways between wired control and indoor units:
  A. One wired controller controls multiple units, as shown in the above figure, (1-5 indoor units). The indoor unit 5 is the wired control master unit (directly connected to the indoor unit of wired controller) and others are the wired control slave units. 3 and 4 indoor units are DC fan motor models, 1 and 2 indoor units are the AC fan motor models. The wired controller is connected with the master unit and DC fan motor models through three lines with polarity. Other indoor units and the master unit are connected via two lines with polarity. SW01 on the main unit is set to 0 while SW01 on other slave units are set to 1, 2, 3 and so on in turn. (Please refer to the dip switch setting)

B. One wired controller controls one indoor unit, as shown in the above figure (indoor unit 6-19). The indoor unit and the wired controller are connected via three lines with polarity.
C. Two wired controllers control one indoor unit, as shown in the figure (indoor unit 20). Either of the wired controllers can be set to be the master wired control while the other is set to be the slave wired controller. The master wired controller, slave wired controller and indoor units are connected via three lines with polarity.

Internal layout of electric appliance box

For example



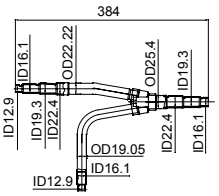
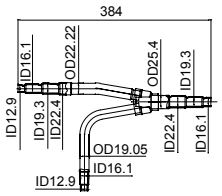
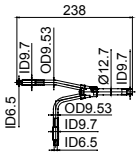
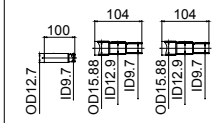
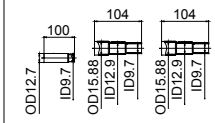
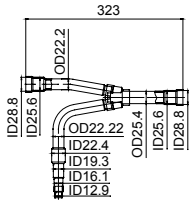
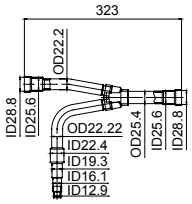
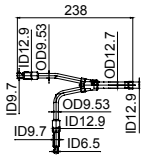
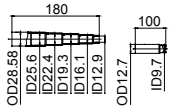
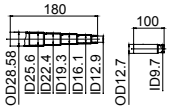
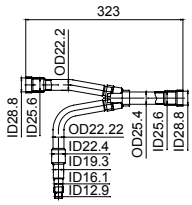
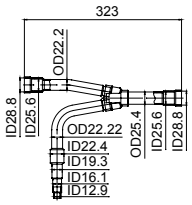
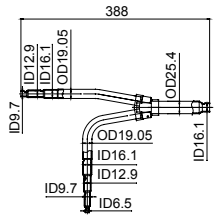
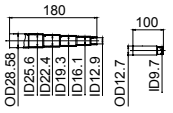
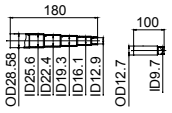
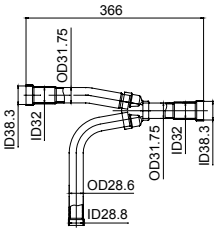
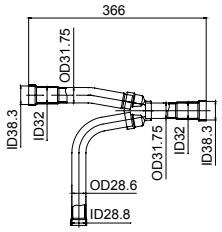
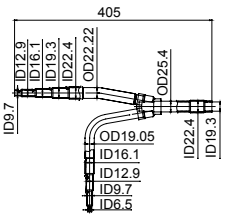
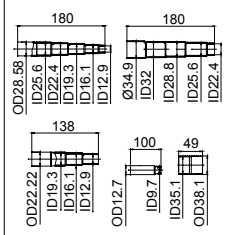
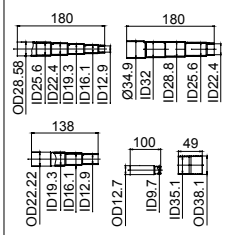
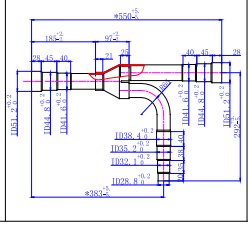
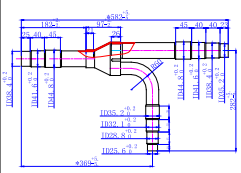
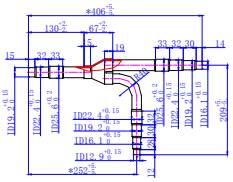
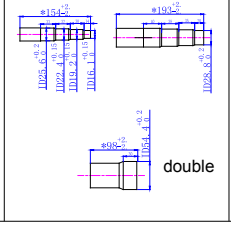
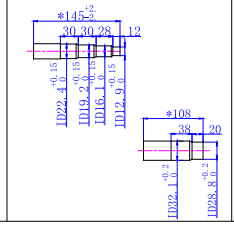
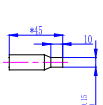
15. Branch pipe dimension

3-pipe systerm

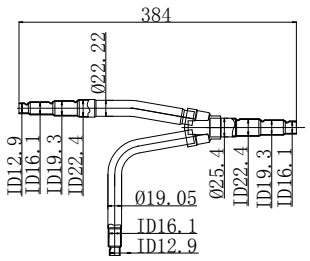
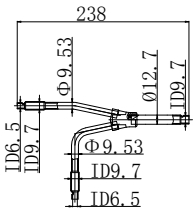
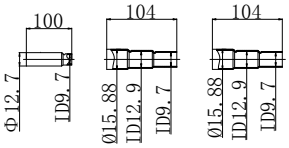
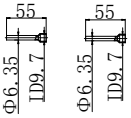
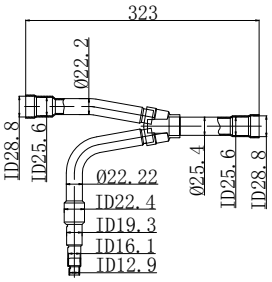
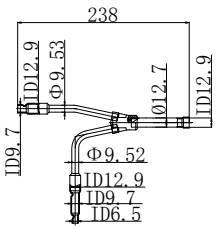
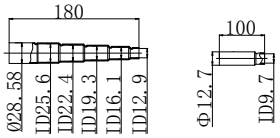
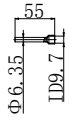
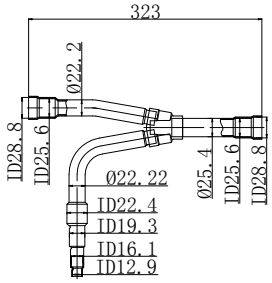
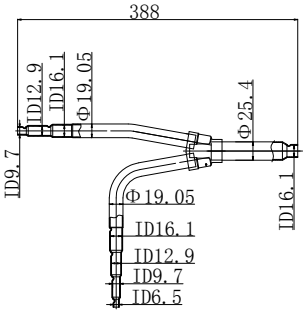
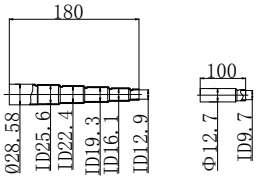
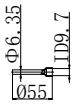
TAU335HR TAU506HR TAU730HR TAU1350HR TAU2040HR

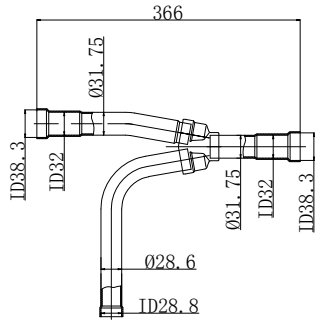
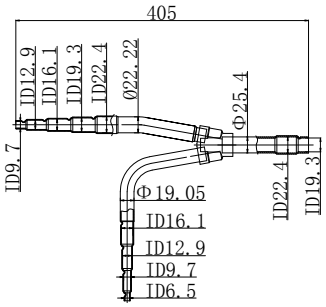
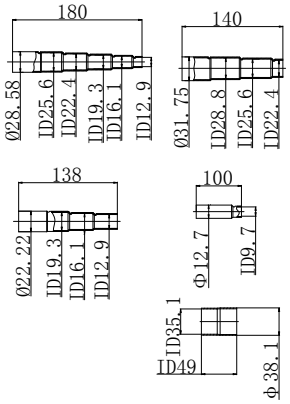
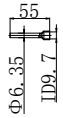
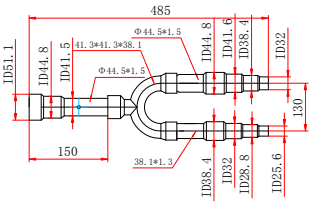
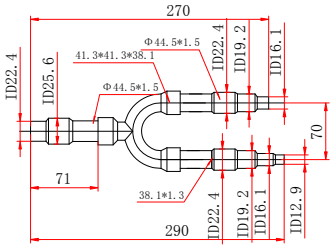
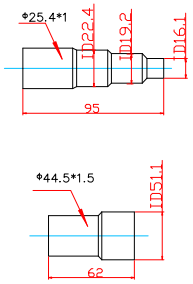
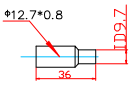
Note: Cut off the pipe from its middle when using.

Unit: mm, ID: inner diameter, OD: outer diameter

	Suction gas branch pipe	HP gas branch pipe	Liquid branch pipe	Suction gas manifold pipe	HP gas manifold pipe	Liquid manifold pipe
TAU335HR						
TAU506HR						
TAU730HR						
TAU1350HR						
TAU2040HR						

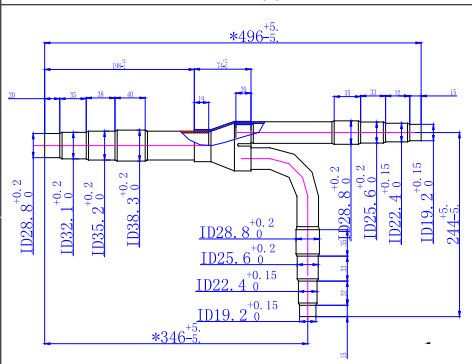
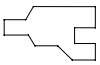
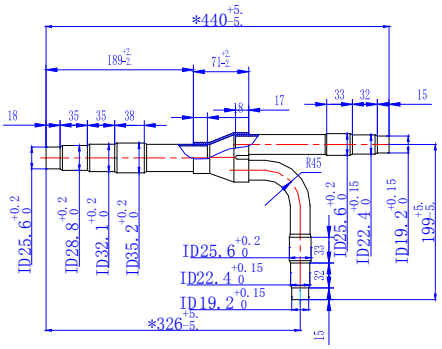
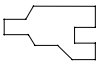
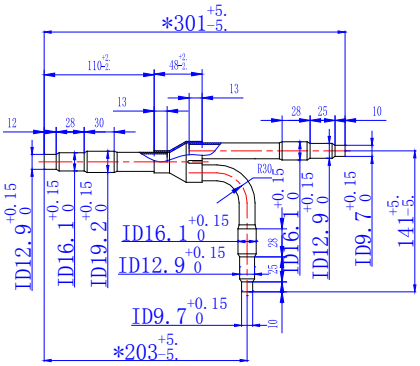
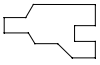
2-pipe systerm

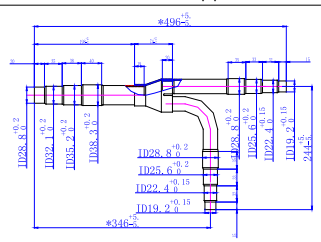
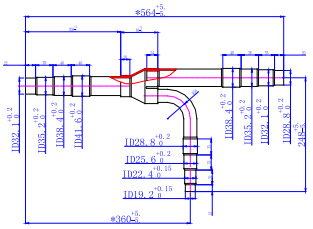
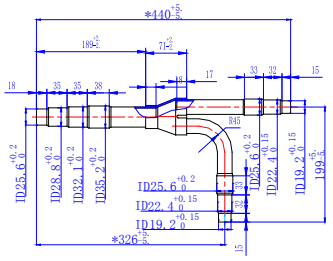
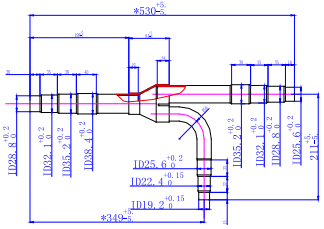
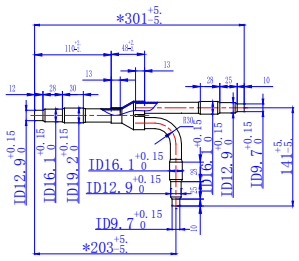
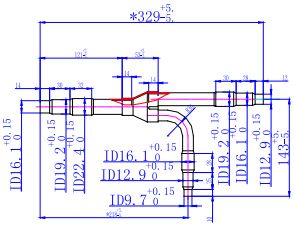
Model	Gas side branch pipe	Liquid side branch pipe	Gas side connection of branch pipe	Liquid side connection of branch pipe
TAU335				
TAU506				
TAU730				

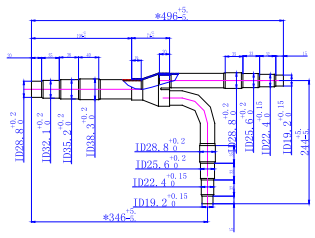
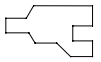
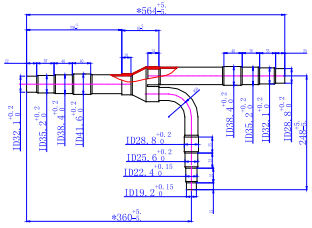
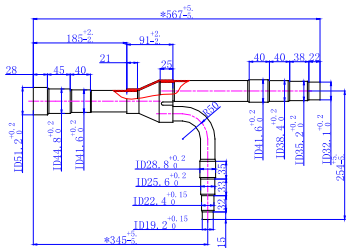
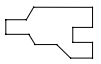
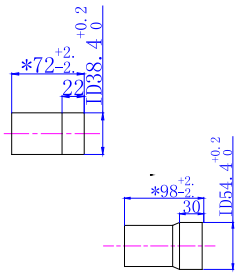
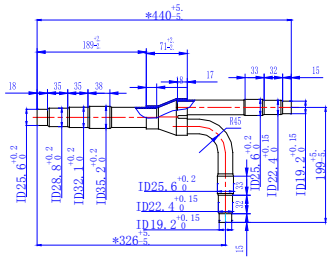
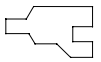
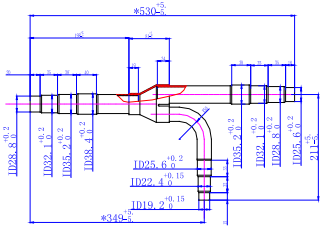
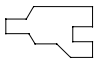
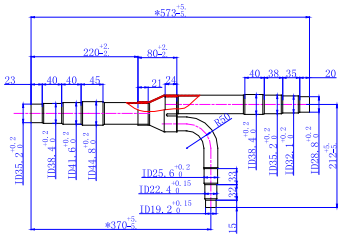
Model	Gas side branch pipe	Liquid side branch pipe	Gas side connection of branch pipe	Liquid side connection of branch pipe
TAU1350				
TAU2040				

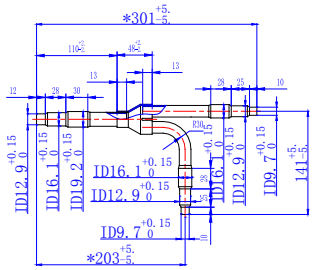
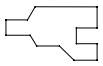
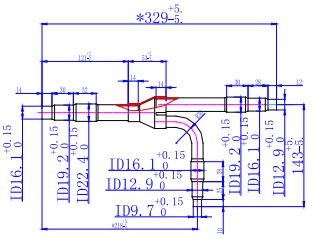
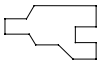
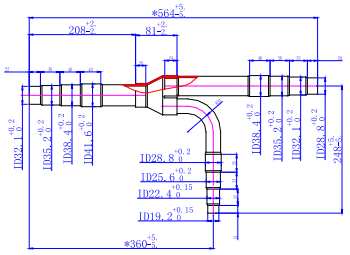
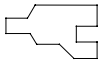
16. Gather pipe dimension

Gather pipe is used for combination of outdoor unit. TBS20HR (for 2 basic modules), TBS30HR (for 3 basic modules),TBS40HR (for 4 basic modules),
Note: Cut off the pipe from its middle when using. Unit: mm, ID: inner diameter, OD: outer diameter

Model	Side	Mark	Manifold pipe	Insulation material	Side	Mark	Connection of manifold pipe
TBS20HR	Suction gas side	A			Suction gas side	1	
	HP gas side	B			HP gas side	2	
	Liquid side	C			Liquid side	3	

Model	Side	Mark	Manifold pipe	Insulation material	Side	Mark	Connection of manifold pipe
TBS30HR	Suction gas side	D			Suction gas side	4	
		E				5	
	HP gas side	F			HP gas side	6	
		G				7	
	Liquid side	H			Liquid side	8	
		I				9	

Model	Side	Mark	Manifold pipe	Insulation material	Side	Mark	Connection of manifold pipe
TBS40HR	Suction gas side	J			Suction gas side	10	
		K				11	
		L				12	
	HP gas side	M			HP gas side	13	
		N				14	
		O				15	

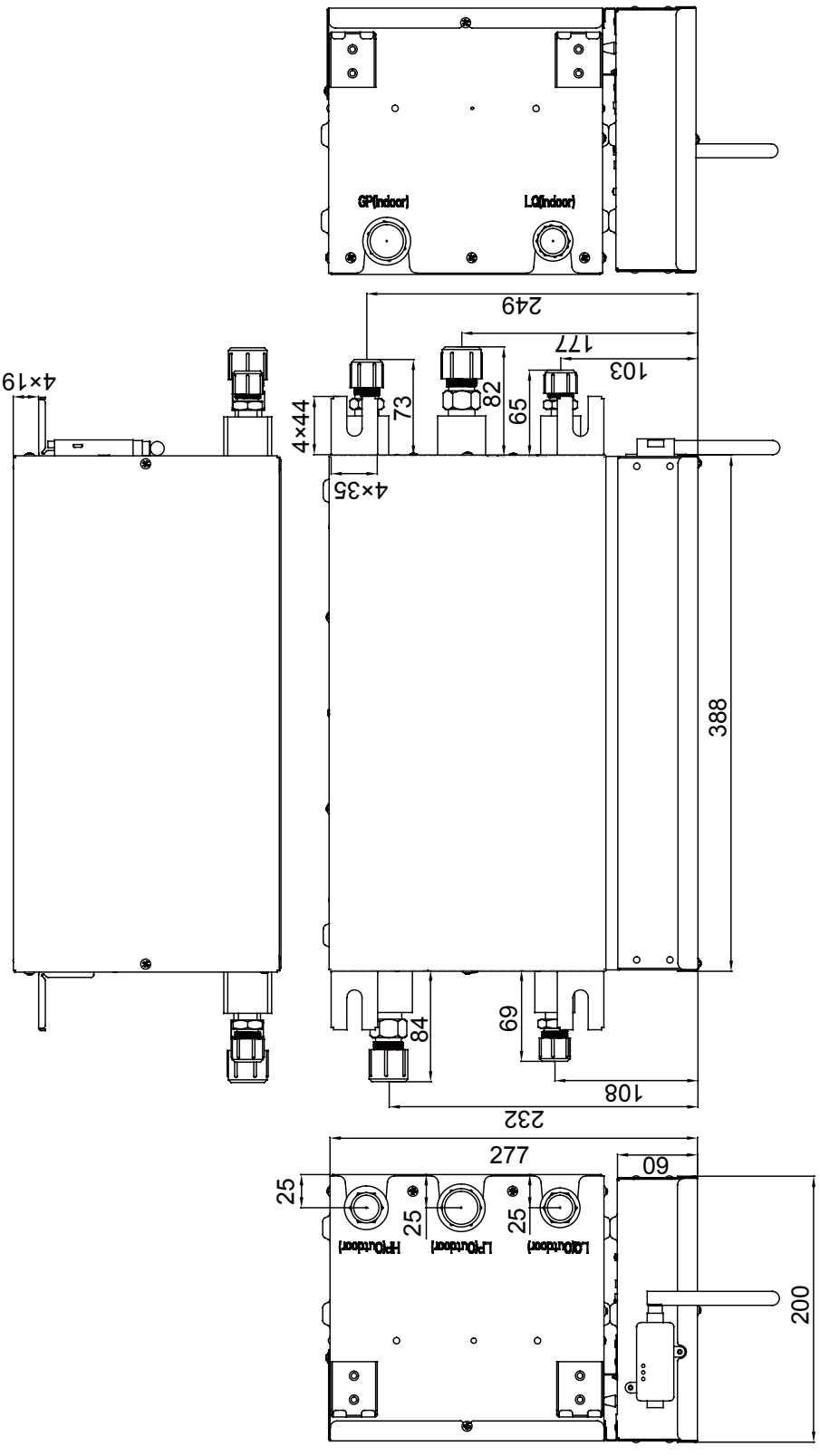
Model	Side	Mark	Manifold pipe	Insulation material	Side	Mark	Connection of manifold pipe
TBS40HR	Liquid side	P			Liquid side	16	
		Q				17	
		R				18	

Part 2 . One by one valve box

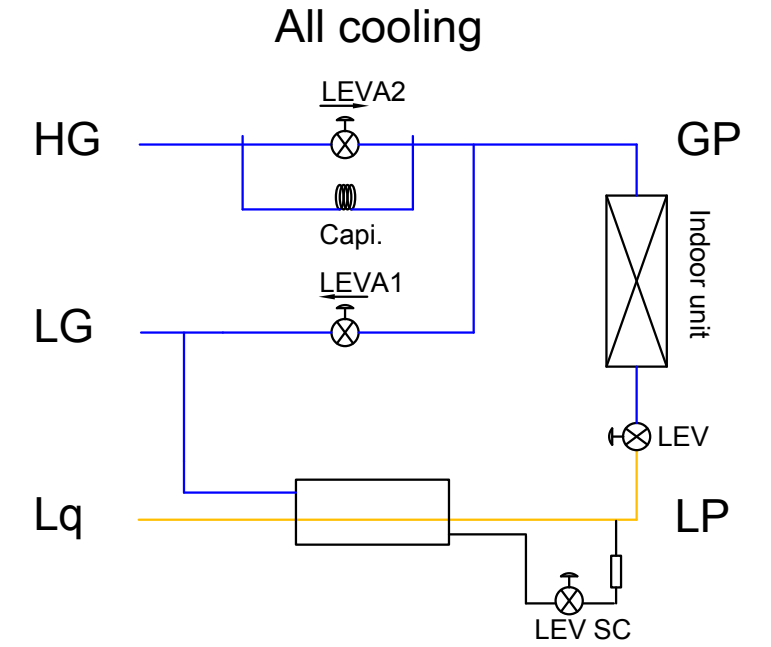
1. Specification

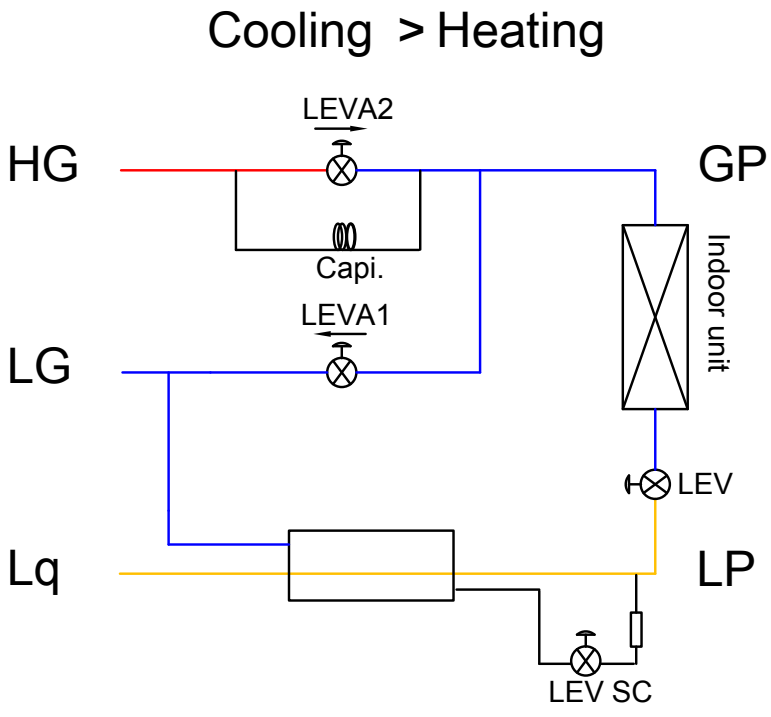
Model		KIT VVEA HR < 11,2	KIT VVEA HR < 18	KIT VVEA HR < 28
Power Supply		1/220-230/50/60		
Max. Number of branch lines		1	1	1
Branching Number of Connectable Indoor Units		5	8	8
Total Number of Connectable Indoor Units		5	8	8
Branching Capacity of Connectable Indoor Units	kW	x≤11.2	11.2<x≤18	18<x≤28
Total Capacity of Connectable Indoor Units	kW	x≤11.2	11.2<x≤18	18<x≤28
Net Dimension (W×H×D)	(mm×mm×mm)	388×200×275	388×200×275	388×200×275
Shipping Dimension (W×H×D)	(mm×mm×mm	608×271×340	608×271×340	608×271×340
Net/Gross weight	kg	8.6/10.8	8.6/10.9	9.3/12.0
Liquid Pipe-Connect To Outdoor Unit	mm	9.52	9.52	9.52
Gas Pipe-Connect To Outdoor Unit	mm	15.88	15.88	22.22
High Pressure Gas Pipe-Connect To Outdoor Unit	mm	12.7	15.88	19.05
Liquid Pipe-Connect To Indoor Unit	mm	9.52	9.52	9.52
Gas Pipe-Connect To Indoor Unit	mm	15.88	15.88	22.22

2. Dimension

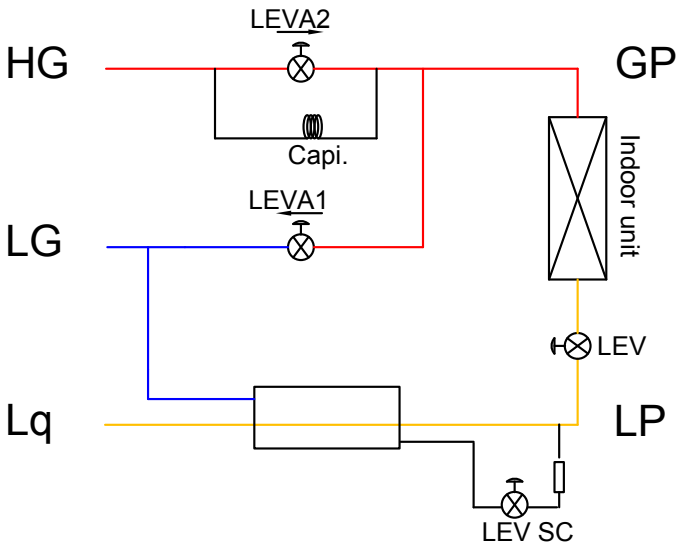

GP(Indoor)
LQ(Indoor)
249
177
103
4×19
4×44
73
82
65
4×35
388
84
69
108
232
277
60
25
25
25
200

3. Piping diagram

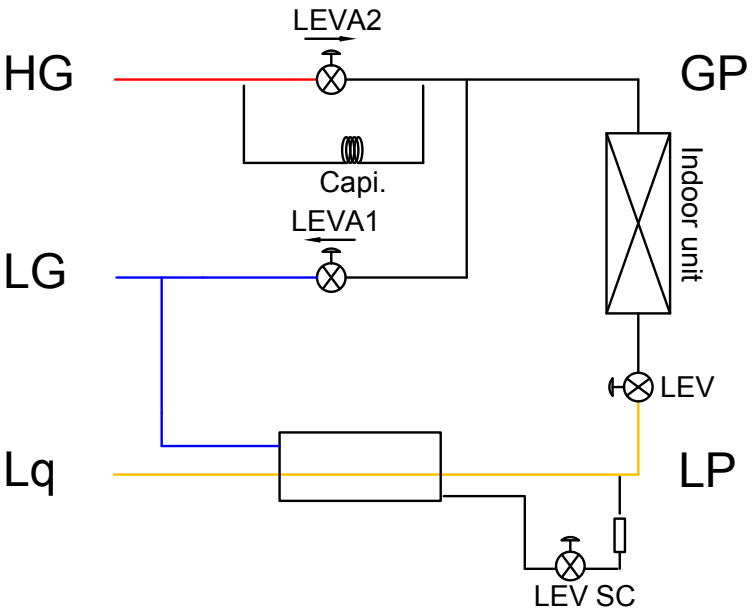




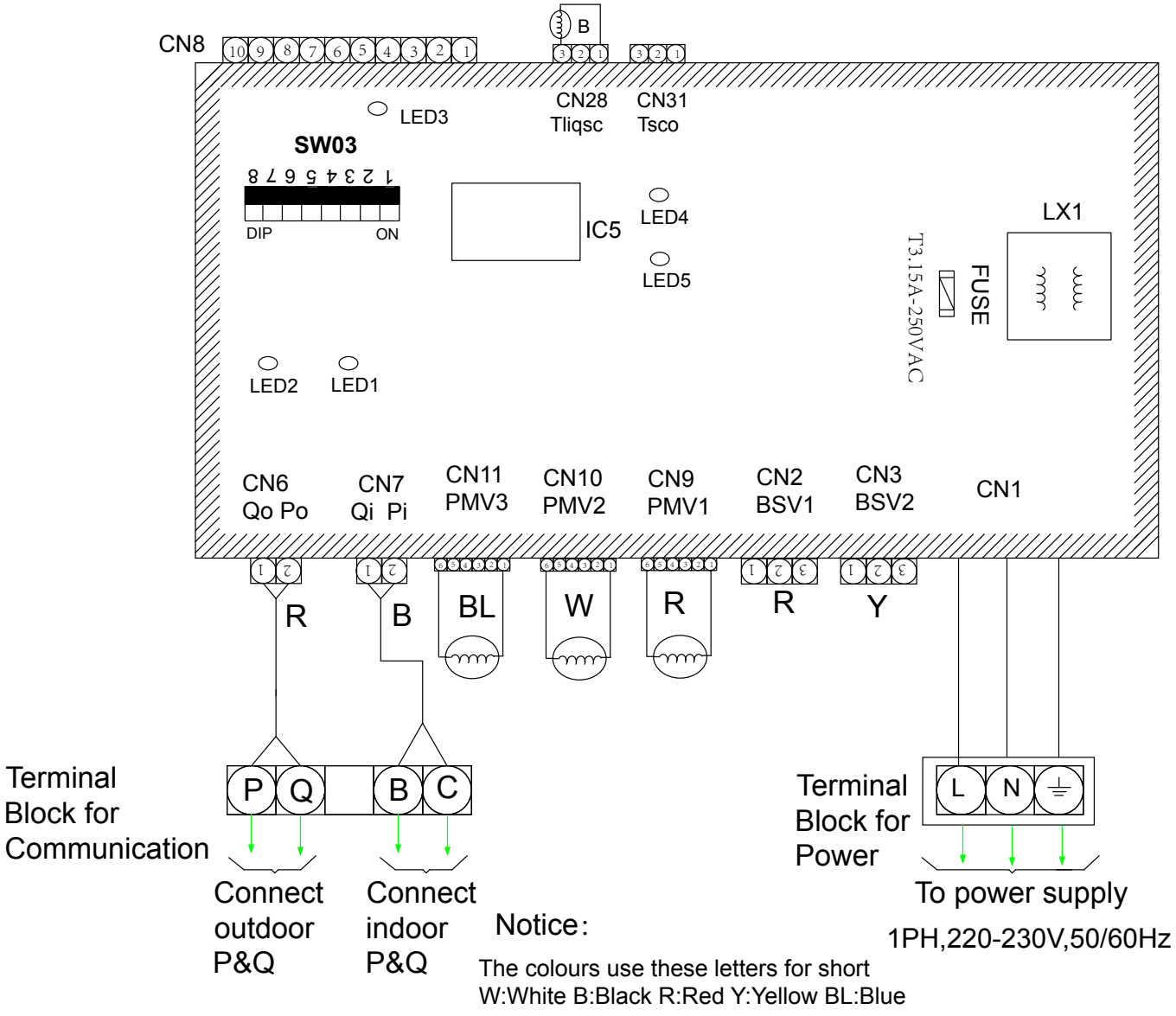
All heating / Heating > Cooling / Heating standby



Cooling OFF



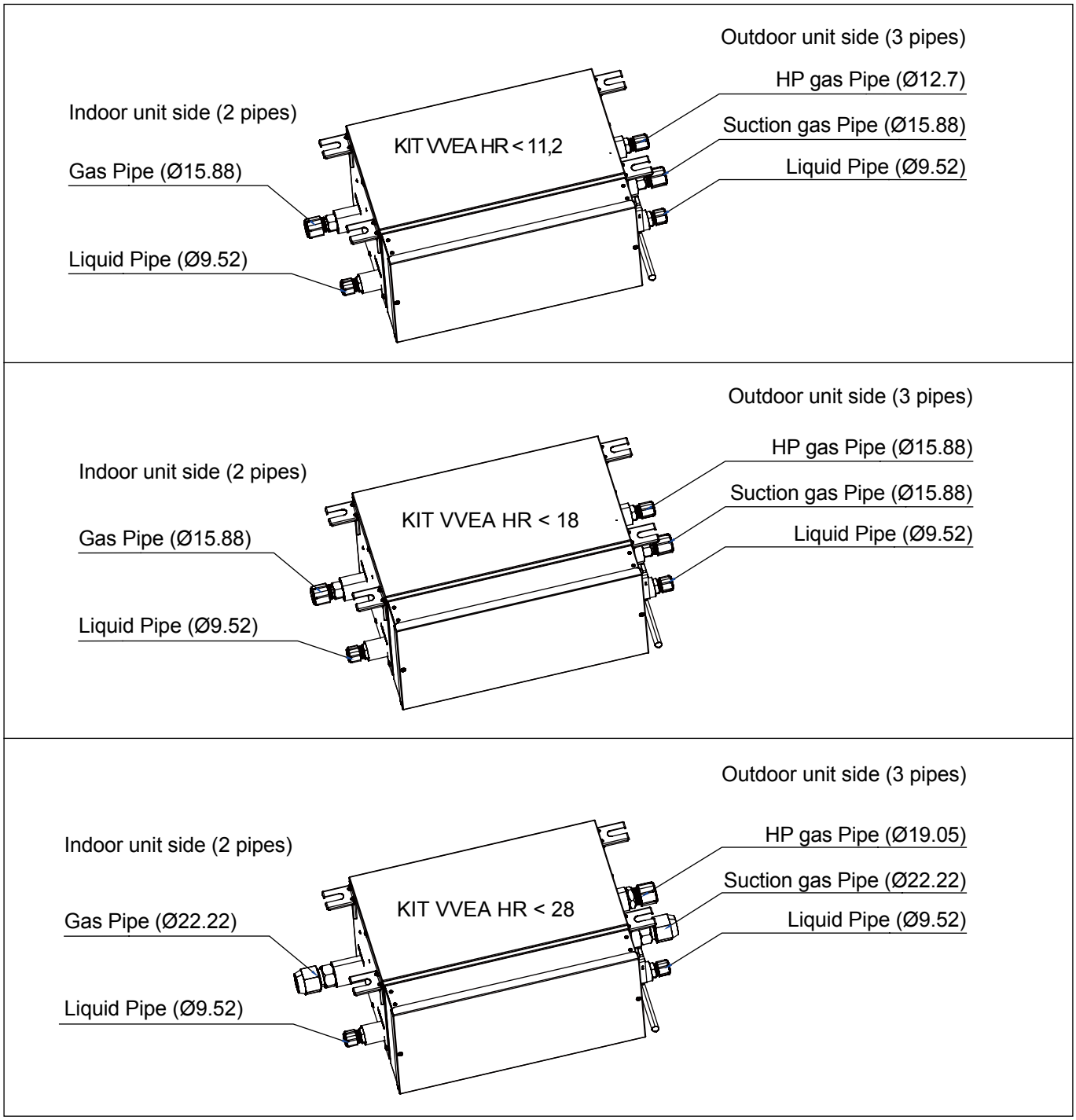
4. Wiring diagram



Notice:

The colours use these letters for short
W:White B:Black R:Red Y:Yellow BL:Blue

5. Installation



- If the valve box is transferred to a new user, this manual shall be transferred to the user, together with the conditioner.
- Before installation, be sure to read Safety Considerations in this manual for proper installation.
- The safety considerations stated below is divided into "⚠Warning" and "⚠ Attention". The matters on severe accidents caused from wrong installation, which is likely to lead to death or serious injury, are listed in "⚠ Warning". However, the matters listed in "⚠ Attention" are also likely cause the severe accidents. In general, both of them are the important items related to the security, which should be strictly abided by.
- After the installation, perform test run to make sure everything is in normal conditions, and then operate and maintain the valve box in accordance with the user manual. The user manual should be delivered to the user for proper keeping.

⚠Warning

- Please ask the special maintenance station for installation and repair. Water leakage, electric shocks or fire accidents might be caused from improper installation if you conduct the installation by your own.
- The installation should be conducted properly according to this manual. Water leakage, electric shocks or fire accidents might be caused from improper installation.
- Please make sure to install the valve box on the place where can bear the weight of the valve box. The valve box can't be installed on the grids such as the non-special metal burglar-proof net. The place with insufficient support strength might cause the dropdown of the machine, which may lead to personal injuries.
- The installation should be ensured against typhoons and earthquakes, etc. The installation unconformable to the requirements will lead to accidents due to the turnover of the machine.
- Specific cables should be used for reliable connections of the wirings. Please fix the terminal connections reliably to avoid the outside force applied on the cables from being impressed on the cables. Improper connections and fixings might lead to such accidents as heating or fire accidents.
- Correct shapes of wirings should be kept while the embossed shape is not allowed. The wirings should be reliably connected to avoid the cover and the plate of the electrical cabinet clipping the wiring. Improper installation might cause such accidents as heating or fire accidents.
- While placing or reinstalling the valve box, except the specific refrigerant (R410A), don't let the air go into the refrigeration cycle system. The air in the refrigeration cycle system might lead to the cracking or personal injuries due to abnormal high pressure of the refrigeration cycle system.
- During installation, please use the accompanied spare parts or specific parts. If not, water leakage, electric shocks, fire accidents or refrigerant leakage might be caused.
- During installation, if refrigerant leakage occurs, ventilation measures should be taken, for the refrigerant gas might generate harmful gases upon contacting the flame.
- After installation, check if any refrigerant leakage exists. If the refrigerant gas leaks in the room, such things as air blowing heaters and stoves, etc. may generate harmful gases.
- Don't install the valve box at the places where the flammable gases may leak. In case the gas leakage occurs around the machine, such accidents as fire disasters may be caused.
- The refrigerant gas pipe, HP gas pipe and liquid pipe should be heat insulated to preserve heat. For inappropriate heat insulation, the water caused from the condensation will drop to get the article at home wet.
- The electrical construction shall be implemented by the correspondingly qualified personnel in accordance with electrical construction standards, local electrical laws as well as specifications. Moreover, dedicated circuit must be used, rather than the wire pin. Insufficient capacity of the wire circuit and unprepared construction (if any) may cause electric shock, fires, etc.
- During the process of grounding, the ground wire cannot be connected to the gas pipe, water pipe, lightning rod and ground wire of the telephone. Incomplete grounding may cause electric shock, fires, etc.
- Install residual-current circuit breaker, or electric shock, fires, etc. will occur.
- When contacting electrical components, ensure they are powered off. Contacting the live part may result in the danger of electric shock.
- If there is leakage of the refrigerant gas flow during operation, refrigerant gas is required. If the refrigerant gas contacts any fire, poisonous gases will be produced.

- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
- This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.
- We recommend that the appliances be installed properly by qualified installation technicians in accordance with the installation instructions provided with the unit.

⚠ Attention

- The valve box should be effectively grounded. Electric shocks may occur if the valve box is ungrounded or inappropriately grounded. The wire for earthing shouldn't be connected to the connections on the gas pipe, water pipe, lightning rod or telephone.
- The breaker for electricity leakage should be mounted. If not, accidents such as electric shocks may happen.
- The installed valve box should be checked for electricity leakage by being powered.
- After installation, all cassette concealed valve boxes should be trial-tested. After the proper operation of the machine, other fitments can be made.
- When installing the valve box, please fix the box and connecting pipes in an efficient way to avoid shaking when changing valve box.
- If the ambient humidity bigger than 80%, when the water discharge hole be blocked or the filter becomes dirty, or airflow speed change, there maybe leads to condensing water drop down, and at the same time there maybe some drops of water spit out.
- Keep the valve box, power supply wiring, conductor, etc. at least 1 m away from the TV and radio to avoid image interference and noise. However, sometimes there is still noise when the distance is over 1 m due to the different states of radio waves.
- Try to install valve box where the fluorescent lamp is far away.
- When wireless devices are being installed, the distance that the signal from the controller will reach may be shortened in a room with a fluorescent lamp that is turned on in an electric way (frequency conversion or rapid start).
- Please install the valve box in places where noise will not influence the customers too much (such as washroom, passageway, warehouse, equipment room, etc.). Places with high requirement for quiet are not suggested for installation, such as bedroom, drawing room, meeting room, office, etc.
- When starting up, stop, defrosting, and oil-returning in heating mode, the electronic expansion valve will switch and cause noise. This kind of noise is normal for the switching of valve box.

⃠ Prohibitions

- Do not use components other than the fuse of proper capacity, such as metal wire and copper wire, which will cause fires and other faults if used instead of the fuse.
- When doing the cleaning and maintenance, make sure that the operation has been stopped and the manual power switch is in the off position.
- Do not use appliances such as water heater near the valve box. Using appliances producing steam near the valve box may lead to accidents such as water leakage, electric leakage and short circuit when the cooling system is in operation.
- Two-generation valve boxes VP1-*A and VP1-*B can't be mixed used in one system.

Do not install at such places

1. A place that is filled with mineral oil, a kitchen which has oil and steam everywhere, etc., which may cause degradation, falling off and water leakage of the resinous components.
2. A place with corrosive gases such as sulphurous acid gas, which will lead to the corrosion of the copper tube, welding joint, etc., causing refrigerant leakage.
3. A place where machines give out electromagnetic waves, which will lead to abnormality and improper function of the control system.
4. A place with possible leakage of combustible gases, floating of carbon fiber and combustible dust and use of volatile combustible substances such as diluents, the accumulation of which around the machine set will lead to fires.
5. A place where small animals inhabit, whose contacting the inner electrical components may cause faults, smoking, outbreak of a fire, etc.
6. A coastal place with high salinity and a place with great variation in voltage such as a factory, which may cause faults to vehicles and ships.

Attention item

Install after making sure that the type of the refrigerant used is R410A. If any other type of refrigerant is used, the machine cannot run.

- Before and after the unpacking, if valve box is to be moved, the hoisting handles (totally 4) shall be held firmly. Do not apply force to other parts, especially a refrigerant tube and an electrical cabinet.
- Concerning the installation of the outdoor and indoor units, refer to the installation specification of each unit.

Accessories

Confirm that the accessories below are packed together.

KIT VWEA HR<112	Auxiliary pipe			Wiring harness		Insulation tube			Nut	Specification
Quantity	1	1	1	6	9	2	1	2	5	1
Shape	①-1 Ø6.5 Ø9.52	①-2 Ø9.7 Ø15.88	①-3 Ø12.9 Ø15.88			 Ø9.52	 Ø12.7	 Ø15.88		

KIT VWEA HR<18	Auxiliary pipe		Wiring harness		Insulation tube		Nut	Specification
Quantity	1	2	6	9	2	3	4	1
Shape	①-1 Ø12.9 Ø15.88	①-2 Ø19.2 Ø15.88			 Ø9.52	 Ø15.88		

KIT VWEA HR<28	Auxiliary pipe				Wiring harness		Insulation tube			Nut	Specification
Quantity	2	2	1	1	6	9	2	2	1	3	1
Shape	①-1 Ø19.2 Ø22.22	①-2 Ø22.4 Ø22.22	①-3 Ø16.1 Ø19.05				 Ø9.52	 Ø22.22	 Ø19.05		

<Entrustment> Before the installation is completed, do not abandon the accessories needed in installation.

Combinations

- This series is cooling and heating heat recovery models. Only when the system is equipped with valve box, indoor units under different valve boxes can achieve cooling and heating simultaneously. The modes of the indoors which under the same valve box should be the same. If the indoors connected without valve box, the indoors only can do cooling mode. Do not connect the valve box to the common multi-split system, as the former is dedicated to the cooling & heating multi-split system.
- Concerning the model of the connectible indoor unit, see the sample brochure, etc. for confirmation.
- Concerning the total capacity of the indoor unit connected at the downstream of the valve box (the total selected capacity of the models), select in Table 1 according to the quantity (refer to Table 2 for the selected capacity of the model of each indoor unit)

Table1: Total capacity of indoor unit:

Valve box	Total capacity of indoor unit (kW)	Quantity of indoor unit
KIT VWEA HR<11.2	Less than 11.2	Less than 5
KIT VWEA HR<18	11.2~18.0	Less than 8
KIT VWEA HR<28	18.0~28.0	Less than 8

Table 2: Capacity measure and selected capacity of the model of indoor unit

Capacity measure	07K	09K	12K	16K	18K	24K	28K	30K	38K	48K	72K	96K
selected capacity (kW)	2.2	2.8	3.6	4.5	5.6	7.0	8.0	9.0	11.2	14.0	22.6	28

Do not connect the fresh air unit to this system.<Selected example> one 7K,

two 18K, upon connection:Total capacity of indoor units =2.2 kW+5.6 kW×2=13.4 kW ⇨ Select KIT VWEA HR<18

Inspection item

Pay much attention to the following during installation. Check them again after completion.

(1) Inspection items after installation

Inspection item	Defect	Inspection column
If the installation of valve box is secure ?	Falling off, vibration and noise	
If gas leakage inspection is completed ?	No heating/cooling	
If complete insulation is achieved (refrigerant piping and tubing connections) ?	Water leakage	
If the voltage of the power supply is consistent with that on the nameplate ?	Out of service, burnt	
If there is improper wiring or piping ?	Out of service, burnt	
If there is construction without grounding ?	Danger in electric leakage	
If the thickness of the wire is as specified ?	Out of service, burnt	

(2) Inspection upon delivery

Inspection item	Inspection column
If the electric box cover is installed	
If the installation specification is transferred to the customer	

1. Pre-installation

The installation location selected shall meet the following conditions and be approved by users.

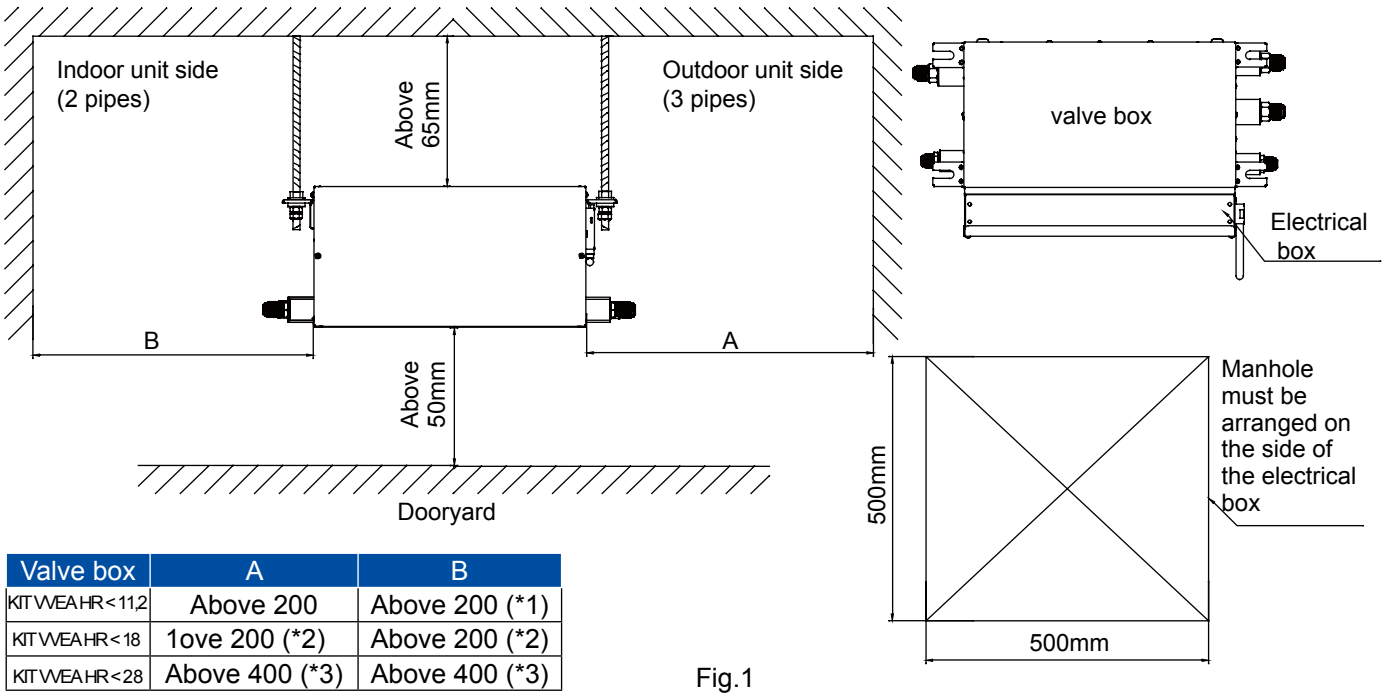
- The strength shall be sufficient to withstand the weight of the valve box
- There is no significant tilt on the plane.
- Ensure that there is enough space for installation and maintenance.as show in Fig.1
- There is space for inspection on the side and top of the electric box
- The length of piping between the indoor and outdoor units shall be within the permissible range (referring to the specification attached to the outdoor unit).
- Please install the valve box in places where noise will not influence the customers too much (such as washroom, passageway, warehouse, equipment room, etc.). Places with high requirement for quiet are not suggested for installation, such as bedroom, drawing room, meeting room, office, etc.

Note:

- the electrical box can be changed as show in 3 valve box installation.
- When starting up, stop, defrosting, and oil-returning in heating mode , the electronic expansion valve will veer and create noise. This kind of noise is normal for the running of valve box.
- A noise may be emitted by the valve box as aresult of control during operation or stopping of an indoor unit. If it is installed in the ceiling where it is exposed, take adequate precautions with the installation location.

<Notice item>

- Inspect whether the installation location can sufficiently withstand the weight of valve box and set the hoisting bolts by reinforcing the beam if necessary. Use hoisting bolts in installation (referring to 2 for the preparation before installation).
- Install the power wiring and power line of the valve box at more than 1 m away from TV and radio to prevent the image clutter and noise. But, there may be noise even if it is more than 1 m according to the different waves.



Valve box	A	B
KITVWEAHR<11,2	Above 200	Above 200 (*1)
KITVWEAHR<18	1ove 200 (*2)	Above 200 (*2)
KITVWEAHR<28	Above 400 (*3)	Above 400 (*3)

Fig.1

(*1) Ensure the maintenance area with more than 250 mm when the auxiliary pipe ①-1,①-2,①-3 on page 4 is used.
(*2) Ensure the maintenance area with more than 400 mm when the auxiliary pipe ①-1,①-2 on page 4 is used.
(*3) Ensure the maintenance area with more than 500 mm when the auxiliary pipe ①-2,①-3 on page 4 is used.

2. Preparation before installation

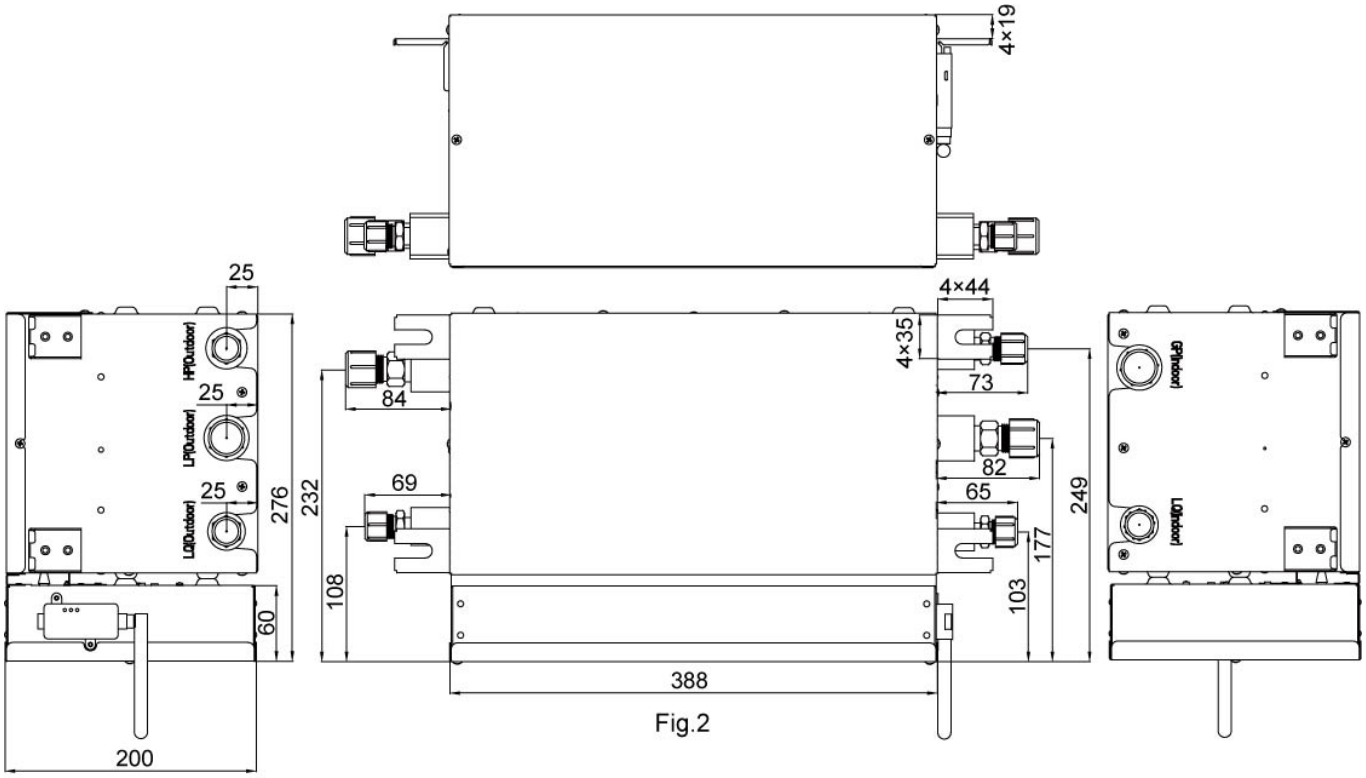


Fig.2

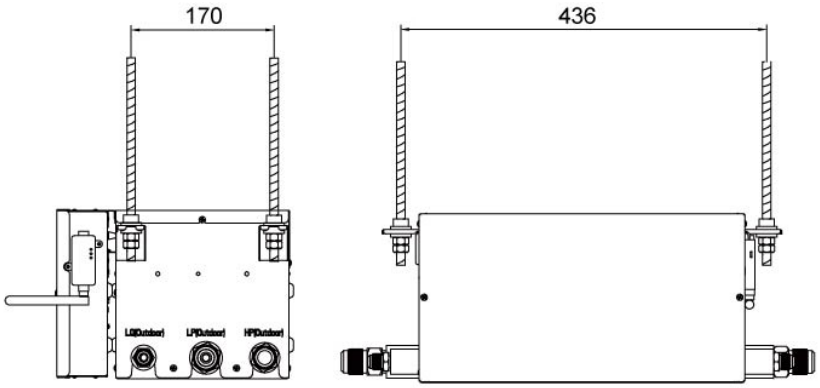


Fig.3 Pitch of lifting bolts

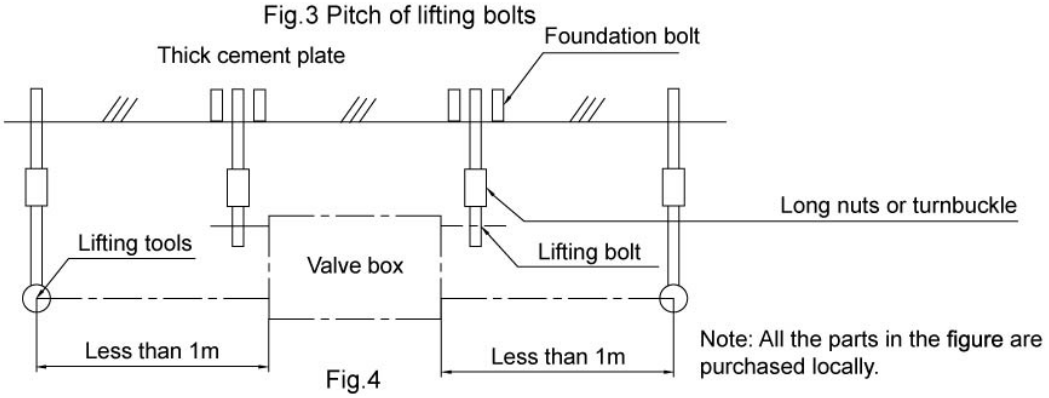


Fig.4

Note: All the parts in the figure are purchased locally.

3. Installation of valve box

Use parts and components specified for installing the installation components.

(1) Change the installation direction of electric box according to requirements following the steps below; (see Fig.1)

① Remove the cover of the electrical appliance box; (2 screws)
② Remove the electrical appliance box; (4 screws)
③ Remove the top plate; (4 screws)
④ Change the outgoing direction of wiring (electronic expansion valve coil) between the equipment and the electrical appliance box;
⑤ Rotate 180° to install the top plate;
⑥ Install the electrical appliance box;
⑦ Install the cover of the electrical appliance box.

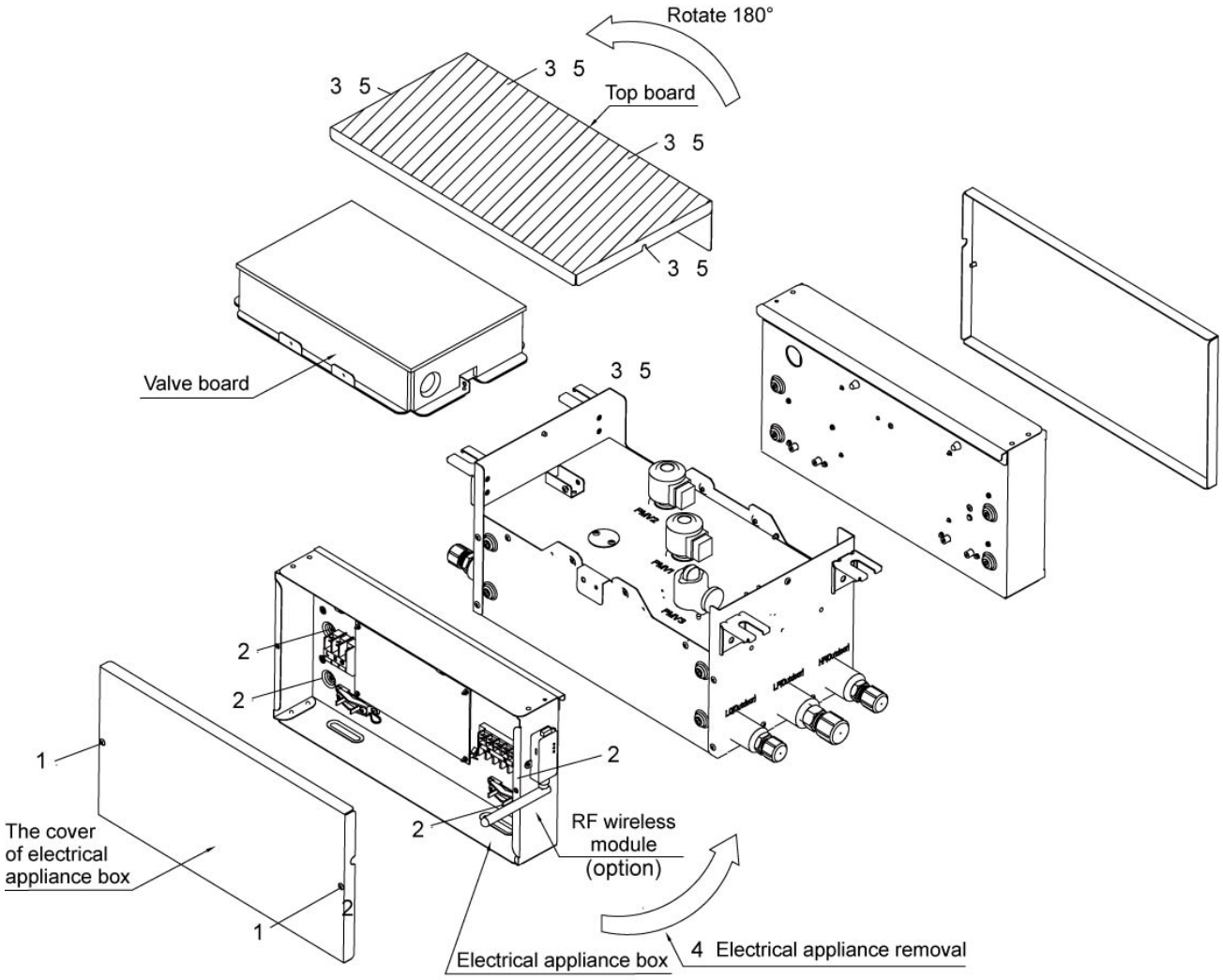


Fig.5

Install the lifting tools on the lifting bolts according to the instruction of the Fig.6
Be sure to follow the stipulations on products locally purchased to use nuts (M8 or M10 of 3 pieces for 4 positions) and gaskets (M8 with the outer diameter of 24~28 mm and M10 with that of 30~34 mm of 2 pieces for 4 positions) on the upper and lower sides of the lifting tools.

<Note>
Be sure that the product must be installed with the top surface (the oblique surface in the Fig.5) upward, or it will not work well and increase the working noise.

