

Part 3 Specification & Performance

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1. Specifications

Model	MDVS-252(8)W/DRN1	MDVS-280(10)W/DRN1	MDVS-335(12)W/DRN1
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Power supply		V-Ph-Hz	380~415V 3Ph ~ 50Hz	380~415V 3Ph ~ 50Hz	380~415V 3Ph ~ 50Hz
Cooling (*1)	Capacity	W	25200	28000	33500
	Input	W	4800	6100	8000
	EER	W/W	5.25	4.59	4.19
Heating (*2)	Capacity	W	27000	31500	37500
	Input	W	4450	5830	7800
	COP	W/W	6.07	5.40	4.81
IPLV©			5.9	5.8	5.8
Max. input consumption		W	9454	9454	11188
Max. current		A	23	23	23
DC Inverter compressor	Model		E655DHD-65D2YG	E655DHD-65D2YG	E655DHD-65D2YG
	Quantities		1	1	1
	Type		DC Inverter	DC Inverter	DC Inverter
	Brand		Hitachi	Hitachi	Hitachi
	Capacity	W	31590	31590	31590
	Input	W	10340	10340	10340
	Power supply	V-Ph-Hz	380-415V~3Ph, 50Hz	380-415V~3Ph, 50Hz	380-415V~3Ph, 50Hz
	Operating frequency	Hz	40~200	40~200	40~200
	Crankcase	W	40~80	40~80	40~80
Refrigerant oil	ml	FVC68D / 500	FVC68D / 500	FVC68D / 500	
Heat exchanger	Type		Double-pipe heat exchanger	Double-pipe heat exchanger	Double-pipe heat exchanger
	Rated water flow volume	m ³ /h	5.4	6	7.2
	Pressure drop	kPa	35	40	48
	Max.pressure of water pipe side	Mpa	1.98	1.98	1.98
Drainage pipe outside diameter		mm	Φ10	Φ10	Φ10
Water side connecting pipe		mm	DN32 inner groove	DN32 inner groove	DN32 inner groove
Outdoor sound level(*3)		dB(A)	51	52	52
Main unit	Dimension(W*H*D)	mm	780×1000×550	780×1000×550	780×1000×550
	Packing (W*H*D)	mm	845×1170×600	845×1170×600	845×1170×600
	Net/Gross weight	Kg	146/155	146/155	146/155
Charged refrigerant type and volume		kg	R410A 2kg	R410A 2kg	R410A 2kg
Throttle type			EXV	EXV	EXV
Excessive operating pressure		MPa	4.4/2.6	4.4/2.6	4.4/2.6
Refrigerant piping	Liquid side/ Gas side(*4)	mm	Φ12.7/Φ25.4	Φ12.7/Φ25.4	Φ15.9/Φ31.8
	Oil balance pipe	mm	Φ6.4	Φ6.4	Φ6.4
	Total pipe length	m	300	300	300
	The farthest pipe length(actual)	m	120	120	120
	The farthest pipe length (equivalent)	m	150	150	150
	The farthest equivalent pipe length from the first distributor (*5)	m	40(90)	40(90)	40(90)
	Max. Vertical pipe length (When main units is above)	m	50	50	50
	Max. Vertical pipe length (When main units is below)	m	40	40	40

	Max. drop between indoor units	m	30	30	30
Connection wiring	Power wiring	mm ²	4×10+10(L≤20m); 4×16+10(L≤50m)	4×10+10(L≤20m); 4×16+10(L≤50m)	4×10+10(L≤20m); 4×16+10(L≤50m)
	Signal wiring	mm ²	3 core shielded wiring; wiring dia.≥0.75	3 core shielded wiring; wiring dia.≥0.75	3 core shielded wiring; wiring dia.≥0.75
Main unit water inlet temp.		°C	7°C—45°C	7°C—45°C	7°C—45°C
Main unit ambient temp. range		°C	0°C—40°C	0°C—40°C	0°C—40°C
Main unit ambient humidity			Below 80%	Below 80%	Below 80%

Notes:

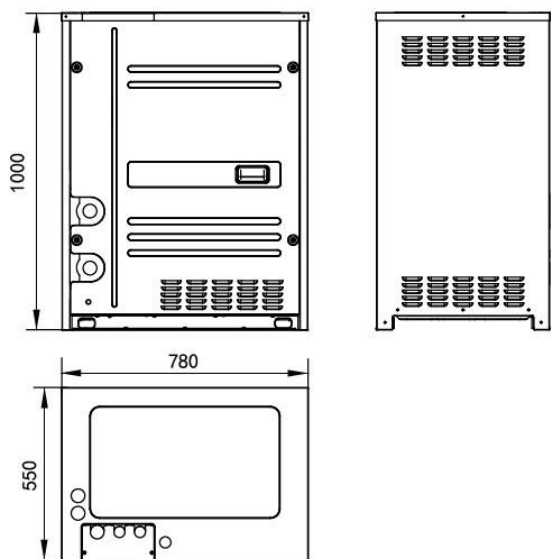
1. The cooling conditions: indoor temp.: 27°CDB, 19°CWB, outdoor temp.: 35°CDB, water inlet temp. :30°C, equivalent pipe length: 5m, drop length: 0m.
2. The heating conditions: indoor temp.: 20°CDB, 15°CWB, outdoor temp.: 7°CDB, 6°CWB, water inlet temp. :20°C, equivalent pipe length: 5m drop length: 0m.
3. Sound level: Anechoic chamber conversion value, measured at a point 1 m in front of the unit at a height of 1 m. During actual operation, these values are normally somewhat higher as a result of ambient conditions.
4. The farthest equivalent pipe length should be equal to or shorter than 40m, but it can be up to 90m if meet the required conditions following part 4 installation sections.
5. The above data may be changed without notice for future improvement on quality and performance.

2. Dimensions

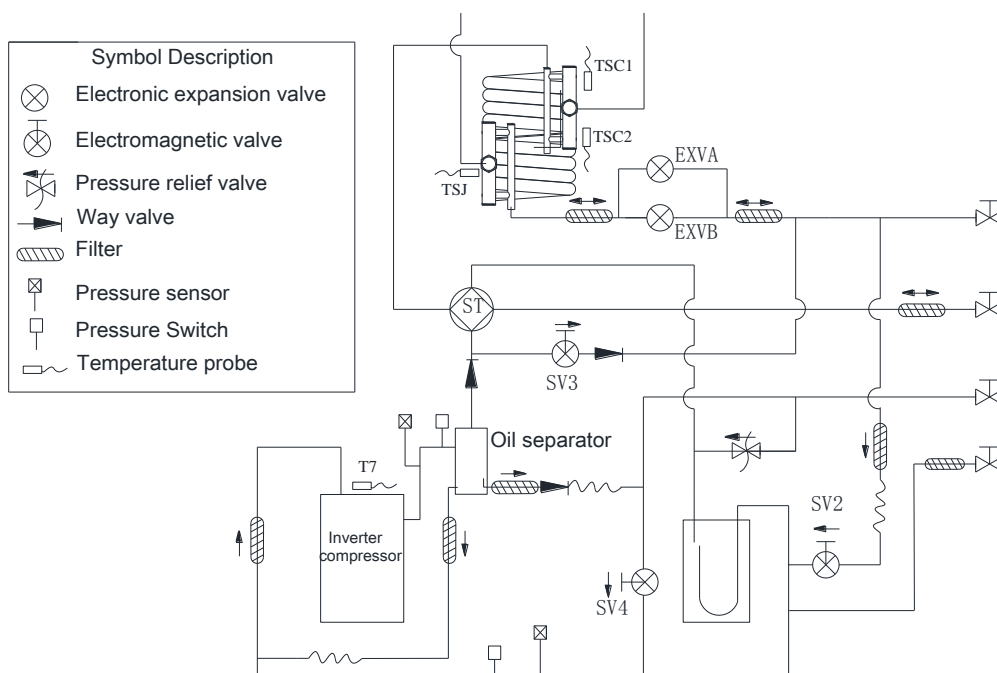
2.1 Units Dimension

8HP/10HP/12HP Dimensions (Combinable):

(Unit: mm)



3. Piping Diagrams



Remark:

- TSC1: water outlet temp. of upper pipe
- TSC2: water outlet temp. of lower pipe
- TSJ: water inlet temp. of double-pipe heat exchanger
- T5: inverter module temp.
- Pc: discharge pressure
- Ps: suction pressure
- T7: discharge temp. of inverter compressor

Each model has one inverter compressor and two EXVs at the high-pressure pipe side.

Key Components:

Oil Separator: used to separate oil from high pressure & temperature gas refrigerant, which is pumped out from compressor. The separation efficiency is up to 99%, it makes the oil return back to each compressor very soon.

Low pressure receiver: It is used to store the liquid refrigerant and oil, it can protect the compressor from liquid hammer.

Four-way valve control (ST1): Closed in cooling mode and open in heating mode (制热开机50s后开启)

EXV (electronic expansion valve) control:

1) Max. Open degree is 700 pulses.

2) Generally, when system is plug in the EXV closes 700pulse first, then opens to 350 pulse and stand by. When then the unit started, it opens to the right pulse.

3) When the running main unit receives OFF signal, the EXV of slave unit will stop, while master unit is running and slave unit stopped at the same time. If all main units stopped, the EXV will close first, and then open to the pulse of stand-by.

SV2: spray a little liquid refrigerant to cooling compressor. Open when any compressor discharge temperature is higher than 100°C

SV3: open when power on, closed after 60 seconds; open when discharge pressure is less than 1.8MP in cooling mode, open when discharge pressure is greater than 4.0MPa in heating mode.

