MANUAL

CONTENT

Read the Manual before Operation

Please read this manual carefully before installation

- The heat pump must be installed by the professional technician.
- Please install the heat pump and connect the water pipe in accordance with this manual strictly.
- For safety, please make sure to recheck everything before power on.
- If the machine has any improvement, the content is subject to change without notice.

I. Prologue

Thanks for using heat pump water heater! Please read this manual carefully before installation and operation! This manual contains the information about installation, commissioning, operation, and maintenance. The following items should be focused:

1. Before installation, please confirm if your local voltage is match with the voltage showed on the machine's nameplate and if the carrying capacity of the power supply, wires and sockets are suitable for this machine's input power.

2. Users are not allowed to change the power cord or socket. Wiring work must be carried out by a qualified electrician and ensure that the metal part of the machine has a good grounding. Changing the ground mode is strictly forbidden.

3. After the completion of the construction of all wiring work, please make sure to recheck everything is well before power on.

4. Installing the machine in the place which the combustible gas may leak is strictly forbidden.

5. Do not put your hands or foreign objects into the air outlet of heat pump unit, otherwise, it will be dangerous to the people and equipment.

6. In order to obtain a better energy-saving effect, the unit should be installed in a place with well-ventilated.

ATTENTIONS:

1. Please make sure the water systems should be filled with water before the machine start working.

2. When the machine is operating, all the valves of the water systems must be in the open position.

3. If without inlet water or stop using for a long time, when re-boot the machine, please according to the item of attentons 1.

4. A removable filter must be installed at the water inlet and please clean the valve periodically depend on your locate water quality (every 2 or 3 months).

5. The maximum water temperature is 55C .When you use the water, please adjust the water

temperature to a appropriate temperature (The most comfortable water temperature for shower is 38~42 , if the water temperature above 50C , there will be danger of burns!)

6. The maintenance of the machine must be carried out by the professional personnel.

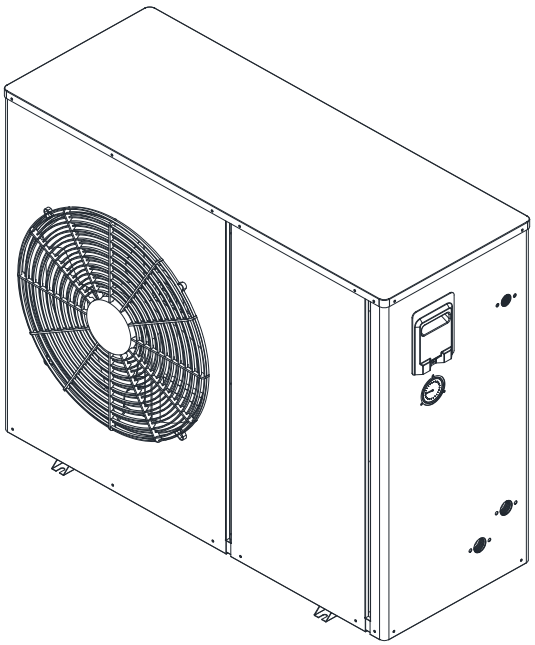
7. If the unit power off,please discharge all the water inside.Otherwise,the heat exchanger will be frozen in winter.

II. Main instruction of product

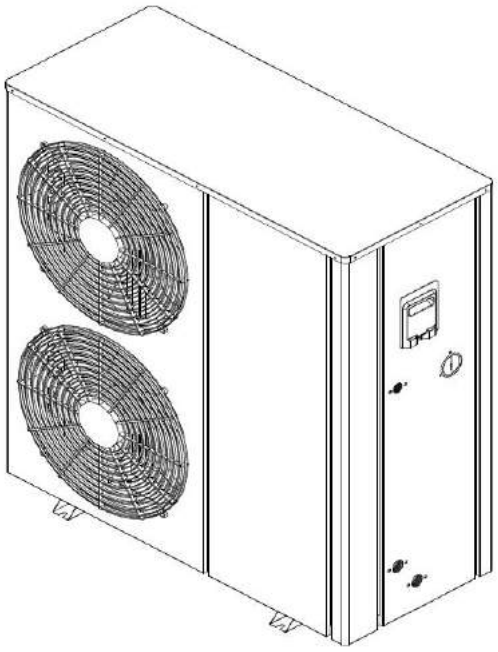
1.Parameter

Model	Size(L*W*H mm)	Net Weight(KG)	Power Source
BKDX30-95I/1/S	1105×452×904	100	220V-50hz-1N
BKDX50-200I/1/S	1214×539×1256	140	220V-50hz-1N 380V-50hz-3N
BKDX60-220I/1/S	1214×539×1256	145	220V-50hz-1N 380V-50hz-3N
BKDX80-280I/1/S	1507×587×1556	175	220V-50hz-1N 380V-50hz-3N

