

PACKAGE CHILLER



TRUST AIR CONDITIONING EQUIPMENT CO.
Prepared By: Engineering & R & D Department.

Installation

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توجه:

شرکت تراست حق تغییر مشخصات دستگاه‌ها را در جهت بهبود و ارتقای کیفیت برای خود محفوظ می‌دارد.

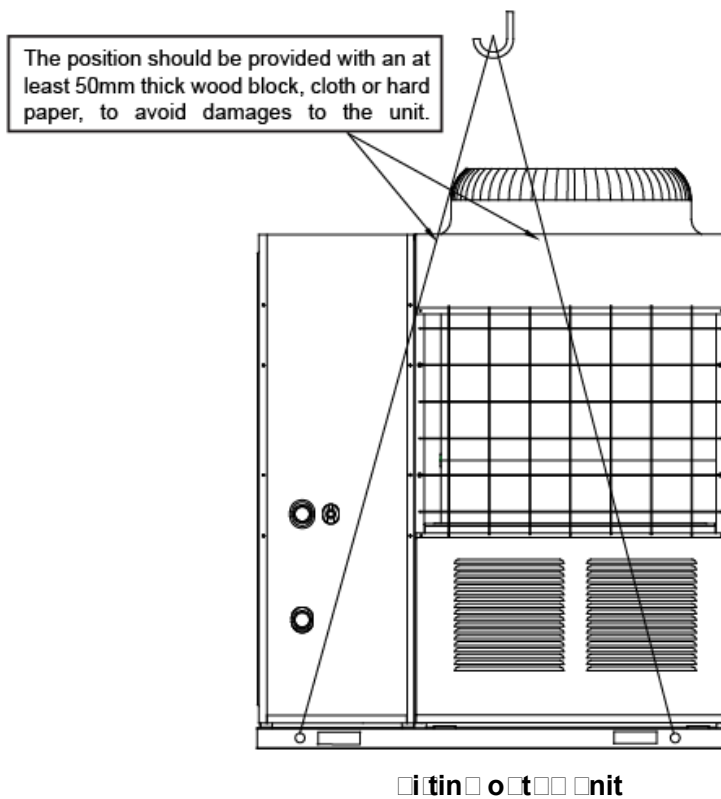
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1. Installation

1.1 Unit Installation

1.1.1 Transportation

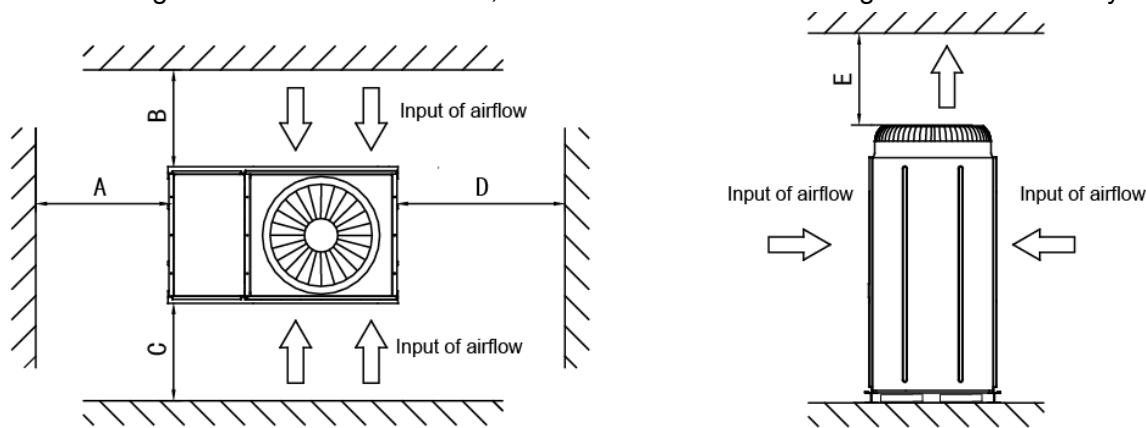
- ◆ Be sure that the package will be transported safely, unpack until reach installation site.
- ◆ The leaning angle during the transportation should be smaller than 15 degree to prevent the module from overturning.
- ◆ Rolling handling: Several rolling rods of the same size are placed under the base of the unit, and the length of each rod must be more than the outer frame of the base and suitable for balancing of the unit.
- ◆ Lifting: The strength lifting rope (belt) can bear should be 4 times the weight of the unit. Check the lifting hook and ensure that it is firmly attached to the unit, and the lifting angle should be more than 60°. To avoid damages to the unit, the contact position of the unit and lifting rope should be provided with an at least 50mm thick wood block, cloth or hard paper. Any person is not allowed to stand below the unit when lifting it.
- ◆ Fork truck transportation: When carry the unit by fork tuck, please insuring the fork holding the front and rear main beams of the unit.



1.1.2 Outdoor installation

- Clean, bright and well ventilated place such as roof, balcony or courtyard.
- Place without the interference of lampblack, steam and other kind of heat source.
- Place where it is convenient for piping and water drainage with the least influence to surroundings caused by noise, cool or heat wind.
- Place close to electrical source for wiring.
- Place with solid basement preventing causing resonance and noise.
- Place with 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 seep.
- Ensure there is sufficient space for the maintenance, the required room is as shown as follows, check whether there are any barriers which would block the airflow. The wall around the module should be not higher than 1m (from the bottom of module).It is recommended to cover the module to prevent rain or snow, but the space between the cover and the top of module should be more than 2m.When parallel installing modules, it is suggested to leave sufficient space among modules for maintenance.
- If the unit needs to operate in winter, and the installation site may be covered by snow, the unit should

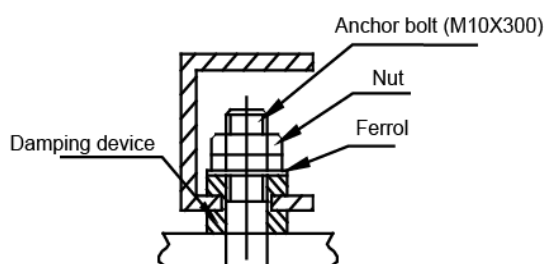
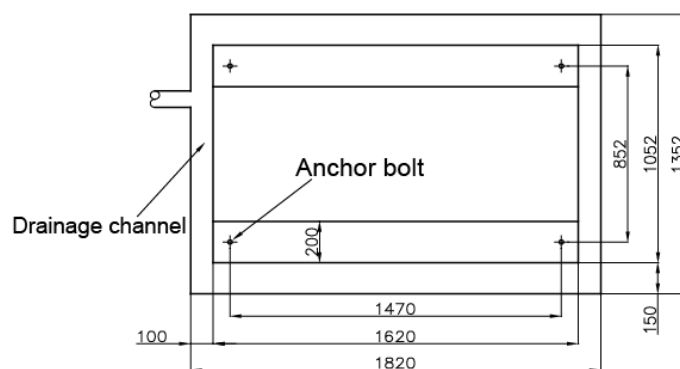
be located higher than the snow surface, to ensure that air flows through the coils smoothly.