SV4: oil returning valve. Opens after the DC inverter compressor has been run for 5 minutes and then closes 15 minutes later. (For the system has only one main unit).

Every 20 minutes, SV4 of each main unit opens for 3 minutes. (For the system has more than one main unit)

High pressure sensor: To supervisor the discharge pressure of the compressor and to control the water temperature.

4. Electric Characteristics

Model	Main unit				Power Supply			Compressor		OFM	
	Hz	Voltage	Min.	Max.	MCA	TOCA	MFA	MSC	RLA	KW	FLA
MDV-252(8)W/D2RN1(B)	50	380	342	440	21	16. 2	32	-	-	/	/
MDV-280(10)W/D2RN1(B)	50	380	342	440	21	16. 2	32	-	-	/	/
MDV-335(12)W/ D2RN1(B)	50	380	342	440	23	18. 3	32	-	-	/	/

Remark:

MCA: Min. Current Amps. (A)

TOCA: Total Over-current Amps. (A)

MFA: Max. Fuse Amps. (A)

MSC: Max. Starting Amps. (A)

RLA: Rated Locked Amps. (A)

OFM: Outdoor Fan Motor.

FLA: Full Load Amps. (A)

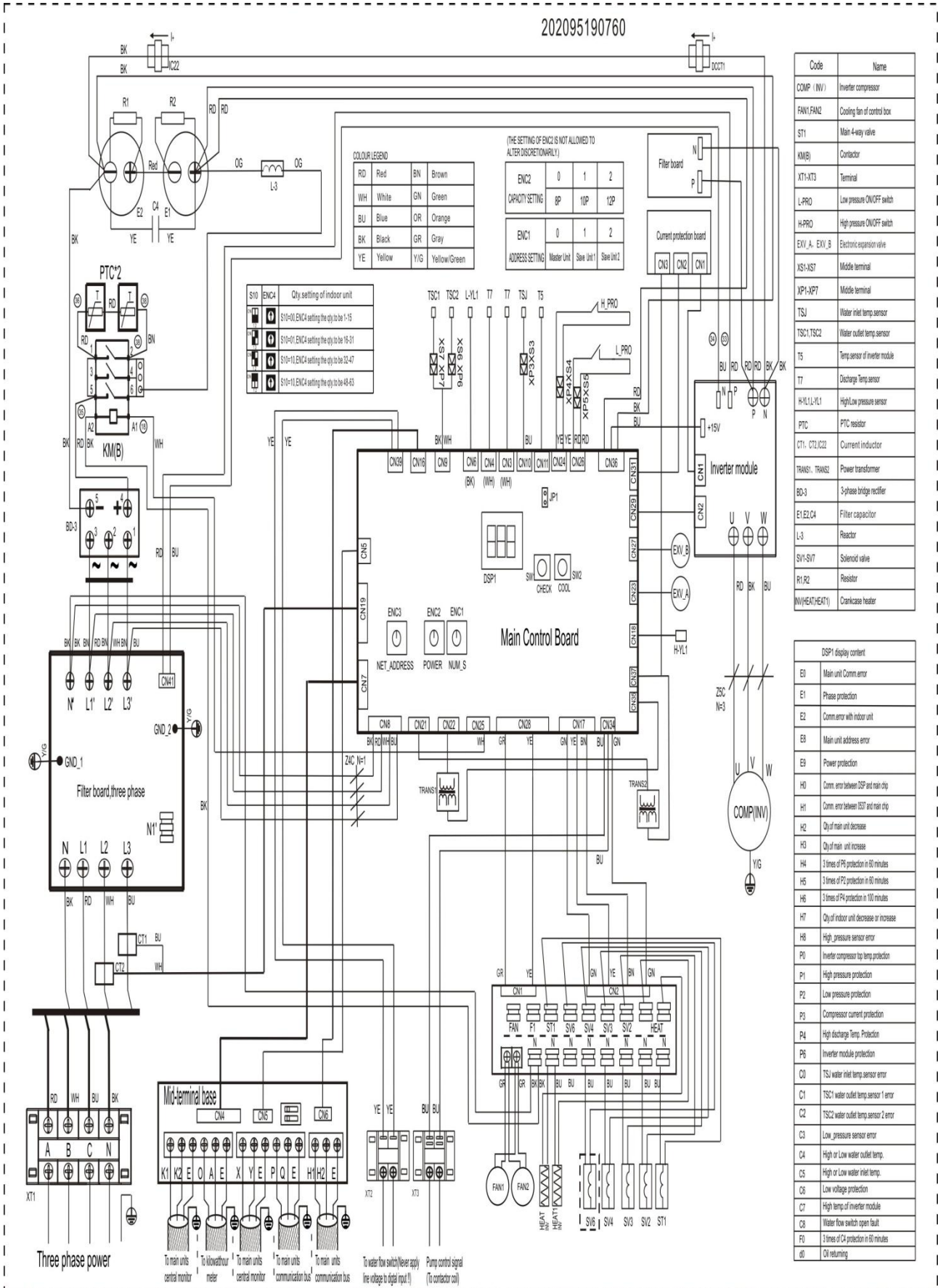
KW: Rated Motor Output (KW)

Notes:

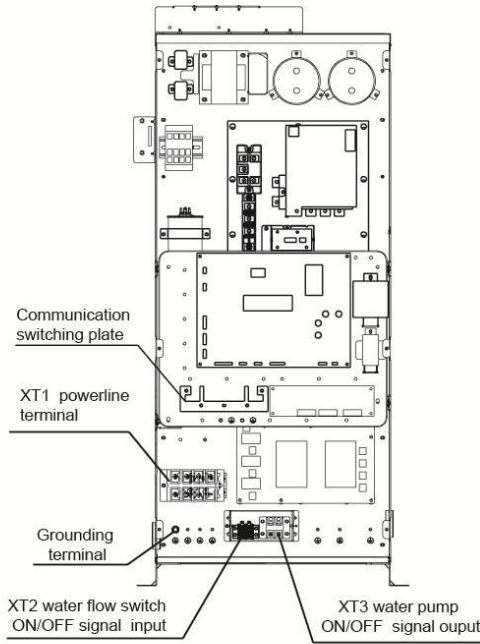
1. RLA is based on the following conditions, Indoor temp. 27°C DB/19°C WB, Outdoor temp. 35°C DB
2. TOCA means the total value of each OC set.
3. MSC means the Max. current during the starting of compressor.
4. Voltage range. Units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.
5. Maximum allowable voltage variation between phases is 2%.
6. Selection wire size based on the larger value of MCA or TOCA.
7. MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth circuit breaker).

5. Electric wiring

5.1 Wiring Diagram For 8,10,12HP

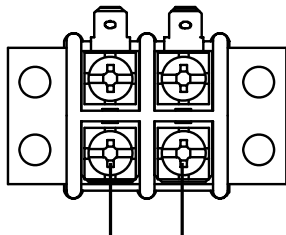


5.2 Terminal base function

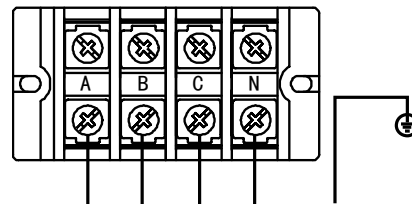


Electric control box diagram

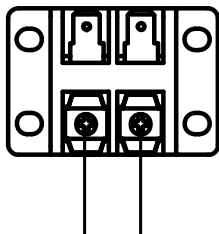
*Never apply line voltage to communication switching plate and XT2 **water** flow switch ON/OFF signal input terminal.



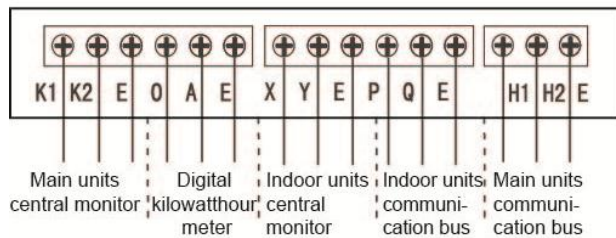
XT2 Water flow switch ON/OFF signal input terminal
(Must be connected to weak current control circuit !)



XT1 Powerline terminal
380-415V 3N- 50Hz/60Hz



XT3 Water pump ON/OFF signal output terminals
(Dry contact)



5.3 Signal wire of indoor/main units

Signal wire of indoor/main unit adopts 3-core shielded wire ($\geq 0.75\text{mm}^2$) which has polarity, please connect it correctly.