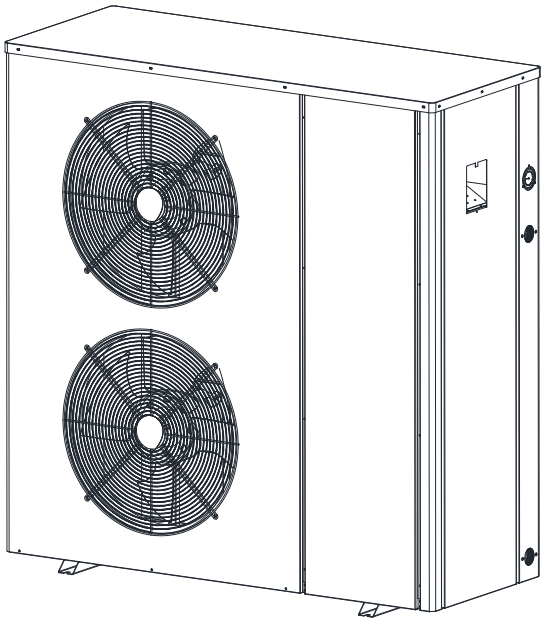
2.Appearance



BKDX30-95I/1/S



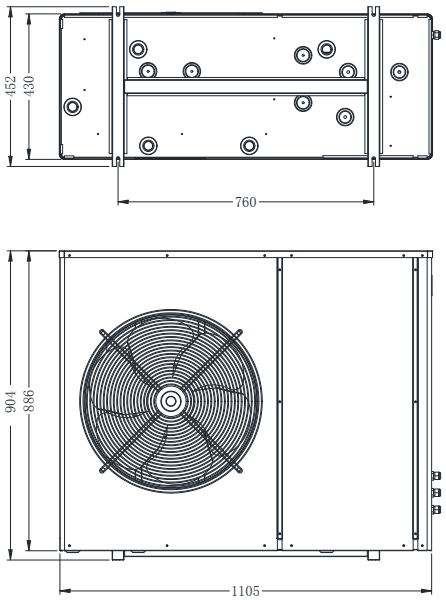
BKDX50-200l/1/S, BKDX60-220l/1/S



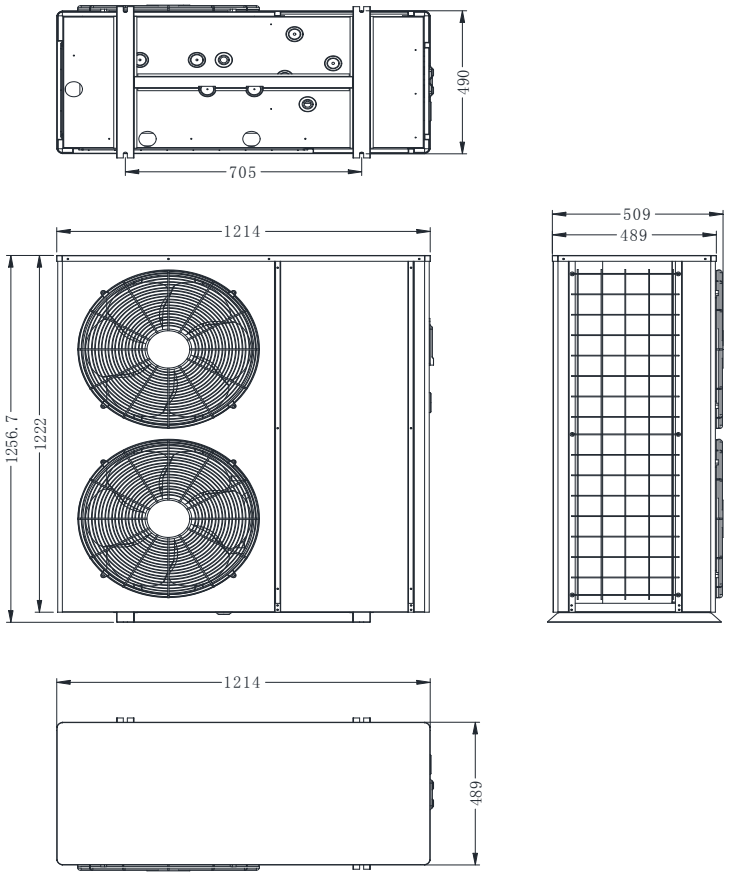
BKDX80-280l/1/S

3.Appearance size

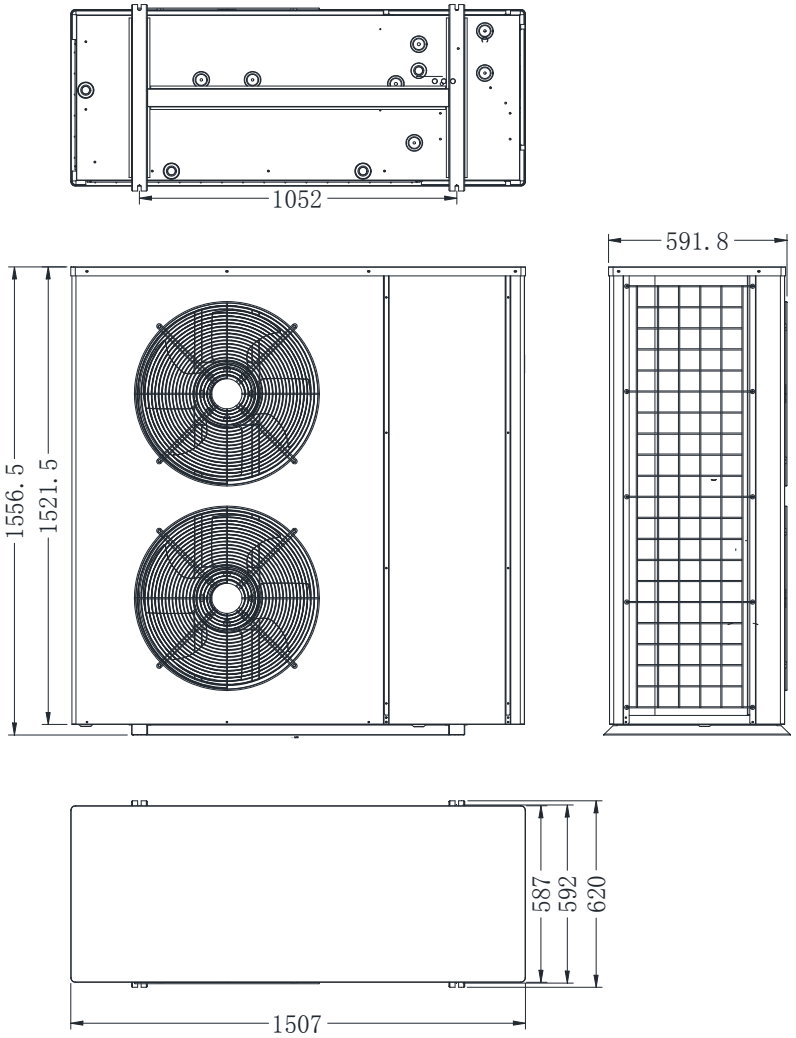
3.1 BKDX30-95I/1/S



3.2 BKDX50-200I/1/S, BKDX60-220I/1/S



3.3 BKDX80-280I/1/S



4.Specifications

Unit	**Low temperature DC Inverter monoblock heat pump**			
Model	**BKDX30-95I/1/S**	**BKDX50-200I/1/S**	**BKDX60-220I/1/S**	**BKDX80-280I/1/S**
Waterproofing grade	IPX4			
Leakage protection	Ⅰ Class			
Power source	220V-50hz-1N	220V-50hz-1N 380V-50hz-3N	220V-50hz-1N 380V-50hz-3N	220V-50hz-1N 380V-50hz-3N
Rated water supply quantity	165L/h	385L/h	392L/h	535L/h
Rated heating capacity	9000W	19000W	21000W	30000W
Hot water capacity	2200-9200W	4000-19400W	5200-21500W	6950-29200W
Heating capacity	2600-9500W	4500-20000W	5600-22000W	5850-30000W
Cooling heating	2500-7000W	4500-11000W	5200-13500W	7200-16600W
Heating input power	1000-3000W	2000-5500W	2500-6600W	2660-8000W
Hot water input power	1000-3000W	2000-5500W	2500-6600W	2660-8000W
Cooling input power	1000-3000W	2000-5500W	2500-6600W	2660-8000W
Electrical heating power	3000W	3000W	3000W	/
Electrical heating Current	14A	14A	14A	/
Rated input power	2370W	5080W	5660W	6050W
Rated current	10.5A	23.1A/7.3A	26.1A/10.1A	28A/9.2A
Max current	27.1A	39A/15.2A	45A/15.5A	41A/12A

Max input power	5960W	8080W	8660W	8850W
Max hot water temperature	55℃	55℃	55℃	55℃
Rated water flow	1.8m³/h	3.5m³/h	4.0m³/h	5.1m³/h
Refrigerant	R410A	R410A	R410A	R410A
Net weight	100kg	145kg	150kg	185kg
Noise	≤55dB(A)	≤58dB(A)	≤58dB(A)	≤60dB(A)
Inlet/outlet gas max working pressure	4.2MPa	4.2MPa	4.2MPa	4.2MPa
High/low pressure max working pressure	4.2MPa	4.2MPa	4.2MPa	4.2MPa
Heat exchanger max working pressure	4.2MPa	4.2MPa	4.2MPa	4.2MPa