Installation space (mm)	
A	≥1200
B	≥1200
C	≥1200
D	≥1200
E	≥2000

1.1.3 Installation Foundation

- Before installation, structure and prefabrication of the basement should be seriously paid attention to, when installing on the top floor or middle, the floor intensity and noise prevention should be considered, it is referable to communicate with building designer before installation.
- The drainage channel must be made around the basement which ensures the water can be draining out fluently. In order to avoid the vibration and noise caused by module, a pad for reducing vibration must be set between the module and the basement, moreover, the module should be installed on the plane, and a shockproof basement can be adopted if it is necessary.
- It is recommended to take some measures to strengthen fixing to prevent the movement caused by long-term running, earthquake or typhoon.
- The unit should be located on the horizontal foundation, the ground floor or the roof which can bear operating weight of the unit and the weight of maintenance personnel.
- If the unit is located so high that it is inconvenient for maintenance personnel to conduct maintenance, the suitable scaffold can be provided around the unit. The scaffold must be able to bear the weight of maintenance personnel and maintenance facilities. The bottom frame of the unit is not allowed to be embedded into the concrete of installation foundation.



1.1.4 Installation details

a. Power supply

Power supply: 380V 3ph 50Hz, the permitted max. Voltage: 418V, the permitted min. voltage: 342V.

b. Operating range for unit operation

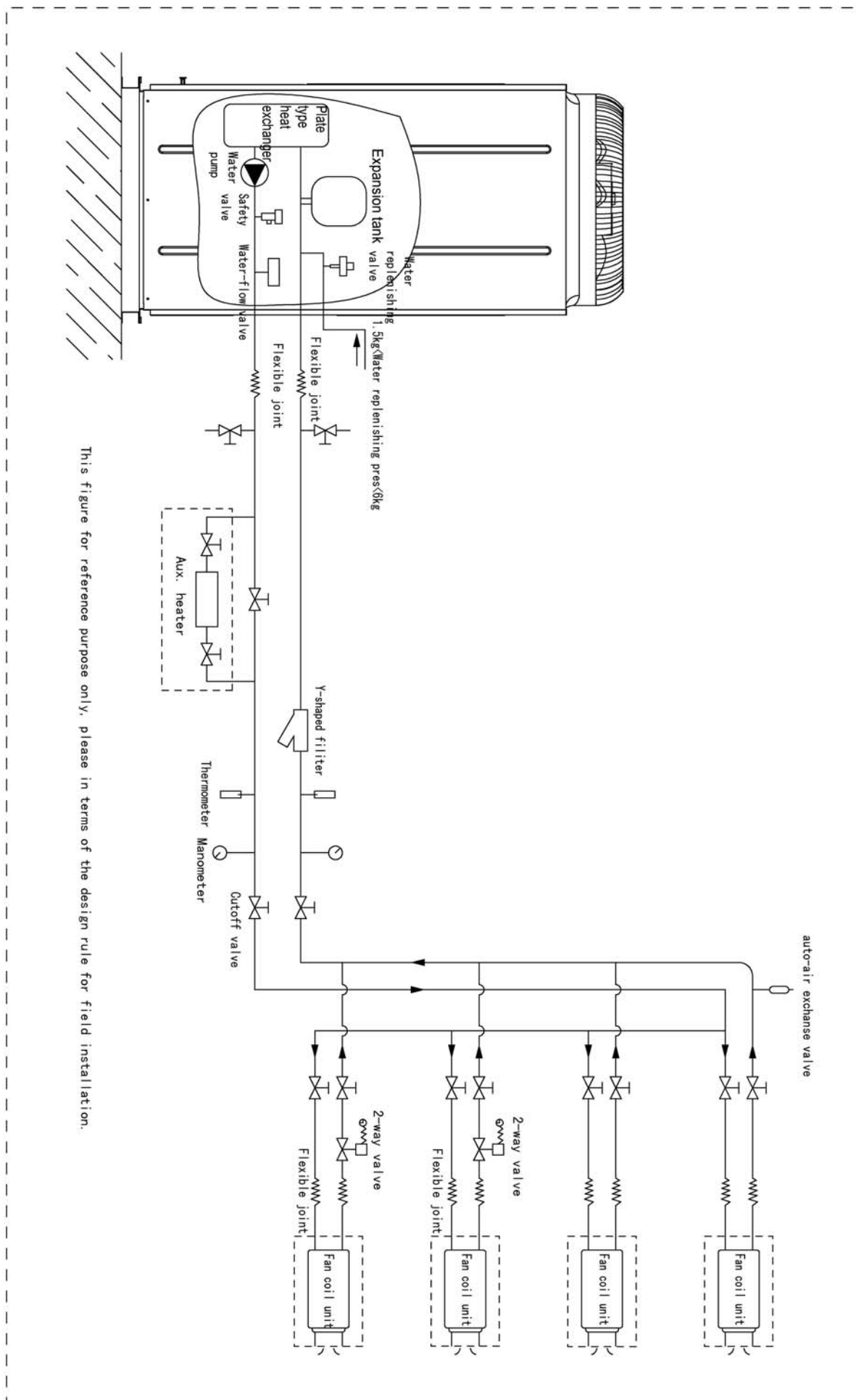
Model	Cooling mode		Heating mode	
	Ambient temperature	Chilled water outlet	Ambient temperature	Heating water outlet
Heat pump	17°C~43°C	5°C~17°C	-10°C~21°C	45°C~50°C