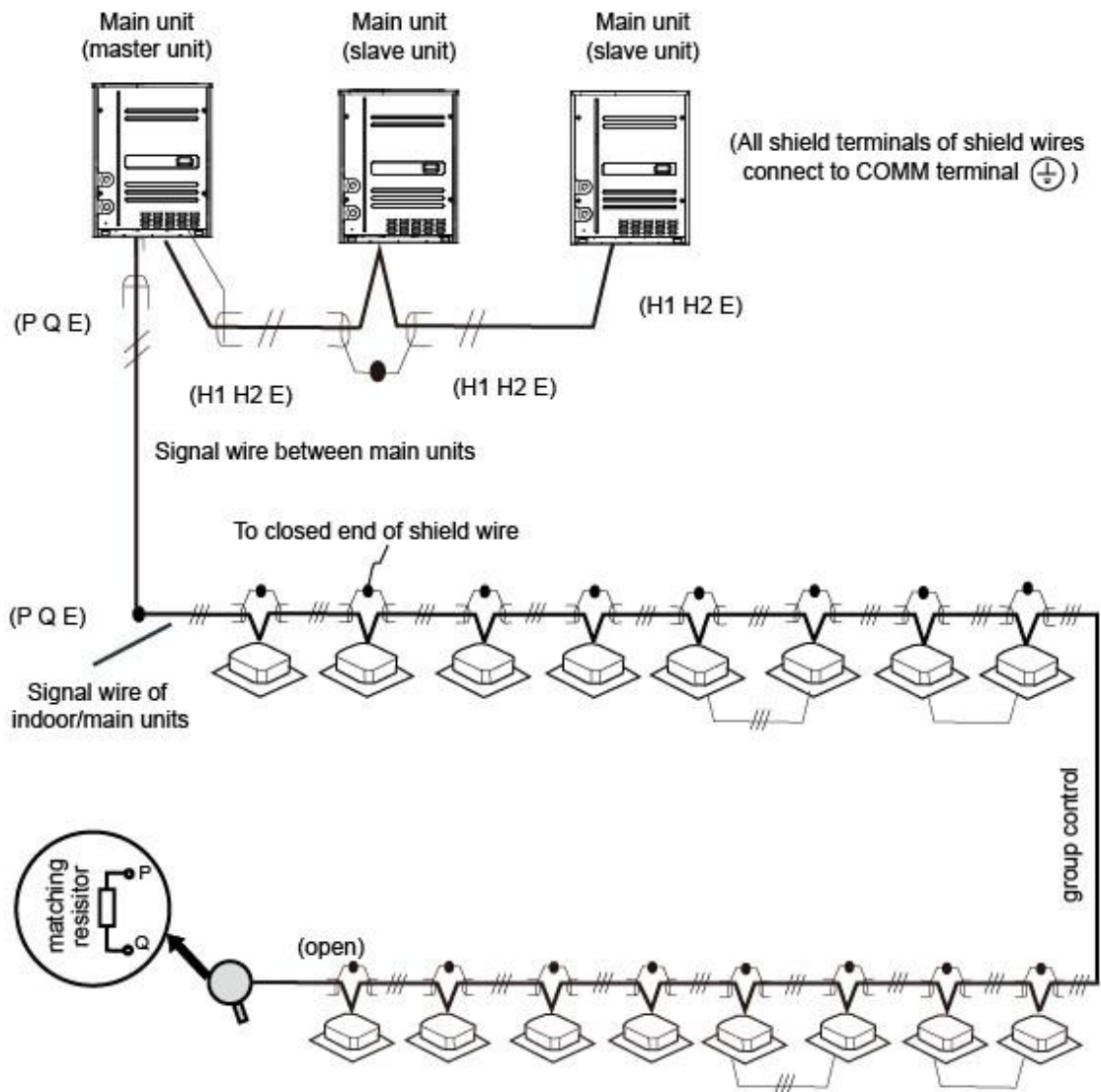


Fig.3-1

5.4 Electric wiring of water pipelines

5.4.1 Water flow ON/OFF signal wiring

- 1) Water flow switch should be wired during the installation. Each unit must be configured a water flow switch, and it can not operate without a water flow switch.
- 2) The signal wire should apply 0.75mm² shielding wire, and connected to the XT2 terminal in the electric control box (see Fig.3-2).

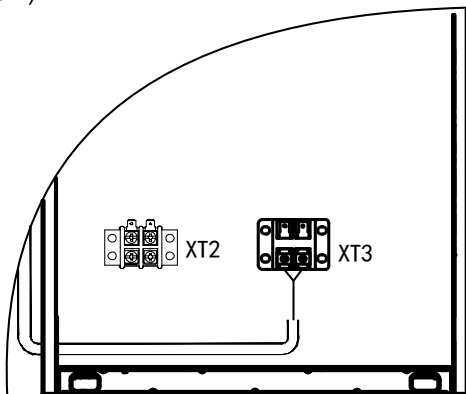


Fig.3-2 Water flow ON/OFF signal input

5.4.2 Water pump ON/OFF signal wiring

- 1) Each unit has configured a dry contact terminal for central control of the water pump (see Fig.3-3), this terminal can not

be connected to power terminal of the water pump directly, only should be connected to the control terminal of the water pump stater.

2)When the water pump ON/OFF signal wire has been connected to strong current, it should be wired the signal wires along with other strong current wires; when it has been connected to week current, it should be wired the signal wires along with the week current wires.

3)When the water pipeline has a single system, the water pump ON/OFF signal wire should be connected to the XT3 terminals in the main unit electric control box. When the water pipeline has several systems, the water pump ON/OFF signal should be controlled by the main unit centralized controller. The wiring of main unit centralized controller see the Fig.3-4.