III. Installation

1.Heat pump installation

(1).Installation location

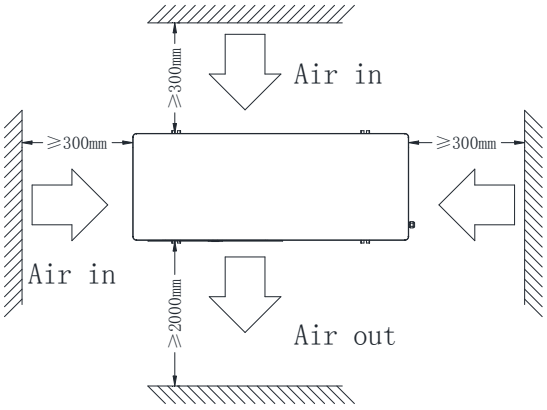
◆ Provide sufficient space for installation and maintenance.
◆ Inlet and outlet accessibility, strong wind cannot reach
◆ Unit installed in ventilation place where can bear the weight of the unit, can mount the unit horizontally, also will not increase the mechanical noise and vibration.
◆ Exhausting air won't affect the neighbors, no combustible gas leakage.
◆ Should have the snow shed in winter.
◆ Around the unit need drainage channel to drain condensate out.
◆ Installation location should be easy to install, repair and connect.
◆ If installed on the roof, it needs to increase measures against typhoons and lightning.
◆ Do not install the control panel in the bathroom, in order to avoid moisture to affect the unit Operation.

(2).Installed in the following locations may cause the machine to malfunction.

- ◆ Places such as cutting oil and other mineral oils.
- ◆ Places with salted air near the sea.
- ◆ Places which contains gas such as sulfur, acidic or alkaline and other corrosive gases in the spa area.
- ◆ The place is with seriously voltage fluctuations and have strong electromagnetic waves.
- ◆ Kitchen and other places which are full of oil odor, and oil trace.

(3).Unit infrastructure installation

Units can be installed base of concrete structures, and steel brackets can also be used to install, basic surface is roughness (basic is designed according to the operational quality and according to the technical performance parameters table). Under the unit, should install the vibration damping rubber, and fix with bolts. Adjust the unit installation level, tilt <2 degrees. On the ground should have the drains for unit's condensate.



(4).Selection circulation pipeline.

Circulation pipeline of inverter heat pump can not be smaller than the inlet and outlet pipeline, circulation pipe should use the same diameter as inlet and outlet pipes.

(5).Connection of pipeline

◆Don't let the dust and other debris into piping system.

◆Doing the plumbing work after fixing the unit firmly.

◆A removable filter （40～60mesh）must be installed at the water inlet and please regular clean the valve depend on your local water quality.

◆Install a drain valve in the lowest point of the pipe, for convenient cleaning, Ensure smooth access level, Can not alternately up and down, for discharge the air and draining the water in the pipe out.

◆Install the union valve at the water inlet/outlet, for convenient maintaining. Should fix the valve on water pipe of the unit. Rotating the water pipe, water connecting can't withstand rotation torsion directly.

◆Outlet and inlet water pipes should do thermal insulation well, the distance of outlet and inlet need to apart, for first time to use, should add the appropriate amount of antifreeze and anti corrosive into the warming water pipes, the input water pipe and water tank can do water replenishment according to the

actual situation.

◆Do not shut off the power in winter. If do not use for a long time, should drain off the water in the unit and water pipes, to prevent heat exchanger or water pipe freeze and crack.

◆Select pipe material, can choose stainless steel, copper, aluminum hot water pipes, hot water PPR pipes, etc., with pipes in national health and safety standards, heat-resistant, rust-proof, not easy to scale.

◆Reasonable pipe layout, to minimize bending and reduce the pressure loss of the water system.

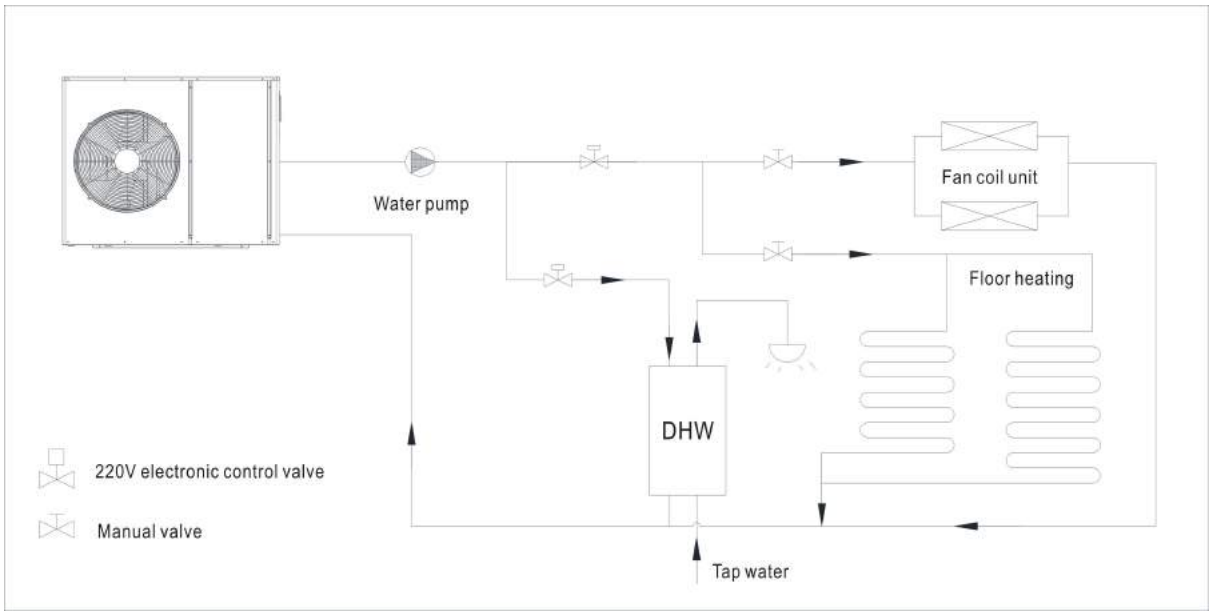
◆After the circulating water system connected, must do pipeline connection rigidity and add water pressure inspection, and sewage, to ensure the system clean. Past the inspection,no leakage, then pack insulation for pipeline and valves.

◆Metal pipe must use with more than 50mm thick glass fiber or high density, fire-retardant insulation sponge. (PPR hot water pipes can be used 30mm thickness of glass fiber or high density fire-retardant sponge rubber insulation.)

