Midea Swimming Pool Type

Heat Pump Water Heater

Technical Manual

Applicable Models:

LRSJ-900/SY LRSJ-450/SY

Contents

Part 1
General Information

1. Measurements

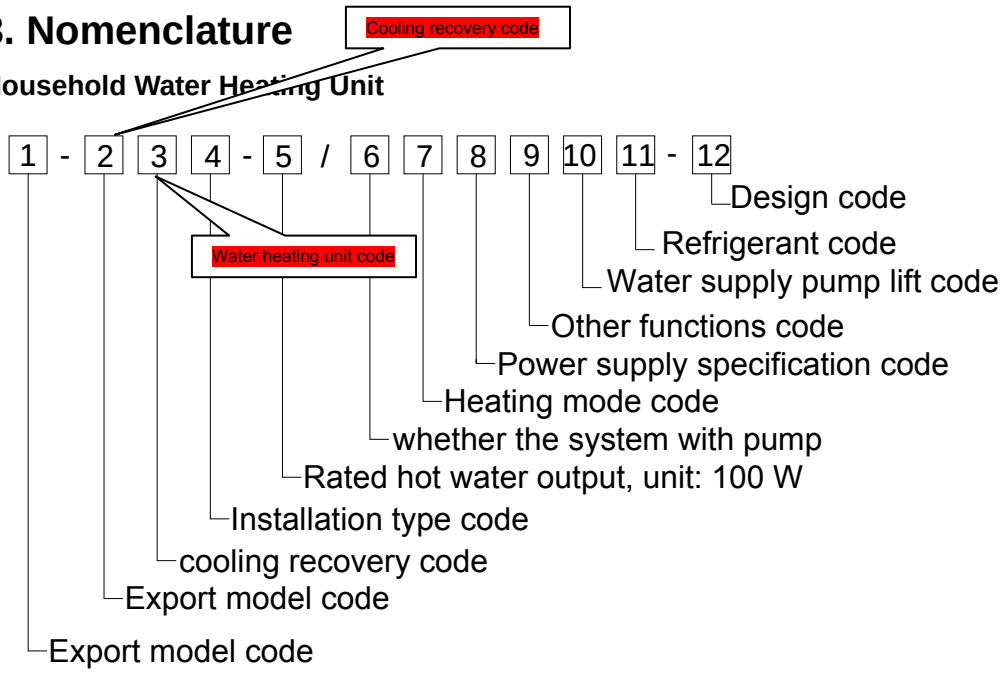
Model	Dimension (mm: W*H*D)	Net weight / Gross weight (kg)	Power Supply
LRSJ-450/SY	1514*1820*850	380/400	380~420V-3ph-50Hz
LRSJ-900/SY	2000*1970*900	580/650	380~420V-3ph-50Hz

2. External Appearance

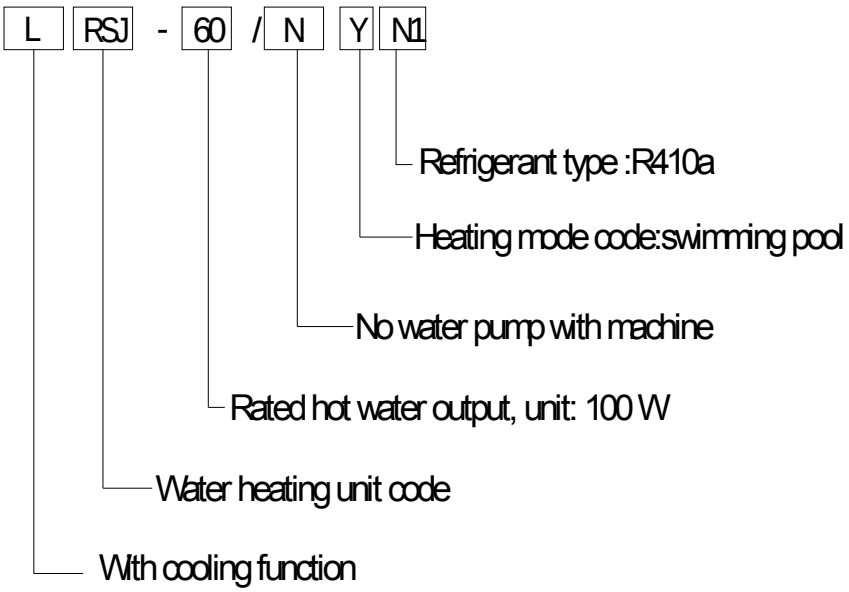
LRSJ-900/SY LRSJ-450/SY

3. Nomenclature

Household Water Heating Unit



For example:



4. Features

4.1 Titanium heat exchanger

a. Excellent prevent eroding material, keep the machine long life.

b. High energy efficiency.

4.2 LCD display and build in high pressure meter in refrigerant side

User can see the machine running parameter and the state quickly.

Engineer can see the machine discharge pressure quickly, get hold of the machine running reliably.

4.3 About the 3-minute protection

Restart or open the manual switch after the unit has shut down, unit will not start immediately until 3 minutes later, because of the self-protect function of the compressor.

4.4 Defrosting function

In case of the unit requiring deicing during heating operation, to prevent the heating efficiency from decreasing, defrosting operation will turn on automatically (approx. 2~8 minutes) .
In the process of defrosting operation, the unit air supply motor will stop running.

4.5 Safety

a. Realize isolation between water and electricity. No electric shock problem, more safety.

b. No fuel tubes and storage, no potential danger from oil leakage, fire, explosion etc.

4.6 Automatic Control:

Automatic start-up and shutdown, automatic defrosting by revising refrigerant cycle. Save you much extra operation.

4.7 R410a gas, Environmental protection (except LRSJ-450/SY & LRSJ-900/SY)

a. No discharge of poisonous gas.

b. No pollution to atmosphere and environment

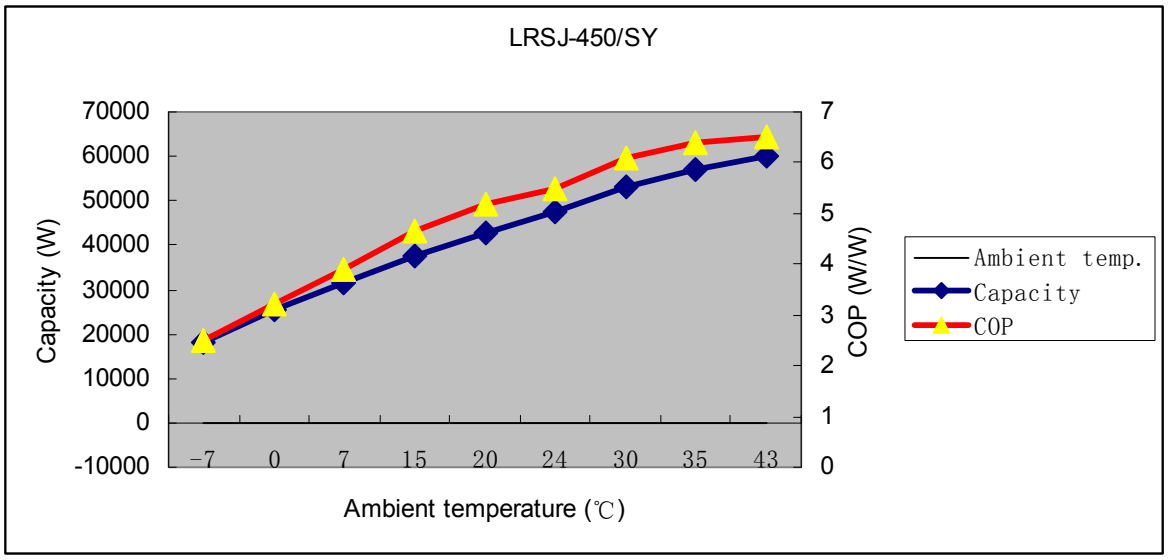
4.8 All-the-weather Running.

Within the temperature range from -7℃ to 43℃, it will not be affected by night, cloudy sky, rain even snow weather.

Part 2
Outdoor Units

HPWH SPECIFICATION				
Model			**LRSJi-450/ SY**	**LRSJi-900/SY**
Power supply		Ph-V-hz	3-380-50	3-380-50
Water Heating	Capacity	kW	45	90
	Input	kW	8.5	16.4
	Outdoor ambient temperature		(-7℃～43℃)	(-7℃～43℃)
Water Cooling	Capacity	kW	40	80
	Input	kW	11.5	20.5
	Outdoor ambient temperature		(21℃～43℃)	(21℃～43℃)
COP			5.2	5.3
Max power input		kW	14	24.8
Outdoor noise level		dB(A)	65	67
Refrigerant type/Quantity		Kg	R22/3.5*2	R22/7*2
	Heat exchanger material		Titanium-tube thermal exchanger	Titanium-tube thermal exchanger
	Water inlet and outlet pipe diameter	mm	DN50	DN100
	Drain pipe diameter	mm	DN25	DN25
	Max. pressure	MPa	0.4	0.4
Air side exchanger	Fin type		Hydrophilic aluminium	Hydrophilic aluminium
	Tube outer type		innergroove tube	innergroove tube
	Air outflow mode		air flow from top	air flow from top
Outdoor unit	Dimension (W*H*D)	mm	1514*1820*850	2000*1970*900
	Packing (W*H*D)	mm	1620*2041*1034	2150*2110*1000
	Net/Gross weight	kg	380/400	580/650
Hot Water Yield		m^3/h	15	30
Wire controller			KJR-08B	KJR-08B
Water Heating Outwater Temp		℃	（default）28℃，20℃～40℃	（default）28℃，20℃～40℃
Water Cooling Outwater Temp		℃	（default）28℃，10℃～30℃	（default）28℃，10℃～30℃
Applicable range		m3	100	200
Compressor current protection value		A		

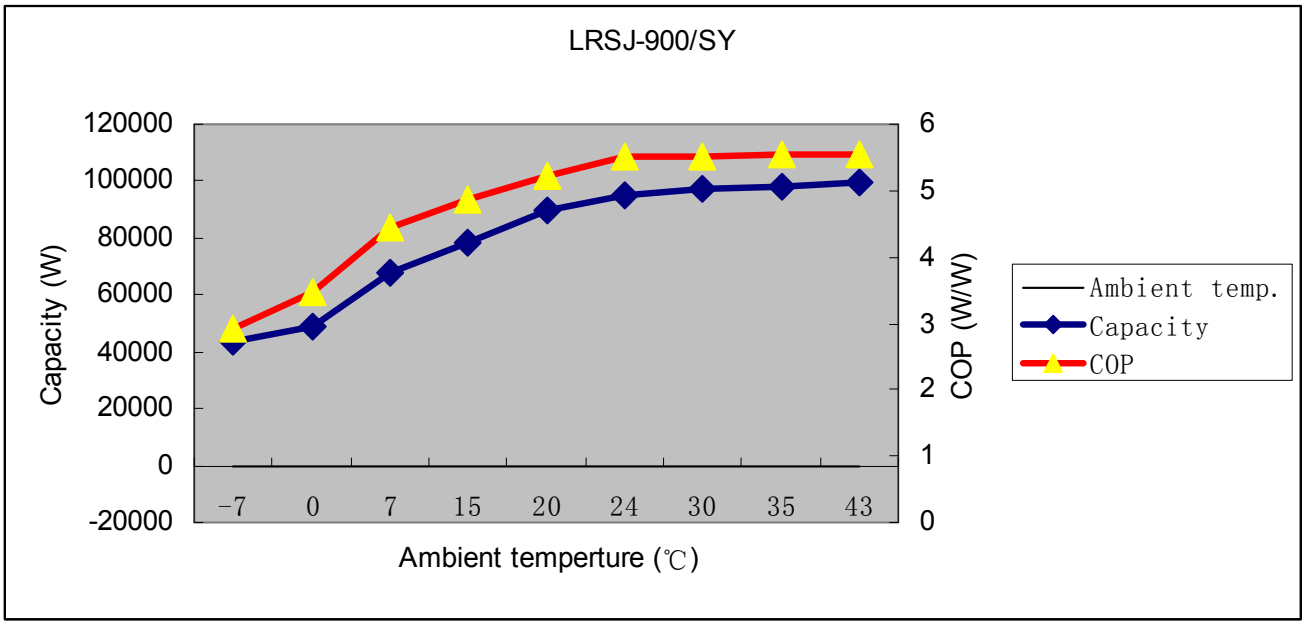
Model: 45KW



Test condition: water heating model, ambient temperature 24/19℃(DB/WB), water inlet temperature 27℃, water outlet temperature 29℃