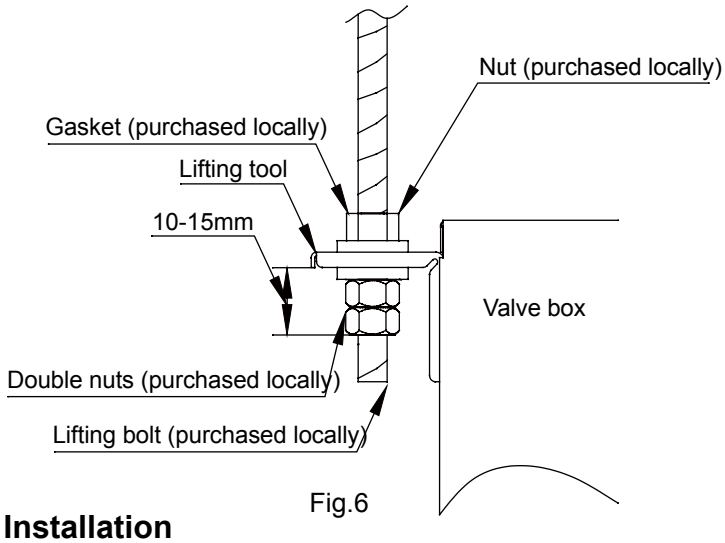


Fig.6

4. Refrigerant pipe Installation

- Pipes between the outdoor unit and valve box, selection of refrigerant branching suite, and the Pipe between refrigerant branching suites and the indoor units, please refer to the installation instructions or equipment design data attached to the outdoor unit.
- Before Installation, make sure the type of the refrigerant to be used is R410A. (If a refrigerant other than this type is used, It cannot run properly)
- Please provide thermal insulation at the high-pressure gas pipe, suction gas pipe,, liquid pipe and oil equalizing pipe (pipes for outdoor units in case of multi-split system) and the connections between these pipes. In the absence of thermal insulation, liquid leakage and scalding may happen. Particularly when the high-pressure gas pipe delivers indrawn air under full-refrigeration condition, it needs the same thermal insulation as does the suction gas pipe. Besides, high-pressure gas pipe and suction gas pipe are to deliver high-pressure gas, thus please provide thermal insulation material that can sustain temperature over 120 °C.
- Enhance the thermal insulation material based on the installation environment. The indicators are shown below.
  For RH75%–80% at 30°C: over 15 mm thick.
  For over 80% at 30°C: over 20 mm thick.
  If not reinforced, the thermal insulation material surface is prone to condensation. Please refer to the equipment design data for further details.
- The high-pressure gas pipe, suction gas pipe, liquid pipe must be provided with reliable thermal insulation. In the absence of thermal insulation, liquid leakage may happen.
- The outdoor unit is already filled with refrigerant.
- To connect the pipes to valve box or remove them from valve box, do use both spanner and torque wrench, as shown in the Fig.7.
- Apply refrigerant oil to inside and outside of the flare. Screw it for 3 to 4 rounds with hands and then tighten it.
- Determine the tightening torque. (Excessive tightening may damage the nuts and hence cause leakage)
- Check the connecting pipes for gas leakage and then fix the thermal insulation, as shown in the Fig.8
- Only use sealing gasket to wrap the part jointing between the gas pipe and thermal insulation.
- For pipe cutter and flare tool, please use R410A special tools.

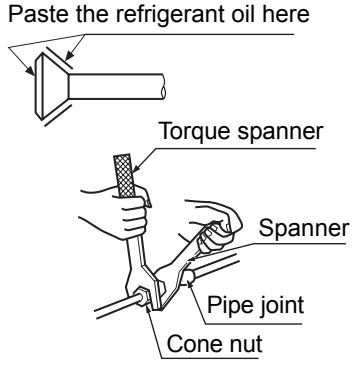


Fig.7

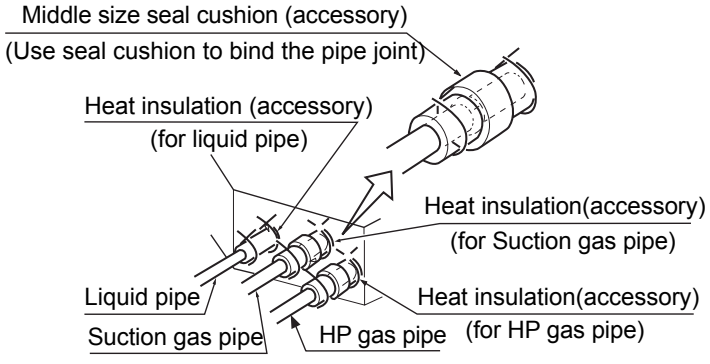


Fig.8

<Notes>
- Please do not let any type of gas other than the specified refrigerant go into the refrigeration system;
- In case of refrigerant leakage during operation, please replace the gas. (Fill the refrigerant at the outdoor unit)

Select piping material

- Make sure both the internal surface and external surface of the pipes are intact and are free from harmful contaminants such as sulphur, oxide, foreign matter, cutting powder, grease and water.
- Please use the following materials for refrigerant pipe.

Pipe material		Phosphorized copper seamless pipe for air conditioner (TP2)		
Model		KIT VVEA HR < 11,2	KIT VVEA HR < 18	KIT VVEA HR < 28
Function	High pressure gas pipe	Ø12.7	Ø15.88	Ø19.05
	Suction gas pipe	Ø15.88	Ø15.88	Ø22.22
	Liquid pipe (outdoor side)	Ø9.52	Ø9.52	Ø9.52
	Gas pipe (indoor side)	Ø15.88	Ø15.88	Ø22.22
	Liquid pipe (indoor side)	Ø9.52	Ø9.52	Ø9.52

Wall thickness and size: select proper sizes according to Selection of piping dimensions
- For the permissible maximum length, permissible elevation difference and permissible length after branching, please refer to the installation instructions or technical data attached to the outdoor unit.
- The branching pipe for the pipe must have refrigerant branching suite. For selection of refrigerant branching suite, please refer to the installation instructions or technical data attached to the outdoor unit.

Piping maintenance

During installation, provide maintenance as specified in the table in order to prevent water, foreign matter and dust from entering the pipes.

Location	Work period	Maintenance method
Outdoors	More than 1 month	Screw
	Less than 1 month	Screw or strap
Indoors	——	

Note
Particularly when a pipe is to penetrate through a wall or extend to outdoors, make sure foreign matter and dust etc cannot enter the pipe.

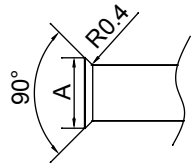
Attention item for piping connection

- To connect a pipe to or remove it from the valve box, do use pliers for screws and torque spanner;
- When installing the valve box, please fix the box and connecting pipes in an efficient way to avoid shaking when changing valve box.
- For the sizes of the flares, please refer to <Table-3>.

<Note>
- For connection at a flare, apply ester or ether oil to the flare (both inner surface and outer surface). Apply such oil for 3 to 4 times and insert the screw in the first use (Refer to Fig.9).
- The tightening torque for the flare is given in <Table-3>.

If no torque wrench is available, act as the follows.
① Use a spanner to tighten the nut of the flare to a position where the tightening torque sharply increases.
② The tightening angle for the position where the tightening torque sharply increases <Table -4>.
③ After the work, make sure there is no air leakage.

<Table-3>

Tube size	Tightening torque (N.m)	Machined flare size A (mm)	Flare shape
Ø6.35	14.2~17.2	8.7~9.1	
Ø9.52	32.7~39.9	12.8~13.2	
Ø12.7	49.5~60.3	16.2~16.6	
Ø15.88	61.8~75.4	19.3~19.7	
Ø19.05	97.2~118.8	23.7—23.9	
Ø22.22	117.2~138.8	28.2-28.5	

<Table-4>

Pipe size	Tightening angle	Recommended tool length (mm)
Ø6.35	60°~90°	150
Ø9.52	60°~90°	200
Ø12.7	30°~60°	250
Ø15.88	30°~60°	300
Ø19.05	20°~35°	450
Ø22.22	15°~30°	600

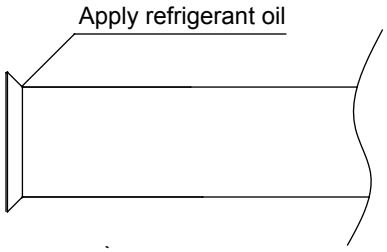


Fig.9

<Note>

- Excessive tightening will result in cracking at the flare and refrigerant leakage.
- To weld the refrigerant pipe, please make nitrogen replacement (*1), or send nitrogen (*2) into the refrigerant pipe while welding the pipe (refer to Fig.9). Finally use the flare or flange to connect the indoor unit and valve box.
  (*1) Nitrogen replacement method is provided in the multi-split system work manual.
  (*2) If nitrogen flowing and welding proceed simultaneously, do use pressure reducing valve. Approximately 0.02 MPa (0.2 Kg/cm with a slight feeling of breeze) pressure is quite proper.

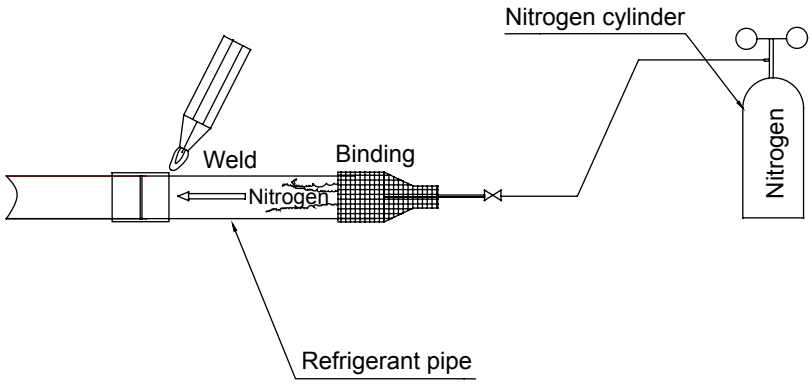


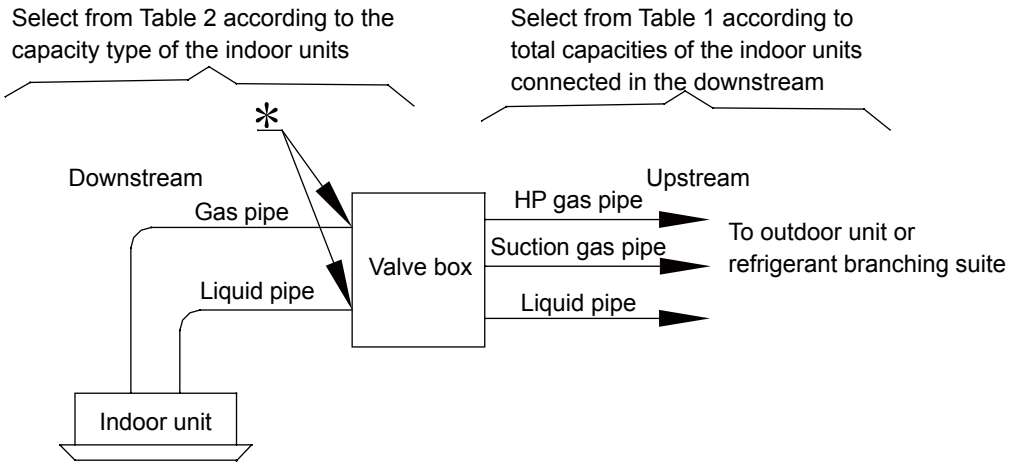
Fig.10

<Note>
- For pipe welding, do not use antioxidant, for its residue may cause tube blocking and component fault.
- For pipe welding, do not use flux. If the flux is chlorine product, it will corrode the tube; if it contains fluorine, it will even cause detrimental effects to the refrigerant system, such as refrigerant oil deterioration. Please do not use phosphor copper for welding material (BCup-2).

Selection of piping dimensions

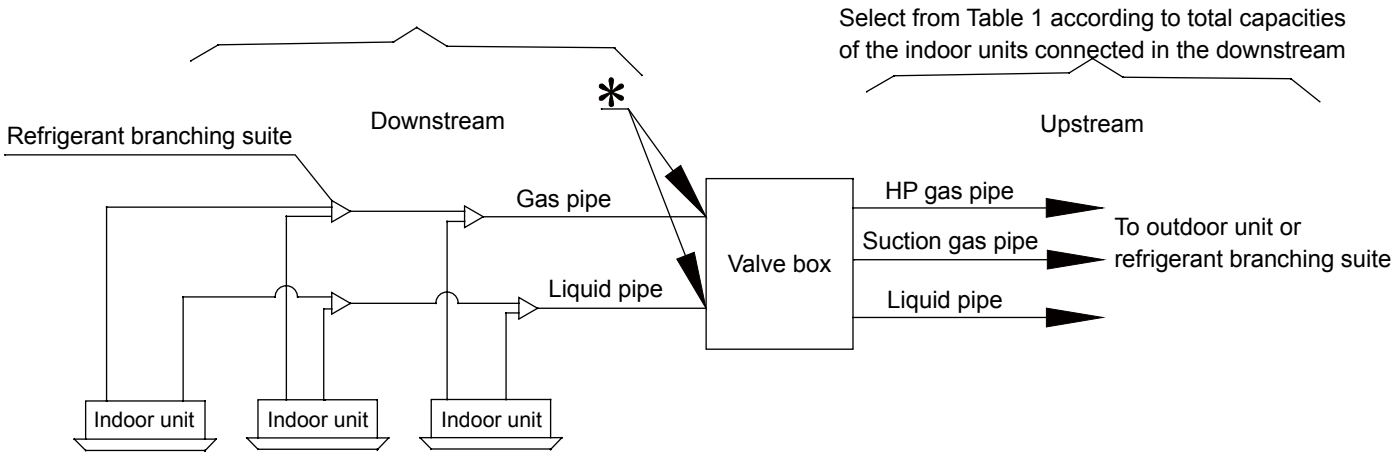
Select refrigerant branching dimensions between outdoor units and valve box, between valve box and indoor units according to the following connection examples 1 and 2 and Tables 5-7.

Connection example 1: Connect an indoor unit to the downstream of the valve box



Connection example 2: with branching in the downstream of the valve box

Select pipe dimensions of the refrigerant branching suite and its components in the indoor unit according to the specifications or technical data provided together with the outdoor unit.



(*) For dimensions of the pipes to the downstream of the valve box, see the table 3. Use the attached pipes for connection in the way shown in Pipe connection according to the pipes dimensions and diameters for indoor unit connection selected in Table 2.

<Table 5> Total capacity and pipe dimensions (mm) of the indoor units

Total capacity of the indoor units Q (kW)	Pipe dimensions (OD × minimum wall thickness)				
	Upstream			Downstream	
	Suction gas pipe	High pressure gas pipe	Liquid pipe	Gas pipe	Liquid pipe
Q<16.8	Ø15.88×1.0	Ø12.7×1.0	Ø9.52×0.8	Ø15.88×1.0	Ø9.52×0.8
16.8≤Q<22.4	Ø19.05×1.0	Ø15.88×1.0		Ø19.05×1.0	
22.4≤Q<28.0	Ø22.22×1.2	Ø19.05×1.0		Ø22.22×1.2	

<Table 6> Dimensions (mm) of connection tube of the indoor units

Total capacity type of the indoor units (×100W)	Pipe dimensions (OD × minimum wall thickness)	
	Gas pipe	Liquid pipe
22, 28	Ø9.52×0.8	Ø6.35×0.8
36, 45, 56	Ø12.7×0.8	Ø6.35×0.8
71, 80, 90, 112, 140	Ø15.88×1.0	Ø9.52×0.8
226	Ø25.4×1.2	
280	Ø25.4×1.2	

Note:
7K/9K, 12K/16K gas pipe/liquid pipe: Ø12.7/Ø6.35
18K, 24K gas pipe/liquid pipe: Ø15.88/Ø9.52

<Table 7> Dimensions (mm) of connection pipe of the vale box

Type of valve box for switch between cooling and heating	Pipe dimensions (OD × minimum wall thickness)				
	High pressure gas pipe	Suction gas pipe	Liquid pipe at the outdoor unit side	Gas pipe of the indoor unit	Liquid pipe at the indoor unit side
112B	Ø12.7×1.0	Ø15.88×1.0	Ø9.52×0.8	Ø15.88×1.0	Ø9.52×0.8
180B	Ø15.88×1.0	Ø15.88×1.0	Ø9.52×0.8	Ø15.88×1.0	Ø9.52×0.8
280B	Ø19.05×1.0	Ø22.22×1.2	Ø9.52×0.8	Ø22.22×1.2	Ø9.52×0.8

Pipe connection

(*1) Refer to the field pipe
(*2) Please use the flare nut installed on the product body again.

Note:
During installation, please confirm the HP gas pipe and Suction gas pipe between outdoor and valve box (such as by sending nitrogen into the HP gas pipe and Suction gas pipe), then connect Suction gas pipe to the Suction gas pipe of valve box, HP gas pipe to the HP gas pipe of valve box.

112B
(Note):
When a 7K, 9K, 22 or 28 indoor unit except for the High wall is connected in the downstream, please use the auxiliary pipe ①-1,2 for connection according to Fig.11.
When a 12K, 16K, 18K, 36, 45 or 56 indoor unit except for the High wall is connected in the downstream, please use the auxiliary pipe ①-1,3 for connection according to Fig.11.
When a 7K, 9K indoor unit is connected in the downstream, please use the auxiliary pipe ①-1,3 for connection according to Fig.11.
When an 18K indoor unit is connected in the downstream, do not use the auxiliary pipe.

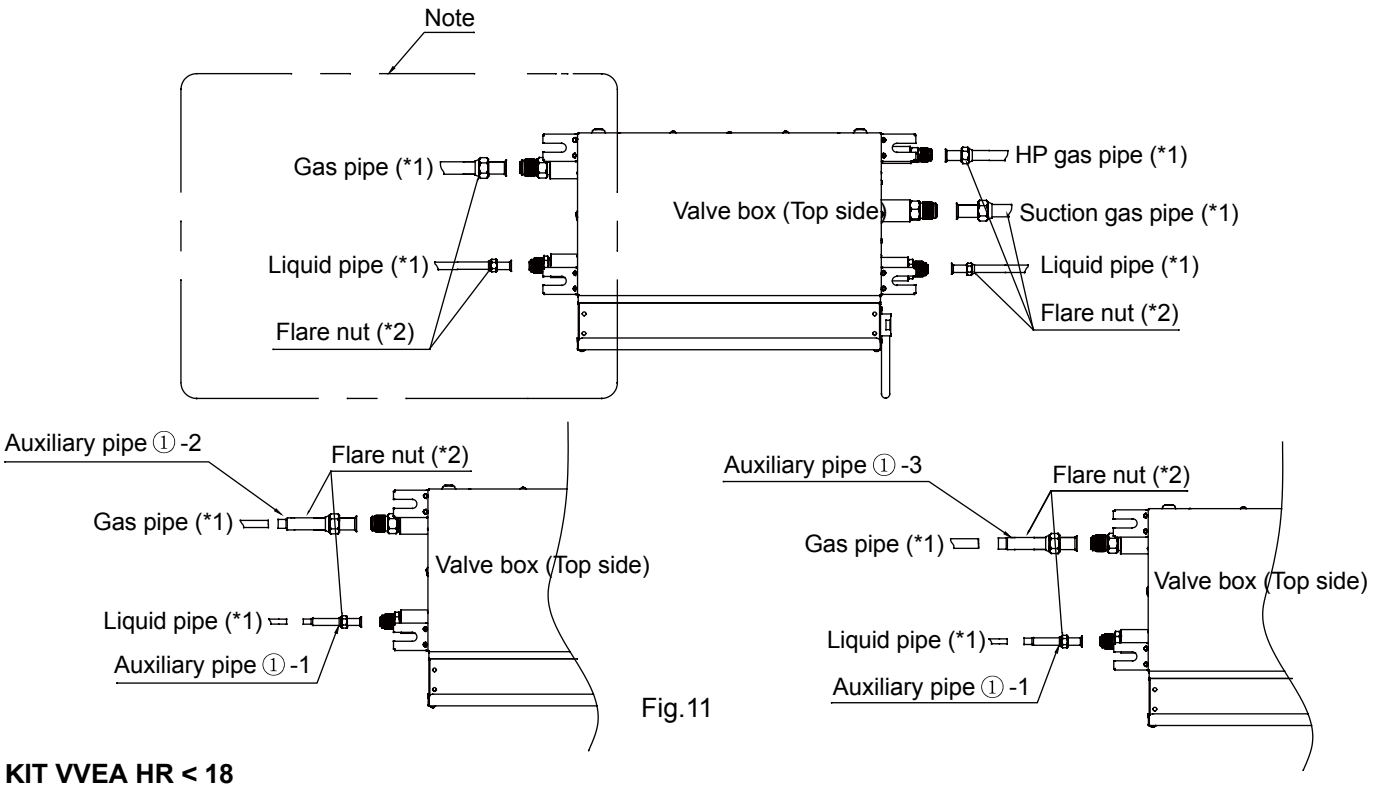


Fig.11

KIT VVEA HR < 18

The total capacity of the indoor units in the downstream is more than 11.2 kW but less than 16.8 kW.

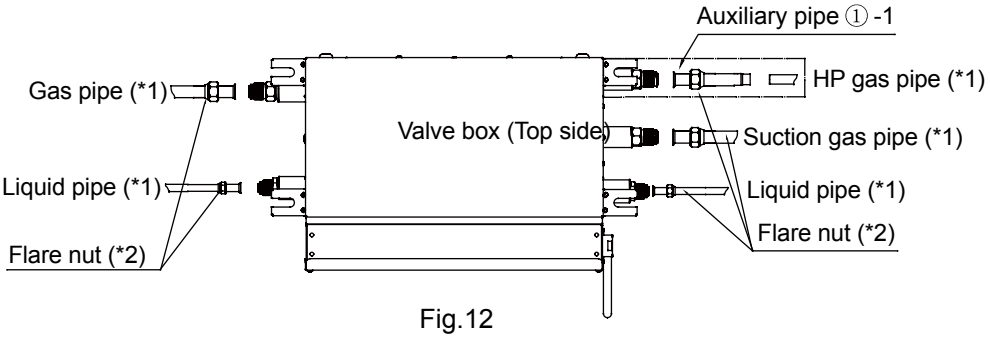


Fig.12

Note : Due to the HP gas pipe and suction gas pipe size of KIT VVEA HR < 18 valve box is the same, so during installation, please confirm the HP gas pipe and suction gas pipe between outdoor and valve box(such as by sending nitrogen into the HP gas pipe and suction gas), then connect suction gas pipe to the suction gas pipe of valve box, HP gas pipe to the HP gas pipe of valve box.

The total capacity of the indoor units in the downstream is more than 16.8 kW but less than 18.0 kW.

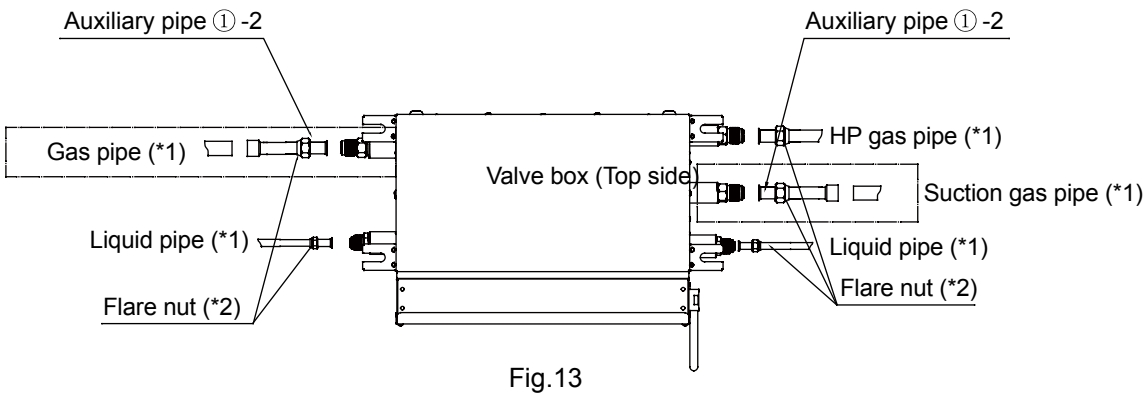


Fig.13

(Note1):
Auxiliary pipe ① -1,2,3: Install the flare nuts first and then use the auxiliary pipe after being flared in the field.

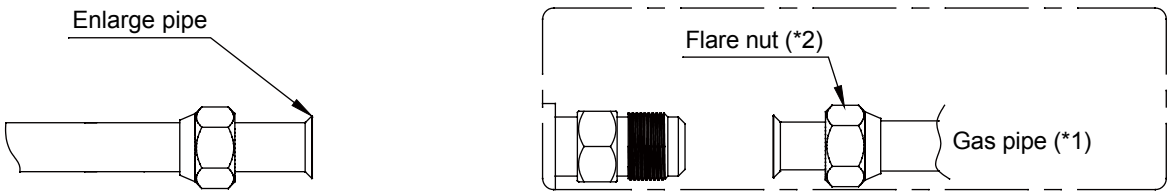


Fig.14

KIT VVEA HR < 28

The total capacity of the indoor unit in the downstream is more than 18.0 kW but less than 22.4 kW.

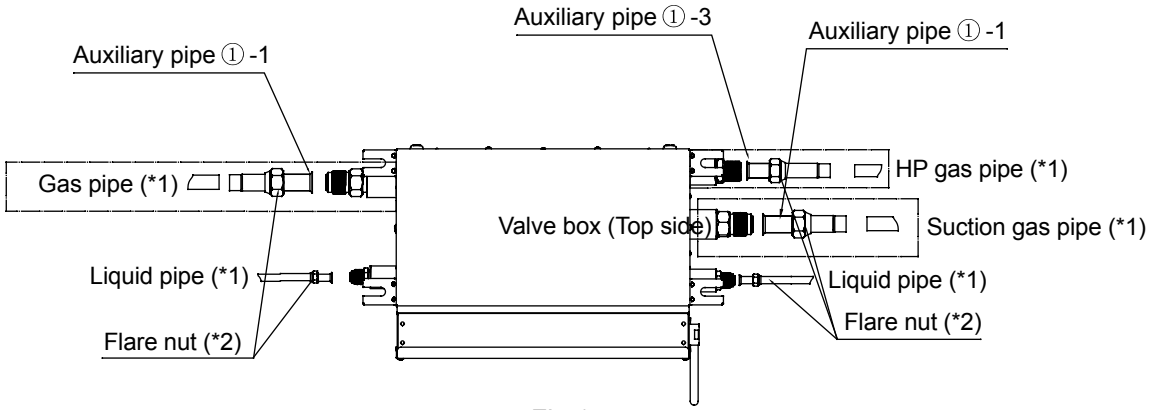


Fig.15

The total capacity of the indoor unit in the downstream is more than 22.4 kW but less than 28.0 kW.

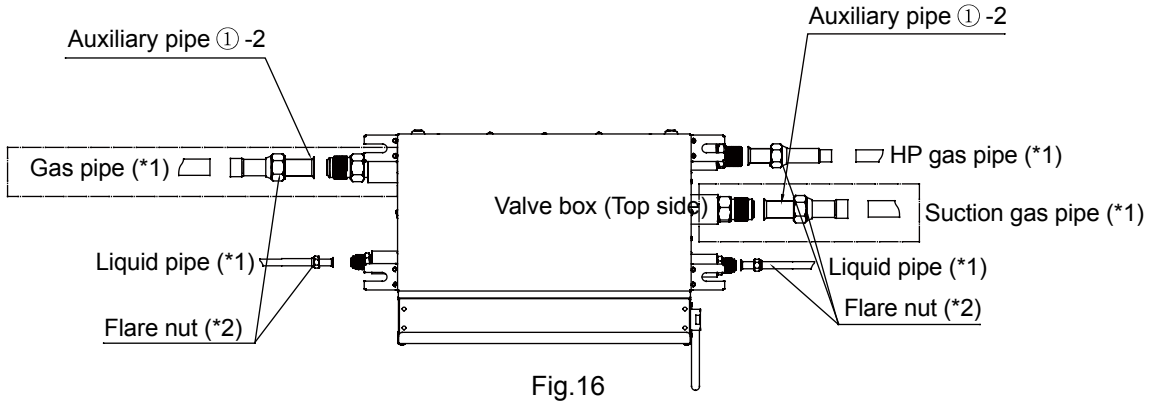


Fig.16

Pipe insulation

Please use the auxiliary insulation cylinder and anchor for insulation works according to Fig.17 after the gas leakage test.

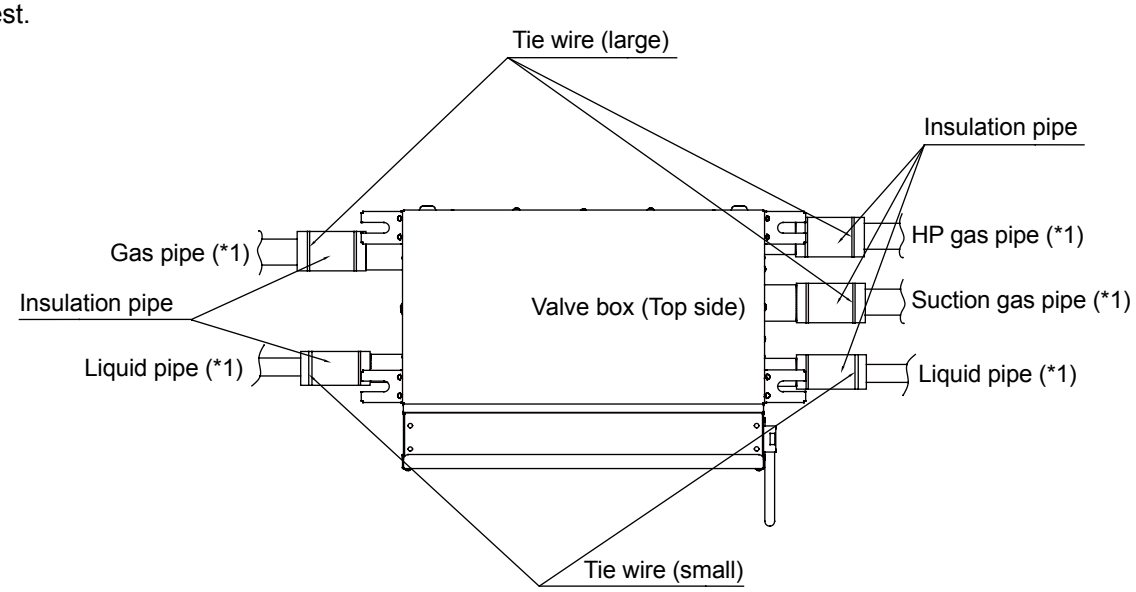


Fig.17

Note 1:
For suction gas pipes, high pressure gas pipe and liquid pipes, gas pipe, flare connections shall be wrapped with insulation materials (purchased locally) when their auxiliary insulation cylinders have been installed.

For installation of insulation materials for the flare nut connections, it shall be cautioned that:
(1) Please connect it tightly so as to ensure no gas leakage at both ends.
(2) The retaining clamp shall not be over tight so as to ensure the thickness of the insulation materials.
(3) Joints of insulation materials (purchased locally) for the upper flare nut connections shall be wrapped upwards.
(4) Ensure that joints of the insulation materials are installed upwards. (See Fig.18.)

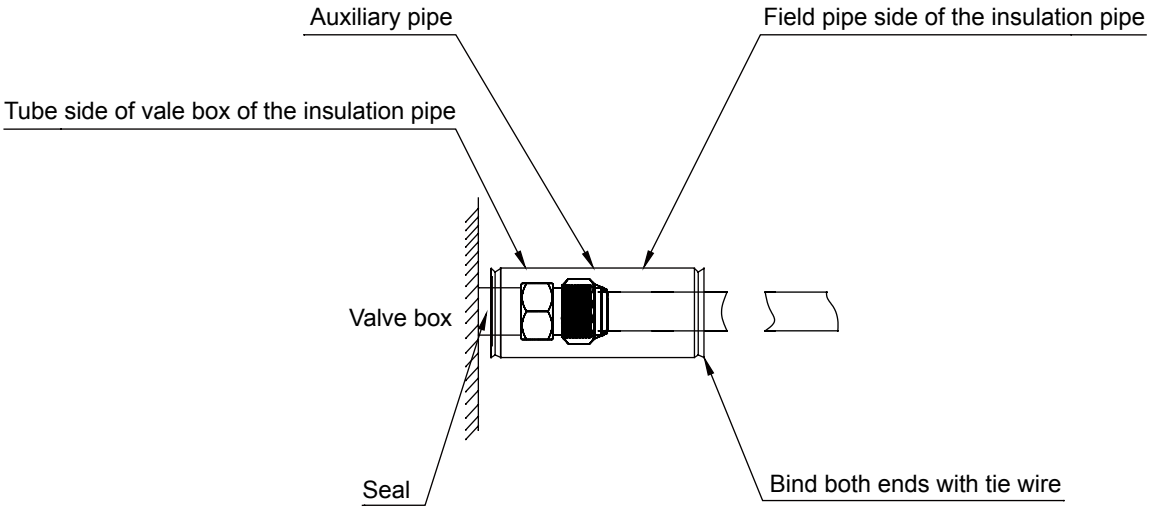


Fig.18

⚠Warning

- Electrical construction should be made with specific mains circuit by the qualified personnel according to the installation instruction. Electric shock and fire may be caused if the capacity of power supply is not sufficient.
- During arranging the wiring layout, specified cables should be used as the mains line, which accords with the local regulations on wiring. Connecting and fastening should be performed reliably to avoid the external force of cables from transmitting to the terminals. Improper connection or fastness may lead to burning or fire accidents.
- There must be the ground connection according to the criterion. Unreliable grounding may cause electrical shocks. Do not connect the grounding line to the gas pipe, water pipe, lightening rod and telephone line.

⚠ Attention

- Only copper wire can be used. Breaker for electric leakage should be provided, or electric shock may occur.
- The wiring of the mains line is of Y type. The power plug L should be connected to the live wire and plug N connected to null wire while ⏚ should be connected to the ground wire. For the type with auxiliary electrically heating function, the live wire and the null wire should not be misconnected, or the surface of electrical heating body will be electrified. If the power line is damaged, replace it by the professional personnel of the manufacturer or service center.
- The power line of valve boxes should be arranged according to the installation instruction of valve boxes.
- The electrical wiring should be out of contact with the high-temperature sections of tubing as to avoid melting the insulating layer of cables, which may cause accidents.
- After connected to the terminal tier, the tubing should be curved into be a U-type elbow and fastened with the pressing clip.
- Controller wiring and refrigerant tubing can be arranged and fixed together.
- The machine can't be powered on before electrical operation. Maintenance should be done while the power is shut down.
- Seal the thread hole with heat insulating materials to avoid condensation.
- Signal line and power line are separately independent, which can't share one line. [Note: the power line, signal line are provided by users. Parameters for power lines are shown as below: 3×(1.0-1.5) mm^2; parameters for signal line: 2×(0.75-1.25)mm^2(shielded line)]
- Valve boxes and outdoor units should be connected to the power source separately. All valve boxes must share one single electrical source, but its capacity and specifications should be calculated. Indoor & outdoor units should be equipped with the power leakage breaker and the overflow breaker.
- Valve box can be installed in multiple, named as unit A, unit B…. Pay attention to the marks on the terminal block when connecting the outdoor unit with the indoor unit. Refer to wiring example as described in 5-2 while ensuring correct connection. In addition, the operation will be abnormal when the wiring and the tubing between indoor and outdoor machine sets are installed in different refrigerant systems.
- Energization is not to be done before it's confirmed that the valve box have completely installed and that the outdoor and indoor installation is completed.

The wiring for the power line and signal line of valve box

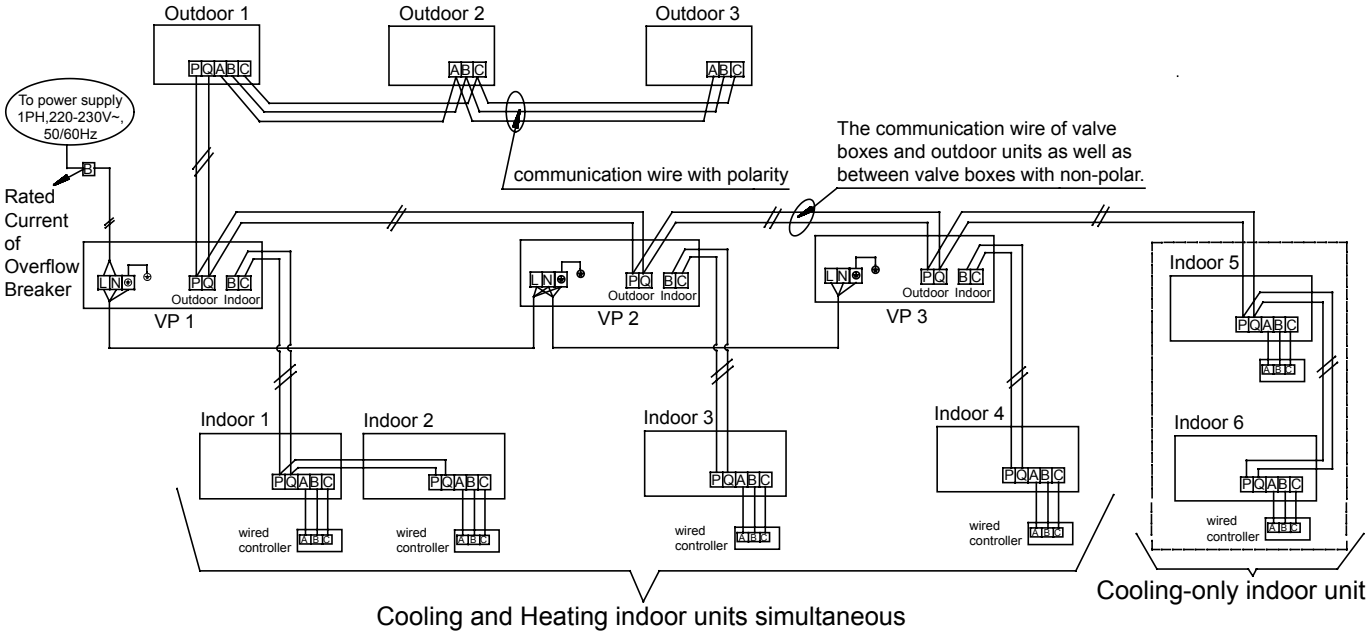
The wiring for the power line of valve box, the wiring for the signal line between valve boxes and outdoor units as well as the wiring between valve boxes.

Items / Total Current of valve boxes (A)	Cross Section (mm^2)	Length (m)	Rated Current of Overflow Breaker (A)	Rated Current of Power Leakage Breaker (A) Leaking Current (mA) Operating Period (S)	Cross Sectional Area of Signal Line	
					Outdoor-valve box (mm^2)	Valve box- valve box (mm^2)
<10	2	20	20	20A,30mA,0.1S or below	2cores ×0.75-2.0 mm^2 shielded line	
≥10 and <15	3.5	25	30	30A,30mA, 0.1S or below		
≥15 and <22	5.5	30	40	40A,30mA, 0.1S or below		
≥22 and <27	10	40	50	50A,30mA, 0.1S or below		

- Power cable and communication wire must be fixed firmly.
- Each valve box must be earthed well.
- When power cable exceeds the range, thicken it appropriately.
- Shielded layer of communication wires must be connected together and be earthed at single point.
- Communication wire total length cannot exceed 1000m.

Graphical representation for wiring

Connect the communication terminal block P and Q of the main unit of the outdoor units with the communication terminal block P and Q of the first valve box (VP 1).



Notes:

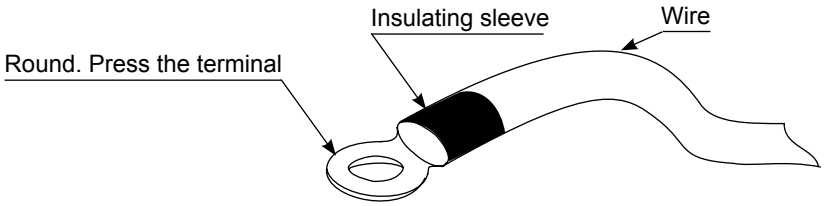
(1) The above wiring example is only for reference. The number of valve boxs and indoor units shall be subject to the field installation.

(2) Communication line from cooling-only indoor unit may be connected to the communication terminal block P and Q (outdoor) of the valve box.

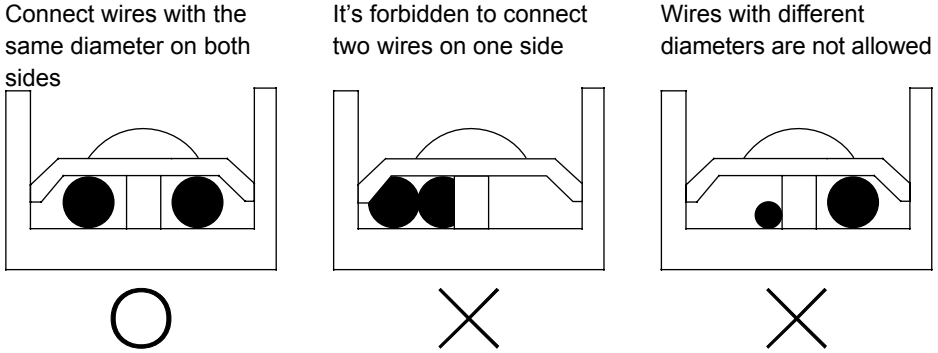
(3) Two-core nonpolar communication line with shield shall be adopted for communication lines between the valve box and the indoor/outdoor unit. Three-core polar communication line with distinguished polarities and shield shall be adopted for the wire controller connected to the indoor unit.

(4) All valve boxes within one system may share one overcurrent breaker for power supply. But it's necessary to compute total current capacity specification.

(5) For wring harness connected to the power terminal block, the terminal shall be pressed with a round (refer to the following figure).



1) The power terminal block shall not be crimped with 2 wires of different diameters. Otherwise, poor crimp connection and looseness may lead to abnormal heating or sparking of the line.
2) Refer to the following figure for crimping wires with the same diameter.



(6) Tighten terminal screws with proper screw driver. Screw driver of small dimension will damage the screw head and fail to tighten properly.

(7) If terminal screws are tightened excessively, they may be damaged. Refer to the following table for tightening torques of terminal screws:

Dimension of terminal screw	Tightening torque (N.m)
M3.5 (terminal block for communication line)	0.80~0.96
M4 (terminal block for power line)	1.18~1.44
M4 (terminal block for ground wire)	1.52~1.86

(8) Power line is forbidden to the communication terminal block because it will damage the circuit control board.

(9) Wiring of communication lines shall be within the following scope. Exceeding the limit will possibly lead to abnormal communication.

The maximum wiring length between the outdoor machine and the furthest valve box or Cooling-only indoor unit is 1000m,the valve box and the indoor machine is 90m. The maximum branch number is 16.

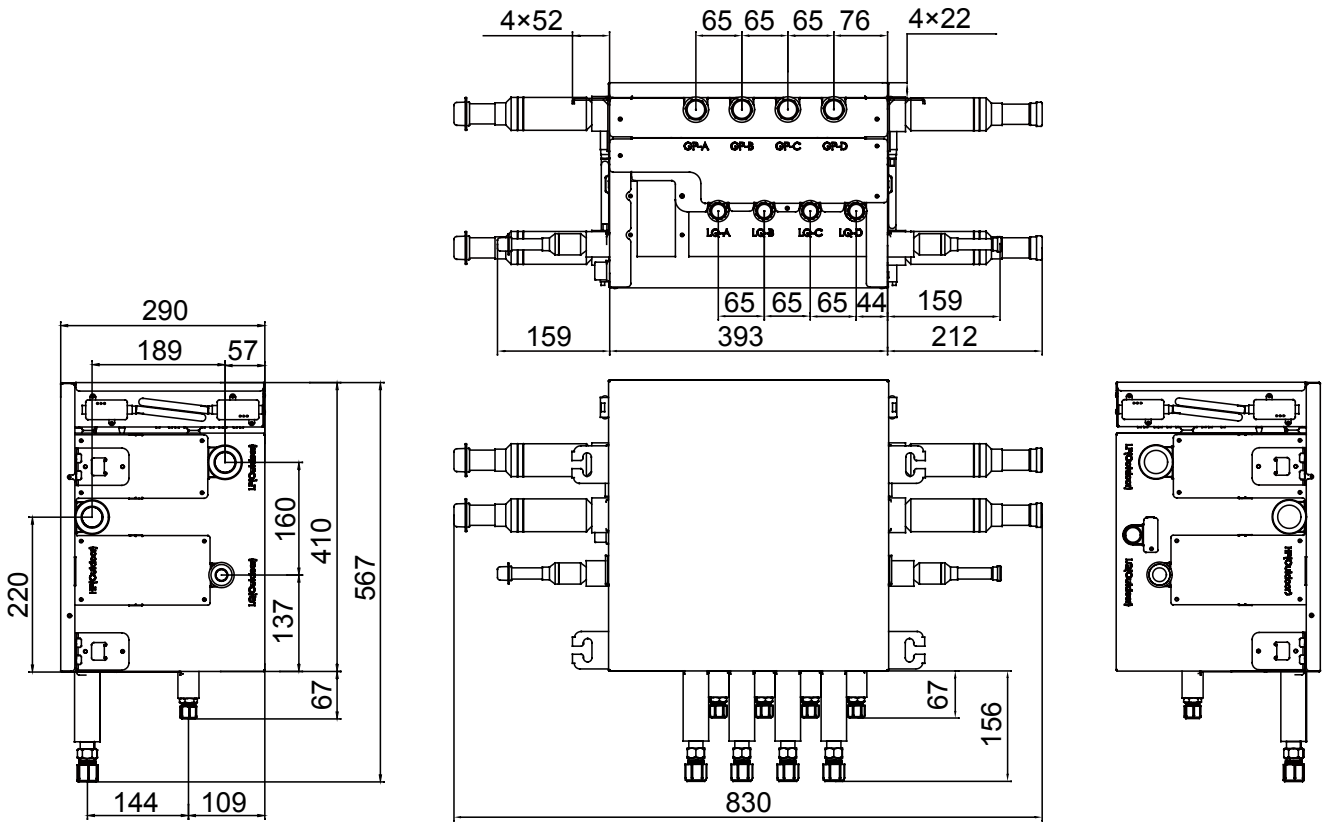
Part 3 . One by four valve box

1. Specification

Model		KIT VVEA HR 4 PORTS < 45
Power Supply		1/220-240/50/60
Max. Number of valve boxes that can be connected in series		4
Branching Number of Connectable Indoor Units		5
Dimension (W×H×D)	mm	396×290×411
Net	kg	39.7(18)
Liquid Pipe-Connect To Outdoor Unit	mm	15.88
Gas Pipe-Connect To Outdoor Unit	mm	28.58
High Pressure Gas Pipe-Connect To Outdoor Unit	mm	28.58
Liquid Pipe-Connect To Indoor Unit	mm	9.52×4
Gas Pipe-Connect To Indoor Unit	mm	15.58×4

	KIT VVEA HR 4 PORTS < 45*1	KIT VVEA HR 4 PORTS < 45*2	KIT VVEA HR 4 PORTS < 45*3	KIT VVEA HR 4 PORTS < 45*4
Branching Number of Connectable Indoor Units	5	5	5	5
Total indoor unit qty.	20	40	60	64
Capability per branch	11.2kW	11.2kW	11.2kW	11.2kW
Total capacity	45kW	71kW	71kW	71kW

2. Dimension


4×52
65 65 65 76
4×22
GP-A GP-B GP-C GP-D
LG-A LG-B LG-C LG-D
65 65 65 44
159
159
393
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57
160
410
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220
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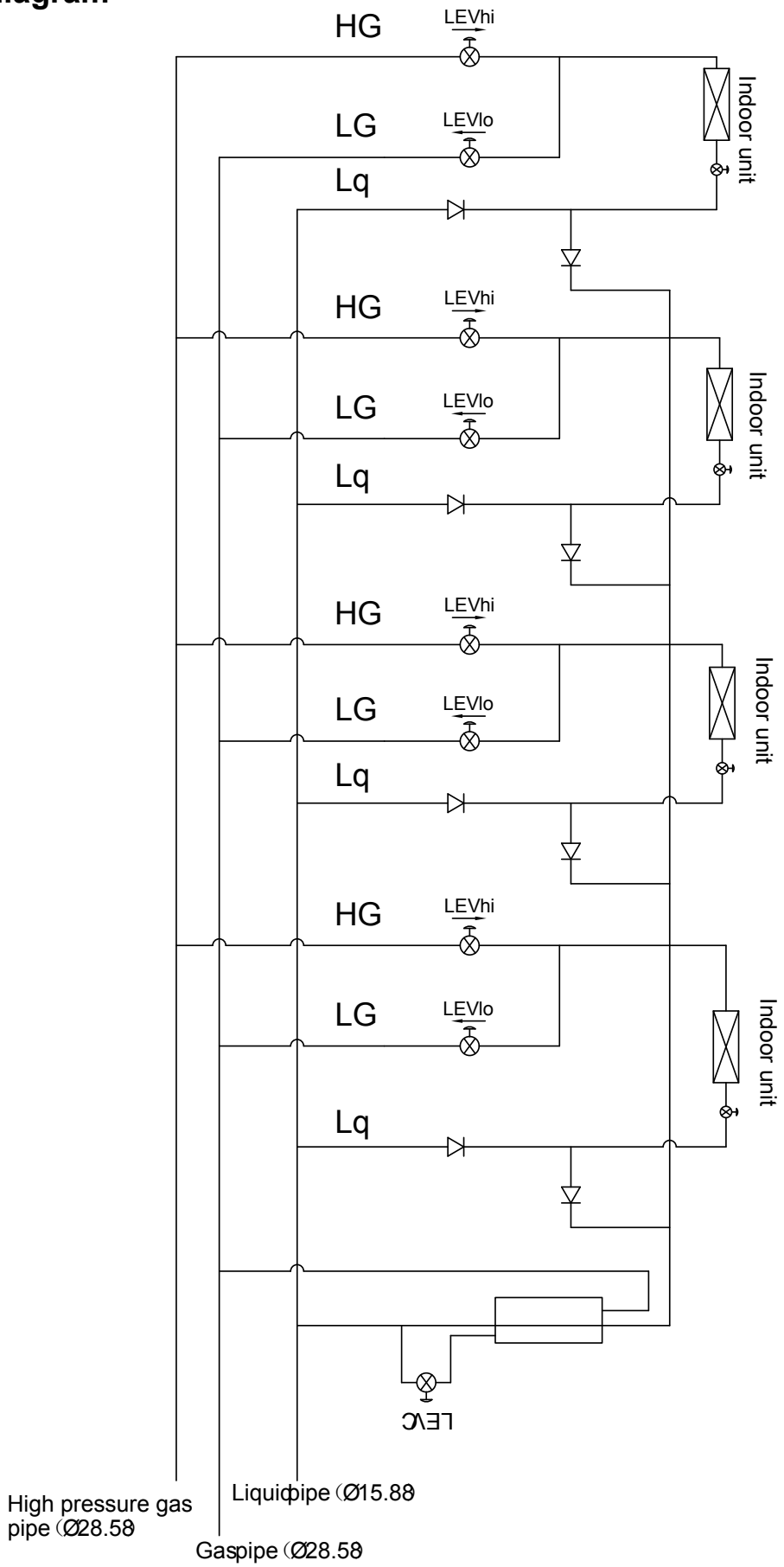
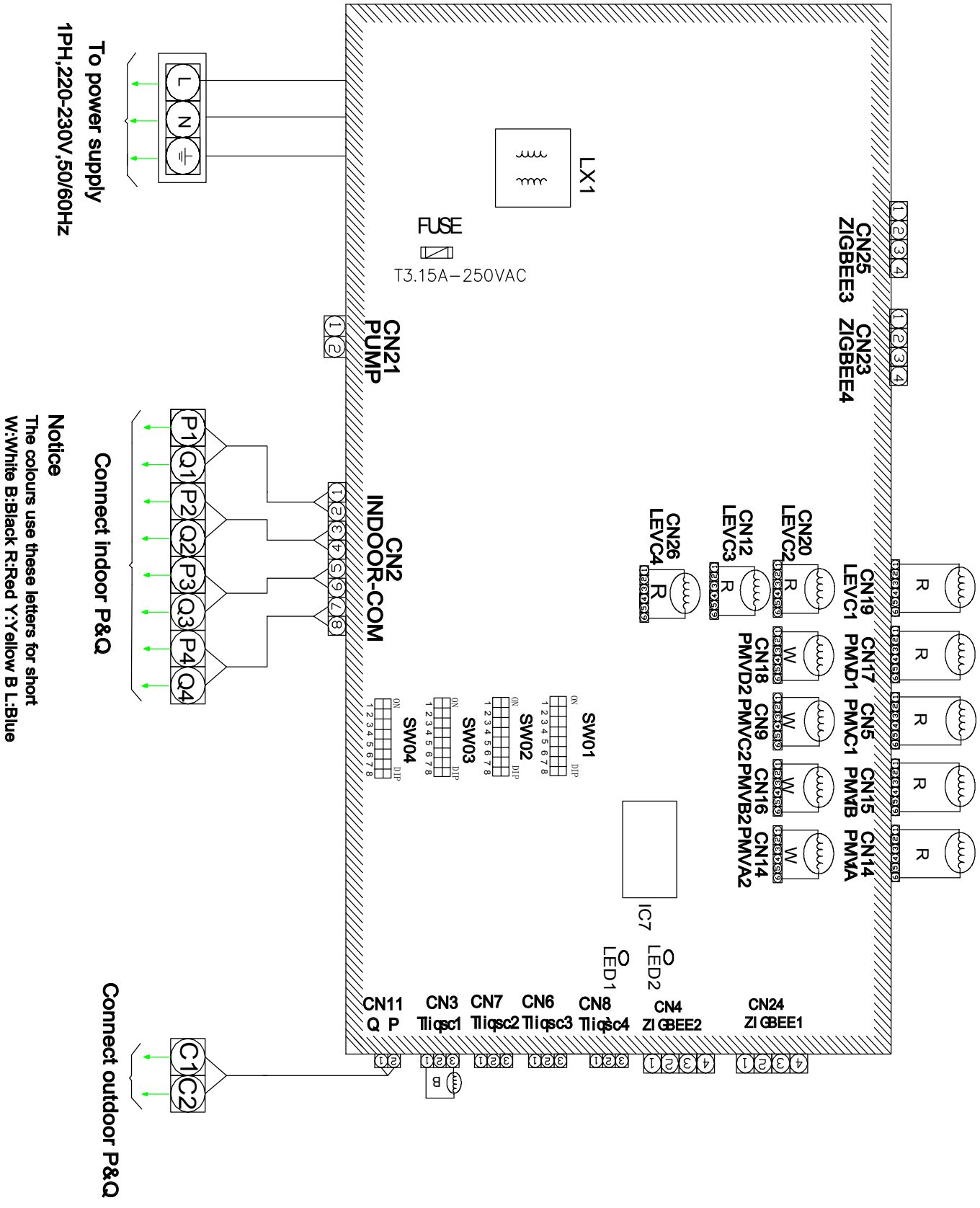
109
67
156
830

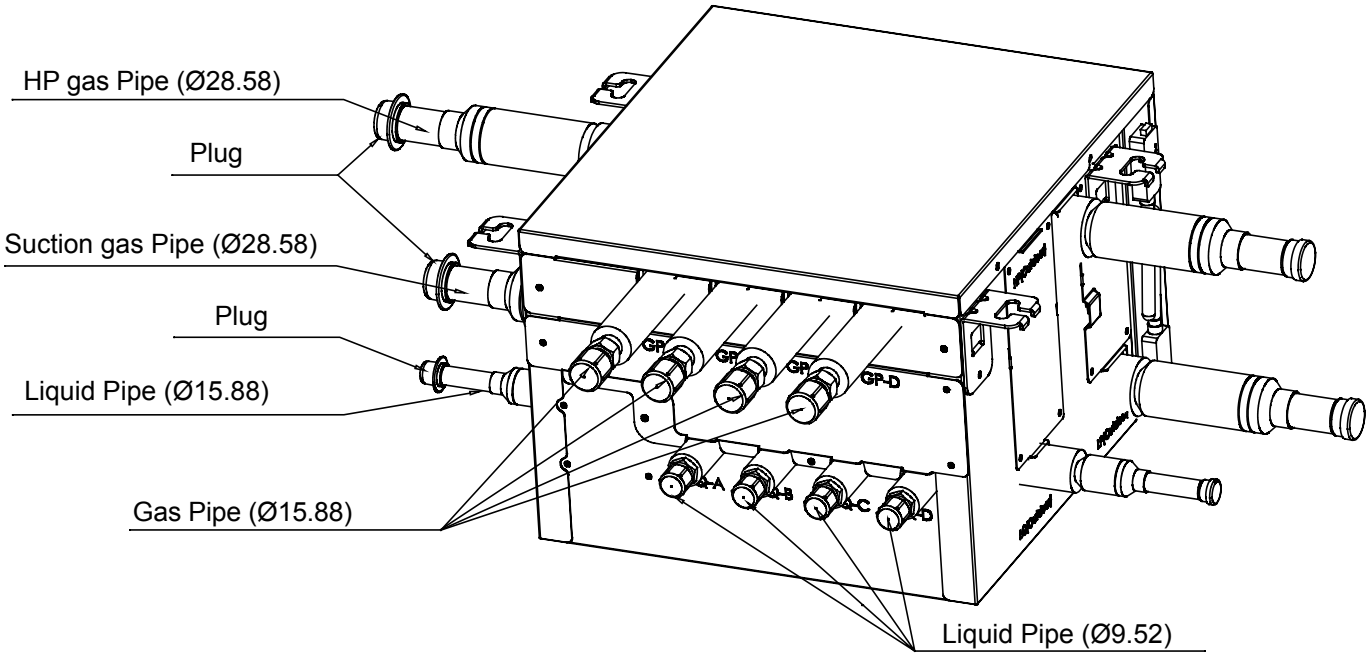
3. Piping diagram



4. Wiring diagram



5. Installation



Before installation , be sure to remove the plug .When the valve box is connected with the outdoor unit, the left side of the three pipes or the right side of the three pipes can be selected according to the actual installation requirements. At the same time, the other end of the three tubes needs to be blocked.

- If the valve box is transferred to a new user, this manual shall be transferred to the user, together with the conditioner.
- Before installation, be sure to read Safety Considerations in this manual for proper installation.
- The safety considerations stated below is divided into "⚠Warning" and "⚠ Attention". The matters on severe accidents caused from wrong installation, which is likely to lead to death or serious injury, are listed in "⚠Warning". However, the matters listed in "⚠ Attention" are also likely cause the severe accidents. In general, both of them are the important items related to the security, which should be strictly abided by.
- After the installation, perform test run to make sure everything is in normal conditions, and then operate and maintain the valve box in accordance with the user manual. The user manual should be delivered to the user for proper keeping.

⚠Warning

- Please ask the special maintenance station for installation and repair. Water leakage, electric shocks or fire accidents might be caused from improper installation if you conduct the installation by your own.
- The installation should be conducted properly according to this manual. Water leakage, electric shocks or fire accidents might be caused from improper installation.
- Please make sure to install the valve box on the place where can bear the weight of the valve box. The valve box can't be installed on the grids such as the non-special metal burglar-proof net. The place with insufficient support strength might cause the dropdown of the machine, which may lead to personal injuries.
- The installation should be ensured against typhoons and earthquakes, etc. The installation unconformable to the requirements will lead to accidents due to the turnover of the machine.
- Specific cables should be used for reliable connections of the wirings. Please fix the terminal connections reliably to avoid the outside force applied on the cables from being impressed on the cables. Improper connections and fixings might lead to such accidents as heating or fire accidents.
- Correct shapes of wirings should be kept while the embossed shape is not allowed. The wirings should be reliably connected to avoid the cover and the plate of the electrical cabinet clipping the wiring. Improper installation might cause such accidents as heating or fire accidents.
- While placing or reinstalling the valve box, except the specific refrigerant (R410A), don't let the air go into the refrigeration cycle system. The air in the refrigeration cycle system might lead to the cracking or personal injuries due to abnormal high pressure of the refrigeration cycle system.
- During installation, please use the accompanied spare parts or specific parts. If not, water leakage, electric shocks, fire accidents or refrigerant leakage might be caused.
- During installation, if refrigerant leakage occurs, ventilation measures should be taken, for the refrigerant gas might generate harmful gases upon contacting the flame.
- After installation, check if any refrigerant leakage exists. If the refrigerant gas leaks in the room, such things as air blowing heaters and stoves, etc. may generate harmful gases.
- Don't install the valve box at the places where the flammable gases may leak. In case the gas leakage occurs around the machine, such accidents as fire disasters may be caused.
- The refrigerant gas pipe, HP gas pipe and liquid pipe should be heat insulated to preserve heat. For inappropriate heat insulation, the water caused from the condensation will drop to get the article at home wet.
- The electrical construction shall be implemented by the correspondingly qualified personnel in accordance with electrical construction standards, local electrical laws as well as specifications. Moreover, dedicated circuit must be used, rather than the wire pin. Insufficient capacity of the wire circuit and unprepared construction (if any) may cause electric shock, fires, etc.
- During the process of grounding, the ground wire cannot be connected to the gas pipe, water pipe, lightning rod and ground wire of the telephone. Incomplete grounding may cause electric shock, fires, etc.
- Install residual-current circuit breaker, or electric shock, fires, etc. will occur.

- When contacting electrical components, ensure they are powered off. Contacting the live part may result in the danger of electric shock.
- If there is leakage of the refrigerant gas flow during operation, refrigerant gas is required. If the refrigerant gas contacts any fire, poisonous gases will be produced.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
- This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.
- We recommend that the appliances be installed properly by qualified installation technicians in accordance with the installation instructions provided with the unit.

⚠ Attention

- The valve box should be effectively grounded. Electric shocks may occur if the valve box is ungrounded or inappropriately grounded. The wire for earthing shouldn't be connected to the connections on the gas pipe, water pipe, lightning rod or telephone.
- The breaker for electricity leakage should be mounted. If not, accidents such as electric shocks may happen.
- The installed valve box should be checked for electricity leakage by being powered.
- After installation, all cassette concealed valve boxes should be trial-tested. After the proper operation of the machine, other fitments can be made.
- When installing the valve box, please fix the box and connecting pipes in an efficient way to avoid shaking when changing valve box.
- If the ambient humidity bigger than 80%, when the water discharge hole be blocked or the filter becomes dirty, or airflow speed change, there maybe leads to condensing water drop down, and at the same time there maybe some drops of water spit out.
- Keep the valve box, power supply wiring, conductor, etc. at least 1 m away from the TV and radio to avoid image interference and noise. However, sometimes there is still noise when the distance is over 1 m due to the different states of radio waves.
- Try to install valve box where the fluorescent lamp is far away.
- When wireless devices are being installed, the distance that the signal from the controller will reach may be shortened in a room with a fluorescent lamp that is turned on in an electric way (frequency conversion or rapid start).
- Please install the valve box in places where noise will not influence the customers too much (such as washroom, passageway, warehouse, equipment room, etc.). Places with high requirement for quiet are not suggested for installation, such as bedroom, drawing room, meeting room, office, etc.
- When starting up, stop, defrosting, and oil-returning in heating mode, the electronic expansion valve valve will switch and cause noise. This kind of noise is normal for the switching of valve box.

⃠ Prohibitions

- Do not use components other than the fuse of proper capacity, such as metal wire and copper wire, which will cause fires and other faults if used instead of the fuse.
- When doing the cleaning and maintenance, make sure that the operation has been stopped and the manual power switch is in the off position.
- Do not use appliances such as water heater near the valve box. Using appliances producing steam near the valve box may lead to accidents such as water leakage, electric leakage and short circuit when the cooling system is in operation.
- Two-generation valve boxes VP*-*A and VP*-*B can't be mixed used in one system.