1.2 Water System Installation

1.2.1 Installation requirements and precautions

- All chilled water pipelines should be thoroughly flushed, to be free of any impurity, before the unit is operated. Any impurity should not be flushed to or into the heat exchanger.
- Water must enter the heat exchanger through the inlet; otherwise the performance of the unit will decline.
- The inlet pipe of the evaporator must be provided with a target flow controller, to realize flow-break protection for the unit. Both ends of the target flow controller must be supplied with horizontal straight pipe sections whose diameter is 5 times that of the inlet pipe. The target flow controller must be installed in strict accordance with “Installation & Regulation Guide for Target Flow Controller” (Figure 4.3~4.4). The wires of the target flow controller should be led to the electric cabinet through shielded cable (see Electric Controlling Schematic Diagram for details). The working pressure of the target flow controller is 1.0MPa, and its interface is 1 inch in diameter. After the pipelines are installed, the target flow controller will be set properly according to the rated water flow of the unit.
- The pump installed in the water pipeline system should be equipped with starter. The pump will directly press water into the heat exchanger of the water system.
- The pipes and their ports must be independently supported but should not be supported on the unit.
- The pipes and their ports of the heat exchanger should be easy to disassemble for operation and cleaning, as well as inspection of port pipes of the evaporator.
- The evaporator should be provided with a filter with more than 40 meshes per inch at site. The filter should be installed near to the inlet port as much as possible, and be under heat preservation.
- The by-pass pipes and by-pass valves as shown in Fig. 4-1 must be mounted for the heat exchanger, to facilitate cleaning of the outside system of water passage before the unit is adjusted. During maintenance, the water passage of the heat exchanger can be cut off without disturbing other heat exchangers.
- The flexible ports should be adopted between the interface of the heat exchanger and on-site pipeline, to reduce transfer of vibration to the building.
- To facilitate maintenance, the inlet and outlet pipes should be provided with thermometer or manometer. The unit is not equipped with pressure and temperature instruments, so they need to be purchased by the user.
- All low positions of the water system should be provided with drainage ports, to drain water in the evaporator and the system completely; and all high positions should be supplied with discharge valves, to facilitate expelling air from the pipeline. The discharge valves and drainage ports should not be under heat preservation, to facilitate maintenance.
- All possible water pipes in the system to be chilled should be under heat preservation, including inlet pipes and flanges of the heat exchanger.
- The outdoor chilled water pipelines should be wrapped with an auxiliary heating belt for heat preservation, and the material of the auxiliary heat belt should be PE, EDPM, etc., with thickness of 20mm, to prevent the pipelines from freezing and thus cracking under low temperature. The power supply of the heating belt should be equipped with an independent fuse.
- When the ambient temperature is lower than 2°C, and the unit will be not used for a long time, water inside the unit should be drained. If the unit is not drained in winter, its power supply should not be cut off, and the fan coils in the water system must be provided with three-way valves, to ensure smooth circulation of the water system when the anti-freezing pump is started up in winter.
- The common outlet pipelines of combined units should be provided with mixing water temperature sensor.

1.2.2 Units and dra li s st installation ill stration



This figure for reference purpose only, please in terms of the design rule for field installation.

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kW is the unit for cooling capacity and L is the unit for G water flow in the formula counting the minimum water flow.

Comfortable type air conditioner

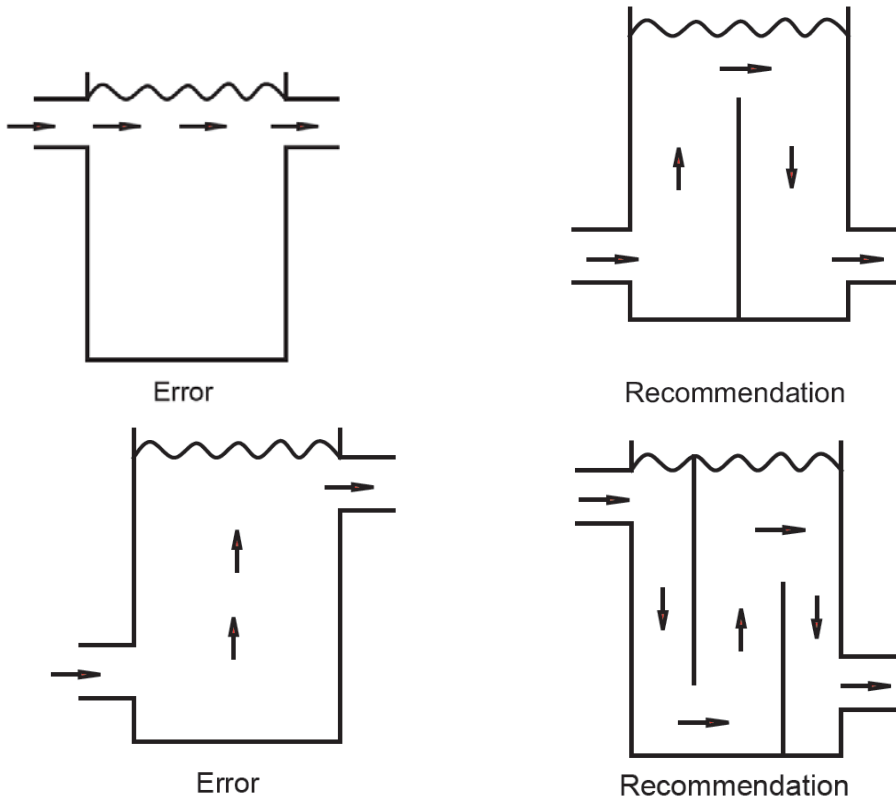
$$G = \text{cooling capacity} \times 2.6L$$

Process cooling application conditioner

$$G = \text{cooling capacity} \times 7.4L$$

If the total water volume in the system is less than the required minimum volume, the additional water tank is necessary in order to avoid the compressor On and Off frequently. The minimum size of the water tank is calculated as: Size of additional water tank (L) = minimum water volume(L) – Actual water volume (L).

- In certain occasion (especially in manufacture cooling process), for conforming the system water content requirement, it's necessary to mount a tank equipping with a cut-off baffle at the system to avoid water short-circuit, Please see the following schemes:



1.2.4 Water Quality

The demanded quality of the water used by system is shown as follows:

The freezing point and the boiling point of the glycol liquor (The consistency of glycol for preventing freezing)

Liquor Consistency%	poidometer	5	10	15	20	25	30	35	40
	volumenometer	4.4	8.9	13.6	18.1	22.9	27.7	32.6	37.5
freezing point °C		-1.4	-3.2	-5.4	-7.8	-10.7	-14.1	-17.9	-22.3
boiling point(100.7kpa) °C		100.6	101.1	101.7	102.2	103.3	104.4	105.0	105.6

The following is the standard of water quality:

PH value:	7~8.5	Total rigidity:	<50ppm
Conductivity:	<200µV/cm (25°C)	Sulfide ion:	None
Chloride ion:	<50ppm	Ammonia ion:	None
Sulfate ion:	<50ppm	Silicon:	<30ppm
Iron thickness	<0.3ppm	Sodium ion:	No requirement
Calcium ion:	<50ppm		