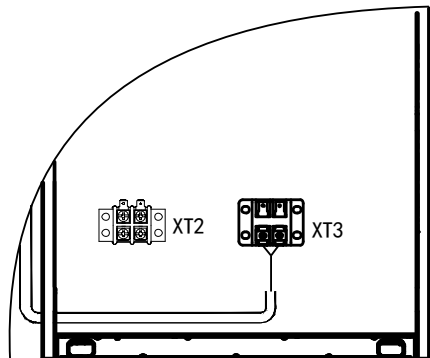


Fig.3-3 Water pump ON/OFF signal output

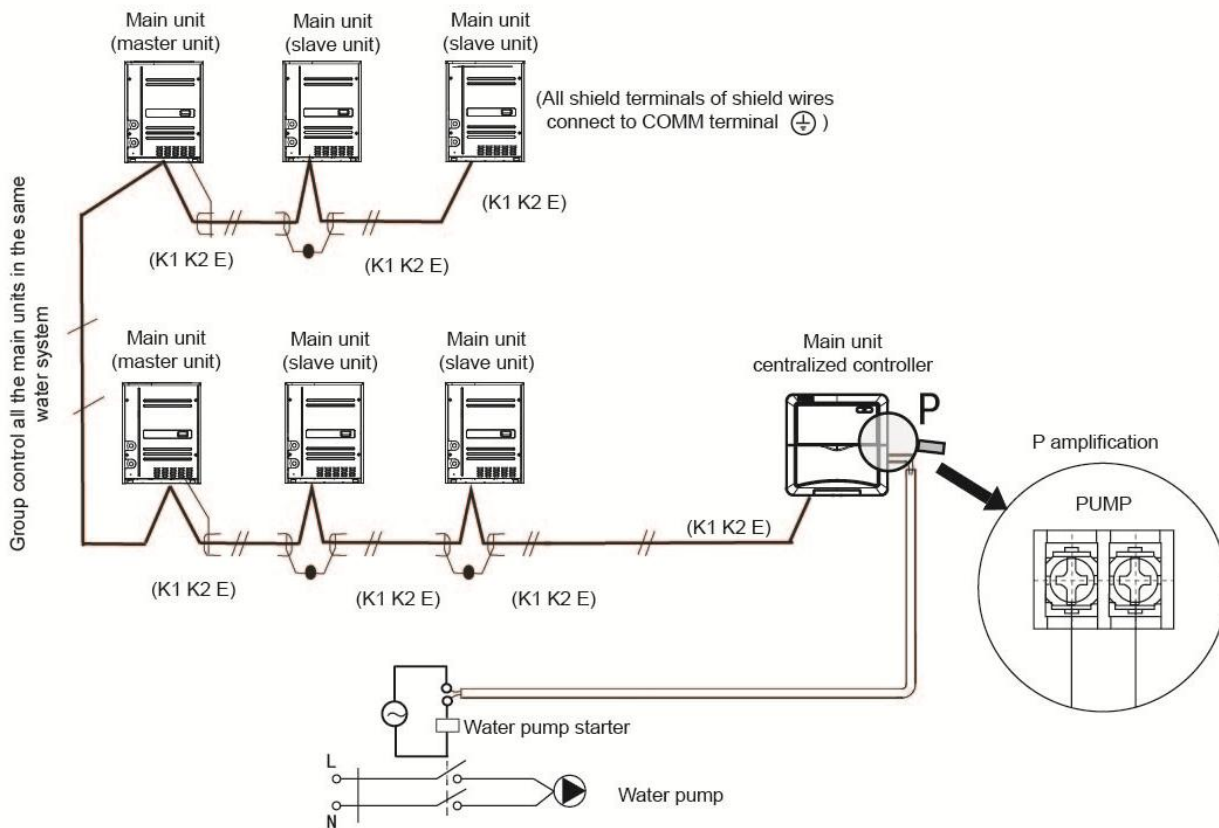
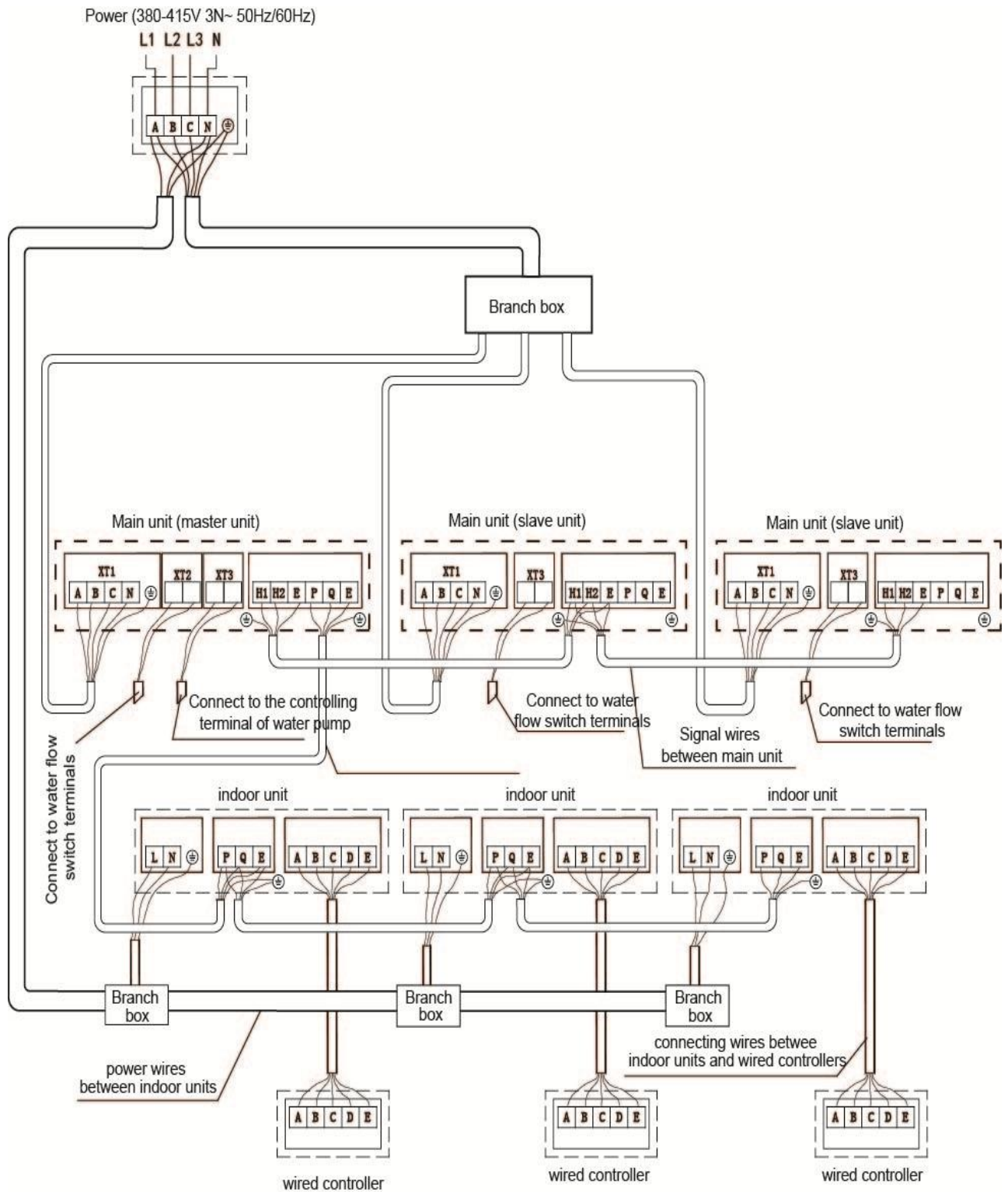
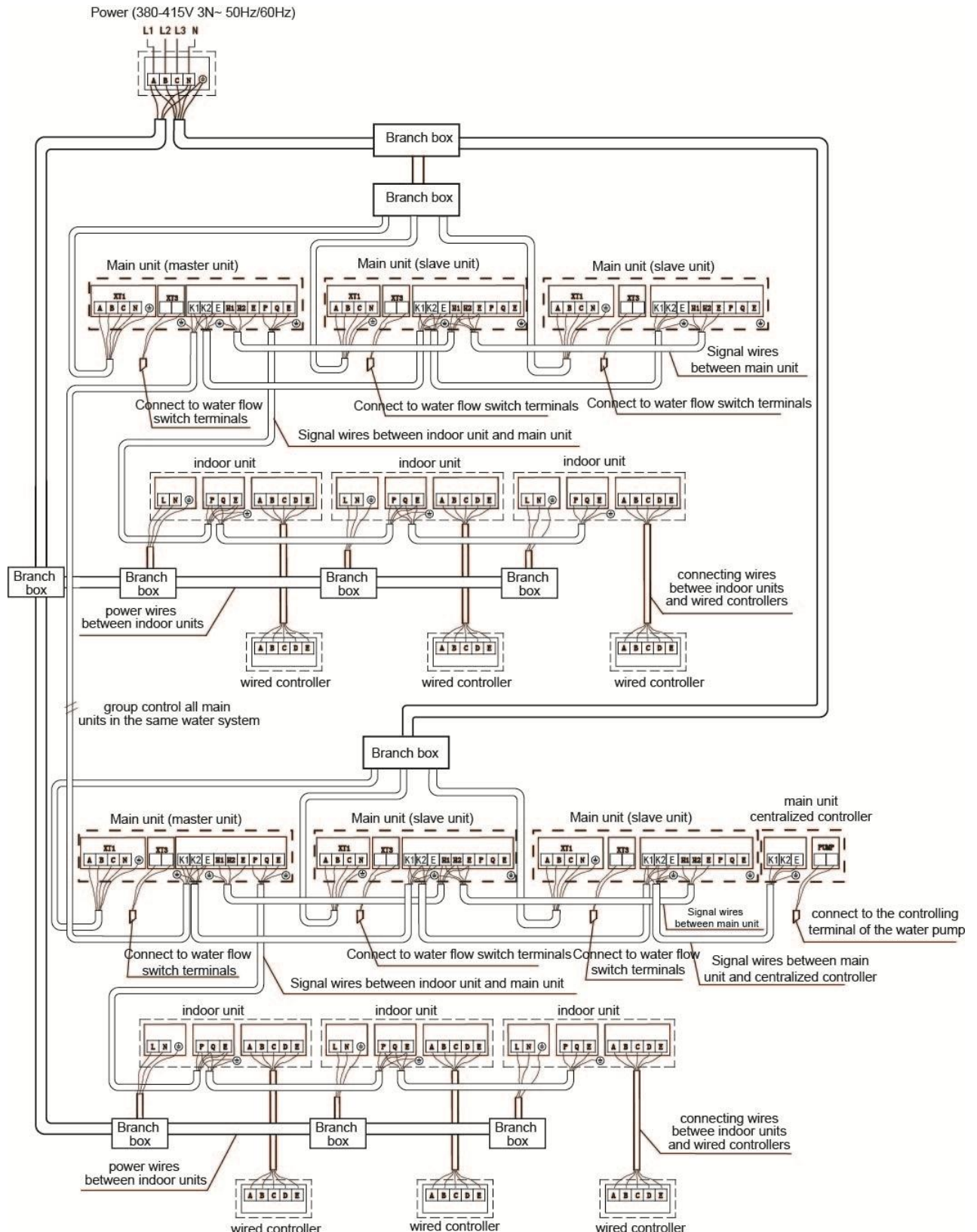


Fig.3-4

5.5 Example for power wire connection
5.5.1 A water circuit for single system wiring



5.4.2 A water circuit for several systems wiring



Note:

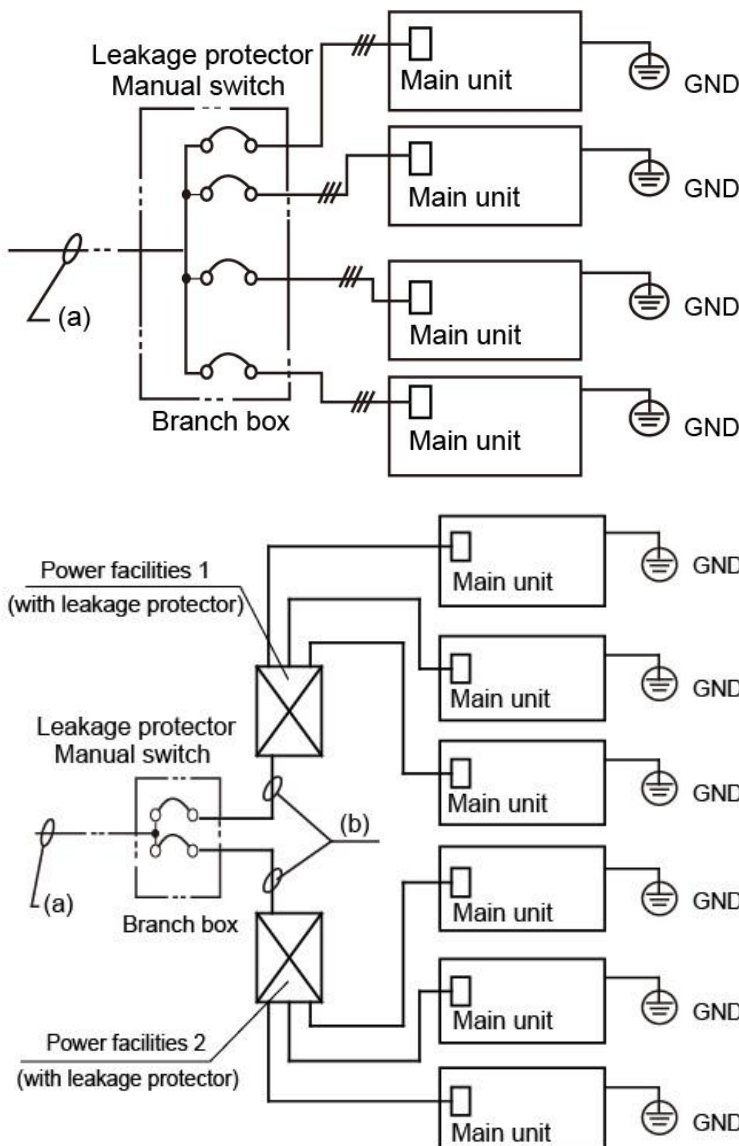
1. The signal connecting line between main units, indoor and main units and indoor units has polarity. When connecting, be careful to prevent error connection.
2. Signal line shall adopt three-core shielded wire with an area above 0.75 mm².
3. Do not bind signal line and copper pipe together with belting.
4. Make sure that the shield metal layer should be grounded well indoor control box in order to prevent interference.
5. It's forbidden to connect 200V or above high-volt **power** to the communication terminal.

