



COMMERCIAL HEAT PUMP

INSTALLATION AND OPERATION INSTRUCTIONS

Applicable model

RSJ-420/SZN1-H



Please read this manual carefully before use and keep it properly.
The cover effect drawing is for reference only, and the specific model is subject to the real object.

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- Ask qualified person for relocating, repairing and maintaining the unit instead of doing by yourself.
Improper installation may result in water leakage, electric shock or fire.
- Electric connection work should obey the instructions of local power company, local electric utility and this manual.
- Never use the wire and fuse with wrong rated current, otherwise unit may break down and cause fire furthermore.
- 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.
- If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person.

DISPOSAL: Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.

- Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities. Contact your local government for information regarding the collection systems available.
- If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.



- 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.

1. SAFETY INFORMATION

Please read thoroughly all of the instructions before installing or operating the unit.

Following safety symbols are very important, always read and obey all safety symbols:

	CAUTION	You may be injured if you don't obey instructions.
	WARNING	You may be killed or seriously injured if you don't obey instructions.
	DANGER	You may be killed or seriously injured immediately if you don't obey instructions.



WARNING

- The unit must be earthed effectively.
- A creepage breaker must be installed adjacent to the power supply.
- Do not remove, cover or deface any permanent instructions, labels, or the data labels from either the outside of the unit or inside of unit panels.
- Ask qualified person to perform the installation of this unit in accordance with local national regulations and this manual. Improper installation may result in water leakage, electric shock or fire.



CAUTION

- The earthing pole of socket must be grounded well, make sure that power supply socket and plug are dry enough and connected tightly.
- How to check the power supply socket and plug are qualified? Turn on power supply and keep the unit running for a half hour, then turn off power supply and plug out, check whether the socket and plug is hot or not.
- Before cleaning, be sure to stop the operation and turn the breaker off or pull out the power plug.
Otherwise, an electric shock and injury may be caused.

- Water temperature over 50 °C can cause severe burns instantly or death from scalds. Children, disabled and elderly are at highest risk of being scalded. Feel water before bathing or showering. Water temperature limiting valves are recommended.


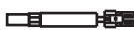


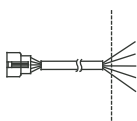


- Do not operate the unit with a wet hand.
An electric shock may be caused.

- The installation height of power supply should be over 1.8m, if there is any water spattered, separate the power supply from water.
- A one-way valve must be installed on the water inlet side, which is available from accessories, see manual "accessories" part.
- After a long term use, check the unit base and fittings. If damaged, the unit may sink and result in injury.
- Arrange the drain pipe to ensure smooth draining. Improper drainage work may cause wetting of the building, furniture etc.
- Do not touch the inner parts of the controller. Do not remove the front panel. Some parts inside are dangerous to touch, otherwise a machine malfunction may be caused.
- Do not turn off the power supply. System will stop or restart heating automatically. A continuous power supply for water heating is necessary, except service and maintenance.
- If the unit has not been used for a long period of time(2 weeks or more), hydrogen gas will be produced in the water piping system. Hydrogen gas is extremely flammable. To reduce the risk of injury under these conditions, it is recommended that open the hot water tap for several minutes at the kitchen sink before using any electrical appliance connected to the hot water system. When hydrogen is present, there will probably be an unusual sound such as air escaping through the pipe as the water begins to flow. There should be no smoking or open flame near the tap at the time it is open.

2. ACCESSORIES

Table 2-1

Accessory name	Qty.	Shape	Model	Purpose
Installation & Operation Manual	1		_____	_____
Water tank temperature sensor	1		CGQ-SXV-L10000-AMP2 (B=3970K)	For water tank temp. inspection
Wire controller	1		KJR-51/BMKE-A	Control the unit and display the unit status
Y-shaped filter	1		_____	_____
Wire controller Matched wire harness	1		PXR-5-L20000-SMR5BK/X5	Connect the master unit with wire controller

PURCHASED BY-SELF

Table 2-2

Accessory name	Qty.	Shape	Model	Purpose
Water flow switch	1	_____	Cut-off value \geq (0.1m ³ /h×unit No.)	Detect the circulating water flow volume



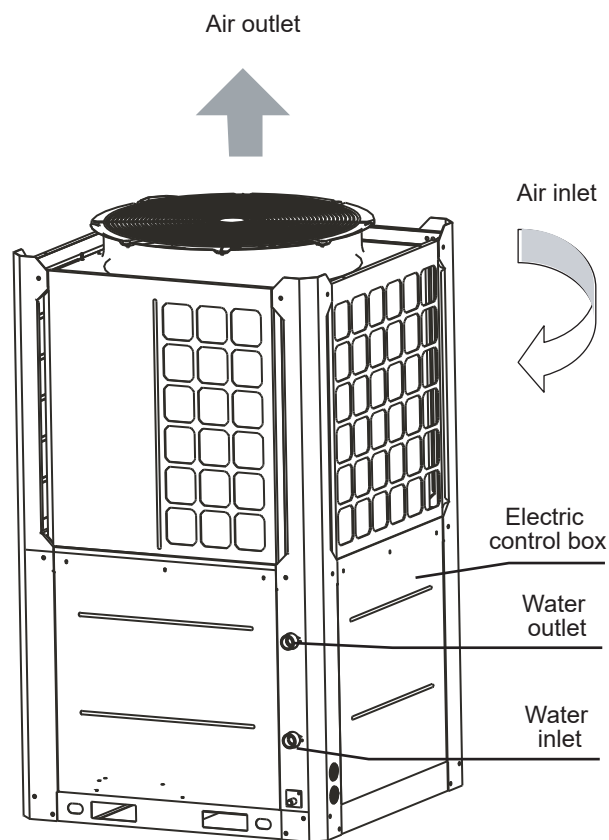
CAUTION

A single unit must be installed a set of water level switch (water flow switch) and wire controller, several units parallel connected can choose one or more sets of above accessories as the customer's need.

3. NAMES AND DIMENSIONS

3. 1 Names

Original instruction



RSJ-420/SZN1-H

Fig 3.1

3. 2 Dimensions(Unit: mm)