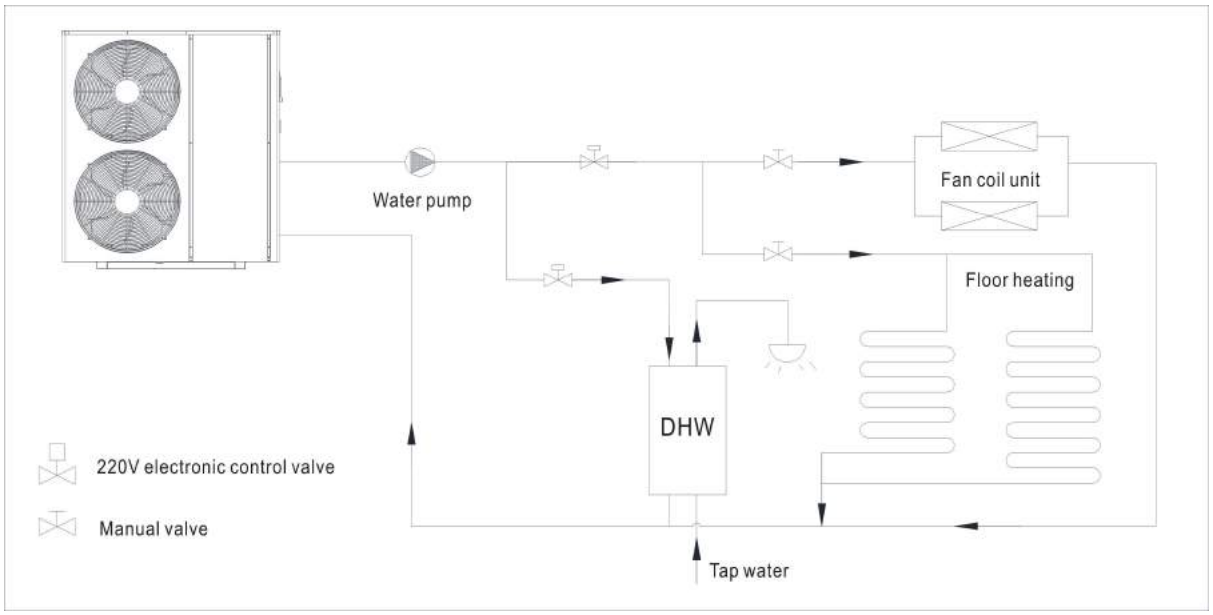
◆Must install thermometer and water pressure gauge on Inlet and outlet water pipes,to inspect during operation.

2.Connection diagram

(1)BKDX30-95I/1/S



(2)BKDX50-200I/1/S, BKDX60-220I/1/S, BKDX80-280I/1/S



3.Circuit connection

(1) Attentions

◆Construction wiring must be installed by a professional technician for construction in accordance with the circuit diagram.

◆Appliance installation wiring should be installed in accordance with national wiring rules.

◆Before installation, please confirm whether your local voltage is match with the voltage showed on the machine's nameplate and whether the carrying capacity of the power supply, wires and sockets are suitable for this machine's input power.

◆The power source wire diameter is selected by the nameplate maximum current.

◆The regulation of insurance tube: according to the reality.

◆Users are not allowed to change the power cord, wiring work must be carried out by qualified electricians, and to ensure that the machine metal parts has a good connection with grounding, the machine shall not be allowed to change the grounding method.

◆The power connection must be equipped with the unit matching and at least 3mm contact with the power from the all-pole disconnect device and leakage protection device.

◆If the power soft wire is damaged, it must be replaced by the manufacturer, its service department, or similar professional to avoid danger.

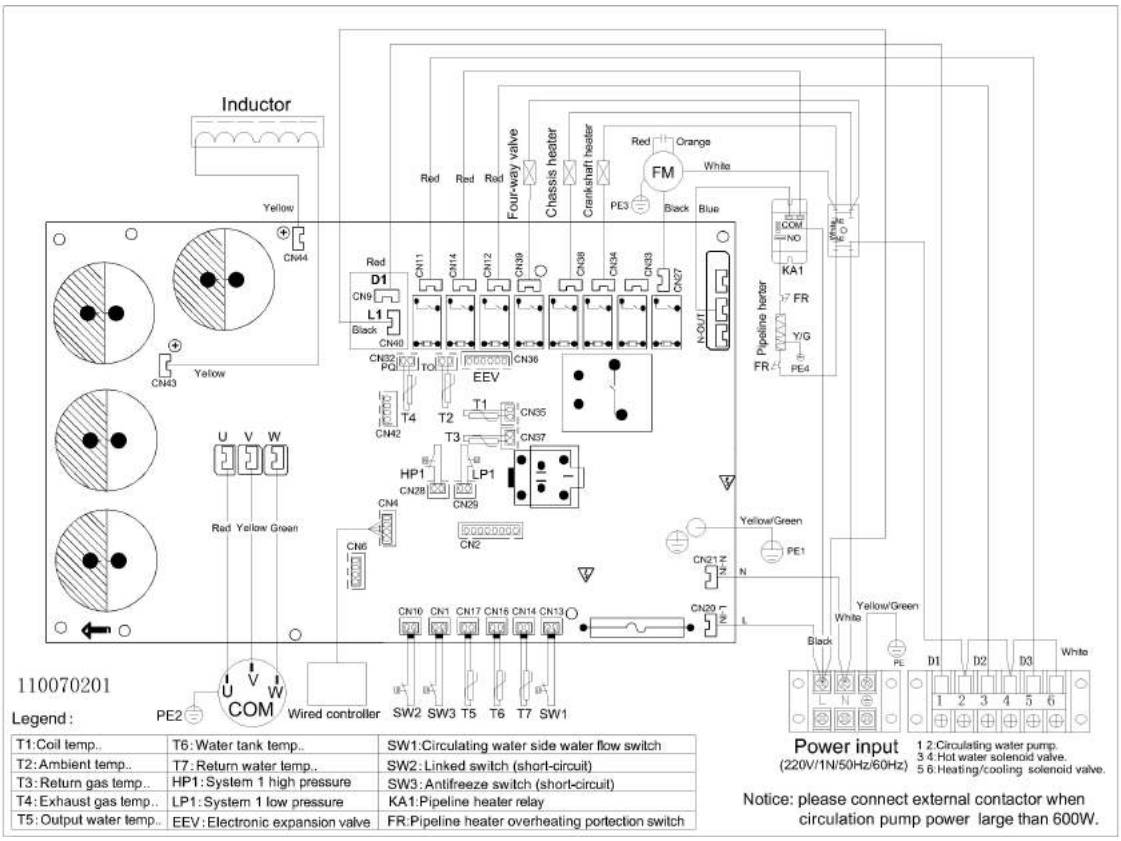
◆Do not insert hands or foreign objects into the outlet of the unit, which will lead to the danger of personnel and equipment.

◆The remote controller is fixed by screw and installed indoor with the height above 1.5M. It is forbidden to install in the environment where the humidity, rain, acidity, corrosivity and light illuminate directly.

◆The water quality of the unit must meet the national standard of domestic water consumption, otherwise it will cause the machine damage, the company does not bear any responsibility.