5.5 Main unit power wiring

5.3.1 Separate Power Supply (without power facility)

Model	Item	Power supply	Minimum Power wire diameter (mm ²) Wiring of mental and synthetic resin		manual switch (A)		Creepage breaker
			Size	Ground wire	Capacity	Fuse	
MDVS-252(8)W/DRN1			4×10 mm ² (<20 m) 4×16 mm ² (<50 m)	1×10 mm ²	32	25	100 mA 0.1 sec or less
MDVS-280(10)W/DRN		380V~415V, 3N, 50Hz	4×10 mm ² (<20 m) 4×16 mm ² (<50 m)	1×10 mm ²	32	25	
MDVS-335(12)W/DRN1			4×10 mm ² (<20 m) 4×16 mm ² (<50 m)	1×10 mm ²	32	25	

5.3.2 With power facilities:



Note:

1. Select power cord for these three models separately according to relevant standard.
 2. The wiring diameter and the length in the table indicate the condition that the voltage dropping range is within 2%. If the length exceeds the above figure, please select the wire diameter according to relevant standard.
 3. Select the wire diameter
- Power wiring refer to the main wire (a) connecting to branch box and the wiring (b) between branch box and power

facilities. Please select the wire diameter according to the following requirement.

4. Diameter of main wire (a)

Depends on the total horsepower of main unit and following table.

E.g. In system:(8Hp×1unit+8Hp×1unit+10Hp×1unit)

Total Hp=26Hp→(Table5.3.3)→size of wire=35mm²(within 50m)

5. Wiring(b):between branch box and power equipment. Depends on the number of combined main unit. If fewer than 5, the diameter is the same as that of main wire (a); if more than 6, there will be 2 electric control boxes, and the diameter of wiring depends on the total horsepower of main units connecting to each electric control box and following table.

5.3.3 Reference table of the cable size for each capacity Table5.3.3

Total capacity (HP)	Min. Diameter of wiring (mm ²) from weather proof isolator to ODU	
	Below 20 m	20 to 50 m
8	10	16
10	10	16
12	10	16
14	16	25
16	16	25
18	16	25
20	25	35
22	25	35
24	25	35
26	25	35
28	25	35
30	35	50
32	35	50
34	35	50
36	35	50

Remark: The above selection is just for reference, it should be considered that the cable layout, space between cable and surroundings, etc. for an actual electrical project

6 Operation Limits

	Outdoor temp.	Indoor temp.	Main unit ambient humidity
Cooling mode	0°C ~ 40°C	17°C ~ 32°C	below 80%
Heating mode	0°C ~ 40°C	15°C ~ 30°C	below 80%

Notes:

1. If the unit is not running in the above condition, protective device will start and even then the units will produce abnormality running.
2. These figures base on the operation conditions between indoor units and main units: Equivalent pipe length is 5m, and height difference is 0m.

Precaution:

The indoor relative humidity should be lower than 80%. If the air conditioner works in an environment with a relative humidity higher than mentioned above, the surface of the air conditioner may condensate. In this case, it is recommended to set the air speed of the indoor unit to high.

6 Capacity Tables

8HP cooling mode

Combination (%)	Water inlet temperature(°C)	Water flow(L/min)	Indoor temperature °CWB													
			14		16		18		19		20		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
			kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	20	90	22.1	2.78	26.3	3.69	28.1	3.97	28.5	4.00	28.9	4.00	29.5	4.04	30.0	4.05
	25		22.1	3.27	26.3	4.36	27.3	4.42	27.7	4.44	28.0	4.46	28.6	4.48	29.0	4.50
	30		22.1	3.87	25.5	4.82	26.3	4.86	26.6	4.89	27.0	4.90	27.5	4.93	27.8	4.94
	35		22.1	4.62	24.4	5.27	25.1	5.32	25.5	5.34	25.8	5.36	26.1	5.37	26.4	5.37
120%	20	90	20.4	2.44	24.4	3.24	27.7	3.95	28.0	3.97	28.4	3.99	29.1	4.02	29.6	4.04
	25		20.4	2.88	24.4	3.82	26.8	4.39	27.2	4.42	27.7	4.43	28.2	4.47	28.7	4.48
	30		20.4	3.41	24.4	4.53	25.9	4.84	26.2	4.86	26.5	4.88	27.1	4.91	27.6	4.93
	35		20.4	4.06	24.0	5.24	25.1	5.29	25.1	5.32	25.3	5.33	25.9	5.37	26.2	5.37
110%	20	90	18.7	2.14	22.3	2.82	26.0	3.59	27.5	3.95	27.8	3.96	28.6	4.00	29.2	4.02
	25		18.7	2.52	22.3	3.32	26.0	4.23	26.7	4.39	27.1	4.41	27.7	4.44	28.3	4.47
	30		18.7	2.97	22.3	3.93	25.4	4.81	25.8	4.83	26.0	4.86	26.7	4.89	27.2	4.92
	35		18.6	3.55	22.3	4.70	24.3	5.75	24.6	5.29	24.9	5.31	25.5	5.34	26.0	5.37
100%	20	90	17.0	1.85	20.3	2.42	23.6	3.07	25.2	3.43	26.8	3.80	29.8	3.97	28.6	4.00
	25		17.0	2.17	20.3	2.85	23.6	3.62	25.2	4.04	26.5	4.38	27.2	4.42	27.7	4.44
	30		17.0	2.56	20.3	3.38	23.6	4.30	25.2	4.80	25.6	4.82	26.2	4.86	26.7	4.90
	35		17.0	3.05	20.3	4.02	23.6	5.13	24.1	5.25	24.4	5.27	25.0	5.31	25.6	5.34
90%	20	90	15.3	1.59	18.2	2.06	21.2	2.60	22.7	2.89	24.2	3.20	27.1	3.86	28.0	3.97
	25		15.3	1.86	18.2	2.42	21.2	3.06	22.7	3.41	24.2	3.77	26.5	4.38	27.2	4.41
	30		15.3	2.19	18.2	2.86	21.2	3.80	22.7	4.04	24.2	4.47	25.6	4.82	26.1	4.86
	35		15.3	2.60	18.2	3.40	21.2	4.32	22.7	4.82	23.9	5.23	24.5	5.28	25.0	5.31
80%	20	90	13.6	1.35	16.2	1.73	18.9	2.17	20.2	2.40	21.4	2.65	24.1	3.18	26.7	3.77
	25		13.6	1.58	16.2	2.03	18.9	2.55	20.2	2.83	21.4	3.12	24.1	3.76	26.5	4.38
	30		13.6	1.85	16.2	2.39	18.9	3.00	20.2	3.34	21.4	3.69	24.1	4.46	25.6	4.82
	35		13.6	2.18	16.2	2.83	18.9	3.57	20.2	3.98	21.4	4.41	23.9	5.23	24.4	5.27
70%	20	90	11.9	1.13	14.2	1.43	16.5	1.78	17.6	1.96	18.8	2.16	21.0	2.57	23.4	3.03
	25		11.9	1.31	14.2	1.67	16.5	2.08	17.6	2.30	18.8	2.53	21.0	3.03	23.4	3.57
	30		11.9	1.54	14.2	1.97	16.5	2.45	17.6	2.71	18.8	2.99	21.0	3.59	23.4	4.24
	35		11.9	1.81	14.2	2.32	16.5	2.89	17.6	3.22	18.8	3.89	21.0	4.28	23.4	5.07
60%	20	90	10.2	0.92	12.2	1.16	14.2	1.42	15.1	1.56	16.1	1.71	18.0	2.03	20.0	2.38
	25		10.2	1.07	12.2	1.35	14.2	1.66	15.1	1.83	16.1	2.01	18.0	2.39	20.0	2.80
	30		10.2	1.26	12.2	1.58	14.2	1.95	15.1	2.15	16.1	2.36	18.0	2.82	20.0	3.30
	35		10.2	1.47	12.2	1.123	14.2	2.31	15.1	2.55	16.1	2.80	18.0	3.34	20.0	3.94
50%	20	90	8.5	0.75	10.1	0.92	11.8	1.11	12.6	1.22	13.4	1.32	15.1	1.55	16.7	1.81
	25		8.5	0.87	10.1	1.07	11.8	1.30	12.6	1.42	13.4	1.54	15.1	1.82	16.7	2.12
	30		8.5	1.00	10.1	1.24	11.8	1.51	12.6	1.66	13.4	1.81	15.1	2.14	16.7	2.49
	35		8.5	1.17	10.1	1.46	11.8	1.78	12.6	1.96	13.4	2.14	15.1	2.53	16.7	2.96

Note:

1. is shown as reference
2. The above table shows the average value of conditions may operate
3. It is recommended to connect less than 130%