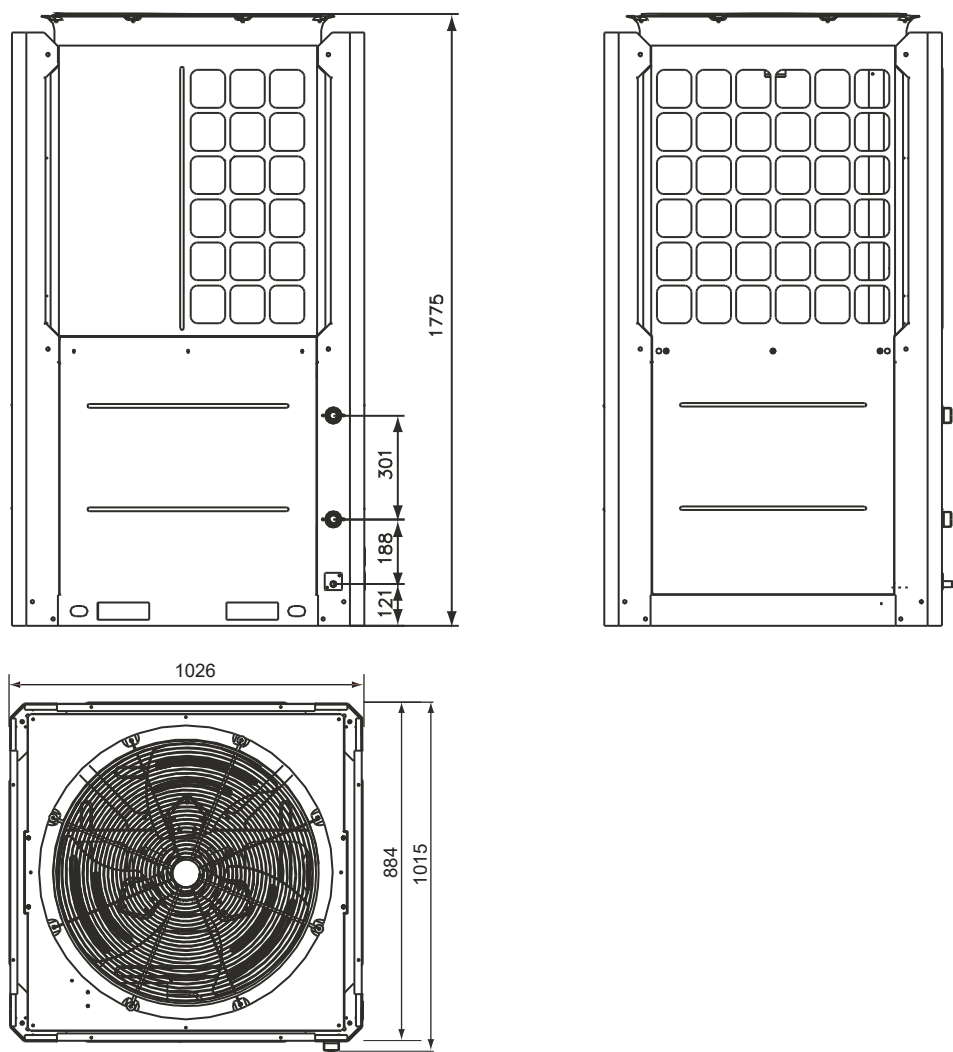


Fig 3.2

3.3 Distance of ground screws (Unit: mm)

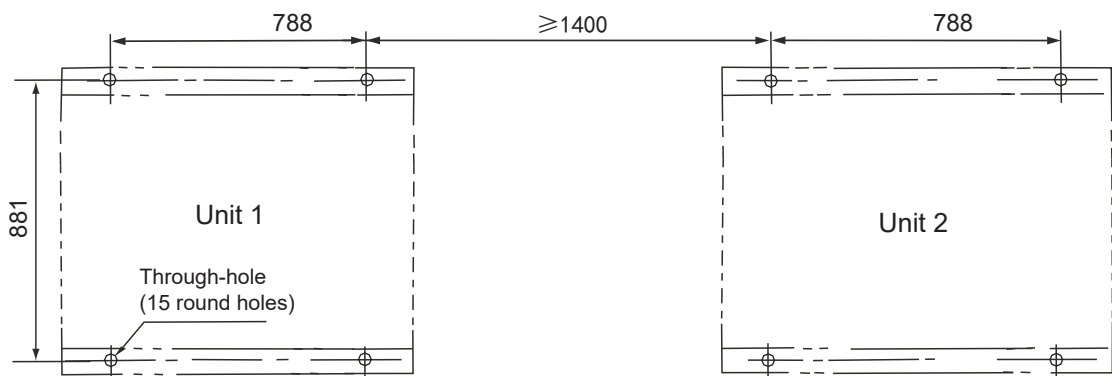


Fig 3.3

3.4 Water pipe joint specifications

Table 3-1

Model	Water inlet pipe joint	Water outlet pipe joint	Remarks
RSJ-420/SZN1-H	DN32	DN32	Flanged joint

4. UNIT INSTALLATION

4.1 Installation Location

- 1) The unit can be installed on the ground or on the suitable roof, but enough ventilation volume should be ensured in both cases.
- 2) The unit should not be installed where noise and vibration are required to a certain extent.
- 3) The installed unit should be sheltered from direct sunlight as much as possible, and be far away from boiler flues and ambient air which may erode condenser coils and copper tube parts of the unit. (such as: places that are full of dust and oil fume).
- 4) Safety measures of isolation should be taken, such as rail guards. These measures will avoid artificial damages and accidental damages,
- 5) The height of the installation foundation for the unit should not be less than 100mm, and floor drains are required in installation sites, to ensure smooth drainage and remove any seepers.
- 6) In case of installation on the ground, the steel base of the unit should be located on the concrete foundation, and the concrete plinth should extend below frozen soil layer. The foundation of the unit should not be connected to the foundation of the building, to avoid affecting the people due to transfer of noise and vibration. The base of the unit is provided with installation holes, which can be used to connect the unit and the foundation firmly.
- 7) In case of installation on the roof, the roof must possess enough strength to sustain weight of the unit and maintenance personnel. The unit can be supported on concrete foundations or channel steel frames similar to those used in the unit installation on the ground. The load-bearing channel steel must be in alignment with the installation holes of the unit damper, and the channel steel should possess enough width for installing the damper.
- 8) Consult the building contractor, the architectural designer or other specialists about the cases with special installation requirements.
- 9) The unit can be installed on the ground or on the suitable roof, but it should follows the requirements of GB 50057-2010, to all lightning-proof measures for the whole water heating system.
- 9) Don't install the air conditioner in salty air surrounding (near the coast).

4.2 Water tank installation location

- 1) A place can provide enough installation and maintenance space.
- 2) The bearing surface is level and can bear weight of the unit, and can fix the water tank vertically.
- 3) Avoid a place where easily leak corrosive gas.
- 4) A place where install the connecting pipes and electric connecting can be easily.

4.3 Installation space

Ensure enough space for installation and miantenance.
(unit: mm)

- 1) Ensure there's enough air flow to supply the heat exchanger. Take influence of down draft caused by tall buildings around the unit to air discharge into consideration when installing.
- 2) If install the unit at a place where ventilation is drastic, such as exposed roofs, short wall or louvers can be applied in case of turbulence disturbs air inlet. If short walls are applied, it should be shorter than the unit. Distance between short walls or louvers to unit should either satisfy requirements of unit installation minimum intervals.
- 3) If the unit runs in winter, and the location has accumulated snow, the unit should stand higher than snow in order to let airflow get through heat exchanger fluently.
- 4) Circulating air volume

Table 4-1

MODEL	Circulative air volume(m³/h)	Remarks
RSJ-420/SZN1-H	≥12000	If the unit is installed in the basement, ensure air around the unit and outdoor air can circulate without obstruction.

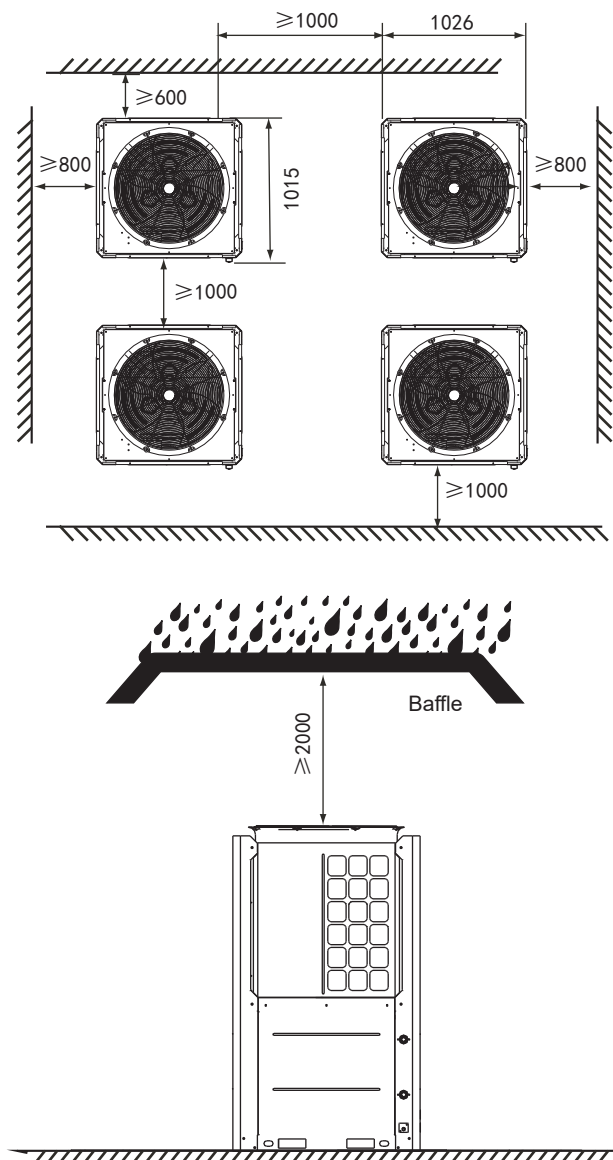


Fig. 4.1



CAUTION

- Walls around the unit should not higher than 1m calculating from the bottom of unit.
- A baffle should be installed to the top of the unit to keep the unit from rains and snows, the distance between the top of the unit and the baffle should be more than 2m
- When multiple units are installed parallelly, a ventilation system should be installed at the top of units to fetch up the wind in case of partial low temp. and short circuit caused by air outlet and air return to ensure unit efficiency

4.4 Handling of the unit

In handling process, unit gradient should not be more than 3° in case of unit rollover.