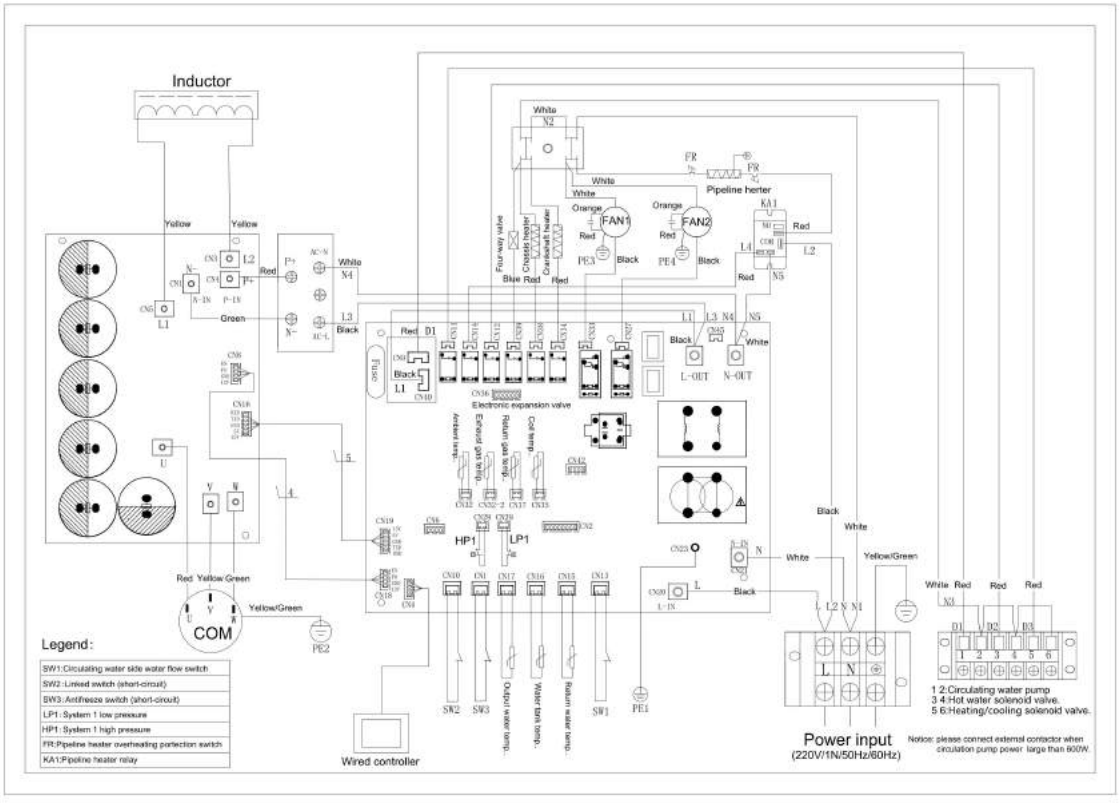
4.Circuit diagram

(1)BKDX30-95I/1/S (220V)

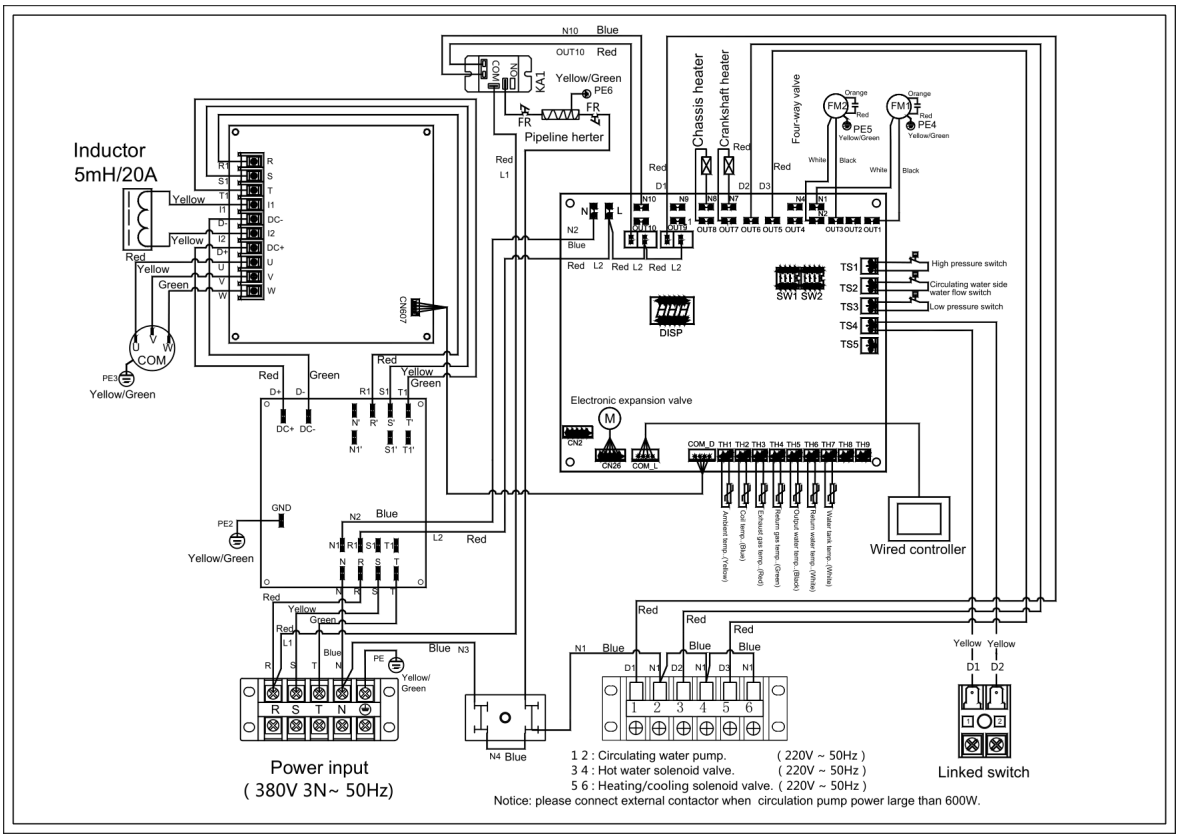


T1:Coil temp..	T6:Water tank temp..	SW1:Circulating water side water flow switch
T2:Ambient temp..	T7:Return water temp..	SW2:Linked switch (short-circuit)
T3:Return gas temp..	HP1:System 1 high pressure	SW3:Antifreeze switch (short-circuit)
T4:Exhaust gas temp..	LP1:System 1 low pressure	KA1:Pipeline heater relay
T5:Output water temp..	EEV:Electronic expansion valve	FR:Pipeline heater overheating portection switch