8HP heating mode

Combination (%)	Water inlet temperature(°C)	Water flow(L/min)	Indoor temperature°CDB											
			16		18		20		21		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
			kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	20	90	28.5	3.61	28.3	3.70	28.2	3.81	28.0	3.87	28.0	3.94	27.7	4.09
	25		31.3	3.79	31.2	3.91	30.9	4.03	30.8	4.10	30.6	4.17	30.4	4.33
	30		33.8	4.00	33.9	4.12	33.6	4.26	32.5	4.33	33.2	4.36	30.9	3.91
	35		37.0	4.22	36.7	4.35	35.5	4.23	33.3	4.02	33.2	3.94	30.9	3.43
120%	20	90	28.3	3.73	28.1	3.84	28.2	3.96	27.8	4.04	27.7	4.11	27.4	4.26
	25		31.1	3.95	30.8	4.07	30.6	4.20	30.5	4.27	30.3	4.36	28.5	3.99
	30		33.8	4.17	33.5	4.30	32.7	4.27	31.7	4.07	30.6	3.86	28.5	3.47
	35		36.5	4.40	34.8	4.12	32.7	3.74	31.7	3.56	30.6	3.39	28.5	3.05
110%	20	90	28.0	3.90	27.9	4.02	27.6	4.15	27.5	4.22	27.4	4.30	26.1	4.09
	25		30.7	4.13	30.5	4.26	30.0	4.32	29.0	4.11	28.0	3.90	26.1	3.50
	30		33.4	4.37	31.9	4.12	30.0	3.67	29.0	3.56	28.0	3.39	26.1	3.13
	35		33.8	3.94	31.9	3.60	30.0	3.29	29.0	3.19	28.0	2.98	26.1	2.69
100%	20	90	27.7	4.09	27.5	4.22	27.0	4.45	26.4	4.14	25.5	3.94	23.8	3.53
	25		30.3	4.34	29.0	4.11	27.0	3.73	26.4	3.55	25.5	3.37	23.8	3.04
	30		30.7	3.89	29.0	3.56	27.0	3.24	26.4	3.09	25.5	2.94	23.8	2.66
	35		30.7	3.41	29.0	3.13	27.0	2.86	26.4	2.73	25.5	2.60	23.8	2.36
90%	20	90	27.4	4.32	26.1	4.08	24.6	3.71	23.7	3.53	22.9	3.35	21.4	3.02
	25		27.7	3.82	26.1	3.50	24.6	3.19	23.7	3.04	22.9	2.89	21.4	2.62
	30		27.7	3.32	26.1	3.04	24.6	2.78	23.7	2.66	22.9	2.54	21.4	2.30
	35		27.7	2.93	26.1	2.69	24.6	2.47	23.7	2.36	22.9	2.25	21.4	2.05
80%	20	90	24.6	3.73	23.2	3.41	21.8	3.11	21.1	2.96	20.4	2.83	19.0	2.55
	25		24.6	3.20	23.2	2.94	21.8	2.69	21.1	2.57	20.4	2.45	19.0	2.23
	30		24.6	2.76	23.2	2.57	21.8	2.36	21.1	2.27	20.4	2.16	19.0	1.97
	35		24.6	2.51	23.2	2.29	21.8	2.10	21.1	2.02	20.4	1.93	19.0	1.77
70%	20	90	21.6	3.06	20.3	2.80	19.1	2.57	18.4	2.46	17.8	2.34	16.6	2.13
	25		21.6	2.64	20.3	2.44	19.1	2.23	18.4	2.14	17.8	2.05	16.6	1.87
	30		21.6	2.32	20.3	2.15	19.1	1.98	18.4	1.90	17.8	1.82	16.6	1.67
	35		21.6	2.07	20.3	1.92	19.1	1.77	18.4	1.69	17.8	1.64	16.6	1.51
60%	20	90	18.4	2.45	17.4	2.26	16.4	2.08	15.8	2.00	15.3	1.91	14.3	1.74
	25		18.4	2.14	17.4	1.98	16.4	1.83	15.8	1.76	15.3	1.69	14.3	1.55
	30		18.4	1.90	17.4	1.76	16.4	1.64	15.8	1.57	15.3	1.51	14.3	1.39
	35		18.4	1.70	17.4	1.59	16.4	1.48	15.8	1.42	15.3	1.37	14.3	1.27
50%	20	90	15.4	1.92	14.5	1.79	14.5	1.65	13.2	1.59	12.7	1.53	11.9	1.41
	25		15.4	1.69	14.5	1.58	14.5	1.47	13.2	1.41	12.7	1.36	11.9	1.26
	30		15.4	1.52	14.5	1.42	14.5	1.33	13.2	1.28	12.7	1.23	11.9	1.15
	35		15.4	1.38	14.5	1.29	14.5	1.21	13.2	1.17	12.7	1.13	11.9	1.05

Note

1. [shaded] is shown as reference
2. The above table shows the average value of conditions may operate
3. It is recommended to connect less than 130%

10HP cooling mode

Combination (%)	Water inlet temperature(°C)	Water flow(L/min)	Indoor temperature °CWB													
			14		16		18		19		20		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
			kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	20	100	24.5	3.53	29.3	4.69	31.3	5.05	31.7	5.08	32.1	5.09	32.8	5.13	33.3	5.15
	25		24.5	4.16	29.3	5.54	30.3	5.61	30.7	5.64	31.1	5.67	31.8	5.70	32.2	5.72
	30		24.5	4.92	28.3	6.12	29.3	6.18	29.6	6.21	30.0	6.23	30.5	6.26	30.9	6.27
	35		24.5	5.88	27.1	6.70	27.9	6.76	28.3	6.79	28.6	6.81	29.0	6.83	29.4	6.83
120%	20	100	22.7	3.11	27.1	4.12	30.7	5.02	31.1	5.05	31.6	5.07	32.3	5.11	32.9	5.13
	25		22.7	3.66	27.1	4.86	29.8	5.58	30.2	5.61	30.7	5.63	31.4	5.68	31.9	5.70
	30		22.7	4.33	27.1	5.76	28.7	6.15	29.2	6.18	29.5	6.20	30.1	6.24	30.6	6.26
	35		22.7	5.16	26.6	6.66	27.9	6.73	27.9	6.76	28.1	6.78	28.7	6.82	29.2	6.83
110%	20	100	20.8	2.72	24.7	3.58	28.8	4.56	30.5	5.02	30.9	5.04	31.8	5.08	32.4	5.11
	25		20.8	3.20	24.7	4.22	28.8	5.38	29.7	5.57	30.1	5.60	30.8	5.64	31.5	5.68
	30		20.8	3.77	24.7	5.00	28.2	6.11	28.6	6.14	28.9	6.17	29.7	6.21	30.2	6.25
	35		20.7	4.51	24.7	5.97	27.0	7.31	27.4	6.72	27.7	6.75	28.3	6.79	28.8	6.82
100%	20	100	18.9	2.36	22.5	3.08	26.2	3.90	28.0	4.36	29.8	4.84	33.1	5.05	31.8	5.08
	25		18.9	2.76	22.5	3.62	26.2	4.60	28.0	5.14	29.5	5.56	30.2	5.61	30.8	5.64
	30		18.9	3.26	22.5	4.29	26.2	5.46	28.0	6.10	28.4	6.13	29.2	6.18	29.7	6.22
	35		18.9	3.87	22.5	5.11	26.2	6.52	26.7	6.67	27.2	6.70	27.8	6.75	28.4	6.79
90%	20	100	17.0	2.02	20.2	2.62	23.6	3.30	25.2	3.67	26.8	4.07	30.1	4.91	31.1	5.05
	25		17.0	2.37	20.2	3.08	23.6	3.88	25.2	4.33	26.8	4.80	29.5	5.56	30.2	5.60
	30		17.0	2.78	20.2	3.63	23.6	4.83	25.2	5.13	26.8	5.69	28.4	6.13	29.0	6.18
	35		17.0	3.30	20.2	4.32	23.6	5.49	25.2	6.13	26.5	6.65	27.3	6.71	27.8	6.75
80%	20	100	15.1	1.71	18.0	2.20	21.0	2.75	22.4	3.06	23.8	3.37	26.7	4.05	29.7	4.80
	25		15.1	2.00	18.0	2.58	21.0	3.24	22.4	3.59	23.8	3.97	26.7	4.77	29.5	5.56
	30		15.1	2.35	18.0	3.03	21.0	3.81	22.4	4.25	23.8	4.69	26.7	5.67	28.4	6.13
	35		15.1	2.77	18.0	3.60	21.0	4.54	22.4	5.06	23.8	5.60	26.5	6.65	27.2	6.70
70%	20	100	13.2	1.44	15.7	1.82	18.4	2.26	19.6	2.49	20.9	2.74	23.4	3.27	26.0	3.85
	25		13.2	1.67	15.7	2.12	18.4	2.64	19.6	2.92	20.9	3.22	23.4	3.85	26.0	4.54
	30		13.2	1.95	15.7	2.50	18.4	3.12	19.6	3.45	20.9	3.80	23.4	4.56	26.0	5.39
	35		13.2	2.30	15.7	2.95	18.4	3.67	19.6	4.10	20.9	4.94	23.4	5.44	26.0	6.44
60%	20	100	11.3	1.17	13.5	1.48	15.7	1.81	16.8	1.98	17.9	2.17	20.0	2.58	22.2	3.02
	25		11.3	1.37	13.5	1.72	15.7	2.11	16.8	2.33	17.9	2.55	20.0	3.03	22.2	3.56
	30		11.3	1.60	13.5	2.01	15.7	2.48	16.8	2.73	17.9	3.00	20.0	3.58	22.2	4.20
	35		11.3	1.87	13.5	2.42	15.7	2.93	16.8	3.24	17.9	3.56	20.0	4.25	22.2	5.01
50%	20	100	9.4	0.95	11.2	1.17	13.1	1.42	14.1	1.55	14.9	1.68	16.8	1.97	18.6	2.30
	25		9.4	1.10	11.2	1.36	13.1	1.65	14.1	1.80	14.9	1.96	16.8	2.32	18.6	2.69
	30		9.4	1.27	11.2	1.58	13.1	1.92	14.1	2.11	14.9	2.31	16.8	2.72	18.6	3.17
	35		9.4	1.49	11.2	1.85	13.1	2.27	14.1	2.49	14.9	2.72	16.8	3.22	18.6	3.76