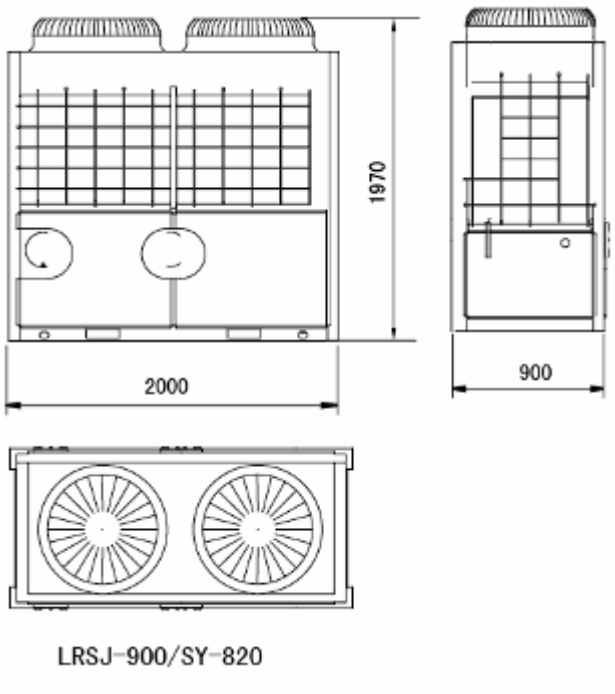
Ambient temp.(℃)	-7	0	7	15	20	24	30	35	43
Capacity (W)	18180	25660	31550	37474	42719	47350	53189	57229	60223
COP (W/W)	2.51	3.2	3.9	4.65	5.2	5.5	6.1	6.4	6.5

Model: 90KW

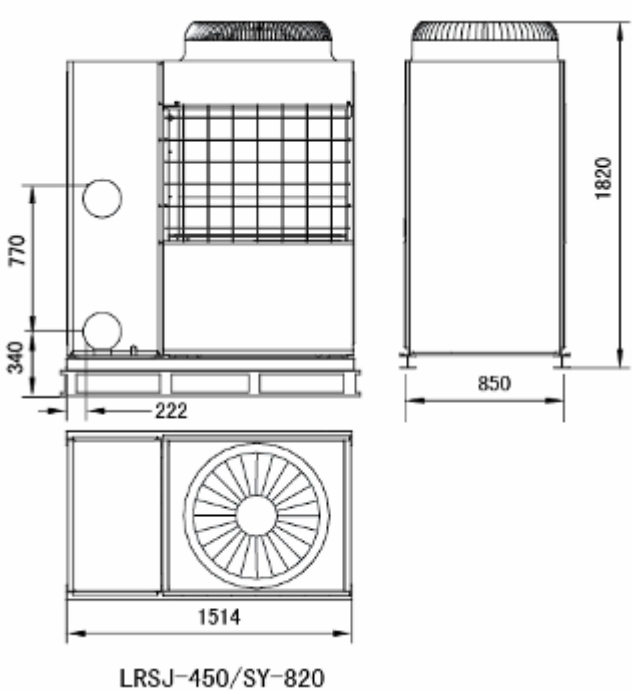


Test condition: water heating model, ambient temperature 24/19℃(DB/WB), water inlet temperature 27℃, water outlet temperature 29℃

Ambient temp.(℃)	-7	0	7	15	20	24	30	35	43
Capacity (W)	43419	48522	67915	78134	89719	94813	97357	98229	99697
COP (W/W)	2.93	3.46	4.45	4.86	5.22	5.5	5.51	5.54	5.56