- Handling rope should at least can bear 3 times of the unit weight, and must go through the handling holes shown in the figure, and make sure there's enough strength to add a pad between the rope and unit in order to protect the unit.
- Distance between the hood and air outlet mesh should be $\geq 1\text{m}$, and ensure that the hood has enough strength as well as reliability in handling process.
- Unit gradient (α) should be less than 3°. Handle with care, don't collide and drag drastically. DO NOT stand in handling operating radius

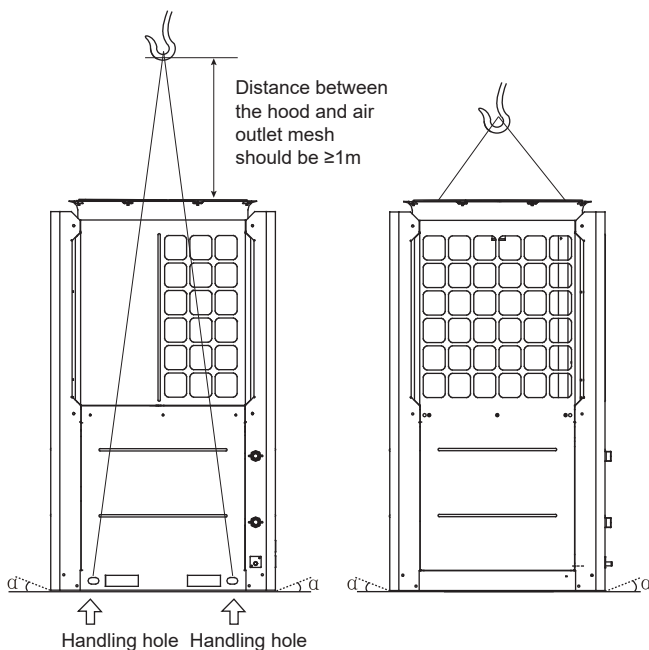


Fig 4.2

4.5 Pipeline connection



CAUTION

- The pipeline system design and construction must meet the national water and heating pipeline design requirements and relative standards.
- All the pipes are recommended to use PPR pipe, and the PPR pipe specifications refers to Table 4-2.
- It must prevent dust and other sundries enter into the pipeline system during the pipeline installation and connection.
- Until fixed the unit then can install the water pipes.
- Use thermal insulation material to wrap the water inlet, water outlet, circulative water pipes.

4.6 The pipe diameter of main water pipes (at most paralleling 2 units)

Table 4-2

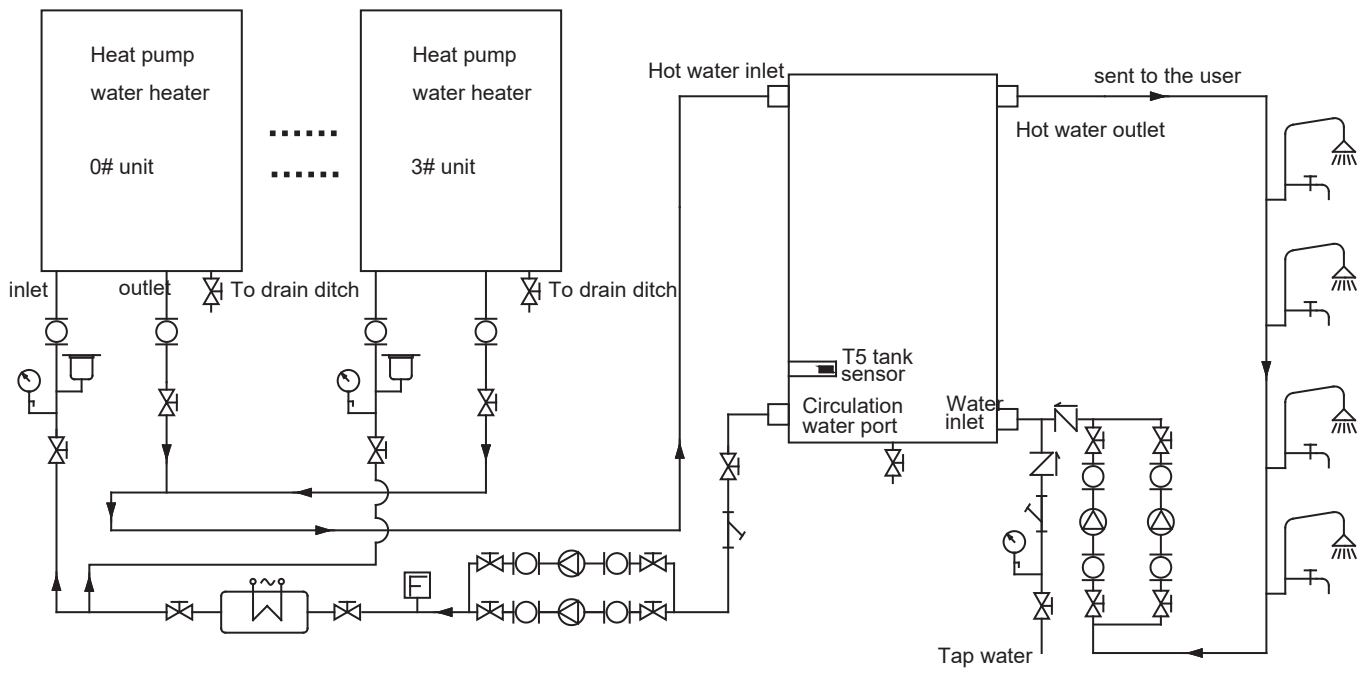
Model	RSJ-420/SZN1-H			
Qty. of units connected in parallel	1	2	3	4
The pipe diameter of the water inlet pipes	DN32	DN50	DN65	DN80
The pipe diameter of the water outlet pipes	DN32	DN50	DN65	DN80

4.7 Connection diagrammatic drawing of the unit

Icon specifications:

Table 4-3

	Stop valve		Mortor operated valve
	Flexible rubber joint (Soft-connect)		Water pump
	Water using end		Water supply controller
	Solenoid valve		Pressure reducing valve
	Reflux valve		Auto air-exhaust valve
	Pressure gage		E-heater
	Y-shape filter		Water flow switch



A maximum of 4 heat pump water heaters can be connected in parallel

Fig. 4.3

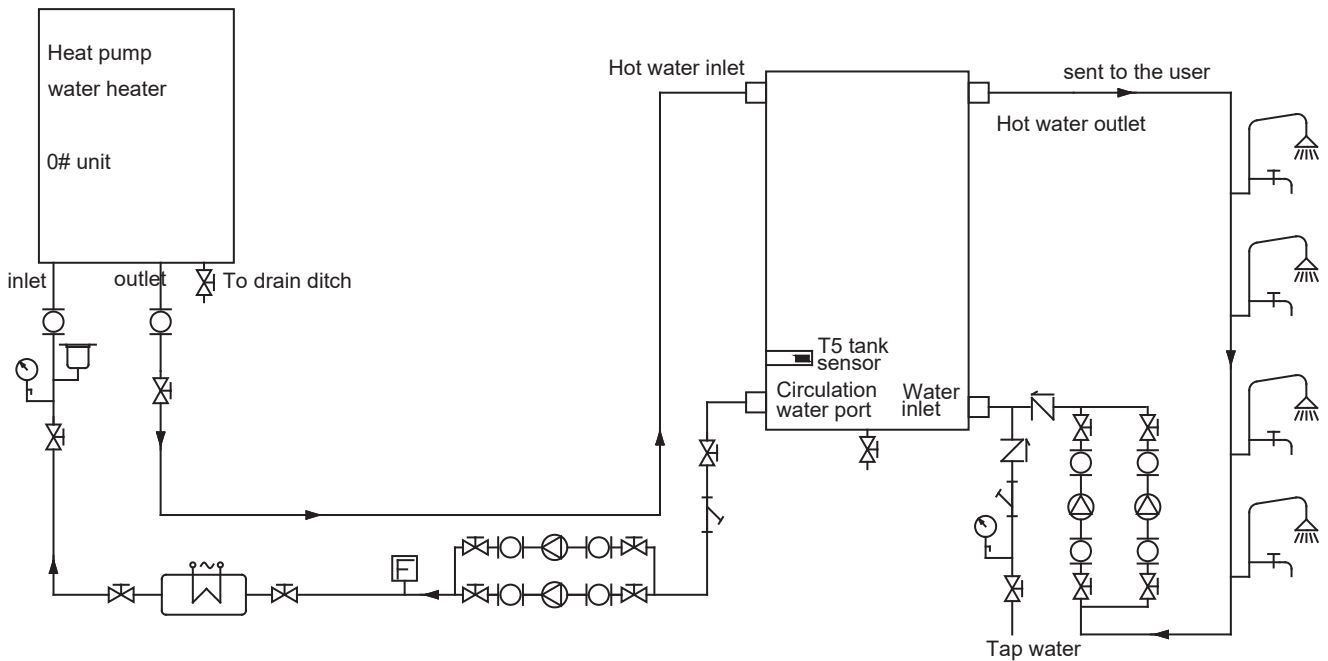


Fig. 4.4



CAUTION

The water flow switch break off values for $\geq (0.1 \text{ m}^3/\text{h} \times \text{UNITS})$.