Do not install at such places

1. A place that is filled with mineral oil, a kitchen which has oil and steam everywhere, etc., which may cause degradation, falling off and water leakage of the resinous components.
2. A place with corrosive gases such as sulphurous acid gas, which will lead to the corrosion of the copper tube, welding joint, etc., causing refrigerant leakage.
3. A place where machines give out electromagnetic waves, which will lead to abnormality and improper function of the control system.
4. A place with possible leakage of combustible gases, floating of carbon fiber and combustible dust and use of volatile combustible substances such as diluents, the accumulation of which around the machine set will lead to fires.
5. A place where small animals inhabit, whose contacting the inner electrical components may cause faults, smoking, outbreak of a fire, etc.
6. A coastal place with high salinity and a place with great variation in voltage such as a factory, which may cause faults to vehicles and ships.

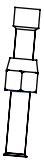
Attention item

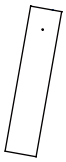
Install after making sure that the type of the refrigerant used is R410A. If any other type of refrigerant is used, the machine cannot run.

- Before and after the unpacking, if valve box is to be moved, the hoisting handles (totally 4) shall be held firmly. Do not apply force to other parts, especially a refrigerant tube and an electrical cabinet.
- Concerning the installation of the outdoor and indoor units, refer to the installation specification of each unit.

Accessories

Confirm that the accessories below are packed together.

KIT VVEA HR 4 PORTS ≤ 45	Auxiliary pipe							
Quantity	4	4	4	4	1	1	2	1
Shape	①-1 Ø6.5  Ø9.52	①-2 Ø9.7  Ø15.88	①-3 Ø12.9  Ø15.88	①-4 Ø19.2  Ø15.88	①-5 Ø12.9  Ø15.88	①-6 Ø9.7  Ø15.88	①-7 Ø22.4  Ø28.58	①-8 Ø25.6  Ø28.58

KIT VVEA HR 4 PORTS < 45	Auxiliary pipe		Wiring harness	Insulation tube			
Quantity	2	1	42	4	4	4	4
Shape	①-9 Ø16.1  Ø22.22	①-10 Ø19.2  Ø22.22		 Ø10	 Ø16	 Ø28	 Ø46

KIT VVEA HR 4 PORTS < 45	Nut		Specification
Quantity	4	4	1
Shape	 Ø9.52	 Ø15.88	

<Entrustment>
Before the installation is completed, do not abandon the accessories needed in installation.

Combinations

- This series is cooling and heating heat recovery models. Only when the system is equipped with valve box, indoor units under different valve boxes can achieve cooling and heating simultaneously. The modes of the indoors which under the same valve box should be the same. If the indoors connected without valve box, the indoors only can do cooling mode. Do not connect the valve box to the common multi-split system, as the former is dedicated to the cooling & heating multi-split system.
- Concerning the model of the connectible indoor unit, see the sample brochure, etc. for confirmation.
- Concerning the total capacity of the indoor unit connected at the downstream of the valve box (the total selected capacity of the models), select in Table 1 according to the quantity (refer to Table 2 for the selected capacity of the model of each indoor unit)

Table1: Total capacity of indoor unit:

Valve Box	Total of four branches		Per branch	
	Total capacity of indoor unit (kW)	Quantity of indoor unit	Total capacity of indoor unit (kW)	Quantity of indoor unit
KIT VVEA HR 4 PORTS < 45	less than 45	less than 20	less than 11.2	less than 5

Table 2: Capacity measure and selected capacity of the model of indoor unit

Capacity measure	07K	09K	12K	16K	18K	24K	28K	30K	38K
selected capacity (KW)	2.2	2.8	3.6	4.5	5.6	7.0	8.0	9.0	11.2

Do not connect the fresh air unit to this system.

Inspection item

Pay much attention to the following during installation. Check them again after completion.

(1) Inspection items after installation

Inspection item	Defect	Inspection column
If the installation of valve box is secure ?	Falling off, vibration and noise	
If gas leakage inspection is completed ?	No heating/cooling	
If complete insulation is achieved (refrigerant piping and tubing connections) ?	Water leakage	
If the voltage of the power supply is consistent with that on the nameplate ?	Out of service, burnt	
If there is improper wiring or piping ?	Out of service, burnt	
If there is construction without grounding ?	Danger in electric leakage	
If the thickness of the wire is as specified ?	Out of service, burnt	

(2) Inspection upon delivery

Inspection item	Inspection column
If the electric box cover is installed	
If the installation specification is transferred to the customer	

1. Pre-installation

The installation location selected shall meet the following conditions and be approved by users.

- The strength shall be sufficient to withstand the weight of the valve box
- There is no significant tilt on the plane.
- Ensure that there is enough space for installation and maintenance.as show in Fig.1
- There is space for inspection on the side and top of the electric box
- The length of piping between the indoor and outdoor units shall be within the permissible range (referring to the specification attached to the outdoor unit).
- Please install the valve box in places where noise will not influence the customers too much (such as washroom, passageway, warehouse, equipment room, etc.). Places with high requirement for quiet are not suggested for installation, such as bedroom, drawing room, meeting room, office, etc.

Note:

- the electrical box can be changed as show in 3 valve box installation.
- When starting up, stop, defrosting, and oil-returning in heating mode , the 4-way valve will veer and create noise. This kind of noise is normal for the running of valve box.
- A noise may be emitted by the valve box as aresult of control during operation or stopping of an indoor unit. If it is installed in the ceiling where it is exposed, take adequate precautions with the installation location.

<Notice item>

- Inspect whether the installation location can sufficiently withstand the weight of valve box and set the hoisting bolts by reinforcing the beam if necessary. Use hoisting bolts in installation (referring to 2 for the preparation before installation).
- Install the power wiring and power line of the valve box at more than 1 m away from TV and radio to prevent the image clutter and noise. But, there may be noise even if it is more than 1m according to the different waves.

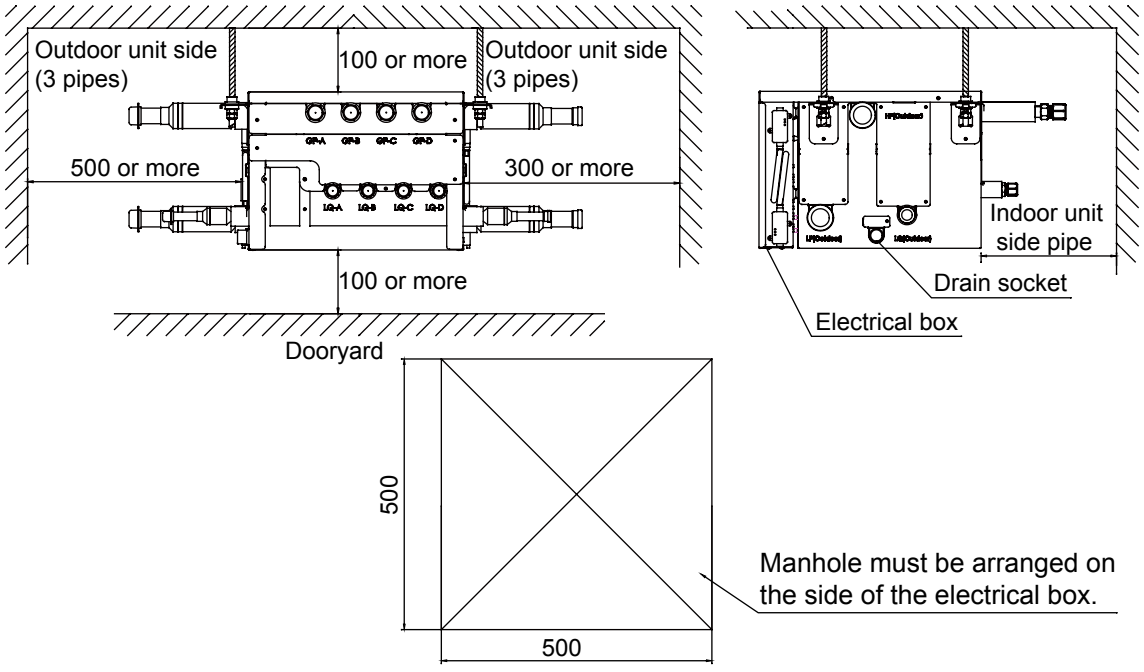


Fig.1

2. Preparation before installation

(1) Valve box dimension (mm)

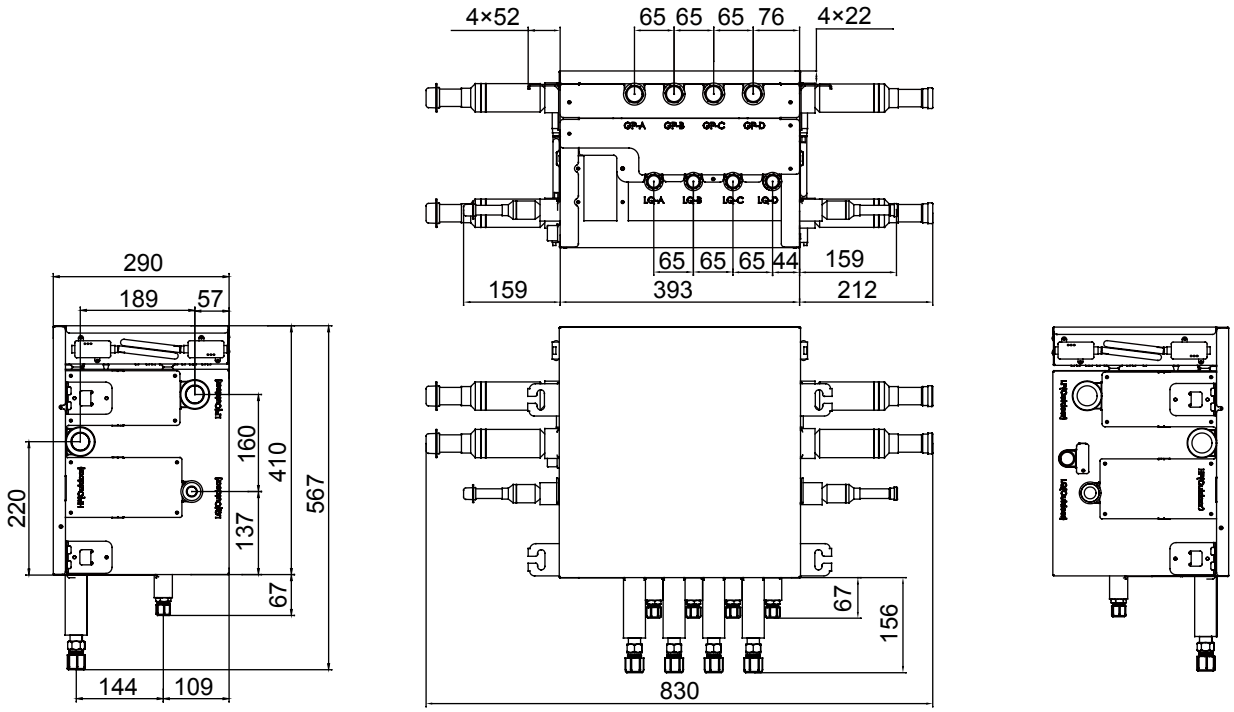


Fig.2

See the Fig.4 to install the lifting bolts and hoisting tools.

- Use the lifting bolts with the size of M8~M10
- Press insert for new settings. Press hole in anchor if set. Ensure that it can sufficiently withstand the weight of the valve box before installation.

(2) Lifting dimension of valve box

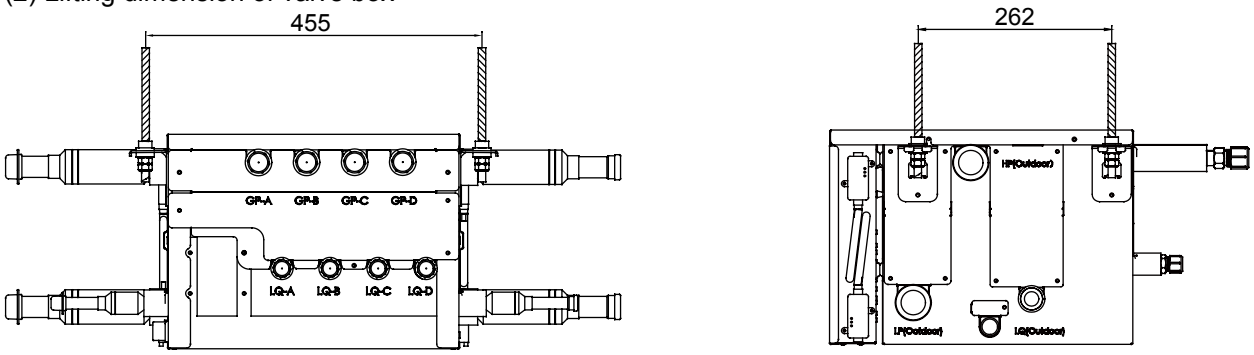


Fig.3 Pitch of lifting bolts

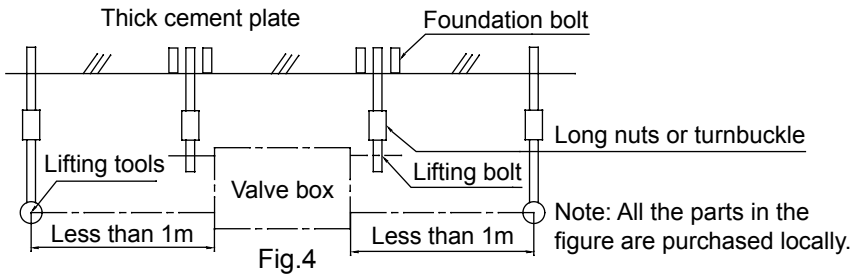


Fig.4

3. Installation of valve box

Use parts and components specified for installing the installation components.

Install the lifting tools on the lifting bolts according to the instruction of the Fig.5
Be sure to follow the stipulations on products locally purchased to use nuts (M8 or M10 of 3 pieces for 4 positions) and gaskets (M8 with the outer diameter of 24~28 mm and M10 with that of 30~34 mm of 2 pieces for 4 positions) on the upper and lower sides of the lifting tools.

<Note>
Be sure that the product must be installed with the top surface (the oblique surface in the Fig.5) upward, or it will not work well and increase the working noise.

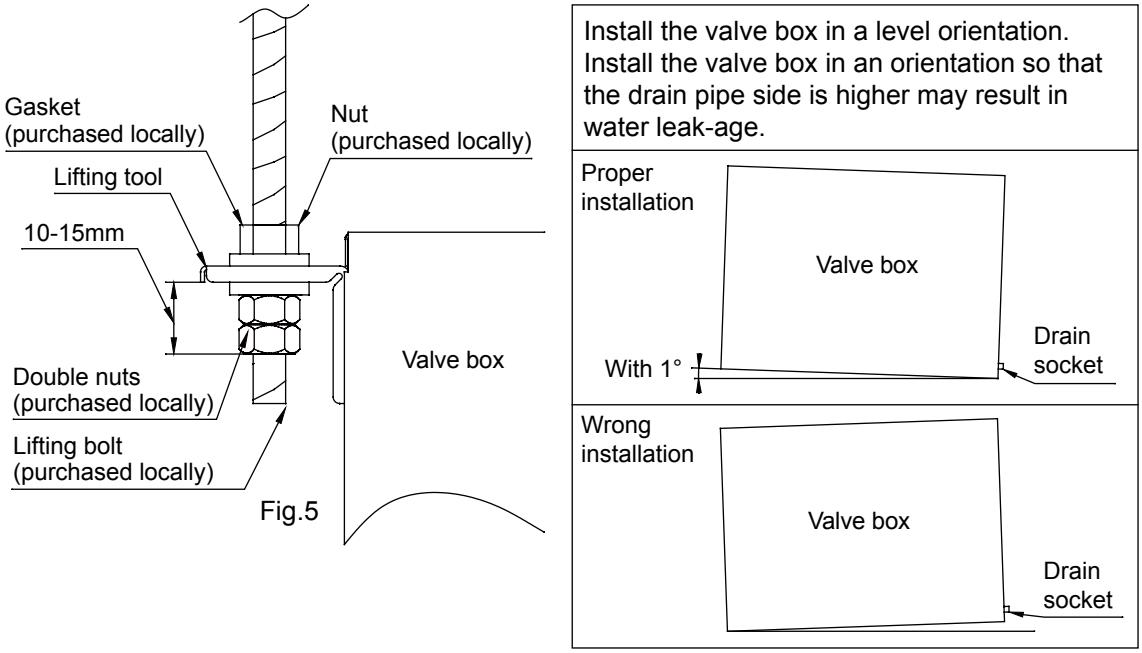


Fig.5

4. Refrigerant pipe Installation

- Pipes between the outdoor unit and valve box, selection of refrigerant branching suite, and the Pipe between refrigerant branching suites and the indoor units, please refer to the installation instructions or equipment design data attached to the outdoor unit.
- Before Installation, make sure the type of the refrigerant to be used is R410A. (If a refrigerant other than this type is used, It cannot run properly)
- Please provide thermal insulation at the high-pressure gas pipe, suction gas pipe,, liquid pipe and oil equalizing pipe (pipes for outdoor units in case of multi-split system) and the connections between these pipes. In the absence of thermal insulation, liquid leakage and scalding may happen. Particularly when the high-pressure gas pipe delivers indrawn air under full-refrigeration condition, it needs the same thermal insulation as does the suction gas pipe. Besides, high-pressure gas pipe and suction gas pipe are to deliver high-pressure gas, thus please provide thermal insulation material that can sustain temperature over 120 °C.
- Enhance the thermal insulation material based on the installation environment. The indicators are shown below.
  For RH75%–80% at 30°C: over 15 mm thick.
  For over 80% at 30°C: over 20 mm thick.
  If not reinforced, the thermal insulation material surface is prone to condensation. Please refer to the equipment design data for further details.

The high-pressure gas pipe, suction gas pipe, liquid pipe must be provided with reliable thermal insulation. In the absence of thermal insulation, liquid leakage may happen.
The outdoor unit is already filled with refrigerant.
To connect the pipes to valve box or remove them from valve box, do use both spanner and torque wrench, as shown in the Fig.6.
Apply refrigerant oil to outside of the flare. Screw it for 3 to 4 rounds with hands and then tighten it.
Determine the tightening torque. (Excessive tightening may damage the nuts and hence cause leakage)
Check the connecting pipes for gas leakage and then fix the thermal insulation, as shown in the in the Fig.7.
Only use sealing gasket to wrap the part jointing between the gas pipe and thermal insulation.
For pipe cutter and flare tool, please use R410A special tools.

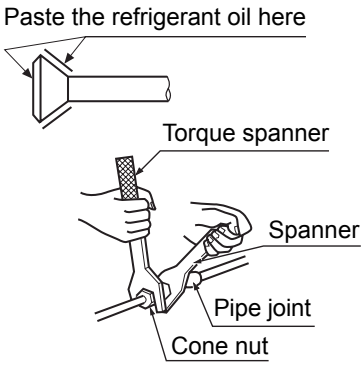


Fig.6

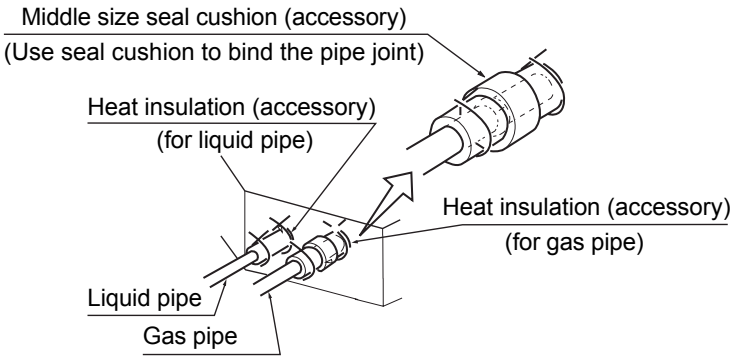


Fig.7

<Notes>
- Please do not let any type of gas other than the specified refrigerant go into the refrigeration system;
- In case of refrigerant leakage during operation, please replace the gas. (Fill the refrigerant at the outdoor unit)

Select piping material

- Make sure both the internal surface and external surface of the pipes are intact and are free from harmful contaminants such as sulphur, oxide, foreign matter, cutting powder, grease and water.
- Please use the following materials for refrigerant pipe.

Pipe material		Phosphorized copper seamless pipe for air conditioner (TP2)
Model		KIT VVEA HR 4 PORTS < 45
Function	High pressure gas pipe	Ø28.58
	Suction gas pipe	Ø28.58
	Liquid pipe (outdoor side)	Ø15.88
	Gas pipe (indoor side)	Ø15.88
	Liquid pipe (indoor side)	Ø9.52

Wall thickness and size: select proper sizes according to Selection of piping dimensions

- For the permissible maximum length, permissible elevation difference and permissible length after branching, please refer to the installation instructions or technical data attached to the outdoor unit.
- The branching pipe for the pipe must have refrigerant branching suite. For selection of refrigerant branching suite, please refer to the installation instructions or technical data attached to the outdoor unit.

Piping maintenance

During installation, provide maintenance as specified in the table in order to prevent water, foreign matter and dust from entering the pipes.

Location	Work period	Maintenance method
Outdoors	More than 1 month	Screw
	Less than 1 month	Screw or strap
Indoors	——	

Note

Particularly when a pipe is to penetrate through a wall or extend to outdoors, make sure foreign matter and dust etc cannot enter the pipe.

Attention item for piping connection

- To connect a pipe to or remove it from the valve box, do use pliers for screws and torque spanner;
- When installing the valve box, please fix the box and connecting pipes in an efficient way to avoid shaking when changing valve box.
- For the sizes of the flares, please refer to <Table-1>.

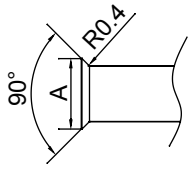
<Note>

- For connection at a flare, apply ester or ether oil to the flare (both inner surface and outer surface). Apply such oil for 3 to 4 times and insert the screw in the first use
- The tightening torque for the flare is given in <Table-1>.

If no torque wrench is available, act as the follows.

① Use a spanner to tighten the nut of the flare to a position where the tightening torque sharply increases.
② The tightening angle for the position where the tightening torque sharply increases <Table -2>.
③ After the work, make sure there is no air leakage.

<Table-1>

Tube size	Tightening torque (N.m)	Machined flare size A (mm)	Flare shape
Ø6.35	14.2~17.2	8.7~9.1	
Ø9.52	32.7~39.9	12.8~13.2	
Ø12.7	49.5~60.3	16.2~16.6	
Ø15.88	61.8~75.4	19.3~19.7	
Ø19.05	97.2~118.8	23.7—23.9	
Ø22.22	117.2~138.8	28.2-28.5	

<Table-2>

Pipe size	Tightening angle	Recommended tool length (mm)
Ø6.35	60°~90°	150
Ø9.52	60°~90°	200
Ø12.7	30°~60°	250
Ø15.88	30°~60°	300
Ø19.05	20°~35°	450
Ø22.22	15°~30°	600

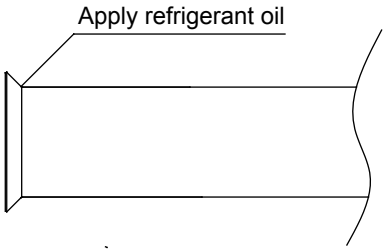


Fig.8

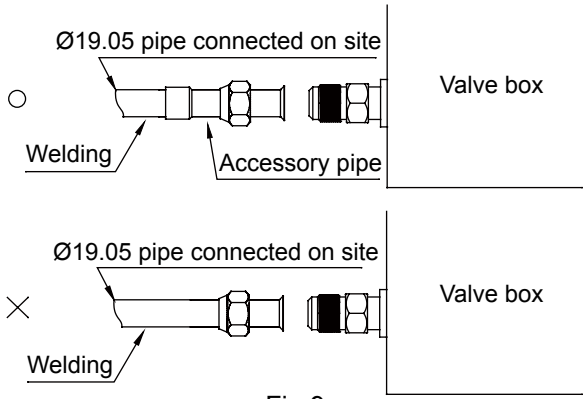


Fig.9

<Note>

- Excessive tightening will result in cracking at the flare and refrigerant leakage.
- To weld the refrigerant pipe, please make nitrogen replacement (*1), or send nitrogen (*2) into the refrigerant pipe while welding the pipe (refer to Fig.10). Finally use the flare or flange to connect the indoor unit and valve box.
  (*1) Nitrogen replacement method is provided in the multi-split system work manual.
  (*2) If nitrogen flowing and welding proceed simultaneously, do use pressure reducing valve. Approximately 0.02 MPa (0.2 Kg/cm with a slight feeling of breeze) pressure is quite proper.

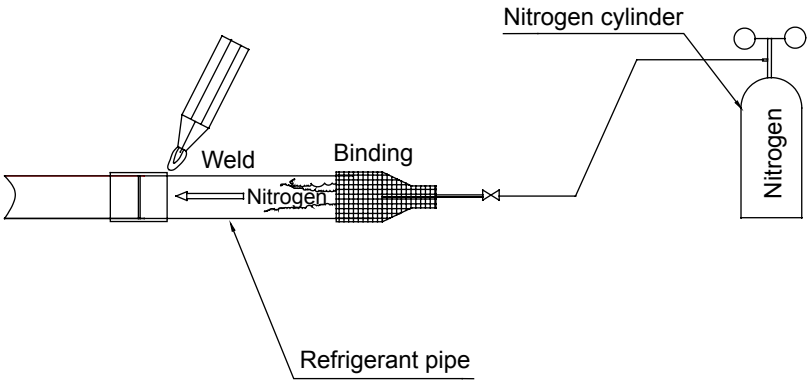


Fig.10

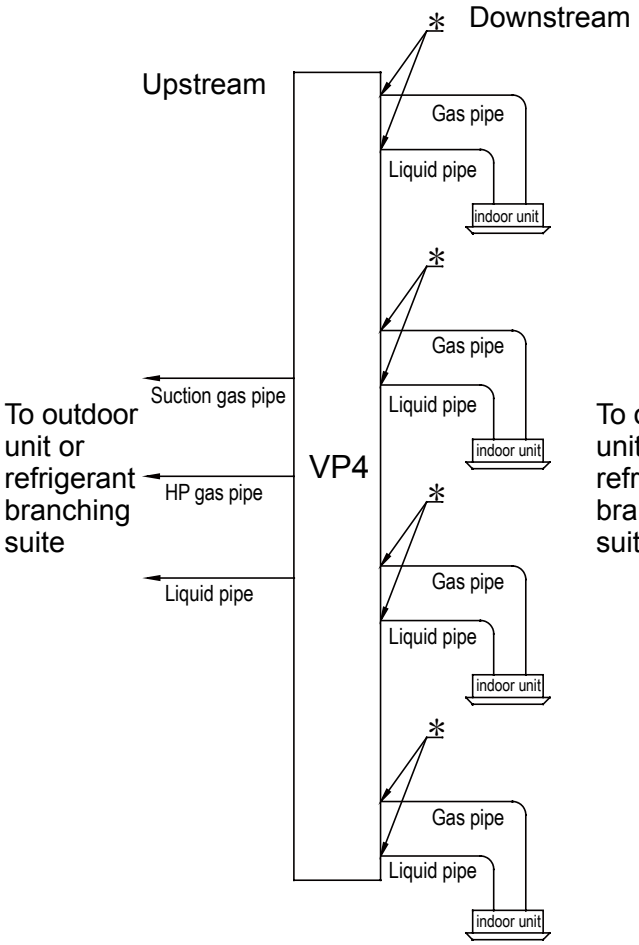
<Note>

- For pipe welding, do not use antioxidant, for its residue may cause tube blocking and component fault.
- For pipe welding, do not use flux. If the flux is chlorine product, it will corrode the tube; if it contains fluorine, it will even cause detrimental effects to the refrigerant system, such as refrigerant oil deterioration. Please do not use phosphor copper for welding material (BCup-2).

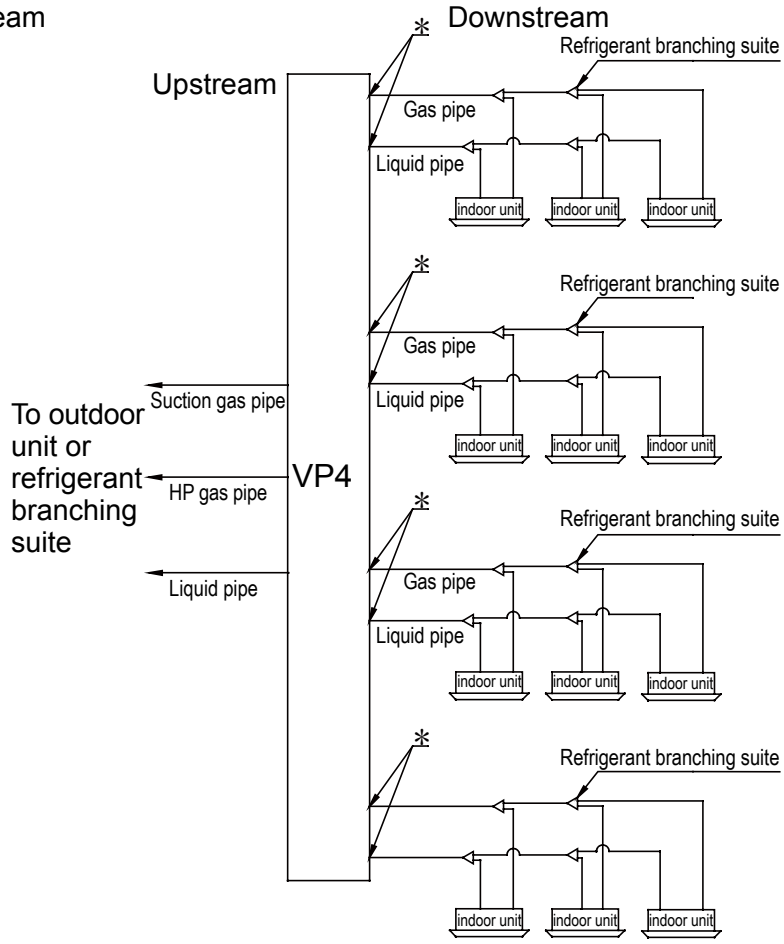
Selection of piping dimensions

Select refrigerant branching dimensions between outdoor units and valve box, between valve box and indoor units according to the following connection examples 1 and 2 and Tables 1-3.

Connection example 1: Connect an indoor unit to the downstream of the valve box



Connection example 2: with branching in the downstream of the valve box



(*) For dimensions of the pipes to the downstream of the valve box, see the table 3. Use the attached pipes for connection in the way shown in Pipe connection according to the pipes dimensions and diameters for indoor unit connection selected in Table 2.

<Table 1> Total capacity and pipe dimensions (mm) of the indoor units

Total capacity of the indoor units Q (kW)	Pipe dimensions (OD × minimum wall thickness)		
	Upstream		
	Suction gas pipe	High pressure gas pipe	Liquid pipe
Q<16.8	Ø15.88×1.0	Ø15.88×1.0	Ø9.52×0.8
16.8≤Q<22.4	Ø19.05×1.0	Ø15.88×1.0	Ø9.52×0.8
22.4≤Q<33	Ø22.22×1.0	Ø19.05×1.0	Ø9.52×0.8
33≤Q<45	Ø28.58×1.2	Ø25.4×1.2	Ø12.7×1.0

<Table 2> Dimensions (mm) of connection tube of the indoor units

Indoor (×100W)	Gas pipe (mm)	Liquid pipe (mm)
22~28	Ø9.52×0.8	Ø6.35×0.8
36~56	Ø12.7×0.8	Ø6.35×0.8
71~112	Ø15.88×1.0	Ø9.52×0.8

Note:
High wall 0.8/1HP gas pipe: Ø12.7
High wall 2HP gas pipe/liquid pipe: Ø15.88/Ø9.52

<Table 3> Dimensions (mm) of connection pipe of the vale box

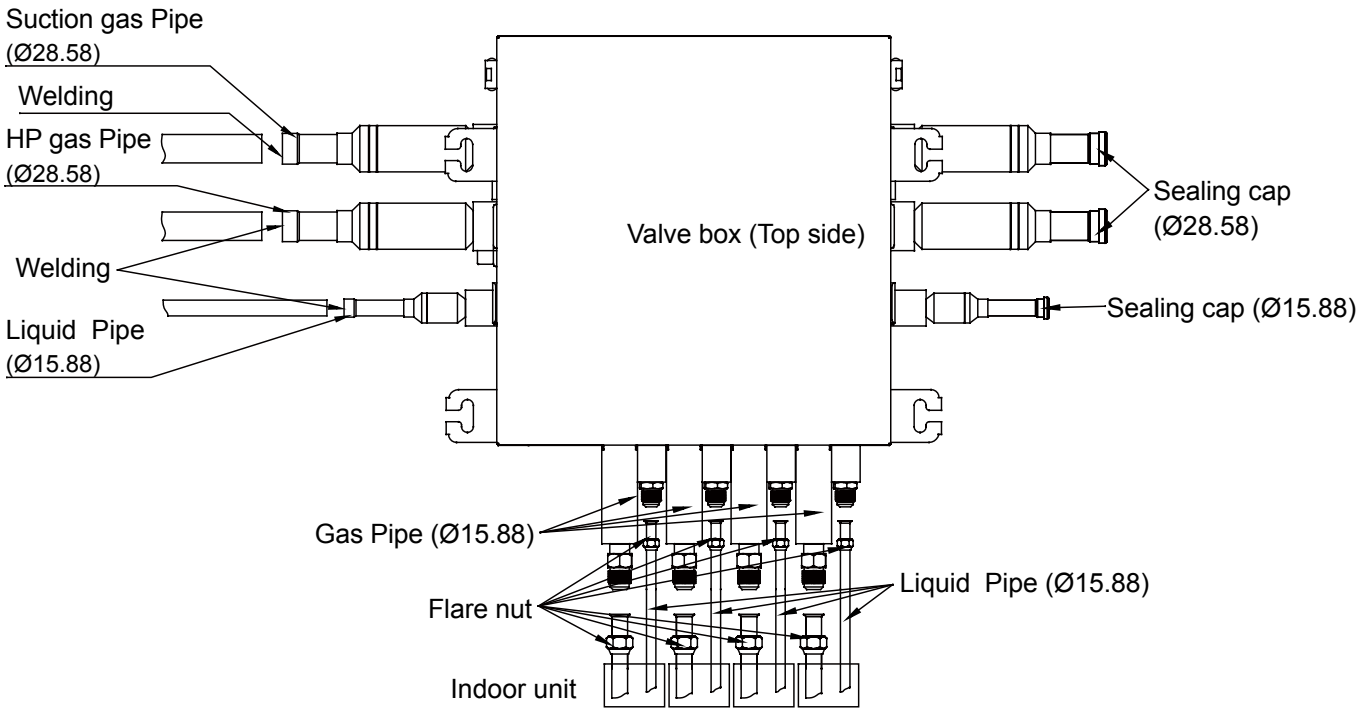
Type of valve box for switch between cooling and heating	Pipe dimensions (OD × minimum wall thickness)				
	High pressure gas pipe	Suction gas pipe	Liquid pipe at the outdoor unit side	Gas pipe of the indoor unit	Liquid pipe at the indoor unit side
KIT VVEA HR 4 PORTS < 45	Ø28.58×1.2	Ø28.58×1.2	Ø15.88×1.0	Ø15.88×1.0	Ø9.52×0.8

Pipe connection

(*1) Refer to the field pipe
(*2) Please use the flare nut installed on the product body again.

Note:
During installation, please confirm the HP gas pipe and Suction gas pipe between outdoor and valve box (such as by sending nitrogen into the HP gas pipe and Suction gas pipe), then connect Suction gas pipe to the Suction gas pipe of valve box, HP gas pipe to the HP gas pipe of valve box.

(Note):
When a 07K, 09K indoor unit is connected in the downstream, please use the auxiliary pipe ①-1,2 for connection according to Fig.11.
When a 12K, 16K, 18K indoor unit is connected in the downstream, please use the auxiliary pipe ①-1,3 for connection according to Fig.11.
When a High wall 0.8/1HP indoor unit is connected in the downstream, please use the auxiliary pipe ①-1,3 for connection according to Fig.11.
When an High wall 2HP indoor unit is connected in the downstream, do not use the auxiliary pipe.


Suction gas Pipe
(Ø28.58)
Welding
HP gas Pipe
(Ø28.58)
Welding
Liquid Pipe
(Ø15.88)
Valve box (Top side)
Sealing cap
(Ø28.58)
Sealing cap (Ø15.88)
Gas Pipe (Ø15.88)
Flare nut
Liquid Pipe (Ø15.88)
Indoor unit

Or

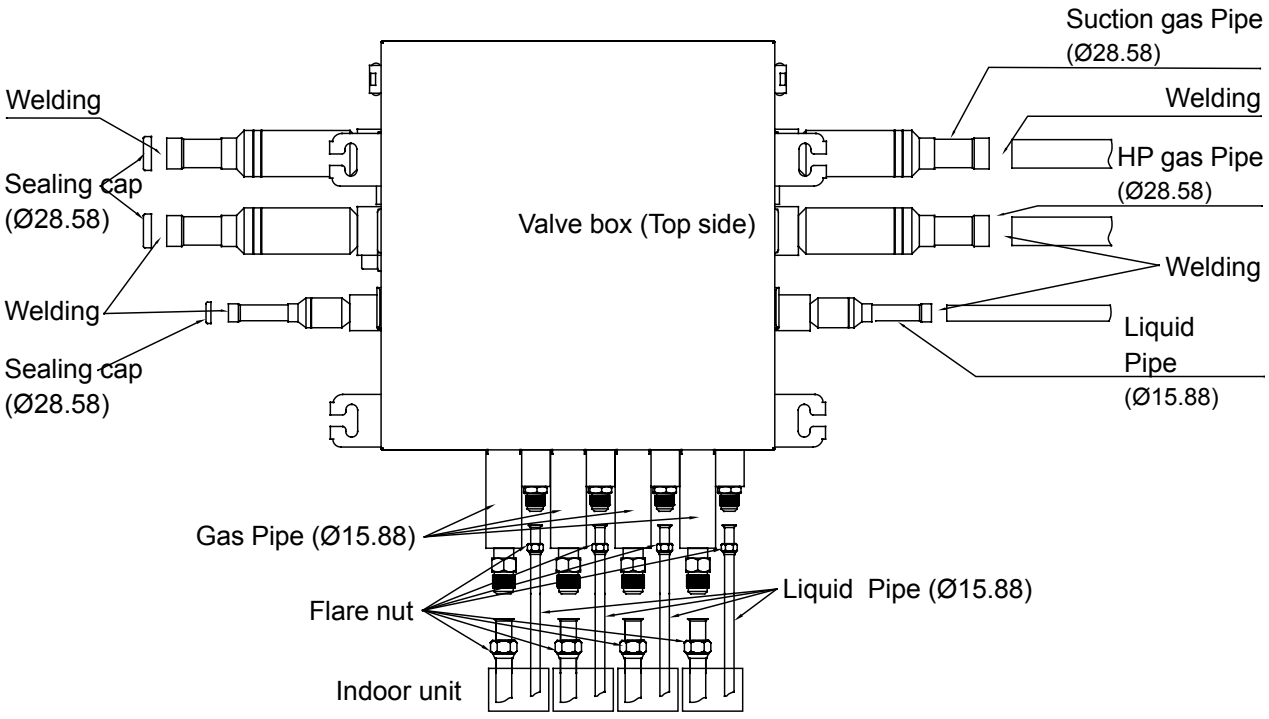
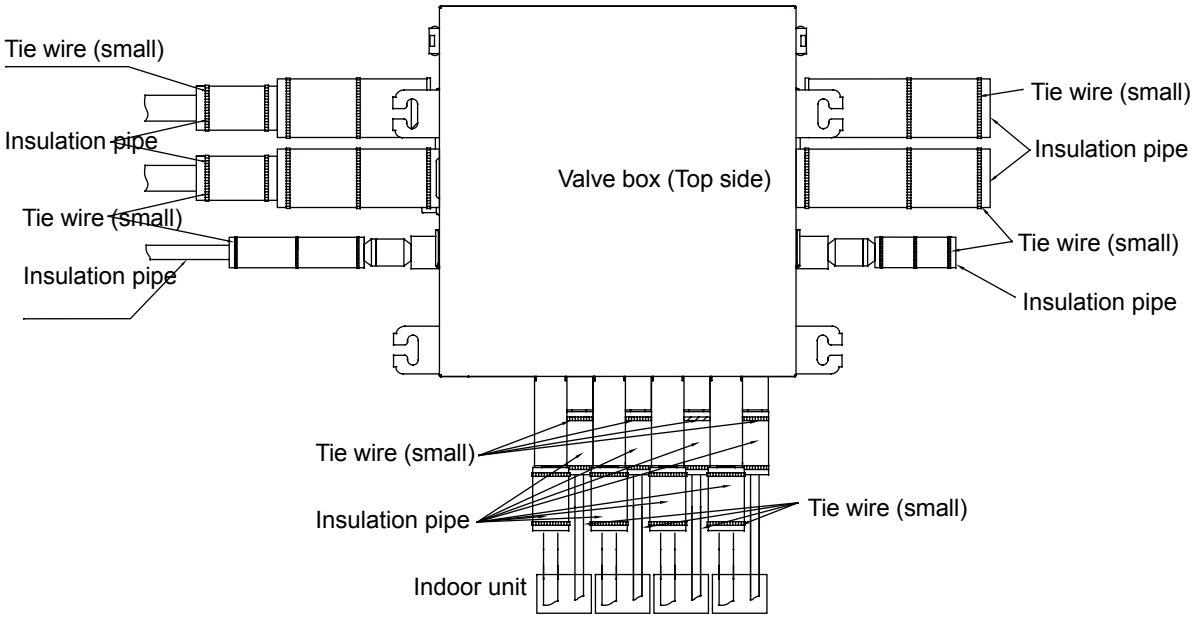

Welding
Sealing cap
(Ø28.58)
Welding
Sealing cap
(Ø28.58)
Valve box (Top side)
Suction gas Pipe
(Ø28.58)
Welding
HP gas Pipe
(Ø28.58)
Welding
Liquid
Pipe
(Ø15.88)
Gas Pipe (Ø15.88)
Flare nut
Liquid Pipe (Ø15.88)
Indoor unit

Fig.11

Pipe insulation

Please use the auxiliary insulation cylinder and anchor for insulation works according to Fig.12 after the gas leakage test.



Or

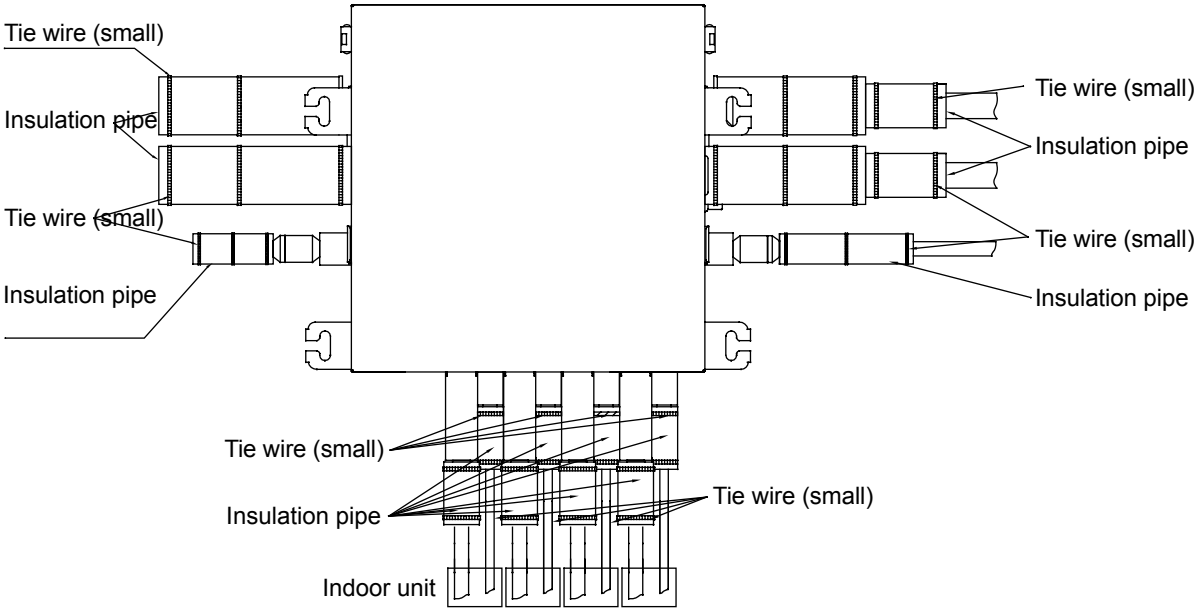


Fig.12

Note 1:
For suction gas pipes, high pressure gas pipe and liquid pipes, gas pipe, flare connections shall be wrapped with insulation materials (purchased locally) when their auxiliary insulation cylinders have been installed.

For installation of insulation materials for the flare nut connections, it shall be cautioned that:
(1) Please connect it tightly so as to ensure no gas leakage at both ends.
(2) The retaining clamp shall not be over tight so as to ensure the thickness of the insulation materials.
(3) Joints of insulation materials (purchased locally) for the upper flare nut connections shall be wrapped upwards.
(4) Ensure that joints of the insulation materials are installed upwards. (See Fig.13.)

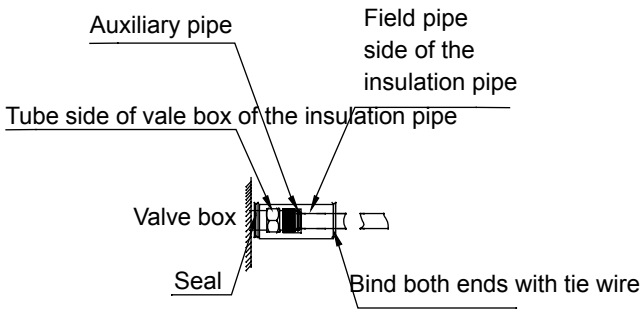


Fig.13

⚠Warning

- Electrical construction should be made with specific mains circuit by the qualified personnel according to the installation instruction. Electric shock and fire may be caused if the capacity of power supply is not sufficient.
- During arranging the wiring layout, specified cables should be used as the mains line, which accords with the local regulations on wiring. Connecting and fastening should be performed reliably to avoid the external force of cables from transmitting to the terminals. Improper connection or fastness may lead to burning or fire accidents.
- There must be the ground connection according to the criterion. Unreliable grounding may cause electrical shocks. Do not connect the grounding line to the gas pipe, water pipe, lightening rod and telephone line.

⚠ Attention

- Only copper wire can be used. Breaker for electric leakage should be provided, or electric shock may occur.
- The wiring of the mains line is of Y type. The power plug L should be connected to the live wire and plug N connected to null wire while ⏚ should be connected to the ground wire. For the type with auxiliary electrically heating function, the live wire and the null wire should not be misconnected, or the surface of electrical heating body will be electrified. If the power line is damaged, replace it by the professional personnel of the manufacturer or service center.
- The power line of valve boxes should be arranged according to the installation instruction of valve boxes.
- The electrical wiring should be out of contact with the high-temperature sections of tubing as to avoid melting the insulating layer of cables, which may cause accidents.
- After connected to the terminal tier, the tubing should be curved into be a U-type elbow and fastened with the pressing clip.
- Controller wiring and refrigerant tubing can be arranged and fixed together.
- The machine can't be powered on before electrical operation. Maintenance should be done while the power is shut down.
- Seal the thread hole with heat insulating materials to avoid condensation.
- Signal line and power line are separately independent, which can't share one line. [Note: the power line, signal line are provided by users. Parameters for power lines are shown as below: 3×(1.0-1.5) mm^2; parameters for signal line: 2×(0.75-1.25)mm^2(shielded line)]
- Valve boxes and outdoor units should be connected to the power source separately. All valve boxes must share one single electrical source, but its capacity and specifications should be calculated. Indoor & outdoor units should be equipped with the power leakage breaker and the overflow breaker.
- Valve box can be installed in multiple, named as unit A, unit B…. Pay attention to the marks on the terminal block when connecting the outdoor unit with the indoor unit. Refer to wiring example as described in 5-2 while ensuring correct connection. In addition, the operation will be abnormal when the wiring and the tubing between indoor and outdoor machine sets are installed in different refrigerant systems.
- Energization is not to be done before it’s confirmed that the valve box have completely installed and that the outdoor and indoor installation is completed.

The wiring for the power line and signal line of valve box

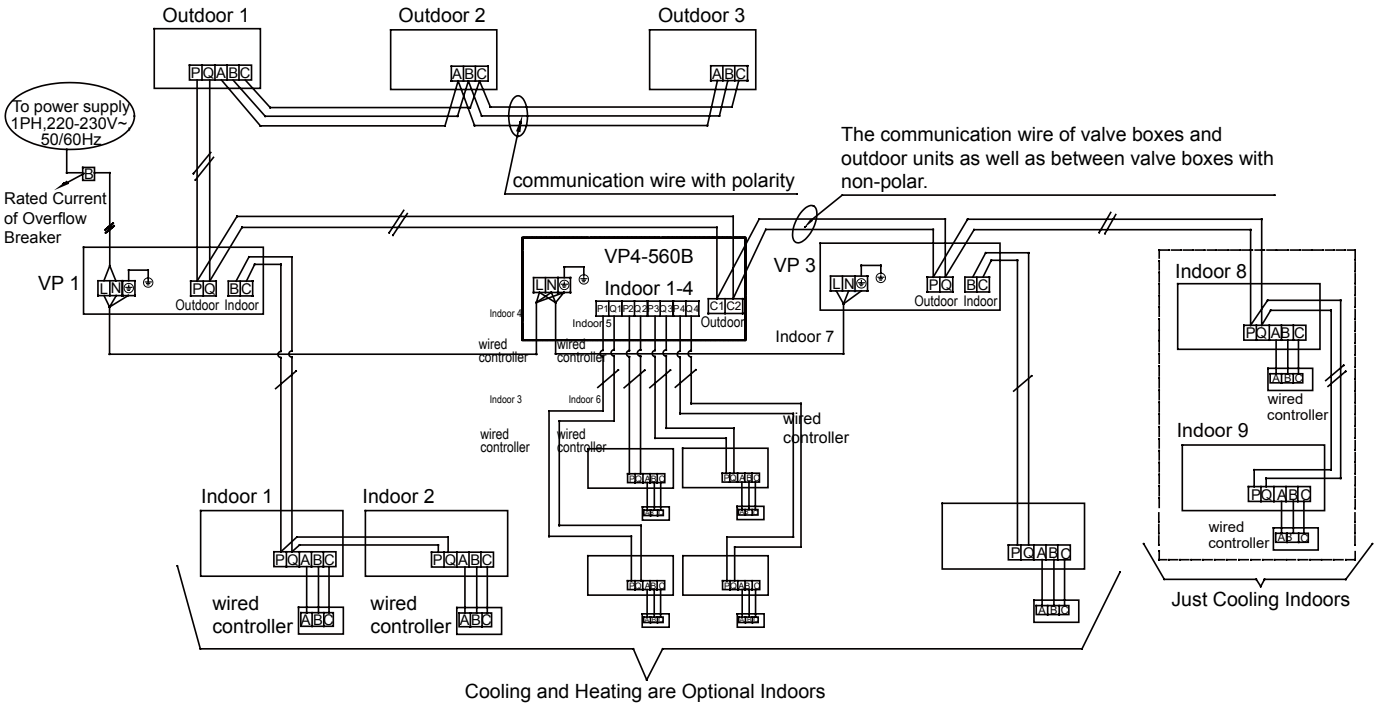
The wiring for the power line of valve box, the wiring for the signal line between valve boxes and outdoor units as well as the wiring between valve boxes.

Items / Total Current of valve boxes（A）	Cross Section（mm^2）	Rated Current of Overflow Breaker (A)	Rated Current of Power Leakage Breaker (A) Leaking Current (mA) Operating Period (S)	Cross Sectional Area of Signal Line	
				Outdoor-valve box (mm^2)	Valve box- valve box (mm^2)
<15	2.5	15	15A, 30mA, 0.1S or below	2cores ×0.75-2.0 mm^2 shielded line	

- Power cable and communication wire must be fixed firmly.
- Each valve box must be earthed well.
- When power cable exceeds the range, thicken it appropriately.
- Shielded layer of communication wires must be connected together and be earthed at single point.
- Communication wire total length cannot exceed 1000m.

Graphical representation for wiring

Connect the communication terminal block P and Q of the main unit of the outdoor units with the communication terminal block P and Q of the first valve box (VP 1).

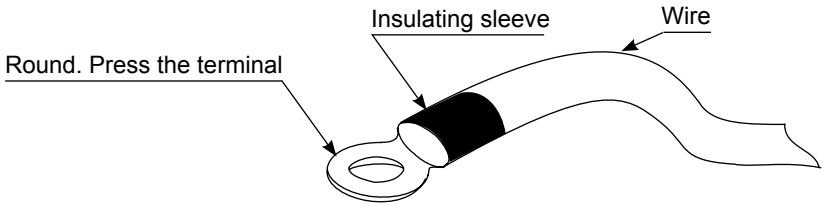


Notes:

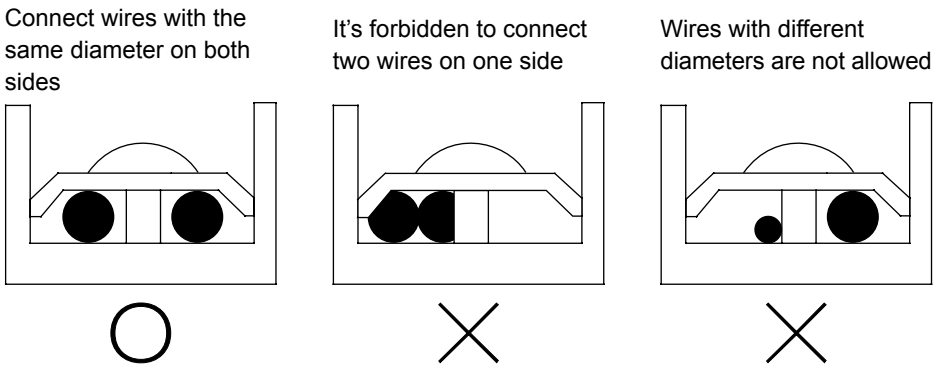
(1) The above wiring example is only for reference. The number of valve boxs and indoor units shall be subject to the field installation.

(2) Communication line from cooling-only indoor unit may be connected to the communication terminal block P and Q (outdoor) of the valve box.

(3) Two-core nonpolar communication line with shield shall be adopted for communication lines between the valve box and the indoor/outdoor unit. Three-core polar communication line with distinguished polarities and shield shall be adopted for the wire controller connected to the indoor unit.
(4) All valve boxes within one system may share one overcurrent breaker for power supply. But it's necessary to compute total current capacity specification.
(5) For wring harness connected to the power terminal block, the terminal shall be pressed with a round (refer to the following figure).



1) The power terminal block shall not be crimped with 2 wires of different diameters. Otherwise, poor crimp connection and looseness may lead to abnormal heating or sparking of the line.
2) Refer to the following figure for crimping wires with the same diameter.



(6) Tighten terminal screws with proper screw driver. Screw driver of small dimension will damage the screw head and fail to tighten properly.
(7) If terminal screws are tightened excessively, they may be damaged. Refer to the following table for tightening torques of terminal screws:

Dimension of terminal screw	Tightening torque (N.m)
M3.5 (terminal block for communication line)	0.80~0.96
M4 (terminal block for power line)	1.18~1.44
M4 (terminal block for ground wire)	1.52~1.86

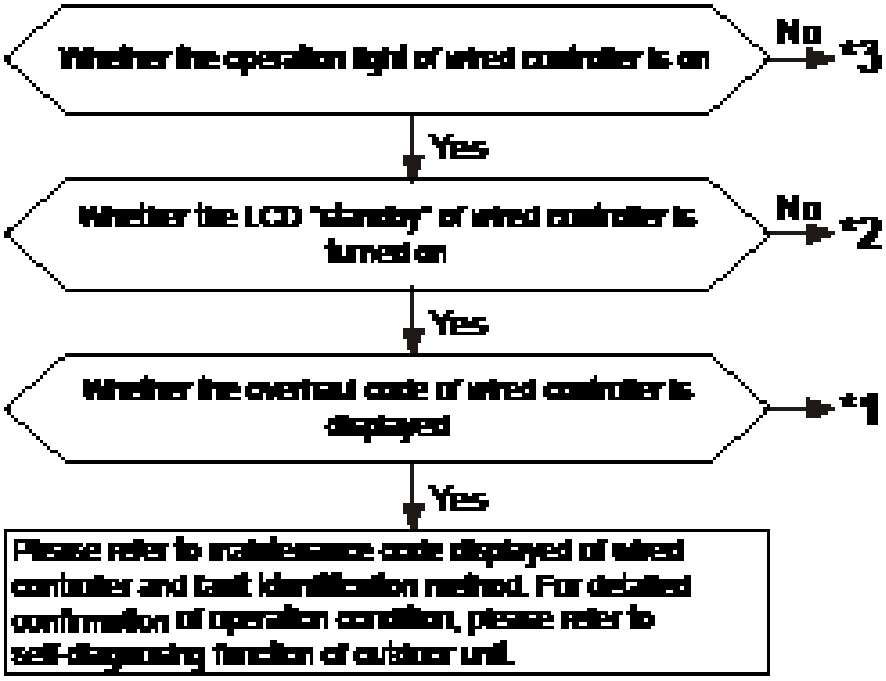
(8) Power line is forbidden to the communication terminal block because it will damage the circuit control board.
(9) Wiring of communication lines shall be within the following scope. Exceeding the limit will possibly lead to abnormal communication.

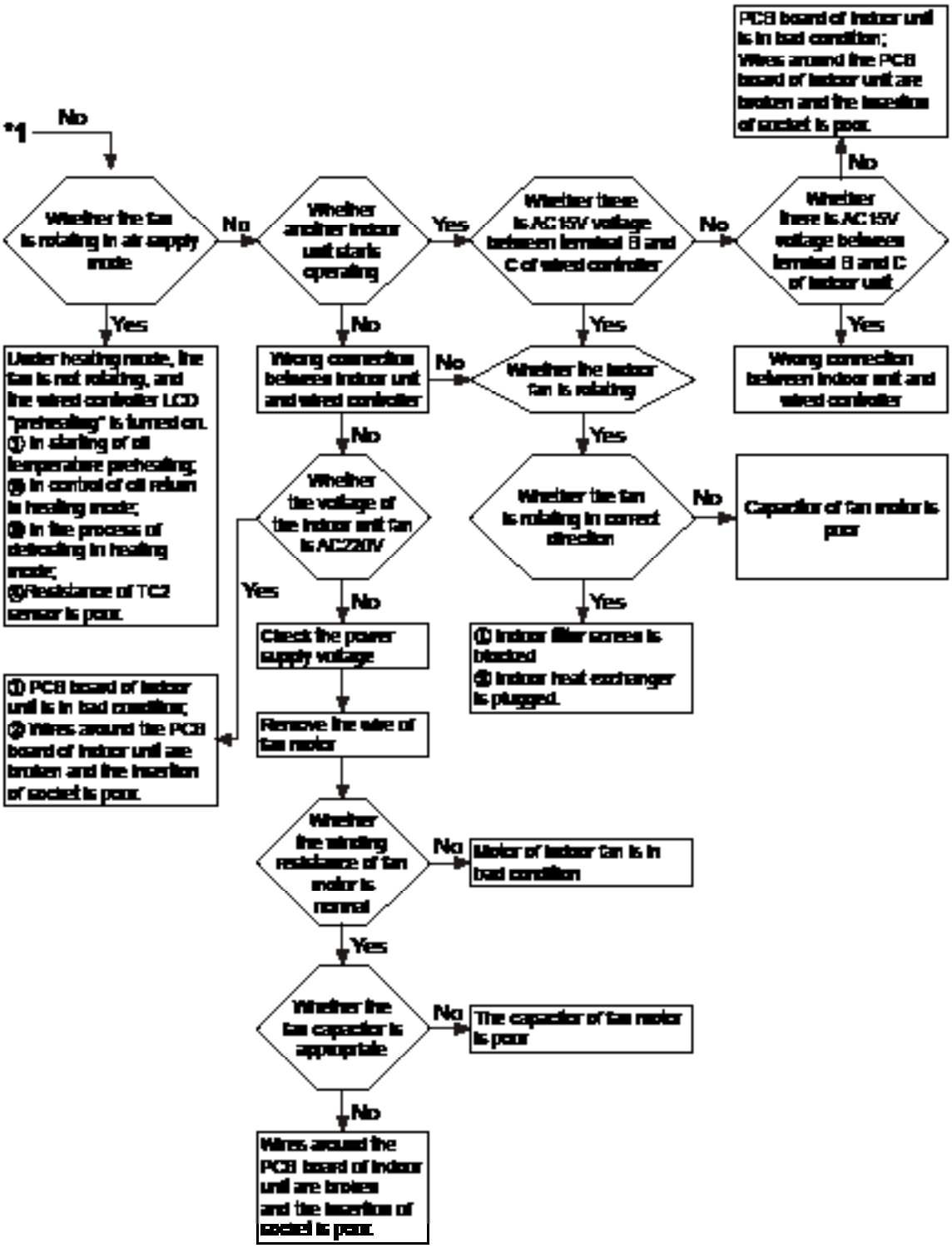
1) The maximum wiring length between the outdoor machine and the valve cage, the valve cage and the indoor machine, and between valve cages is 1000 m at most. The total wiring length is 2000m at most. The maximum branch number is 16.
2) The maximum wiring length between the valve cage and the wire controller for switching working modes is 500 m at most.