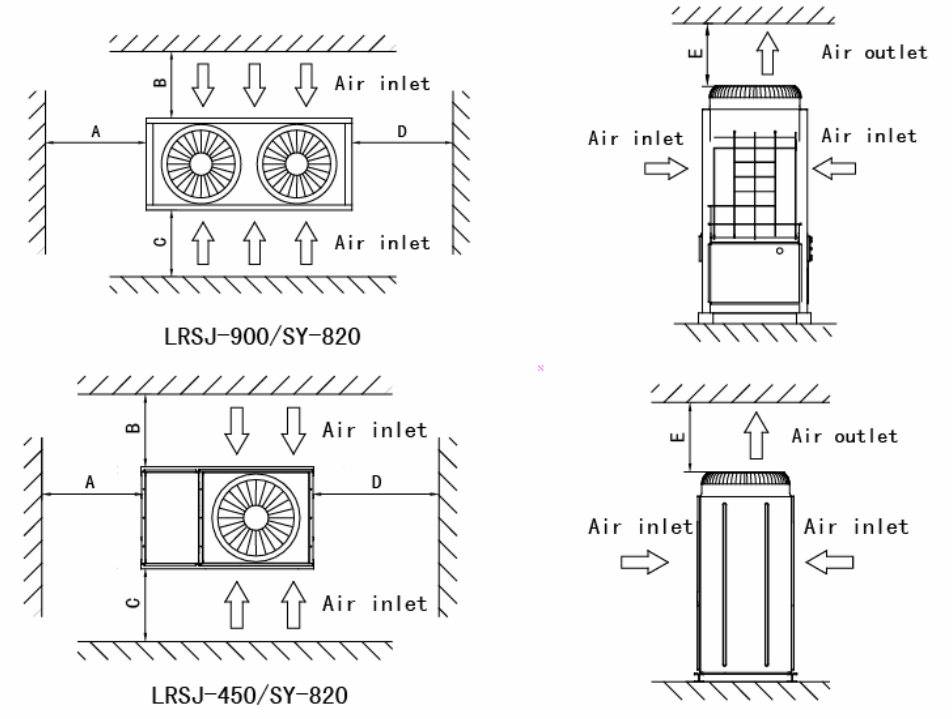


LRSJ-900/SY-820



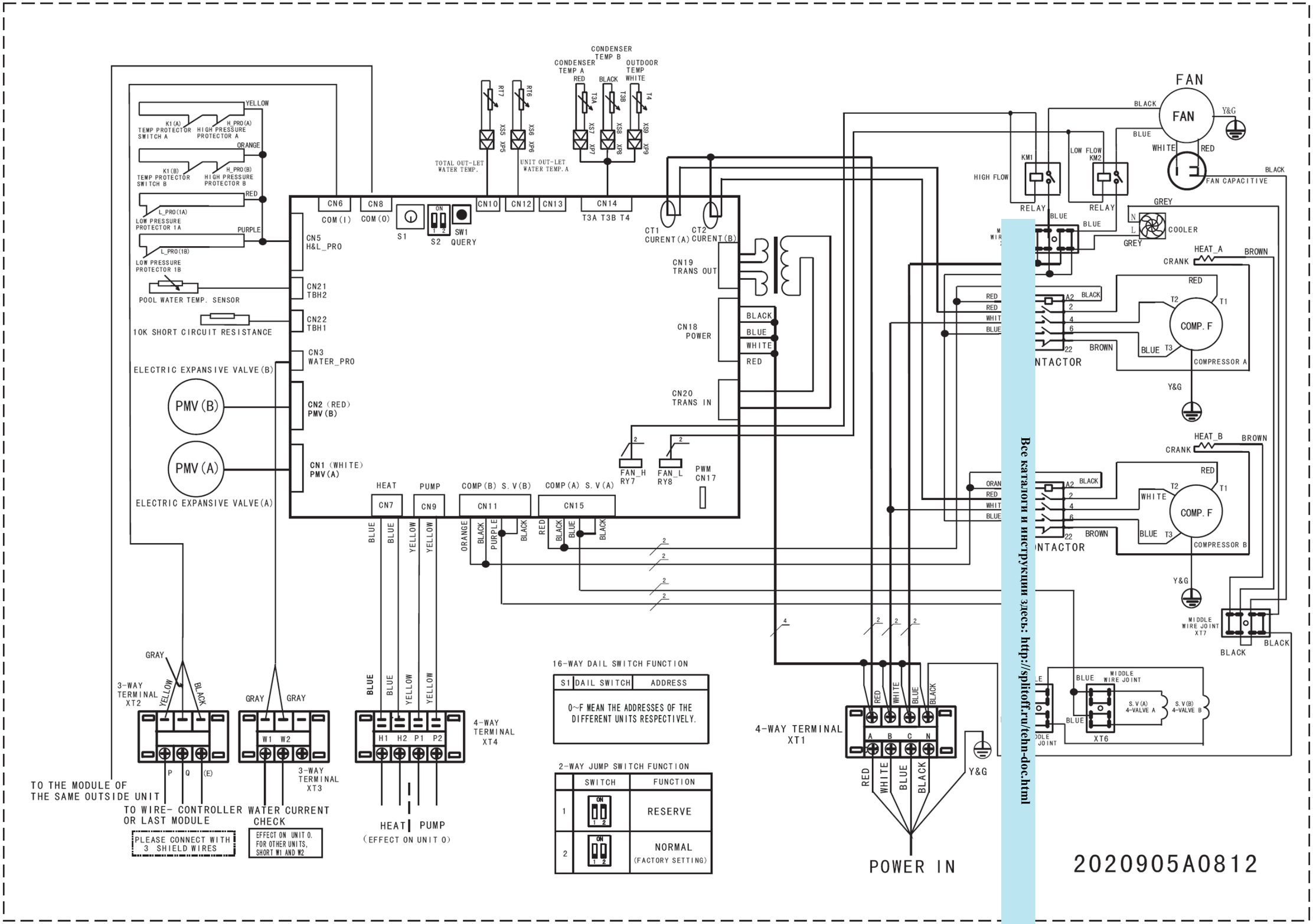
LRSJ-450/SY-820

4. Service Space

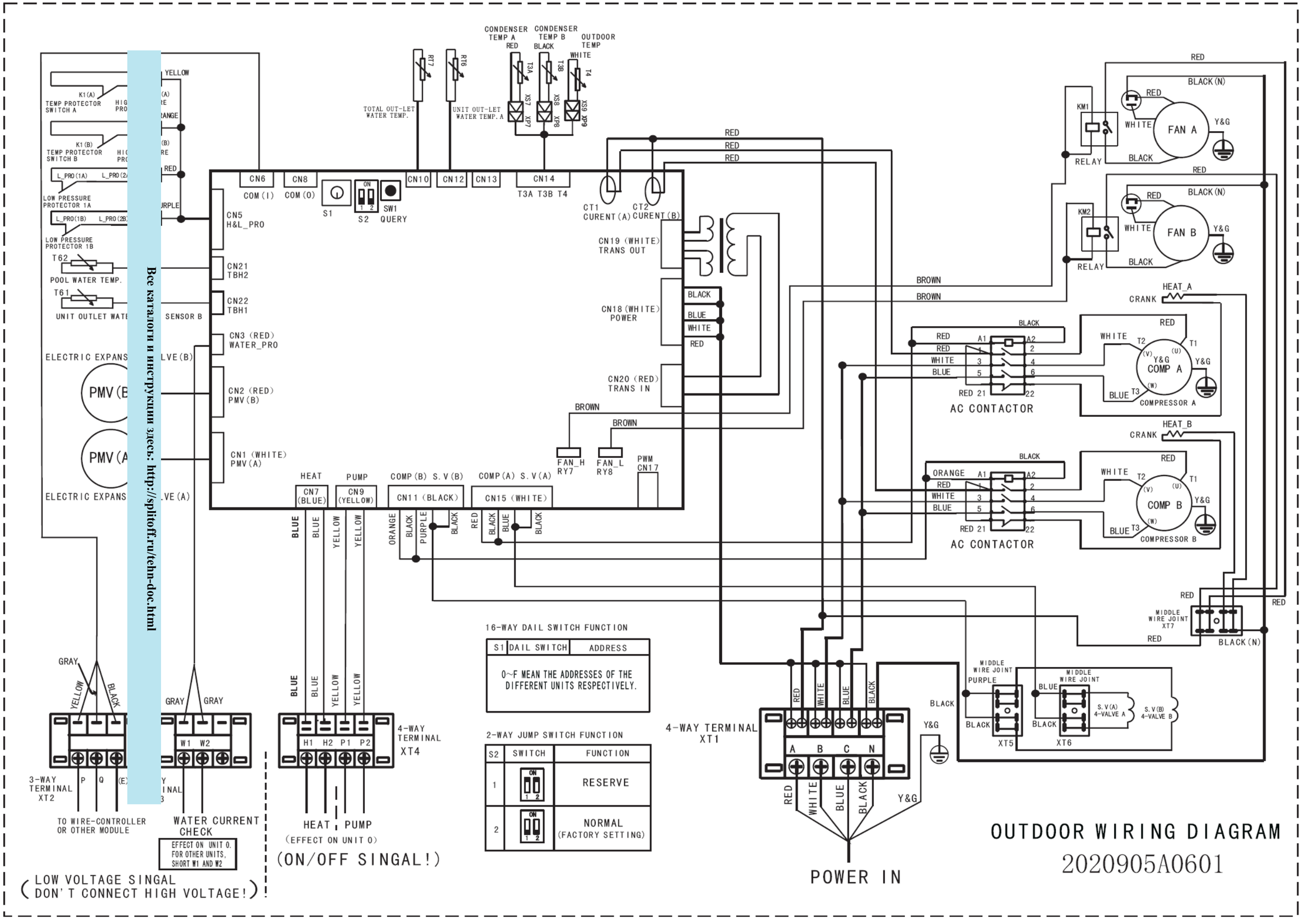


Service space (mm)				
A	B	C	D	E
⩾1500	⩾2000	⩾2000	⩾1500	⩾8000

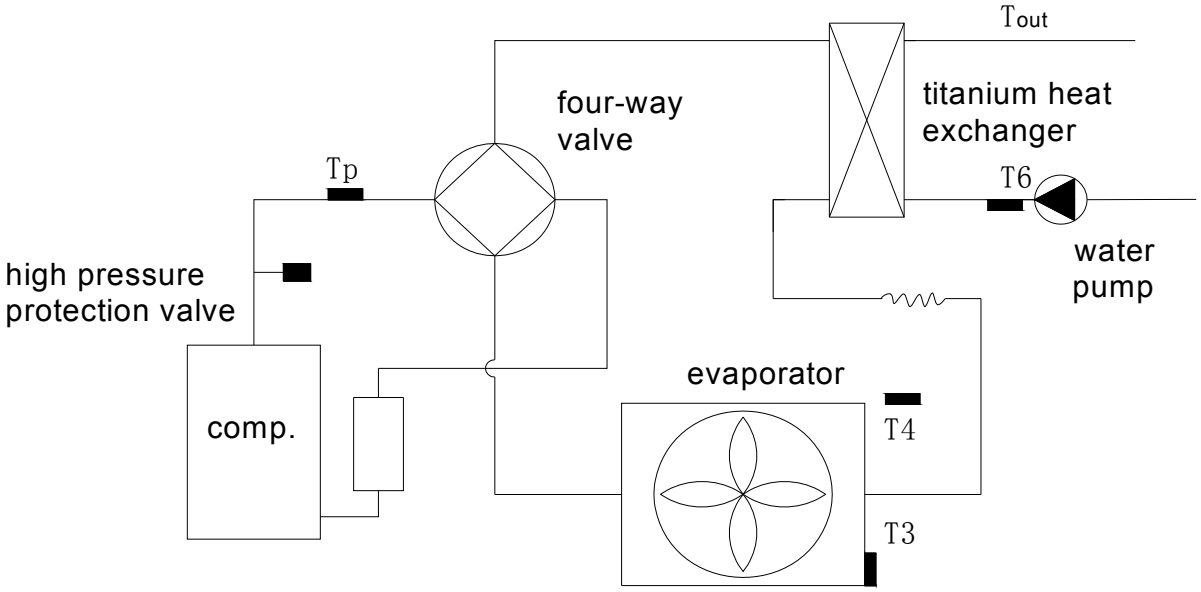
45kw wiring diagrams:



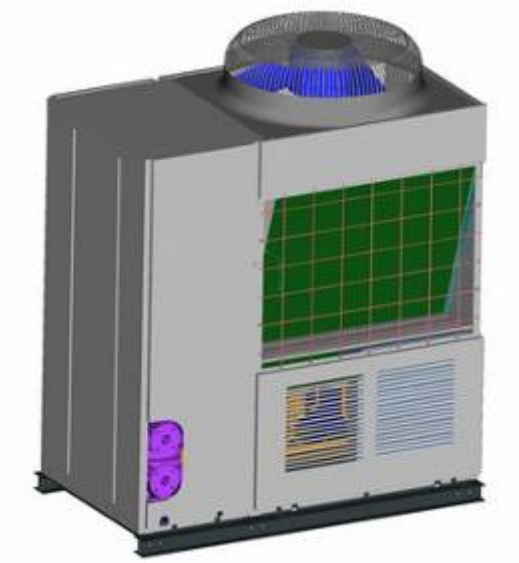
90 kw wiring diagrams:

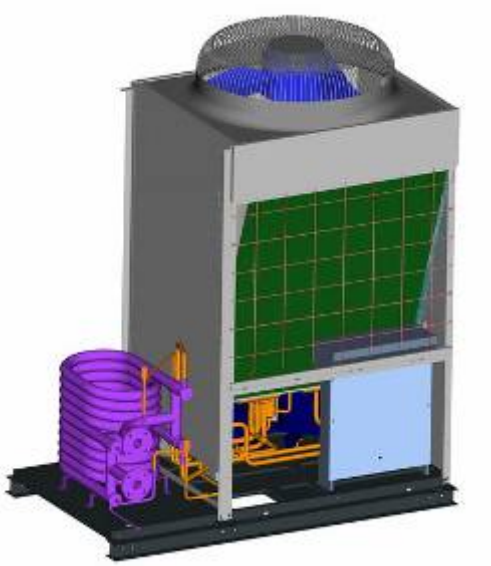


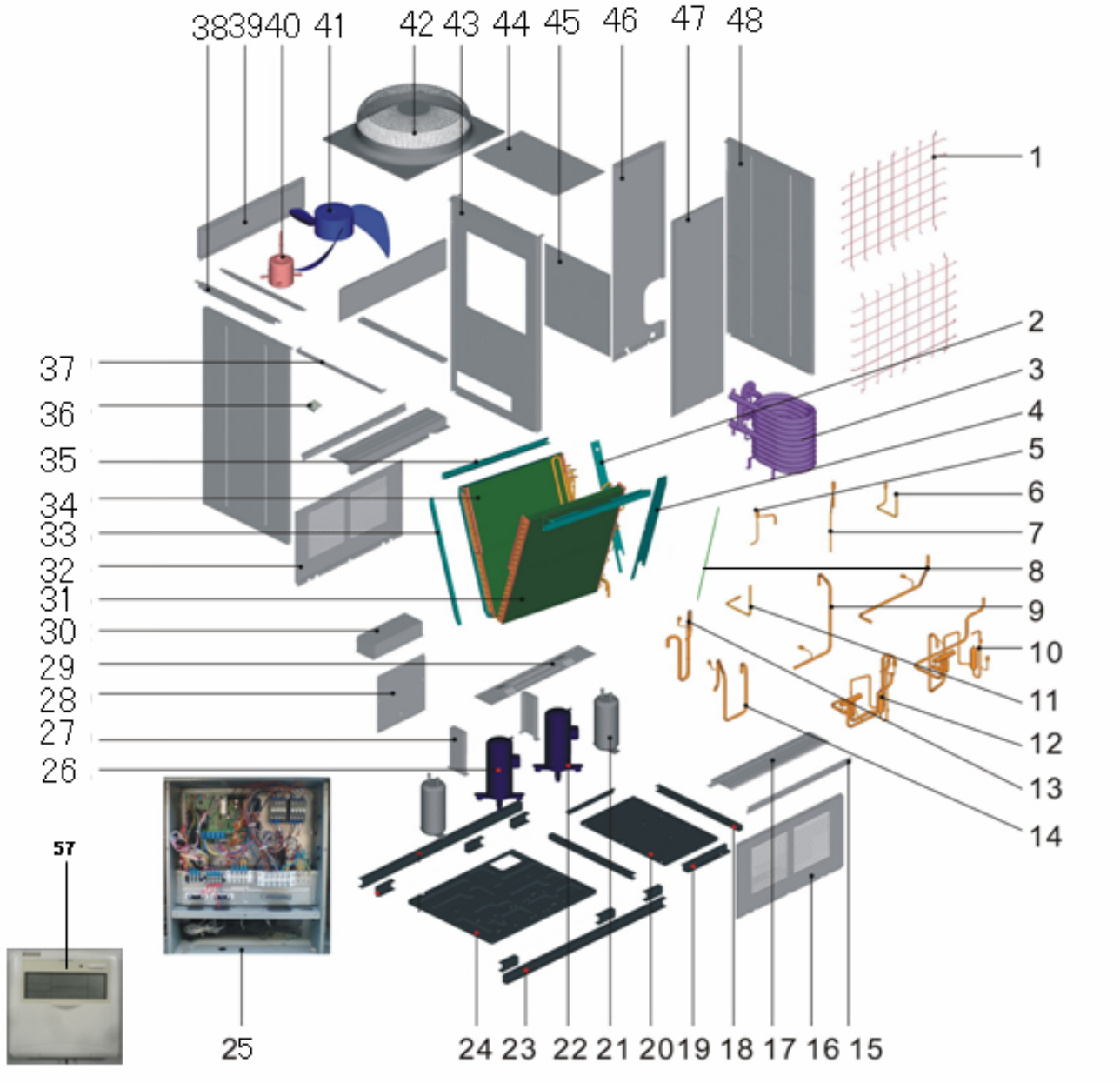
6. System Refrigerant Diagrams

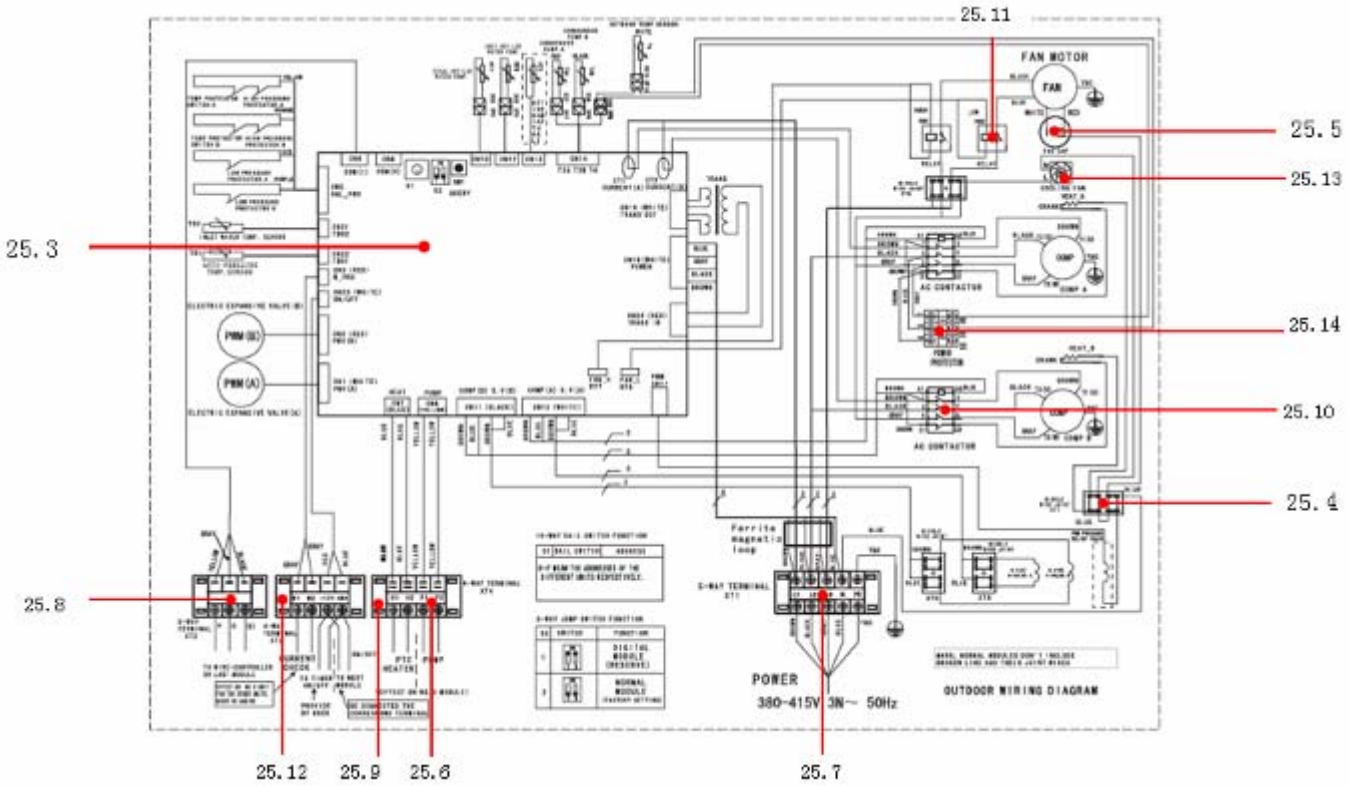


MODEL: LRSJi-450/SY





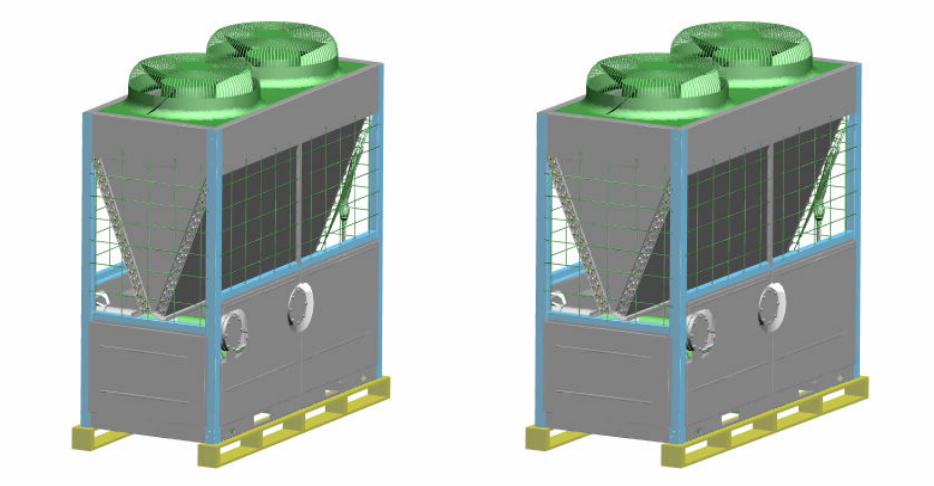


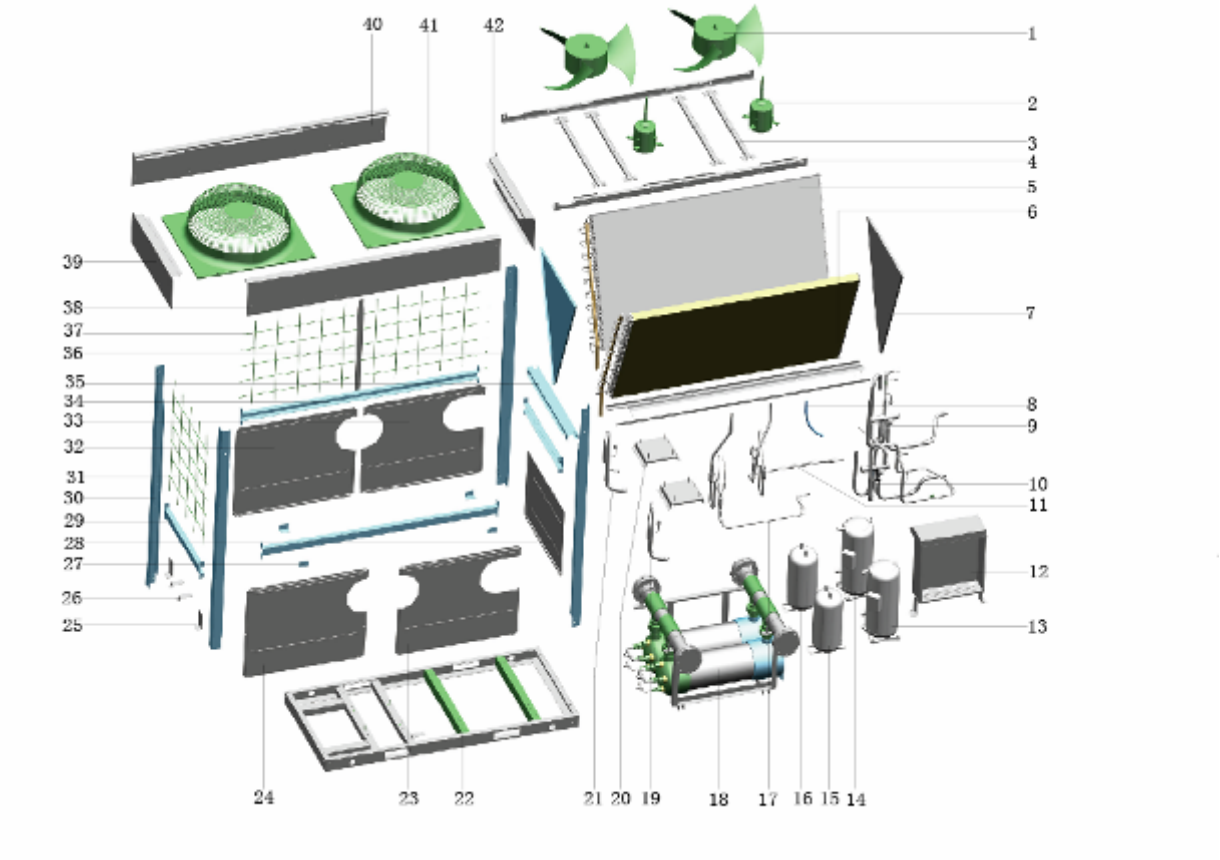


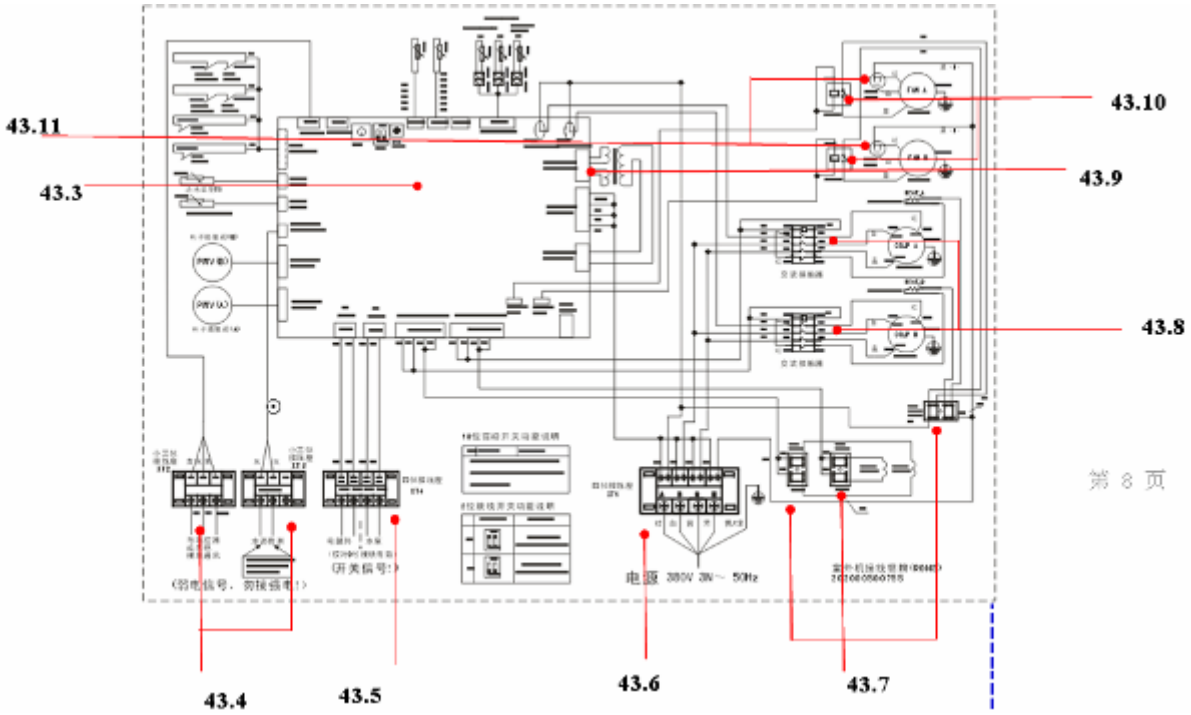
No.	Part Name	Quantity	No.	Part Name	Quantity
1	Net	2	25.2	Cover ass'y	1
2	Right sealing plate D of condenser	1	25.3	PCB	1
3	Titanium heat exchanger	1	25.4	Wire joint	4
4	Right sealing plate A of condenser	1	25.5	Compressor capacitor	1
5	Input tube I of unit B	1	25.6	Terminal label	1
5.1	Electronic expansion valve	1	25.7	Wire joint	1
6	Input tube II of unit A	1	25.8	Wire joint, 3p	1
6.1	Strainer	1	25.9	Wire joint	1
7	Input tube I of unit A	1	25.10	Contactor	2
7.1	Electronic expansion valve	1	25.11	Relay	2
8	Left sealing plate A of condenser	1	25.12	Wire joint, 4p	1
9	Input tube ass'y of unit A	1	25.13	Axial flow fan	1
9.1	Pressure controller	1	25.14	Three-phase power protection devices	1
10	4-way valve ass'y of unit A	1	26	Compressor	1
10.1	4-way valve	1	27	Drainage pan holder	2
10.2	4-Ways valve solenoid	1	28	E-Part box cover	1
10.3	Muffler	1	29	Drainage pan holder	1
10.4	Strainer	1	30	Protecting water box	1

10.5	Pipe joint	3	31	Condenser ass'y of unit A	1
10.6	Pressure controller	1	32	Cover	1
11	Inputtub II of unit B	1	33		1
11.1	Strainer	1	34	Condenser ass'y of unit B	1
12	B unit 4-way valve ass'y	1	35	Motor holder	2
12.1	4-way valve	1	36	Side sealed board	4
12.2	4-Ways valve solenoid	1	37	Clapboard supporting board	3
12.3	Muffler	1	38	Motor bracket	1
12.4	Strainer	1	39	Cover	2
12.5	Pipe joint	3	40	Motor	1
13	Suction pipe ass'y A	1	41	Axial flow fan	1
13.1	Pipe joint	1	42	Top cover	1
14	Suction pipe ass'y D	1	43	Middle partition plate	1
14.1	Pipe joint	1	44	Top cover	1
15	Support board	2	45	Sealed board	1
16	Cover	1	46	Rear cover	1
17	Cover board	2	47	Front cover	1
18	Bracket ass'y	2	48	About clapboard	2
19	Bracket ass'y	2	49	EEV solenoid	2
20	Base ass'y	1	50	Discharge temp sensor	2
21	Accumulator cylinder	2	51	Compressor electric heater	2
22	Compressor	1	52	Room temp sensor ass'y	1
23	Base	1	53	Temp sensor ass'y	6
24	Base ass'y	1	54	Pressure controller	2
25	E-controlling box ass'y	1	55	Pressure controller	2
25.1	E-part boxr Ass'y	1	56	R22	7
			57	Wire controller	1