5. INSTALLATION OF FITTINGS

5.1 Installing the water tank.

The water tank temperature sensor can not be placed in the water directly, the water tank must be installed temperature pipe, and the water tank temperature sensor should be installed in the temperature pipe.

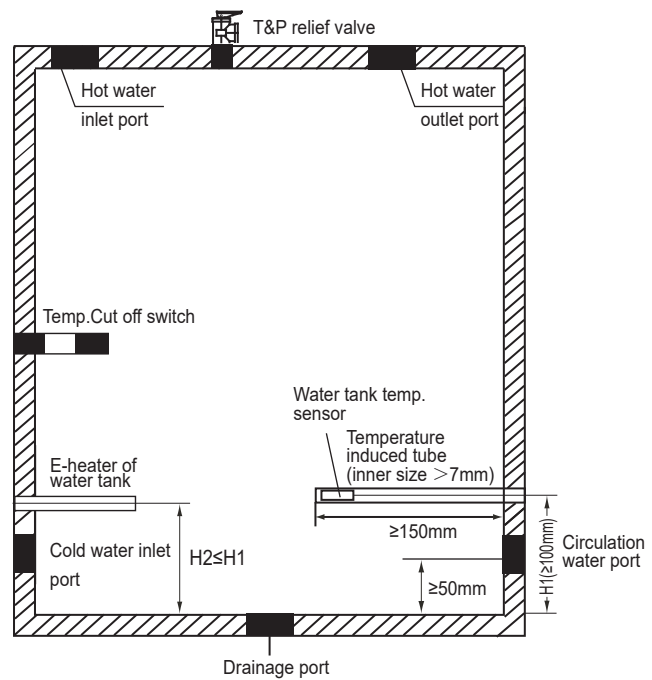


Fig 5-1

5.2.2 Water cycle pump selection

Rated head of circulative pump: $\Sigma \text{on-way resistance} + \Sigma \text{local resistance} + \text{unit resistance}$.

Rated flow of circulative pump: Rated flow of a single circulation heating unit \times Circulating unit quantity.

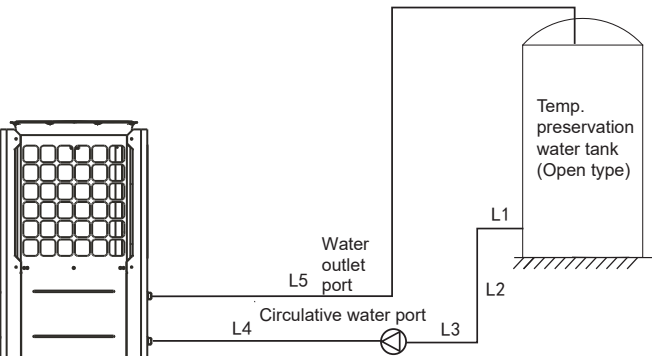


Fig 5.4

Rated flow when the unit is circulative heating

Table 5-1

Model	RSJ-420/SZN1-H
Circulative heating rated water flow (m³/h)	7
Water resistance of circulative rated water flow (kPa)	160

CAUTION

The hot water circulative pump must use hot water pump; the temperature resistance of the circulative water pump can not lower 80 °C.

5.3 E-heater capacity selection

The user can select the auxiliary electric heater, and the master unit provides the passive control signals of the auxiliary heater. The installation location of the auxiliary heater must strictly comply with the installation schematic diagram. Rated heating capacity of main unit \times (10%-30%).

CAUTION

- E-heater can apply the pipe-type E-heater or water tank E-heater. After installation it must through dialing codes to choose the relative E-heating mode, otherwise it will damage the unit or the E-heater.
- The selection of auxiliary heater is only for recommendation, user can select accord to the actual conditions.

5.4 Requirements of making the water tank

Make sure E-heater is covered with water all the time.

6. ELECTRIC CONNECTION OF THE UNIT



NOTE

- Only use the electric components specified by our company, and require installation and technical services from the manufacturer or authorized dealer.
 - Electronic installation must comply with the native regulations. Independent power supply should be applied. Power supply should satisfy electrical specifications that the unit requires
 - The unit must be ground wiring reliably.
 - Set leakage protective devices according to the requirements of national technical standard about electric equipment. Power supply wire and signal wire should be arranged properly without interruption to each other, don't contact with connecting pipes and valves as well.
 - When strong electricity and weak electricity are in parallel, please put the cable into each other's circuit and leave a proper space.
 - No power supply wire is provided, please refer to the requirements in this manual and in national standards. In Table 6.2, power supply wire and connection length is the situation when voltage drop range is within 2%, if wire continuous length exceeds the ones listed in the table, please choose wires with a right diameters according to relative regulations.
- When finishing wiring, power on when there's no mistakes after a careful inspections.
For mode selection, setting and troubleshooting, please refer to wire controller manual.

6.1 Voltage range

Table 6-1

MODEL	Range
RSJ-420/SZN1-H	380-415V 3N~ 50Hz

6.2 Power wiring

6.2.1 Specifications of power supply

Table 6-2

Model	RSJ-420/SZN1-H	
Item		
Power supply	380-415V 3N~ 50Hz	
Min. wire size (mm/ set) mental synthetic resin pipe line	Wire Size (<30 m)	10# (UL1015)
	Ground wire	10# (UL1015)
Manual switch (A)	Capacity	63
	Fuse	50
Leakage Protector	30mA 0.1sec below	
NOTE: Please use H07RN-F for the power wire .		

6.3 Specifications of controlling wire

Table 6-3

Name	Qty.	Size (UL1015)
E-heater control wire\ Circulating water pump control wire\ Remote alarm control wire	2-core	18#
Communication cable (shield)	3-core	22#
Wire controller power supply wire\ Target flow switch	2-core	22#

6.4 Wiring diagram of system power

1) Connection for single unit

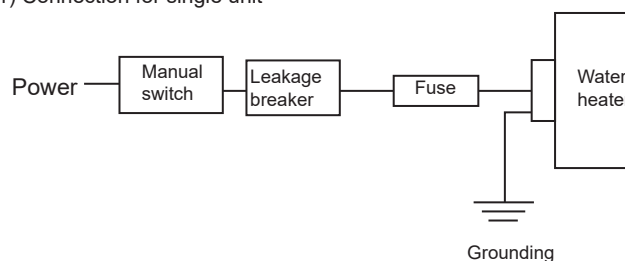


Fig. 6-1

2) Connection for 2 units(For reference only, take 3-phase unit as an example)