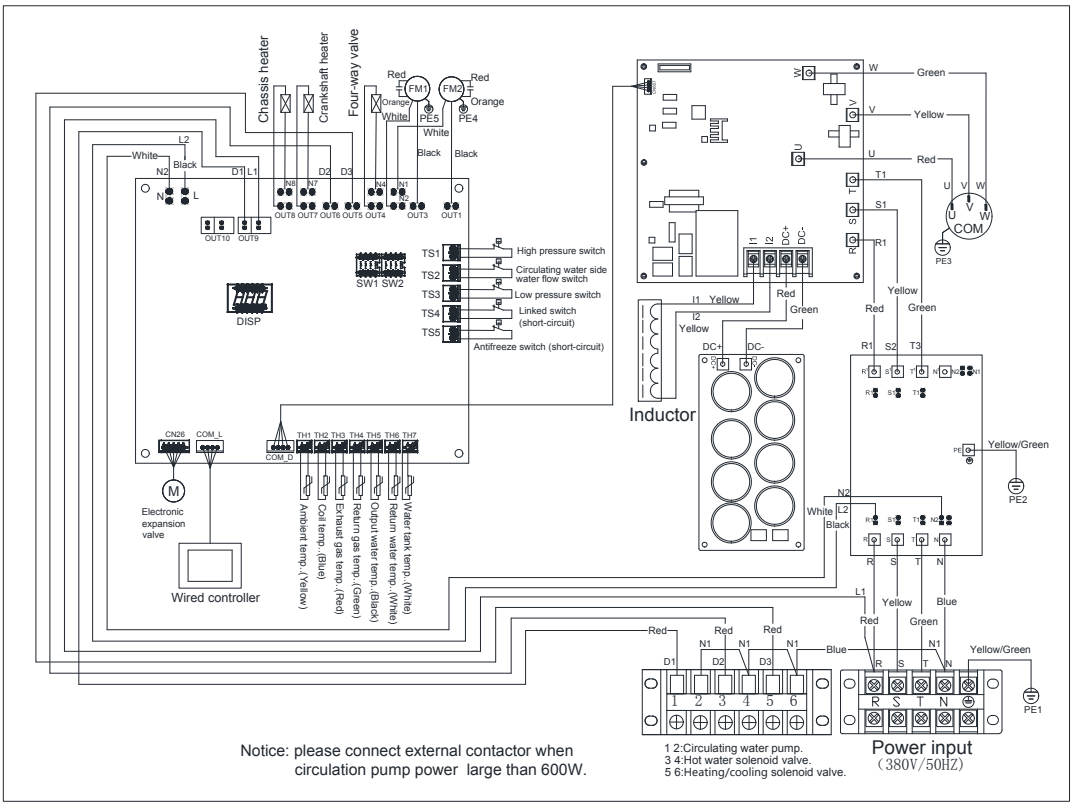
(2) BKDX50-200I/1/S, BKDX60-220I/1/S (220V)



(3) BKDX50-200I/1/S, BKDX60-220I/1/S (380V)



(4) BKDX80-280I/1/S(380V)



IV. Trial running

1.Trial running must after all the installation completed.

2.Please confirm the following matters before the trial operation, put "√"in the boxes after confirmation

- ▲ Unit is installed correctly ☐
- ▲ Power supply meets unit's rated power source need ☐
- ▲ Piping and wiring are correctly installed ☐
- ▲ Unit air inlet/outlet well-ventilated ☐
- ▲ Drain off water is done well ☐
- ▲ Leakage protective device act effectively ☐
- ▲ Pipe thermal insulation ☐
- ▲ Grounding wire connected correctly ☐

3.After check and ensure correct, then power on. If the control panel display nothing, that should recheck and tight the line of control panel. The control panel should display time, setting temperature and the current temperature.

4.Discharge the air out of the pipelines , and then press ON/OFF button, the unit work under the setting temperature, unit's trial running would check the following:

- ▲ First time to run the device, check the current normal or not;
- ▲ Operation panel's function keys are normal or not;
- ▲ The indicator light is normal or not;
- ▲ The whole circulating hot water system whether has water leakage;
- ▲ The condensed water discharge is normal or not;
- ▲ System's pressure is normal or not (according to the high water temperature or low pressure);
- ▲ Whether there is abnormal sound and vibration when unit running;
- ▲ The wind, sound and condensed water from unit whether effect neighborhood;
- ▲ Whether there is leakage of refrigerant.

V. Operation panel instruction

1. Indoor line control panel
(BKDX30-95I/1/S,BKDX50-200I/1/S,BKDX60-220I/1/S,BKDX80-280I/1/S)-220V

2. Button Instruction

2.1 Button lock and unlock

Press and to lock or unlock the controller.

When in lock status,the display ,when in unlock status,the hide.

2.2 On/off Button

Press to switch on/off the unit.

In power on status,in heating mode,press for 3 seconds then forced into defrost process.

2.3 Mode Button

In switch on status,press to select the working model.

In switch off status,press to for 3 seconds to forced into recycle refrigerant function.

2.4 Temperature Setting

In switch on status,press or to set the temperature,press more than 0.5 second to fast increase or decrease.

2.5 Clock setting

Press for 3 seconds,minute number flashes,press or to modify the minute number.

Press again,hour number flashes,press or to modify the hour number. Press again

to save and exit the clock setting.

2.6 Timer Setting

Press  ,minute number flashes and  icon flashes,press  or  to modify minute number. Press  ,hour number flashes and  icon flashes,press  or  to modify hour number.

Press  ,minute number flashes and  icon flashes,press  or  to modify minute number. Press  ,hour number flashes and  icon flashes,press  or  to modify hour number.

Without operation in 10 seconds then exit timer setting.

After timer setting, press  again to cancel the timer .

2.7 Parameters Checking

Press  and  for 3 seconds to enter into parameters checking status,touch  or  to check each parameter.

Parameters table

No.	Status name	Unit	Ranger	Remark
d01	Inverter compressor current actual frequency	Hz	0 ~ 150	
d02	Inverter compressor operation(input) current	A	0 ~ 50.0	
d03	Water return temperature	℃	-30 ~ 999	
d04	Water tank temperature	℃	-30 ~ 999	
d05	Water supply pipe temperature	℃	-30 ~ 999	
d06	Reserve	℃	-30 ~ 999	
d07	Exhaust gas temperature	℃	-15 ~ 999	
d08	Ambient temperature	℃	-30 ~ 999	
d09	Evaporator coil temperature	℃	-30 ~ 999	

d10	Gas return temperature	℃	-30 ~ 999	
d11	After throttling temperature	℃	-30 ~ 999	
d12	Opening of EXV(shown as the actual opening)	P	0 ~ 500	Pulse count

Button instruction

Fault code and instruction table

Code No.	Fault Name
E01	Outdoor unit current protection
E02	Flow switch protection
E03	EEPROM error indication (indoor board) / EEPROM error indication (operation panel)
E04	Return water temperature over high when heating or output water temperature over low when cooling
E05	DC link voltage is over high / low protection
E06	IPM failure
E08	Output and input water temperature different too large protection
E09	Communication error (indoor board and outdoor board)
E10	Return water temp sensor fault
E11	Output water temp sensor fault
E12	Tank temp sensor fault
E13	Ambient temp sensor fault
E14	Evaporator temp sensor fault
E18	Compressor outlet gas temp sensor fault
E21	Compressor outlet gas temperature over high
E25	Evaporator coil temperature too high when cooling model
E31	System pressure over high protection
E32	Communication error (operation panel & indoor board)
E33	Communication error (IPM & outdoor board)
E41	System pressure over low protection
E44	Winter unit standby antifreeze protection
E45	Return gas temp sensor fault
E46	Temp sensor fault after throttle
E47	Water tank temperature sensor abnormal protection
E48	Antifreeze switch disconnect failure

BKDX50-200I/1/S,BKDX60-220I/1/S, BKDX80-280I/1/S (380V)

2.21. Operation illustration & displays

Symbol	Definition	Symbol	Definition
	On/Off Key		Hot Water Mode button
	Timing Setting Key		Room Heating Mode button
	Add button		Cooling Function Mode button
	Subtract button		Defrosting Function button
M	Mode button	1 ON 2 OFF	Timing button

2.3.1 Wired Controller Display Declaration

2.3.1.1 Temperature display area display system cock, timing, running parameters, common parameters, alarm code related data.Left side temperature display area display actual detect tank temperature ,setting temperature ,parameter number etc.