MODEL: LRSJi-900/SY

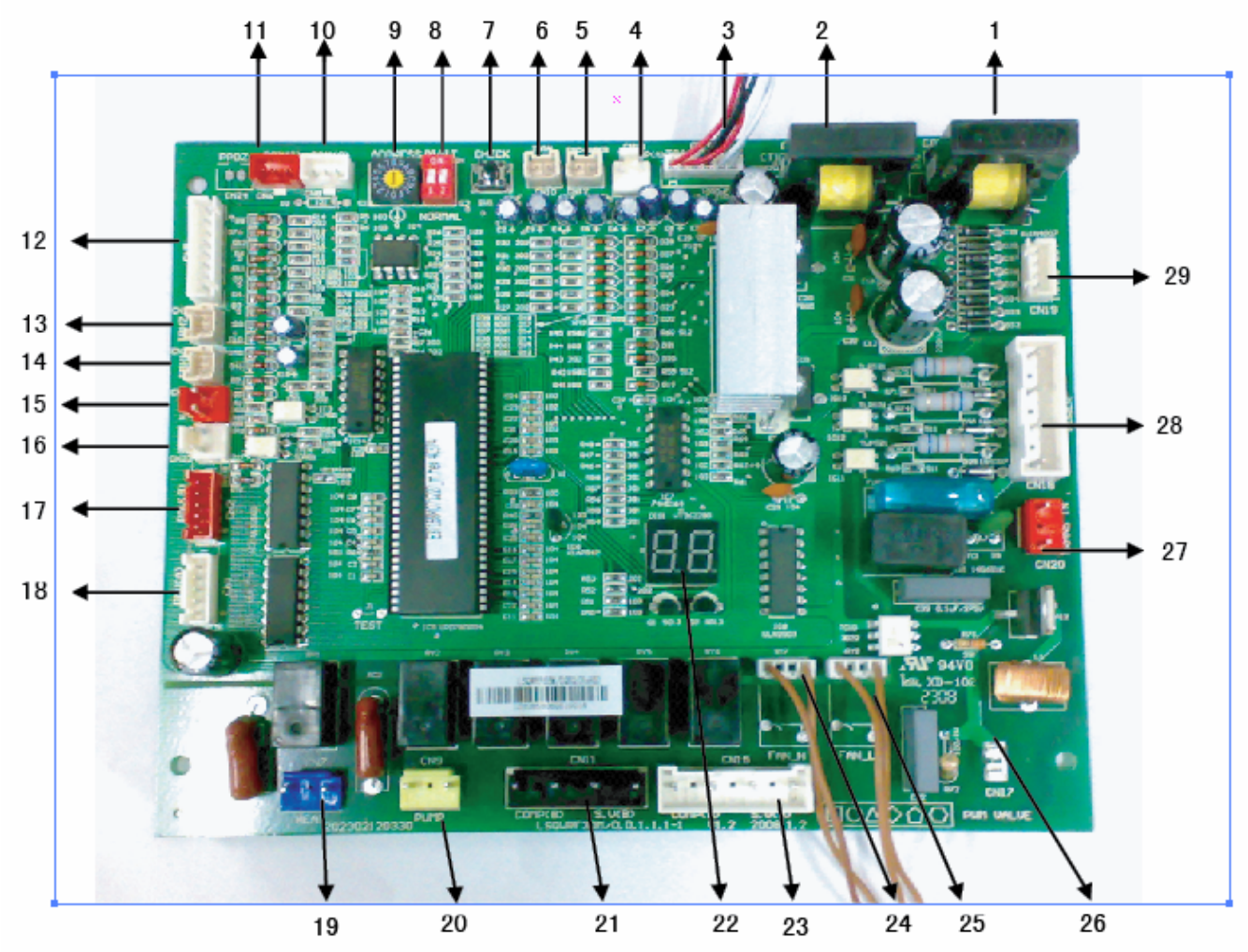


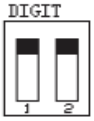


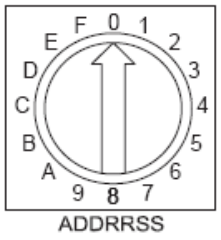


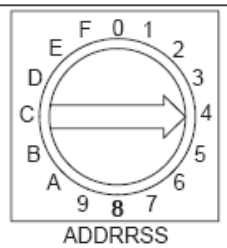
No.	Part Name	BOM code	Quantity	No.	Part Name	BOM code	Quantity
1	Axial flow fan	201200300013	2	28	Right cover	201290190082	1
2	Motor	202400400399	2	29	Mid upright support	201290100211	2
3	Motor bracket ass'y	201290100005	4	30	Pole	201290190074	4
4	Unit B fixed tray ass'y of condenser	201290108629	1	31	Net	201290100240	2
5	Condenser ass'y of unit A	201590500621	1	32	Rear left cover ass'y	201290501318	1
6	Condenser ass'y of unit B	201590500622	1	33	Rear right cover ass'y	201290501310	1
7	Triangle reinforcement ass'y	201290100218	8	34	Mid horizontal support	201290100219	2
8	Drain pipe	201190100001	4	35	Condenser seal connector	201290108626	1
9	4-way valve ass'y of unit A	201690502361	1	36	A combination of pieces of fixed plate condenser	201290108627	1
10	4-way valve ass'y of unit B	201690502356	1	37	Net	201290100237	4
11	Heat exchanger input tube of unit A	201690502350	1	38	Condenser seal connector	201290108625	1
12	E-part box door	201290100194	1	39	Condenser side board	201290108624	2
13	Compressor	201401420300	2	40	Mid horizontal support	201290100223	2
14	Rubber gasket	202790150330	6	41	Top cover	201195300051	2
15	Pipe clamp B	201286900515	4	42	Top upright support	201290100191	2
16	Separator	201601100055	2	43	E-controlling box ass'y	203390500614	1
17	Heat exchanger input tube of unit B	201690502344	1	43.1	E-part box	201290100212	1
18	Titanium heat exchanger	201790501177	1	43.2	Electric installation board ass'y	201290190083	1
19	Conduit ass'y of unit B	201690502352	1	43.3	PCB	201390500623	1
20	Mounting panel ass'y of compressor	201290501308	2	43.4	Wire joint, 3p	202301450044	2
21	Conduit ass'y of unit A	201690502354	1	43.5	Wire joint	202301450130	1
22	Base ass'y	201290501320	1	43.6	Wire joint	202301450110	1
23	Front right cover ass'y	201290501314	1	43.7	Wire joint	202301450122	3
24	Front left cover ass'y	201290501316	1	43.8	AC contactor	202300850050	2
25	Tube fixed panel A	201290501370	2	43.9	Transformer	202300900109	1
26	Tube fixed panel B	201290501371	3	43.10	Relay	202300800003	2
27	Reinforcement board	201290100247	4	43.11	Compressor capacitor	202401000410	2

Model: 45KW & 90KW



<table>
<tr><th>No.</th><th>Detail information</th></tr>
<tr><td>1</td><td>Detection of current of the compressor B (protection code P5)</td></tr>
<tr><td>2</td><td>Detection of current of the compressor A (protection code P4)
Current is not detected within the initial 5 seconds after the compressor is started up. When the current of the compressor is detected to exceed protective value set (33A for constant speed compressor), it will be shut down and re-started after 3 min.</td></tr>
<tr><td>3</td><td>T4: outdoor ambient temperature sensor (fault code E7)
T3B: pipe temperature sensor of the condenser B (fault code E6 and protection code P7)
T3A: pipe temperature sensor of the condenser A (fault code E5 and protection code P6)
1) T4: if there is one system that requires starting outdoor fans, the fans are started through electric control of the unit. Outdoor fans set high wind, low wind two respectively, and control the unit through T4.
2) T3B and T3A: when the electric control of the modular unit detects the temperature of the outdoor pipe T3A or T3B of the system exceeds the protective temperature 65℃, the corresponding system will be shut down. And it will be re-started up, after the temperature drops below the recovery temperature 60℃. Another system will be not affected.
3) T4, T3B and T3A: when the temperature sensor is detected to suffer open circuit or short circuit, fault alarm will occur.
• When the main unit suffer fault of temperature sensor: the main unit and subordinate units will be shut down.
• When the subordinate unit suffer fault of temperature sensor: the unit will be shut down, but other subordinate units will not be affected.</td></tr>
<tr><td>4</td><td>(reserved)</td></tr>
<tr><td>5</td><td>Unit B outlet water temperature sensor (fault code Eb)
Unit A outlet water temperature sensor (fault code E4)</td></tr>
<tr><td>6</td><td>Pool temperature sensorT5（fault code EF）
Total outlet water temperature sensor (fault code E3)
Only the main unit is valid, and the subordinate units are invalid.</td></tr>
<tr><td>7</td><td>Spot check. The operating status of outdoor system can be observed through spot check, and specific display contents are as shown in the following figure:
→ Normal display
↓
Operating mode→Operating capability of the compressor B→Number of online units→Outdoor ambient temp.→Temp. of the condenser A
↓
System A frost-proof temp ←Unit B outlet water temp ←Unit A outlet-water tempe ←Temp. of the condenser B ←
↓
System B frost-proof temp→ EXV opening A→EXV opening B→ Operating current of system A → Operating current of system B
↓
The last failure ←
• Display contents of “operating mode”: 1. cooling; 2. heating; 4. pump; 8. Stand-by
• Display contents of “number of online units”: the main unit can display the number of online units, and the subordinate unit displays 0.</td></tr>
<tr><td>8</td><td>Selection code of the compressor
<table><tr><td>  </td><td>Reserved DIP switch state</td></tr><tr><td>  </td><td>The diagram denotes selection of constant speed compressor (Default setting)</td></tr></table></td></tr>
</table>

<table>
<tr><th>No.</th><th>Detail information</th></tr>
<tr><td>9</td><td>
<table>
<tr><td> 

ADDRRSS</td><td>When the address is 0, it serves as the main unit.</td></tr>
<tr><td> 

ADDRRSS</td><td>When the address is 1,2,3……F, it serves as the subordinate unit 1,2,3……15.</td></tr>
</table>
Each modular part of modular unit has the same electric control function, and the main unit and subordinate units can be set through address code on the electric control board. The address code 0 # is provided as the main unit. The priority of being the main unit is given to the unit with digital compressor, and other addresses are subordinate units. Only the unit is chosen as the main unit, its electric control can activate such functions as direct communication with the wired controller, refrigerating and heating capability adjustment, pump control, auxiliary electric heater control, total effluent temperature detection and water flow switch detection.</td></tr>
<tr><td>10</td><td>COM (I) 485 communication port (fault code E2)</td></tr>
<tr><td>11</td><td>COM (0) 485 communication port (fault code E2)
COM (0) and COM (1) communication port ,used for RS-485 communication.
1) If faults occur between the wired controller and the main unit module, all modules will be shut down.
2) If faults occur between the main unit and subordinate units, the subordinate unit module suffering communication fault will be shut down. Less units will be detected by the wired controller, which may display EA, and in the meanwhile, the indicator lamp of the wired controller will flash.</td></tr>
<tr><td>12</td><td>high-pressure protection of the system A and discharge temperature switch protection (protection code P0);
high-pressure protection of the system B and discharge temperature switch protection (protection code P2);
low-pressure protection of the system A (protection code P1);
low-pressure protection of the system B (protection code P3);
Constant speed compressor: connection of discharge temperature switch and high-pressure switch of the system in series.</td></tr>
<tr><td>13</td><td>Pool temperature T5 (fault code EF)</td></tr>
<tr><td>14</td><td>Unit of the water B sensors （T code Eb)</td></tr>
<tr><td>15</td><td>Water flow detection (fault code of the main unit E0) is only valid for the main unit but invalid for subordinate units.
1) Main unit: if abnormal water flow occurs for the first and second time, the main unit board will display fault code E9. If abnormal water flow occurs the third time, the main unit board will display fault code E0 (off-power recovery is needed), and the wired controller will display fault code E0 (fault is displayed only after 3 detection).
2) Subordinate unit: (Short connect before shipping).</td></tr>
<tr><td>16</td><td>Control port （(reserved)）</td></tr>
<tr><td>17</td><td>Electronic expansion valve of the system B</td></tr>
<tr><td>18</td><td>Electronic expansion valve of the system A
Electronic expansion valve is used to control refrigerant flow under different operating modes and different loads.</td></tr>
</table>

No.	Detail information
19	Auxiliary electric heater Attention: the control port value of auxiliary electric heater actually detected is ON/OFF but not 220V control power supply, so special attention should be paid when installing the auxiliary electric heater. Attention! Under heating mode, when the main unit board detects total water outlet temperature to be lower than 35□, the switch will be closed, and the auxiliary electric heater will begin to work; when the total water outlet temperature is higher than 40□, the switch will be opened, and the auxiliary electric heater will stop working.
20	PUMP. Attention: the control port value of the pump actually detected is ON/OFF but not 220V control power supply, so special attention should be paid when installing the pump. 1) After receiving start-up instruction, the pump will be started up instantly, and will maintain start-up state always in the process of operation. 2) In case of refrigerating or heating shutdown, the pump will be shut down 2 minutes after all modules stop operating. 3) In case of shutdown under the pump mode, the pump can be directly shut down.
21	Compressor of the system B; Neutral wire; Four-way valve of the system B; Neutral wire.
22	Numerical code tube. 1) In case of stand-by, the address of the module is displayed; 2) In case of normal operation, 10. is displayed (10 is followed by dot). 3) In case of fault or protection, fault code or protection code is displayed.
23	Compressor of the system A; Neutral wire; Four-way valve of the system A; Neutral wire.
24	Outdoor fan A, controlled by T4.
25	Outdoor fan B, controlled by T4.
26	(reserved port)
27	Input of transformer, 220V AC current. (only valid for the main unit)
28	Input of three-phase four-wire power supply (fault code E1) Three phases A, B and C of power supply should exist simultaneously, and the difference of phase angle should be 120º among them. If the conditions are not met, fault of phase sequence or phase lack may occur, and fault code will be displayed. When the power supply returns to normal condition, fault is removed. Attention: phase lace and phase dislocation of power supply are detected only in the early period after the power supply is connected, and they are not detected while the unit is in operation.
29	Output of transformer

Part 3
Installation

1. Precautions

To prevent injury to the user or other people and property damage, the following instructions must be followed. Incorrect operation due to ignoring of instructions may cause harm or damage.

The safety precautions listed here are divided into two categories. In either case, important safety instructions are listed to which close attention must be paid.

WARNING

Failure to observe a warning may result in death.

CAUTION

Failure to observe a caution may result in injury or damage to the equipment.

WARNING

- The water heating unit must be earthed effectively.
- A creepage breaker must be installed near the power supply.
- Ask your supplier for installation of the air source heat pump water heating units. Incomplete installation performed by yourself may result in water leakage, electric shock, or fire.
- Ask your supplier for the repair and maintenance. Incomplete repair and maintenance may result in water leakage, electric shock or fire.
- In order to avoid electric shock, fire or injury, if any abnormality is detected, such as smell of fire, turn off the power supply and call your supplier for instructions.
- Never replace a fuse with that of wrong rated current or other wires when a fuse blows out. Use of wrong wire or copper wire may cause the unit to break down or a fire.
- Do not insert fingers, rods or other objects into the air inlet or outlet. When the fan is rotating at high speed, it will cause injury.
- Never use a flammable spray such as hair spray, lacquer paint near the unit. It may cause a fire.
- Never touch the air outlet or the horizontal blades while the swing flap is in operation. Fingers may become caught or the unit may break down.
- Never put any objects into the air inlet or outlet. Objects touching the fan of high speed can be dangerous.
- Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.
- The appliance shall be installed in accordance with national wiring regulations.