Relationship of water quality, furring and causticity

Water quality		Furring	Causticity	Remark
1	PH≤6 acidic water	Hard	Big	Hard CaSO ₄ will be built easily
2	PH≥8 acidic water	Soft	-----	Soft deposit with Fe ³⁺ &Cl ⁻ will be made.
3	Water of Ca ²⁺ , Mg ²⁺	Hard	-----	Hard furring will be built easily.
4	Water of Cl ⁻	Dirt resultant	Very strong	Causticity will be very strong special for iron and copper.
5	Water of SO ₄ ²⁻ , SiO ₂ ²⁻	Hard	Big	Hard CaSO ₄ & CaSO ₂ will be built easily
6	Water of Fe ³⁺	Hard & Dirt resultant	Big	Deposit of Fe(OH) ₃ & Fe ₂ O ₃ will be made.
7	Feculent water	Dirt resultant	Very strong	Causticity will be very strong for copper.
8	Organic compound of water	Dirt resultant	-----	Furring will be built easily.
9	Water of exhaust gas	-----	Big	Copper pipe will be causticized and perforated
10	Water of plastic dust	Dirt resultant	-----	-----
11	Water of sulfurous acid gas in atmosphere	-----	Very strong	-----
12	Water interfused by natural effects of pollution, for ex. humidity nearby sea or hexapod body of garden belt	Dirt resultant	Big	-----

1.3 Outdoor Installation

All wiring installation should be done by qualified person.

1.3.1 Precautions

1. The air-conditioner should apply special power supply, whose voltage should conform to rated voltage.
2. Wiring construction must be conducted by the professional technicians according to the labeling on the circuit diagram.
3. Only use the electric components specified by our company, and require installation and technical services from the manufacturer or authorized dealer. If wiring connection fails to conform to electric installation norm, failure of the controller, electronic shock, and so on may be caused.
4. The connected fixed wires must be equipped with full switching-off devices with at least 3mm contact separation.
5. Set leakage protective devices according to the requirements of national technical standard about electric equipment.
6. After completing all wiring construction, conduct careful check before connecting the power supply.
7. Please carefully read the labels on the electric cabinet.
8. The user's attempt to repair the controller is prohibited, since improper repair may cause electric shock, damages to the controller, and so on. If the user has any requirement of repair, please contact the maintenance center.
9. The detail is shown as follow:

Model \ It's	Outdoor Installation			
	Power supply	Manual switch	Fuse	Wiring
TMCHUF-30H410W TMCHUD-30H410W	380-415V 3N~50Hz	50A	36A	10mm ² (<30m)

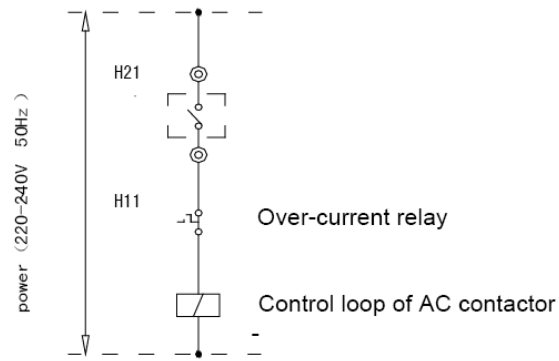
1.3.2 Main Power Line Connection

- Step 1. Check the unit and ensure that it is connected with grounding wires correctly, to avoid leakage, and the grounding devices should be mounted in strict accordance with the requirements of electrical engineering rules. The grounding wires can prevent electric shock.
- Step 2. The control box of the main power switch must be mounted in a proper position.
- Step 3. Wiring connection holes of the main power should be provided with glue cushion.
- Step 4. The main power and neutral wires and grounding wires of power supply are led into the electric box of the unit.
- Step 5. The wires of the main power must pass the bonding clamp.
- Step 6. Wires should be connected firmly to the connection terminals A, B, C and N.
- Step 7. Phase sequences must be consistent when the wires of the main power.
- Step 8. The main power should be located out of easy reach of non-professional maintenance personnel, to avoid mal-operation and improve safety.

1.3.3 Control Wire Connection

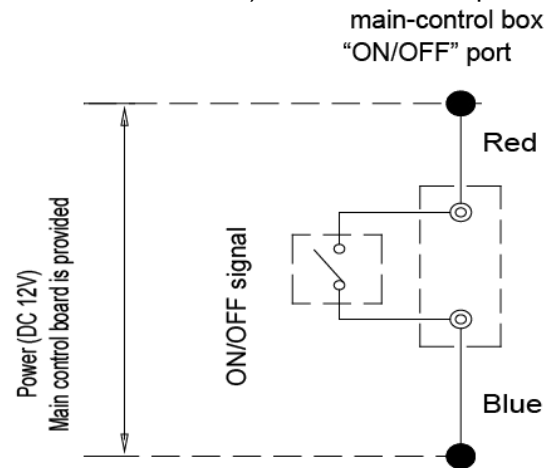
1. Auxiliary electric heater control wire connection (outfitting by users):

The control wire of AC contactor must pass the main unit's terminals H1, H2. The reference diagram is as follows:

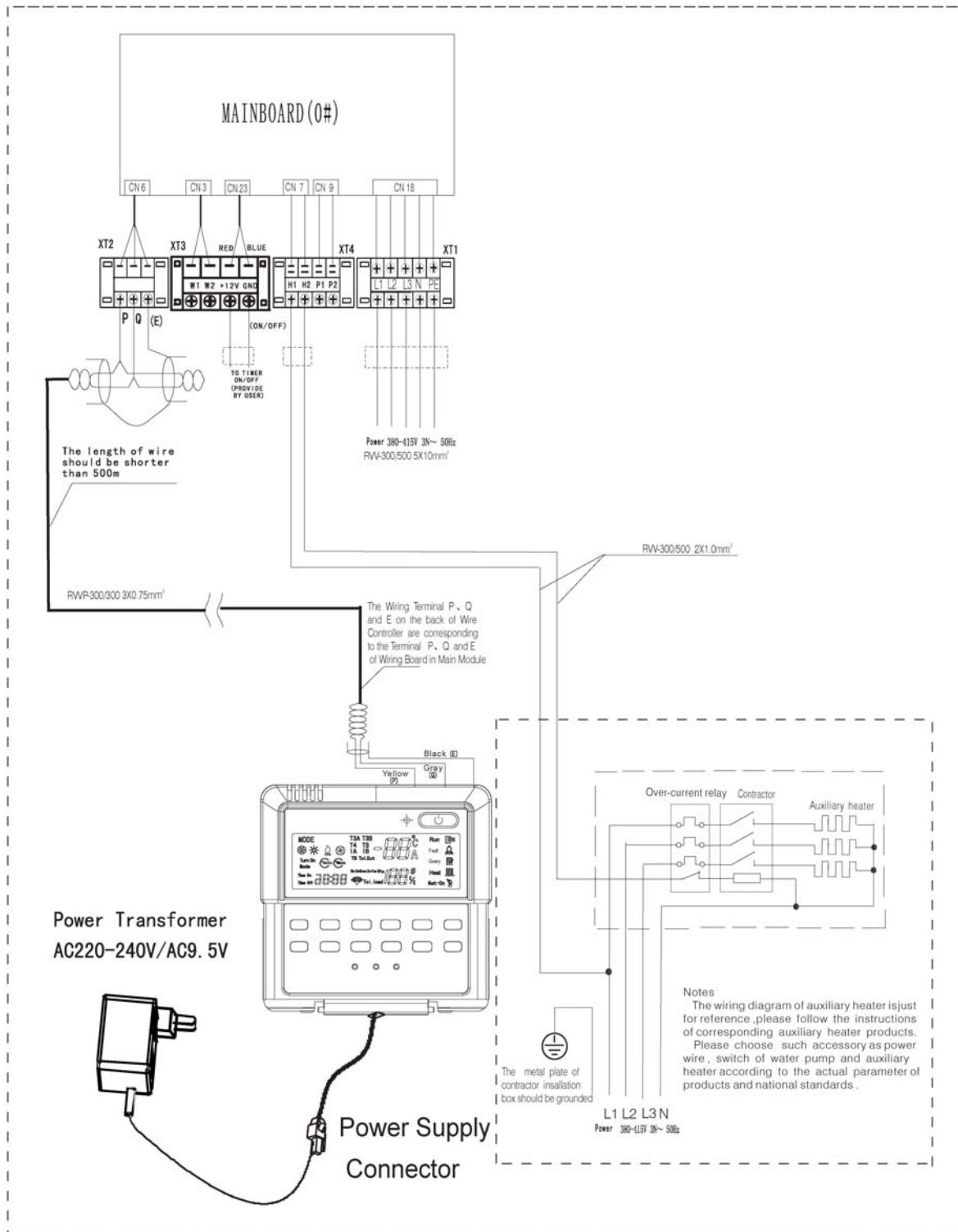


2. Wiring of "ON/OFF" weak electric port:

connect the "ON/OFF" signal (from the user's timer) to the "ON/OFF" port of main unit as follows.



3. The communication diagram between wire control and modular unit:



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- 1) Electrify unit 12 hours before starting to pre-heating the compressors, if it is not been done in advance, the compressor may be damaged.
- 2) Regulate the water flow switch and the valve on the inlet pipeline carefully to ensure the water flow can keep the 90% of the rating.
- 3) Check if the components of unit are loose.
- 4) Check if there is any problem of power supply or wiring before starting, especially phases sequence, if it is incorrect, exchange any two of them with each other and ensure all the components are tightly connected.
- 5) Connect the water flow switch correctly to the control cycle.
- 6) Set tightly the Temp. Sensor to the corresponding site of unit.

2. Installation

2.1 Preparation

- After the water system pipeline is flushed several times, please make sure that the purity of water meets the requirements; the system is re-filled with water and drained, and the pump is started up, then make sure that water flow and the pressure at the outlet meet the requirements.
- The unit is connected to the main power 12 hours before being started up, to supply power to the heating belt and pre-heat the compressor. Inadequate pre-heating may cause damages to the compressor.
- Setting of the wired controller. See details of the manual concerning setting contents of the controller, including such basic settings as refrigerating and heating mode, manual adjustment and automatic adjustment mode and pump mode. Under normal circumstances, the parameters are set around standard operating conditions for trial run, and extreme working conditions should be prevented as much as possible.
- Carefully adjust the target flow controller on the water system or the inlet stop valve of the unit, to make the water flow of the system be 90% of the water flow specified in failure & protection codes.

2.2 Installation

Installation	Description
Whether installing site is meet for requirements	Units are fixed mounting on level base.
	Ventilating space for heat exchanger at the air side is meeting for requirement
	Maintenance space is meeting for requirement.
	Noise and vibration is meeting for requirement.
	Sun radiation and rain or snow proof measures are meeting for requirements.
	External physical is meeting for requirement.
Whether water system is meeting for requirements	Pipe diameter is meeting for requirement
	The length of system is meeting for requirement
	Water discharge is meeting for requirement
	Water quality control is meeting for requirement
	Flexible tube's interface is meeting for requirement
	Pressure control is meeting for requirement
	Thermal insulation is meeting for requirement
	Wire capacity is meeting for requirement
	Switch capacity is meeting for requirement
	Fuse capacity is meeting for requirement
	Voltage and frequency are meeting for requirement
Whether electric wiring system is meeting for requirements	Connecting tightly between wires
	Operation control device is meeting for requirement
	Safety device is meeting for requirement
	Chained control is meeting for requirement
	Phase sequence of power supply is meeting for requirement

2.3 Start-up

- Start up the controller and check whether the unit displays a fault code. If a fault occurs, remove the fault first, and start the unit according to the operating method in the "unit control instruction", after determining that there is no fault existing in the unit.
- Conduct trial run for 30 min. When the influent and effluent temperature becomes stabilized, adjust the water flow to nominal value, to ensure normal operation of the unit.
- Optimizing the setting parameters according to the local weather and concerning operation references.
- After the unit is shut down, it should be put into operation 10 min later, to avoid frequent start-up of the unit. In the end, check whether the unit meets the requirements according to the following table:

Models		30kW module	
For compressor	High-pressure switch Cut off Close	MPa	Reset automatically, unadjusted 4.4 3.2
	Low-pressure switch Cut off Close	MPa	Reset automatically, unadjusted 0.15 0.3
Temp Sensor inside the digital compressor		-	Controlled by micro- controller When the Temp. is lower than 125°C, compressor will not work. When the Temp. is higher than 125°C, the capacity output of digital compressor will decrease to 40%. When the Temp. is higher than 140°C, compressor will stop. After the malfunction disappears, compressor will restart 3 minutes later.
Over-current protection		A	18
Heating belt Capacity		W	Each compressor has one 40
Discharge Temp. Protection Cut off Close		°C	130 90
Anti-freeze Protection Switch		°C	Controlled by micro- controller (one every cycle.) 3

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- 1) The unit can control start-up and shut-down of the unit, so when the water system is flushed, the operation of the pump should not be controlled by the unit.
- 2) Do not start up the unit before draining the water system completely.
- 3) The target flow controller must be installed correctly. The wires of the target flow controller must be connected according to electric control schematic diagram, or the faults caused by water breaking while the unit is in operation should be the user's responsibility.
- 4) Do not re-start the unit within 10 min after the unit is shut down during trial run.
- 5) When the unit is used frequently, do not cut off the power supply after the unit is shut down; otherwise the compressor cannot be heated, thus leading to its damages.
- 6) If the unit is not in service for a long time, and the power supply needs to be cut off, the unit should be connected to the power supply 12 hours prior to re-starting of the unit, to pre-heat the compressor.