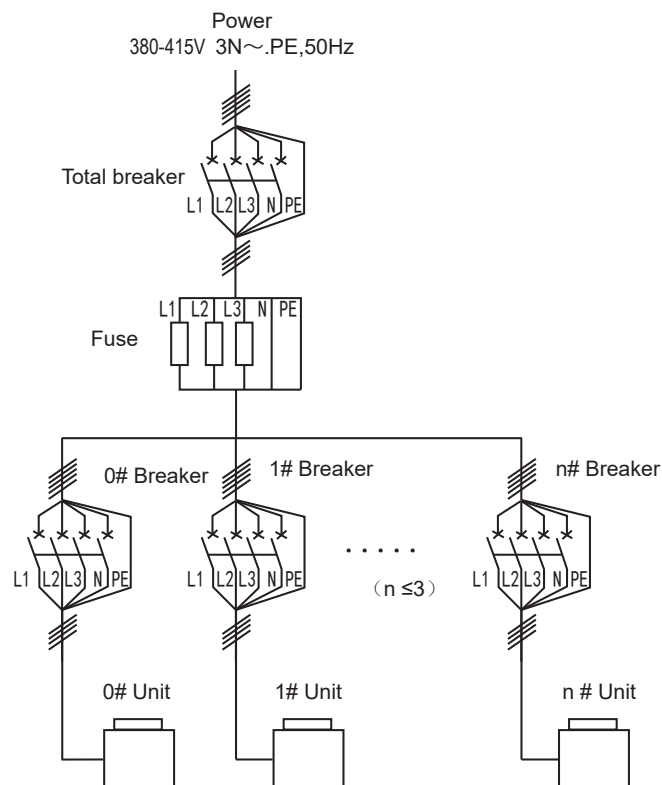


Fig. 6-2

6.5 Electric wiring figure

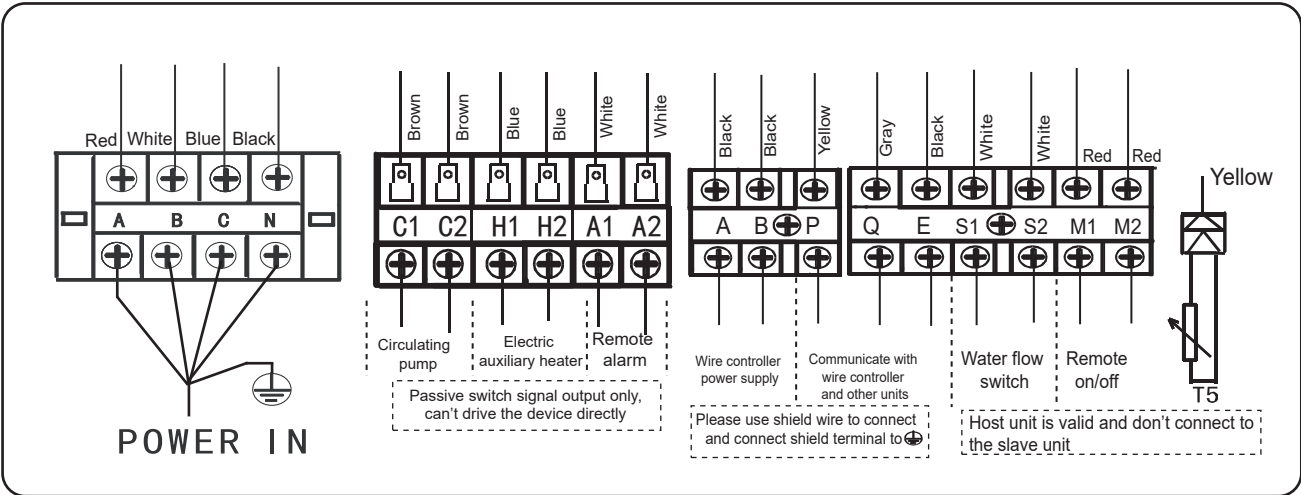


Fig 6-3

6.6 Electric control schematic diagram of the unit (only for reference)

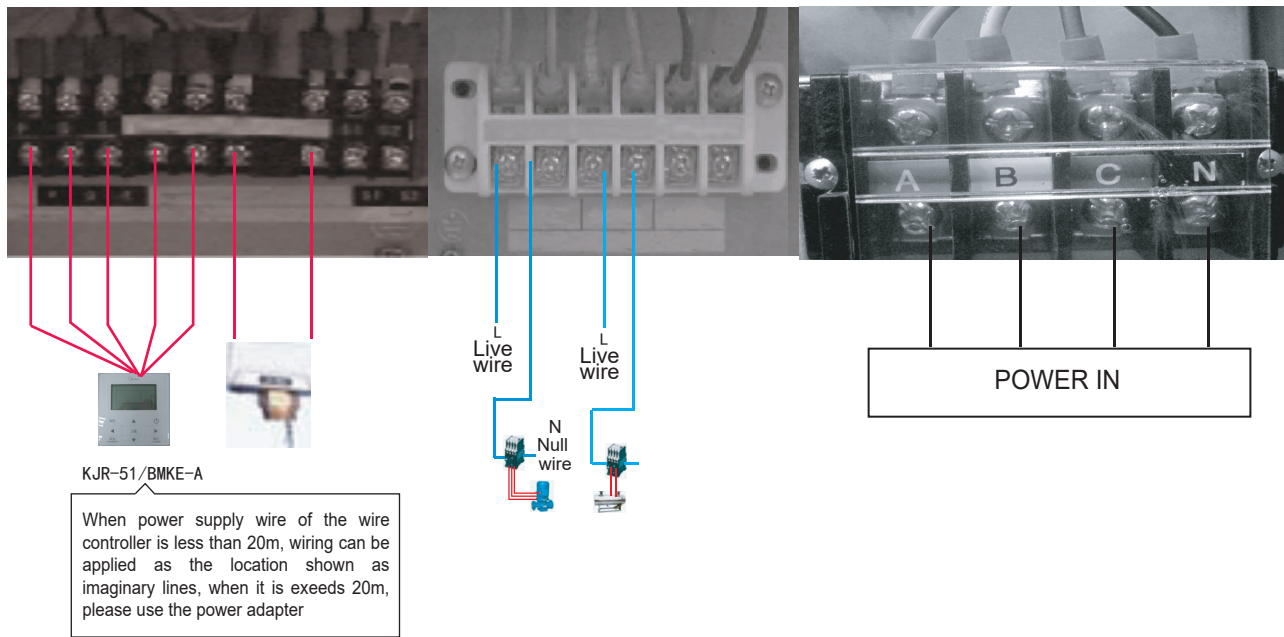


Fig 6-4



CAUTION

- Pay attention to the power phase sequence, if wrong connect the phase sequence, the compressor not operate, and the digital tube of the water heater electrical control panel will display error code.
Change the phase sequence, and powering again until the nixie tube doesn't display error and compressor starts normally.
- The water flow switch, water pump, E-heater are only connect with the No.0 main unit and only supply non-source ON/OFF signal, not supply 220V control signal. Do not directly drive loading!
- Error
When the main unit has any one error of E1, E2, E4 and E8, all the water heaters stop operation; when the main unit has E4 error, the main unit and wire controller alarm the error, the slave unit not display error, then all the units can directly heat water, and can not circulative heat water; when the main unit has other errors (except E1, E2, E4, E8), then only stop that unit, other units will not be affected; when the slave unit has error, only stop the operation of that unit, other units will not be affected.
- Protection
When the main or slave unit has protection, only stop that unit, other units will not be affected.

6.7 Dial code specification

6.7.1 Dial code settings for RSJ-420/SZN1-H

Table 6-4

S3-1: remote ON/OFF functional status (OFF: inactive(default) ON: active)
 S3-2 : Defrost periodical choice(OFF: default time by program ON: 28min)
 S3-3,4: auxiliary heater choice(OFF indicates 0, ON indicates 1, the factory default is 00)

00	01	10	11
No E-heating	Water tank E-heating way	Pipeline E-heating way	

ADDRESS DIAL CODE

As 0: Unit
address dial code:

"0~3" separately stands for
address "0~3", means "0~3" set
unit and so on. When dial the dial
switch to 4 or larger than 4, then it
will invalid.

Each module of the water heater has the electric control function. Set the host unit through the address dial code on electric control board. Stipulate the unit with address dial code 0 # as the host unit. Only after setting which unit is the host unit can activate the function of direct communication with wire controller, controlling, auxiliary electric heater controlling.