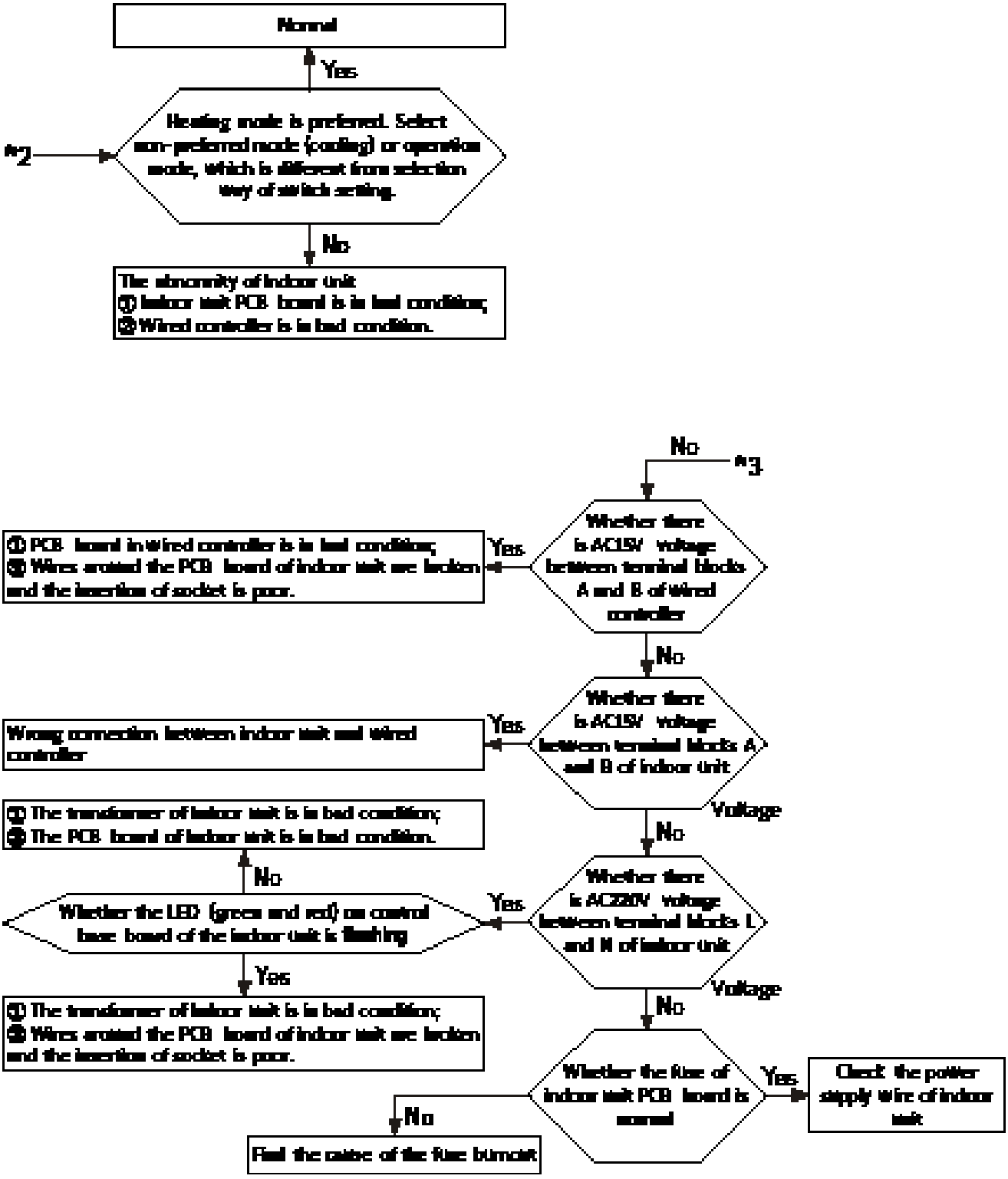
6. Trial operation confirmation

The test run confirmation, in principle, shows that all the indoor units should be confirmed one by one. The improper connection of refrigeration pipe and control wire cannot be confirmed when all the indoor units are running simultaneously. So all the other indoor units should be set in "stopped condition".

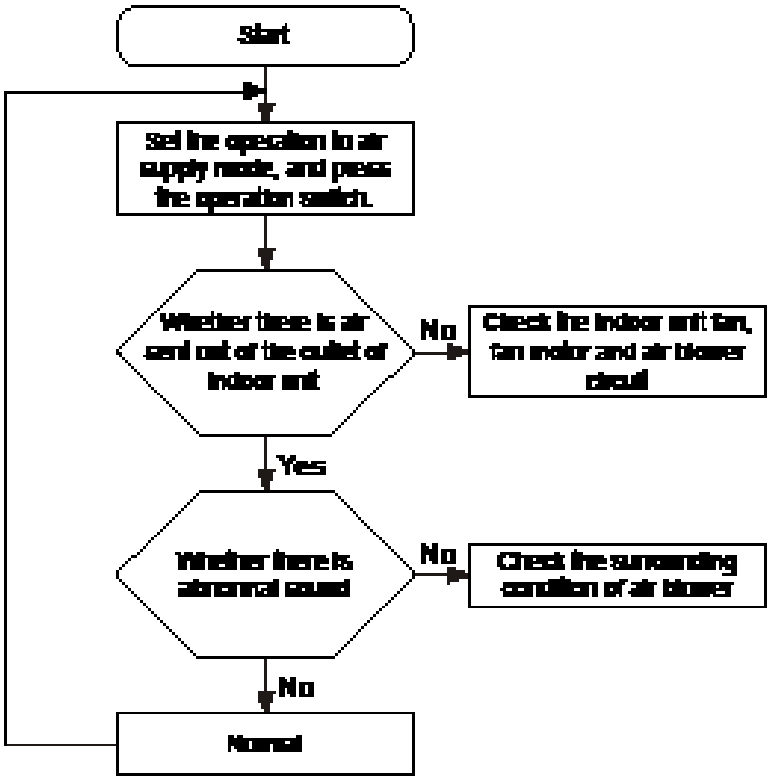
A. Main power supply and initial confirmation




*1
No
Whether the fan is rotating in air supply mode
No
Whether another indoor unit starts operating
Yes
Whether there is AC15V voltage between terminal B and C of wired controller
No
Whether there is AC15V voltage between terminal B and C of indoor unit
No
PCB board of indoor unit is in bad condition;
Wires around the PCB board of indoor unit are broken and the insertion of socket is poor.
Yes
Under heating mode, the fan is not rotating, and the wired controller LCD "preheating" is turned on.
① In starting of oil temperature preheating;
② In control of oil return in heating mode;
③ In the process of defrosting in heating mode;
④Resistance of TC2 sensor is poor.
No
Wrong connection between indoor unit and wired controller
No
Whether the indoor fan is rotating
Yes
Wrong connection between indoor unit and wired controller
No
Whether the voltage of the indoor unit fan is AC220V
Yes
① PCB board of indoor unit is in bad condition;
② Wires around the PCB board of indoor unit are broken and the insertion of socket is poor.
No
Check the power supply voltage
Remove the wire of fan motor
Whether the winding resistance of fan motor is normal
No
Motor of indoor fan is in bad condition
Yes
Whether the fan capacitor is appropriate
No
The capacitor of fan motor is poor
No
Wires around the PCB board of indoor unit are broken and the insertion of socket is poor.
Yes
Whether the fan is rotating in correct direction
No
Capacitor of fan motor is poor
Yes
① Indoor filter screen is blocked
② Indoor heat exchanger is plugged.

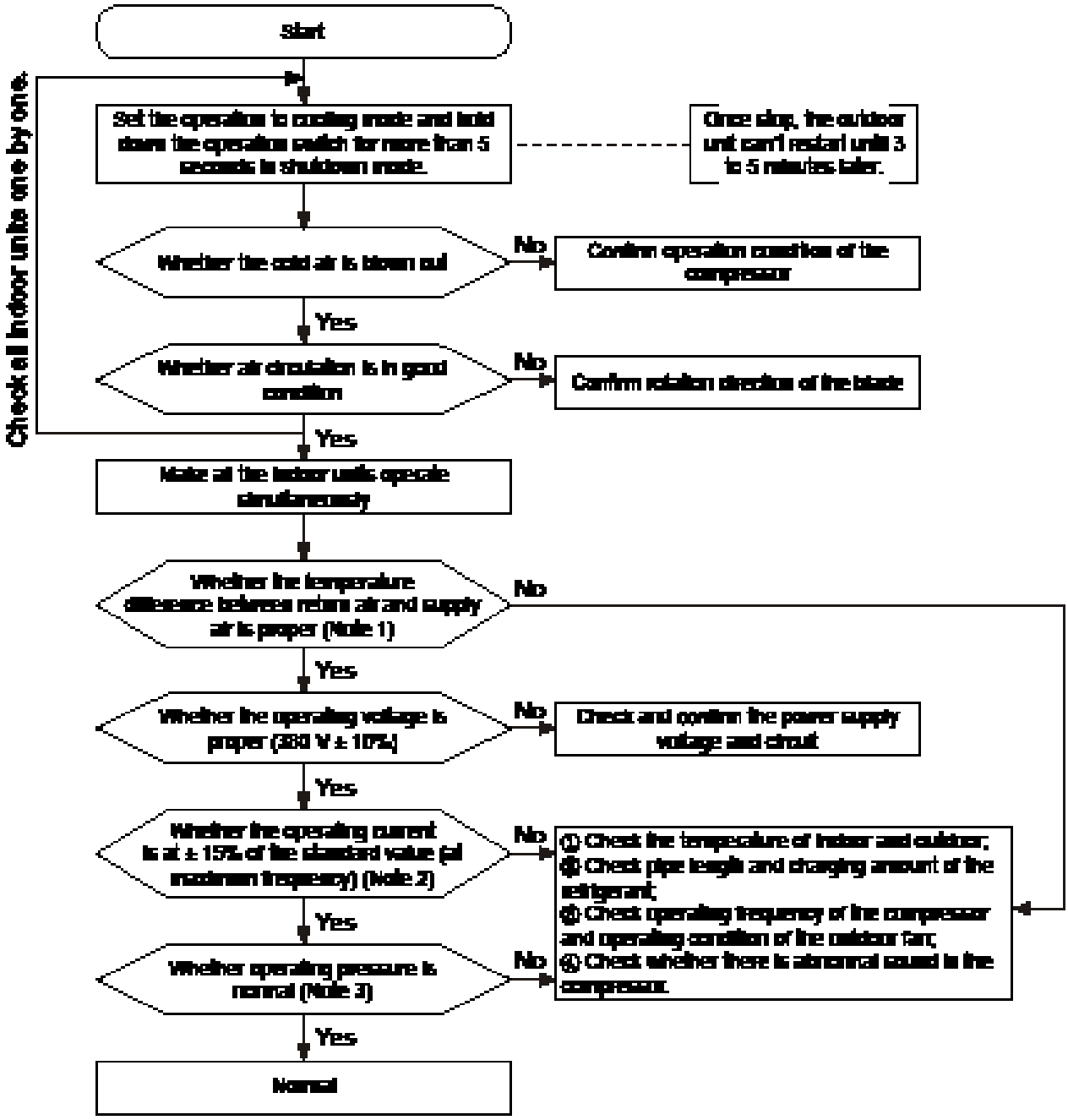

Normal
Yes
Heating mode is preferred. Select non-preferred mode (cooling) or operation mode, which is different from selection way of switch setting.
*2
No
The abnormity of indoor unit
① Indoor unit PCB board is in bad condition;
② Wired controller is in bad condition.
No
*3
Whether there is AC15V voltage between terminal blocks A and B of wired controller
Yes
① PCB board in wired controller is in bad condition;
② Wires around the PCB board of indoor unit are broken and the insertion of socket is poor.
No
Whether there is AC15V voltage between terminal blocks A and B of indoor unit
Yes
Wrong connection between indoor unit and wired controller
Voltage
No
Whether there is AC220V voltage between terminal blocks L and N of indoor unit
Yes
① The transformer of indoor unit is in bad condition;
② The PCB board of indoor unit is in bad condition.
No
Whether the LED (green and red) on control base board of the indoor unit is flashing
Yes
Voltage
No
① The transformer of indoor unit is in bad condition;
② Wires around the PCB board of indoor unit are broken and the insertion of socket is poor.
Whether the fuse of indoor unit PCB board is normal
Yes
Check the power supply wire of indoor unit
No
Find the cause of the fuse burnout

B. Air blower operation confirmation

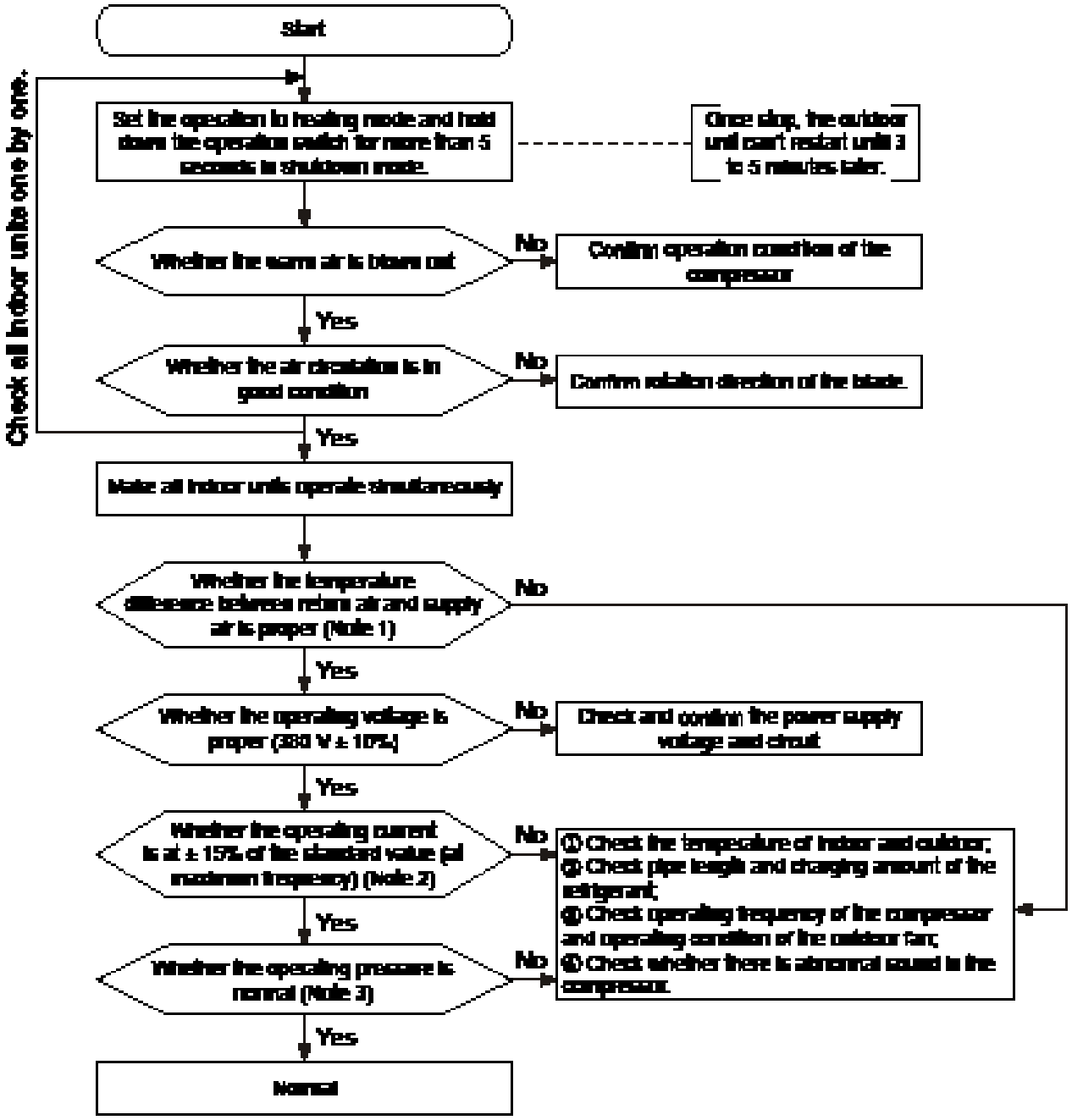


Note: Check the indoor units one by one.

C. Cooling operation confirmation



D. Heating operation confirmation



(Note 1)The general standard for temperature difference between inlet and outlet air

In "cooling" operation, it is normal that the dry bulb temperature difference between inlet air and outlet air of the air conditioner is over 10°C (at the maximum frequency) after 30 minutes at least.
In "heating" operation, it is normal that the dry bulb temperature difference between inlet air and outlet air of the air conditioner is over 14°C (at the maximum frequency) after 30 minutes at least.

(Note 2) General standard for operating current

It is normal that the current in either cooling/heating operation mode is within ±15% of the calibrated current. The value of current may have the following differences due to different operation conditions: When higher than the standard value of the current: the temperature of indoor and outdoor is high; heat dissipation of outdoor unit is poor. When lower than the standard value of the current: the temperature of indoor and outdoor is low; refrigerant gas leaks (insufficient refrigerant).

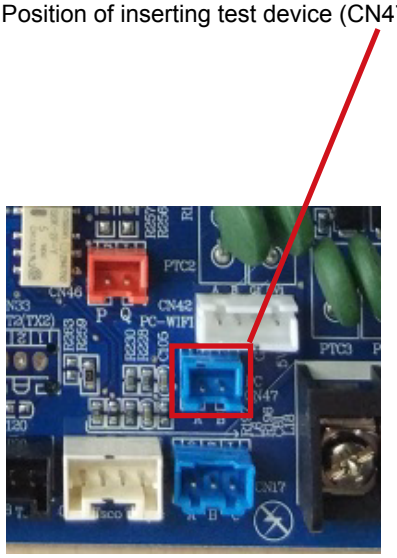
(Note 3) General standard for operating pressure

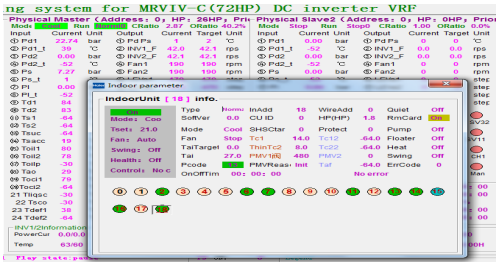
Cooling (at the maximum frequency)	High pressure 2.0~3.8 MPa	Indoor 18-32°C Outdoor 25-35°C
	Low pressure 0.6~1.0 MPa	
Heating (at the maximum frequency)	High pressure 2.2~3.0 MPa	Indoor 15-25°C Outdoor 5-10°C
	Low pressure 0.3~0.8 MPa	

Values after 15-minute operation (the temperature therein refers to dry bulb temperature with unit of °C)
The transformation trend of high pressure and low pressure due to change of operation condition
Refrigeration/heating: indoor temperature rises – high/low pressure rises
Indoor temperature drops – high/low pressure drops
Outdoor temperature rises – high/low pressure rises
Outdoor temperature drops – high/low pressure drops

Evaluating unit through test device

Operation	Begin to operate the system whose complete setting has been confirmed. Operating methods:	
	1. Switch the BM1, BM2 to OFF , search the indoor units and outdoor unit to check if the number of indoor units are right.	
	2. Switch the SW1, SW2, SW3 to 0, 13, 2 respectively, then press SW2 for 2 seconds, the digital display tube will display “1111” and indoor unit will enter into cooling operation; or switch SW1, SW2, SW3 to 0, 14, 2 respectively, then press SW2 for 2 seconds, the digital display tube will display “1111”, indoor unit will turn on automatically and enter into heating operation. Frequency of compressor is controlled by low pressure control for cooling, and high pressure control for heating.	

<table>
<tr><td rowspan="4">Data measuring</td><td>1. Connecting methods of device: Insert one end of data line into the terminal of main PCB CN31 with a two-core terminal, one end connects with 485 device or Gangda device, the other end of the device connects computer.</td><td rowspan="4">Position of inserting test device (CN47)
 

It is normal if there is high pressure frequency limitation or high discharging temperature frequency limitation when outdoor ambient temperature is high and all the indoor units are operating.</td></tr>
<tr><td>2. The data that can acquire through device Outdoor unit: The frequency of outdoor unit compressor /Outdoor fan speed/Opening of outdoor electronic expansion valve/ High pressure of outdoor unit/Corresponding saturation temperature of outdoor unit's high pressure/Low pressure of outdoor unit/Corresponding saturation temperature of outdoor unit's low pressure/Discharging temperature/ Suction temperature/Oil temperature/ Temperature of condenser outlet pipe/Ambient temperature/Temperature of defrosting sensor/Starting of all kinds of solenoid valve Indoor unit: Temperatures of gas pipe and liquid pipe, opening angle of electronic expansion valve /Display of failure</td></tr>
<tr><td>3.Test device can display failures of the unit during operation, moreover it can realize a function of storing data in real time, and the test data can be stored in computer.</td></tr>
<tr><td>4.Prepare a report according to the test data and submit it to user.</td></tr>
<tr><td rowspan="5">Confirmation of the data</td><td>The confirmation of running data/Timing and recording of the measurement. After the measurement is begun, check the system pressure through detection software. Generally, the cooling low pressure is about 7.5kg and the heating high pressure is about 28kg under rated cooling and heating modes. Then observe if operation under each parameter is normal.</td><td rowspan="5"> 
</td></tr>
<tr><td>There is a picture about cooling operating parameters' data in the right column, after operating about half hour, the unit remains stable.</td></tr>
<tr><td>Check if there is a blockage in capillary during operation, if any, replace it.</td></tr>
<tr><td>Check if there is contact between refrigerant piping and capillary tube, if any, deal with it.</td></tr>
<tr><td>Check if wires of sensor (such as wiring, pressure sensor, etc.) are too tight, or contact with vibrating pipe, if so, deal with it.</td></tr>
<tr><td></td><td>Check if the value of sensor is correct.</td><td></td></tr>
</table>

7. Startup

7.1 Startup procedure

1. The materials preparation before on-site commissioning
 --Printed drawing of architectural design
 --Printed installation checking list and system start request
 --Startup manual
 --Flow Logic IV service manual
 --Trouble shooting and error code

2. Read the attention carefully before start up

3. Installation checking
 --installation checking
 --Parameter standard checking list

4. Operation
 --Dip switch setting for indoor units
 --Dip switch setting for outdoor units
 --Dip switch setting for controllers
 --Power on
 --Locking quantity of indoor and outdoor units (BM1-1/BM1-2)

5. Trail operation
 --Startup of indoor units
 --Running parameter checking
 --Running parameter standard
 --Completion of startup report

7.2 Installation checking

1. Piping
 --Enough fixed supports
 --Branch pipe installed horizontal way
 --Welding (Nitrogen flow)
 --Branch pipe distance,1m (39.37 inch) away from each other and 0.5m (19.7 inch) far from IDU

2. Drain
 --1% gradient (indoor unit)
 --Exhaust outlet for drain pipe (indoor unit)
 --Aerial part height above 200mm (outdoor unit)

3. Communication wire (important)
 --PQ cable connected hand by hand
 --The PQ shielded layer must be single point ground to master unit
 --The PQ cable is 2X0.75mm with shielded layer
 --There is at least 10cm (3.94 inch) distance between communication and power source line
 --Before starting, don’t connect the terminal PQ to the ODU, it may cause unexpected start

4. Electricity wire
 --Independent wire line to each IDU
 -- Same phase power supply
 -- Add breaker for each IDU
 -- Electricity wire installed to IDU and ODU correctly

5. Indoor unit
 --Anti-dust protection during installation
 --Installed on properly level
 --Service space reserved at least 50X50cm

6. Outdoor unit
 -- Installed an anti-vibration at the bottom
 -- Space (20cm/7.87inch away from each other)
 -- Gather pipe are the same level
 -- Breaker
 -- Communication cable (A / B / C, PQ)

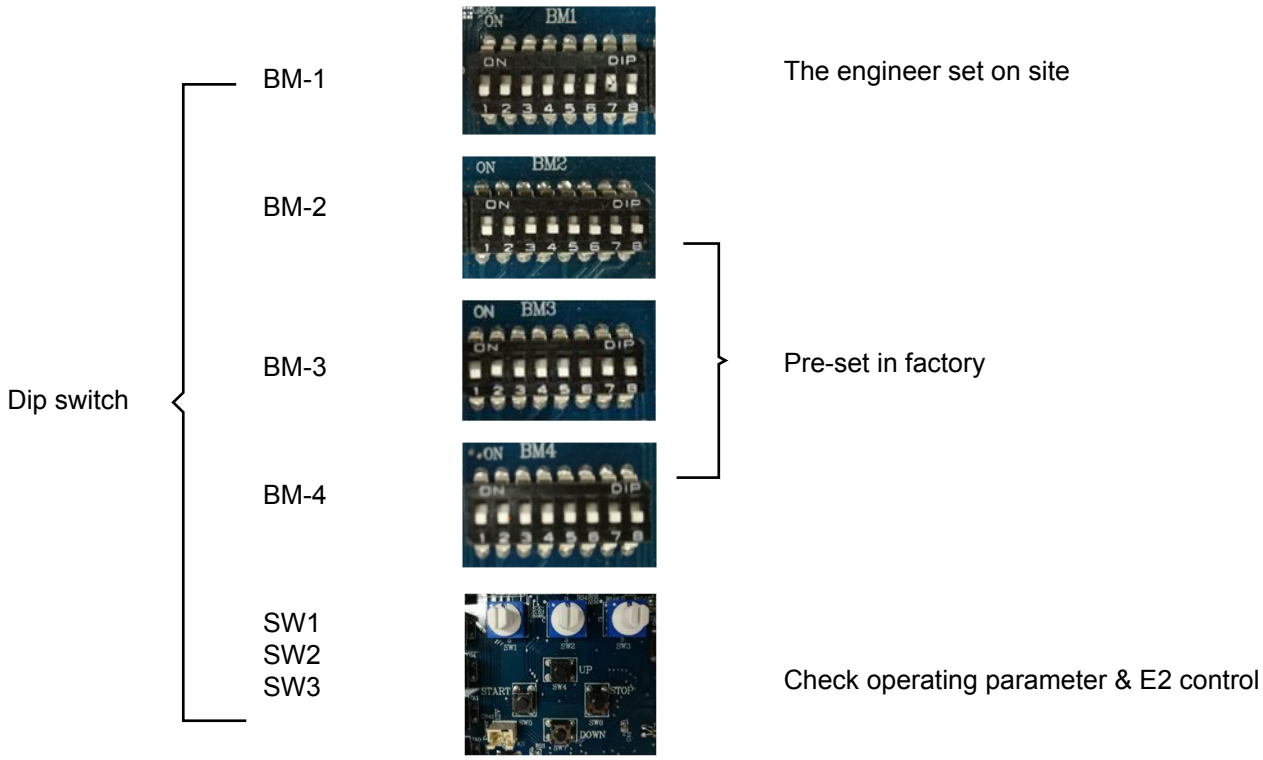
7. Pre start up
 -- 100% of the piping completed the pressure test
 -- Vacuum test
 -- The system have been with electric power more than 6h
 -- Outdoor unit addressing (Master 0, slave 1, slave2)
 -- Indoor units are addressing correctly
 -- All the indoor units work correctly in Fan mode

7.3 Wiring-dip switch

1. Indoor dip switch setting—Indoor units for Flow Logic IV and indoor units for Flow Logic III are the same, so indoor dip switch setting is completely the same, please check with the service manual.
2. Controller dip switch setting- it's the same as the controller dip switch setting of MRVIV, please check the service manual.

IDU Dip switch setting
For different IDU PCB board, the setting is little different. When start up, check the below Dip switch setting:
SW01 (1~4 or 2~4)--------Set the master/slave unit when use wired controller in group control
SW01 (5~8)----------Set the capacity of the unit(default setting, no need to reset)
SW03 (1~8)----------Set the communication address and central address(the default setting is set the address by wired controller or automatically)

ODU Dip switch setting



7.4 Power on

1. For the protection of the compressor, It is required to preheat the compressor oil before start up the indoor and outdoor units. 6 hours of preheating is the standard time for the preheating, the engineers have to wait for 6 hours until the compressor oil reaches the required temp. The main PCB will show on the LED time counting down.
2. The outdoor and indoor units communication P, Q should be disconnected before turning on indoor units in case of any unexpected operation.

7.5 Search and lock outdoor \ indoor unit

1. Search: Set BM1-1 at off to search outdoor unit, set BM1-2 at off to search indoor unit.
2. Lock: When ensuring that the displayed indoor units, valve boxes and outdoor units quantity is equal to that of actually installed, the indoor, valve box and outdoor units quantity can be locked. The locking method is to set the master module dip switch BM1-1 and BM1-2 from OFF to ON.

7.6 Trial operation and parameters record

1. The requirement of startup is to set the temp. to be 16 degree centigrade, high speed fan in cooling mode and 30 degree centigrade, high speed fan in heating mode. The following is the example when using wired controller of temp. display.
2. In cooling or in heating mode, let the outdoor and indoor units run for 1 hour;
3. Record for the first time after the unit running for 1 hour, and then record every half an hour for 5 times.
4. Running Parameters Checking Standard.

Mode	TA	Pd(MPa)	Ps(MPa)	Toil	Td(°C)	Ts	Outdoor EEV	Indoor EEV
Cooling	18~27	1.5~2.4	0.4~0.85	closed to Td	60~110	-20~30°C	250	60~480
	28~35	1.7~3.2	0.5~0.9	closed to Td	60~110	-20~30°C	250	60~480
	above 35	2.0~2.9	0.7~1.05	closed to Td	60~110	-20~30°C	250	60~480
Heating	below -5	1.6~2.8	0.1~0.4	closed to Td	60~110	-20~30°C	60-350	200~480
	-5~7	1.9~2.8	0.3~0.8	closed to Td	60~110	-20~30°C	60-350	200~480
	above 7	2.2~3.6	0.8~1.05	closed to Td	60~110	-20~30°C	60-350	200~480

7.7 Flow Logic IV system startup report

Airwell	Flow Logic IV

INSTALATION CHECK LIST AND SYSTEM START UP REQUEST ENGLISH BETA 1.2

PROJECT:
CUSTOMER:
INSTALLER: _____
CITY/COUNTRY: _____
ADDRESS: _____
CONTACT TEL: _____ DATE: DD / MM / YY

PROJECT CONFIGURATION

SYSTEM 1 CODE		MODEL	
SYSTEM 2 CODE		MODEL	
SYSTEM 3 CODE	_____	MODEL	_____
SYSTEM 4 CODE	_____	MODEL	_____
SYSTEM 5 CODE	_____	MODEL	_____
SYSTEM 6 CODE	_____	MODEL	_____
SYSTEM 7 CODE	_____	MODEL	_____
SYSTEM 8 CODE	_____	MODEL	_____
SYSTEM 9 CODE	_____	MODEL	_____
SYSTEM 10 CODE	_____	MODEL	_____
SYSTEM 11 CODE	_____	MODEL	_____
SYSTEM 12 CODE	_____	MODEL	_____
SYSTEM 13 CODE	_____	MODEL	_____
SYSTEM 14 CODE	_____	MODEL	_____
SYSTEM 15 CODE	_____	MODEL	_____

COMMENTS:

INSTALLER: _____ SIGNATURE: _____
DATE : _____

INSTALATION CHECK LIST

ENGLISH BETA 1.2

1. PREINSTALATION — YES

1.1. REFRIGERATION PIPING

* Refrigerant piping are correctly insulated. ☐
* Refrigerant piping have enough fixed supports. ☐
* All welds were made with permanent nitrogen flow, to create an inert atmosphere. ☐
* All branch pipes are installed in horizontal direction. ☐
* There are at least the distance of 1m between branch and branch, and 0.5m far from the indoor units. ☐

1.2. DRAIN

* Drain piping is correctly insulated.
* Exhaust outlet for drain pipe.
* A drop of at least 1% is guaranteed (1 cm per linear meter). ☐
* Drain's piping diameter is according to requirements. ☐
* Drain piping is separated for unit with drain pump. ☐

1.3. COMMUNICATION WIRE

* The communication wire is properly installed between outdoor and indoor units - P/Q (Assy. chain).
* The wire for centralized control is properly installed between A/C and interface (Assy. chain).
* Sequence of colors in the cord is guaranteed P-P, Q-Q.
* The wiring is 2 x 15 with shield cord. The shield layer is fixed to ground on one point. ☐
* There is independent pipeline for communication wire. ☐
* There is a 10cm distance between communication wire and electricity wire at least. ☐
* Before starting, do not connect the terminal P, Q on the outdoor unit, it may cause unexpected start. ☐

1.4. ELECTRICITY WIRE

* There is independent pipeline for electricity wire to each indoor unit. ☐
* There is a general power supply for all indoor unit. ☐
* There is same phase power supply for all indoor units in one group under wired controller. ☐
* Security power off system: Is there a breaker for each outdoor and indoor unit? ☐
* Electricity wire is installed to indoor and outdoor units correctly. ☐

1.5. INDOOR UNITS

* During installation indoor units have dustproof protection. ☐
* All the units are properly leveled, and fixing system allows adjustments when is required. ☐
* The flare nuts are correctly adjusted and tightened for each indoor unit. ☐
* Indoor units are in the perfect physical conditions, free of dents or dings. ☐
* There is at least 50 cm of free space around indoor unit for service and maintenance. ☐

1.6. OUTDOOR UNITS

* Is Installed an anti-vibration system for the outdoor units.
* The ground where the outdoor units are must be properly leveled.
* 1 meter of distance is guaranteed for the outdoor units of walls and others.
* Outdoor units are in the perfect physical conditions, free of dents or dings. ☐
* The outdoor units in same system have 20cm distance to each other. ☐
* Gather pipe are at the same level. ☐
* Each outdoor unit have a security breaker. ☐
* A drain pan is required to the Outdoor unit (HEAT MODE). ☐
* The communication wire is properly done between the outdoor units A, B, C. ☐
* The communication wire is correctly done for the centralized monitor between master outdoor unit and ☐
interface (Assy. chain) ☐
* The balance oil pipeline is at the same level Without outlets and Piping trap. ☐
* Outdoor units are supported on anti-vibration system. ☐
☐

2. PRE START UP ☐
* 100% Of the piping completed the pressure test at 80 psi (5.5 Kg/cm^2) during 3 Minutes ☐
* 100% Of the piping completed the pressure test at 250 psi (17.5 Kg/cm^2) during 2 Hours
* 100% Of the piping completed the pressure test at 590 psi (40.5 Kg/cm^2) during 24 Hours
☐
* Vacuum test, reaching gauge presssure of: (-755mmHg) ☐
☐

* The system have been with Electric power more than 6 hours before de start up.
* Indoor units are addressed properly.
* Outdoor units are addressed according the position Master, Slave 1, Slave 2 y Slave 3.
* Once the system is connected to electric power, the master outdoor unit display show the indoor units quantity connected.
* All the Indoor units and vale boxes work correctly in Fan Mode.

Airwell						Flow Logic IV	
						ENGLISH BETA 1.2	
SYSTEM START UP LIST							
SYSTEM CODE			MODEL				
* Refrigerant recharge calculation							
Liquid pipe size	Multiple factor	Length	Subtotal				
6.35 (1/4")	0.022						
9.52 (3/8")	0.054						
12.7 (1/2")	0.11						
15.88 (3/4")	0.17						
19.05 (5/8")	0.25						
22.22 (7/8")	0.35						
25.4 (1")	0.52						
		Total(Kg)					
Outdoor unit No.	Model		Serial No.				
Master							
Slave1							
Slave2							

*Please input measured voltage values before start up:							
L1 vs. L2	V	L1 vs. N	V		L1 vs. Ground	V	
L2 vs. L3	V	L2 vs. N	V		L2 vs. Ground	V	
L3 vs. L1	V	L3 vs. N	V		L3 vs. Ground	V	

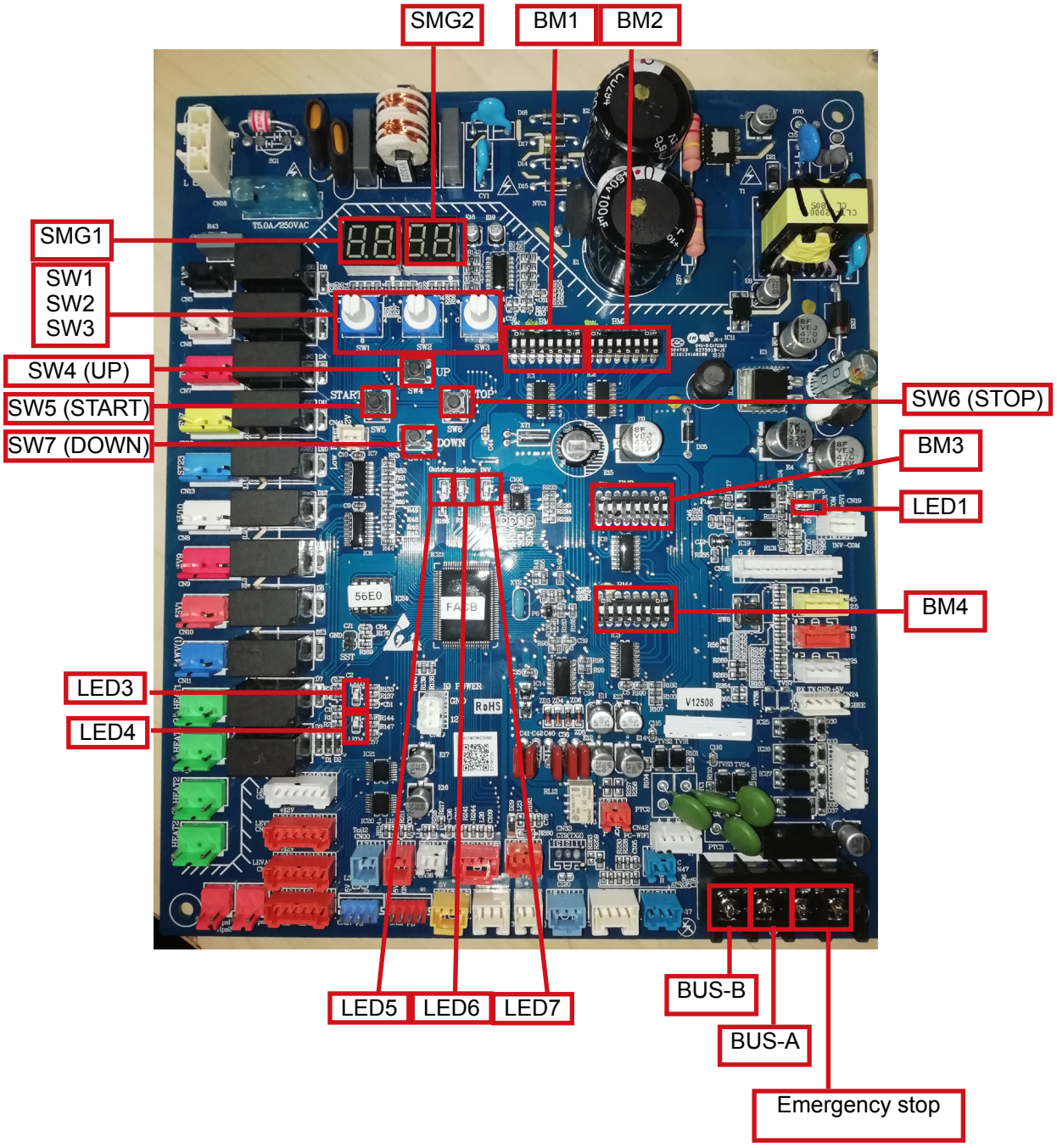
Airwell						Flow Logic IV	
						ENGLISH BETA 1.2	
START UP							
* Do measurements with all units switched ON after 1 hour.							
No.	Items	SW9/10/11	Master	SW9/10/11	SLAVE 1	SW9/10/11	SLAVE 2
1	Pressure Pd1 (bar)	0/0/1		1/0/1		2/0/1	
3	Pressure Ps (bar)	0/2/1		1/2/1		2/2/1	
4	Temp.Td1 (°C)	0/3/1		1/3/1		2/3/1	
5	Temp.Td2 (°C)	0/4/1		1/4/1		2/4/1	
8	Temp.Tdef1 (°C)	0/5/1		1/5/1		2/5/1	
10	Temp.TA (°C)	0/1/15		1/1/15		2/1/15	
11	Temp.Toil1 (°C)	0/7/1		1/7/1		2/7/1	
12	Temp.Toil2 (°C)	0/8/1		1/8/1		2/8/1	
13	Temp.Toci1 (°C)	0/9/1		1/8/1		2/8/1	
15	Current CT of inverter compressor INV1	0/10/15		1/10/15		2/10/15	
16	Current CT of inverter compressor INV2	0/11/15		1/11/15		2/11/15	
17	Fixed Compress current	0/15/1		1/15/1		2/15/1	
18	Current frequency of inverter compressor INV1	0/5/0		1/5/0		2/5/0	
19	Current frequency of inverter compressor INV2	0/6/0		1/6/0		2/6/0	
20	Outdoor unit QTY	0/2/2					
21	Indoor unit QTY	0/3/2					
22	Running indoor unit QTY	0/4/2					
23	The end						

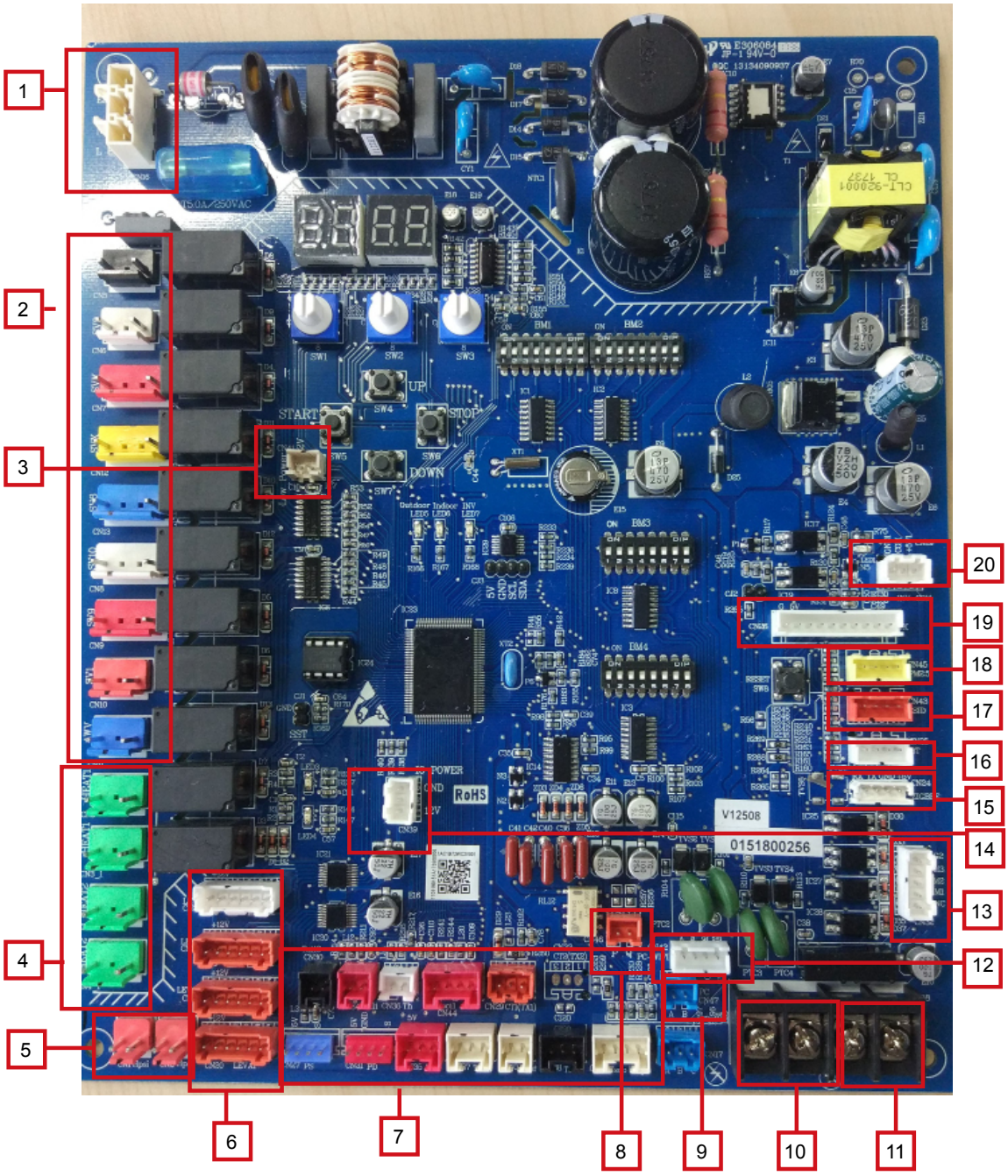
Indoor unit No.	Model	PMV	TA	TC1	TC2	Serial N°
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

Part 4 .

1. Outdoor PCB photo and dip switch setting

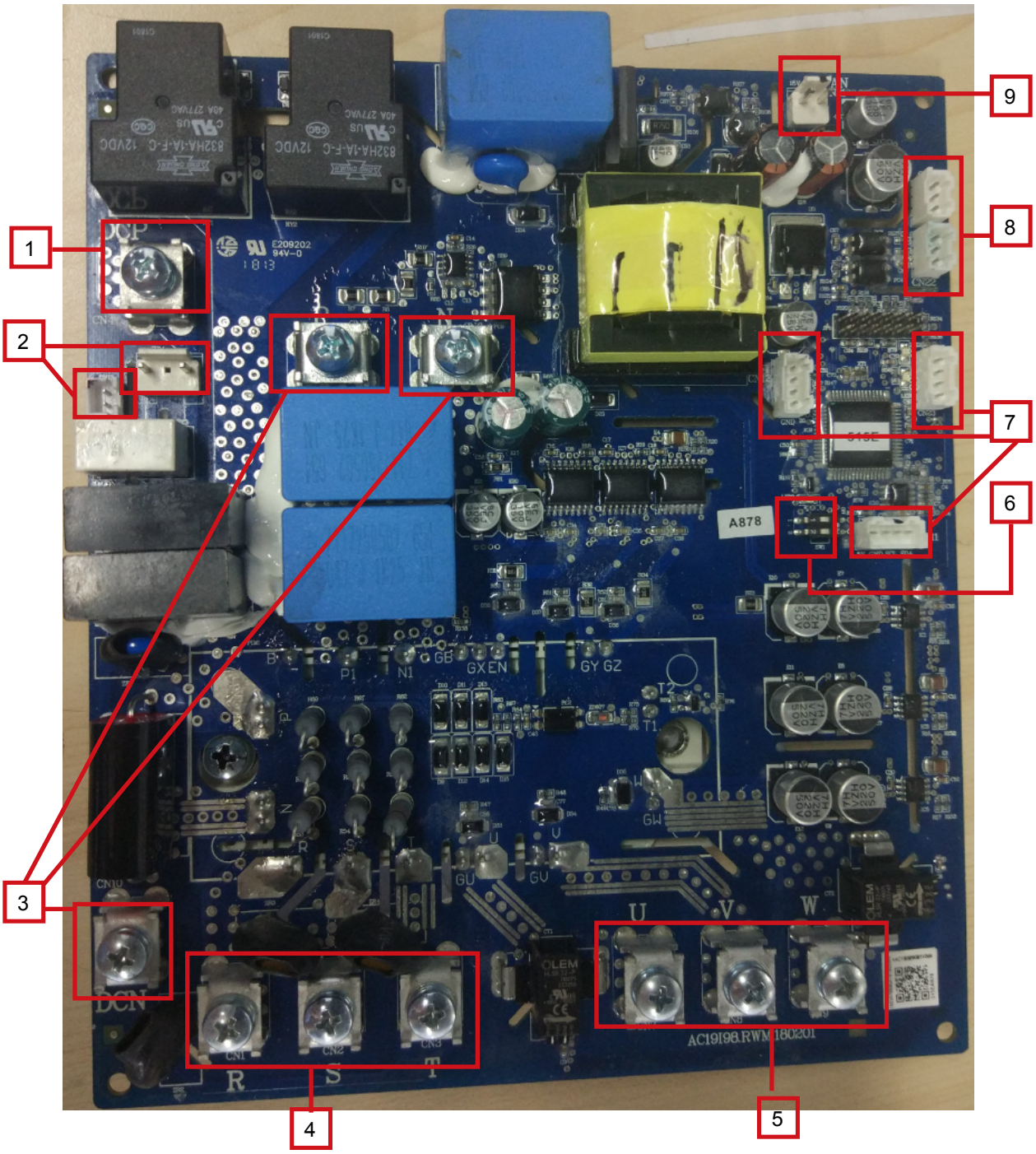
Outdoor PCB code: 0151800256D





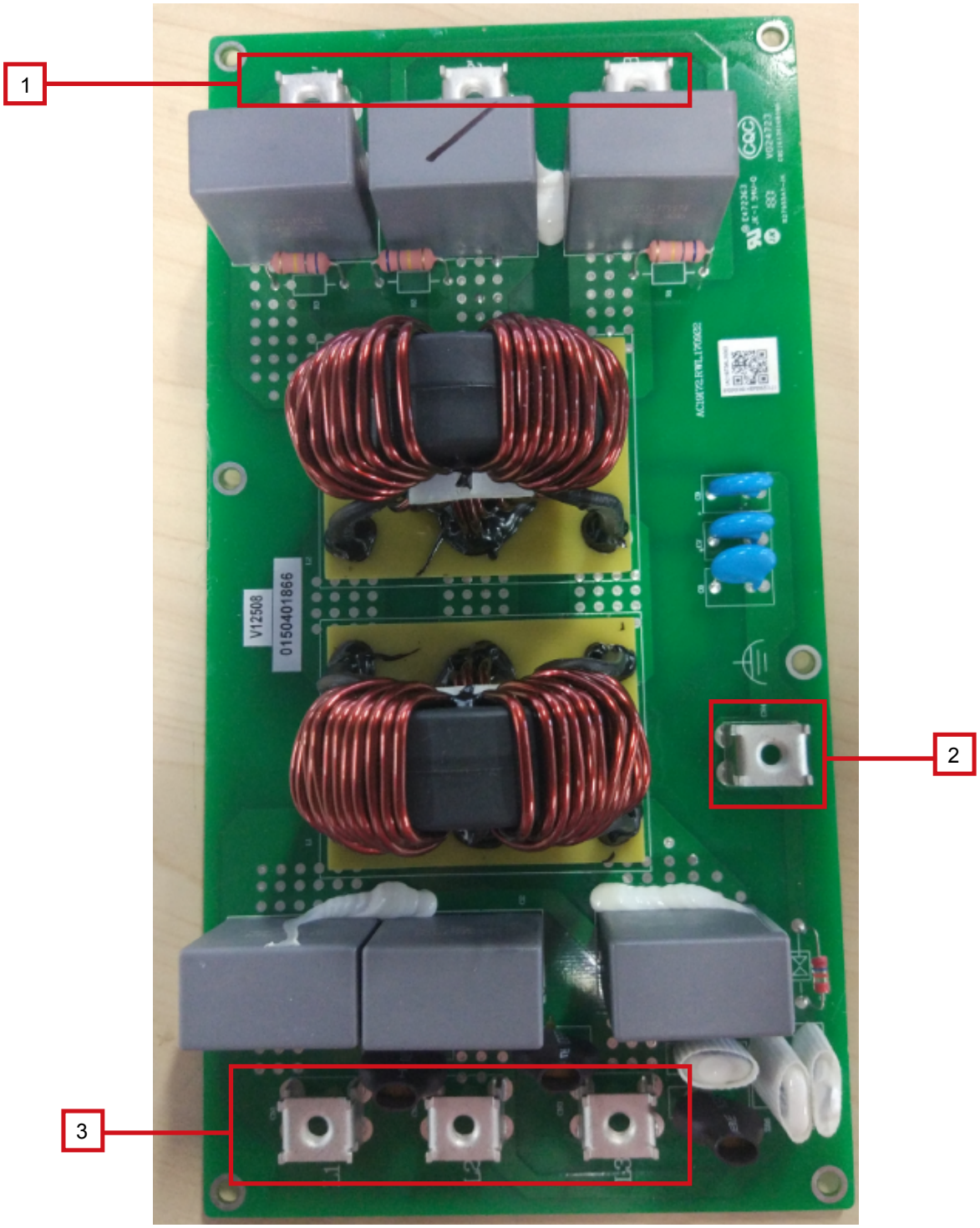
No.	Function	No.	Function
1	Power connector	11	Emergency stop signal connector
2	Solenoid valve connector	12	Monitoring PC WIFI connector
3	Low-power standby control connector	13	Power suppression signal connector
4	Compressor heating tape connector	14	Expansion PCB 12VDC power supply connector
5	High pressure switch connector	15	Zigbee wireless communication connector
6	Outdoor EEV connector	16	Expansion PCB communication connector
7	Ambient temperature, coil temperature sensor	17	Reserved password lock decryption connector
8	Indoor communicating connector	18	Reserved PM2.5 detection connector
9	Monitoring computer connector	19	Programming connector
10	Centralized control 485 communication connector	20	Module board communicating connector

Compressor driver board: 0151800260E



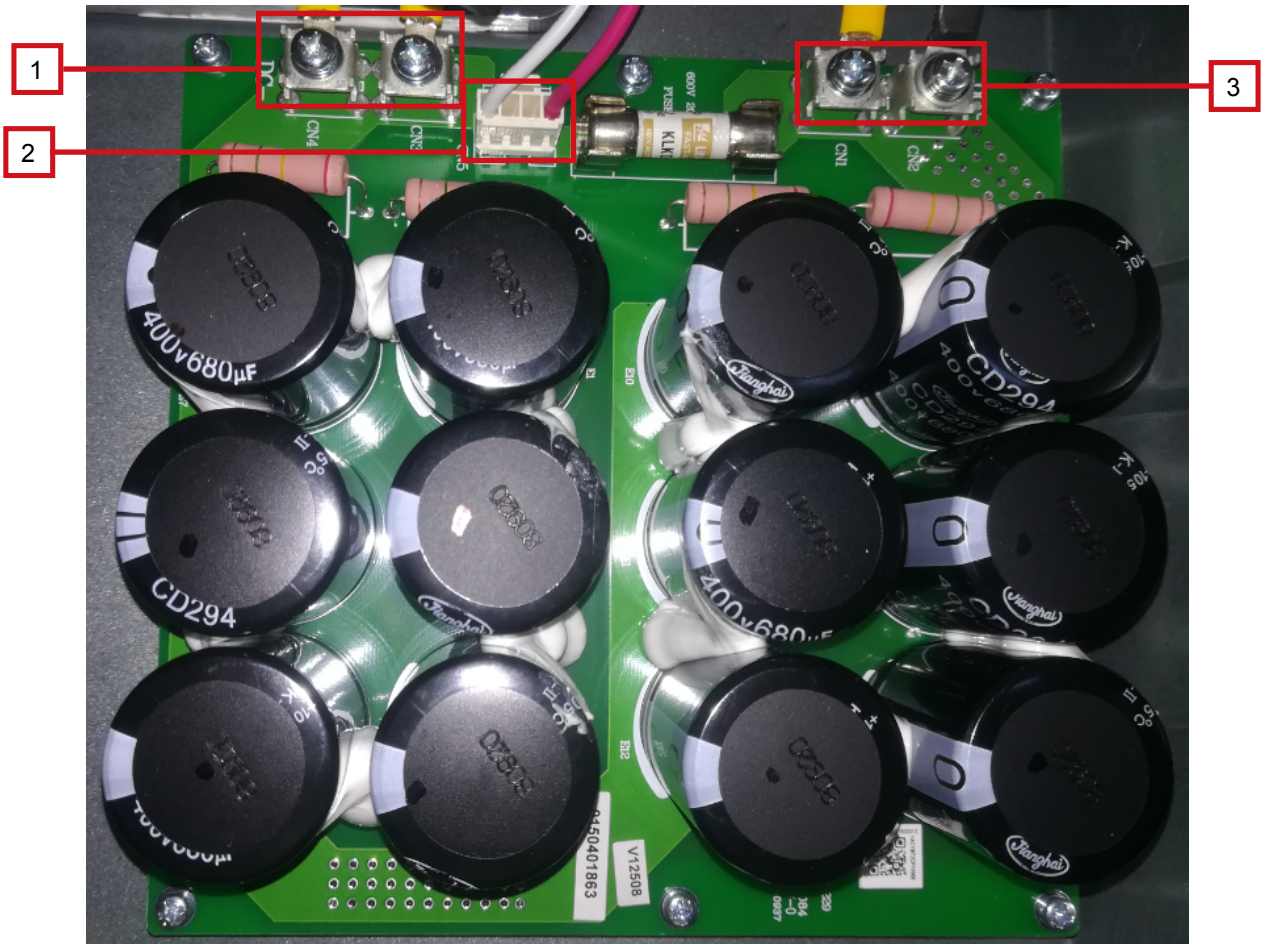
No.	Function
1	Connected reactor connector
2	Low-power standby control connector
3	Connect electrolytic capacitor PCB connector
4	Module three-phase power input connector
5	Module drive output connector
6	Dip switch
7	Programming connector
8	Main PCB and fan motor communicating connector
9	15VDC power output connector

Filter board: 0150401866



No.	Function
1	Filter board output connector
2	Filter board ground wire connector
3	Filter board power input connector

Capacitor board:0150401863



No.	Function
1	Electrolytic capacitor negative connector
2	Fan DC power supply connector
3	Electrolytic capacitor positive connector

2. Outdoor PCB dip switch setting

LED light definition:
• LED1: power supply lamp
Power on light
• LED3: electronic expansion valve LEVa1, LEVa2, fault lamp
No fault, not light
• LED4: electronic expansion valve LEVb, LEVc, fault lamp
No fault, not light
• LED5: communication lamp between outdoors
Communication is normal, flashing
• LED6: communication lamp between indoor and outdoor
Communication is normal, flashing
• LED7: communication lamp between PCB and power module
Communication is normal, flashing
Concept identification:
• Physical master unit: the outdoor unit, whose number is set as 0 by dip switch(BM1-7 and BM1-8), is the communication sponsor and in charge of the communication with indoor unit, also works as initiator of communication of the whole outdoor unit.
• Function master unit: the outdoor unit, whose priority is set as 0, operates with the highest priority.
• Physical slave unit: the outdoor unit, whose number is not set as 0 by dip switch(BM1-7 and BM1-8).
• Function slave unit: the outdoor unit, whose priority is set as 1~3, not operates with the highest priority.
• Setting of group class: the setting of physical master unit is valid for the whole unit.
• Setting of local class: it is only valid for this unit, not for the whole unit.
Dip switch introduction:
• BM1 is usually set by the engineer on site; BM2, BM3, BM4 are pre-set in the factory.
• BM1_1: Master outdoor unit searches the total outdoor units after power on at first time. The quantity of total outdoor units is floating from right to left on digital tube SMG1 and SMG2. "1=0" is one outdoor unit, "2=01" is two outdoor units, "3=012" is three outdoor units, "4=0123" is four outdoor units.

• BM1_2: Master outdoor unit searches the total indoor units after locked the quantity of the outdoor units. The quantity of total indoor units is floating from right to left on digital tube SMG1 and SMG2. "-04-" is 4 indoor units, "-06-" is 6 indoor units, "-15-" is 15 indoor units.
• BM1_3: The setting is OFF or ON. Default is ON. Once power off, unit software shall reset to "OFF" automatically ignoring BM1_3 setting.

Outdoor dip switch introduction

Identification:

- Physical master unit: by setting dip switch, the unit number is 0. It is used to communicate with indoor unit, also it is the organizer of outdoor communications as communication master unit.
- Functional master unit: the outdoor with the highest priority of running, the priority class is 0.
- Physical slave unit: by setting dip switch, the unit number is not 0.
- Functional slave unit: the outdoor without the highest priority of running, the priority class is 1~3.
- Group class setting: physical master unit setting is valid, which can be used for all the units. For example, silence, snow-proof, piping length etc setting. Set all kinds of state on the physical master unit as a representative.
- Single class setting: only be used for the single unit, instead of the whole group. For example, sensor backup running, inverter board selection etc.

① BM1 introduction

<table>
<tr><td rowspan="2">BM1_1</td><td rowspan="2">Outdoor searching after startup</td><td>OFF</td><td colspan="2">Begin to search outdoor</td><td rowspan="13">Group class (physical master unit is valid)</td></tr>
<tr><td>ON</td><td colspan="2">Stop searching outdoor and lock the quantity</td></tr>
<tr><td rowspan="2">BM1_2</td><td rowspan="2">Indoor searching after startup</td><td>OFF</td><td colspan="2">Begin to search indoor</td></tr>
<tr><td>ON</td><td colspan="2">Stop searching indoor and lock the quantity</td></tr>
<tr><td>BM1_3</td><td>Start up condition selection</td><td colspan="3">Power on, no matter this dip switch is on "ON" or "OFF" position (default is OFF) don't change the dip switch position, the unit will start after 6 hours preheat or within 6 hours when oil temp. meets the standard value:
If you want to reduce the startup condition, you can do the following operation:
after power on need one action to change this dip switch to "ON" position (If the dip switch is on "OFF" position, after power on change the "OFF" to "ON";
If the dip switch is on "ON" position, change the "ON" to "OFF" then to "ON")
The unit will start after 6 hours preheat or within 6 hours when oil temp. meets the allowed value (allowed value lower than the standard value)</td></tr>
<tr><td rowspan="2">BM1_4</td><td rowspan="2">Outdoor mode setting</td><td>OFF</td><td colspan="2">Heat pump (default)</td></tr>
<tr><td>ON</td><td colspan="2">Cooling only</td></tr>
<tr><td rowspan="2">BM1_5</td><td rowspan="2">Outdoor static pressure selection</td><td>OFF</td><td colspan="2">No static pressure, high speed (default)</td></tr>
<tr><td>ON</td><td colspan="2">Ultra high-speed</td></tr>
<tr><td>BM1-6</td><td>Reverser</td><td colspan="3">---</td></tr>
<tr><td rowspan="6">BM1_7
BM1_8</td><td rowspan="6">Outdoor address setting</td><td>BM1_7</td><td>BM1_8</td><td>Unit number</td></tr>
<tr><td>OFF</td><td>OFF</td><td>0# (physical master unit)</td></tr>
<tr><td>OFF</td><td>ON</td><td>1#</td></tr>
<tr><td>ON</td><td>OFF</td><td>2#</td></tr>
<tr><td>ON</td><td>ON</td><td>3#</td></tr>
</table>

② BM2 introduction

BM2_1 BM2_2	Reserved	OFF	Reserved	
BM2_3	Outdoor unit heat mode setting (valid when BM1_4 =0)	OFF	Normal(default)	
		ON	Heating only	
BM2_4	Outdoor locks the indoor wireless module MAC address (Wireless communication)	Power on, no action	Locked the indoor wireless module MAC address (default)	
		Power on, OFF→ON	Allow all new indoor wireless modules to join (Single-system power-on search mode during debugging)	
BM2_5	Clear the master wireless module EEPROM completely (Wireless communication)	Power on, no action	Normal(default)	
		OFF→ON →OFF	During the debugging process, multiple systems are powered on at the same time, which causes the master wireless module data error, need to do this operation: first setting the digital tube to 1-1-1, then change the dip swith from OFF→ON can clear the master wireless module EEPROM data.	
BM2_6	Billing module selection (Wireless communication)	OFF	No Billing module	
		ON	Billing module	
BM2_7	Quick start selection in high temperature areas	OFF	Forbid quick start (default)	Group class (physical master unit is valid)
		ON	Allow quick start	
BM2_8	Reserved	OFF	Reserved	

③ BM3 introduction

BM3_1 BM3_2 BM3_3	Outdoor type selection	BM3_1	BM3_2	BM3_3	Outdoor	The outdoor unit is effective
		OFF	ON	ON	VVEA outdoor unit	
BM3_4	Reserved	OFF			Default	
BM3_5 BM3_6 BM3_7 BM3_8	Outdoor horse power setting	BM3_5	BM3_6	BM3_7	BM3_8	Outdoor horse
		OFF	OFF	OFF	ON	8HP
		OFF	OFF	ON	OFF	10HP
		OFF	OFF	ON	ON	12HP
		OFF	ON	OFF	OFF	14HP
		OFF	ON	OFF	ON	16HP
		OFF	ON	ON	OFF	18HP
		OFF	ON	ON	ON	20HP
		ON	OFF	OFF	OFF	22HP

④ BM4 introduction: Group class (physical master unit is valid)

BM4_1 BM4_2	ModeBus Centralized control protocol selection	BM4_1	BM4_2	Protocol selection				
		OFF	OFF	Third party standard MODBUS protocol (default)				
		OFF	ON	BMS protocol (HCM*)				
		ON	OFF	Central control protocol (YCZ*)				
		ON	ON	Reserved				
BM4_3	Reserved	OFF		Reserved				
BM4_4 ~ BM4_8	ModeBus centralized control communication address	BM4_4	BM4_5	BM4_6	BM4_7	BM4_8	ModeBus set control communication address (IGU02 using the address in brackets)	
		OFF	OFF	OFF	OFF	OFF	Address1 (0)	
		OFF	OFF	OFF	OFF	ON	Address 2 (1)	
		OFF	OFF	OFF	ON	OFF	Address 3 (2)	
		OFF	OFF	OFF	ON	ON	Address 4 (3)	
		OFF	OFF	ON	OFF	OFF	Address 5 (4)	
		OFF	OFF	ON	OFF	ON	Address 6 (5)	
		OFF	OFF	ON	ON	OFF	Address 7 (6)	
		OFF	OFF	ON	ON	ON	Address 8 (7)	
		OFF	OFF	OFF	OFF	OFF	Address 9 (8)	
		OFF	OFF	OFF	OFF	ON	Address 10 (9)	
		…	…	…	…	…	……	
		ON	ON	ON	ON	ON	Address 32 (31)	

Outdoor unit digital tube display settings

The contents of the display are defined as follows:

- Key parts: long press the left START (SW5) control to enter, short press above UP (SW4) data increase, short press down DOWN (SW7) data reduction, long press the right STOP (SW6) control exit
- Dial: SW1, SW2, SW3: set the turntable dial switch is 0 - 15
- (Note: the dial plate, with the letters A for 10, B for 11, C for 12, D for 13, E for 14, F for 15)
- Display parts: LD1, LD2, LD3, LD4:4 digital tube from left to right

① Indoor machine parameter view

You can view the indoor machine 128 sets of parameters: SW1 and SW2 represent the indoor machine address, SW3 range 3-14 can view the indoor machine parameters.