3. Maintenance

To ensure the unit can reliably run for a long time, debugging and maintenance should be done by the qualified persons. The items below should be noticed especially.

Fire:

1. If it is on fire, switch off the main power at once and eradicate the fire with extinguisher.
2. The unit can't be operated near the flammable gas to prevent fire or explosion.

Precaution:

1. Maintain unit regularly according to the reference to keep unit in a good condition.
2. Do not touch the discharge pipeline to avoid any scald.
3. If malfunction causes the unit stop, please refer to the "Troubles and solutions" part of this manual or contact with us to find out the reason. After the malfunction is eliminated, the unit can be restarted again. It is absolutely forbidden to forced restart the unit without solving the problems. If refrigerant or chilled water (cooling water) has leakage, it must shut down all switches. If the unit can't be stopped by the controller, it must switch off the main power to stop the unit.
4. Do not use any iron wire, copper wire instead of the demanded fuse, otherwise it will cause the fire and damage the system.
5. Don't make the protection device short-circuited, otherwise it may cause accident.

Maintenance or Air Conditioners:

1. Close attention should be paid to the discharge and suction pressure during the running process. Find out reasons and eliminate the failure if abnormality is found.
2. Control and protect the equipment. See to it that no random adjustment be made on the set points on site.
3. Regularly check whether the electric connection is loose, and whether there is bad contact at the contact point caused by oxidation and debris etc., and take timely measures if necessary. Frequently check the work voltage, current and phase balance.
4. Check the reliability of the electric elements in time. Ineffective and unreliable elements should be replaced in time.

Scaling:

After a long term running, the surface of the heat-exchanger of water side will form calcium oxide and other mineral. Those kinds of material will decrease the heat transfer efficiency, cause more power consumption and higher discharge pressure (or lower suction pressure). These materials can be cleaned by formyl, citric acid, vinegar acid, etc, but any liquid which contains chlorine acid or fluoride ingredient is forbidden. Because the pipe is made of stainless steel, it is easy to be rotted by such material.

1. Cleaning work of waterside heat exchanger should be operated by the professional, please contact with our local TRUST service center.
2. After cleaning by chemical liquid detergent, scour the pipeline with clean water and heat the exchanger again. Pre-dispose the water to avoid rotting and forming of the scale again.
3. On the condition of using chemical liquid detergent, please select the intensity, cleaning time and Temperature of the liquid according to the actual situation.
4. After cleaning, the waste liquid should be neutralized, so please contact the professional company to get the further disposal for the waste.
5. Detergent and neutralization liquid are harmful to human beings, so it is necessary to use some protective device, such as special glasses, gloves, shoes, mask, etc.

Winter Unit in Winter

When turning off the units in winter, clean and dry the inner and outer surface of the unit, then cover them to prevent dust. Open the water discharge valve, drain away the water in heat exchanger of water side and water pipe to prevent freeze. It is recommended to inject some anti-freeze material into the water pipe.

First start after Unit stop

The following must be done when restarting the unit after a long-term vacancy:

1. Check and clean unit thoroughly.
2. Clean the water system pipeline.

3. Check pump, control valve and other equipments of water pipe system.
4. Fix connections of all wires.
5. It is a must to electrify the machine before startup.

Pressure sensor replacement

Only TRUST accessory can be used and please don't use any different one.

Refrigerant

Check the discharge and suction pressure to determine whether the unit needs to recharge or not. Take leakage test for the system; if there is leakage or some components needs to be replaced, leakage test is necessary. When recharging refrigerant, two cases must be separated:

1. The refrigerant has leaked out totally

In this case, leakage test must be done by using nitrogen (15~20 kgf/cm²) or refrigerant. If necessary, welding should be done after all gas of the system is discharged out.

- 1) Connect the vacuum pump pipeline to the refrigerant charging hole.
- 2) Vacuum refrigerant pipeline more than 15 minutes and confirm it achieve -1.0×10⁵Pa (-76cmHg).
- 3) After having achieved the designated vacuity, add refrigerant to the system from the cylinder, corresponding volume of the refrigerant can be got from the nameplate and parameters table. It should be noticed that charging just be allowed from the liquid pipeline side.
- 4) The volume charged into the system will vary from different surrounding Temperature, if the designated volume can't be achieved, unit can be started for recharging while the water system is running. Wire the low-pressure switch to short circuit if necessary.

After rewiring the connection after charging.

2. Additional refrigerant charge

Connect refrigerant cylinder to the refrigerant charging hole and mount a pressure detector on the gas side pipeline.

- 1) Recycle the chilled-water, then start unit, take low-pressure control switch to short circuit if necessary.
- 2) Charge the refrigerant into the system slowly, and check the discharge and suction pressure.

Warning: it is absolutely forbidden to charge the oxygen, acetylene or other gas which is poisonous or flammable into the system for leak hunting or leakage test, just nitrogen or refrigerant is allowed.

Compressor

If it is necessary to remove the compressor, please operate with the sequence below:

- 1) Switch off the power
- 2) Remove the electric wire
- 3) Remove the suction and discharge pipeline
- 4) Loosen the fixing bolts.
- 5) Remove the compressor.

Heater

When the ambient temperature is lower than 2°C, the heating efficiency decreases with the decline of the outdoor temperature. In order to make the air-cooled heat pump stably run in a relatively cold region and supplement some heat lost due to de-frosting. When the lowest ambient temperature in the user's region in winter is within 0°C~10°C, the user may consider to use auxiliary electric heater. Please refer to relevant professionals for the power of auxiliary electric heater.