6.8 Electrical control schematic diagram

Fig 6.5 Parts names

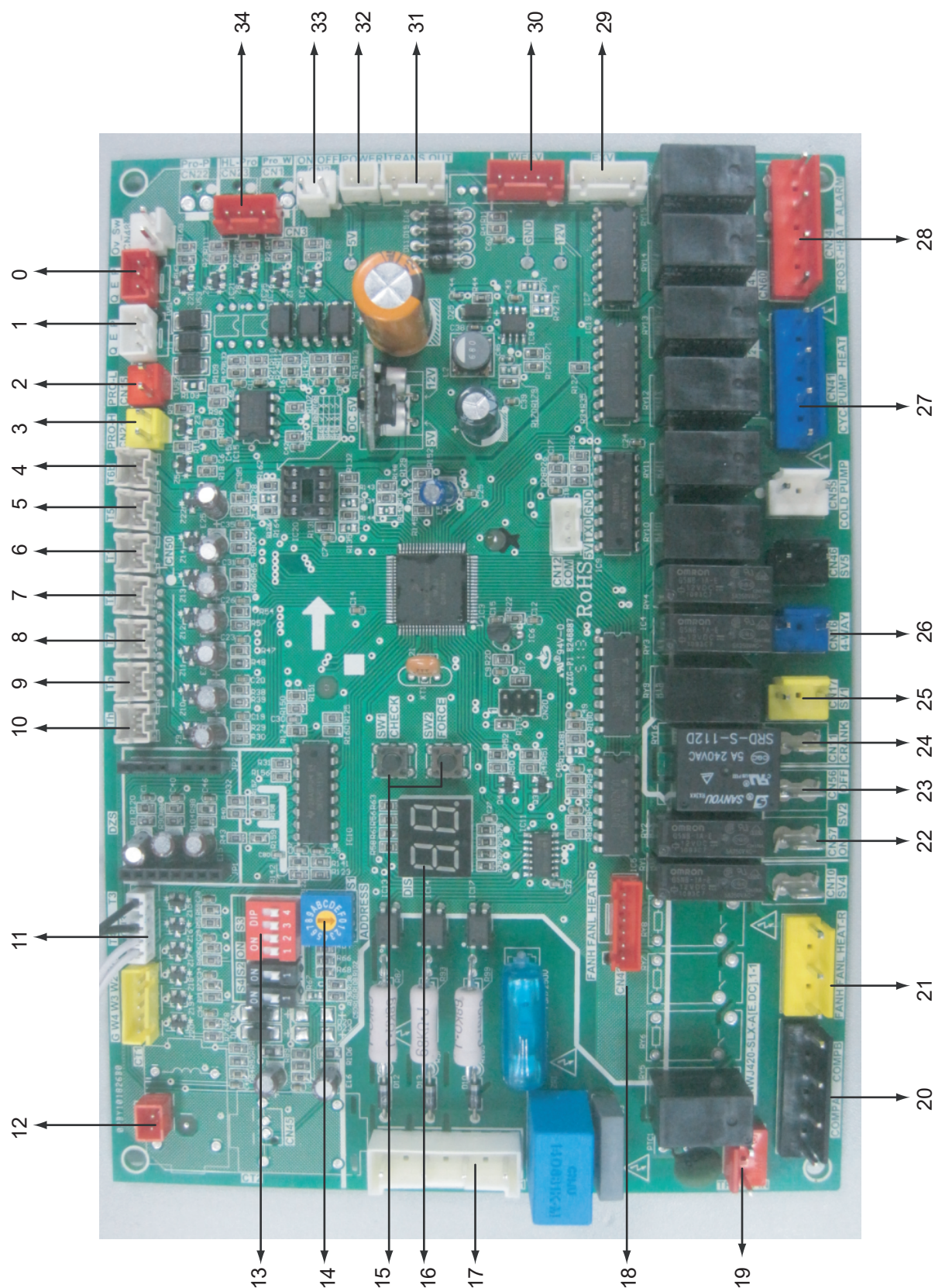


Fig 6.5

Table 6-5

No.	Detailed specification								
0	Communication port for other unit (Error code E2)								
1	Communication port for wire controller (Error code E2)								
2	System low pressure protection (Protection code P0)								
3	System high pressure protection (Protection code P1)								
4	E-heat temp. sensor connector of refrigerant(Protection code E7)								
5	Water tank (pook) temp. sensor connector (Error code E4), only the main unit is valid, the slave unit is invalid.								
6	Water outlet temp. sensor connector (Error code E3)								
7	E-heat temp. sensor connector of refrigerant(Protection code E7)								
8	Water inlet temp. sensor connector (Error code Ed)								
9	Discharge temp. sensor connector (Error code EA)								
10	Suction temp. sensor connector (Error code E9)								
11	T3: Heat exchanger coil inlet temp. sensor connector (Error code E5) T4: Outdoor ambient temp. sensor connector (Error code E6)								
12	Detection port for compressor current, (Error code P2 and C1)								
13	<div><div><div><div>ON</div><div>S3</div><div><div><div>1</div><div>2</div><div>3</div><div>4</div></div><div>OFF</div></div></div><div><p>S3-1: remote ON/OFF functional status (OFF: inactive(default) ON: active) S3-2 :Defrost periodical choice(OFF: default time by program ON: 28min) S3-3,4: auxiliary heater choice(OFF indicates 0, ON indicates 1, the factory default is 00)</p><table><tr><td>00</td><td>01</td><td>10</td><td>11</td></tr><tr><td>No E-heating</td><td>Water tank E-heating way</td><td>Pipeline E-heating way</td><td></td></tr></table></div></div></div>	00	01	10	11	No E-heating	Water tank E-heating way	Pipeline E-heating way	
00	01	10	11						
No E-heating	Water tank E-heating way	Pipeline E-heating way							
14	<div><div><div>ADDRESS DIAL CODE</div><div><div><div><div><div>F</div><div>0</div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div><div>6</div><div>7</div><div>8</div><div>9</div></div><div><div>E</div><div>D</div><div>C</div><div>B</div><div>A</div></div></div><div>As 0: Unit address dial code:</div><div>ADDRRSS</div></div><div><div><div><div>F</div><div>0</div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div><div>6</div><div>7</div><div>8</div><div>9</div></div><div><div>E</div><div>D</div><div>C</div><div>B</div><div>A</div></div></div><div>"0~3" separately stands for address "0~3", means "0~3" set unit and so on. When dial the dial switch to 4 or larger than 4, then it will invalid.</div><div>ADDRRSS</div></div></div></div></div>								
<p>Each module of the water heater has the electric control function. Set the host unit through the address dial code on electric control board.Stipulate the unit with address dial code 0 # as the host unit. Only after setting which unit is the host unit can activate the function of direct communication with wire controller, controlling, auxiliary electric heater controlling.</p>									

Table 6-6

No.	Detailed specification
15	Left side: CHECK, spot check key, for checking the operating state of unit Right side: FORCE, constraint key, special function for constraint exit
16	Display digital pipe
17	3-phase 4-wire system power input (Error code E1) Note: No phase and wrong phase of power only be detected on the initial stage of power on, no detection during operation.
18	High and low fan speed
19	Transformer input, 220V AC current
20	Control port for comp
21	Refrigerant E-heat control port
22	Electric Ball Valve ON
23	Electric Ball Valve OFF
24	Control port for crankcase E-heating belt
25	One-way solenoid control port
26	4-way valve control power
27	Left side: Circulating water pump control; Right side: E-heat control Note: only supply ON/OFF signal, not supply power signal
28	Right side: Remote alarm signal output; (only supply non-source ON/OFF signal, not supply power signal)
29	EXV connector
30	Warm water valve connector
31	Transformer output connector
32	Power connector for wire controller
33	Remote control port
34	Target switch connector (Error code E8)

7. TRIAL RUN

7.1 Check item table prior to trial run

Table 7-1

No.	Item	Remark
1	Whether the unit is installed firmly	
2	Whether the air inlet and outlet of the unit has obstacle	
3	Whether the dial codes of each unit has dial to the correct position	
4	Whether check the leakage of the water system	
5	Whether has clean the water system	
6	Whether has clean the filter	
7	Whether drain the water smoothly	
8	Whether complete the heat insulation of the water pipe	
9	Whether vacuum the pipeline of water side	
10	Whether all the valves in the water side pipeline are under correct status	
11	Whether the water flow switch work well	
12	Whether grounding correctly	
13	Whether the power voltage meets the requirements of the unit	
14	Whether the leakage protector can work effectively	

7.2 Trial run

When use the wire controller to operate the water heater, please check as the following listed:
(If it is error, please refer to this manual to find out the reason and handle the error)