SW1	SW2	address
0	0-15	1 to 16 (address 0#-15#)
1		17 to 32 (address 16#-31#)
2		33 to 48 (address 32#-47#)
3		49to 64 (address 48#-63#)
7		65 to 80 (address 64#-79#)
8		81 to 96 (address 80#-95#)
9		97 to 112(address 96#-111#)
10		113 to 128(address 112-127#)

SW3	function	Digital tube LD1 ~ 4 display
3	Indoor unit communication check and program version	Communication normal display indoor machine program version (1 decimal), the communication interrupted normal display “0000” (5 consecutive round of no communication success), communication has not been normal display “---- ----””. Such as 3.9, said the machine version number is V3.9
4	Indoor unit failure	Display indoor unit fault code, no fault display 0
5	Indoor unit capacity	The indoor unit capacity (horse, 1 decimal places), 1.5 horse show 1.5
6	Indoor unit expansion valve opening	expansion valve opening（pulse）
7	Indoor unit environment temperature Tai	environment temperature(℃)
8	Indoor gas temperature Tc1	gas temperature Tc1（℃）
9	Indoor liquid temperature Tc2	liquid temperature（℃）
10（A）	Indoor unit boot mode, the actual operation of wind speed and SCODE code	LD1 said the boot mode O: stop C: refrigeration H: heating LD2 said the actual operating speed of the indoor machine (0- stop, 1- low speed, 2- Middle speed , 3- high speed)， LD3 and LD4 are represented by SCODE codes (0 ~ 15)。 Such as C311 said the cooling operation of high speed, SCODE 11。
11（B）	Indoor set temperature Tset	Indoor set temperature（℃）
12（C）	Indoor unit consistency control setting	Display the indoor unit corresponding to the same contract use (0 unallocated group number, their control) Method of setting group and the <E2 control parameters and Display Settings > (Note: all in the unit at the same time can be set by a dial 15-0-2 set “in the same unit drive outside unit control”, 0- indoor unit according to the number of automatic control, 1- indoor unit with all contract, all within each 2- indoor unit control, banned from drive off)
13（D）	Low temperature automatic running function of indoor unit	Shows whether the machine has this function, 0 - No 1 - there are Setting the method with the <E2 control parameters display and Settings > Note: all within the machine at the same time setting can be set by dialing 15-1-2 “within the machine at low temperature automatic operation at the same time control selection”, 0- automatic control, 1- all within the machine is valid, 2- all within the machine is invalid

SW3	function	Digital tube LD1 ~ 4 display
14（E）	Forced indoor mechanism cooling / heating / shutdown	(1) press START (SW5) for 2 seconds, to enter the instruction set state, flashing display instructions. (2) according to UP (SW4) or DOWN (SW7) () adjustment instructions (COOL/ HEAT/OFF). (3) after the adjustment is completed, according to STOP (SW6) for 2 seconds, the implementation of the instruction set and stop flashing display

② Outdoor unit parameter view

0~3 SW1 is used to select the outdoor machine number, to select the different machine. SW3 range of 0, 1, 15, expressed as the observation of outdoor machine parameters.
(the host can display the parameters of the other outdoor machine and the indoor machine parameters, and the sub machine only displays the machine parameter SW1 is 0).
(1) The first boot, the first sub search engine, from left to right circular display 1:0, if found a table display 2:01 two table display 3:012. "3:012" means a total of 3 units of the system, 012 said the address of the machine. (":" the actual display "=").
(2) Lock machine units, start the search within the machine number, cycle "- in - machine units", such as "-6-" said the system connects the 6 station machine
(3) After the search is completed, the display of the machine's fault code, the machine has no fault when the display 0.

SW1	SW2	SW3	function	Digital tube LD1 ~ 4 display
Outdoor unit address 0-3	0	0	Display outdoor unit fault code	External machine bus data transfer fault code. If there is no fault display on the electric heating 6 hour countdown time to form a stopwatch Press START (SW5) for 2 seconds, 1111, into the fault query state, can query the last 10 faults occur: fault and fault code flashing display serial number, each by 1 UP (SW4) plus 1 serial number, each by 1 DOWN (SW7) serial number minus 1; 2min automatic exit. Steady state Press STOP (SW6) for 2 seconds, display 0000, quit the status of the query, stop flashing display; The dial in 13,0,0, press START (SW5) 2 seconds, 1111, can clear the historical record of failure
	1	0	Display outdoor unit priority and outdoor unit capacity	LD1： Display priority of outdoor unit LD2：Display “-” LD3-4：Display outdoor unit capacity (Horse)
	2	0	Display operation mode and outdoor unit operation output ratio	LD1 said O: stop C: refrigeration H: heating LD2-LD4 said: 60 of the ability to express the output of 60%
	3	0	Outdoor fan speed 1	345 representation 345rpm Press START (SW5) for 2 seconds, 1111, enter the set state: flashing, each by 1 UP (SW4) level of wind speed increased by 1 per level, by 1 DOWN (SW7) wind speed increased by 1 grade; 5min automatically exit the setting state Press STOP (SW6) for 2 seconds, display 0000, quit the set state, stop flashing display
	4	0	Outdoor fan speed 2	
	5	0	Frequency converter INV1 current frequency	110 representation 110.0Hz Press START (SW5) for 2 seconds, display 1111, enter the set state: flashing display, each according to the 1 UP (SW4) frequency rise 1Hz, every 1 times DOWN (SW7) frequency drop 1Hz; 5min after automatically quit the set state. Press STOP (SW6) for 2 seconds, display 0000, quit the set state, stop flashing display; （When the system is in trouble, the compressor is forbidden to start.）
	6	0	Frequency converter INV2 current frequency	

SW1	SW2	SW3	function	Digital tube LD1 ~ 4 display
Outdoor unit address 0-3	7	0	Outdoor unit LEVa1 open degree	0---470pluse Press START (SW5) for 2 seconds, 1111, enter the set state: flashing, press UP (SW4) valve fully open, according to DOWN (SW7) 2min after the valve is fully closed; automatically exit the setting state Press STOP (SW6) for 2 seconds, display 0000, quit the set state, stop flashing display
	8	0	Outdoor unit LEVa2 open degree	
	9	0	Outdoor unit LEVb open degree	
	10（A）	0	Outdoor unit LEVc open degree	
	11（B）	0	Outdoor unit output electromagnetic valve	LD1： 4WV ： 1 open 0 close——High to the left LD2： SV1 ： 1 open 0 close LD3： SV3： 1 open 0 close LD4： Reserved，Display “-”
	12（C）	0	Outdoor unit output electromagnetic valve	LD1： SV6： 1 open 0 close——High to the left LD2： SV9：1 open 0 close LD3： SV10： 1 open 0 close LD4： SV11： 1 open 0 close
	13（D）	0	Outdoor unit output electromagnetic valve	LD1： SVX： 1 open 0 close LD2： SVY： 1 open 0 close LD3： Reserved，Display “-” LD4： Reserved，Display “-”
	14（E）	0	Heating belt output	LD1： CH1： 1 open 0 close LD2： CH2： 1 open 0 close LD3： CHa ： 1 open 0 close LD4：Reserved，Display “-”
	15（F）	0	Program version	1 representation Ver1.0

SW1	SW2	SW3	function	Digital tube LD1 ~ 4 display
Outdoor unit address 0-3	0	1	Pd	Unit: kg, 2 decimal places
	2	1	Ps	
	3	1	Td1	Unit: degree
	4	1	Td2	
	5	1	Tdef	
	7	1	Toil1	
	8	1	Toil2	
	9	1	Toci1	
	14（E）	1	Tsacc	
	15（F）	1	Th	

SW1	SW2	SW3	function	Digital tube LD1 ~ 4 display
Outdoor unit address 0-3	0	15（F）	Reserved	
	1	15（F）	Tao	25 Unit: degree
	2	15（F）	Pd_temp	
	4	15（F）	Ps_temp	
	5	15（F）	Tliqsc	
	6	15（F）	Tsco	
	8	15（F）	Frequency conversion press INV1 running time	Unit: Min
	9	15（F）	Frequency conversion press INV2 running time	Unit: Min
	10（A）	15（F）	Frequency conversion press INV1 current CT	Unit: A, 1 decimal places
	11（B）	15（F）	Frequency conversion press INV2 current CT	Unit: A, 1 decimal places
	12（C）	15（F）	Frequency conversion compressor INV1 DC voltage	Unit: V
	13（D）	15（F）	Frequency conversion compressor INV2 DC voltage	Unit: V

SW1	SW2	SW3	function	Digital tube LD1 ~ 4 display
Outdoor unit address 0-3	14（E）	15（F）	Frequency converter INV1 module temperature	Unit: degree
	15（F）	15（F）	Frequency converter INV2 module temperature	Unit: degree

③ System status display and control (host)

SW1	SW2	SW3	function	Digital tube LD1 ~ 4 display
0	0	2	Refrigerant type	410A represents 410A refrigerant
0	1	2	The same outdoor unit total number and total capacity	LD1：The total number of outdoor unit LD2：Display “-” LD3/ LD4：Total outdoor unit capacity (unit: Horse) For example: 3-48 said 3 outdoor machines, with a total capacity of 48 horses
0	2	2	Total indoor unit capacity	50 represents 50 horses
0	3	2	Number of valve boxes and indoor units in the same system	LD1/ LD2: number of valve boxes (Heat recovery model) LD3/ LD4: number of indoor units For example: 0206 means 2 valve boxes, 6 indoor units
0	4	2	Number of indoor units in operation	LD1/ LD2: number of indoor units cooling LD3/ LD4: number of indoor units heating The temperature sensor on as the indoor units operation For example: 0312 indicates that the system has 3 indoor units cooling and 12 indoor units heating.
0	5	2	Number of indoor units which is same operation mode as outdoor unit	LD1/LD2/LD3/LD4: number of indoor units which is same operation mode as outdoor unit For example: 13 means 13 indoor units are same operation mode as outdoor unit.
0	6	2	Cooling target temperature	Unit: degree
0	7	2	Heating target temperature	
0	8	2	Automatic recovery of refrigerant Note: the end of the recovery must be canceled or reset	When the outdoor stops, press START (SW5) for 2 seconds, display 1111, start. (the outdoor is set to work in a state of operation) Press STOP (SW6) for 2 seconds, display 0000, stop
0	10（A）	2	Test run setup Note: the end of the test run must be canceled or reset	When the outdoor stops, press START (SW5) for 2 seconds, display 1111, start. (the outdoor is set to work in a state of operation) Press STOP (SW6) for 2 seconds, display 0000, stop
0	11（B）	2	Outdoor unit mode	0-normal C-only cool H-only heat
0	12（C）	2	Indoor unit expansion valve fully open	Press START (SW5) for 2 seconds, display 1111, indoor valve fully open 2 minutes, 2 minutes after the automatic shutdown valve
0	13（D）	2	All the indoor unit for cooling	Press START (SW5) for 2 seconds, display 1111, fully open; Press STOP (SW6) for 2 seconds, 0000, closed
0	14（E）	2	All the indoor unit for heating	
0	15（F）	2	Cancel all manual control (running class)	Press START (SW5) for 2 seconds, display 1111 cancel; or press STOP (SW6) for 2 seconds, display 0000, cancel Remove all manual control (part), closed indoor unit

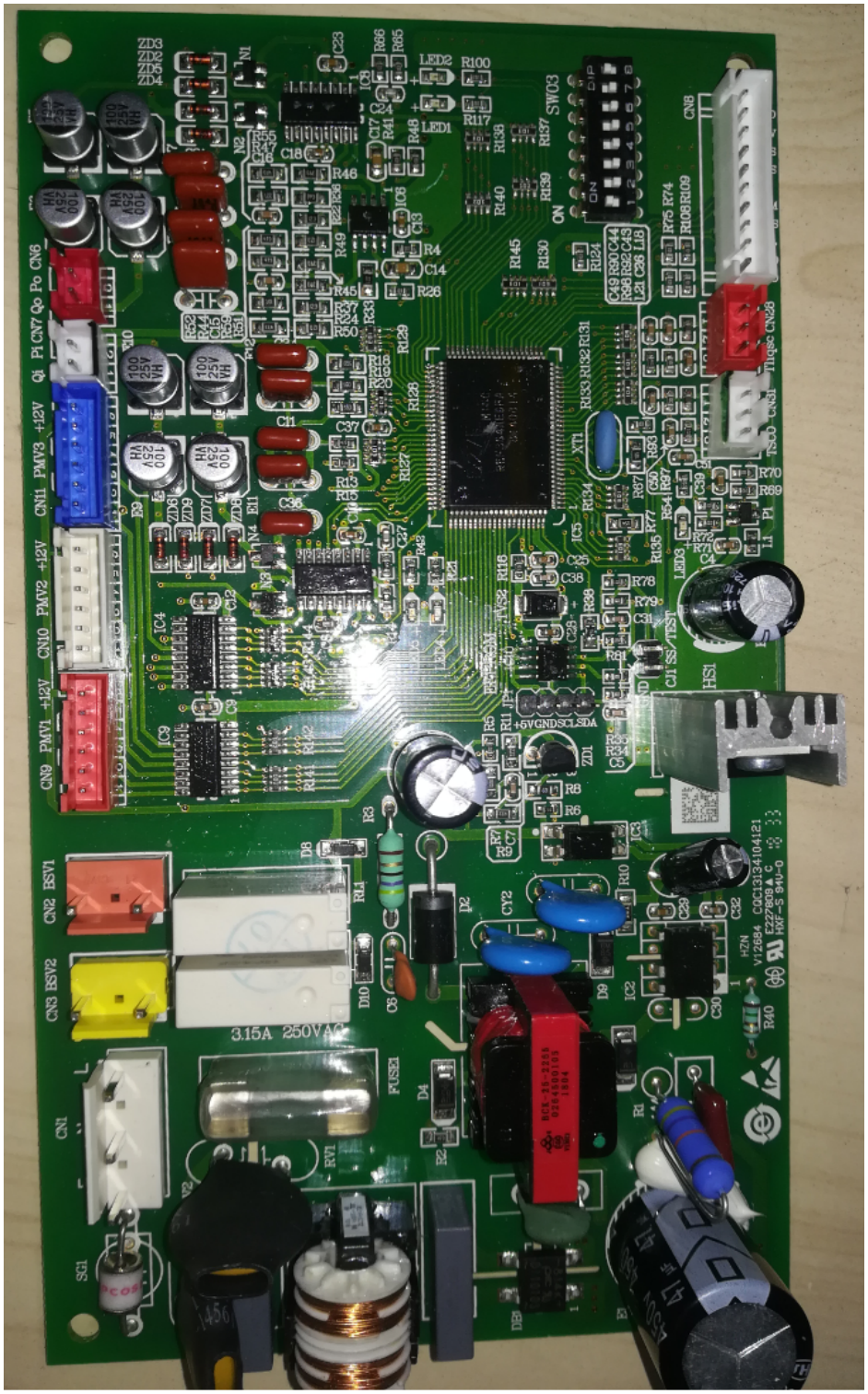
④ E2 control parameters display and setting

Each need to be set, setting method:
(1)Press START (SW5) for 2 seconds, display 1111, enter the set state, flashing display the current value
(2)According to UP (SW4) or DOWN (SW7) adjustment parameters
(3)After the adjustment is completed
<A> In the current state of the code, effectively set the time by pressing STOP (SW6) for 2 seconds, showing 0000, keeping the current settings and exit the set state, stop flashing display, waiting for 2 minutes after the power off and then re power up
<B> The current set time is not set by STOP (SW6) or change the dial selection, do not save the current set value, exit the set state, stop flashing display
<C> Effective time setting: the machine with the contract number and set off a low temperature automatic operation function for 10 minutes, the other for 30 seconds.

SW1	SW2	SW3	function	Digital tube LD1 ~ 4 display	Control range
15（F）	0	2	In the same machine drive off control selection	0- machine automatic control according to the group number, all within the machine with 1- drive, 2- all in each machine control, drive off with ban	Group class (physical master unit is valid)
15（F）	1	2	Selection of low temperature automatic operation control for indoor unit	0- within the machine automatic control, 1- all within the machine is valid, 2- all the inside of the machine is invalid	
15（F）	2	2	Pipe length selection	0： short pipe length; 1： middle pipe length； 2： long pipe length	
15（F）	3	2	Defrosting conditions selection	0- normal area, 1- area easy to frost	
15（F）	4	2	Operation mode priority	0- first open priority； 1- after opening priority 2- cooling priority； 3- heating priority	
15（F）	6	2	Heating limit when Outdoor temp Over 25 degree	0-shows no limitation, 1-shows limitation	
15（F）	7	2	Silent running option	0-without silent operation， 1- silent operation 1， 2- silent operation 2， 3- silent operation 3， 4- silent operation 4 5- silent operation 5， 6- silent operation 6	
15（F）	8	2	snow-proof operation setting	0-without snow-proof operation， 1- with snow-proof operation	
15（F）	9	2	When the main outdoor machine is running, the choice of the operation of the wind turbine is stopped.	0-stop， 1-run	
15（F）	12（C）	2	Power limit operation control mode selection	0- By E2 value, 1- By external contact DRM	
15（F）	13（D）	2	Power output ratio selection (E2 control method is valid)	Maximum capacity to allow the maximum number of files, a total of 11 stalls, 0 stalls for 10, 0%, 100%	

3. Valve box PCB photo and dip switch setting

One by one valve box PCB code: 0151800186A



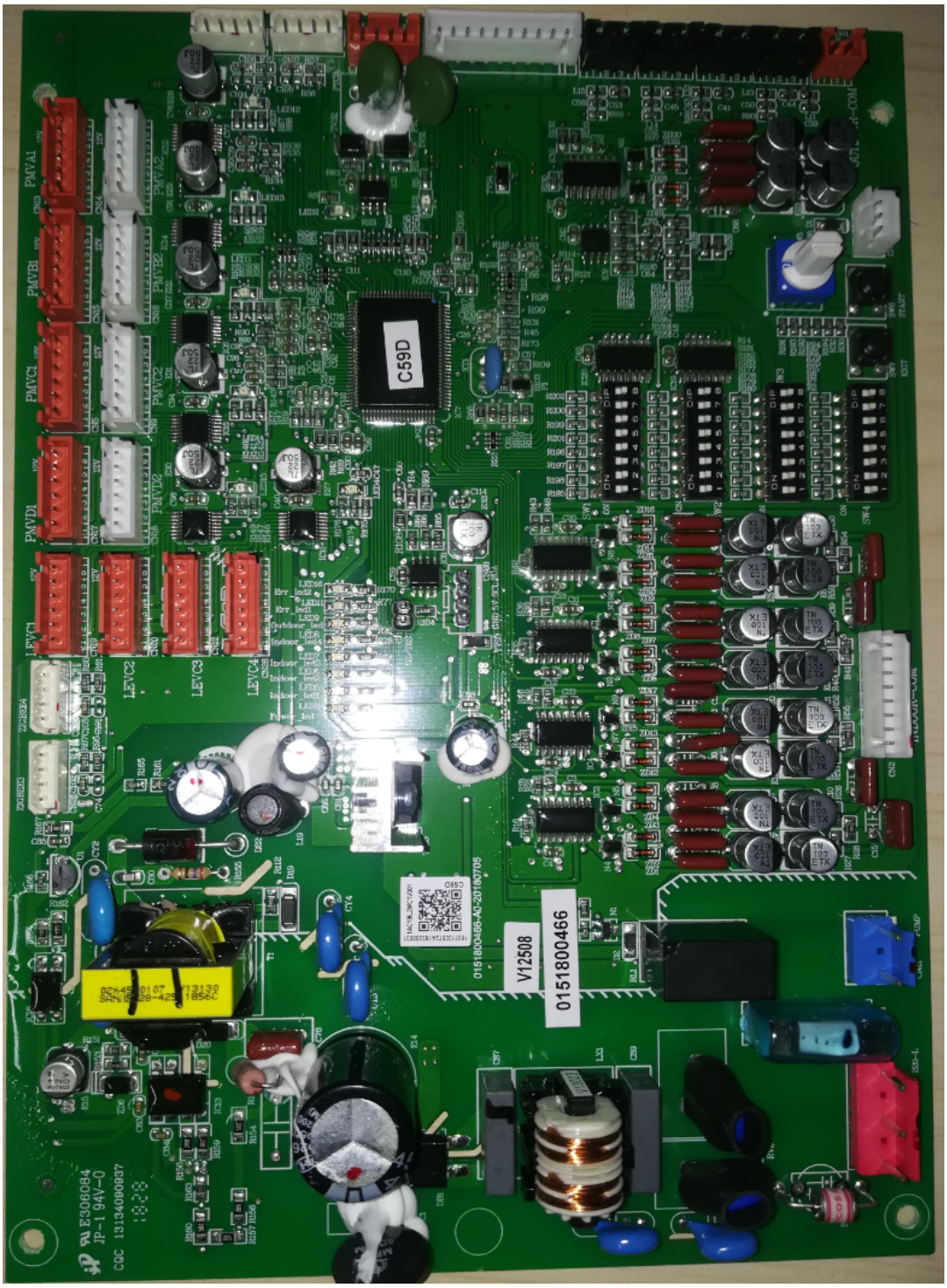
SW03 is used for valve box address setting

SW03_1	Manner of set address	OFF	Set the address with automatism （default）					
		ON	Set the address with dip switch					
SW03_2	Pre-set	OFF	Pre-set（default）					
		ON	Pre-set					
SW03_3 ~ SW03_8	Set the communication address with dip switch	[3]	[4]	[5]	[6]	[7]	[8]	Communication address
		OFF	OFF	OFF	OFF	OFF	OFF	0#（default）
		OFF	OFF	OFF	OFF	OFF	ON	1#
		OFF	OFF	OFF	OFF	ON	OFF	2#
		OFF	OFF	OFF	OFF	ON	ON	3#
		OFF	OFF	OFF	ON	OFF	OFF	4#
		OFF	OFF	OFF	ON	OFF	ON	5#
		OFF	OFF	OFF	ON	ON	OFF	6#
		OFF	OFF	OFF	ON	ON	ON	7#
		OFF	OFF	ON	OFF	OFF	OFF	8#
		OFF	OFF	ON	OFF	OFF	ON	9#
		OFF	OFF	ON	OFF	ON	OFF	10#
		OFF	OFF	ON	OFF	ON	ON	11#
		OFF	OFF	ON	ON	OFF	OFF	12#
		OFF	OFF	ON	ON	OFF	ON	13#
		OFF	OFF	ON	ON	ON	OFF	14#
		OFF	OFF	ON	ON	ON	ON	15#
		OFF	ON	OFF	OFF	OFF	OFF	16#
		OFF	ON	OFF	OFF	OFF	ON	17#
		OFF	ON	OFF	OFF	ON	OFF	18#
		OFF	ON	OFF	OFF	ON	ON	19#
		OFF	ON	OFF	ON	OFF	OFF	20#
		OFF	ON	OFF	ON	OFF	ON	21#
		OFF	ON	OFF	ON	ON	OFF	22#
		OFF	ON	OFF	ON	ON	ON	23#
		OFF	ON	ON	OFF	OFF	OFF	24#
		OFF	ON	ON	OFF	OFF	ON	25#
		OFF	ON	ON	OFF	ON	OFF	26#
		OFF	ON	ON	OFF	ON	ON	27#
		OFF	ON	ON	ON	OFF	OFF	28#
		OFF	ON	ON	ON	OFF	ON	29#
		OFF	ON	ON	ON	ON	OFF	30#
		OFF	ON	ON	ON	ON	ON	31#
		ON	OFF	OFF	OFF	OFF	OFF	32#
		ON	OFF	OFF	OFF	OFF	ON	33#
		ON	OFF	OFF	OFF	ON	OFF	34#
		ON	OFF	OFF	OFF	ON	ON	35#

		[3]	[4]	[5]	[6]	[7]	[8]	Communication address
SW03_3 ~ SW03_8	Set the communication address with dip switch	ON	OFF	OFF	ON	OFF	OFF	36#
		ON	OFF	OFF	ON	OFF	ON	37#
		ON	OFF	OFF	ON	ON	OFF	38#
		ON	OFF	OFF	ON	ON	ON	39#
		ON	OFF	ON	OFF	OFF	OFF	40#
		ON	OFF	ON	OFF	OFF	ON	41#
		ON	OFF	ON	OFF	ON	OFF	42#
		ON	OFF	ON	OFF	ON	ON	43#
		ON	OFF	ON	ON	OFF	OFF	44#
		ON	OFF	ON	ON	OFF	ON	45#
		ON	OFF	ON	ON	ON	OFF	46#
		ON	OFF	ON	ON	ON	ON	47#
		ON	ON	OFF	OFF	OFF	OFF	48#
		ON	ON	OFF	OFF	OFF	ON	49#
		ON	ON	OFF	OFF	ON	OFF	50#
		ON	ON	OFF	OFF	ON	ON	51#
		ON	ON	OFF	ON	OFF	OFF	52#
		ON	ON	OFF	ON	OFF	ON	53#
		ON	ON	OFF	ON	ON	OFF	54#
		ON	ON	OFF	ON	ON	ON	55#
		ON	ON	ON	OFF	OFF	OFF	56#
		ON	ON	ON	OFF	OFF	ON	57#
		ON	ON	ON	OFF	ON	OFF	58#
		ON	ON	ON	OFF	ON	ON	59#
		ON	ON	ON	ON	OFF	OFF	60#
		ON	ON	ON	ON	OFF	ON	61#
		ON	ON	ON	ON	ON	OFF	62#
		ON	ON	ON	ON	ON	ON	63#

Notes:
The communication address setting is written in the chip during energization of the valve box
1) Make sure that the communication address code is set before the valve box is energized.
2) Be sure to close the cover of the electrical cabinet after setting.

One by four valve box PCB code: 0151800466



SW1 sets the communication address between the valve box and the indoor unit 1.
SW2 sets the communication address between the valve box and the indoor unit 2.
SW3 sets the communication address between the valve box and the indoor unit 3.
SW4 sets the communication address between the valve box and the indoor unit 4.
The setting method of each dip switch is the same. Take SW1 as an example

SW1_1	Manner of set address	OFF	Set the address with automatism （default）					
		ON	Set the address with dip switch					
SW1_2	Pre-set	OFF	Pre-set（default）					
		ON	Pre-set					
SW1_3 ~ SW1_8	Set the communication address with dip switch	[3]	[4]	[5]	[6]	[7]	[8]	Communication address
		OFF	OFF	OFF	OFF	OFF	OFF	0#（default）
		OFF	OFF	OFF	OFF	OFF	ON	1#
		OFF	OFF	OFF	OFF	ON	OFF	2#
		OFF	OFF	OFF	OFF	ON	ON	3#
		OFF	OFF	OFF	ON	OFF	OFF	4#
		OFF	OFF	OFF	ON	OFF	ON	5#
		OFF	OFF	OFF	ON	ON	OFF	6#
		OFF	OFF	OFF	ON	ON	ON	7#
		OFF	OFF	ON	OFF	OFF	OFF	8#
		OFF	OFF	ON	OFF	OFF	ON	9#
		OFF	OFF	ON	OFF	ON	OFF	10#
		OFF	OFF	ON	OFF	ON	ON	11#
		OFF	OFF	ON	ON	OFF	OFF	12#
		OFF	OFF	ON	ON	OFF	ON	13#
		OFF	OFF	ON	ON	ON	OFF	14#
		OFF	OFF	ON	ON	ON	ON	15#
		OFF	ON	OFF	OFF	OFF	OFF	16#
		OFF	ON	OFF	OFF	OFF	ON	17#
		OFF	ON	OFF	OFF	ON	OFF	18#
		OFF	ON	OFF	OFF	ON	ON	19#
		OFF	ON	OFF	ON	OFF	OFF	20#
		OFF	ON	OFF	ON	OFF	ON	21#
		OFF	ON	OFF	ON	ON	OFF	22#
		OFF	ON	OFF	ON	ON	ON	23#
		OFF	ON	ON	OFF	OFF	OFF	24#
		OFF	ON	ON	OFF	OFF	ON	25#
		OFF	ON	ON	OFF	ON	OFF	26#
		OFF	ON	ON	OFF	ON	ON	27#
		OFF	ON	ON	ON	OFF	OFF	28#
		OFF	ON	ON	ON	OFF	ON	29#
		OFF	ON	ON	ON	ON	OFF	30#
		OFF	ON	ON	ON	ON	ON	31#
		ON	OFF	OFF	OFF	OFF	OFF	32#
		ON	OFF	OFF	OFF	OFF	ON	33#
		ON	OFF	OFF	OFF	ON	OFF	34#
		ON	OFF	OFF	OFF	ON	ON	35#

		[3]	[4]	[5]	[6]	[7]	[8]	Communication address
SW03_3 ~ SW03_8	Set the communication address with dip switch	ON	OFF	OFF	ON	OFF	OFF	36#
		ON	OFF	OFF	ON	OFF	ON	37#
		ON	OFF	OFF	ON	ON	OFF	38#
		ON	OFF	OFF	ON	ON	ON	39#
		ON	OFF	ON	OFF	OFF	OFF	40#
		ON	OFF	ON	OFF	OFF	ON	41#
		ON	OFF	ON	OFF	ON	OFF	42#
		ON	OFF	ON	OFF	ON	ON	43#
		ON	OFF	ON	ON	OFF	OFF	44#
		ON	OFF	ON	ON	OFF	ON	45#
		ON	OFF	ON	ON	ON	OFF	46#
		ON	OFF	ON	ON	ON	ON	47#
		ON	ON	OFF	OFF	OFF	OFF	48#
		ON	ON	OFF	OFF	OFF	ON	49#
		ON	ON	OFF	OFF	ON	OFF	50#
		ON	ON	OFF	OFF	ON	ON	51#
		ON	ON	OFF	ON	OFF	OFF	52#
		ON	ON	OFF	ON	OFF	ON	53#
		ON	ON	OFF	ON	ON	OFF	54#
		ON	ON	OFF	ON	ON	ON	55#
		ON	ON	ON	OFF	OFF	OFF	56#
		ON	ON	ON	OFF	OFF	ON	57#
		ON	ON	ON	OFF	ON	OFF	58#
		ON	ON	ON	OFF	ON	ON	59#
		ON	ON	ON	ON	OFF	OFF	60#
		ON	ON	ON	ON	OFF	ON	61#
		ON	ON	ON	ON	ON	OFF	62#
		ON	ON	ON	ON	ON	ON	63#

Notes:
The communication address setting is written in the chip during energization of the valve box
1) Make sure that the communication address code is set before the valve box is energized.
2) Be sure to close the cover of the electrical cabinet after setting.

4. Control function

4.1 Compressor control

4.1.1. Cycle start function of compressor

(1) According to different load of indoor unit, determine the starting number of compressors and outdoor unit

(2) If there is only 1 outdoor unit with 2 compressors, shift the priority of compressor 1 and 2 every 4 hours.

(3) If there are several outdoor units, the priority of these outdoor units shall be shifted every 8 hours.

(4) There are no fixed master or slaves in the MRVIV-C series system, and they are switched in turn according to the conditions.

4.1.2. Changes of the number of compressor

(1) In one outdoor unit, when one compressor operating frequency reaches 75%, another one compressor is started. When the output ratio of two compressors drops to 25%, one of the compressors is stopped;

(2) In the multiple outdoor units combination system, when the output ratio of one outdoor unit reaches 75%, another outdoor unit is started. When the total output ratio of all the outdoor units drops to 25%, one outdoor unit is stopped.

4.1.3. Compressor start delay

(1) In the control of the compressor, in order to prevent the starting at differential pressure, it must take some time to balance the high and low pressure after stopping fully, the restarting will delay automatically, and the compressor can restart after stopping for 3 to 5 minutes.

(2) When power on, it shall delay 3~5 min to restart the compressor.

(3) Before restart the compressor, when the oil temperature cannot meet the start requirement, it will delay the start until oil temperature can meet the requirement.

4.1.4. Compressor crankcase heater control

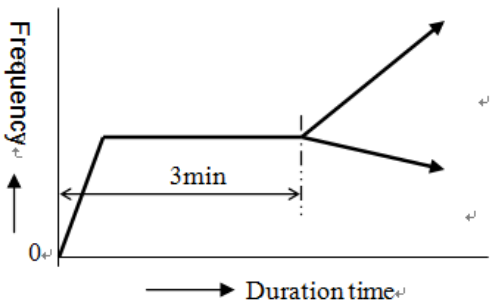
When the compressor is stopped, in order to prevent the refrigerant from dissolving in the compressor oil and diluting the compressor oil, the compressor oil temperature must be controlled at a certain value or more.

Even if the compressor is in operation, if the compressor oil temperature is too low, the heater is energized to heat it.

4.1.5. Compressor start protecting control:

(1) Based on the superheat of the oil temperature of the compressor or the heating time of the heater after the power is turned on to determine whether to start the compressor. The purpose of this control is to prevent the oil of the compressor that has been stopped for a long time from being severely diluted by the refrigerant.

(2) Compressor start protection control: In the first three minutes of start-up, the compressor's operating frequency is kept at 50 rps or 60 rps.



4.2 Electronic expansion valve control

Cooling: when startup, the electronic expansion valve is maintained at 100 pls and the electronic expansion valve is fully open after startup.
Heating: When heating, the electronic expansion valve is usually superheated to certain degrees. SH = Toci1-ET

4.3 Fan motor control

① Control of EEVA series DC motor
The air supply speed of outdoor unit can be set from speed 0 to 22 in accordance with the operating mode.
The operating is commonly at speed 1 - 22, and it is CVT (Continuously Variable Transmission) control between speed 1 and 22.

② Air supply motor: range of number and rotating speed (unit: rpm)
< Outdoor fan motor control (usually control / high static pressure control) >

Level	Double fan	Single fan
24 (high static pressure)	1100+1100	1000
22	1020+1020	1000
21	1000+1000	940
20	970+970	920
19	910+910	880
18	860+860	845
17	800+800	820
16	770+770	760
15	650+650	710
14	560+560	680
13	520+520	640
12	460+460	610
11	410+410	560
10	360+360	520
9	330+330	475
8	300+300	440
7	280+280	415
6	210+210	370
5	190+190	320
4	280	280
3	230	230
2	200	200
1	160	160
0	0	0

The highest speed for each model under normal running condition

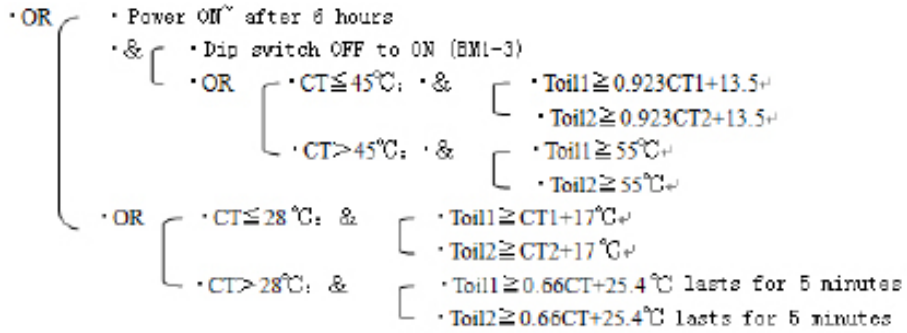
Single fan					
Horse power	8	10	12	14	16
Speed	0~16	0~16	0~17	0~19	0~19
Double fan					
Horse power	18	20	22	24	26
Speed	0~19	0~20	0~21	0~22	0~22

a. In cooling mode
the motor control by the high pressure. If Pd <20kg, the motor will reduce 1 class every 20 seconds, until the lowest class; if
20kg≤Pd<25kg, the
motor run at the current speed, if Pd≥25kg, the motor will raise 1 class every 20 seconds, until the highest class

b. In heating mode
the motor control by the high pressure. If Pd ＞ 33kg, the motor will reduce 1 class every 20 seconds, until the lowest class; if 28kg≤Pd<33kg, the motor run at the current speed, if Pd≤28kg, the motor will raise 1 class every 20 seconds, until the highest class

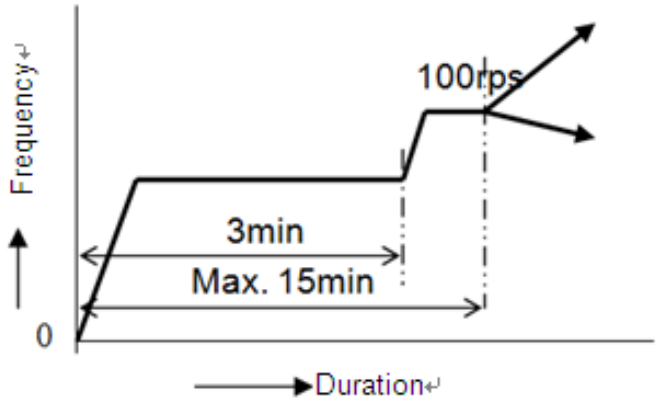
4.4 Start Control

① Evaluate if the compressor is started according to the superheat of oil temperature or the heating time of energized heating trip, in order to prevent prolonged suspension compressor oil from being severely diluted by refrigerant. The compressor starting conditions are as follows:

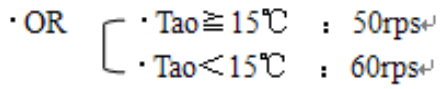


② Compressor start protecting control: Within the 3 min after starting, the operating frequency of compressor keeps at 50rps or 60rps. 3 min later.
if Td SH is higher than 25℃ , withdrawal from the starting process and conduct target Pd or target Ps control; 3min later;
if Td SH is lower than 25℃ , the frequency goes up to 100rps and withdrawal from the starting until the Td SH is higher than25℃ or the starting time reaches 15min.

In the process of starting, protecting control has the priority.



[Note] Frequency maintained within the 3 min after starting is as follows:



③ Restart of the compressor

1. In the control of the compressor, in order to prevent the starting at differential pressure, it must take some time to balance the high and low pressure after stopping fully, the restarting will delay automatically, and the compressor can restart after stopping for 3 to 5 minutes.

2. When the operating mode shifts reversely from [cooling. dehumidifying] to [heating], the all compressors shall stop and delay 3~5 min to restart.

3. When power on, it shall delay 3~5 min to restart the compressor.

4. Before restart the compressor, when the oil temperature cannot meet the start requirement, it will delay the start until oil temperature can meet the requirement.

④ Cycle start function of compressor

1. According to different load of indoor unit, determine the number of compressors needing to start and outdoor units needing to start.

2. If there is only 1 outdoor unit but 2 compressors, shift the priority of compressor 1 and 2 every 4 hours.

3. If there are several outdoor units, the priority of these outdoor units shall be shifted every 8 hours. If the outdoor unit with 2 compressors is operating, it shall shift the priority of compressor 1 and 2 every 4 hours.

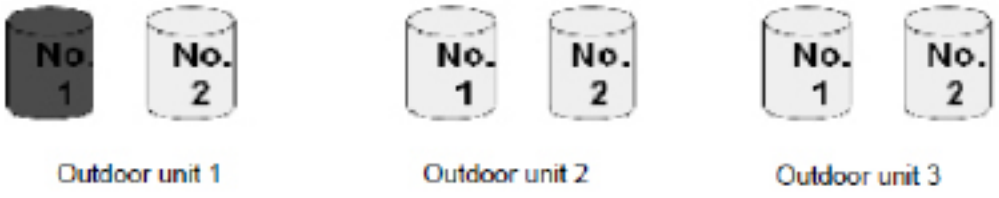
4. Shift the priority of compressor and outdoor unit to meet shift interval in the following conditions.
1) When all of compressor and outdoor unit are ON or OFF at the same time, the priority can be shifted directly;
2) When all of outdoor unit and compressor operate in the process of oil return and deforesting, they can shift the priority;
3) When outdoor unit and compressor with higher priority stop upon failure alarm, the priority can be shifted directly without evaluating the interval period.

5. Multi-connected unit of MRV 5 series without fixed host and sub-unit can shift in turn according to the conditions.

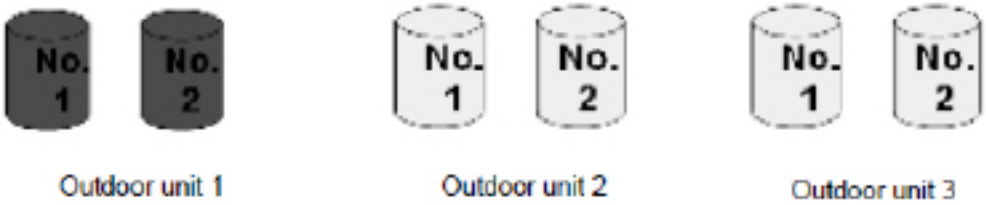
⑤ Changes of the number of compressor (take the multiple connection of 3 double compressor of outdoor unit as example)

Compressor shifts its number of operating with the different operating frequency according to the following pictures.
※ No.1 in the following picture represents the compressor with the highest priority, and outdoor unit 1 represents the outdoor unit with the highest priority, and so on.

1. At first, when operating frequency of one compressor of the outdoor unit 1 is less than 75% of the highest frequency, only No. 1 compressor works.



2. When operating frequency of one compressor rises up to the 75% of the highest frequency, two compressors in the outdoor unit 1 will work at the same time.



3. When the operation output ratio of the outdoor unit 1 (actual operating frequency/total operating frequency) continue to rise up to the 75%, two compressors in the outdoor unit 2 will also work at the same time.

4. When the total operation output ratio of the outdoor unit 1 and outdoor unit 2 (actual operating frequency/total operating frequency) rises up to the 75%, two compressors in the outdoor unit 3 will also work at the same time.

5. When the total operation output ratio of the outdoor unit 1, outdoor unit 2 and outdoor unit 3 declines to the 25%, two compressors in the outdoor unit 3 will stop at the same time, outdoor unit 1 and outdoor unit 2 continue to operate.

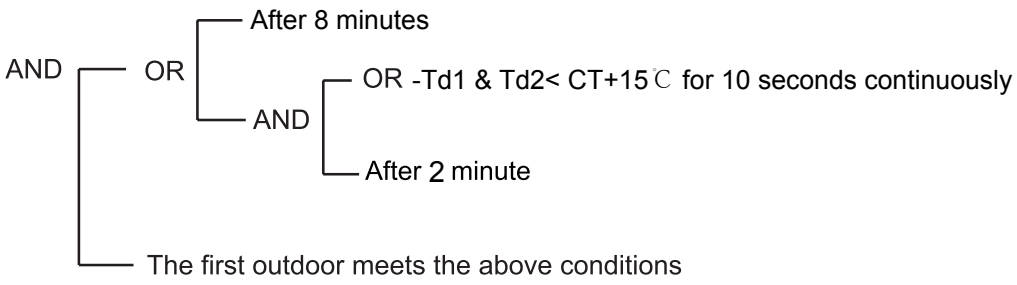
6. When the total operation output ratio of the outdoor unit 1 and outdoor unit 2 declines to the 25%, two compressors in the outdoor unit 2 will stop at the same time, and the two compressors in outdoor unit 1 continue to operate.

7. When the total operation output ratio of the outdoor unit 1 declines to the 25%, the No. 2 compressor of outdoor unit 1 will stop and the No. 1 compressor continues to operate.

4.5 Oil return control

1. Entering condition
When outdoor total running capacity is over 25% and less than 75% for 4 hours, or outdoor total running capacity is less than 25% for 2 hours, the system will enter oil return operation.
*When outdoor total running capacity is over 75% for 10minutes continuously, the oil return time will be cleared.

2. Oil return procedure:
All outdoors start up, and run with 75% of total capacity in cooling mode; In oil return course, outdoor leva1, 2 open to 250pls;
In oil return course, THERMO ON, indoor valves 250pls, THERMO OFF, indoor valves 125pls .In oil return, Levb OFF.
Oil return quit condition:



4.6 Defrosting control

When one of the running outdoors reaches the defrosting condition, it will send defrosting signal to the master unit. After the master unit receives defrosting signal, it will send defrosting signal to all slave outdoors. All outdoor units will self-control after receiving the signal.

Defrost operation is also performed on the outdoor unit that has not been operated since the previous defrosting.

Enter condition:

- &
  - Tao ≤ 20℃
  - OR
    - After 50 minutes of heating start
    - Previous defrosting ~ Heating operation accumulated time exceeds 50 minutes
  - OR
    - A: Tao ≥4 ℃, Tdef ≤ -6℃ lasts 5 minutes
    - B: -6≤ Tao ＜ 4 ℃, Tdef ≤ 0.8 Tao-8.5 lasts 5 minutes
    - C: -15≤ Tao ＜ -6 ℃, Tdef ≤ (5Tao-72)/7/1.08 lasts 5 minutes
    - D: Tao ≤ -15 ℃, Tdef ≤ -20 lasts 5 minutes
    - X : If the following conditions are met during the oil return operation, the accumulated running time is cleared.
      - OR
        - outdoor Tdef ≥10℃ lasts 1 minute
        - outdoor Tdef ≥15℃ lasts 10 seconds

Quit condition：

- OR After 12 minutes of defrosting operation
- OR outdoor Te ≥15 ℃ lasts 1 minute
- OR Pd ≥ 3.5MPa

4.7 Pump down operation

After the liquid refrigerant is retained in the gas-liquid separator, the refrigeration oil in the compressor is diluted to reduce the lubricity, and can cause Liquid compression, which may damage the compressor. This control is to prevent these situations happening.

Pump down operation for cooling

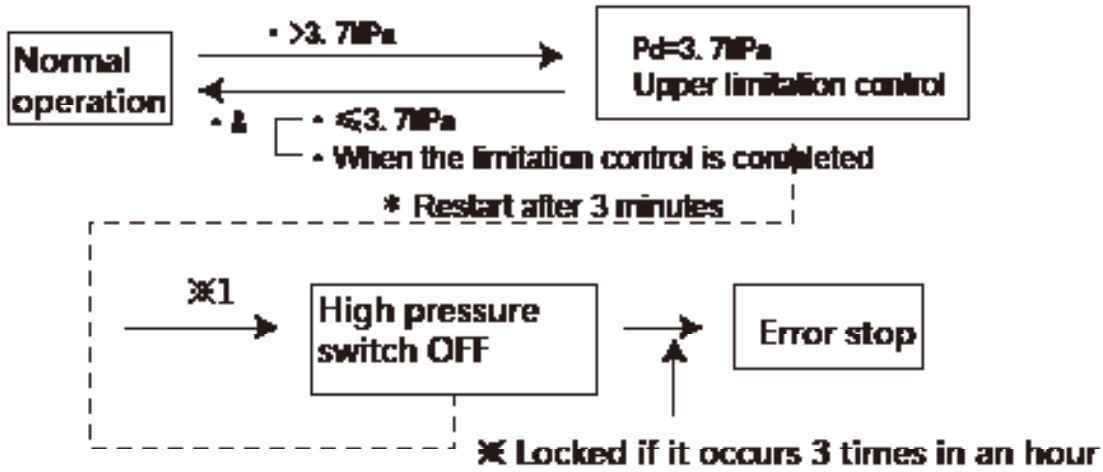
The outdoor unit frequency is 25%* rated frequency, the indoor LEV is fully closed, and other automatic control, after running for a period of time, the exhaust superheat degree meets the requirements and then exits.

Pump down operation for heating

Outdoor unit frequency 25%* rated frequency, outdoor unit LEV fully closed, other automatic control, after running for a period of time, the exhaust superheat degree meets the requirements and then exits

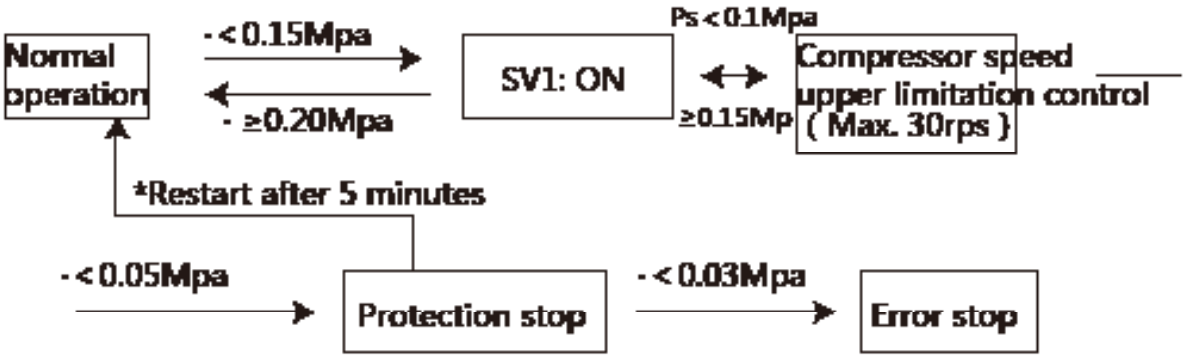
4.8 High pressure protection

In order to maintain normal cooling and heating operation, high pressure control is performed by a high pressure sensor.
Limit the upper limitation of the compressor operating frequency and operating under a certain high pressure value



4.9 Low pressure protection

By SV1 and compressor operating frequency control to maintains the low pressure above a specified value.



4.10. The temperature of discharge too low control

In cooling:
• Td low temperature side (<CT+10°C) is controlled by the[the first stage is indoor unit SH control/ the second stage is compressor output control/ the third stage is minimum number of outdoor units running control.

When the Td superheat is less than 20°C, the exhaust temperature will be increased by correcting the indoor unit superheat.

When the Td superheat is continuously reduced below 15°C, the compressor frequency will be increased to increase the exhaust temperature, and the exhaust superheat will be below 10°C for 5 minutes Alarm and shutdown
.

In heating:

• Td low temperature side (<CT+10°C) is controlled by the[the first stage is indoor unit SH control/ the second stage is compressor output control/ the third stage is minimum number of outdoor units running control

When the Td superheat is less than 25°C, the exhaust temperature will be increased by correcting the indoor unit superheat.

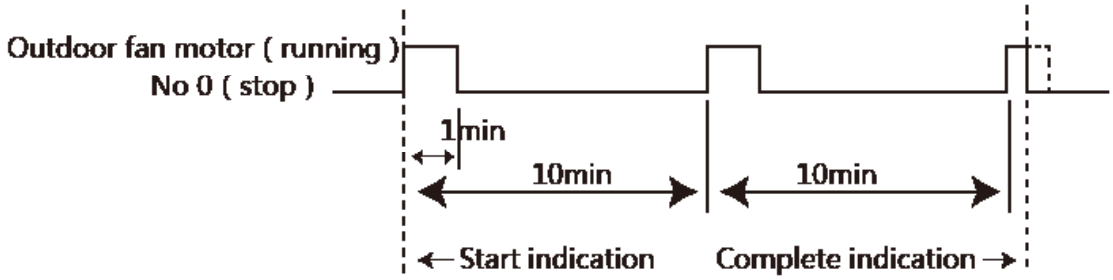
When the Td superheat is continuously reduced below 15°C, the compressor frequency will be increased to increase the exhaust temperature, and the exhaust superheat will be below 10°C for 5 minutes Alarm and shutdown

.

4.11. Radiator protection control

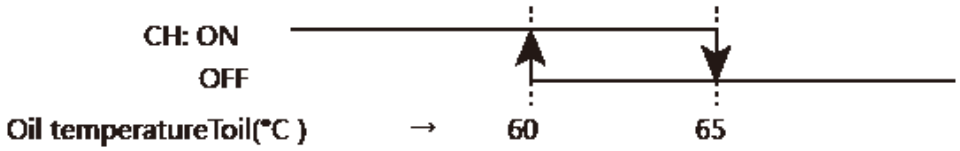
By controlling the frequency of the compressor to control the temperature of the radiator, and the radiator temperature is usually controlled at 95 ° C. Above 95 ° C, the outdoor fan increases the speed.

4.12. Anti-snow protection



4.13. Heater control

When the system is running, control the heater according to the following picture.



When the compressor oil temperature Toil is 60-65 ° C, it starts from ON.

CH: Heater (Crank Case Heater)

4.14 Target pressure control

① Cooling low pressure control

Target pressure Ps when cooling		Remarks
Long piping setting	6.5kg	
Medium piping setting	7.5kg	Factory default setting
Short piping setting	8.3kg	

• During cooling, the operating frequency of compressor is fuzzy controlled based on target Ps.

• The frequency of compressor goes down and Ps goes up; the frequency of compressor goes up and Ps goes down.

.

[Note] The one-way connection piping of unit is generally defined as: when the longest piping is less than 30m, it is short piping; 30-90m, medium piping; more than 90m, long piping. The specific situation is determined by installation in site.

② Heating high pressure control

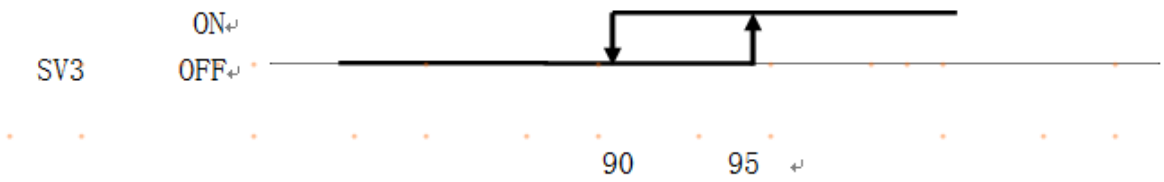
Target pressure Pd when heating		Remarks
Long piping setting	30kg	
Medium piping setting	28kg	Factory default setting
Short piping setting	26kg	

During heating, the operating frequency of compressor is fuzzy controlled based on target Pd.
The frequency of compressor goes down and Pd goes down; the frequency of compressor goes up and Pd goes up.

[Note] For heating capacity, if the high pressure is higher, the capacity is higher. However, if the high pressure is higher, the COP of unit will be lower.

4.15 Overheating protection control

① When the temperature at the top of compressor rises, the corresponding SV3 is started to conduct the liquid bypass cooling.
(Refer to Figure) Td high temperature side (≦ 120℃) control / SV3 control



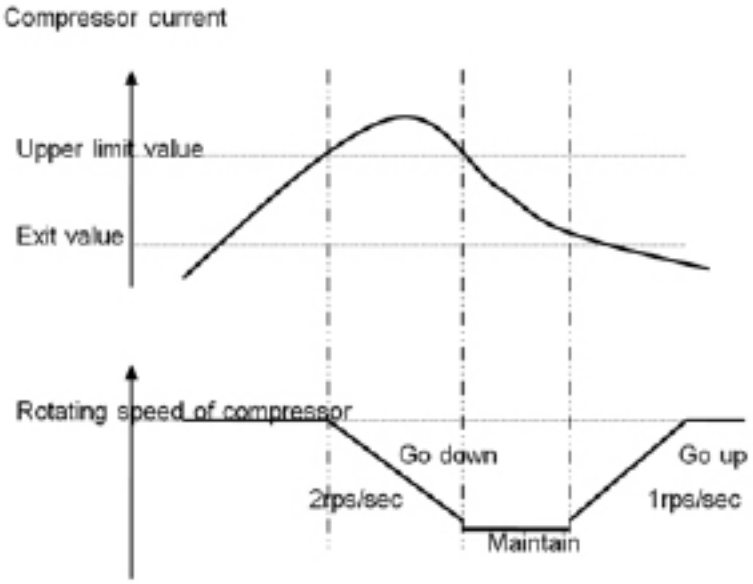
When Td ≥105, control the compressor frequency

4.16 Current protection control

① If the current of compressor exceeds the stipulated upper limit value, the operating frequency is reduced for control before the current changes to exit value or below.

② When the current cannot reach the upper limit value or below even at the lowest rotating speed (20rps), the compressor will stop operating.

③ If the current reaches the exit value or below, it will get back to the target rotating speed.



Compressor	ANB42	ANB52	ANB66	ANB78	ANB87
Rated Current	33A	34A	40A	45A	50A

4.32 Heating is prohibited

When the outdoor temperature is greater than or equal to 25 degrees, the setting can be made through the outdoor unit rotary dial, and the outdoor is prohibited from starting.