Note:

1. [Redacted] is shown as reference
2. The above table shows the average value of conditions may operate
3. It is recommended to connect less than 130%

10HP heating mode

Combination (%)	Water inlet temperature(°C)	Water flow(L/min)	Indoor temperature°CDB											
			16		18		20		21		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
			kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	20	100	33.2	4.73	33.0	4.84	32.9	5.00	32.7	5.07	32.6	5.16	32.3	5.35
	25		36.6	4.97	36.4	5.12	36.1	5.28	36.0	5.37	35.8	5.47	35.5	5.68
	30		39.4	5.24	39.6	5.40	39.2	5.58	37.9	5.68	38.7	5.71	36.1	5.13
	35		43.1	5.52	42.8	5.69	41.4	5.54	38.8	5.27	38.7	5.16	36.1	4.50
120%	20	100	33.0	4.89	32.8	5.03	32.9	5.19	32.4	5.29	32.3	5.38	32.0	5.58
	25		36.3	5.18	36.0	5.34	35.7	5.51	35.6	5.60	35.4	5.71	33.2	5.23
	30		39.5	5.47	39.1	5.64	38.2	5.60	37.0	5.33	35.8	5.06	33.2	4.54
	35		42.6	5.76	40.6	5.39	38.2	4.90	37.0	4.67	35.8	4.44	33.2	3.99
110%	20	100	32.7	5.11	32.5	5.26	32.2	5.44	32.1	5.53	31.9	5.63	30.5	5.35
	25		35.9	5.41	35.6	5.58	35.0	5.66	33.8	5.38	32.7	5.11	30.5	4.59
	30		39.0	5.72	37.3	5.39	35.0	4.81	33.8	4.67	32.7	4.44	30.5	4.10
	35		39.5	5.16	37.3	4.72	35.0	4.31	33.8	4.18	32.7	3.90	30.5	3.52
100%	20	100	32.3	5.36	32.1	5.53	31.5	5.83	30.8	5.43	29.8	5.16	27.8	4.63
	25		35.4	5.69	33.8	5.38	31.5	4.89	30.8	4.66	29.8	4.42	27.8	3.99
	30		35.9	5.10	33.8	4.67	31.5	4.25	30.8	4.05	29.8	3.85	27.8	3.48
	35		35.9	4.47	33.8	4.10	31.5	3.75	30.8	3.58	29.8	3.41	27.8	3.09
90%	20	100	31.9	5.67	30.5	5.35	28.7	4.85	27.7	4.63	26.8	4.39	24.9	3.96
	25		32.3	5.01	30.5	4.58	28.7	4.17	27.7	3.99	26.8	3.79	24.9	3.43
	30		32.3	4.34	30.5	3.99	28.7	3.65	27.7	3.48	26.8	3.32	24.9	3.01
	35		32.3	3.83	30.5	3.52	28.7	3.23	27.7	3.09	26.8	2.95	24.9	2.68
80%	20	100	28.7	4.88	27.1	4.47	25.5	4.07	24.6	3.88	23.8	3.70	22.2	3.34
	25		28.7	4.19	27.1	3.85	25.5	3.52	24.6	3.36	23.8	3.21	22.2	2.92
	30		28.7	3.62	27.1	3.37	25.5	3.10	24.6	2.98	23.8	2.83	22.2	2.58
	35		28.7	3.29	27.1	2.99	25.5	2.76	24.6	2.64	23.8	2.53	22.2	2.31
70%	20	100	25.1	4.00	23.7	3.67	22.3	3.36	21.5	3.22	20.8	3.07	19.4	2.79
	25		25.1	3.46	23.7	3.19	22.3	2.93	21.5	2.80	20.8	2.68	19.4	2.45
	30		25.1	3.04	23.7	2.81	22.3	2.59	21.5	2.48	20.8	2.38	19.4	2.18
	35		25.1	2.71	23.7	2.51	22.3	2.32	21.5	2.22	20.8	2.14	19.4	1.97
60%	20	100	21.5	3.21	20.3	2.97	19.1	2.73	18.5	2.62	17.9	2.50	16.7	2.29
	25		21.5	2.80	20.3	2.60	19.1	2.40	18.5	2.30	17.9	2.21	16.7	2.03
	30		21.5	2.48	20.3	2.30	19.1	2.14	18.5	2.06	17.9	1.97	16.7	1.82
	35		21.5	2.23	20.3	2.08	19.1	1.94	18.5	1.86	17.9	1.79	16.7	1.66
50%	20	100	18.0	2.52	17.0	2.34	17.0	2.16	15.4	2.09	14.8	2.00	13.8	1.84
	25		18.0	2.22	17.0	2.07	17.0	1.93	15.4	1.85	14.8	1.78	13.8	1.65
	30		18.0	1.99	17.0	1.86	17.0	1.74	15.4	1.67	14.8	1.61	13.8	1.50
	35		18.0	1.80	17.0	1.69	17.0	1.59	15.4	1.53	14.8	1.48	13.8	1.38

Note:

1. is shown as reference
2. The above table shows the average value of conditions may operate
3. It is recommended to connect less than 130%

12HP cooling mode

Combination (%)	Water inlet temperature(°C)	Water flow(L/min)	Indoor temperature °CWB													
			14		16		18		19		20		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
			kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	20	120	29.4	4.63	35.0	6.16	37.4	6.62	37.9	6.66	38.4	6.67	39.3	6.73	39.9	6.75
	25		29.4	5.45	35.0	7.27	36.3	7.36	36.8	7.40	37.3	7.43	38.0	7.47	38.5	7.50
	30		29.4	6.45	33.9	8.03	35.0	8.11	35.4	8.15	35.9	8.17	36.5	8.21	37.0	8.23
	35		29.4	7.71	32.4	8.78	33.4	8.86	33.9	8.90	34.3	8.93	34.8	8.96	35.1	8.96
120%	20	120	27.1	4.07	32.4	5.40	36.8	6.58	37.3	6.62	37.8	6.65	38.6	6.70	39.4	6.73
	25		27.1	4.80	32.4	6.37	35.6	7.32	36.1	7.36	36.8	7.39	37.5	7.44	38.1	7.47
	30		27.1	5.68	32.4	7.55	34.4	8.07	34.9	8.11	35.3	8.13	36.0	8.19	36.6	8.21
	35		27.1	6.77	31.9	8.73	33.4	8.82	33.4	8.86	33.6	8.89	34.4	8.94	34.9	8.96
110%	20	120	24.8	3.57	29.6	4.70	34.5	5.98	36.5	6.58	37.0	6.61	38.0	6.66	38.8	6.70
	25		24.8	4.19	29.6	5.53	34.5	7.06	35.5	7.31	36.0	7.35	36.9	7.40	37.6	7.44
	30		24.8	4.95	29.6	6.55	33.8	8.01	34.3	8.05	34.6	8.09	35.5	8.15	36.1	8.20
	35		24.8	5.92	29.6	7.83	32.2	9.58	32.7	8.81	33.1	8.85	33.9	8.90	34.5	8.94
100%	20	120	22.6	3.09	27.0	4.03	31.4	5.12	33.5	5.72	35.6	6.34	39.6	6.62	38.0	6.66
	25		22.6	3.62	27.0	4.75	31.4	6.04	33.5	6.74	35.3	7.30	36.1	7.36	36.9	7.40
	30		22.6	4.27	27.0	5.63	31.4	7.16	33.5	8.00	34.0	8.04	34.9	8.11	35.5	8.16
	35		22.6	5.08	27.0	6.70	31.4	8.56	32.0	8.74	32.5	8.78	33.2	8.85	34.0	8.90
90%	20	120	20.3	2.65	24.2	3.44	28.2	4.33	30.1	4.82	32.1	5.33	36.0	6.43	37.3	6.62
	25		20.3	3.10	24.2	4.03	28.2	5.09	30.1	5.68	32.1	6.29	35.3	7.30	36.1	7.35
	30		20.3	3.65	24.2	4.76	28.2	6.33	30.1	6.73	32.1	7.46	34.0	8.04	34.8	8.11
	35		20.3	4.33	24.2	5.67	28.2	7.20	30.1	8.04	31.7	8.72	32.6	8.80	33.2	8.85
80%	20	120	18.1	2.24	21.6	2.88	25.1	3.61	26.9	4.01	28.5	4.42	32.0	5.31	35.5	6.29
	25		18.1	2.63	21.6	3.38	25.1	4.25	26.9	4.71	28.5	5.20	32.0	6.26	35.3	7.30
	30		18.1	3.08	21.6	3.98	25.1	5.00	26.9	5.57	28.5	6.16	32.0	7.43	34.0	8.04
	35		18.1	3.64	21.6	4.72	25.1	5.96	26.9	6.63	28.5	7.35	31.7	8.72	32.5	8.78
70%	20	120	15.8	1.88	18.8	2.39	22.0	2.96	23.5	3.26	25.0	3.60	28.0	4.29	31.1	5.05
	25		15.8	2.19	18.8	2.79	22.0	3.46	23.5	3.83	25.0	4.22	28.0	5.05	31.1	5.96
	30		15.8	2.56	18.8	3.28	22.0	4.09	23.5	4.52	25.0	4.99	28.0	5.98	31.1	7.07
	35		15.8	3.01	18.8	3.87	22.0	4.82	23.5	5.37	25.0	6.48	28.0	7.14	31.1	8.45
60%	20	120	13.6	1.54	16.2	1.94	18.8	2.37	20.1	2.60	21.5	2.85	24.0	3.38	26.6	3.97
	25		13.6	1.79	16.2	2.26	18.8	2.77	20.1	3.05	21.5	3.34	24.0	3.98	26.6	4.67
	30		13.6	2.10	16.2	2.64	18.8	3.25	20.1	3.58	21.5	3.94	24.0	4.70	26.6	5.51
	35		13.6	2.45	16.2	3.17	18.8	3.85	20.1	4.25	21.5	4.67	24.0	5.57	26.6	6.57
50%	20	120	11.3	1.25	13.4	1.54	15.7	1.86	16.8	2.03	17.8	2.20	20.1	2.59	22.2	3.01
	25		11.3	1.45	13.4	1.78	15.7	2.16	16.8	2.36	17.8	2.57	20.1	3.04	22.2	3.53
	30		11.3	1.67	13.4	2.07	15.7	2.52	16.8	2.77	17.8	3.02	20.1	3.57	22.2	4.15
	35		11.3	1.95	13.4	2.43	15.7	2.97	16.8	3.26	17.8	3.57	20.1	4.22	22.2	4.94