Right side temperature display area display setting temperature ,parameters values etc.

2.3.1.2 Flashes of the various fields show the flashing period for 1 second; after the full power of about 3 seconds after the normal operation.

2.3.1.3 30 seconds without key operation, the LCD display brightness will automatically extinguished.

2.3.2 Wired Controller Operation

2.3.2.1 On/ Off Key: when heat pump shutdown, press "⏻" to start up the unit ; when heat pump start up press "⏻"key to shutdown the unit. When heat pump under heating start up status, press "⏻" for more than 3s to force unit to enter defrosting function .

2.3.2.2 Mode Key: When the wired controller is on, Press"M"to choose the operating mode, and also

for setting temperature, checking & setting parameters, etc.

2.3.2.3 Temperature Setting: When the wired controller is on, press“△”or“▽” , the temperature data on the screen will show up, then press “△”or“▽”to add or reduce ,then press“M” to confirm the modifying, or after 20 seconds without any operation, it will automatically quit from the temperature setting, and store the current modified data, press“△” or “▽” without stop for over 0.5 second to start quick adding or substracting.

2.3.2.4 Key locked function: First press “△”, then press “▽” for 3s to enter or exit key locked function, when “”symbol show up means wired controller locked.

2.3.2.5 Inquiry running parameters

2.3.5.1 Enter inquiry: first press “M”then press “▽” for 3 s to enter parameters setting status, temperature display area display parameter number, setting temperature area display parameters content.

2.3.5.2 Inquiry operation and exit: after entering running parameters, press “△”or “▽”to display each running parameter; press “”to exit inquiring parameters status or if there is not any pressing keys operation will automatically exit inquiring parameters status after 20s.

2.3.2.6 Common parameters setting

1.3.6.1 Enter setting ; first pressing “M” then press “△” for 3 secs,the temperature display area display “00” and blinking display ,input the password (default password “Fb”),then press “△”or “▽”to add or subtract ,press “△”or “▽” to confirm ,if the password is wrong then exit current status ; if the password is correct then enter parameter modification status ,temperature display area display parameters number and blinking display ,setting temperature area display parameter content ;

1.3.6.2 Setting operation : after entering setting parameters, the parameter number blinking display ,press “△”or “▽”switch line to display each setting parameters number ,then press “M”the parameters content blinking display ,press “△”or “▽” to modify current content ,after finishing press “M” to save current modification then back to parameters number display status .

1.3.6.3 Exit setting; press “”to exit parameters setting status or if there is not any pressing keys

operation will automatically exit parameters setting status after 20s.

2.3.2.7 Fault display; when unit fault occurs, the fault blinking display at setting temperature area, recycling display fault code and temperature, after fault clear the controller recover normal display.

2.3.2.8

2.3.8.1 Clock display: in unit shutdown status, long press any keys except “ ”, the temperature display area display current time for one second.

2.3.8.2 Enter clock setting; long press “ ” for 3 secs.minutes part of clock area blinking display, means entering clock setting status

2.3.8.3 Clock setting operation : enter clock setting status ,minutes part blinking display ,press “ ”or “ ”to modify minute value .Then press “ ”,hours part blinking display ,press “ ”or “ ”to modify hour value ,press “ ” to save current setting then exit or if there is not any pressing keys operation will automatically save current setting then exit.

2.3.2.9 Setting Timing Control

2.3.9.1 There are 2 group timing units, 1 ~ 2 group ,each timing unit group can set as “timing start-up ”timing shutdown. Default setting is “invalid”, means timing start-up and timing timing shutdown is same.

2.3.2.9.2 Enter the setting timing: short press “ ”,symbol “1 ”、“ON ”at left bottom screen blinking display ,minutes display area blinking means enter “1 unit timing start-up ”setting status ,the minute position blinking display ,press “ ”or “ ”to modify minute value ,then press “ ” to confirm then enter hour setting ,the hour position blinking display , press “ ”or “ ”to modify hour value ,press “ ” to confirm and “1 ”、“OFF ”symbols blinking display .the minute position blinking display ,press “ ”or “ ”to modify minute value ,then press “ ” to confirm then enter hour setting ,the hour position blinking display , press “ ”or “ ”to modify hour value ,press “ ”to confirm and enter “2 unit timing start-up ” , its operation same as above .

2.3.2.9.3 Exit timing setting : in timing setting status ,press “ ” or in 20s without any key

operations then quit current timing setting and exit timing setting status .

2.3.2.9.4 Cancel timing setting; after enter timing setting status, long press “  ” for 3 secs to cancel the configured timing function.

2.3.2.10 Memory function : in shutdown status ,long press “  ” for 3 secs,the LCD display “POSET”then enter memory function setting ,press “  ”or “  ”to set value as “on” or “off ”;If value is “on ”,the wired contact memory setting status before powering off .if value is “off ”wired controller memory shutdown status .

2.3.2.11、Back light setting ; in shutdown status ,long press “  ” for 3 secs, the LCD display “LCD SET” then enter back light setting ,press “  ”or “  ”to adjust the brightness. Press any keys except “  ”or “  ” to save setting or if no any keys operation in 5s the controller will save current setting and exit.

2.3.2.12、Running Parameters List:

No.	Status Name	Units	Indication Range	Remarks
d01	Inverter compressor current actual frequency	Hz	0 ~ 150	
d02	Inverter compressor operation(input) current	A	0 ~ 50.0	
d03	Water return temperature	℃	-30 ~ 999	
d04	Water tank temperature	℃	-30 ~ 999	
d05	Water supply pipe temperature	℃	-30 ~ 999	
d06	Reserve	℃	-30 ~ 999	
d07	Exhaust gas temperature	℃	-15 ~ 999	
d08	Ambient temperature	℃	-30 ~ 999	
d09	Evaporator coil temperature	℃	-30 ~ 999	
d10	Gas return temperature	℃	-30 ~ 999	
d11	After throttling temperature	℃	-30 ~ 999	
d12	Opening of EXV(shown as the actual opening)	P	0 ~ 500	Pulse Count