SW1	SW2	SW3	Function	Digital tube LD1 ~ 4 display
15	6	2	Heating limitation when outdoor temp over 25 degree	0- no limitation, 1-limitation

5. Outdoor system basic control

Cooling		
Part name	**Operation**	**Remark**
Compressor	Compressor capacity control for cooling operation	
Fan motor	Cooling operation fan control	
4-way valve	OFF	
Electrinica expansion valve LEVA1	470pls	
Electrinica expansion valve LEVA2	470pls	
Solenoid valve SV1	Auto	For low pressure control
Solenoid valve SV3	Auto	For discharging superheat control
Solenoid valve SV9	Auto	For oil equipment control
Solenoid valve SV10	Auto	For oil equipment control

Heating		
Part name	**Operation**	**Remark**
Compressor	Compressor capacity control for heating operation	
Fan motor	Heating operation fan control	
4-way valve	ON	
Electrinica expansion valve LEVA1	Superheat control	
Electrinica expansion valve LEVA2	Superheat control	
Solenoid valve SV1	Auto	For low pressure control
Solenoid valve SV3	Auto	For discharging superheat control
Solenoid valve SV9	Auto	For oil equipment control
Solenoid valve SV10	Auto	For oil equipment control

In cooling		
Part name	**Operation control method**	**Remark**
Compressor	Soft start control	Compressor frequency up speed 1rps/s, up to 60rps
Fan motor	According to high pressure control	After the initial fan speed runs for 30 seconds, PID control will be performed according to the high pressure
4-way valve	OFF	
Electrinica expansion valve LEVA1	470pls	
Electrinica expansion valve LEVA2	470pls	
Solenoid valve SV1	30 seconds before compressor starts	
Solenoid valve SV3	Auto	For discharging superheat control
Solenoid valve SV9	Auto	For oil equipment control
Solenoid valve SV10	Auto	For oil equipment control

In heating		
Part name	**Operation control method**	**Remark**
Compressor	Soft start control	Compressor frequency up speed 1rps/s, up to 60rps
Fan motor	According to TE control	After the initial fan speed runs for 30 seconds, PID control will be performed according to TE
4-way valve	ON	
Electrinica expansion valve LEVA1	Superheat control	PID control
Electrinica expansion valve LEVA2	Superheat control	PID control
Solenoid valve SV1	30 seconds before compressor starts	
Solenoid valve SV3	Auto	For discharging superheat control
Solenoid valve SV9	Auto	For oil equipment control
Solenoid valve SV10	Auto	For oil equipment control

Oil return control in cooling			
Part name	**Oil return preparation control**	**Oil return process control**	**End of oil return control**
Compressor	Current frequency	Oil return frequency	Frequency before oil return
Fan motor	High voltage control	High voltage control	High voltage certain control
4-way valve	OFF	OFF	OFF
Electrinica expansion valve LEVA1	470pls	470pls	470pls
Electrinica expansion valve LEVA2	470pls	470pls	470pls
Solenoid valve SV1	OFF	OFF	OFF
Solenoid valve SV3	OFF	OFF	OFF
Solenoid valve SV9	OFF	OFF	OFF
Solenoid valve SV10	OFF	OFF	OFF
End condition	30S		

Indoor unit state when oil return control in cooling		
Part name of indoor unit	**Indoor unit wired controller**	**Oil return operation in cooling**
Fan motor	Thermometer ON	Setting fan speed
	Thermometer OFF	OFF
	Stop	OFF
Electrinica expansion valve	Thermometer ON	Run normally
	Thermometer OFF	Oil return open angle
	Stop	Oil return open angle

Oil return control in heating			
Part name	**Oil return preparation control**	**Oil return process control**	**End of oil return control**
Compressor	Current frequency	Oil return frequency	Frequency before oil return
Fan motor	Current fan speed	OFF	the highest fan speed
4-way valve	ON	OFF	ON
Electrinica expansion valve LEVA1	Superheat control	470pls	Superheat control
Electrinica expansion valve LEVA2	Superheat control	470pls	Superheat control
Solenoid valve SV1	OFF	OFF	OFF
Solenoid valve SV3	OFF	OFF	OFF
Solenoid valve SV9	OFF	OFF	OFF
Solenoid valve SV10	OFF	OFF	OFF
Quit conditon	1min	10 minutes or sunction superheat <3	Up to 3 minutes

Indoor unit state when oil return control in cooling		
Part name of indoor unit	**Indoor unit wired controller**	**Oil return operation in cooling**
Fan motor	Thermometer ON	OFF
	Thermometer OFF	OFF
	Stop	OFF
Electrinica expansion valve	Thermometer ON	Oil return open angle
	Thermometer OFF	Oil return open angle
	Stop	Oil return open angle

Defrosting control			
Part name	**Defrosting controlpreparation control**	**Defrosting control process control**	**End of defrosting control**
Compressor	Current frequency	Defrosting frequency	Frequency before Defrosting
Fan motor	Current fan speed	OFF	the highest fan speed
4-way valve	ON	OFF	ON
Electrinica expansion valve LEVA1	Superheat control	470pls	Superheat control
Electrinica expansion valve LEVA2	Superheat control	470pls	Superheat control
Solenoid valve SV1	OFF	OFF	OFF
Solenoid valve SV3	OFF	OFF	OFF
Solenoid valve SV9	OFF	OFF	OFF
Solenoid valve SV10	OFF	OFF	OFF
Quit conditon	1min	10 minutes or sunction superheat <3	Up to 3 minutes

Restart standby control		
Part name	**Operation control**	**Remark**
Compressor	OFF	
Fan motor	OFF	
4-way valve	-----	
Electrinica expansion valve LEVA1	Closed	
Electrinica expansion valve LEVA2	Closed	
Solenoid valve SV1	OFF	
Solenoid valve SV3	OFF	
Solenoid valve SV9	OFF	
Solenoid valve SV10	OFF	
Quit conditon	5min	

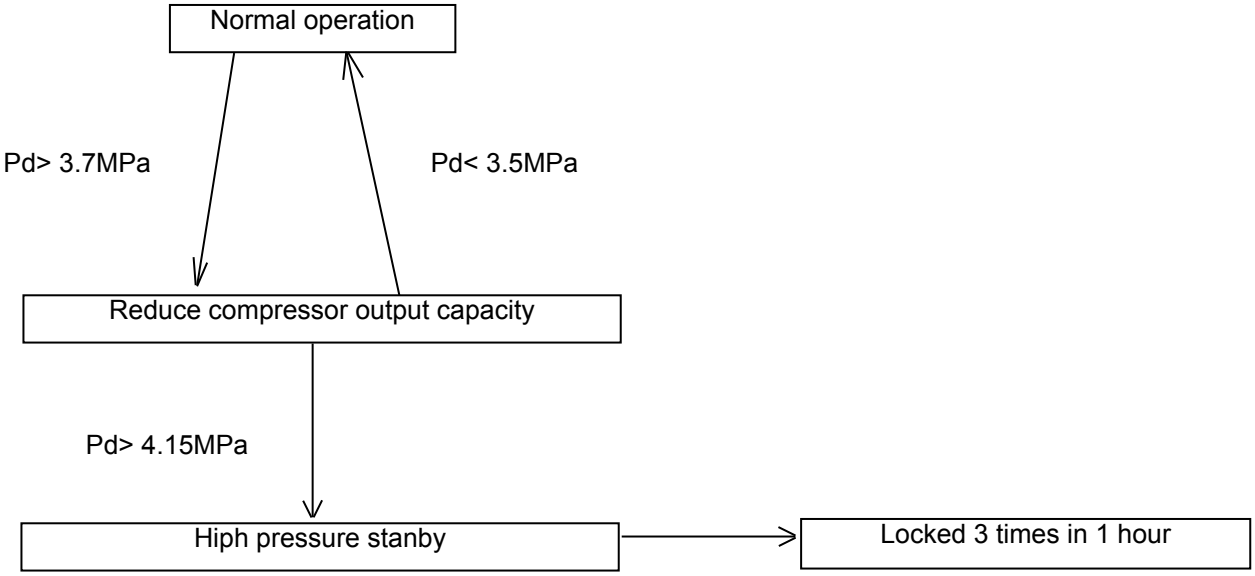
Stop control----When the system is in stop mode		
Part name	**Operation control**	**Remark**
Compressor	OFF	
Fan motor	OFF	
4-way valve	OFF	
Electrinica expansion valve LEVA1	Closed	
Electrinica expansion valve LEVA2	Closed	
Solenoid valve SV1	OFF	
Solenoid valve SV3	OFF	
Solenoid valve SV9	OFF	
Solenoid valve SV10	OFF	
Quit conditon	Indoor temperature control is turned on	

Stop control----When the system is in cooling		
Part name	**Operation control**	**Remark**
Compressor	OFF	
Fan motor	OFF	
4-way valve	OFF	
Electrinica expansion valve LEVA1	Closed	
Electrinica expansion valve LEVA2	Closed	
Solenoid valve SV1	OFF	
Solenoid valve SV3	OFF	
Solenoid valve SV9	OFF	
Solenoid valve SV10	OFF	
Quit conditon	Receive operational signal	

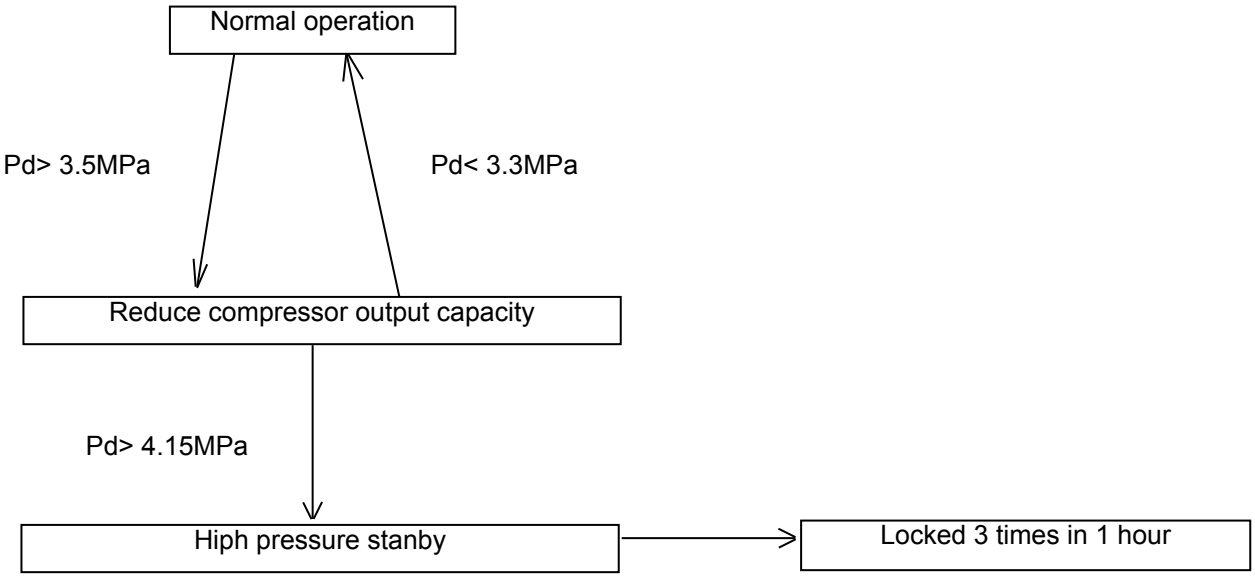
Stop control----When the system is in heating		
Part name	**Operation control**	**Remark**
Compressor	OFF	
Fan motor	OFF	
4-way valve	ON	
Electrinica expansion valve LEVA1	Closed	
Electrinica expansion valve LEVA2	Closed	
Solenoid valve SV1	OFF	
Solenoid valve SV3	OFF	
Solenoid valve SV9	OFF	
Solenoid valve SV10	OFF	
Quit conditon	Receive operational signal	

High and low pressure control

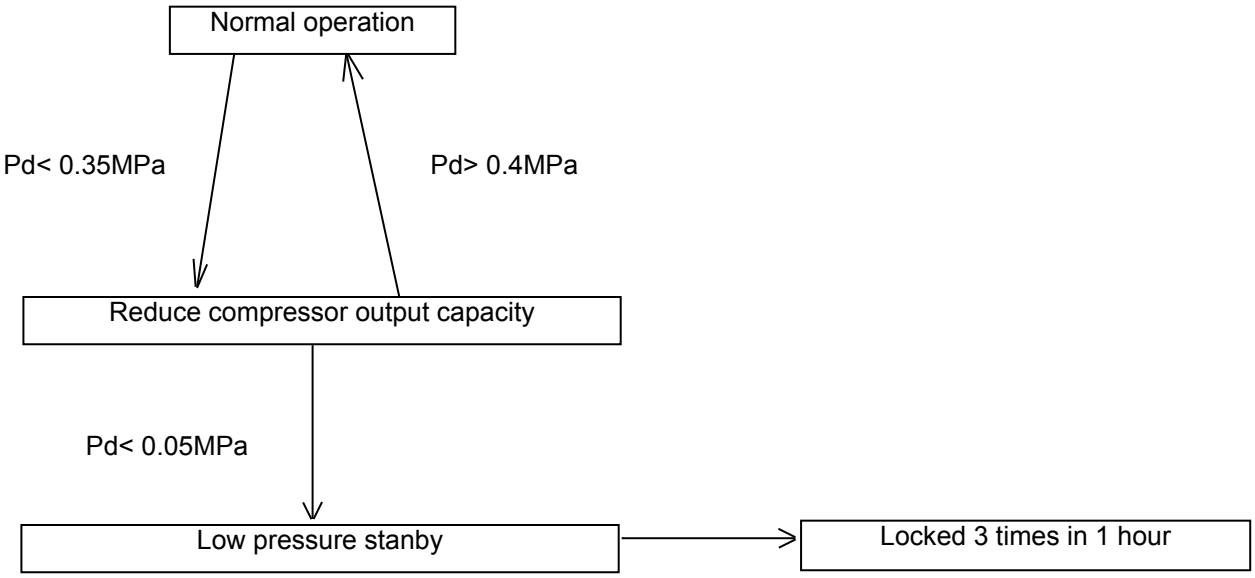
High pressure control in cooling



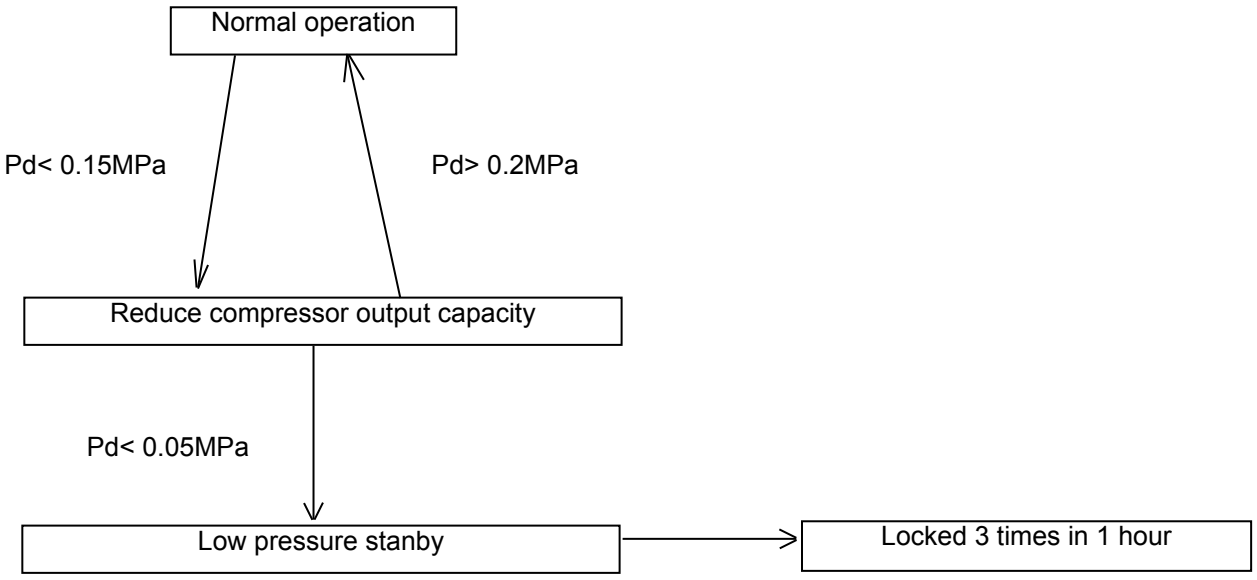
High pressure control in heating



Low pressure control in cooling

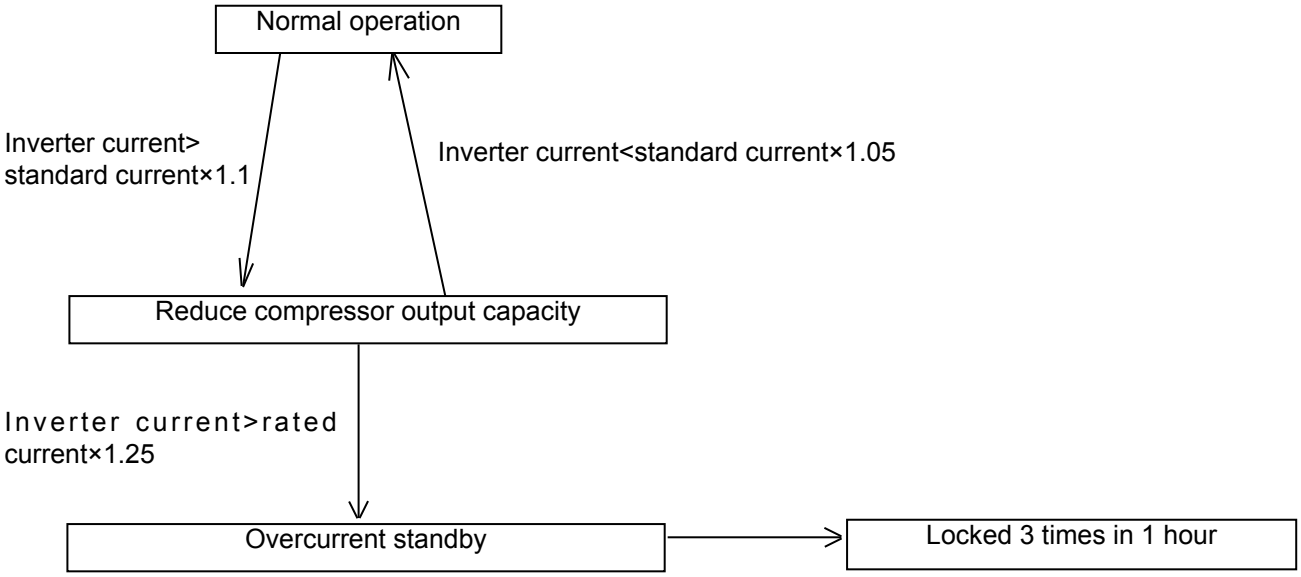


Low pressure control in heating

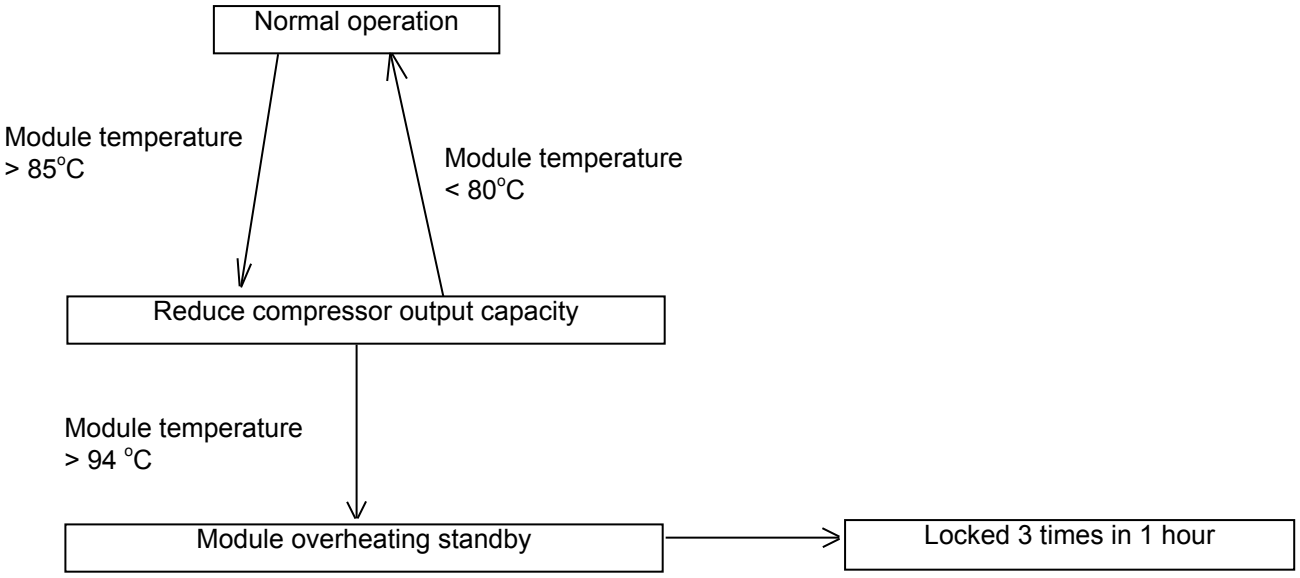


Module control

Module current protection control



Module temperature protection control



5.4 4-way valve reversing

When the four-way valve is switched, the high pressure point of the valve needs to reach the minimum pressure difference required by the valve action.

5.5 Supercooling coil control

In cooling, the liquid outlet temperature Tliqsc of the suppercooling coil is controlled by adjusting the electronic expansion valve LEVb.

Ordinary high drop, improve system operation efficiency by obtaining a certain degree of supercooling.

5.6 Defrosting control

When any outdoor unit meets the defrost entry condition, it will switch the four-way valve to start defrosting.

5.7 Oil return in heating

During oil return in heating, the four-way valve is switched to the cooling state and the indoor units are anti-cold air control in the whole process

5.8 Compressor bottom temperature control

(1) When the temperature at the bottom of the compressor increases, the liquid bypass cooling is performed by opening the corresponding SV31,2.
(2) Before the compressor is started, the bottom of the compressor is heated by heater so that the internal liquid refrigerant evaporates sufficiently before the compressor is started to avoid excessive dilution of the compressor oil.

5.9 Compressor top temperature (Td1/Td2) control

(1) When the temperature at the top of the compressor rises, the liquid bypass cooling is performed by opening the corresponding SV31,2.
(2) When the temperature at the top of the compressor rises to 115°C, the output frequency of the compressor is limited.

5.10 High pressure protection control in heating

In heating, the high pressure is detected by the high pressure ensors Pd1, Pd2 of each compressor so as to control the compressor capacity to avoid high pressure rise.

5.11 Current safety control

(1) If the compressor current exceeds the specified upper limit, reducing the operating frequency for control before the current becomes the exit value.
(2) Even if the current dropped to the minimum speed cannot reach the upper limit value, the operation stops.

5.12 Module radiator temperature protection control

When the radiator temperature Tfin ≥ the limit temperature value, according to Tfin=limit temperature value to control the frequency limit of the INV compressor.

5.13 Compression ratio protection control

(1) When the compression ratio ε ≥ limit value, the compressor speed limit control is performed according to the target of ε=limit value;

(2) When the compression ratio ε<limit value, the compressor speed limit control is performed according to the target of ε=limit value;

(3) When ε exceeds the limit value for a certain period of time, alarm the compression ratio error and shutdown.

5.14 Balancing oil operation

(1) When more than 2 outdoor units are in operation, the master / slave unit will balancing oil every 20 minutes;

(2) Balancing oil between the outdoor units, according to the pressure difference between the pressure of the high pressure chamber compressor oil pool of the oil discharging oudoor unit and the pressure of the suction side of the oil absorbing outdoor unit. during the balancing oil, the outdoor unit that discharges oil turns on the SV9, and the outdoor unit that absorbs oil opens the SV10.

5.15 Frequency converter cooling fan control

(1) The heat generate by the frequency converter forced cooling with a cooling fan;

(2) After the compressor is started, the fan runs immediately. After the compressor stops, the fan stops running.

5.16 Automatic back-up operation

(1) When a outdoor unit or compressor fails, other outdoor units and compressors that can be operated will enter to back-up operation;

(2) The classification of backup operation

① The system is stopped: all the masters and slaves unit stop.

② Single unit stop: The outdoor unit is stopped (the compressor of the abnormal unit stops).

③ Compressor stop: compressor unit stops (only abnormal compressor stops).

• It does not stop permanently when it stops abnormally, it will automatic recovery.

5.17 Refrigerant recovery control during maintenance

(1) When the outdoor unit is discarded and transferred, the refrigerant needs to be recovered from the outdoor unit. At this time, the outdoorl unit performs the refrigerant recovery operation. (The refrigerant in the system is recycled to the outdoor unit)

(2) This control operation by hand

(3) Operation step:

① Turn on the unit for cooling operation

② Close the liquid pipe stop valve of each outdoor unit

③ After the low pressure of each outdoor unit is lower than 0.1 MPa for 10 seconds, closed the gas pipe stop valve of each outdoor unit at the same time.

④ The units are powered off and the refrigerant recovery is ended

5.18 Broken sensor detection and required temperature range

(1) The sensor's style range and breakage detection value

No.	Sensor	Unit	Application range	Disconnection range
1	Tfin	℃	-10~140	-11℃ below
2	Toil1, Toil2, Td1, Td2	℃	-20~140	-30℃ below
3	Ts, Ts1, Ts2, Tsco	℃	-40~75	-50℃ below
4	Tao	℃	-40~75	-50℃ below
5	Tdef1, Tdef2, Toci1, Toci2, Tliqsc	℃	-40~75	-50℃ below
6	Toilp, Tsuc	℃	-20~140	-30℃ below
7	High pressure	MPa	0~4.15MPa	0V below or 3.49V above
8	Low pressure	MPa	0~1.7MPa	

(2) Disconnection detection method

① Detecting the AD value of temp. sensor less than 11 (open circuit) or more than 1012 (short-circuit) continuously for 60 seconds, the failure be confirmed and unit alarm.

② Toil1, Toil2, Td1, Td2, $T_o$ilp, and Tsuc sensor, do not judge the disconnection fault when the outdoor temperature is lower than 0°C.

③ The high-pressure and low-pressure sensors detect AD values less than 11 (open circuit) or more than 1012 (short-circuit) continuously for 30 seconds, alarm. During defrosting and after defrosting 3 minutes, do not alarm.

5.19 Quiet operation control

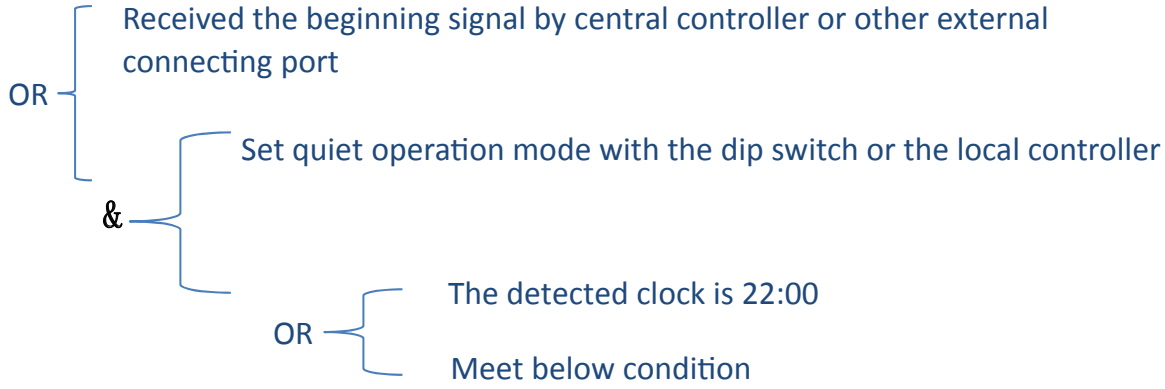
This control is to deal with noise regulations at night or in the residential area.

At night when the outdoor temperature is low, the quiet operation control is realized by "outdoor fan speed reduction and compressor speed reduction"

(1) Relationship between master unit and slave unit

Master outdoor unit receives the control signal and sent it to the slave outdoor unit, then the slave unit operate follow the directions.

(2) Beginning condition



Calculate the highest temperature in the past 3 days, from that moment on, after 8 hours, begin quiet operation.

(3) Control content

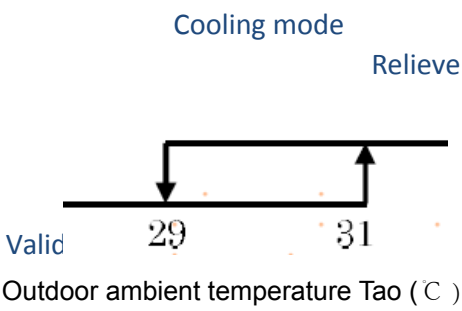
Same control as cooling/heating

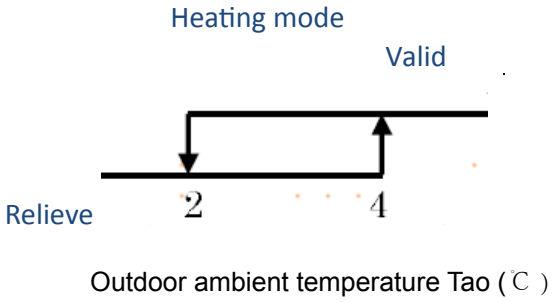
Silent 1, there is a limit on the start condition, and silent 4~6 no limit on the 8-hour operation of the start condition and the end condition.

After setting, the selected control is executed immediately until the setting is changed (or meet the end condition)

1	Compressor's upper limit rotating speed is 90% of the highest rotating speed, fan motor's rotating speed is below the highest rotating speed -5
2	Compressor's upper limit rotating speed is 80% of the highest rotating speed, fan motor's rotating speed is below the highest rotating speed -6
3	Compressor's upper limit rotating speed is 70% of the highest rotating speed, fan motor's rotating speed is below the highest rotating speed -7
4	Strong silent operation, compressor's upper limit rotating speed is 90% of the highest rotating speed, the highest fan motor rotating speed is 18
5	Strong silent operation, compressor's upper limit rotating speed is 90% of the highest rotating speed, the highest fan motor rotating speed is 16
6	Strong silent operation, compressor's upper limit rotating speed is 80% of the highest rotating speed, the highest fan motor rotating speed is 14

Outdoor ambient temperature range for silent operation mode





(4) Complete condition

(1) Getthe control complete signal from the external port like the central controller

(2) Getthe control complete signal from the local controller
(3) Allthe indoor units' dip switch are off (control complete signal)
(4) 8 hours after control

(5) Relationship with other control mode
When unit is in defrost control or oil return control mode, quiet operation mode stop

6. Failure code

Failure code description: (failure code of the whole system is showed as 8 bits, so totally 256 codes. Indoor failure code should be judged by the table and the unit number)

- Outdoor failure code exists in EEPROM, in which 5 failure codes can be kept.
- Indoor failure code exists in EEPROM, in which 5 failure codes can be kept.
- Can clear failure code by indoor or outdoor.

Failure codes are distributed as following:

0~19: indoor failure code
20~99: outdoor failure code
100~109: DC motor failure code
110~125: inverter module failure code
126~127: soft auto-check failure code

Physical master unit:
Dip switch SW9, SW10, SW11 are at 0, 0, 0, digital tube displays failure code 20~127, it is the master failure code.
Dip switch SW9, SW10, SW11 are 1, 0, 0, digital tube displays failure code 20~127, it is failure code of No. 1 slave unit.
Dip switch SW9, SW10, SW11 are 2, 0, 0, digital tube displays failure code 20~127, it is failure code of No. 2 slave unit.
Physical slave unit:
Dip switch SW9, SW10, SW11 are at 0, 0, 0, digital tube displays failure code 20~127, it is single slave unit failure code.
Outdoor failure code display principle on wired controller:
When outdoor compressor is running, indoor wired controller will display the failure code of outdoor with higher priority. When compressor stops, it displays all indoor failures. The indoor failures will be classified as below: sensor failure, inverter board failure, fan motor driving board failure, any protections etc.

Outdoor unit failure code

Digital tube indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
20-0	14	Defrosting temp. sensor Tdeffailure	AD value is below 11(open circuit) or over 1012(short circuit)for 60 seconds,in cooling mode,if the sensor is abnormal,the unit does not deal with it,besides,in defrosting and within 3 minutes after defrosting,no alarm	resumable
21	15	Ambient temp.sensor Ta failure	AD value is below 11(open circuit) or over 1012(short circuit)for 60 seconds	resumable
22-2	16	Suction temp.sensor Ts(acc) failure		
23-0	17	Discharging temp. sensor Td1 failure	AD value is below 11(open circuit) or over 1012(short circuit)for 60 seconds	resumable
23-1	17	Discharging temp. sensor Td2 failure		
24-0	18	Modular heat sensor Th failure	AD value is below 11(open circuit) or over 1012(short circuit)for 60 seconds	resumable
24-1	18	Oil temp.sensor Toil1 failure	AD value is below 11(open circuit) or over 1012(short circuit)for 60 seconds	
24-2	18	Oil temp.sensor Toil2 failure		
25-0	19	Inlet temp.of heat exchanger Toci1 failure	AD value is below 11(open circuit) or over 1012(short circuit)for 60 seconds	resumable
26-0	1A	Indoor communication failure	For continuous 200 cycles,can not find connected indoors	resumable
26-1			For continuous 270 seconds,the searched indoor quantity is less than the set quantity	
26-2			For continuous 170 seconds,the searched indoor quantity is more than the set quantity	

Digital tube indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
26-3	1A	Outdoor unit and VP-box communication failure	The searched vp box quantity is less than set quantity for continuous 5 minutes	
26-4			The searched vp box quantity is more than set quantity for continuous 5 minutes	
27-0	1B	Oil temp.too high protection（Toil1）	Toil ≧ 120℃ continuous 2sec exceeds the set value after shutdown alarm; the alarm condition after stopping the oil temperature below 10 degrees, automatic recovery after 2min50s. Four times an hour to confirm the fault	Once confirmation un-resumable
27-1	1B	Oil temp.too high protection（Toil2）		
28	1C	High pressure sensor Pd failure	AD value is below 11(open circuit)or over 1012(short circuit)for 30 seconds	resumable
29	1D	Low pressure sensor Ps failure	AD value is below 11(open circuit)or over 1012(short circuit)for 30 seconds	
30-0	1E	High pressure switch HPSi failure	If disconnect for 2s continuously,alarm.If alarm 3 times in an hour,confirm the failure	Once confirmation un-resumable
30-1	1E	High pressure switch HPS2failure		
32-0	20	Heat exchanger outlet temp. Tsco failure	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm, sensor has no alarm when abnormal in heating mode.	resumable
32-1	20	Liquid pipe SC temp. of subcooler Tliqsc failure		
33-0	21	EEPROM failure	AT24C04 EEPROM communication failure	Once confirmation un-resumable
33-2			AT24C04 EEPROM data check failure(model code,check sun etc)	
33-3			AT24C04 EEPROM data check failure(data beyond limit,reverse sequence etc)	
34-0	22	Discharging temp. too high protection（Td1）	Td ≧ 120℃ continuous 2sec exceeds the set value after shutdown alarm; the alarm condition after stopping the oil temperature below 10 degrees, automatic recovery after 2min50s. Four times an hour to confirm the fault	Once confirmation un-resumable
34-1	22	Discharging temp. too high protection（Td2）		
35-0	23	4-way valve reversing failure	After 4-way valve is electrified for 10 minutes,if the below conditions can be met for continous 10 seconds,that is conversing successfully. This outdoor compressor is running normally Td1orTd2-Tdef1≥10℃＆ Toci-Tao≤5℃＆ Pd-Ps≥0.3MPa Otherwise，the system alarms reversing failure If it occurs 3 times in an hour,confirm the failure	Once confirmation un-resumable
35-1	23	4-way valve reversing failure	After the start of the main outdoor machine 20min still have a child of the four way valve is not on the electricity is reported 35-1 fault. 2 times an hour to confirm the fault。	Once confirmation un-resumable
36-0	24	Oil temp.too low protection（Toil1）	In normal operation,if Toil ＜ CT+10℃ for continuous 5 minntes,the unit stop and alarm.2 minutes and 50 seconds later,resume automatically.If it occurs 3 times in an hour,confirm the failure	Once confirmation un-resumable
36-1	24	Oil temp.too low protection（Toil2）		
39-0	27	Low pressure sensor Ps too low protection	After compressor is running(except for residual operation),if in cooling,Ps ＜ 0.01MPa or in heating，Ps ＜ 0.05MPa for continuous 5 minutes，alarm and stop。2 minutes and 50 seconds later，resume automatically。If it occurs 3 times in an hour，confirm the failure。	Once confirmation un-resumable

Digital tube indication on master unit		Failure code definition	Failure description	Remarks
39-1	27	Compression ratio too high Protection	After compressor is running，compression ratio ε ＞ 10.0 forcontinuous 5 minutes ，stop and alarm。2 minutess and 50 Seconds later，resume automatically。If it occurs 4 times in an hour，confirm the failure。	Once confirmation un-resumable
40	28	High pressure sensor Pd too high protection	If Pd≥4.15MPa，alarm and stop，2 minutes and 50 seconds later，resume automatically。If it occurs 3 times in an hour，confirm the failure。	Once confirmation un-resumable
43-0	2B	Discharging temp.sensor Tdi too low protection	In normal operation,If Td ＜ CT+10℃ for continuous 5 minutes，the unit stops and alarms.2 minutes and 50 seconds later,resume automatically.If it occurs 3 times in an hour,confirm the failure.	Once confirmation un-resumable
43-1	2B	Discharging temp.sensor Td1 too low protection		
45	2D	Communication failure between outdoors	Continuous 30 seconds no communication	resumable
46-0	2E	Communication failure with INV1 module board	Continuous 30 seconds no communication	
46-1	2E	Communication failure with INV2 module board	Continuous 30 seconds no communication	
46-4	2E	Communication with fan 1 module board	Continuous 30 seconds no communication	
46-5	2E	Communication with fan 2 module board	Continuous 30 seconds no communication	
47	2F	Communication failure with wireless module	Wireless module can not detect 2 minutes alarm	
51-0	33	LEVa1 over current protection	LEV drive chip detection	resumable
51-1	33	LEVa2 over current protection	LEV drive chip detection	resumable
52-0	34	LEVa1 disconnection fault	LEV drive chip detection	resumable
52-1	34	LEVa2 disconnection fault	LEV drive chip detection	resumable
74	4A	Emergency stop	External interface control(The machine will stop quickly after switch cut off)	resumable
75-0	4B	High and low pressure difference is too small	Pd-Ps = 0.35Mpa for 3 minutes, if the outdoor protective stop. Protect stop after 5 minutes, then restart.	Once confirmation un-resumable
76-0	4C	Incorrect outdoor address or capacity setting	The number of sub machine and host data does not match the EEPROM set	Reset
76-1			The address of sub machine and host data does not match the EEPROM set	
76-2			The capacity setting of sub machine and host data does not match the EEPROM set	
83	53	Incorrect parameter setting or incorrect match of outdoor unit	Outdoor machine type dial code settings error or with the host model does not match	Non recoverable
99-X	63	Program self fault	X=0~5	resumable

Digital tube indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
108	6C	Module rectifier side software transient overcurrent	-	-0: compressor module 1; -1: compressor module 2; -4: fan module 1; -5: fan module 2; Four fault confirmation for one hour， Once confirmation un-resumable
109	6D	Module rectifier side current detection circuit anomaly	-	
110	6E	Module hardware overcurrent	-	
111	6F	Compressor out of step	In the process of starting or running, the rotor position can not be detected for 6 times in a row, and the INV control board is automatically restored after stopping 5S	
112	70	High temperature of module radiator	The temperature more than 94℃ fault alarm. Automatic recovery of INV control board when temperature is 94℃	
113	71	Module overload	-	
114	72	Inverter input power abnormal	P/N voltage<420V, alarm P/N voltage≥420V, auto recovery	
			P/N voltage>642V, alarm P/N voltage≤642V, auto recovery	
			Inverter input power voltage sags and brief interruptions	
117	75	Modular software overcurrent	-	
118	76	Module boot failure	Compressor 5 consecutive start failure	
119	77	Module current detection circuit error	Abnormality of current detection sensor, no connection or connection error	
120	78	Module power supply error	Inverter controller power supply instantaneous interrupt	
121	79	Module control board power supply abnormal	Inverter controller board power supply instantaneous interrupt	
122	7A	Module radiator temperature sensor abnormal	Temperature sensor resistance is abnormal or not connected	
123	7B	Module rectifier side hardware transient overcurrent	-	
124	7C	Three phase power supply failure	-	
125-0/1	7D	Compressor frequency mismatch	(the current frequency is greater than or equal to INV or +3Hz target frequency (frequency) target actual frequency >0 & & =0) for 5 minutes	resumable
125-4/5	7D	Fan speed mismatch (locked rotor)	20rpm run below the 30s, or the target value of 70% to run for up to 2 minutes after the shutdown, automatic recovery after 2 minutes of 50 seconds, one hour and four fault confirmation.	Once confirmation un-resumable
127	7F	MCU reset fault	If the host detects sub machine MCU reset, and the machine is in operation, the host MCU reset the fault, the whole system down; if in the heating mode, then restart the 4WV power, the system re 4WV reversing operation. Four fault confirmation for one hour	Once confirmation un-resumable

In the case of no fault, if the system does not meet the start-up conditions, the host digital display standby code:

555.0	Indoor machine capacity beyond the outdoor machine capacity of 150% or less than 50%, standby system	Indoor machine capacity beyond the outdoor machine capacity of 150% or less than 50%, standby system	resumable
555.1	26 degree standby	Ambient temperature above 26 degrees indoor heat can not boot	
555.2	Low pressure (gas) standby	Refrigeration Ps<0.23Mpa or heating Ps<0.12Mpa start, system standby	
555.3	54 degrees above the cooling outdoor machine is not running	54 degrees above the cooling outdoor machine is not running	
555.5	Power restriction	Power inhibit setting maximum capacity output is 0%	
555.6	Password lock	Password lock system to set the maximum operating time to the system standby	
555.8	No trial running	No trial running	

Valve box failure code list

Failure code	Failure code definition	Judgment method	Remarks
5	Valve box EEPROM date failure		Un-resumable
6	Communication between valve box and outdoor failure	No communication with the outdoor unit for continuous 120 seconds	Resumable
7	Communication between valve box and indoor failure	When detecting the connected indoor units, the indoor unit quantity is zero.	Resumable
9	Valve box repeated address		Resumable
20	Outdoor corresponding failure		Resumable

7. Troubleshooting

7.1. Defrosting temperature sensors Tdef failure

Failure code: Outdoor digital display tube: 20-0 Indoor wired controller: 14

Indoor unit LED : LED 5 flash 20 times

Outdoor unit LED status : LED1 Normal LED2 Normal

Abnormity detection method:

◆ Check if the sensor connection is normal;

◆ Check if resistance characteristic of the sensor is normal;

◆ Check if the temperature loop acquired by the PCB is normal.

Possible causes:

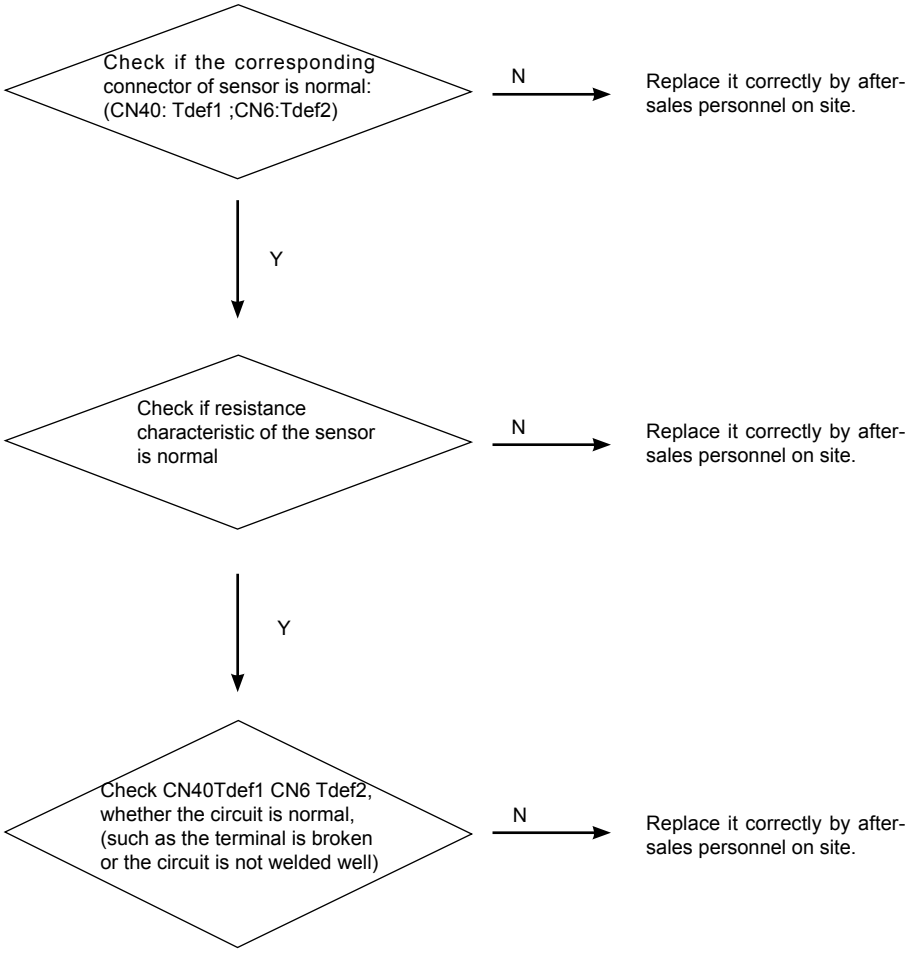
◆ The connection of sensor is not secure;

◆ The sensor is broken;

◆ The sensor is with resistance drift;

◆ The temperature acquired by PCB is not accurate

Troubleshooting



7.2. Ambient temperature sensor: Tao failure

Failure code: Outdoor digital display tube: 21 Indoor wired controller: 15

Indoor unit LED : LED 5 flash 20 times

Outdoor unit LED status : LED1 Normal LED2 Normal

Abnormity detection method:

◆ Check if the sensor connection is normal;

◆ Check if resistance characteristic of the sensor is normal;

◆ Check if the temperature loop acquired by the PCB is normal.

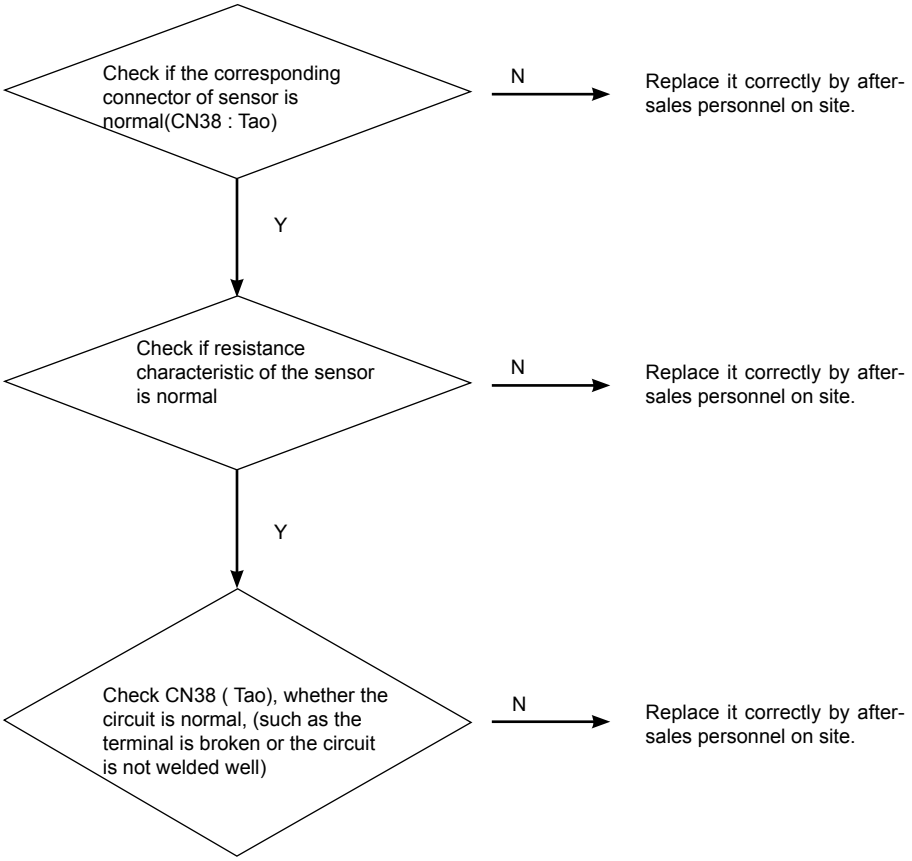
Possible causes:

◆ The connection of sensor is not secure;

◆ The sensor is broken;

◆ The sensor is with resistance drift;

◆ The temperature acquired by PCB is not accurate



7.3. Suction temperature sensor: Ts failure

Failure code: Outdoor digital display tube: 22-2 Indoor wired controller: 16

Indoor unit LED : LED 5 flash 20 times

Outdoor unit LED status : LED1 Normal LED2 Normal

Abnormity detection method:

◆ Check if the sensor connection is normal;

◆ Check if resistance characteristic of the sensor is normal;

◆ Check if the temperature loop acquired by the PCB is normal.

Possible causes:

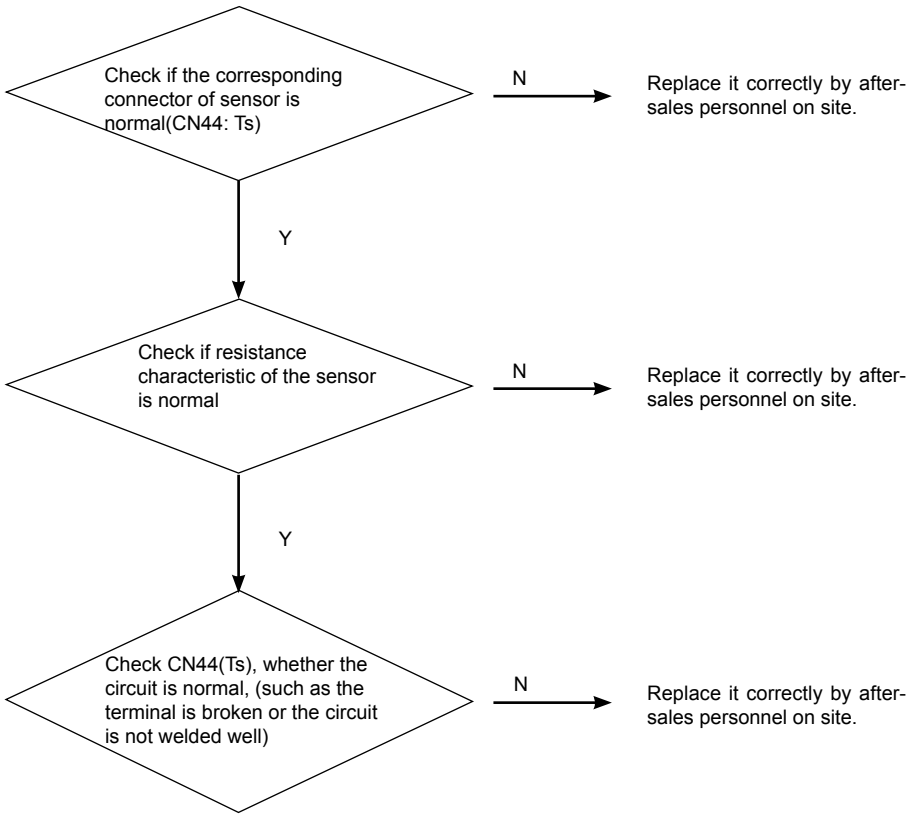
◆ The connection of sensor is not secure;

◆ The sensor is broken;

◆ The sensor is with resistance drift;

◆ The temperature acquired by PCB is not accurate

Troubleshooting



7.4. Discharging temperature sensor: Td1 and Td2 failure

Failure code: Outdoor digital display tube: 23-0,23-1 Indoor wired controller: 17

Indoor unit LED : LED 5 flash 20 times

Outdoor unit LED status : LED1 Normal LED2 Normal

Abnormity detection method:

◆ Check if the sensor connection is normal;

◆ Check if resistance characteristic of the sensor is normal;

◆ Check if the temperature loop acquired by the PCB is normal.

Possible causes:

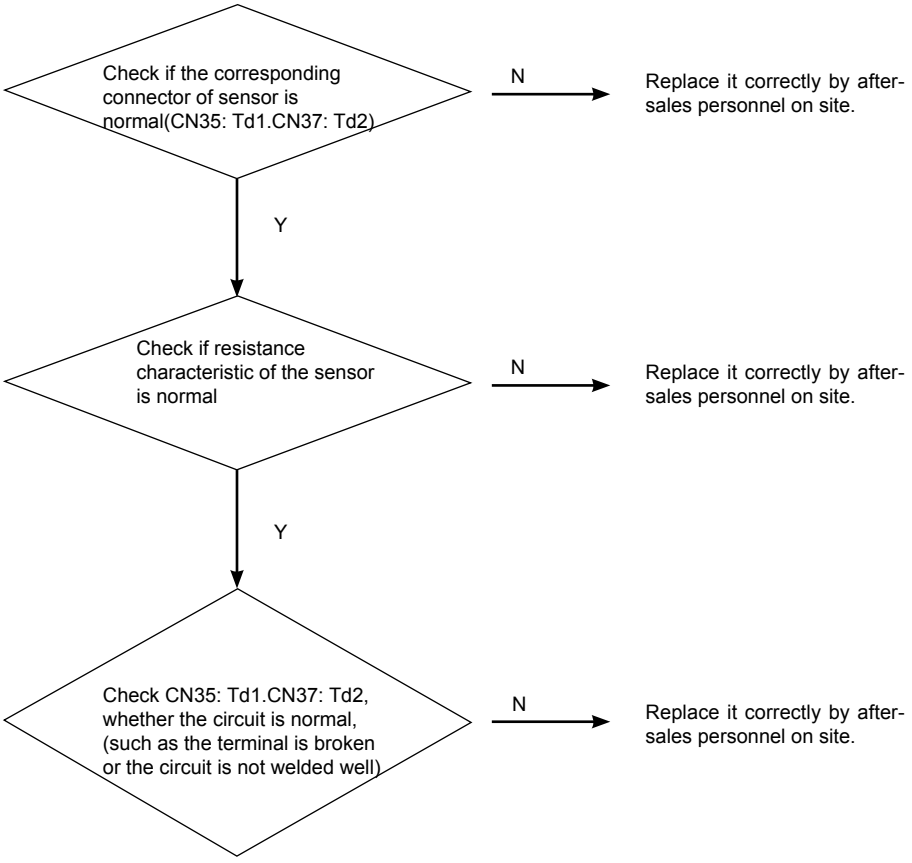
◆ The connection of sensor is not secure;

◆ The sensor is broken;

◆ The sensor is with resistance drift;

◆ The temperature acquired by PCB is not accurate

Troubleshooting



7.5. Oil temperature sensor: Toil1 and Toil2 failure

Failure code: Outdoor digital display tube: 24-0,24-1,24-2 Indoor wired controller: 16

Indoor unit LED : LED 5 flash 20 times

Outdoor unit LED status : LED1 Normal LED2 Normal

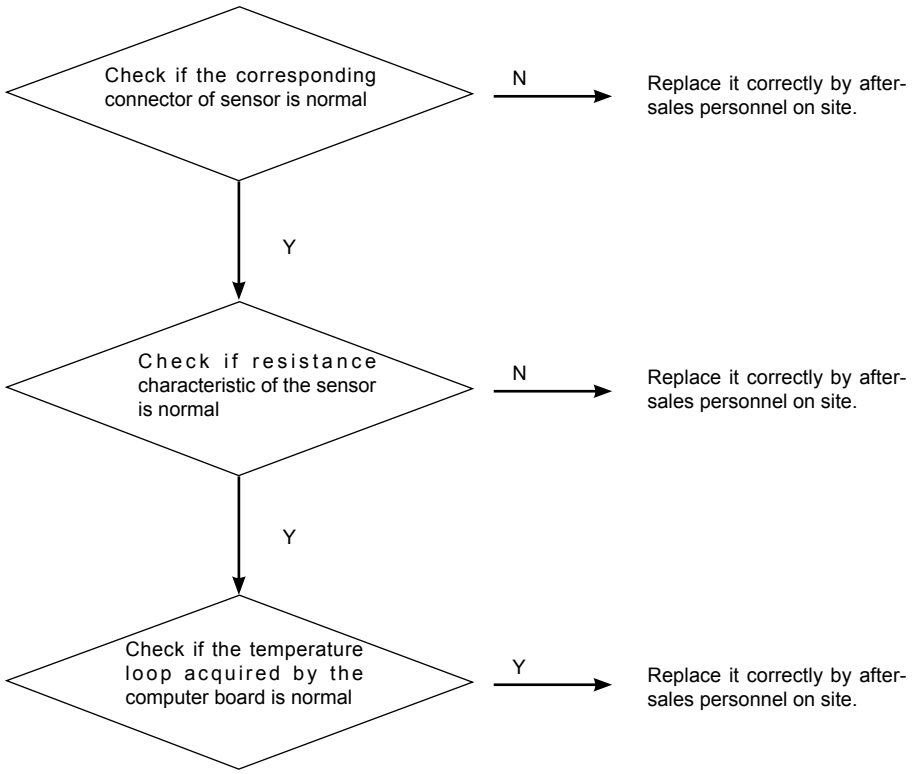
Abnormity detection method:

- ◆ Check if the sensor connection is normal;
- ◆ Check if resistance characteristic of the sensor is normal;
- ◆ Check if the temperature loop acquired by the PCB is normal.

Possible causes:

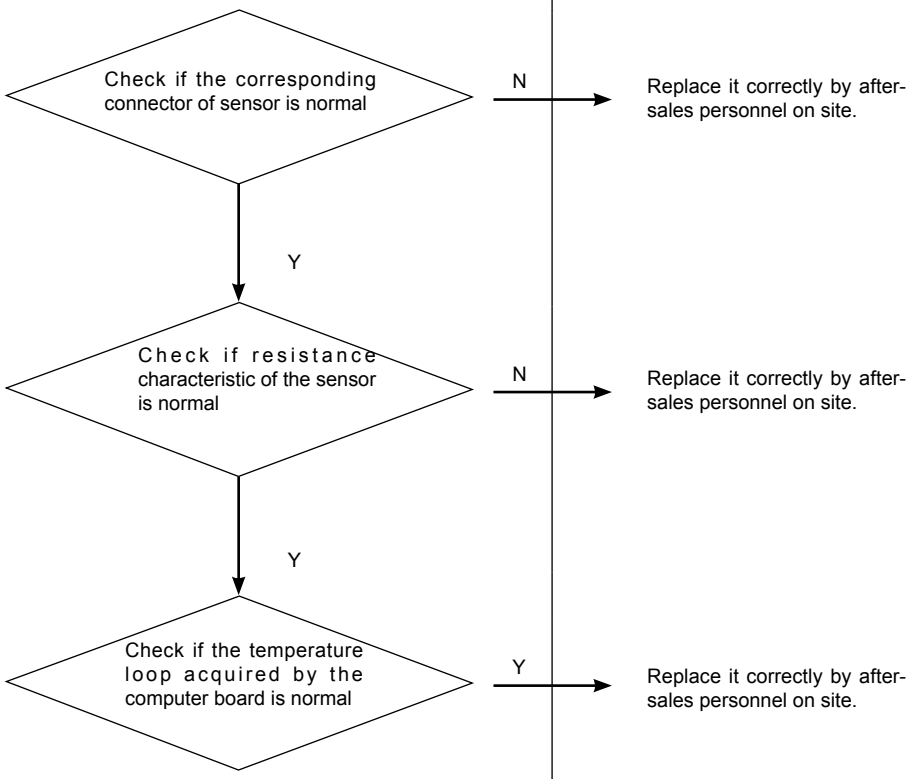
- ◆ The connection of sensor is not secure;
- ◆ The sensor is broken;
- ◆ The sensor is with resistance drift;
- ◆ The temperature acquired by PCB is not accurate

Troubleshooting



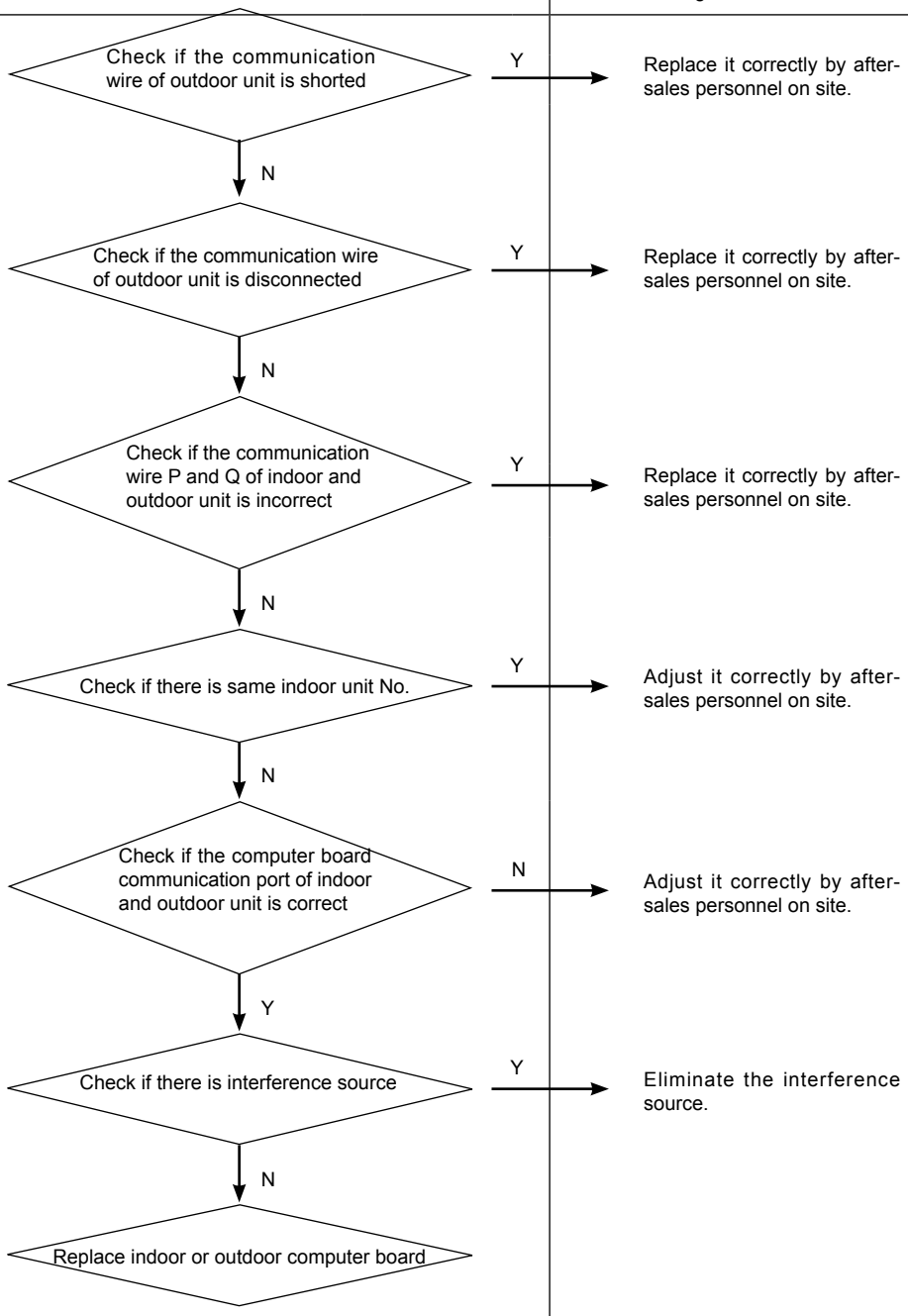
Failure code Outdoor digital display tube: 25-0 Indoor wired controller: 19	Indoor unit LED status	LED5		Failure description: Heat exchanger inlet temperature: Toci1 failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the sensor connection is normal; ◆ Check if resistance characteristic of the sensor is normal; ◆ Check if the temperature loop acquired by the PCB is normal.		
3. Abnormity confirmation conditions		
It is detected that the AD value is below 11 (open circuit) or above 1012 (short circuit) for 60 seconds continuously, the cooling mode operates the sensor abnormity without troubleshooting it, and no alarm is given during defrosting and within 3 minutes at the end of defrosting.		
4. Possible causes		
◆ The connection of sensor is not secure; ◆ The sensor is broken; ◆ The sensor is with resistance drift; ◆ The temperature acquired by PCB is not accurate.		



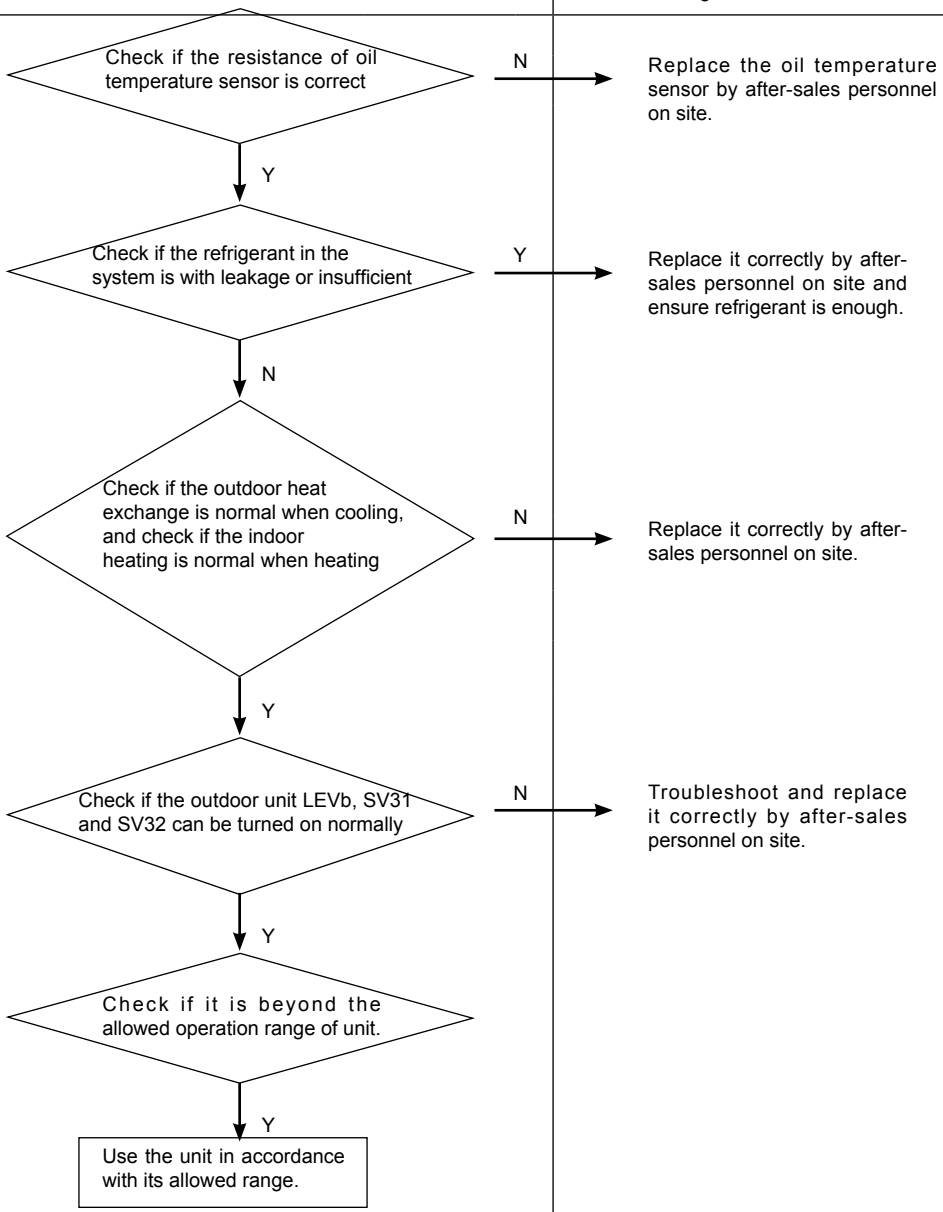
Failure code Outdoor digital display tube: 26-0, 1, 2 Indoor wired controller: 1A	Indoor unit LED status	LED5		Failure description: Communication between indoor unit and outdoor unit failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Grounded short-circuit of communication wire, or disconnected communication wire P and Q; ◆ Incorrect wiring of communication wire P and Q; ◆ Uniform indoor unit power supply, and partial indoor unit being powered off. ◆ Larger interference and unstable communication signal. ◆ Failure in PCB of indoor and outdoor unit results in unstable communication.		
3. Abnormity confirmation conditions		
It is not detected that there is indoor unit connection for 200 rounds continuously; it is detected that the number of indoor units is less than set number for 270 seconds continuously; it is detected that the number of indoor units is more than set number for 170 seconds continuously.		
4. Possible causes		
□Poor communication wire: short circuit and disconnection; □Incorrect wiring of communication wire P and Q P and Q; □Poor PCB results poor communication; □Larger interference of normal communication.		