Table 7-2

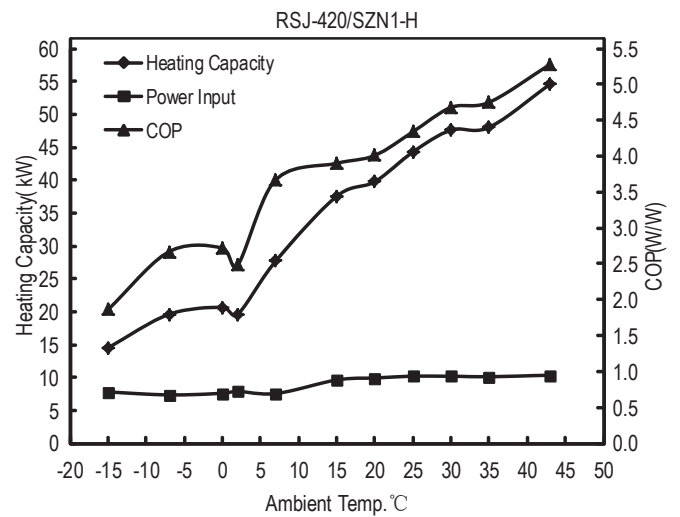
No.	Item	Remark
1	Whether all the buttons of wire controller are normal	
2	Whether the input voltage of the unit meet the requirements of the unit	
3	Whether the electronic lock has been unlocked	
4	Whether the water outlet temp. is normal	
5	Whether has abnormal vibration and noise during operation	



CAUTION

Enter "Debugging replenishing" method:

- Long press "CHECK" button for 3s, then the digital pipe will display "0" and be flashed with 2Hz frequency, means enter to the function selection state;
- Short check, the digital pipe will successively display each corresponding number,
NO.4 capacity testing mode I
NO.5 drain water mode
NO.6 force cycle pump operating
NO.8 force deforstring
NO.10 capacity testing mode II
- After 5s, the digital pipe will flash with 1Hz frequency, means has already enter the debugging replenishing function.



8. FAULT ANALYSIS AND SOLUTIONS

8.1 Fault analysis and solutions

Before asking for serving or repairing, check the following points:

Table 8-1

Not distribute to malfunction	PHENOMENA	CAUSE
	White aerosol or globule is give out. Make sound of "hiss" every now and then.	When the unit is defrosting, the sound of the 4-way valve being shifted. Air supply motor stop automatically to defrost. At the begining and the end of the defrost process, sound is give out in motor valve occur. During the process or just after have stoped, sound like water flow occur, which will be amplified at the first 2~3 minutes, this is caused by process of refrigerant current or water discharge at dehumidifying operation. Slight "hiss" is caused by heat exchanger as temperature changes. The sound give out because of heat expands and cold contracts of heat exchanger. During the beginning or just after have stopped, sound like clock occur, which is caused by electric expanding valve operation.
	Water outlet temperature fluctuation	Because of different water inlet pressure, under special working condition that may show up water outlet temperature fluctuation, which is a normal phenomenon, and will not affect the actual use; appropriately adjust the water pressure can improve this phenomenon.
	Water outlet temperature can not reach the setting temperature	Under low temperature condition, for the purpose of protecting the unit, the water outlet temperature may not reach the higher setting temperature, which is a normal phenomenon.
	The terminal circulating water temperature lower than the setting temperature	For the purpose of protecting the unit, the terminal circulating water temperature can not reach 60℃, which is a phenomenon, and will not affect the actual use.
	Re-start after the unit stop, after 3 minutes then can be operated	Compressor delay protection
	The fan operate low speed or only operate one fan	When the ambient temperature is high, for protecting the unit then the fan will shift to low speed or only operate one fan
	Heat exchanger defrosting	If operated in winter, for the heat exchanger surface temperature is lower than the ambient temperature, and the heat exchanger surface temperature is lower than 0℃, the heat exchanger surface will be frosted, which will affect the heat exchanging effect, so the unit should be periodically defrosting.
	The fan can not operate	During defrosting, the fan will not be operated.
Please check that again	Stop operation or drive up automatically,	Detect the timer whether be given wrong operation. Detect antifreezing mode is opened.
	No operation	Whether the power is cut. Whether the manual power supply switch is off. Whether fuse is broken. Whether the protection device works.(Operation lamp is lightened.) Whether it is the time set.(Operation lamp is lightened.)

Error	Possible reason	Detect and settle measure
Compressor is unable to drive	<ol style="list-style-type: none"> 1. Power error 2. Wire connection is loosen 3. Relay or fuse error 4. Compressor error 	<ol style="list-style-type: none"> 1. Connected with wrong phase sequence 2. Check and fasten again 3. Chec and repair 4. Change the compressor
Fan has loud noise	<ol style="list-style-type: none"> 1. Fixing screw of the fan is loosen 2. Fan blade touched the cover shell or screen 3. The fan operated unsteadily 	<ol style="list-style-type: none"> 1. Re-fasten the fixing screw of the fan 2. Check and adjust 3. Change the fan
Abnormal noise gives out form compressor	<ol style="list-style-type: none"> 1. Liquid refrigerant flows into compressor and produce liquid strike 2. Damages of the compressor inner components 	<ol style="list-style-type: none"> 1. Check the EEV, and whether the temperature sensor has loosen and then repair 2. Change the compressor
The water pump not operated or abnormal operated	<ol style="list-style-type: none"> 1. Power error 2. Relay error 3. There is gas in the water pipe 	<ol style="list-style-type: none"> 1. Check and repair 2. Change the relay 3. Drain off the gas
Compressor ON and OFF frequently	<ol style="list-style-type: none"> 1. Bad circulation of water system 2. Low load 	<ol style="list-style-type: none"> 1. Blocked the water system or has air in the water system. Check the water pump, valves, pipeline, and clean the water filter or drain off the air 2. Adjust the load or add stored energy device
Compressor operated with no heating	<ol style="list-style-type: none"> 1. Refrigerant leakage 2. Compressor error 	<ol style="list-style-type: none"> 1. Check and repair and replenish the refrigerant 2. Change the compressor
Not obvious heating effect of the unit	<ol style="list-style-type: none"> 1. Bad thermal insulation of water system 2. Bad heat exchanging of evaporator 3. Lack of refrigerant 4. The water side heat exchanger has blocked 	<ol style="list-style-type: none"> 1. Enlarge the thermal insulation of the system 2. Check the air inlet and outlet whether are normal and clean the evaporator 3. Check whether has refrigerant leakage 4. Clean or change the heat exchanger

8.2 Failure of wired controller and its reason

8.2.1 Failure information and code

In case the unit runs under abnormal condition, failure protection code will display on both digital screen of PCB and wired controller, and the indicator on the wired controller will flash with 5Hz. The display codes are shown in the following table:

Table 8-3

No.	Error code	Reason
1	E1	Power phase sequence error
2	E2	Communication error of main unit and wire controller
3	E3	Error of water outlet temp. sensor (T1)
4	E4	Error of water temp. sensor in the water tank (T5)
5	E5	Error of evaporator pipe temp. sensor (T3)
6	E6	Error of outdoor ambient temp. sensor (T4)
7	E7	Error of E-heating pipe temp. sensor (T6,T6b)
8	E8	Error of circulating waterflow detection
9	E9	Error of suction temp. sensor (Th)
10	Ed	Error of water inlet temp. sensor (T7)
11	EA	Error of discharge temp. sensor (Tp)
12	EE	Error of EEPROM
13	P0	System low pressure protection
14	P1	System high pressure protection
15	P2	Compressor current protection of system is over load
16	P7	Unmatched between main panel and wire controller
17	P4	Protection for discharge over-temperature
18	C1	Compressor current is less than 2A when operation
19	P8	Water outlet over-temperature operation
20	db	Anti-freezing protection
21	d8	ON/OFF signal is ON close status
22	Hb	Address conflict error



CAUTION

- Continuous come out any error for 4 times within 2 hours, then the unit will stop running. At the same time, it will be counted as once. After 1 hour, the unit will be automatically running again.
- If the stop frequency reaches 5 times, the protection code will be displayed and the unit should be repowered on again.
- When the unit satisfies the unit stopping conditions, the counting of stop frequency will be cleaned. By the way, also it will be cleaned when the unit has not any protection in 10 hours. Otherwise, if switch off the unit by wired controller, the counting of stop frequency will not be cleaned.

8.2.2 Spot check function

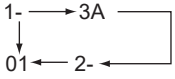
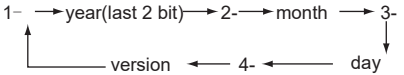
Through the spot check button of the control board to observe the operating status of outdoor system. Convenient for maintaining by engineering technicians. Press check button once, it will first display check sequence number(No.and dot) , then on second later display the parameter.