VI. Maintenance & Repair

- **Maintenance**

1. The motor has been lubricate and sealed in advance before left the factory, therefore lubricate is not needed during maintenance.
2. Using a stiff nylon brush to clean the evaporator fins. Before scrub, clean it with vacuum cleaner. If there is compressed air, you can use high pressure air duct to clean the condenser and evaporator.
3. Periodic inspecting if the air inlet or outlet is stopped up。
4. Pay more attention to the exhaust/ suction pressure of the system. If there is any abnormity, find out the reason and clearing the fault. If you cannot determine the reason, get in touch with the technician.
5. To control and protect the equipment, do not adjust the factory setting freely.
6. Periodic inspect the electrical connections and regularly monitor the operating voltage, operating current and phase balance. Timely to check the reliability of the electrical components, replace the expired and unreliable parts timely.
7. Inverter floor heating heat pumps use patent heat exchanger and the outlet water temperature is high. After long time operation, the heat transfer surface of the water side heat exchanger will be deposited calcium oxide or any other minerals. If these minerals fouling too much on the heat transfer surface, it will effect heat transfer performance , So regular cleaning is necessary. Descaling only for life water, the warm water pipeline is full enclosed type, no need to do descaling. Notice: Replenishment pipes must increased Y-filter device to prevent condenser or pipeline blocked; Descaling material: used formic acid, citric acid, and acetic acid etc. clean, cannot contain cid or fluoride sanitiser, due to water side heat exchanger's material is stainless steel, easy to corrosion, lead to refrigerant leak

- **Parts replacement**

When replace the parts, you must use resource.

- **System maintenance**

Whether need to refill the refrigerant depend on the value of exhaust/suction pressure. The air tight test should be done. in case of leakage or replacements of the components of the circulate system. In accordance with the following two situations when refill the refrigerant:

1. The refrigerant leak completely

If this happens, you must use 40Kgf/cm2r high pressure nitrogen or a small amount of refrigerant to do leak detection. Before repair welding, the gas in the system must be drained. Before refill the refrigerant, the system must be thoroughly dried and vacuum.

a、Connecting the vacuuming pipe to the refrigerant injection needle valve of low pressure side. Use vacuum pump to vacuumize the system for more than 15 minutes. Then confirm if the vacuum gauge shows at －1.0×105Pa（－76cmHg）.

b、After achieving the required vacuum effect, filling the refrigerant to the system with refrigerant bottle. On the nameplate and main technical parameters we have marked the suitable refrigerant. Make sure to fill the refrigerant at the low pressure side of the system.

c、The refilling refrigerant quantity subject to the ambient temperature. If you do not meet the required filling quantity and cannot filling longer, you can turn on the machine, then starting filling continuously from low pressure side, in the meantime must prevent damage from liquid refrigerant.

2. Refill the Refrigerant

Connecting the refrigerant bottle at the refrigerant injection needle valve of low pressure side and connecting the pressure gauge at the low pressure side. Then turn on the machine, filling the refrigerant into the system slowly and inspect the high and low pressure.

▲Warning: When doing leakage hunting and air tight test, only high pressure nitrogen and refrigerant is allowed to use, filling oxygen, acetylene or other flammable or toxic gases is strictly forbidden.

Malfunction analyze and clearing：

Phenomenon	**Reason**		**Check**	**Clear**
Machine does not work	Power cut/outage		Measure the voltage of circuitry	Wait for power resume
	The operation panel has display, but machine can not turn on, key failure	Operation panel lines not connected	Check the circuitry	connect
		Operation panel damaged	Substitution method	Replace operation panel
		disturbed	Check the source of interference	Clear the source of interference
			If the line lengthened by the non-shielded cable	Replace the line(use shielded cable)
		Low voltage	Check the circuitry voltage	Replace the line or increase voltage stabilizer
		PCB damaged	Substitution method	Replace PCB
Machine does not work	operation panel no display	Transformer damaged	Measure with multi-meter	Replace transformer
		Operation panel lines not connected well	Check the circuitry	Welding with soldering iron
		Operation panel damaged	Substitution method	Replace operation panel
		PCB damaged	Substitution method	Replace PCB

		disturbed	Check the source of interference	Clear the source of interference
			If the line lengthened by the non-shielded cable	Replace the line(use shielded cable)
Fan does not work	Fan blade is stuck		Check the fan blade	Clear foreign body
	The sub High pressure(fan uninstall) system' pressure over high	sub high pressure switch damaged	Check the sub high pressure	Replace(short it)
		Too much refrigerant	Check the pressure	Discharge some refrigerant
		Water system dirty	Check if filter is installed	Clean water system and install filter
			Check water system	Clean water system
		Lack of water flow	Check filter	Clean filter
		Water pump damaged	Check water pump	Replace water pump
		Water flow of water pump is small	Measure the water flow of water pump	Change a bigger water pump
	Without power supply	Power cut off	Measure the circuitry voltage	Wait for power supply
		Circuit breaker	Check the circuitry	Connect the circuitry
		PCB damaged (no output)	Measure the output voltage	Replace PCB
		Transformer damaged	Measure the winding and output voltage	Replace transformer
	Capacitor damaged	Capability become smaller	Check the capability of the capacitor	Replace the capacitor
		open circuit	Measure with multi-meter	Replace the capacitor
		short circuit	Measure with multi-meter	Replace the capacitor
	Motor damaged	Motor winding open circuit	measure the winding	Replace the motor
		Motor winding short circuit	measure the winding	measure the winding
		Motor winding grounding	measure the winding	measure the winding
The compressor does not work	Compressor wiring terminal without power supply(PCB no output)	The machine is power off	Check the operation panel	Power on
		Setting temperature is lower than water	Check setting temperature	Reset
		PCB damaged	Substitution method	Replace PCB

		Transformer damaged	Substitution method	Replace transformer
		Power cut	Measure the circuitry voltage	Wait for power supply
Compressor does not work	Capacitor damaged		Check the capability of the capacitor	Replace the capacitor
	External overload protector damaged		Measure protector resistance	Replace
	Built-in protector	Too much refrigerant	Measure pressure, current and water temperature	Discharge some refrigerant
	Built-in protector	Too little refrigerant	Measure pressure, current and water temperature parameter	Refill refrigerant
		The voltage is low	Measure voltage	Change the lines or increase voltage regulator
		Compressor cylinder jammed	Measure pressure, current and water parameter water temperature	Shunt capacitor, fill refrigeration oil
		Compressor oil shortage, noisy, excessive	Listen to the noisy and test the compressor	fill refrigeration oil
Not defrosting	Defrosting temperature sensor reinstall after broken	Short circuit	Test the resistance	Replace sensor
		Open circuit	Test the resistance	Replace sensor
		Resistance variation	Test the resistance	Replace sensor
	Defrosting temperature sensor loose		Check the sensor	refit
	No frost at the installation site of the defrosting temperature sensor		Visual inspection	Adjust the installation site
	Defrosting detection time is too long		Check the defrosting time	Reset the time
	Defrosting condition setting inappropriate		Setting defrosting temperature too high	Adjust the temperature
	Four way valve does not work	Four way valve coil damage	Measure the winding	Replace the coil
		Four way valve stuck	Knock the four way valve	Replace four way valve

	Four way valve blowby	Touch and feel for way valve's temp. Measure current and voltage	Replace four way valve
	PCB damaged	Force to defrost, check whether PCB have power output.	Replace PCB