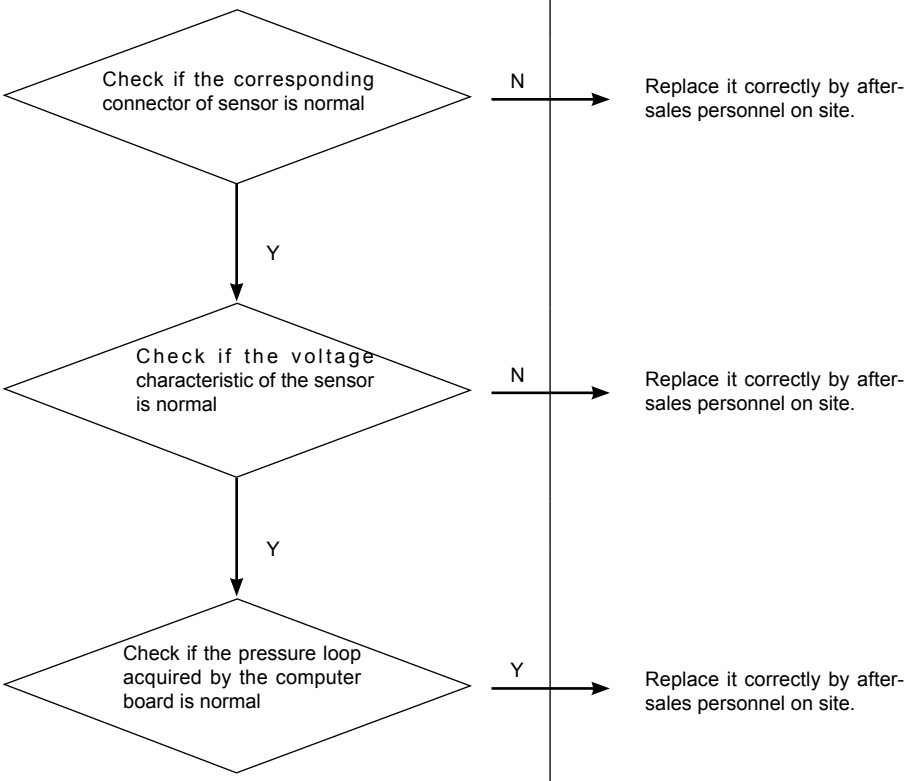


Failure code Outdoor digital display tube: 27-0, 1 Indoor wired controller: 1B	Indoor unit LED status	LED5		Failure description: Outdoor compressor oil temperature too high failure(Toil1 and Toil2)
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

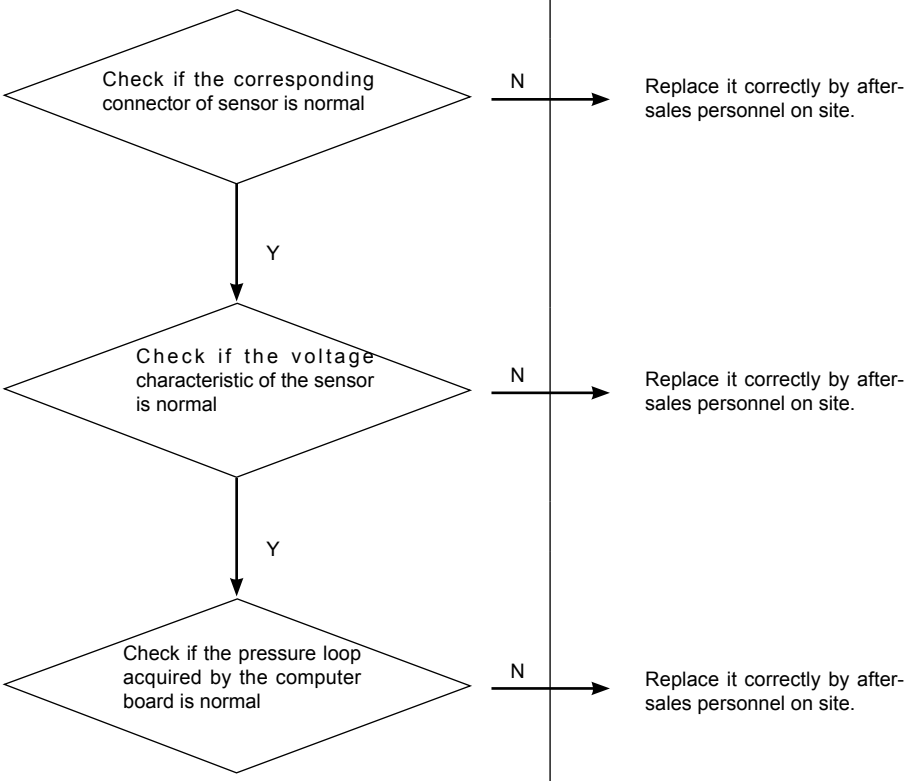
1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the temperature detected by the oil temperature sensor is correct; ◆ Check the unit for leakage or insufficient refrigerant; ◆ Check if the outdoor unit SV31, SV32, LEVb, etc. can be normally turned on; ◆ Check the outdoor heat exchanger of this unit for filth blockage and inlet & outlet air blockage. ◆ Check the indoor heat exchanger of this unit for filth blockage and inlet & outlet air blockage when cooling.		
3. Abnormity confirmation conditions		
Toil1/Toil2≥120°C.		
4. Possible causes		
◆ The oil temperature sensor is with resistance drift; ◆ The refrigerant in the system is insufficient; ◆ The outdoor unit LEVb, SV31, SV32, etc. cannot be turned on normally; ◆ The unit condensation side is with poor heat transfer function. ◆ The operation environment is beyond the allowed range.		



Failure code Outdoor digital display tube: 28 Indoor wired controller: 1C	Indoor unit LED status	LED5		Failure description: High pressure sensor Pd failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

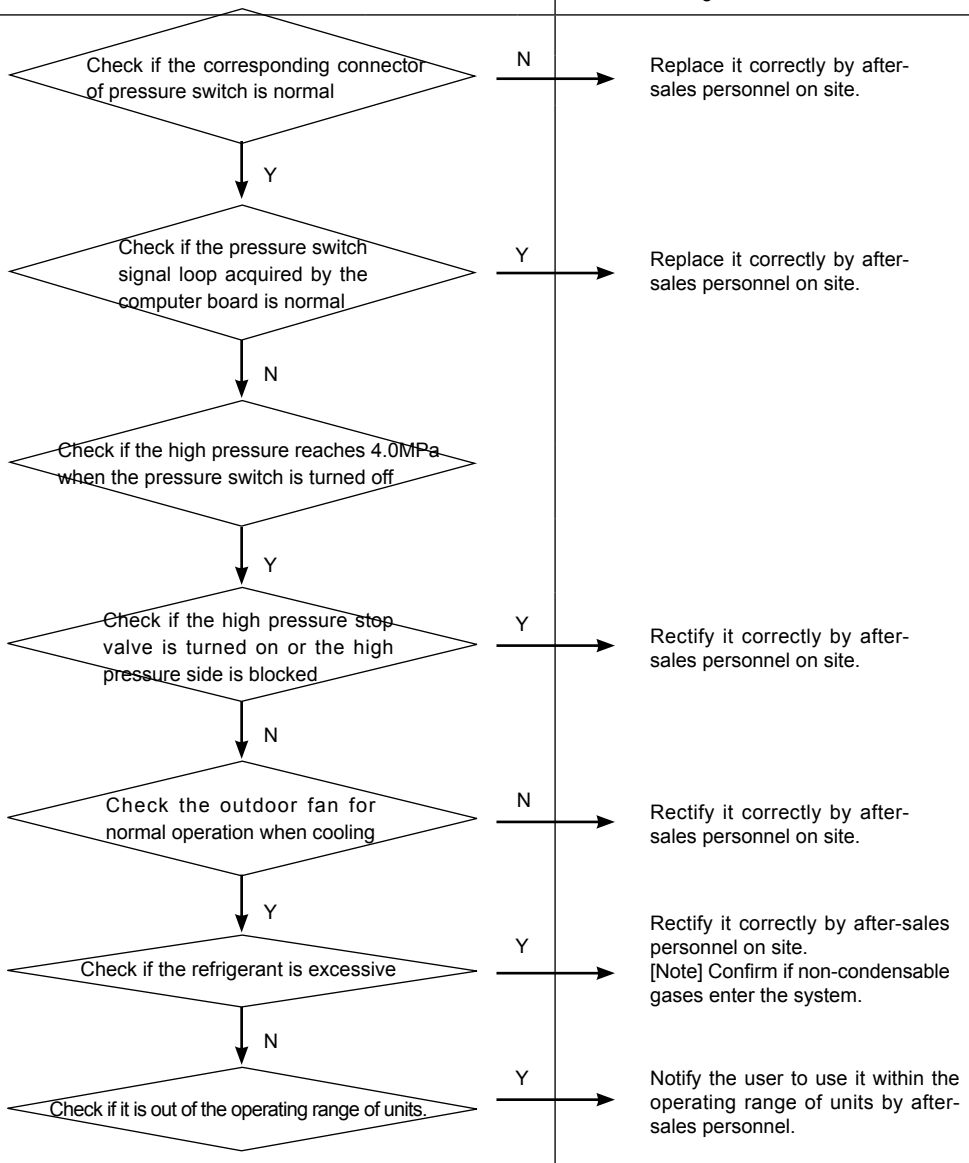
1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the sensor connection is normal; ◆ Check if voltage characteristic of the sensor is normal; ◆ Check if the pressure loop acquired by the PCB is normal.		
3. Abnormity confirmation conditions		
It is detected that the AD value is below 11 (open circuit) or above 1012 (short circuit) for 30 seconds continuously, and no alarm is given during defrosting and within 3 minutes at the end of defrosting.		
4. Possible causes		
◆ The connection of pressure sensor is not secure; ◆ The pressure sensor is broken; ◆ The pressure acquired by PCB is not accurate.		

Failure code Outdoor digital display tube: 29 Indoor wired controller: 1D	Indoor unit LED status	LED5		Failure description: Low pressure sensor Ps failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the sensor connection is normal; ◆ Check if voltage characteristic of the sensor is normal; ◆ Check if the pressure loop acquired by the PCB is normal.		
3. Abnormity confirmation conditions		
It is detected that the AD value is below 11 (open circuit) or above 1012 (short circuit) for 30 seconds continuously, and no alarm is given during defrosting and within 3 minutes at the end of defrosting.		
4. Possible causes		
◆ The connection of pressure sensor is not secure; ◆ The pressure sensor is broken; ◆ The pressure acquired by PCB is not accurate.		

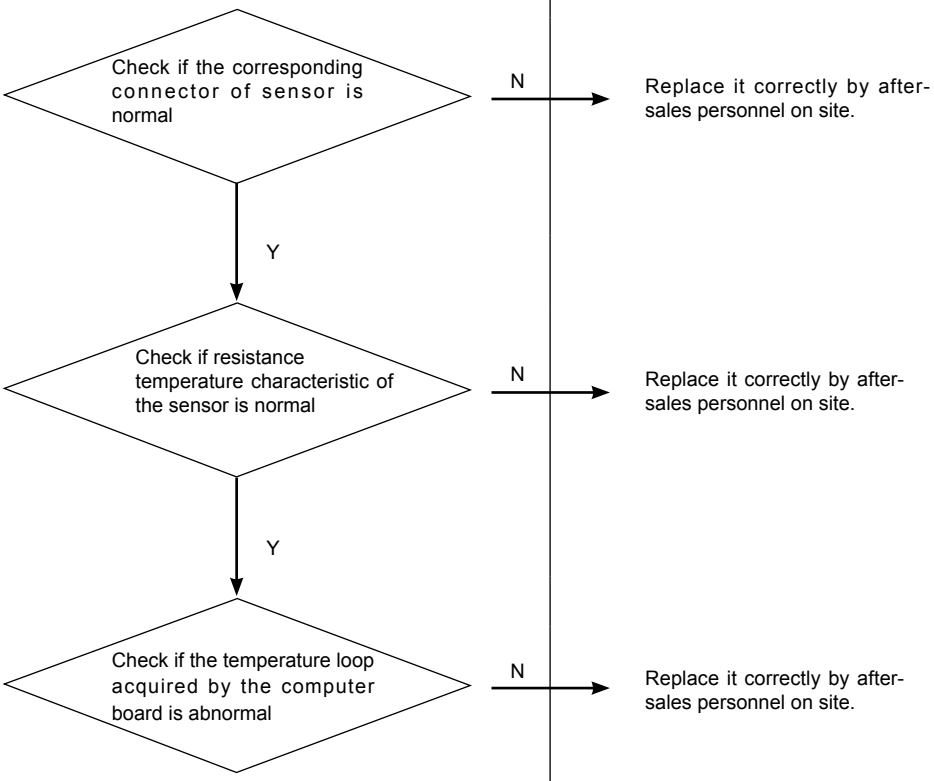
Failure code Outdoor digital display tube: 30-0, 1 Indoor wired controller: 1E	Indoor unit LED status	LED5		Failure description: High pressure switch HPS1 and HPS2 failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the pressure switch connection is normal; ◆ Check if the pressure switch signal loop acquired by the PCB is normal; ◆ Check if the pressure switch is turned off usually and the pressure exceeds 4.0MPa when disconnection; ◆ Check if the high pressure side of the system is blocked; ◆ Check the outdoor fan for normal operation when cooling.		
3. Abnormity confirmation conditions		
The high pressure switch is turned off for 2s.		
4. Possible causes		
◆ The connection of pressure switch is not secure; ◆ Pressure switch is broken; ◆ The pressure switch signal acquired by the PCB is incorrect; ◆ The high pressure side of the unit is blocked; ◆ The outdoor fan stops operating when cooling; ◆ The refrigerant is excessive; ◆ It is out of the operating range of units.		

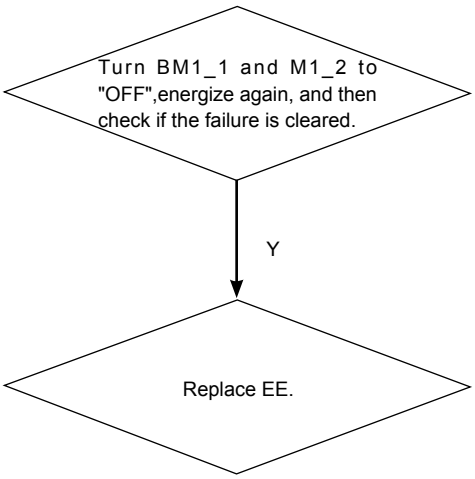


FFailure code Outdoor digital display tube: 32-0, 1 Indoor wired controller: 20	Indoor unit LED status	LED5		Failure description: Defrosting temperature sensor failure: Tsco and Tliqsc
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the sensor connection is normal; ◆ Check if resistance characteristic of the sensor is normal; ◆ Check if the temperature loop acquired by the PCB is abnormal.		
3. Abnormity confirmation conditions		
It is detected that the AD value is below 11 (open circuit) or above 1012 (short circuit) for 60 seconds continuously, the cooling mode operates the sensor abnormity without troubleshooting it, and no alarm is given during defrosting and within 3 minutes at the end of defrosting.		
4. Possible causes		
◆ The connection of sensor is not secure; ◆ The sensor is broken; ◆ The sensor is with resistance drift; ◆ The temperature acquired by PCB is not accurate.		

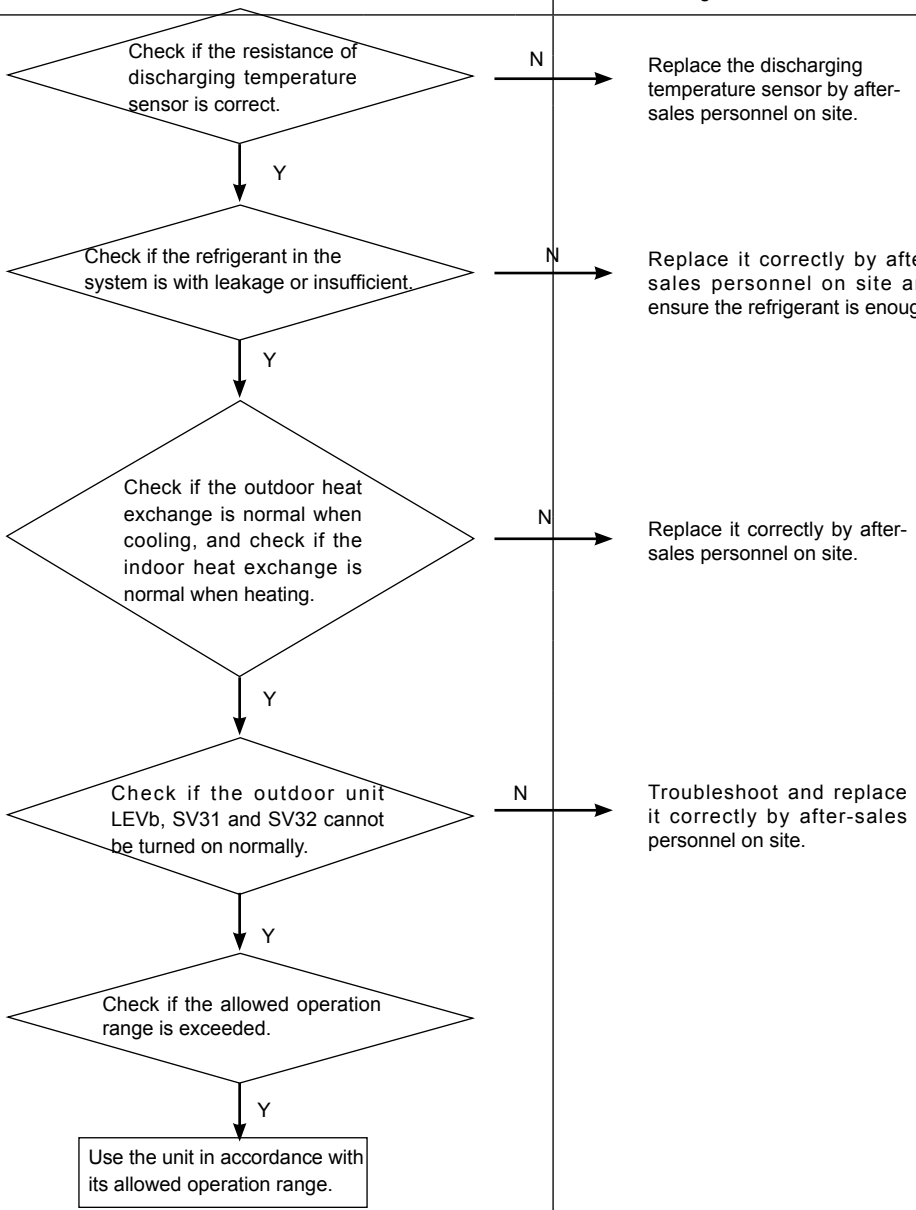


Failure code Outdoor digital display tube: 33-0, 2, 3 Indoor wired controller: 21	Indoor unit LED status	LED5		Failure description: AT24C04 EEPROM communication failure AT24C04 EEPROM data check failure IM EEPROM data or communication failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Incorrect EEPROM data.		
3. Abnormity confirmation conditions		
EEPROM communication error; EEPROM data check error (model ID, checksum, etc.); EEPROM data logic error (wider data range, wrong order, etc.)		
4. Possible causes		
◆ EEPROM is an old version, while the program is a new version.		

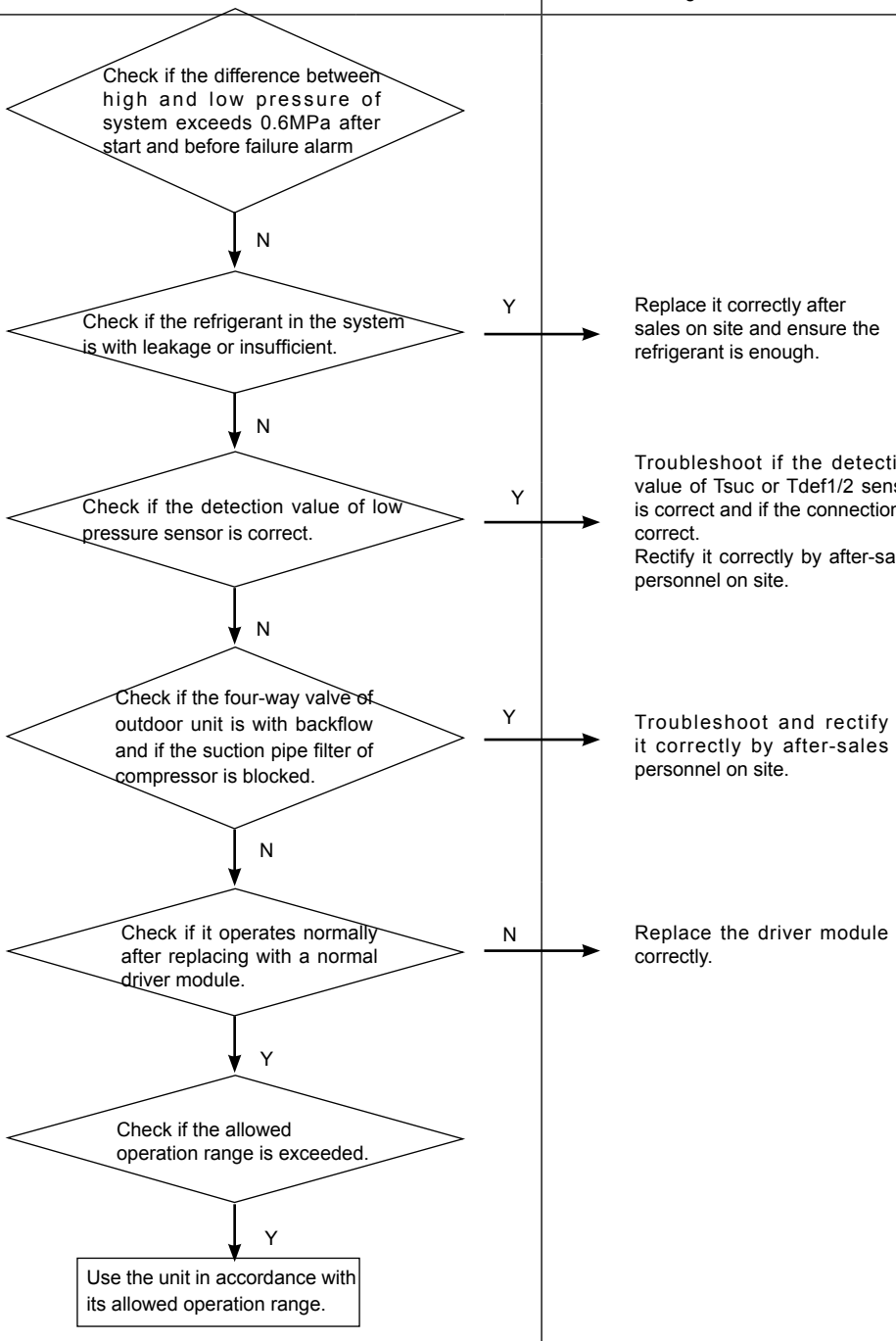
Failure code Outdoor digital display tube: 34-0, 1 Indoor wired controller: 22	Indoor unit LED status	LED5		Failure description: Outdoor compressor discharging temperature (Td1, Td2).too high failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the temperature detected via a discharging temperature sensor is correct. ◆ Check the unit for leakage or insufficient refrigerant; ◆ Check if the outdoor unit SV31, SV32, LEVb, etc. can be normally turned on; ◆ Check the outdoor heat exchanger of unit for filth blockage and air inlet & outlet short circuit when cooling. ◆ Check the indoor heat exchanger of the unit for filth blockage and air inlet & outlet short circuit when heating.		
3. Abnormity confirmation conditions		
Toil1/Toil2≥120°C.		
4. Possible causes		
◆ The oil temperature sensor is with resistance drift; ◆ The refrigerant in the system is insufficient; ◆ The outdoor unit LEVb, SV31 and SV32 cannot be turned on normally. ◆ The unit condensation side is with poor heat transfer function; ◆ The operation environment is beyond the allowed range.		

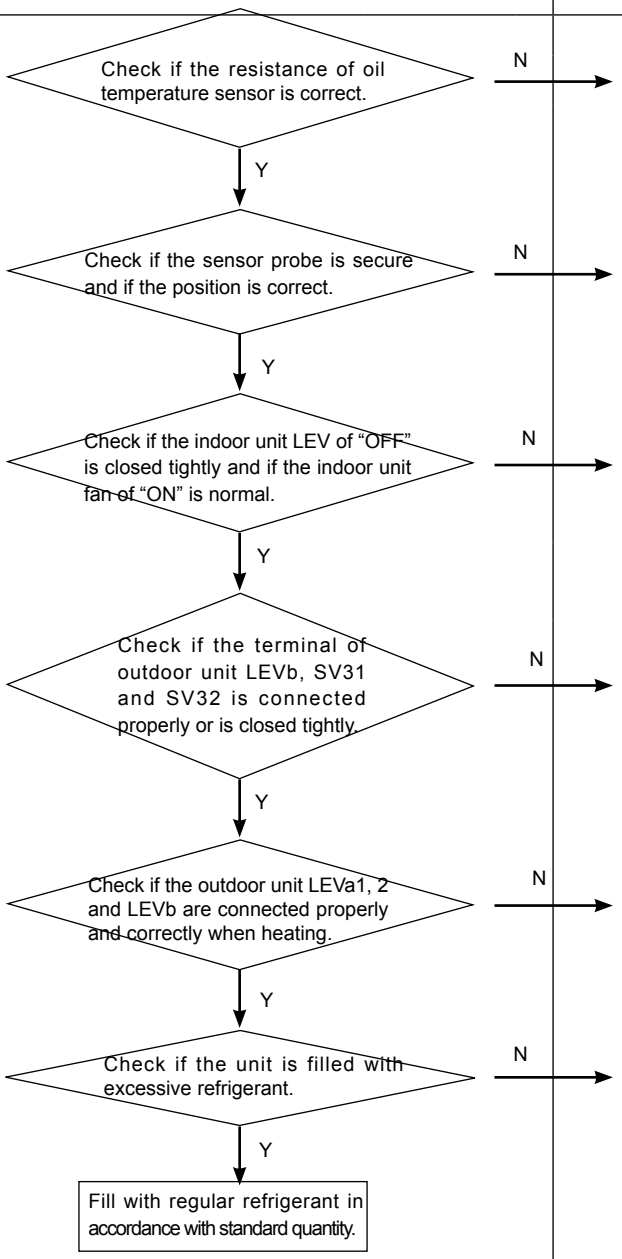


Failure code Outdoor digital display tube: 35-0, 1 Indoor wired controller: 23	Indoor unit LED status	LED5		Failure description: Four-way valve reversing failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

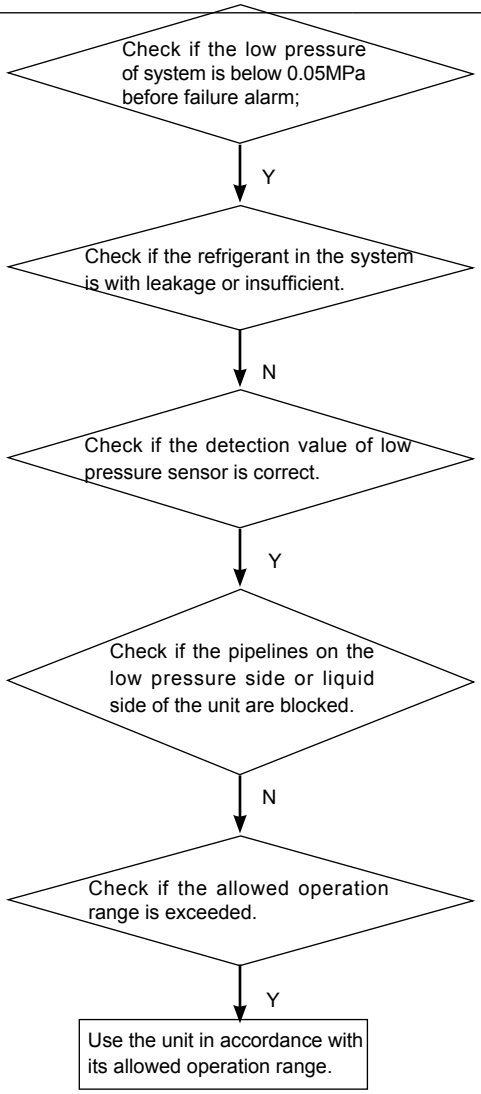
1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the difference between high and low pressure of system exceeds 0.6MPa after start and before failure alarm; ◆ Check if the unit lack of refrigerant. ◆ Check the four-way valve of unit for normal switching and free from backflow. ◆ Check if the detection value of high/low pressure sensor is correct. ◆ Check if the unit is beyond the operation range.		
3. Abnormity confirmation conditions		
In case of meeting one of the following conditions after the four-way valve is energized for 3min and lasts for 10s, it is judged as switching completion: •Tsuc-Tdef≥10°C •Pd-Ps≥βMpa (Tao>-10°C, β=0.60;Tao≤-10°C, β=0.40), otherwise, it is judged as failure.		
4. Possible causes		
◆ The detection value of high/ low pressure sensor is incorrect; ◆ The refrigerant in the system is insufficient; ◆ The four-way valve cannot be switched normally or with backflow. ◆ The filter of compressor suction pipe is blocked by foreign matters; ◆ The detection value of Tsuc or Tdef1/2 sensor is incorrect; The power module cannot drive the compressor operating normally; ◆ The operation environment is beyond the allowed range.		



Failure code Outdoor digital display tube: 36-0, 1 Indoor wired controller: 24	Indoor unit LED status	LED5		Failure description: Outdoor compressor oil temperature (Toil1, Toil2) too low failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

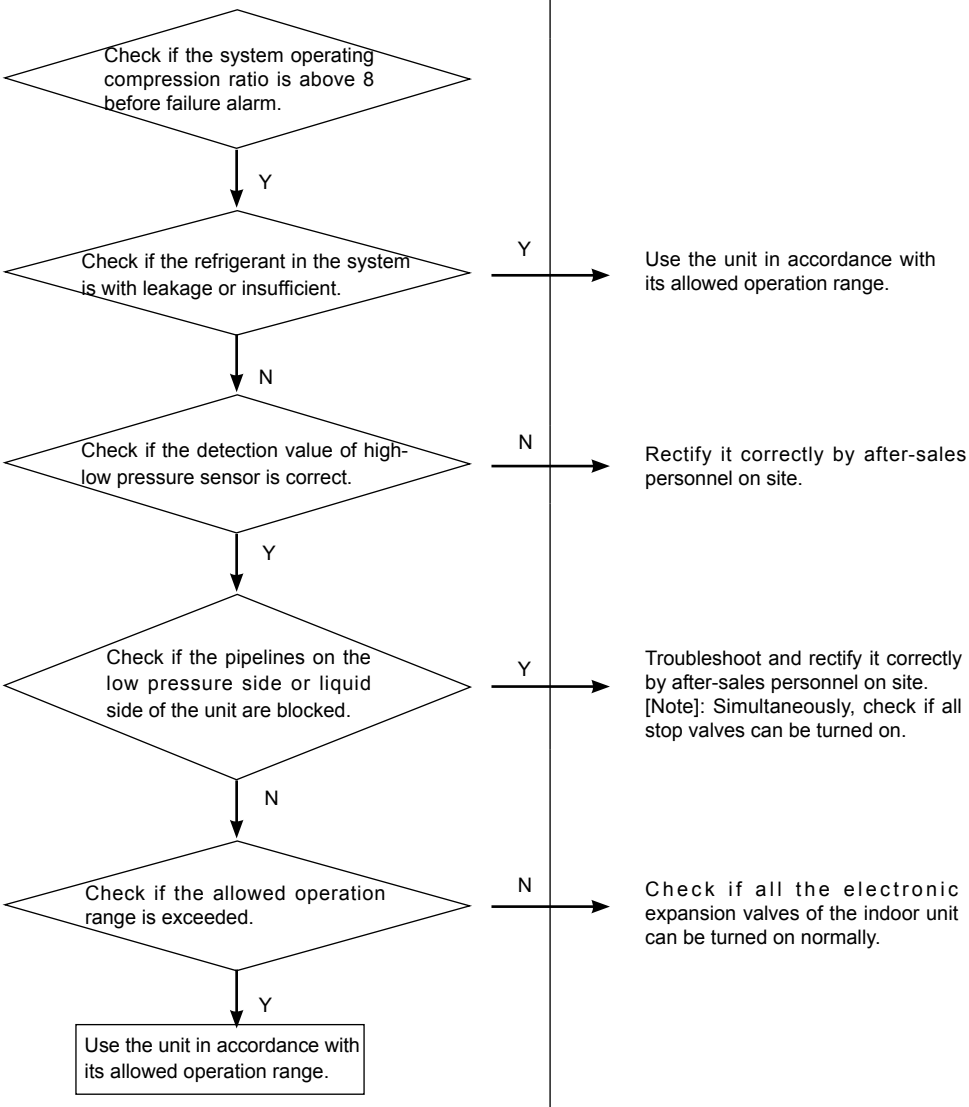
1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the temperature detected by the oil temperature sensor is correct. ◆ Check if the outdoor unit SV31, SV32, LEVb, etc. are with abnormal leakage and check if the detected temperature is correct; ◆ Check if the shutdown indoor unit LEV of unit is closed tightly, and if the running indoor unit fan operates normally.		
3. Abnormity confirmation conditions Toil1/Toil2-CT≤10°C lasts for 5min.		
4. Possible causes ◆ The probe of oil temperature sensor falls off or is with unsecure connection; ◆ The probe of oil temperature sensor is misplaced; ◆ The oil temperature sensor is with resistance drift; ◆ The outdoor unit LEVb, SV31 and SV32 are with leakage; ◆ The terminal of outdoor unit LEVa1, 2 and LEVb is connected incorrectly; ◆ For the unit, there is LEV leakage in shutdown indoor unit and non-operation of fan in operating indoor unit; ◆ The system refrigerant is too much ◆ The operation environment is beyond the allowed range.		

Failure code Outdoor digital display tube: 39-0 Indoor wired controller: 27	Indoor unit LED status	LED5		Failure description: Low pressure sensor Ps too low protection
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method	
◆ Check if the low pressure of system is below 0.06MPa before failure alarm; ◆ Check if the unit lack of refrigerant. ◆ Check if the pipelines on the low pressure side or liquid side of the unit are blocked; ◆ Check if the detection value of low pressure sensor is correct. ◆ Check if the unit is beyond the operation range.		
3. Abnormity confirmation conditions		
Alarm to shut down if the followings are detected for 5min: cooling: Ps< 0.10Mpa; heating: Ps< 0.05Mpa; oil return: Ps<0.03Mpa after the compressor operates. (except residual operation)		
4. Possible causes		
◆ The detection value of low pressure sensor is incorrect; ◆ The refrigerant in the system is insufficient or the system is with air leakage; ◆ The pipelines on the low pressure side or liquid side of the unit are blocked; ◆ The outdoor unit cannot be turned on normally due to failure to open electronic expansion of outdoor heat exchanger when heating; ◆ The operation environment is beyond the allowed range.		

Failure code Outdoor digital display tube: 39-1 Indoor wired controller: 27	Indoor unit LED status	LED5		Failure description: Compressor ratio ε too high protection
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

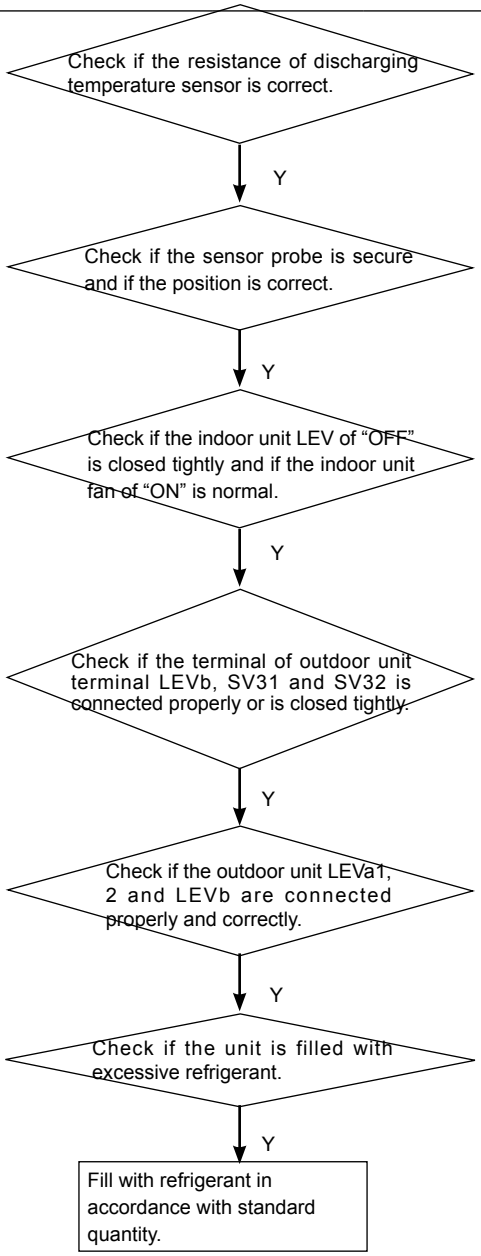
1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the operating compression ratio of system is above 8 before failure alarm; ◆ Check if the unit lack of refrigerant. ◆ Check if the pipelines on the low pressure side or liquid side are blocked; ◆ Check if the detection value of high/low pressure sensor is correct. ◆ Check if the unit is beyond the operation range.		
3. Abnormity confirmation conditions		
Alarm to shut down if the compression ratio ε>8.0 is detected for continuous 5min after the compressor operates; alarm to shut down if the compression ratio ε>9.0 or ε>8.5 when cooling or heating for 1min separately.		
4. Possible causes		
◆ The detection value of high/ low pressure sensor is incorrect; ◆ The refrigerant in the system is insufficient or the system is with air leakage; ◆ The pipelines on the high pressure side or liquid side of the unit are blocked; ◆ The outdoor unit cannot be turned on normally due to failure to open electronic expansion of outdoor heat exchanger when heating; ◆ The operation environment is beyond the allowed range.		



Failure code Outdoor digital display tube: 40 Indoor wired controller: 28	Indoor unit LED status	LED5		Failure description: High pressure sensor Pd too high protection
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

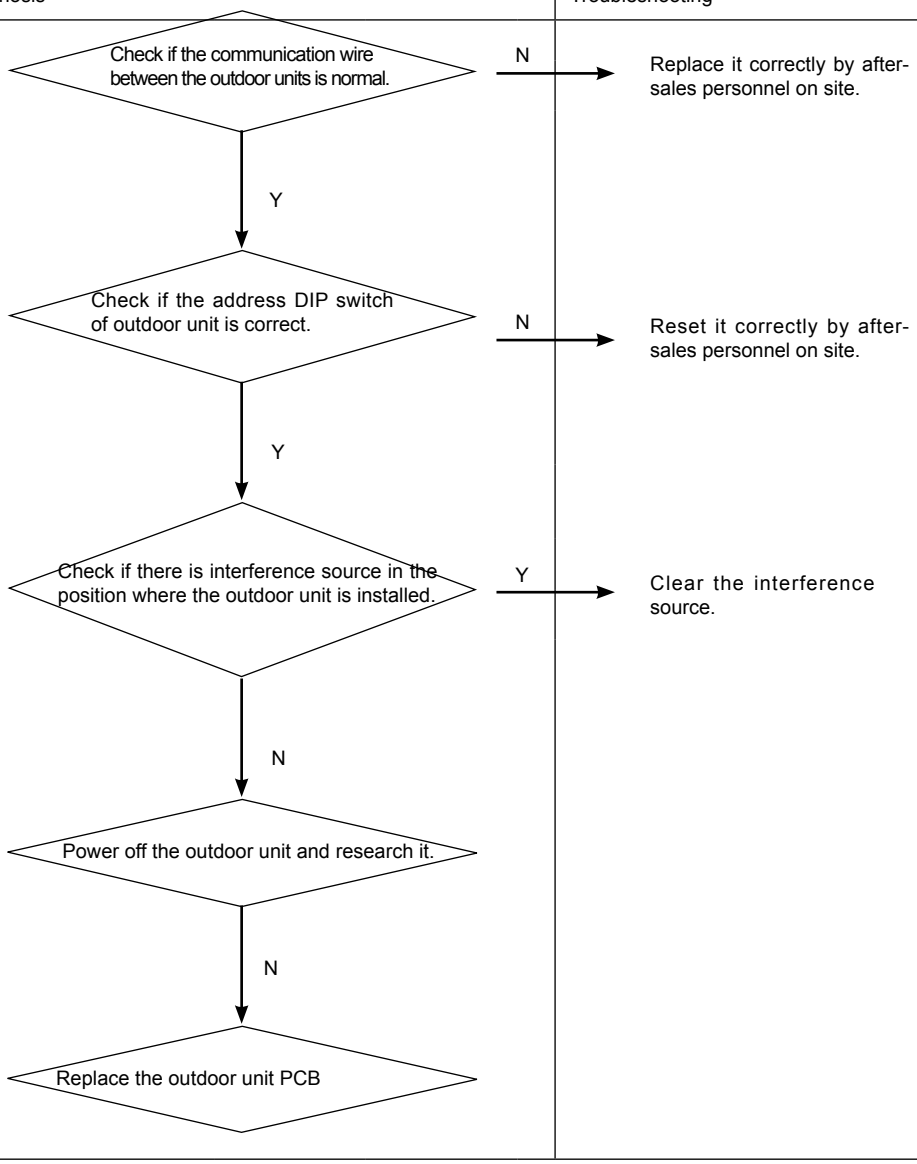
1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the high pressure acquired by the PCB is correct; ◆ Check if the voltage characteristic corresponding to the pressure sensor is correct; ◆ Check if the high pressure side of the system is blocked; ◆ Check the outdoor fan for normal operation when cooling.	Check if the voltage characteristic of the corresponding pressure sensor is normal. — N → Replace it correctly by after-sales personnel on site. Y Check if the pressure sensor signal acquisition loop of the computer board is normal. — N → Replace it correctly by after-sales personnel on site. Y Check if the high pressure reaches 4.0MPa upon failure alarm. Y Check if the high pressure stop valve is turned on or the high pressure side is blocked. — Y → Rectify it correctly by after-sales personnel on site. N Check the outdoor fan for normal operation when cooling. — N → Rectify it correctly by after-sales personnel on site. Y Check if the refrigerant is excessive. — Y → Rectify it correctly by after-sales personnel on site. Note: confirm if the system including the noncondensable gas N Check if the allowed operation range is exceeded — Y → Notify the user to use it within the operating range of units by after-sales personnel.	
3. Abnormity confirmation conditions The high pressure switch is turned off for 2s.		
4. Possible causes ◆ The pressure sensor is broken; ◆ The pressure sensor signal acquired by the PCB is incorrect; ◆ The high pressure side of the unit is blocked; ◆ The outdoor fan stops operating when cooling; ◆ The refrigerant is excessive; ◆ It is out of the operating range of units.		

Failure code Outdoor digital display tube: 43-0, 1 Indoor wired controller: 2B	Indoor unit LED status	LED5		Failure description: Outdoor unit compressor discharging temperature (Td1, Td2) too low failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

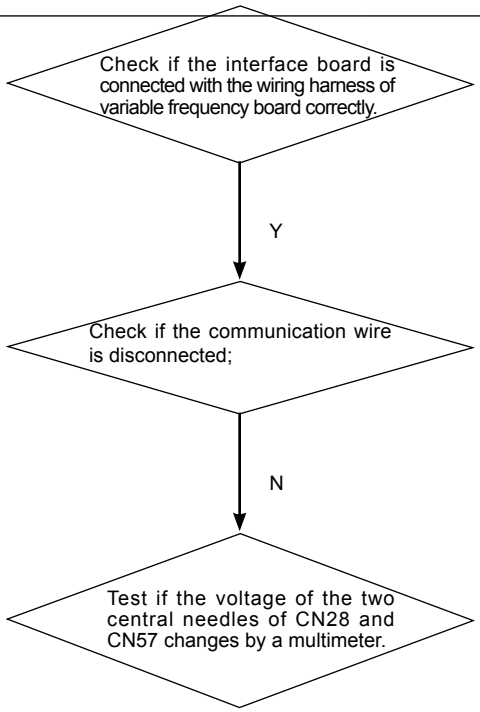
1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the temperature detected by the oil temperature sensor is correct. ◆ Check the outdoor unit SV31, SV32, LEVb, etc. for abnormal leakage and check if the detected temperature is correct; ◆ Check if the shutdown indoor unit LEV of unit is closed tightly, and if the running indoor unit fan operates normally.		
3. Abnormity confirmation conditions Td1/Td2-CT≤10°C lasts for 5min.		
4. Possible causes ◆ The probe of oil temperature sensor falls off or is with unsecure connection; ◆ The probe of oil temperature sensor is misplaced; ◆ The oil temperature sensor is with resistance drift; ◆ The outdoor unit LEVb, SV31 and SV32 are with leakage; ◆ The terminal of outdoor unit LEVa1, 2 and LEVb is connected incorrectly; ◆ For the unit, there is LEV leakage in shutdown indoor unit and non-operation of fan in operating indoor unit; ◆ The system is filled with excessive refrigerant. ◆ The operation environment is beyond the allowed range.		

Failure code Outdoor digital display tube: 45 Indoor wired controller: 2D	Indoor unit LED status	LED5		Failure description: Communications between outdoor units failure.
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

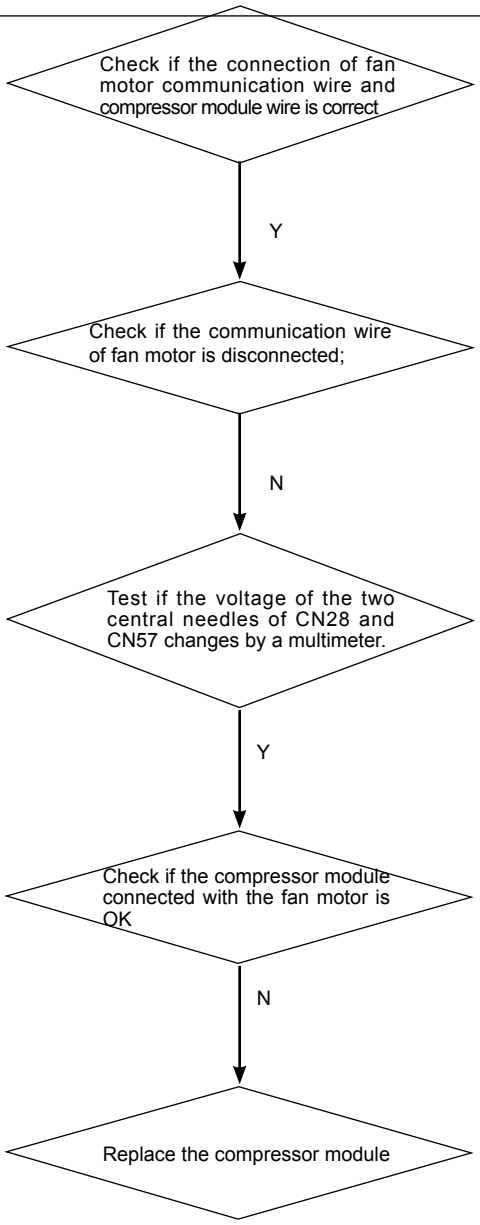
1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Incorrect order of outdoor communication wire; ◆ Incorrect wiring of outdoor communication wire; ◆ Incorrect terminal connection of outdoor communication wire; ◆ Incorrect setting of address dip switch of outdoor unit;		
3. Abnormity confirmation conditions		
No communication for 30s (E)		
4. Possible causes		
◆ Poor communication wire: short circuit or disconnection; ◆ Non-corresponding communication wire A, B and C; ◆ Incorrect connection of outdoor unit communication port of PCB; ◆ Interference source, which causes unstable communication of outdoor unit.		



Failure code Outdoor digital display tube: 46-0, 1 Indoor wired controller: 2E	Indoor unit LED status	LED5		Failure description: Communication with INV1 and INV2 module board failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the communication wire correspondence of inverter module is correct; ◆ Check if the communication wire is disconnected;		
3. Abnormity confirmation conditions No communication for 30s		
4. Possible causes ◆ Poor communication wire: disconnection; ◆ Incorrect correspondence of INV1 and INV2; incorrect connection of outdoor unit communication port of PCB; ◆ Poor inverter board or connection board		

Failure code Outdoor digital display tube: 46-4, 5 Indoor wired controller: 2E	Indoor unit LED status	LED5		Failure description: Communication with fan motor module board 1, 2 failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

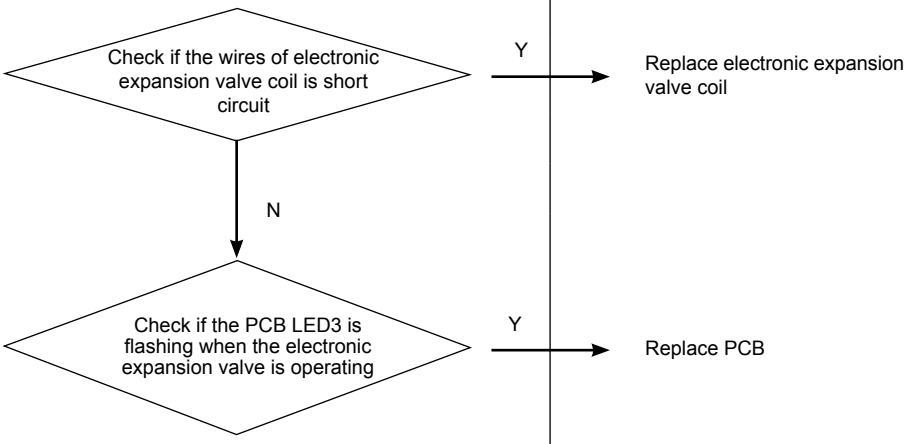
1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the communication wire correspondence of fan motor is correct; ◆ Check if the communication wire is disconnected; ◆ Check if the driver module whitch power supply to the fan motor is powered		
3. Abnormity confirmation conditions Fan motor has a host computer or compressor inverter, no communication for 30s		
4. Possible causes ◆ Poor communication wire: disconnection; ◆ Incorrect correspondence of INV1 and INV2; incorrect connection of outdoor unit communication port of PCB; ◆ Poor inverter board or connection board		

Failure code Outdoor digital display tube: 47 Indoor wired controller: 2F	Indoor unit LED status	LED5		Failure description: Communication with wireless communicai-ton module failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

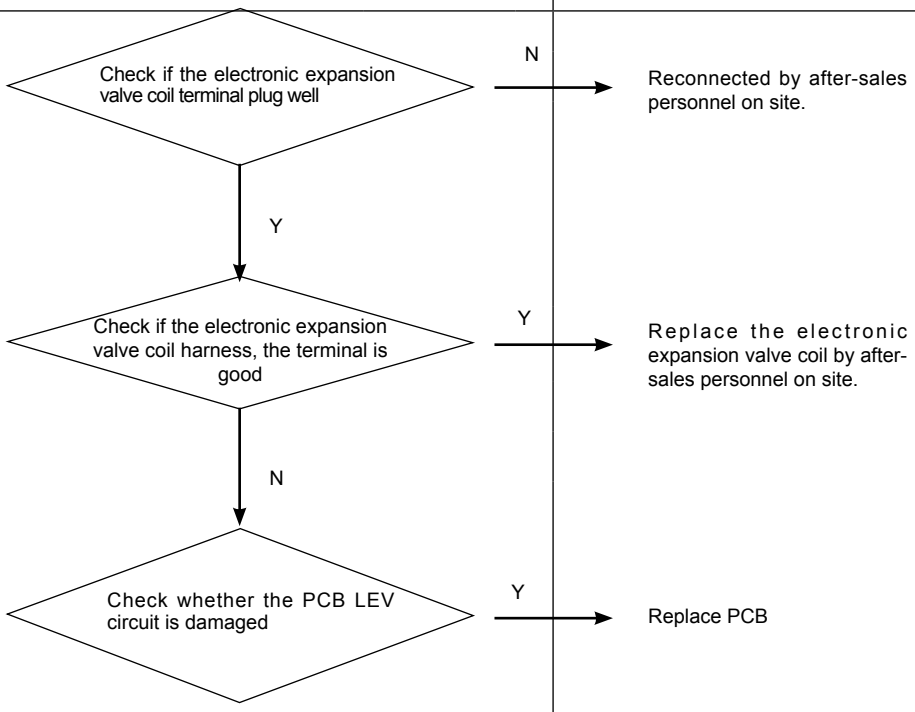
1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the dip switch of BM2-1 and BM2-2 is correct	Check if the dip switch of BM2-1 and BM2-2 is OFF position → N → Change the dip switch by after-sales personnel on site.	
3. Abnormity confirmation conditions		
Can't detect the wireless communication module within 120 seconds continuously, alarm		
4. Possible causes		
◆ The dip switch of BM2-1 and BM2-2 is wrong		

Failure code Outdoor digital display tube: 51-0,1,2,3 Indoor wired controller: 33	Indoor unit LED status	LED5		Failure description: LEVa1,2 and LEVb,c over current protection
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ LEV driver chip detection		
3. Abnormity confirmation conditions		
LEV driver chip detection		
4. Possible causes		
◆ The wires of electronic expansion valve coil short circuit ◆ LEV drive output circuit anomalies		



Failure code Outdoor digital display tube: 52-0,1,2,3 Indoor wired controller: 34	Indoor unit LED status	LED5		Failure description: LEVa1,2 and LEVb,c open circuit
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ LEV driver chip detection		
3. Abnormity confirmation conditions LEV driver chip detection		
4. Possible causes ◆ The electronic expansion valve coil connector is disengaged or misplaced ◆ Electronic expansion valve coil harness breaks ◆ LEV drive circuit is open		

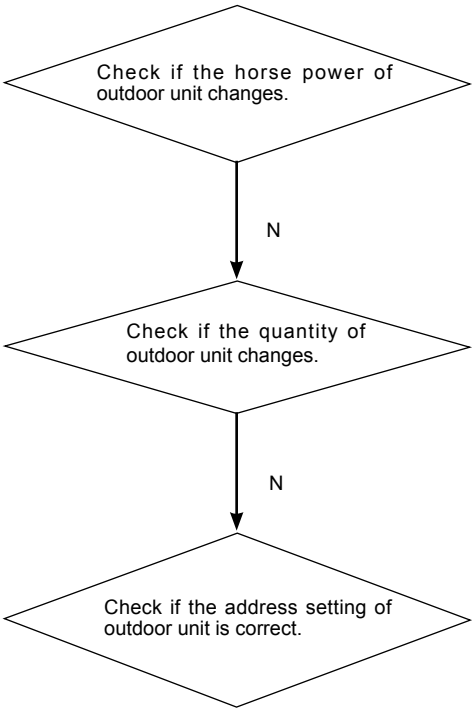
Failure code Outdoor digital display tube: 74 Indoor wired controller: 4A	Indoor unit LED status	LED5		Failure description: Emergency stop function switch failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the CN18 is open circuit		
3. Abnormity confirmation conditions		
	If the PCB CN18 is short circuit → N → Short circuit the CN18	
4. Possible causes		
◆ CN18 is open circuit		

Failure code Outdoor digital display tube: 75-0 Indoor wired controller: 4B	Indoor unit LED status	LED5		Failure description: Pressure difference between high and low pressure too low failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

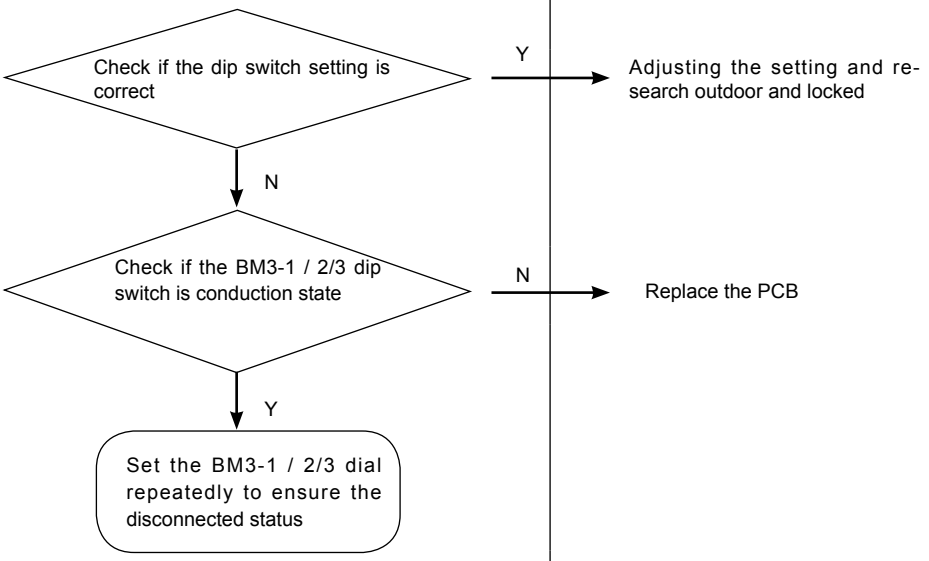
1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the difference between high and low pressure of system exceeds 0.4MPa after start and before failure alarm; ◆ Check if the unit lack of refrigerant. ◆ Check the four-way valve of unit for normal switching and free from backflow. ◆ Check if the detection value of high/low pressure sensor is correct. ◆ Check if the unit is beyond the operation range.	Check if the high-low pressure difference of system exceeds 0.4MPa after start and before failure alarm; N Check if the refrigerant in the system is with leakage or insufficient. Y → Replace it correctly by after-sales personnel on site and ensure the refrigerant is enough. N Check if the detection value of low pressure sensor is correct. N → Rectify it correctly by after-sales personnel on site. Check if the corresponding pressure sensor is intersected with another compressor, especially for a double compressor system. Y If the four-way valve of outdoor unit is with backflow and if the suction pipe filter of compressor is blocked. Y → Troubleshoot and replace it correctly by after-sales personnel on site. [Note]: Check if the suction pipe filter of compressor is blocked, when the discharging temperature rises obviously. N Check if it operates normally after replacing a normal driver module. N → Replace the driver module correctly. Y if the allowed operation range is exceeded. N → Replace the inverter compressor if the high-low pressure difference cannot reach 0.4MPa above before failure alarm. Y Use the unit in accordance with its allowed operation range.	
3. Abnormity confirmation conditions 75-0: Pd-Ps≤0.1Mpa within 1min upon the INV compressor starts. 75-4: Pd-Ps≤0.4Mpa lasts for 3min.		
4. Possible causes ◆ The detection value of high/low pressure sensor is incorrect; ◆ The refrigerant in the system is insufficient; ◆ The four-way valve cannot be switched normally or with backflow. The power module cannot drive the compressor operating normally; ◆ The inverter compressor is with serious inter deterioration, which makes it difficult to form difference between high and low pressure. ◆ The operation environment is beyond the allowed range.		

Failure code Outdoor digital display tube: 76-0, 1, 2 Indoor wired controller: 4C	Indoor unit LED status	LED5		Failure description: Incorrect settings of quantity, address or capacity for outdoor unit
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

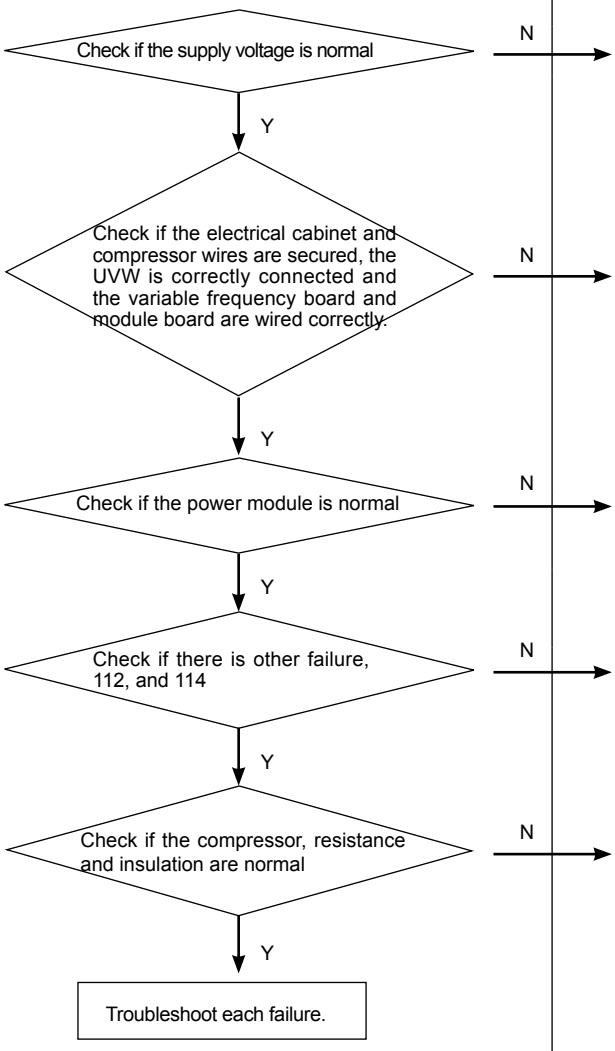
1. Model	Diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the quantity of outdoor unit changes; (76-0) ◆ Check if the address of outdoor unit changes; (76-1) ◆ Check if the horse power of outdoor unit changes.(76-2)		
3. Abnormity confirmation conditions Quantity of sub-unit setting does not conform to host EEPROM data; address of sub-unit setting does not conform to host EEPROM data; horse power setting of sub-unit does not conform to host EEPROM data.		
4. Possible causes ◆ The quantity of connected unit changes; ◆ The horse power of outdoor unit of the same system changes; ◆ The address setting of the same system changes;		

Failure code Outdoor digital display tube: 83 Indoor wired controller: 53	Indoor unit LED status	LED5		Failure description: Outdoor unit model are set incorrectly
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

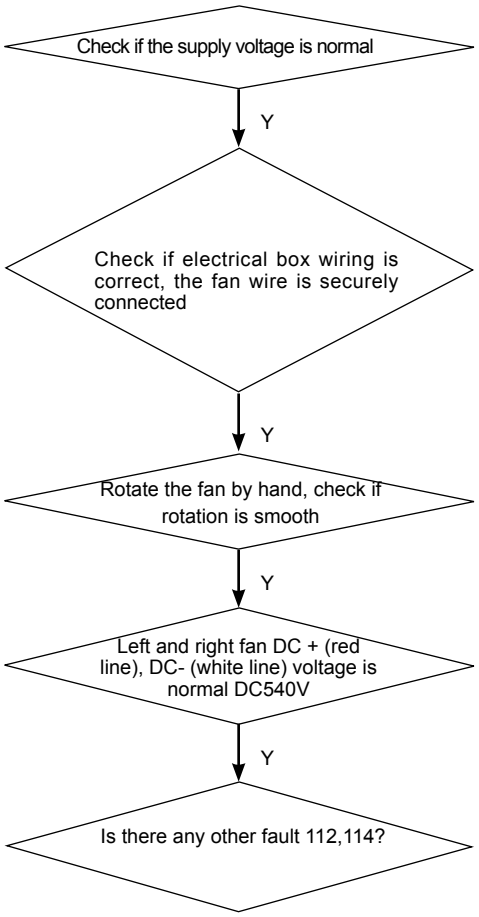
1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
3. Abnormity confirmation conditions		
4. Possible causes		
◆ BM3-1 / 2/3 dip switch setting wrong or bad continuity.		