Anti-freeze

If plate heat exchanger is frozen, the exchanger will be damaged; in addition, this kind of damage is out of guarantee, so it should be specially noticed. Users should pay special attention to the three points below:

1. When there is a long-term vacancy with low outdoor Temp Water in waterside heat exchanger should be drained out if the Temp below 0°C.
2. When running

If the chilled-water flow switch and anti-freeze Temp Sensor are invalid, water pipeline will be frozen, so the wire of water flow switch must apply to the "wiring principle figure".

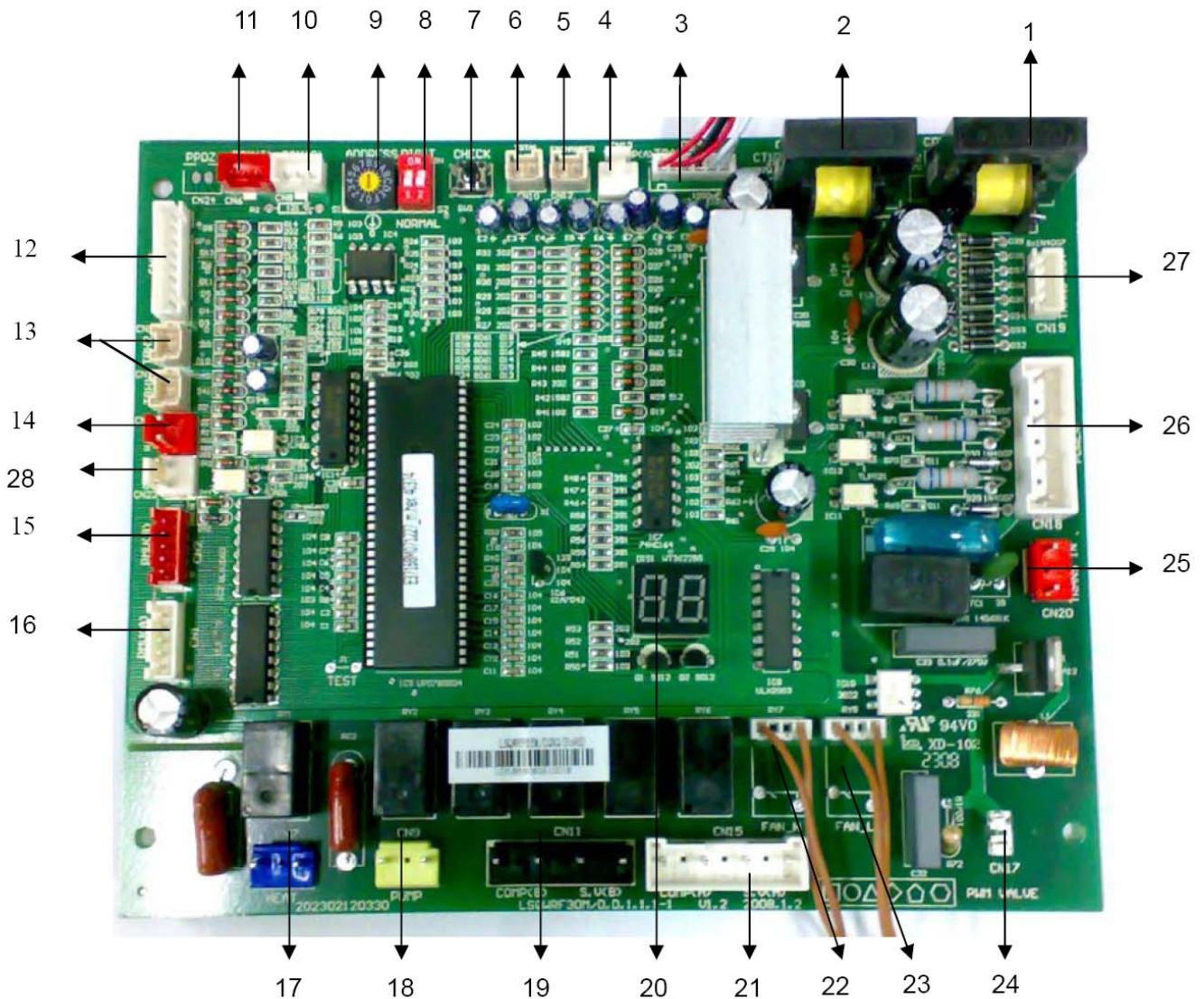
3. When maintaining

It is possible to freeze waterside heat exchanger when recharging and discharging refrigerant. Whenever the pressure of the refrigerant is below 0.4Mpa, freezing would happen. So it is necessary to drained out all of the water or keeps the water flowing.

4. Control system

4.1 Control line and connection

4.1.1 Control flow diagram



4.1.2 Control line connection

- 1—Compressor B current detection (Protection code P5)
- 2—Compressor A current detection (Protection code P4)

The current will not be detected at the first 5 seconds when starting, after that, if the current is exceeds the pre-set protection standard, (18A for both of digital and constant), compressor will stop, and restart 3 minutes later.

3—T4: Outdoor Temperature sensor (failure code E7).

T_{3B}: Condenser B tube Temperature sensor (failure code E6, protection code P7).

T_{3A}: Condenser A tube Temperature sensor (failure code E5, protection code P6).

● T4

If any one system needs to start the outdoor fan, the fan will be started by the unit electric controller. The fan has two speed levels: high and low which all depends on the T4 Temperature.

● T3B、T3A

When unit electric controller detects the Temperature of T_{3B} or T_{3A} are higher than 65°C, the corresponding system will stop, then restart after the Temperature is lower than 60°C or less. Meanwhile the other system keeps running without any influence.

● T4、T3B、T3A

The alarm will work if the voltage detected by the Temperature sensor is less than 0.05V or more than 4.95V.

● If main unit sensor of fails: all units will stop.

● If auxiliary unit sensor fails: this unit will stop while the others keep running.

4—System A compressor discharge gas Temperature sensor (failure code E8, protection code P8) is only available for main unit.

5—Outlet water Temperature sensor of plate heat exchanger (failure code E4).

Capacity output will adjust according to the outlet water Temperature of the plate heat exchanger both in cooling and heating modes.

(Auxiliary unit) constantly adjusting range: ON and OFF;

(Main unit) digitally adjusting range:

● Cooling mode: OFF, 30%, 40%, 50%, 60%, 70%, 80%, 90% and 100%.