Note:

1. is shown as reference
2. The above table shows the average value of conditions may operate
3. It is recommended to connect less than 130%

12HP heating mode

Combination (%)	Water inlet temperature(°C)	Water flow(L/min)	Indoor temperature°CDB											
			16		18		20		21		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
			kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	20	120	39.6	6.33	39.3	6.48	39.2	6.68	39.0	6.78	38.8	6.90	38.5	7.16
	25		43.5	6.65	43.3	6.85	42.9	7.06	42.8	7.19	42.6	7.32	42.2	7.59
	30		46.9	7.01	47.1	7.23	46.7	7.47	45.2	7.59	46.1	7.64	42.9	6.86
	35		51.3	7.39	51.0	7.62	49.3	7.42	46.2	7.05	46.1	6.90	42.9	6.01
120%	20	120	39.3	6.54	39.1	6.73	39.2	6.95	38.6	7.08	38.5	7.20	38.1	7.47
	25		43.2	6.92	42.8	7.14	42.4	7.37	42.3	7.49	42.1	7.64	39.6	7.00
	30		47.0	7.32	46.5	7.54	45.5	7.49	44.0	7.13	42.6	6.77	39.6	6.08
	35		50.7	7.71	48.3	7.21	45.5	6.56	44.0	6.24	42.6	5.94	39.6	5.34
110%	20	120	39.0	6.84	38.7	7.04	38.4	7.28	38.2	7.40	38.0	7.53	36.3	7.16
	25		42.7	7.24	42.3	7.47	41.7	7.57	40.3	7.20	39.0	6.84	36.3	6.14
	30		46.4	7.66	44.4	7.21	41.7	6.43	40.3	6.24	39.0	5.94	36.3	5.48
	35		47.0	6.90	44.4	6.32	41.7	5.76	40.3	5.60	39.0	5.22	36.3	4.71
100%	20	120	38.5	7.18	38.2	7.40	37.5	7.80	36.7	7.26	35.5	6.90	33.1	6.19
	25		42.1	7.61	40.3	7.20	37.5	6.54	36.7	6.23	35.5	5.91	33.1	5.33
	30		42.7	6.82	40.3	6.24	37.5	5.69	36.7	5.42	35.5	5.15	33.1	4.66
	35		42.7	5.98	40.3	5.48	37.5	5.02	36.7	4.79	35.5	4.56	33.1	4.13
90%	20	120	38.0	7.58	36.3	7.15	34.1	6.49	32.9	6.19	31.9	5.88	29.7	5.29
	25		38.5	6.70	36.3	6.13	34.1	5.58	32.9	5.33	31.9	5.07	29.7	4.59
	30		38.5	5.81	36.3	5.33	34.1	4.88	32.9	4.66	31.9	4.45	29.7	4.03
	35		38.5	5.13	36.3	4.71	34.1	4.32	32.9	4.13	31.9	3.94	29.7	3.59
80%	20	120	34.1	6.53	32.2	5.98	30.3	5.45	29.3	5.19	28.4	4.95	26.5	4.47
	25		34.1	5.61	32.2	5.15	30.3	4.71	29.3	4.50	28.4	4.30	26.5	3.90
	30		34.1	4.84	32.2	4.51	30.3	4.14	29.3	3.98	28.4	3.79	26.5	3.45
	35		34.1	4.40	32.2	4.01	30.3	3.69	29.3	3.54	28.4	3.39	26.5	3.10
70%	20	120	29.9	5.36	28.3	4.91	26.6	4.50	25.6	4.31	24.8	4.11	23.1	3.73
	25		29.9	4.62	28.3	4.27	26.6	3.92	25.6	3.75	24.8	3.59	23.1	3.27
	30		29.9	4.07	28.3	3.77	26.6	3.46	25.6	3.32	24.8	3.18	23.1	2.92
	35		29.9	3.63	28.3	3.36	26.6	3.11	25.6	2.97	24.8	2.87	23.1	2.64
60%	20	120	25.6	4.30	24.2	3.97	22.7	3.65	22.0	3.50	21.3	3.35	19.8	3.06
	25		25.6	3.75	24.2	3.47	22.7	3.21	22.0	3.08	21.3	2.96	19.8	2.72
	30		25.6	3.32	24.2	3.08	22.7	2.87	22.0	2.75	21.3	2.64	19.8	2.44
	35		25.6	2.98	24.2	2.78	22.7	2.59	22.0	2.49	21.3	2.40	19.8	2.22
50%	20	120	21.4	3.37	20.2	3.13	20.2	2.89	18.3	2.79	17.7	2.68	16.5	2.46
	25		21.4	2.97	20.2	2.77	20.2	2.58	18.3	2.48	17.7	2.39	16.5	2.21
	30		21.4	2.67	20.2	2.49	20.2	2.32	18.3	2.24	17.7	2.16	16.5	2.01
	35		21.4	2.41	20.2	2.26	20.2	2.12	18.3	2.05	17.7	1.98	16.5	1.84

Note:

1. is shown as reference
2. The above table shows the average value of conditions may operate
3. It is recommended to connect less than 130%

9 Accessories

9.1 Standard accessories

No	Name	Quantity	Purpose
1	Main unit installation manual	1	/
2	Main unit owner's manual	1	Be sure to deliver it to the customer
3	Indoor unit owner's manual	1	Be sure to deliver it to the customer
4	User's guideline	1	Be sure to deliver it to the customer
5	Bolts bag	1	Stone for service
6	Toggling flathead screw	1	For toggling of indoor and main units
7	Water outlet connector	1	For draining the internal condensed water of the unit
8	Water outlet plug	1	Block a drainage port of the unit chassis which do not need to drainage
9	Seal ring	2	For avoiding water leakage of the chassis
10	Y-shape water filter	1	Connect to the side of water inlet pie
11	Indoor unit branch pipes installation manual	1	
12	Main unit branch pipes installation manual	1	
13	Seal plug	8	For pipe cleaning
14	Connective pipe accessory	1	Connect to the side of liquid pipe
15	Air side connective pipe	1 or 2	Connect to the air pipe side(8/10HP 1pc,12HP 2pcs)

9.2 Optional accessories

Optional accessories	Model name	Function
Branch Joint of main unit side	FQZHW-02N1C	Distribute the refrigerant to indoor units and balance the resistance between each main unit.
	FQZHW-03N1C	
Branch Joint of indoor side	FQZHN-01C	
	FQZHN-02C	
	FQZHN-03C	
	FQZHN-04C	
	FQZHN-05C	
Main units controller	MD-CCM02/E	Monitor the main units operating parameter
Three phase electricity power protector	202301600580 DPA51CM44 or 202300800224 HWUA/DPB71CM48	To stop the air-conditioner running in case of bad power supply such as Phase Error, Over-voltage, Under-voltage lose, phase lost and phase sequence inverse. Thus to protect the equipment.
Digital ammeter (WHM)	DTS634/DT636	Electricity charge monitor

10 Functional parts and safety devices

Item	Symbol	Name	MDVS-252(8)W/DRN1	MDVS-280(10)W/DRN1	MDVS-335(12)W/DRN1
Compressor	Inverter	Inverter compressor	E655DHD-65D2YG	E655DHD-65D2YG	E655DHD-65D2YG
	Safety OLP	Current protection board	MDV-POWER-50A(IR341)-1		
	CCH	Crank case heater	DJRD-520A-1500-27.6W		
Temperature sensor	TSJ	Water inlet temp. of double-pipe heat exchanger	B:4100, R(25°C): 10KΩ		
	TSC1	Water outlet temp. of upper pipe	B:4100, R(25°C): 10KΩ		
	TSC2	Water outlet temp. of lower pipe	B:4100, R(25°C): 10KΩ		
	T7	Discharge Temp.sensor	B:3950,R(25°C):56104.8Ω		
	T5	Temp.sensor of inverter module	B:3950,R(25°C):56104.8Ω		
Pressure sensor	HPS	High pressure sensor (discharge)	Model: YLCGQ-NSK-BD046I-U289 0-5Mpa		
	LPS	Low pressure sensor (suction)	YK-0.05/0.15-2000 0.05MPa		
Functional Parts	PMV	Electronic expansion valve	D32MISZ-1R 4.2MPa		
	4-W/V	4-way valve	STF-01VN1		
	SV	Solenoid valve	FDF6A-049-PK(ZB) or FDF6A11 4.2MPa		