CAUTION

- Do not use the air-source water heater for other purposes.
- Before cleaning, be sure to stop the operation and turn the breaker off or pull out the power cord. Otherwise, an electric shock and injury may be caused.
- In order to avoid injury, do not remove the fan guard on the outdoor unit.
- Do not operate the air-source water heater with a wet hand. An electric shock may be caused.
- In the place and the wall where water may be spattered, the installation height must be more than 1.8m.
- At the water inlet, the One Way valve must be installed.
- After a long use, check the unit stand and fittings. If damaged, the unit may fall and result in injury.
- Never touch the internal parts of the controller.
- Do not remove the front panel. Some parts inside are dangerous to touch, and a machine malfunction may be caused.
- Never expose babies, plants or animals directly to the air flow. Adverse influence to babies, animals and plants may be resulted.

2. Installation information

- Enough space is installation and maintenance shall be preserved.
- The air inlet and outlet should be free from obstacles and strong wind.
- The bearing surface should be flat, able to bear weight of the unit and suitable for installing the unit horizontally without increasing noise or vibration.
- The operation noise and air flow expelled shall not affect neighbors.
- No flammable gas is leaked nearby.
- It is convenient for piping and wiring.
- The maximum pressure is 0.4 Mpa, when the pressure is more than 0.4 Mpa, Please add a pressure relief valve.

CAUTION

- Installing the equipment in any of the following places may lead to malfunction of the equipment (if it is inevitable, consult the supplier):

1) The site contains mineral oils such as cutting lubricant.
2) Seaside where the air contains much salt.
3) Hot spring area where corrosive gases exist, e.g., sulfide gas.
4) Factories where the power voltage fluctuates seriously.
5) Inside a car or cabin.
6) Place like kitchen where oil permeates.
7) Place where strong electromagnetic waves exist.
8) Place where flammable gases or materials exist.
9) Place where acid or alkali gases evaporate.
10) Other special environments.

- Precautions before installation

1) Decide the correct way of conveying the equipment.
2) Try to transport this equipment with the original package.
3) If the unit has to be installed on a metal part of the building, electric insulation must be installed, and the installation must meet the relevant technical standards for electric devices.

- Installation space

Before installing the unit, reserve the space of maintenance .

WARNING

- Ask your supplier to install the air source heat pump water heating units. Incomplete installation performed by yourself may result in a water leakage, electric shock, or fire.
- The place without direct sunlight and other heat supplies. If there’s no way to avoid these, please install a covering.
- The unit must be securely fixed, or else, noise and shaking will be resulted.
- Make sure that there’s no remora around the unit.
- In the place where there is strong wind like seashore, fix the unit in the location protected from the wind.
- Carry the unit onto the site

1) In order to avoid scratch or deformation of the unit surface, apply guard boards to the contacting surface.
2) No contact of fingers and other things with the vanes.

3) Don’t incline the unit more than 45° in moving, and keep it vertical when installing.

■ Install the unit.

1) The circulating air for every unit should be more than 2400m3/h.

2) Make sure there is enough Installation space.

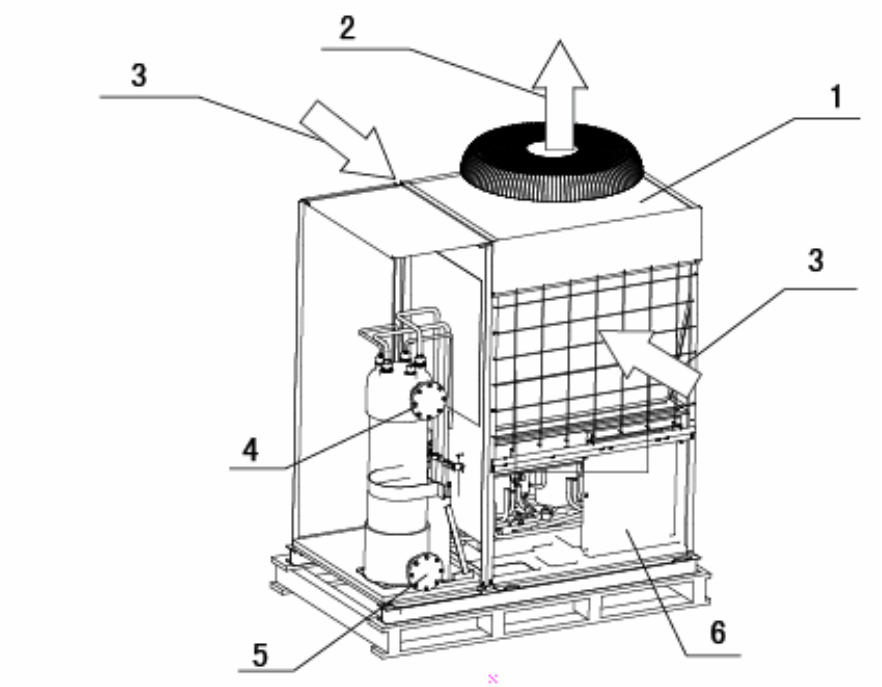
3) Outline dimensional drawing

Water treatment

In order to use our appliances under the best conditions, the following parameters must be respected: free chlorine: max.2.5mg/l, total bromine: max. 5.5 mg/l, PH between 6.9 and 8.0. If chemical or electrophysical disinfection systems are used, the installer and user must contact the supplier to ensure they are compatible with our materials. These systems must be installed after the heating system.

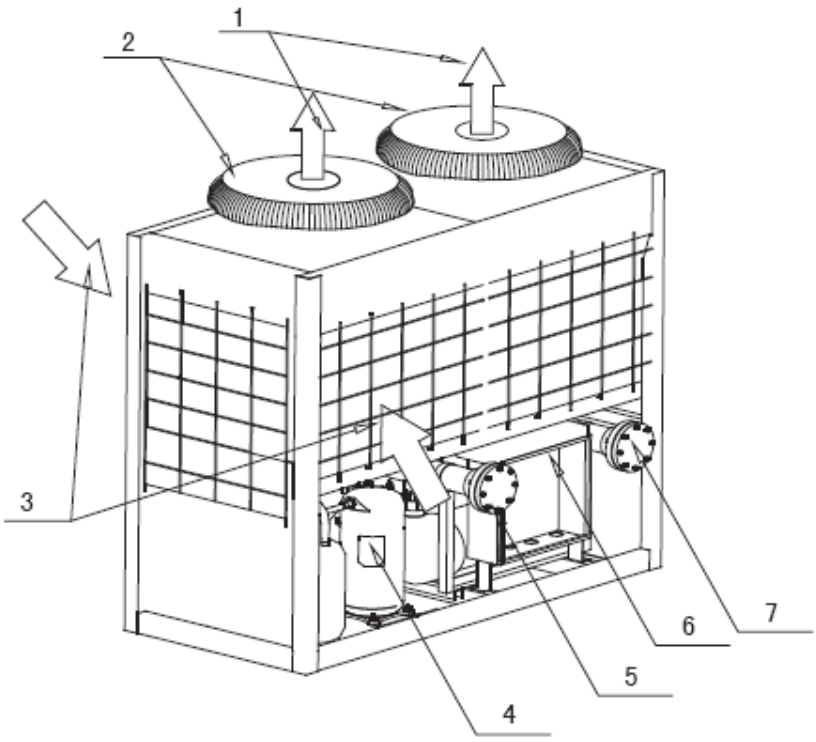
Ingredient	Contented precentage
Free chlorine	Max.2.5 mg/l
Total bromine	Max. 5.5 mg/l
PH	Between 6.9 and 8.0

3. Unit Appearance



LRSJ-450/SY-820

NO.	1	2	3	4	5	6
Name	Top cover	Air outlet	Air inlet	Water outlet	Water inlet	Electric control box



NO.	1	2	3	4	5	6	7
NAME	Air outlet	Top cover	Air inlet	Compressor	Water outlet	Electric control box	Water intlet

4. Accessories

Check whether the following assemblies are complete.

Model: 45KW, 90KW

Accessory name	Qty.	Shape	Purpose
Installation & owner's Manual	1		For install and use instruction
Wire controller	1		——
Wire controller owner's Manual	1		——

5. Inspecting and Handling the Unit

After delivery, the package should be checked and any damage should be reported immediately to the carrier claims agent.

When handling the unit, take into account the following:

1.  Fragile, handle the unit with care.

    Keep the unit upright in order to avoid compressor damage.
2. Choose before hand the path along which the unit is to be brought in.
3. Move this unit with original package.
4. When lifting the unit , always use protectors to prevent belt damage and pay attention to the balance of the unit's gravity.

6. Water pipeline diagram

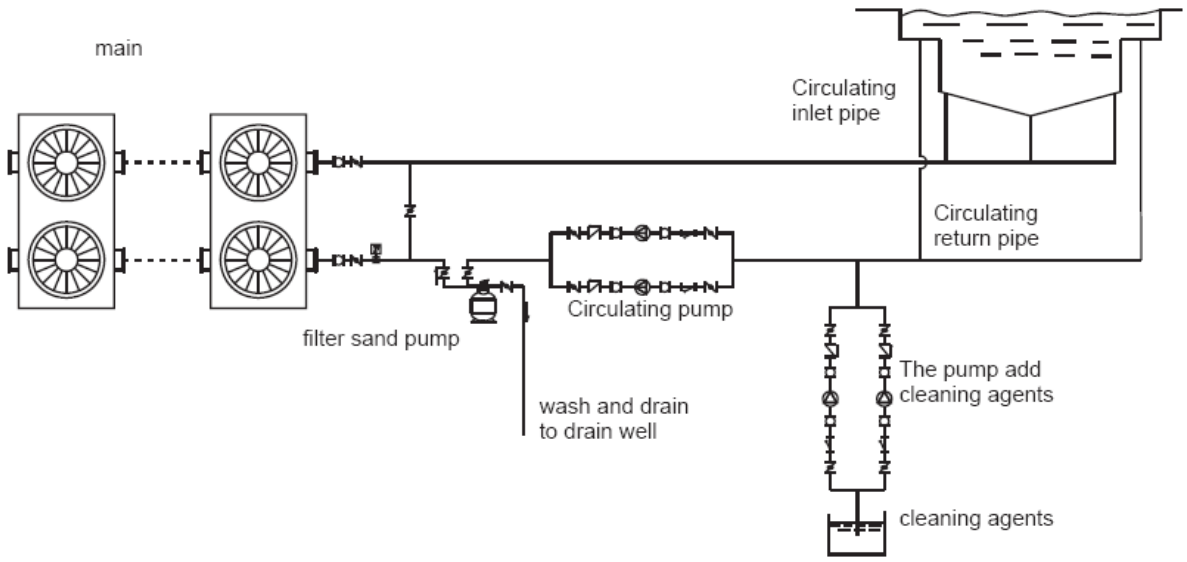


Fig. 5-1

Table 5-1

Symbol explanation			
Stop valve	Circulating pump	Water flow switch	Gate valve
Y-shaped filter	Check valve	Flexible joint	

Connect drawing for pipeline system (45KW & 90KW)

8.1 Connection is established with a by-pass on the pool filtration circuit after the filter and before the water treatment device (see diagrams upper). In order to connect other heat source
8.2 During installation of connective pipe, you must beware not to let any dust or other foreign substance intrude into pipe system.
8.3 Water inlet and outlet pipes can be installed as long as the water-heating A/C have been fixed.
8.4 Thermal insulation materials should be employed to seal up water outlet and inlet pipes.
8.5 Before operation, please confirm that the specifications of connective pipes are correct, and thermal insulation layer have been wrapped on pipes. It requires that all pipes have been sealed up, and no water leakage has been detected.
8.6 Hydraulic circuit test pressure: 3 bars - Hydraulic circuit operating pressure: 1.5 bar
pressure drop 2.2 mCE (0.22 bar)

7. Water pump selection

Model	Water flow	Recommendatory flow
LRSJ-450/SY	9-30	15 m3/h
LRSJ-900/SY	18-50	30 m3/h

8. Tools required for installation

- 1 set of flat head screwdrivers
- 1 set of crosshead screwdrivers
- 1 cutter
- 1 wire stripper
- 1 pipe or round head spanner 13
- 1 ratchet spanner
- 1 pliers
- 2 straps (for handling)