1) Normal display contents:

- Under standby and no error, protection situation, the main unit will display T5, the slave unit will display the address of this unit.
- Under the main unit with T5 situation, display T5 temperature; if no T5 or T5 error then will display the error, the slave unit will display the T1 temperature.

2) Detailed spot check display contents as follow:

Table 8-4

No.	Display	Specification	No.	Display	Specification
1	Water outlet temp.	T1 temperature value	17	Operating mode	Standby, Stop: 0; Directly heated type: 1; Circulation type: 2; Defrosting: dF; Anti-freezing: db; Remote ON/OFF signal closure: d8
2	Coil temp.	T3 temperature value			
3	Ambient temp.	T4 temperature value			
4	Water tank temp.	T5 temperature value	18	Fan speed	F0--no fan, F1--Low, F2--Med, F3-High
5	Refrigerant heating pipe temp.	T6 temperature value	19	Model code	Direct heated mode second 3A01 
6	Refrigerant heating pipe temp.	T6b temperature value			
7	Water inlet temp.	T7 temperature value	20	Protection counter	XY: X for stop count because of 4 protection within 2 hours. Y for protection count within 2 hours.
8	Discharge temp.	TP temperature value			
9	Suction temp.	Th temperature value			
10	Water outlet setting temp.	Ts temperature value	21	Protection, Error	Display the last third protection, error code
11	Operating temp. of circulating heating water	Tr temperature value	22	Protection, Error	Display the last second protection, error code
			23	Protection, Error	Display the last protection, error code
12	Compressor A current	IA current value	24	The number of slave units	Main unit displays XY, slaves displays -- X for count of total units Y for count of operating units
13	Compressor B current	IB current value (This unit display --)			
14	EXV opening	EXV opening	25	Program version	
15	Warm water valve opening	Warm water valve opening			
16	Water level height	4: higher than high water level salve unit:--	26	nd	End

9. MAINTENANCE

- 1) All the safety protection devices in the unit will be set before leaving the factory, the user can not adjust or remove them, in case to damage the unit.
- 2) First on the unit or cut-off the power for a long-term stop (more than 1 day) and then re-power on, it should prior to connect to the supply from the compressor operation.
- 3) Please do not place other obstacles on the unit, it should keep dry and clean and well ventilated around the unit. When the heat exchanger has dust, it should be immediately cleaned, in case it affect the unit capacity or cause the unit stops for the protection.
- 4) Periodically clean the filter in the water system, for avoiding blocking and damage the unit or cause unit protection, and it should often check the water replenishing system devices whether are normal.
- 5) When the ambient temperature is below zero, it's forbidden to cut-off the power, otherwise, the anti-freezing protection will ineffective.
- 6) For long-time not use the unit, drain off the water in the unit and pipeline system, and open the water plug on the water tank to drain off the water, in case the unit been frozen.
- 7) Please do not frequently on and off the unit, please do not manual cut-off the manual adjust valve during the unit is operating.
- 8) Often check the working situation of each part in the unit, and check the inner pipe connectors of the unit and whether the high and low pressure detection ports of the refrigerant has oil dirty, to make sure the unit has no refrigerant leakage.
- 9) When the user can not deal with the unit error, please contact the MDV Service Center.
- 10) Switch check for the electricity leakage protector.
- 11) The leakage flow protector of Electric control box operates a period (generally a month), should be in the closed power on state to press the test button, check the leakage flow protector is normal or not (each time you press the button, the leakage flow protector should be broken off once), if it's not normal and check the cause of the accident when be found, allowing once power on, and then, if no operation, it should find out the reason of the fault, and if necessary, do the movement characteristic test; if it is confirmed by the check for the leakage flow protector itself fails, it should be timely replacement or repaired.
- 12) After running for a long time, the heat transfer surface of water side heat exchanger will deposit calcium carbonate or other minerals, when these substances on the heat transfer surface scale is large, then can affect the heat transfer performance and lead to increased power consumption, high discharge pressure (or suction pressure is too low). It can use the organic acids such as formic acid, citric acid, acetic acid detergent for cleaning. Do not use detergents containing fluoride chlorate, due to the material of the water side heat exchanger is stainless steel or copper, which is easily to be corrosive and cause refrigerant leakage.

Table 9-1

PH Value	Total Hardness	Electrical Conductivity
6.5-8.0	50ppm	<200 μ S/cm (25°C)
Sulphate Ion	Silicon	Iron Content
<50ppm	<30ppm	<0.3ppm
Sulfide Ion	Chloride Ion	Ammonia Ion
None	<50ppm	None
Sodium Ion	Calcium Ion	_____
None	<50ppm	_____



CAUTION

- Clean the water side heat exchanger should be conducted by professionals. Please contact your local customer service of MDV.
- After using cleaning agent, use the clean water to clean the water pipe and heat exchanger, in case the waterproof system will be corrosive or has cleaning scale after adsorption.
- Under using the clean agents, it should accord to the dirt deposition to adjust the detergent concentration, cleaning time and temperature.
- It needs to neutralize the waste liquid after cleaning; the waste liquid processing should contact the relative company.
- The cleanser have corrosion effect for the eyes, skin, nasal mucosa etc., so the protection device must be used in the cleaning process (such as protective glasses, protective gloves, protective mask, protective shoes etc.) in order to prevent the inhalation or contact with the cleaner.

10. SPECIFICATIONS

Table 10-1

Model	RSJ-420/SZN1-H
Heating capacity (kW)	39
Nominal input power (kW)	9.65
Rated Input(kW)	14.5
Nominal input current(A)	19.7
Nominal water output(m³/h)	0.85
Circulating heating rated water flow(m³/h)	6.9
Water resistance in circulative rated water flow(kPa)	160
Rated input power (kW)	14.5
Rated input current (A)	24
Power supply	380-415V 3N~ 50Hz
Operation control	Can start the unit automatically, and has various protections and fault alarm functions
Refrigerant type	R410A
Refrigerant charge (g)	4500
Operating ambient temp. (°C)	-15~46
Water outlet temp. (°C)	56 (Default) 、 40-60 Adjustable
Water inlet pipe diameter (mm)	DN32
Water outlet pipe diameter (mm)	DN32
The max.bearing pressure of water system(MPa)	1.0
Outdoor fan power (W)× Qty	670X1
Outdoor fan draft direction	Air-out from the top
Unit width(mm)	1015
Unit height(mm)	1775
Unit depth(mm)	1026
Unit net weight(kg)	323
Noise dB(A)	66
Inlet temp(°C)	5~35
Inlet pressure(MPa)	0.15~0.6
Sound pressure value(dB)	<70
<ul style="list-style-type: none"> ● The heating capacity of the unit is detected by under the standard ambient of the outdoor dry/wet bulb temperature are 20°C/15°C, initial water temperature is 15°C and the outlet water temperature is 55°C; the actual heating capacity will be increased or decreased as the outdoor environment temperature and the relative humidity change. ● The noise of the unit is detected accord to the national standard requirement and in the semi-anechoic acoustic laboratory, the measurement error will be +3dB (A). ● The above data are only for reference, if there is update please being subject to the parameters in the label plate. 	

MD13IU-029JW

16125300000056

更改记录表（仅做说明用，不做菲林）

版本升级	更改人	更改日期	更改主要内容	更改页码 印刷页（或默认页码）
A-B	罗静 周峰	14. 4. 10	电控整改	整本更新
B-C	罗静 汤志国	14. 4. 10	认证整改、 增加过滤器	P1\2
C-D	罗静 汤志国	14. 6. 10	更新参数表 +环境温度范围	P20
D-E	罗静 汤志国	14. 7. 10	按认证要求更新 内容	整本更新
E-F	罗静 汤志国	14. 8. 7	按认证要求更新 内容	p1\2\13
F-G	罗静 周峰	14. 9. 15	更新接线铭牌	P9
G-H	罗静 周峰	14. 10. 08	更新故障代码表 增加曲线图	P14\17
H-I	郭银欢	18. 01. 30	增加腐蚀说明	P4
H-I	冯雪映	20. 01. 23	完善技术要求， 内容不变， 故不升级版本	
I-J	曾小燕	22. 09. 07	文字重叠， 已将其删除	P18

技术要求
双胶纸80g，黑白印刷，210*297mm