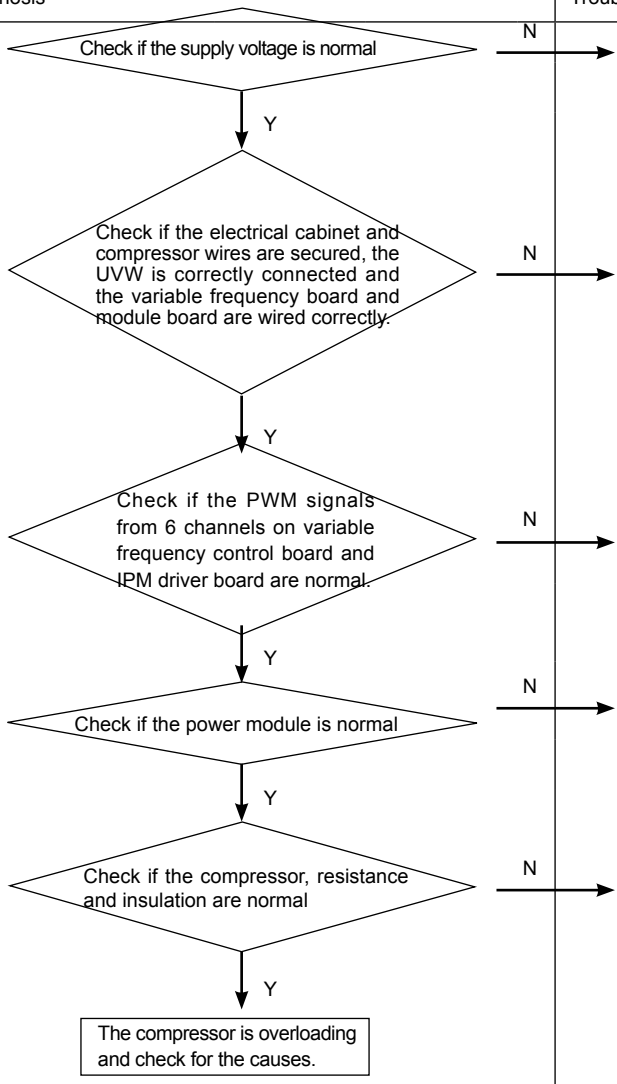
Failure code Outdoor digital display tube: 110-0, 1 Indoor wired controller: 6E	Indoor unit LED status	LED5		Failure description: Compressor module hardware over current
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the modules are in normal conditions and if P and N are short-circuited to U, V and W. ◆ Check if the modules are fixed securely and the heat dissipation is good; ◆ Check if the compressor resistance is normal, ◆ Check if the compressor wiring UVW is wrongly connected and if the inverter board and module board are wired securely. 3. Abnormity confirmation conditions Over current of module hardware 4. Possible causes ◆ The module alarms FO failure due to poor heat dissipation; ◆ The module alarms failure as it is broken down; ◆ Liquid shock is found in compressor, which results in over current upon starting or operating; ◆ The winding resistance of compressor is large; ◆ UVW wiring is wrongly connected or the inverter board and module board are wired insecurely.		

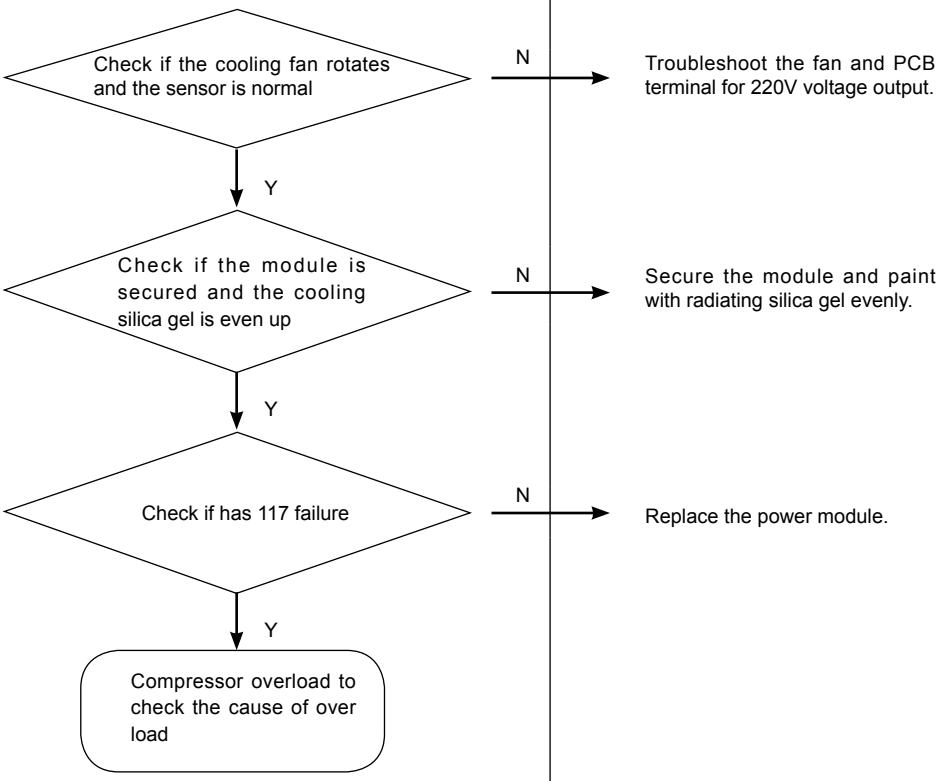
Failure code Outdoor digital display tube: 110-4, 5 Indoor wired controller: 6E	Indoor unit LED status	LED5		Failure description: Fan motor module hardware over current
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the motor DC +/- loop is short circuit; ◆ Check fan blade load is stuck, rotation is smooth; ◆ Check if the compressor resistance is normal, ◆ Check the motor resistance is normal;		
3. Abnormity confirmation conditions Fan built-in drive hardware over-current		
4. Possible causes ◆ The power supply of fan motor capacitor board is poor ◆ Fan blade load is stuck. ◆ Motor built-in driver is not good		

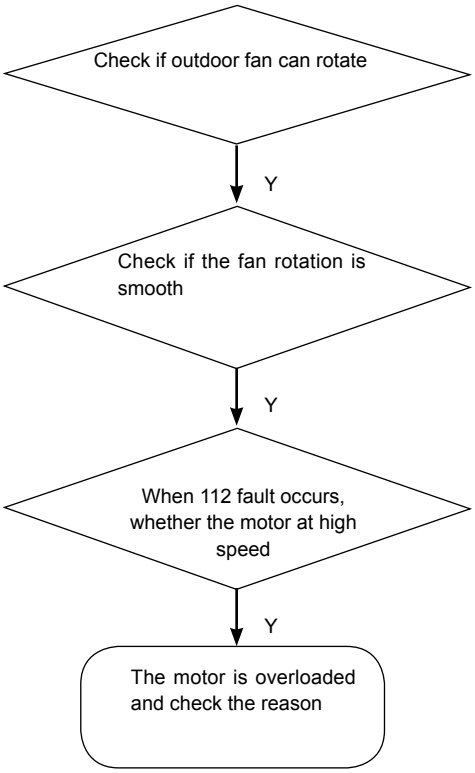
Failure code Outdoor digital display tube: 111-0, 1 Indoor wired controller: 6F	Indoor unit LED status	LED5		Failure description: Compressor out of control
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the module is in normal conditions and if P and N is short-circuited to U, V and W; Measure with diode to see if there is a voltage drop between P/N and U/V/W. ◆ Check if the module is securely fixed and the heat dissipation is good; ◆ Check if the compressor winding is normal. ◆ Check if the compressor wiring UVW is connected correctly and the inverter board and module board is securely wired.		
3. Abnormity confirmation conditions		
Over current of module hardware		
4. Possible causes		
◆ The module alarms failure as it broke down; ◆ Liquid shock is found in compressor which results in over current upon starting or operating; ◆ The compressor winding is burned out; ◆ UVW wiring is wrongly connected or the inverter board and module board are wired insecurely.		

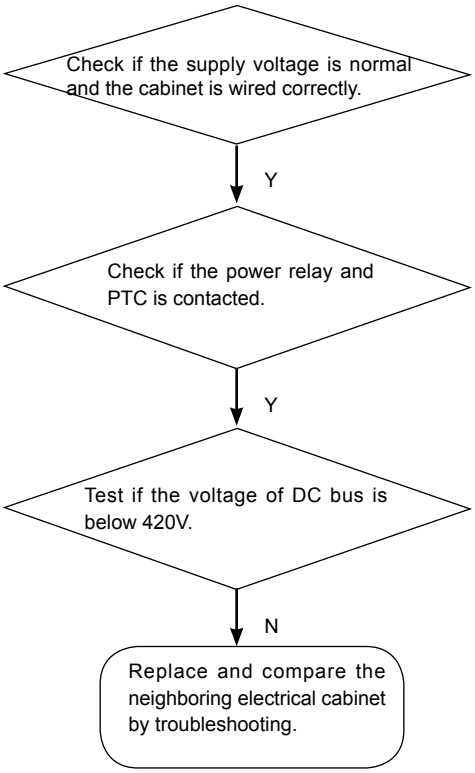
Failure code Outdoor digital display tube: 112-0, 1 Indoor wired controller: 70	Indoor unit LED status	LED5		Failure description: Compressor module radiator temp. too high
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the radiator is in normal conditions; ◆ Check if the cooling fan is in normal conditions; ◆ Check if the radiator sensor is in normal conditions.		
3. Abnormity confirmation conditions		
Raise failure alarm when temperature ≥94°C. INV control board recovers automatically when temperature ≤94°C.		
4. Possible causes		
◆ The module is insecurely fixed, which results in poor heat dissipation; ◆ The radiator sensor is broken which results in high detection temperature; ◆ The cooling fan fails to operate; ◆ There is no 220V output from the terminal of cooling fan of PCB.		

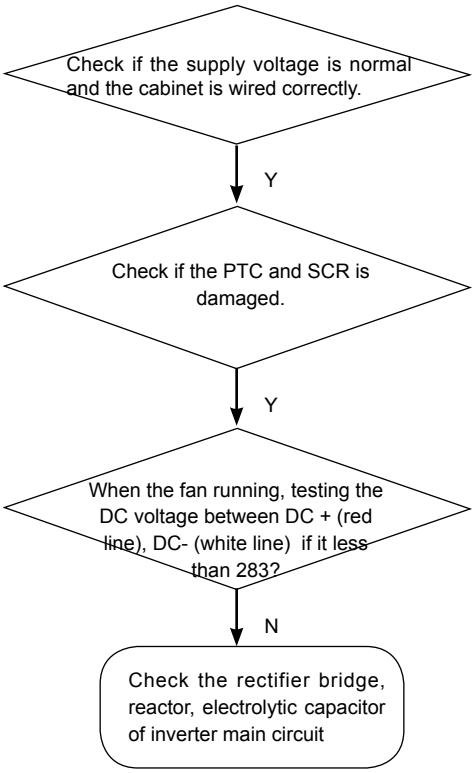
Failure code Outdoor digital display tube: 112-4, 5 Indoor wired controller: 70	Indoor unit LED status	LED5		Failure description: Fan motor module radiator temp. too high
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the radiating of the fan motor aluminum radiator is good ◆ Check if the fan is good		
3. Abnormity confirmation conditions Motor built-in IGBT bottom radiator temperature reaches 95.65 degree;		
4. Possible causes ◆ Motor built-in IGBT radiating poor; ◆ Outdoor fan does not turn or stuck		

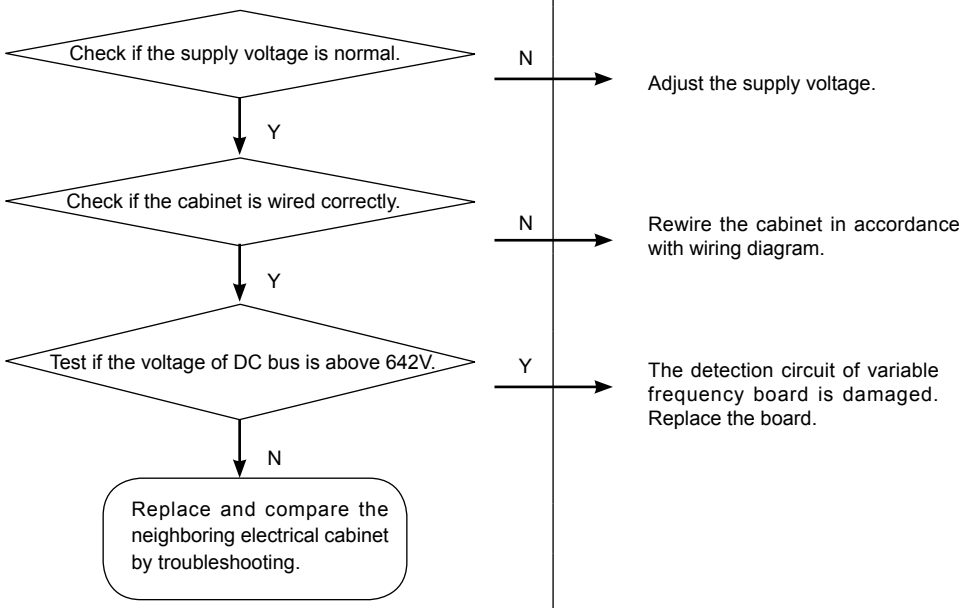
Failure code Outdoor digital display tube: 114-0, 1 Indoor wired controller: 72	Indoor unit LED status	LED5		Failure description: Compressor module DC BUS under voltage
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the power voltage is too low and results in voltage decrease after rectification; ◆ Check if the PTC is in normal conditions; ◆ Check if the cabinet is correctly wired.		
3. Abnormity confirmation conditions		
Raise failure alarm when power voltage<DC420V. INV control board recovers automatically when voltage >DC420V		
4. Possible causes		
◆ Incorrect wiring may result in under voltage alarm; ◆ PTC or relay damage may result in under voltage; ◆ Low power voltage may result in under voltage.		

Failure code Outdoor digital display tube: 114-4, 5 Indoor wired controller: 72	Indoor unit LED status	LED5		Failure description: Fan motor module DC BUS under voltage
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

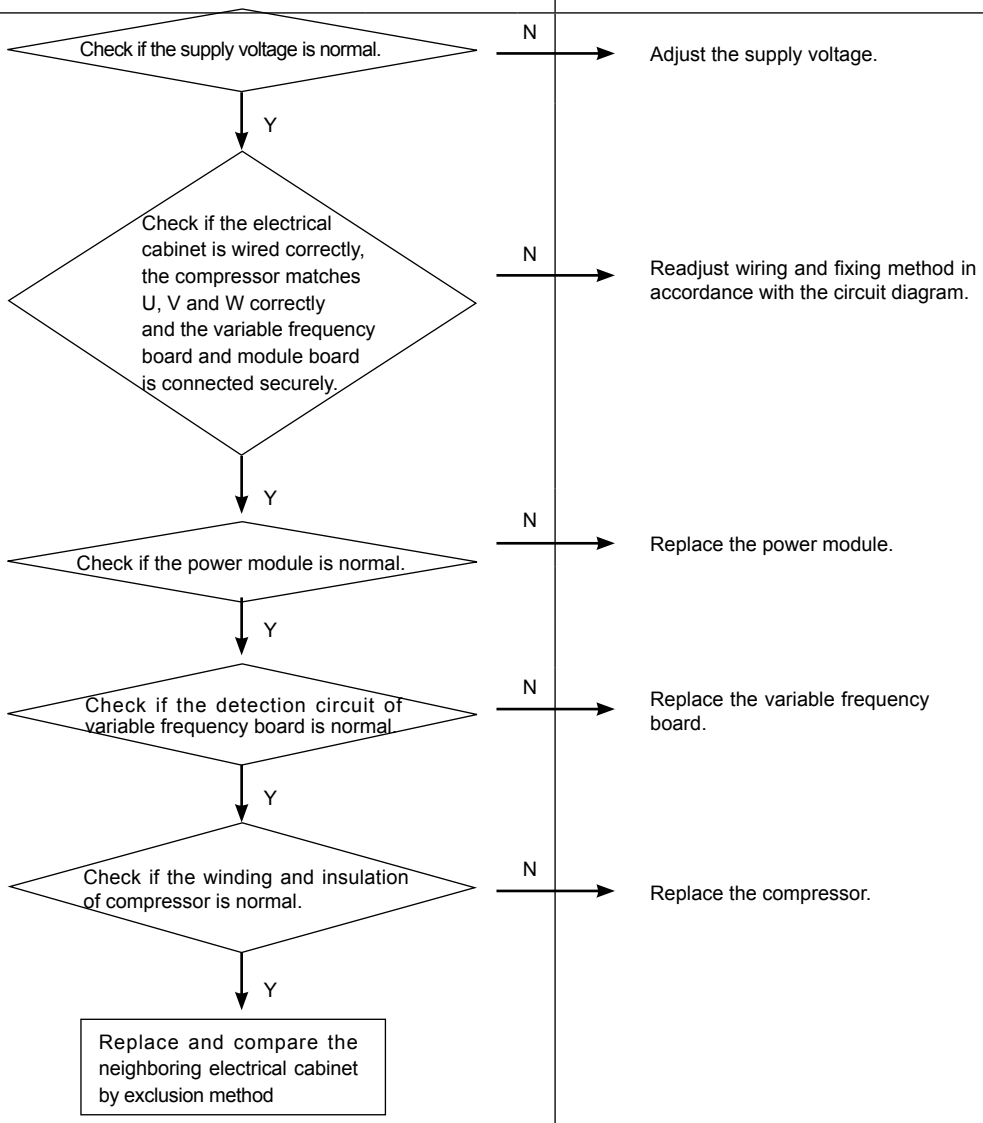
1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check the power supply voltage is too low, resulting in reduced voltage after rectification; ◆ Check if the PTC is in normal conditions; ◆ Check if the cabinet is correctly wired.		
3. Abnormity confirmation conditions When the power voltage <DC283V, fault and alarm. Voltage> DC283V, the motor built-in control panel automatically restored		
4. Possible causes ◆ Incorrect wiring may result in under voltage alarm; ◆ PTC or SCR damage may result in under voltage; ◆ Low power voltage may result in under voltage.		

Failure code Outdoor digital display tube: 115-0, 1 Indoor wired controller: 73	Indoor unit LED status	LED5		Failure description: Compressor module DC BUS over voltage
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the power voltage is too high and results in over voltage after rectification; ◆ Check if the cabinet is correctly wired.		
3. Abnormity confirmation conditions		
Raise failure alarm when power voltage>DC642V. INV control board recovers automatically when voltage <DC642V.		
4. Possible causes		
◆ Incorrect connection may result in over voltage alarm; ◆ High power voltage may result in over voltage.		

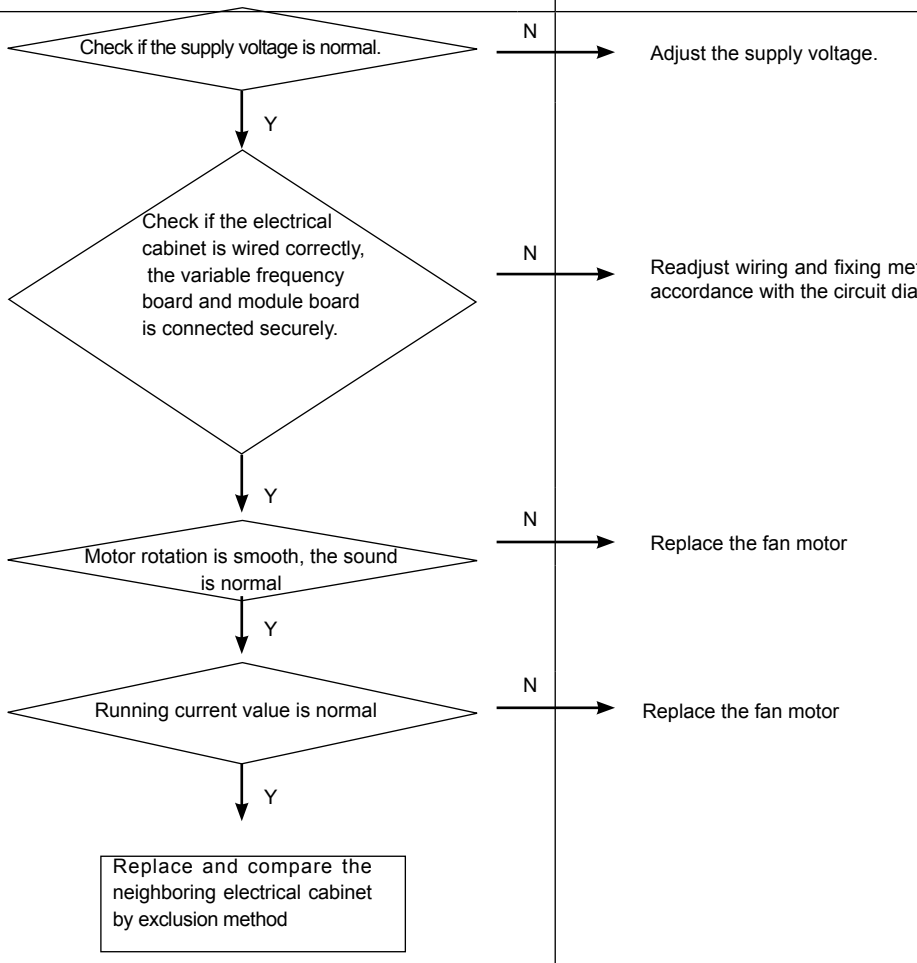
Failure code Outdoor digital display tube: 117-0, 1 Indoor wired controller: 75	Indoor unit LED status	LED5		Failure description: Compressor module software over current
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the compressor is insecurely connected; ◆ Check the system for liquid shock. ◆ Check if the module is in normal conditions and subject to short circuit. ◆ Check if the compressor is well. ◆ Check if the compressor wiring UVW is connected correctly and the inverter board and module board is securely wired.		
3. Abnormity confirmation conditions		
Over current of module software		
4. Possible causes		
◆ The current detection loop of inverter board is in poor performance, which results in rapid current rise of compressor; ◆ Damage or liquid shock is found in compressor, which results in over current; ◆ UVW wiring is wrongly connected or the inverter board and module board are wired insecurely.		



Failure code Outdoor digital display tube: 117- 4, 5 Indoor wired controller: 75	Indoor unit LED status	LED5		Failure description: Fan motor module software over current
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the fan motor strong electricity wire is insecurely connected; ◆ Fan rotation is smooth ◆ Check if the module is normal, if short circuit		
3. Abnormity confirmation conditions		
Double fan: fan running current value over 5.5A, single fan: fan running current value over 6A		
4. Possible causes		
◆ Fan motor is poor ◆ Fan blade overload		



Failure code Outdoor digital display tube: 119-0, 1 Indoor wired controller77	Indoor unit LED status	LED5		Failure description: Current detecting circuit abnormal of compressor module
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the current sensor is reversely connected and U and W is in reverse direction. ◆ Check if the current sensor is in reverse direction. (the arrow on sensor points at the compressor) ◆ Check if the inverter board is well. ◆ Check if the current sensor is well.	Check if the inverter module is connected to the three phase lines, U (red), V (white) and W (black) correspondingly on compressor?	N → Correct the connection in accordance with the wiring diagram and ensure negative phase and phase loss are not found.
	Y	
	Check if the current sensor detects the current of U phase and W phase?	N → Correct the connection in accordance with the wiring diagram.
	Y	
3. Abnormity confirmation conditions The current detection sensor of inverter control board is in abnormal conditions, disconnected or connected incorrectly.	Check if the screen printed arrow on current sensor points to the compressor?	N → Correct the connection in accordance with the wiring diagram.
	Y	
	Check if the harness terminal of current sensor is connected correspondingly to the inverter controlling board? Is the connection reliable?	N → Correct the connection in accordance with the wiring diagram.
	Y	
4. Possible causes ◆ The inverter board and current sensor is anti-connected or the current sensor is in incorrect direction. ◆ The inverter board or current sensor is damaged.	After power on and before operation, test the DC voltage between the second pin (black, earth wire) and third pin (brown, signal wire) of the wiring harness terminal of the two current sensors, confirm if the signal voltage is within 3V±0.2V?	N → Replace the current sensor with abnormal signal voltage.

To be continued

Continued

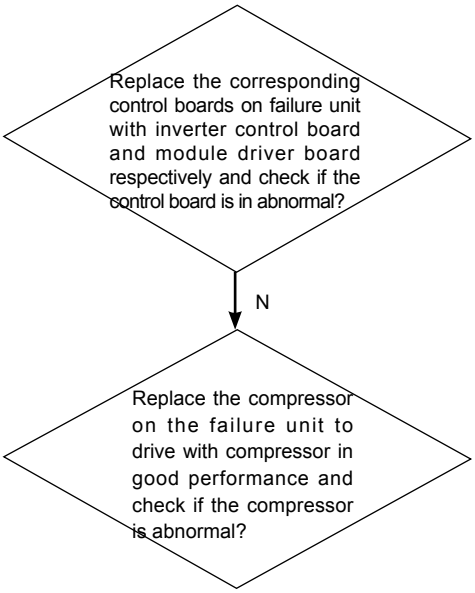
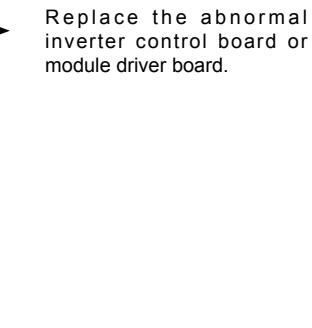
Failure code Outdoor digital display tube: 119-0, 1 Indoor wired controller77	Indoor unit LED status	LED5		Failure description: Current detecting circuit abnormal of compressor module
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the current sensor is reversely connected and U and W is in reverse direction. ◆ Check if the current sensor is in reverse direction. (the arrow on sensor points at the compressor) ◆ Check if the inverter board is well. ◆ Check if the current sensor is well.	Check if there is audible sound when the compressor starts before the 119 failure alarm. (Note: the duration is about 1s.)	N → Replace the inverter control board with abnormal current detection loop.
	Y	
3. Abnormity confirmation conditions The current detection sensor of inverter control board is in abnormal conditions, disconnected or connected incorrectly.	After power supply and upon compressor start, test the DC voltage between the second pin (black, earth wire) and third pin (brown, signal wire) of the wiring harness terminal of the two current sensors, confirm if the signal voltage is between 1V and 5V?	N → Replace the current sensor with abnormal signal voltage.
	Y	
4. Possible causes ◆ The inverter board and current sensor is anti-connected or the current sensor is in incorrect direction. ◆ The inverter board or current sensor is damaged.	Confirm if the wiring harness between inverter control board CN10 and module driver board CNDR15V1 is reliably connected?	N → Correct the wrong connection.
	Y	
	Confirm if the wiring harness between inverter control board CN9 and module driver board CNDR1 is reliably connected?	N → Correct the wrong connection.

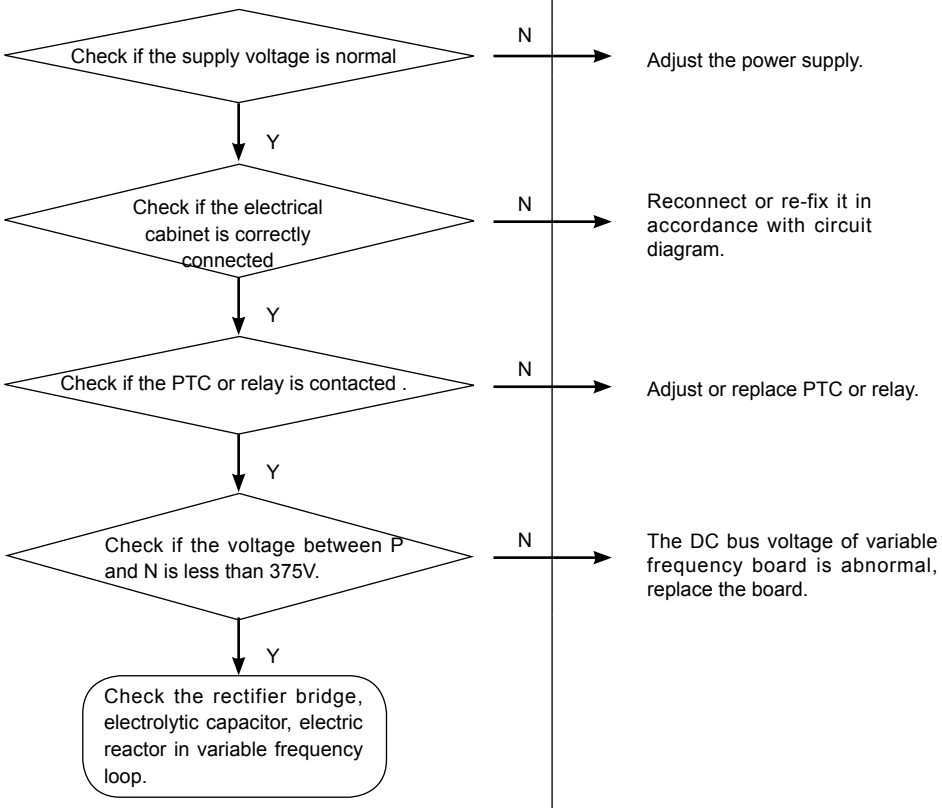
To be continued

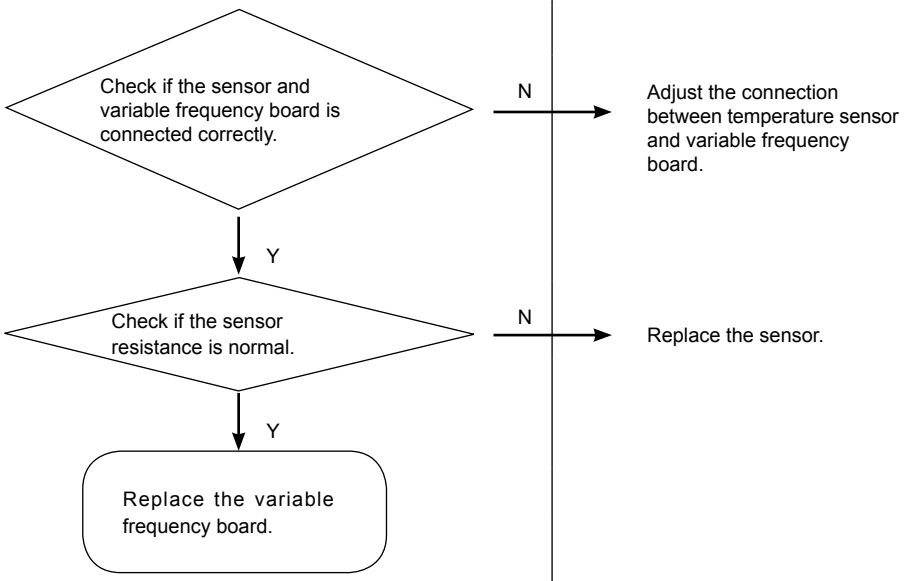
Continued

Failure code Outdoor digital display tube: 119-0, 1 Indoor wired controller77	Indoor unit LED status	LED5		Failure description: Current detecting circuit abnormal of compressor module
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the current sensor is reversely connected and U and W is in reverse direction. ◆ Check if the current sensor is in reverse direction. (the arrow on sensor points at the compressor) ◆ Check if the inverter board is well. ◆ Check if the current sensor is well.		
3. Abnormity confirmation conditions		
The current detection sensor of inverter control board is in abnormal conditions, disconnected or connected incorrectly.		
4. Possible causes		
◆ The inverter board and current sensor is anti-connected or the current sensor is in incorrect direction. ◆ The inverter board or current sensor is damaged.		

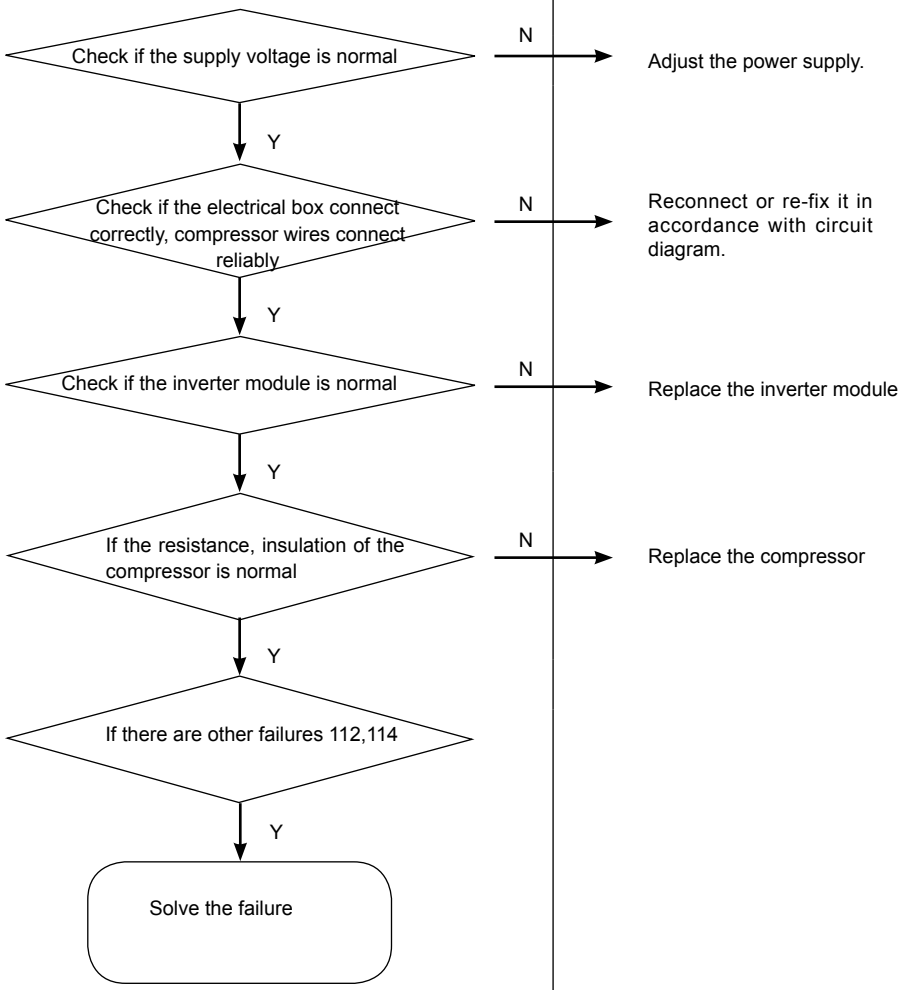
Failure code Outdoor digital display tube: 120-0, 1 121-0, 1 Indoor wired controller: 78, 79	Indoor unit LED status	LED5		Failure description: Compressor module power supply abnormal
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the supply voltage is abnormal. ◆ Check if the PTC or relay contacts or not. ◆ Check if the DC bus voltage is normal. ◆ Check if the DC power supply of inverter board is normal.	
3. Abnormity confirmation conditions The power supply of inverter control board is interrupted instantly.		
4. Possible causes ◆ The supply voltage is found with abnormal fluctuations. ◆ The PTC or relay does not contact. ◆ The inverter control board is in poor performance.		

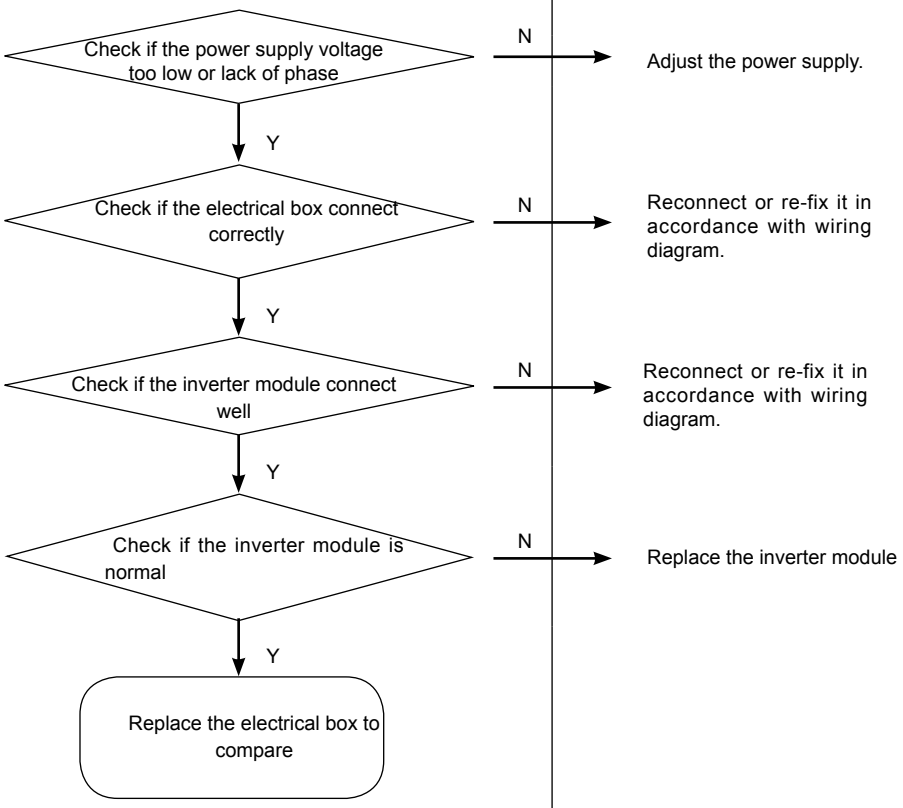
<table>
<tr><td rowspan="3">Failure code
Outdoor digital display tube: 122-0, 1
Indoor wired controller: 7A</td><td colspan="2" rowspan="2">Indoor unit LED status</td><td colspan="2">LED5</td><td rowspan="2">Failure description:
Radiator temp. sensor of compressor module is abnormal.</td></tr>
<tr><td colspan="2">20 times</td></tr>
<tr><td colspan="2">Outdoor unit LED status</td><td>LED1</td><td>LED2</td></tr>
<tr><td colspan="2"></td><td>Normal</td><td>Normal</td><td></td></tr>
<tr><td>1. Model</td><td colspan="5">Failure diagnosis and troubleshooting</td></tr>
<tr><td rowspan="8">VVEA series</td><td colspan="3">Diagnosis</td><td colspan="2">Troubleshooting</td></tr>
<tr><td colspan="3" rowspan="7"> 
</td><td colspan="2" rowspan="7"></td></tr>
<tr><td>2. Abnormity detection method</td></tr>
<tr><td>◆ Check if the temperature acquisition circuit of inverter board is normal.
◆ Check if the resistance of temperature sensor is normal.
◆ Check if they are connected correctly</td></tr>
<tr><td>3. Abnormity confirmation conditions</td></tr>
<tr><td>The temperature sensor is disconnected or the resistance is incorrect.</td></tr>
<tr><td>4. Possible causes</td></tr>
<tr><td>◆ The resistance of temperature sensor is found with drift.
◆ The inverter board acquires inaccurate temperature.</td></tr>
</table>

Failure code Outdoor digital display tube: 123-0, 1 Indoor wired controller: 78, 7B	Indoor unit LED status	LED5		Failure description: Hardware instantaneous over current of the compressor module rectifier side
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

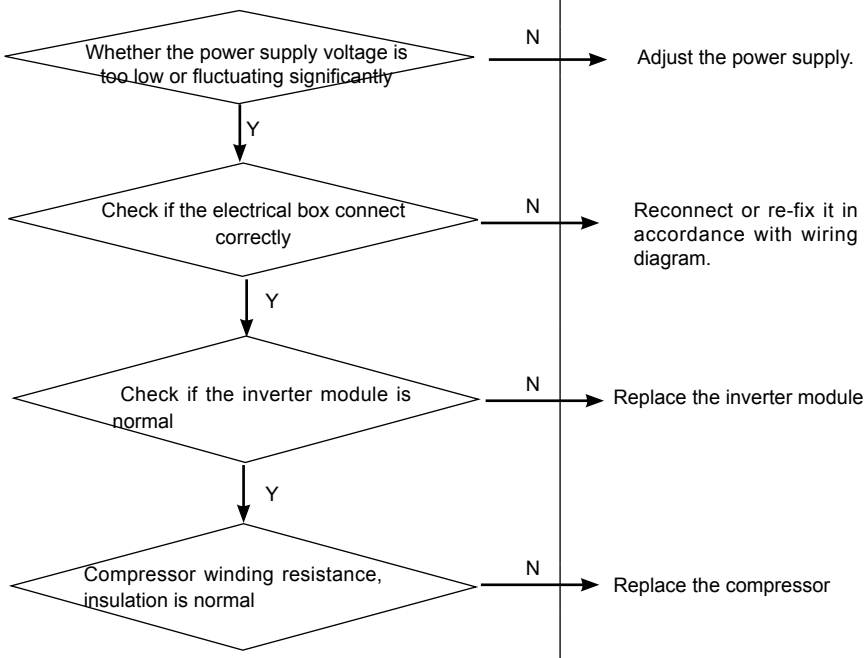
1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check the module is normal, there is short circuit between P, N, U, V, W ◆ Check whether the module is fixed reliably and radiating is good; ◆ Check the compressor resistance is normal, ◆ Check if the wiring of compressor UVW is correct, frequency converter board and module board connection is reliable.		
3. Abnormity confirmation conditions		
Hardware instantaneous over current of the module rectifier side		
4. Possible causes		
◆ Poor radiating caused the module burned; ◆ The module is punctured to cause a breakdown; ◆ Compressor winding resistance too large ◆ UVW wiring short circuit, or compressor line short circuit to ground ◆ The compressor has a liquid shock, causing starting current or operating current too high		



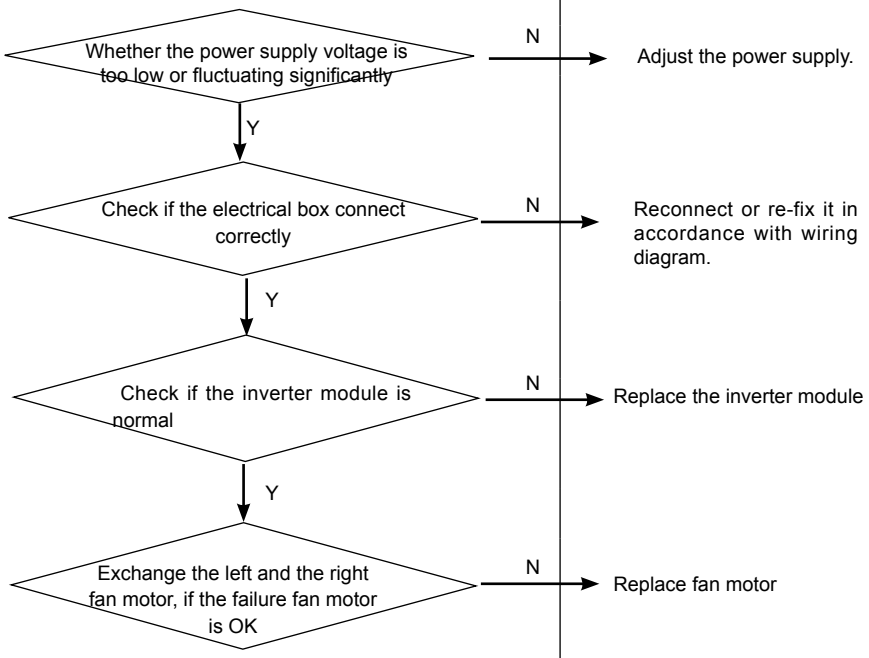
Failure code Outdoor digital display tube: 124-0, 1 Indoor wired controller: 78, 7C	Indoor unit LED status	LED5		Failure description: Compressor module three-phase power failure
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the modules' R, S, T are correct, if missing phase ◆ Check if the power supply of the electrical box lack of phase, if the voltage is too low 3. Abnormity confirmation conditions Module three-phase power failure 4. Possible causes ◆ Module three-phase voltage is too low ◆ Module three-phase power lack of phase or imbalance		

Failure code Outdoor digital display tube: 125-0, 1 Indoor wired controller: 7D	Indoor unit LED status	LED5		Failure description: Compressor frequency un-match
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method		
◆ Check if the communication circuits of power module and inverter board are securely inserted and connected. ◆ Check if the power module is well. ◆ Check if the inverter board is well.		
3. Abnormity confirmation conditions		
(current frequency ≥ INV target frequency +3Hz) or (target frequency ≥0 && actual frequency =0) for continuous 5 minutes		
4. Possible causes		
◆ The power module and inverter board are connected loosely, which results in detection failure of compressor rotation speed. ◆ The power module is damaged.		

Failure code Outdoor digital display tube: 125-4, 5 Indoor wired controller: 7D	Indoor unit LED status	LED5		Failure description: Fan motor speed un-match
		20 times		
	Outdoor unit LED status	LED1	LED2	
		Normal	Normal	

1. Model	Failure diagnosis and troubleshooting	
VVEA series	Diagnosis	Troubleshooting
2. Abnormity detection method ◆ Check if the compressor module is damaged ◆ Check if the fan rotation is smooth; ◆ Check whether the fan blade load is blocked; 3. Abnormity confirmation conditions Hall signal logic built-in the fan motor is wrong too many times 4. Possible causes ◆ Fan blade overload ◆ Fan motor is bad		

8. Sensor resistance table

NO.	Model	Name	Code	Characteristic
1	VVEA-250R-01T32 VVEA-280R-01T32 VVEA-335R-01T32 VVEA-400R-01T32 VVEA-450R-01T32 VVEA-504R-01T32 VVEA-560R-01T32 VVEA-615R-01T32	Tao sensor	0150401910	R25=10KΩ
2		Td1sensor	0150401914	R80=50KΩ
3		Td2 sensor	0150401915	R80=50KΩ
4		Toci1/Tsacc sensor	0150401911	R25=10KΩ
5		Tdef sensor	0150401913	R25=10KΩ
6		Toil1sensor	0150401916	R80=50KΩ
7		Toil2sensor	0150401917	R80=50KΩ

R80=50kΩ±3% B25/80=4450K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
0	1749.014	1921.993	2094.972	9	9
1	1651.431	1813.265	1975.099	8.93	8.93
2	1560.165	1711.646	1863.127	8.85	8.85
3	1474.737	1616.593	1758.449	8.78	8.78
4	1394.709	1527.611	1660.513	8.7	8.7
5	1319.683	1444.25	1568.817	8.63	8.63
6	1249.295	1366.096	1482.897	8.55	8.55
7	1183.21	1292.773	1402.336	8.48	8.48
8	1121.124	1223.935	1326.746	8.4	8.4
9	1062.756	1159.265	1255.774	8.33	8.33
10	1007.85	1098.474	1189.098	8.25	8.25
11	956.167	1041.293	1126.419	8.18	8.18
12	907.491	987.477	1067.463	8.1	8.1
13	861.621	936.799	1011.977	8.03	8.03
14	818.372	889.052	959.732	7.95	7.95
15	777.574	844.042	910.51	7.88	7.88
16	739.066	801.59	864.114	7.8	7.8
17	702.705	761.533	820.361	7.73	7.73
18	668.353	723.717	779.081	7.65	7.65
19	635.885	688.001	740.117	7.58	7.58
20	605.185	654.254	703.323	7.5	7.5
21	576.145	622.355	668.565	7.43	7.43
22	548.663	592.189	635.715	7.35	7.35
23	522.645	563.651	604.657	7.28	7.28
24	498.006	536.644	575.282	7.2	7.2
25	474.662	511.076	547.49	7.13	7.13
26	452.538	486.862	521.186	7.05	7.05
27	431.563	463.922	496.281	6.98	6.98
28	411.671	442.182	472.693	6.9	6.9
29	392.8	421.572	450.344	6.83	6.83
30	374.891	402.028	429.165	6.75	6.75
31	357.891	383.489	409.087	6.68	6.68
32	341.749	365.898	390.047	6.6	6.6
33	326.416	349.201	371.986	6.53	6.53
34	311.848	333.349	354.85	6.45	6.45
35	298.004	318.295	338.586	6.38	6.38
36	284.843	303.995	323.147	6.3	6.3

R80=50kΩ±3% B25/80=4450K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
37	272.329	290.407	308.485	6.23	6.23
38	260.427	277.493	294.559	6.15	6.15
39	249.104	265.216	281.328	6.08	6.08
40	238.329	253.541	268.753	6	6
41	228.073	242.437	256.801	5.93	5.93
42	218.308	231.873	245.438	5.85	5.85
43	209.01	221.82	234.63	5.78	5.78
44	200.154	212.252	224.35	5.7	5.7
45	191.715	203.142	214.569	5.63	5.63
46	183.674	194.467	205.26	5.55	5.55
47	176.009	186.204	196.399	5.48	5.48
48	168.703	178.333	187.963	5.4	5.4
49	161.735	170.832	179.929	5.33	5.33
50	155.089	163.682	172.275	5.25	5.25
51	148.748	156.866	164.984	5.18	5.18
52	142.698	150.367	158.036	5.1	5.1
53	136.924	144.168	151.412	5.03	5.03
54	131.411	138.255	145.099	4.95	4.95
55	126.148	132.613	139.078	4.88	4.88
56	121.122	127.229	133.336	4.8	4.8
57	116.32	122.089	127.858	4.73	4.73
58	111.732	117.181	122.63	4.65	4.65
59	107.347	112.494	117.641	4.58	4.58
60	103.157	108.018	112.879	4.5	4.5
61	99.15	103.741	108.332	4.43	4.43
62	95.319	99.654	103.989	4.35	4.35
63	91.655	95.748	99.841	4.28	4.28
64	88.149	92.014	95.879	4.2	4.2
65	84.795	88.443	92.091	4.13	4.13
66	81.584	85.028	88.472	4.05	4.05
67	78.511	81.761	85.011	3.98	3.98
68	75.569	78.636	81.703	3.9	3.9
69	72.752	75.645	78.538	3.83	3.83
70	70.052	72.781	75.51	3.75	3.75
71	67.466	70.04	72.614	3.68	3.68

R80=50kΩ±3% B25/80=4450K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
72	64.988	67.415	69.842	3.6	3.6
73	62.613	64.901	67.189	3.53	3.53
74	60.337	62.493	64.649	3.45	3.45
75	58.154	60.185	62.216	3.38	3.38
76	56.06	57.973	59.886	3.3	3.3
77	54.051	55.852	57.653	3.23	3.23
78	52.125	53.82	55.515	3.15	3.15
79	50.275	51.87	53.465	3.08	3.08
80	48.5	50	51.5	3	3
81	46.728	48.206	49.684	3.07	3.07
82	45.028	46.484	47.94	3.13	3.13
83	43.397	44.832	46.267	3.2	3.2
84	41.833	43.246	44.659	3.27	3.27
85	40.332	41.723	43.114	3.33	3.33
86	38.891	40.26	41.629	3.4	3.4
87	37.509	38.856	40.203	3.47	3.47
88	36.181	37.506	38.831	3.53	3.53
89	34.905	36.209	37.513	3.6	3.6
90	33.68	34.962	36.244	3.67	3.67
91	32.503	33.764	35.025	3.73	3.73
92	31.373	32.612	33.851	3.8	3.8
93	30.286	31.504	32.722	3.87	3.87
94	29.242	30.439	31.636	3.93	3.93
95	28.236	29.413	30.59	4	4
96	27.271	28.427	29.583	4.07	4.07
97	26.342	27.478	28.614	4.13	4.13
98	25.448	26.564	27.68	4.2	4.2
99	24.589	25.685	26.781	4.27	4.27
100	23.762	24.838	25.914	4.33	4.33
101	22.966	24.023	25.08	4.4	4.4
102	22.199	23.237	24.275	4.47	4.47
103	21.462	22.481	23.5	4.53	4.53
104	20.751	21.752	22.753	4.6	4.6

R80=50kΩ±3% B25/80=4450K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
105	20.067	21.049	22.031	4.67	4.67
106	19.408	20.372	21.336	4.73	4.73
107	18.773	19.72	20.667	4.8	4.8
108	18.162	19.091	20.02	4.87	4.87
109	17.573	18.485	19.397	4.93	4.93
110	17.005	17.9	18.795	5	5
111	16.459	17.337	18.215	5.07	5.07
112	15.931	16.793	17.655	5.13	5.13
113	15.422	16.268	17.114	5.2	5.2
114	14.933	15.763	16.593	5.27	5.27
115	14.46	15.275	16.09	5.33	5.33
116	14.005	14.804	15.603	5.4	5.4
117	13.565	14.349	15.133	5.47	5.47
118	13.141	13.911	14.681	5.53	5.53
119	12.733	13.488	14.243	5.6	5.6
120	12.339	13.08	13.821	5.67	5.67
121	11.958	12.685	13.412	5.73	5.73
122	11.591	12.305	13.019	5.8	5.8
123	11.238	11.938	12.638	5.87	5.87
124	10.897	11.584	12.271	5.93	5.93
125	10.567	11.242	11.917	6	6
126	10.249	10.911	11.573	6.07	6.07
127	9.943	10.593	11.243	6.13	6.13
128	9.647	10.285	10.923	6.2	6.2
129	9.362	9.988	10.614	6.27	6.27
130	9.087	9.701	10.315	6.33	6.33
131	8.822	9.425	10.028	6.4	6.4
132	8.566	9.158	9.75	6.47	6.47
133	8.319	8.9	9.481	6.53	6.53
134	8.08	8.651	9.222	6.6	6.6
135	7.85	8.411	8.972	6.67	6.67
136	7.629	8.18	8.731	6.73	6.73
137	7.416	7.957	8.498	6.8	6.8
138	7.209	7.741	8.273	6.87	6.87
139	7.011	7.533	8.055	6.93	6.93
140	6.82	7.333	7.846	7	7

R25=10kΩ±3% B25/50=3700K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
-30	145.819	135.018	124.217	7	7
-29	138.071	129.126	120.181	6.93	6.93
-28	131.793	123.339	114.885	6.85	6.85
-27	125.665	117.684	109.703	6.78	6.78
-26	119.706	112.18	104.654	6.71	6.71
-25	113.933	106.843	99.753	6.64	6.64
-24	108.361	101.687	95.013	6.56	6.56
-23	102.997	96.719	90.441	6.49	6.49
-22	97.847	91.946	86.045	6.42	6.42
-21	92.915	87.371	81.827	6.35	6.35
-20	88.2	82.994	77.788	6.27	6.27
-19	83.702	78.815	73.928	6.2	6.2
-18	79.417	74.832	70.247	6.13	6.13
-17	75.342	71.041	66.74	6.05	6.05
-16	71.471	67.437	63.403	5.98	5.98
-15	67.798	64.015	60.232	5.91	5.91
-14	64.316	60.769	57.222	5.84	5.84
-13	61.017	57.692	54.367	5.76	5.76
-12	57.895	54.778	51.661	5.69	5.69
-11	54.942	52.019	49.096	5.62	5.62
-10	52.149	49.409	46.669	5.55	5.55
-9	49.51	46.941	44.372	5.47	5.47
-8	47.016	44.607	42.198	5.4	5.4
-7	44.659	42.4	40.141	5.33	5.33
-6	42.433	40.315	38.197	5.25	5.25
-5	40.332	38.345	36.358	5.18	5.18
-4	38.346	36.482	34.618	5.11	5.11
-3	36.472	34.723	32.974	5.04	5.04
-2	34.7	33.059	31.418	4.96	4.96
-1	33.027	31.487	29.947	4.89	4.89
0	31.445	30	28.555	4.82	4.82
1	29.951	28.594	27.237	4.75	4.75
2	28.538	27.264	25.99	4.67	4.67
3	27.202	26.006	24.81	4.6	4.6
4	25.938	24.815	23.692	4.53	4.53

R25=10kΩ±3% B25/50=3700K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
5	24.742	23.687	22.632	4.45	4.45
6	23.61	22.619	21.628	4.38	4.38
7	22.538	21.607	20.676	4.31	4.31
8	21.522	20.647	19.772	4.24	4.24
9	20.559	19.737	18.915	4.16	4.16
10	19.646	18.874	18.102	4.09	4.09
11	18.779	18.054	17.329	4.02	4.02
12	17.958	17.276	16.594	3.95	3.95
13	17.177	16.537	15.897	3.87	3.87
14	16.436	15.834	15.232	3.8	3.8
15	15.731	15.166	14.601	3.73	3.73
16	15.061	14.53	13.999	3.65	3.65
17	14.424	13.925	13.426	3.58	3.58
18	13.817	13.349	12.881	3.51	3.51
19	13.24	12.8	12.36	3.44	3.44
20	12.69	12.277	11.864	3.36	3.36
21	12.166	11.778	11.39	3.29	3.29
22	11.666	11.302	10.938	3.22	3.22
23	11.189	10.848	10.507	3.15	3.15
24	10.734	10.414	10.094	3.07	3.07
25	10.3	10	9.7	3	3
26	9.898	9.604	9.31	3.06	3.06
27	9.514	9.226	8.938	3.13	3.13
28	9.147	8.864	8.581	3.19	3.19
29	8.796	8.519	8.242	3.25	3.25
30	8.459	8.188	7.917	3.31	3.31
31	8.137	7.871	7.605	3.38	3.38
32	7.828	7.568	7.308	3.44	3.44
33	7.532	7.277	7.022	3.5	3.5
34	7.248	6.999	6.75	3.56	3.56
35	6.977	6.733	6.489	3.63	3.63
36	6.716	6.477	6.238	3.69	3.69
37	6.466	6.232	5.998	3.75	3.75
38	6.227	5.998	5.769	3.81	3.81
39	5.997	5.773	5.549	3.88	3.88
40	5.776	5.557	5.338	3.94	3.94
41	5.564	5.35	5.136	4	4

R25=10kΩ±3% B25/50=3700K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
42	5.36	5.151	4.942	4.06	4.06
43	5.166	4.961	4.756	4.13	4.13
44	4.978	4.778	4.578	4.19	4.19
45	4.799	4.603	4.407	4.25	4.25
46	4.625	4.434	4.243	4.31	4.31
47	4.46	4.273	4.086	4.38	4.38
48	4.301	4.118	3.935	4.44	4.44
49	4.148	3.969	3.79	4.5	4.5
50	4.001	3.826	3.651	4.56	4.56
51	3.86	3.689	3.518	4.63	4.63
52	3.724	3.557	3.39	4.69	4.69
53	3.594	3.431	3.268	4.75	4.75
54	3.468	3.309	3.15	4.81	4.81
55	3.349	3.193	3.037	4.88	4.88
56	3.233	3.081	2.929	4.94	4.94
57	3.123	2.974	2.825	5	5
58	3.015	2.87	2.725	5.06	5.06
59	2.913	2.771	2.629	5.13	5.13
60	2.815	2.676	2.537	5.19	5.19
61	2.721	2.585	2.449	5.25	5.25
62	2.63	2.497	2.364	5.31	5.31
63	2.543	2.413	2.283	5.38	5.38
64	2.459	2.332	2.205	5.44	5.44
65	2.379	2.255	2.131	5.5	5.5
66	2.301	2.18	2.059	5.56	5.56
67	2.228	2.109	1.99	5.63	5.63
68	2.156	2.04	1.924	5.69	5.69
69	2.088	1.974	1.86	5.75	5.75
70	2.021	1.91	1.799	5.81	5.81
71	1.958	1.849	1.74	5.88	5.88
72	1.897	1.791	1.685	5.94	5.94
73	1.839	1.735	1.631	6	6
74	1.782	1.68	1.578	6.06	6.06
75	1.728	1.628	1.528	6.13	6.13

R25=10kΩ±3% B25/50=3700K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
76	1.676	1.578	1.48	6.19	6.19
77	1.626	1.53	1.434	6.25	6.25
78	1.578	1.484	1.39	6.31	6.31
79	1.531	1.439	1.347	6.38	6.38
80	1.486	1.396	1.306	6.44	6.44
81	1.443	1.355	1.267	6.5	6.5
82	1.401	1.315	1.229	6.56	6.56
83	1.362	1.277	1.192	6.63	6.63
84	1.323	1.24	1.157	6.69	6.69
85	1.285	1.204	1.123	6.75	6.75
86	1.249	1.169	1.089	6.81	6.81
87	1.214	1.136	1.058	6.88	6.88
88	1.181	1.104	1.027	6.94	6.94
89	1.148	1.073	0.998	7	7
90	1.116	1.042	0.968	7.06	7.06
91	1.085	1.013	0.941	7.13	7.13
92	1.056	0.985	0.914	7.19	7.19
93	1.026	0.957	0.888	7.25	7.25
94	0.998	0.93	0.862	7.31	7.31
95	0.971	0.904	0.837	7.38	7.38
96	0.944	0.879	0.814	7.44	7.44
97	0.918	0.854	0.79	7.5	7.5
98	0.893	0.83	0.767	7.56	7.56
99	0.867	0.806	0.745	7.63	7.63
100	0.843	0.783	0.723	7.69	7.69
101	0.819	0.76	0.701	7.75	7.75
102	0.796	0.738	0.68	7.81	7.81
103	0.772	0.716	0.66	7.88	7.88
104	0.749	0.694	0.639	7.94	7.94
105	0.727	0.673	0.619	8	8

Appendix table for manual updated information

No.	Version	Updated information
1		Update the one by four valve box specification
2		Delete the smartlink content
3		
4		
5		

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WARNING :
The design and specifications are subject to change without prior notice for product improvement. Consult with the sales agency or manufacturer for details.

ATTENTION :
Le design et les données techniques sont donnés à titre indicatif et peuvent être modifiés sans préavis.

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22.AW.EEVA.250-2400.R410A.SM.EN.04.28.Rev01