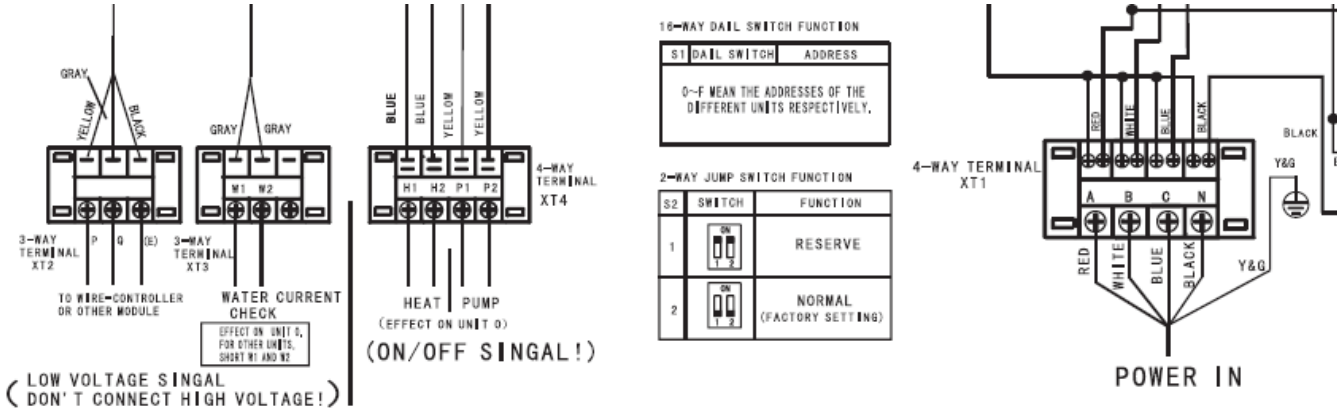
9. Electric connection

9.1 Power specification

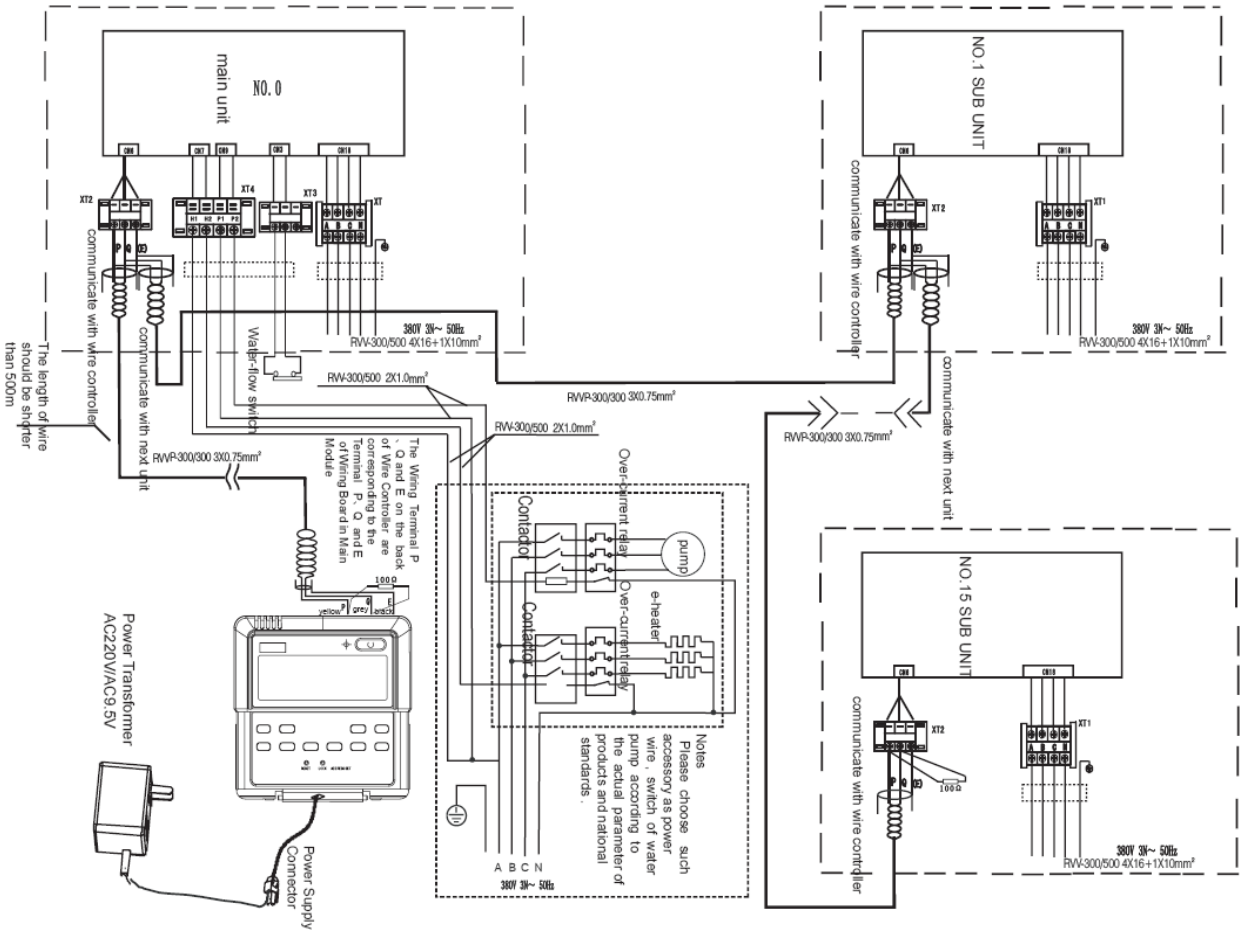
Item / Model	Power Supply	Diameter of the thinnest cable (mm^2) (Metal pipe and synthetic resin pipe wiring)		Manual Switch (A)	
		Size (continuous length ＜30 m	Earthling Wire	Capacity	Fuse
LRSJ-450/SY	380~420V-3ph-50Hz	6	6	⩾60	50
LRSJ-900/SY	380~420V-3ph-50Hz	16	16	⩾125	100

9.2 Electric wiring diagram

Electric wiring diagram for single model of 45kW or 90kW



Networking communication schematic of main unit and auxiliary unit (45KW & 90KW)



Part 4
Trial Operation

1. Confirmation Before the Trial Operation

1.1 All the installation is complete.

1.2 Water heater is installed correctly.

1.3 The pipelines and wiring are correct.

1.4 The accessories are installed correctly.

1.5 The drainage is smooth.

1.6 The thermal insulation is sound.

1.7 The earthing wire is connected correctly.

1.8 The power voltage is consistent with the rated voltage of the heater.

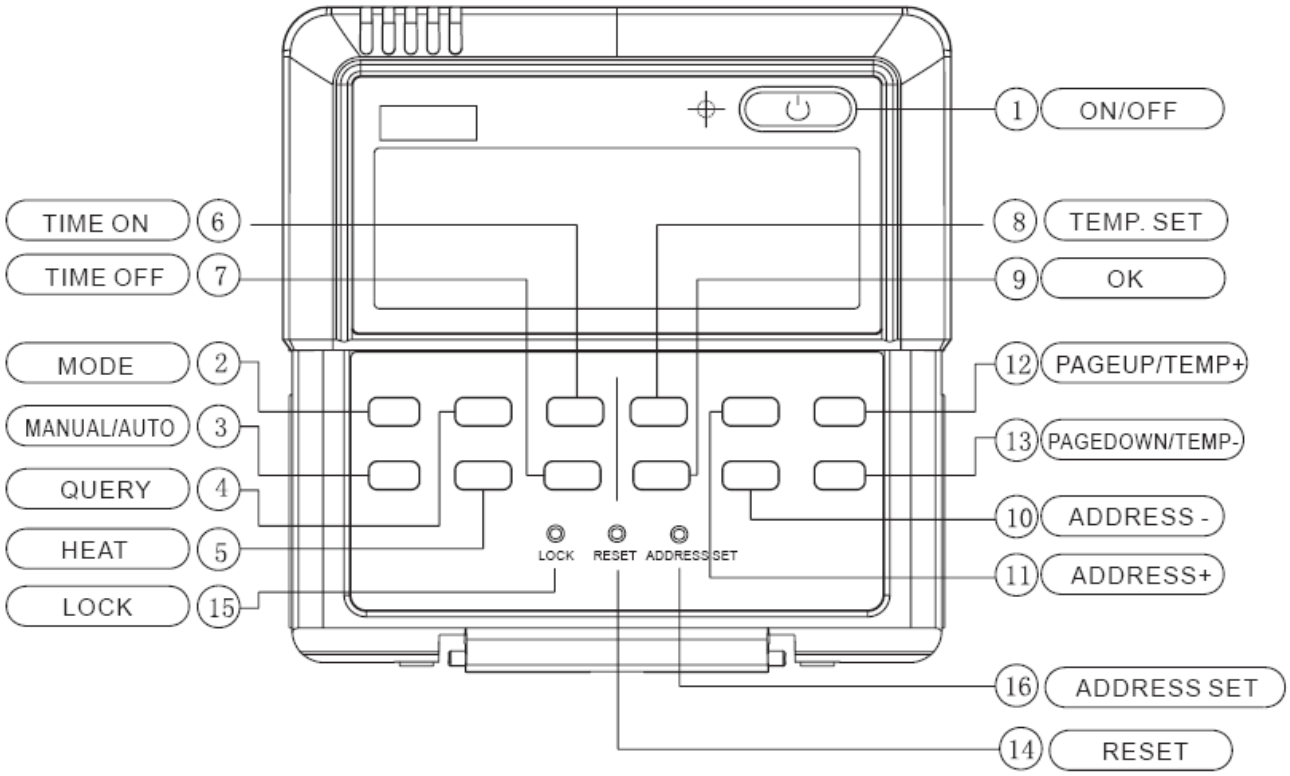
1.9 No obstacle at the air inlet and outlet of the unit.

1.10 The leakage protector can work effectively.

2. Operating Instruction

2.2 Operating Instruction for 45KW,90KW

2.2.1 The appearance of controller



2.2.2 operating instructions of buttons

8.2 Operating instructions of buttons

① Startup/shutdown button
Under power-off state, press the button, the startup indicator lamp is turned on, and the wired controller enters power-on state, and in the meanwhile, such information as temperature value, timing, and so on is set. Under power-on state, press the button, the startup indicator lamp is turned off, and in the meanwhile, the information of shutdown is sent.

② Mode selection button:
Under power-off state, press the button to select operating mode of the unit. Under power-on state, the button is invalid.
Mode switching sequence is as follows:

③ Manual/auto button:
Press the button, to select “auto mode” or “manual mode”. When selecting manual mode, the number of the units to be started up can be increased or decreased through “page up (temperature +)” and “page down (temperature -)”.

④ Query
Press the button, to inquire state information of No.0 to 15 outdoor units (the default is state information of No.0 unit) and enter inquiry state. After entering inquiry state, inquire the information of the former unit or the following unit through “address increase” and “address decrease”. After a certain outdoor unit is selected, state information of the outdoor unit can be inquired through “page up” and “page down”. The inquiry sequence is outlet water temperature—outdoor pipe temperature T3—outdoor ambient temperatures—current of the compressor A—current of the compressor B—fault—protection—outlet water temperature ……. Because there are many outdoor fault and protection codes, the wired controller only displays the fault information and the protection information with highest priority, when query is conducted on fault and protection information.

⑤ Auxiliary electric heat button (reserved function)
Press this button under heating mode to start the Forced Start function of auxiliary electric heater and the LCD will show the corresponding icon. Press this button once more to switch off the function. This button is invalid under other modes. This function is invalid for air cooling modular unit.

⑥ ⑦ Timer function
Once "Timer On" button is pressed, the hour and minute of On-Timer flash with 2HZ and do not flash when they are adjusted; flashing continues 2 seconds after adjustment is stopped. Press “Timer On” once to adjust the setting hour, which flashes with 2HZ. Adjust the hour by pressing “Page-up (temperature+)”and Page-down (temperature-)”, and press "Timer" once more to adjust the setting minute, which flashes with 2HZ, and then adjust the minute by pressing “Page-up (temperature+)”and Page-down (temperature-)”.If no adjustment is made 8 seconds after entering the time setting state, the time setting state will be off and the set time will be the current set time. Press “Timer Off” button to set the Switch time off in the above way. Extended press on “Timer On” can cancel the time setting of Timer On, and the same is true for “Timer Off”.

⑧ Temperature setting button
To set the total outlet water temperature under refrigerating and heating modes, and the temperature of water cabinet or water tank under heating water mode.

⑨ OK button
Press OK button after operation is finished and the wired controller will send the order to the main engine.

⑩ Address decrease
Press the button under Spot check display state to select the previous modular unit to display its operation state data. If it come to 0# modular unit, select 15# unit after pressing the button.
Press this button for address decrease when setting wired controll address and press this button to change the wired controller address into 0 when the address is 15.

⑪ Address increase
Press the button under Spot check display state to select the next modular unit to display its operation state data. If it comes to 15# modular unit, select 0# unit after pressing the button.
Press this button for address increase when setting wired controlle address and press this button to change the wired controller address into 15 when the address is 0.

⑫ ⑬ Page-up and Page-down button (temperature + -)
To increase or decrease the number of units operation. To spot check the operation parameters of unit in the main menu. To increase or decrease the set temperature in the temperature settir page. To adjust the time of ON/OFF timer.

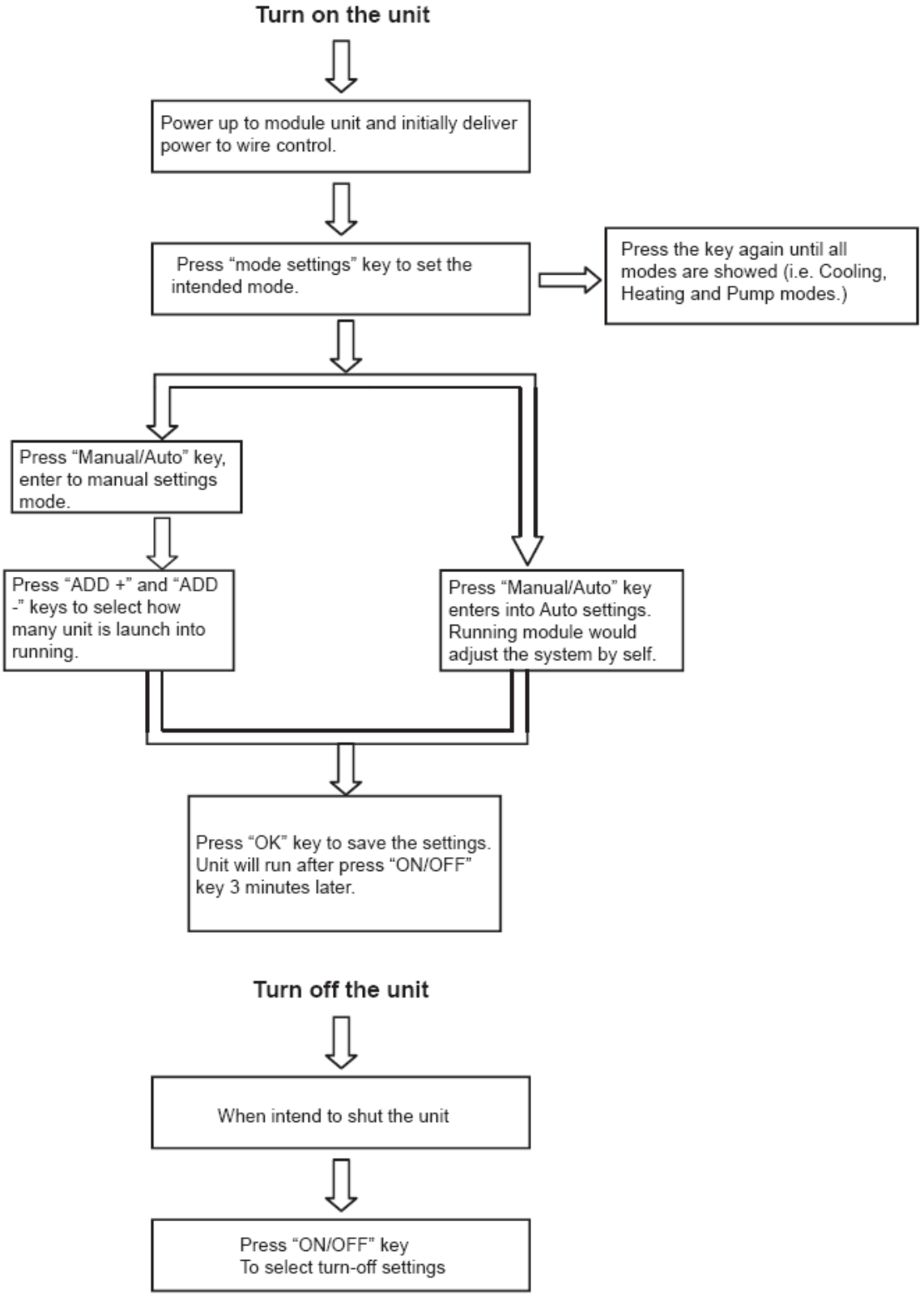
⑭ Reset button (built-in)
Press this button with a small round stick of 1mm diameter to canc the current setting, and the wired controller enters reset state and return to default setting.

⑮ Lock button (built-in)
Press this button with a small round stick of 1mm diameter to lock the current setting, and press this button once more to cancel the lock.

⑯Address setting button (built-in, reserved function)
After this button is pressed, the wired controller address is set through “address increase” and “address decrease”, with wired controller address range “0~15”, parallel connection for 16 wired controllers at most.
This function is only applicable to the parallel connection of multipl wired controllers. In case of single wired controller, no setting is needed as the default address has been set as “0” before the wire controller leaves the factory.

2.2.3 ON/OFF

Follow the following diagram for system ON/OFF



2.2.4 Trouble shooting

Error	Possible reason	Detect and settle measure
Over high air discharge pressure (Cooling operation)	Air or other non-condensing gas still in the system	Discharge gas from fluorin charging inlet. Re-vacuum the system if necessary.
	Fins in the condenser are dirty or foreign substance blocking fins.	Clean condenser fins.
	Insufficient chilling air volume or condenser fan error	Check and repair the condenser fan, recover the normal operation
	Excessive high air suction pressure	See "Excessive high air suction pressure"
	Excessive refrigerant charging volume	Discharge the excessive refrigerant
	Over high ambient temperature	Check ambient temperature
Over low air discharge pressure (Cooling operation)	Over cool air in the side of air heat exchanger	Check ambient temperature
	Refrigerant leakage or insufficient r efrigerant volume	Test leakage or charge sufficient refrigerant to the system
	Excessive low air suction pressure	See "Excessive low air suction pressure"
Over high air suction pressure (Cooling operation)	Excessive refrigerant charging volume	Discharge the excessive refrigerant
	Over high temperature in chilling water inlet	Check thermal insulation layer of water pipe and the specification of this layer
Over low air suction pressure (Cooling operation)	Insufficient water flow volume	Check temperature difference at water inlet and outlet, and adjust the water flow volume
	Over low temperature in chilling water inlet and outlet	Check and installation state
	Refrigerant leakage or insufficient refrigerant volume	Test leakage or charge sufficient refrigerant to the system
	Incrustant in evaporator	Eliminate incrustant
Over high air discharge pressure (Heating operation)	Insufficient water flow	Check temperature difference at water inlet and outlet, and adjust the water flow volume
	Air or other non-condensing gas still in the system	Discharge gas from fluorin charging inlet. Re-vacuum the system if necessary.
	Incrustant in water side of heat exchanger	Eliminate incrustant
	Over high temperature in chilling water inlet	Check water temperature
	Excessive high air suction pressure	See "Excessive high air suction pressure"
Over low air discharge pressure (Heating operation)	Over low temperature of chilling water	Check chilling water temperature
	Refrigerant leakage or insufficient refrigerant volume	Test leakage or charge sufficient refrigerant to the system
	Excessive low air suction pressure	See "Excessive low air suction pressure"
Over high air suction pressure (Heating operation)	Over heat air in the side of air heat exchanger	Check ambient temperature around it
	Excessive refrigerant charging volume	Discharge the excessive refrigerant
Over low air suction pressure (Heating operation)	Insufficient refrigerant charging volume	Charge sufficient refrigerant to the system
	Insufficient air flow volume	Check fan rotating direction
	Air loop short-circuit	Reason about remove air short-circuit
	Insufficient frost-removal operation	Error comes out from 4-way valve or thermal resistor. Replace a new one if necessary.
Compressor stops because of freeze-proof protection (Cooling operation)	Insufficient chilling water flow volume	Error comes from pump or flow-type water volume control. Check and repair or replace a new one.
	Gas still in water loop	Discharge air
	Thermal resistor error	Upon error have been confirmed, please replace a new one.
Compressor stops because of Hi-pressure protection	Over high air expelling pressure	See "Over high air expelling pressure"
	Hi-pressure switch error	Upon error have been confirmed, please replace a new one.

2.2.5 Maintaince and upkeep

Error	Possible reason	Detect and settle measure
Compressor stops because of motor Overcurrent.	Over high air expelling pressure and air suction pressure	See "Over high air expelling pressure" and "Over high air suction pressure"
	Hi-voltage or Lo-voltage, signal phase or phase unbalance	Confirm voltage not higher or lower than the rated voltage 20V
	Short circuit comes out from motor or connecting interface	Confirm resistors at motor are connected corresponding to terminals
	Overcurrent assembly error	Replace a new one
Compressor stops because of integrate temperature sensor or air discharge temperature protection.	Over high or over low voltage	Confirm voltage not higher or lower than the rated voltage 20V
	Over high air expelling pressure or excessive low air suction pressure	See "Over high air expelling pressure" and "excessive low air suction pressure "
	Component error	Check the integrated temperature sensor after motor is cool down.
Compressor stops because of Lo.-pressure protection	Filter in front (or rear) of expanding valve is blocked	Replace a new filter
	Lo-voltage switch error	If the switch is defective, please replace a new one.
	Excessive low air suction pressure	See "Excessive low air suction pressure"
Abnormal noise gives out form compressor	Liquid refrigerant flows into compressor from evaporator result in liquid slugging.	Adjust refrigerant charge volume
	Aging of compressor	Replace a new compressor
Compressor is unable to drive	Overcurrent relay trip up, fuse burnt out	Replace damaged assembly
	Control circuit without power though	Check the wring of control system
	Hi-voltage or lo-voltage protection	Reference to mention in above the parts of air suction and discharge pressure error
	Coils in contactor are burnt out	Replace damaged assembly
	Wrong connection of phase sequence	Re-connect and adjust the any 2 wires among 3 phases
	Water system error and flow type volume controller short connection	Check water system
	Error signal delivered from wire controller	Find out the error type and carry out the corresponding measure to settle
	"OFF" signal input of "ON/OFF" port	Check the "ON/OFF" port signal，it's "ON" normally.
	Multiple connection failure of "ON/OFF" port when combination with servel modules.	Check the "ON/OFF"port multiple connection wiring in every module, confirm the "red-to-red" and "blue to bule" correspondence
Air side heat exchanger excessive frost	4-way valve or thermal resistor error	Check the running state. Replace a new one if necessary.
	Air loop short-circuit	Settle the short-circuit of air discharge
With noise	Fixing screws at panel are loosen	Fix up all assemblies

2.2.6 Error code

NO.	Code	Reason
1	E0	Water flow detection error or fan protection (the 3rd time)
2	E1	Power phase sequence error
3	E2	Communication error
4	E3	Total water outlet temperature sensor error
5	E4	Outlet water temperature sensor of system A error
6	E5	Pipe temperature sensor in condenser A error
7	E6	Pipe temperature sensor in condenser B error
8	E7	Outdoor ambient temperature sensor error or power supply protection
9	E8	Outlet water temperature sensor of system B error
10	E9	Water flow detection error or fan protection (the 1st and 2nd time)
11	EA	Main unit detect that auxiliary unit's quantity have decreased
12	Eb	Freeze-proof temperature sensor of system A error
13	EC	Wire controller did not found out any on-line module unit
14	Ed	1-hour consecutive 3-times PE protection
15	EF	freeze-proof temperature sensor of system B error
16	P0	High pressure or air discharge temperature protection error in system A
17	P1	Low pressure protection system A
18	P2	High pressure or air discharge temperature protection error in system B
19	P3	Low pressure protection system B
20	P4	Current protection in system A
21	P5	Current protection in system B
22	P6	Condenser high pressure protection in system A
23	P7	Condenser high pressure protection in system B
24	PA	Low ambient temperature drive-up protection
25	Pb	System freeze-proof protection
26	PC	Reserved
27	PE	Low-temperature protection of system
28	F1	wire controller failure
29	F2	Failure of reduction of wired controller number at parallel connection of multiple wired controller (reserved)

2.2.7 Self-checking function

NO.	Description
1	Normal display : T6 ；
2	Operate mode:（1 cooling；2 heating; 4 pump ;8 standby）
3	Capacity of compressor B
4	Quantity of online units
5	Ambient temperature
6	Pipe temperature of condenser A
7	Pipe temperature of condenser B
8	water temperature of the pool T5
9	water outlet temperature of unit A
10	water outlet temperature of unit B
11	Aperture of E-expansion valve A
12	Aperture of E-expansion valve B
13	Compressor current for system A
14	Compressor current for system B
15	Error code for the last time