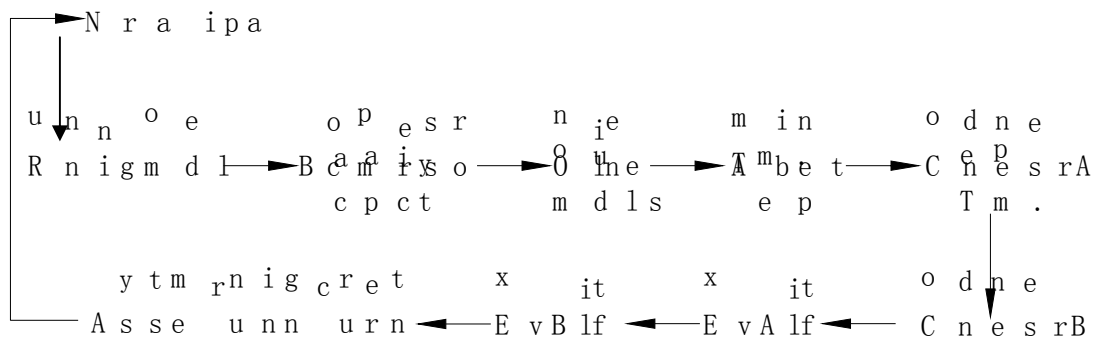
● Heating mode: OFF, 30%, 40%, 50%, 60%, 70%, 80%, 90% and 100%.

6—Total outlet water Temperature sensor (failure code E3), just valid for main unit.

Adjust the capacity output according to the outlet water Temperature of the plate heat exchanger both in cooling and heating modes

Adjusting range: OFF, 40%, 60%, 80%, and 100%.

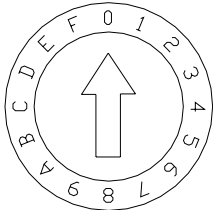
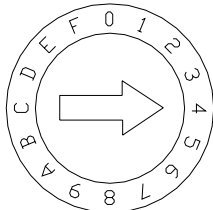
7—CHECK. It can be achieved by CHECK to observe the running condition of the outdoor systems. The corresponding data will be shown as follows:



8—DIGIT Digital compressor selecting switch.

	<p>“00” presents selecting digital compressor (as the main unit.)</p>
	<p>“11” presents selecting constant compressor (as the auxiliary unit).</p>

9—ADDRESS

 <p style="text-align: center;">ADDRESS</p>	<p>0 presents NO. 0 main unit</p>
 <p style="text-align: center;">ADDRESS</p>	<p>1~F presents NO 1~15 auxiliary units respectively</p>

For modular units, each module unit has same electrical control function, while the unit can be set as main unit or auxiliary unit by adjust the address switch of the PCB. The No.0 unit is prescribed as main unit. The digital module unit must be set as main unit and the others are auxiliary units. As long as being set as main unit, the module unit's control system just activates the functions that are the communication with wire controller, the capacity adjustment, water pump control, auxiliary electric heater control, total water temp. detect and water flow switch detect.

10—COM (O) 485 communication port (failure code E2).

11—COM (I) 485 communication port (failure code E2).

P, Q, E points of COM (O) and COM (I) are connected with each other for RS-485 communication.

- If failure occurs between the wire controller and main module, all the units stop.
- If failure occurs between main unit and auxiliary unit, the auxiliary unit with communication failure will stop, and then the number of units online detected by the wire controller will decrease; "EA" will be displayed and the indicator lights will flash.

12—System A high-pressure protection & discharge gas Temperature switch protection (protection code (P0),

System B high-pressure protection & discharge gas Temperature switch protection (protection code (P2),

System A low-pressure protection (protection code P1)

System B low-pressure protection (protection code P3)

- Constant compressor: discharge Temperature switch is connected in series with high-pressure switch.
- Digital compressor: double protection of discharge Temperature Switch and discharge Temperature Sensor, discharge Temperature Switch is connected in series with high-pressure switch, and the discharge Temperature Sensor has its own interface.

Digital compressor has discharge Temperature sensor (which is invalid for the constant), protection is depending on the discharge Temperature (DLT), and it will act for three Temperature areas if the sensor is ok (failure code E8 means sensor absent): safe area without protection when DLT below 125°C; yellow area appears in the condition that the capacity dropping down to 40% of the rating, when DLT is higher than 125°C for 10 minutes. If DLT is lower than 125°C, protection will eliminate, on the other hand, if DLT keeps increasing to 140°C or more, it enter red area when the compressor stop and restart 3 minutes later if the problem has been solved.

13—Anti-frost protection sensor of plate exchanger T6, T62.

14—Water flow check (failure code E0 for main unit) which is just valid for main unit.

- Main unit: main unit controller displays E9 when water flow is abnormal first time and second time and displays E0 when water flow is abnormal third time. (Display resumes after cutting power supply). Wire controller also displays E0 after three times' checking.
- Auxiliary: without water flow checking.

15—System B electric expansion valve.

16—System A electric expansion valve.

EXV can adjust the refrigerant flow according to different running models and capacity requested by surrounding.

17—HEAT auxiliary heater.

Notice: the actual figure of controller of the heater is not 220V power supply but ON/OFF switch!

On heating mode, when the total outlet water temperature is below 45°C, the switch closes and auxiliary heater starts working; on the other hand, when the Temperature is above 50°C, the switch opens to stop heating and heater stops working.

18—WATER PUMP

Notice: the actual figure of controller of the pump is not 220V power supply but ON/OFF switch!

- Water pump will start at once after receiving the opening order and keep running during the whole running term of the system. Pump will close 2 minutes later after all the units having been shut down on cooling or heating mode.
- Pump can be closed directly on the pump mode.

19—System B compressor

Ground wire
System B four-way valve
Ground wire

20—Digital tube

- On waiting mode: display unit address.
- On running mode:
- Main unit display the current capacity of the digital compressor as 40, 60, 80 and 10. (Notice “10” is followed by “.”)
- Auxiliary unit display 10. (Notice “10” is followed by “.”)
- On failure or protection mode: display failure code or protection code.

21—System A compressor;

Earth wire
Four-way valve of system A
Earth wire

22—High speed of outdoor fan, controlled by T4.

23—Low speed of outdoor fan, controlled by T4.

24—PWM, used for digital compressor capacity adjustment. (It is valid for main unit).

25—Transformer input, 220V/AC.

26—Power input by three-phase four-wire system (E1 for failure code).

A, B, C phases should be supplied together with the 120 degree angle difference among three phases. If it is not qualified, it may cause phases sequence failure or phases absent failure then the corresponding code will be displayed until the power get right. Notice: phases sequence failure or phases absent failure are just checked at the beginning of electrifying. During the running, they will not be detected.

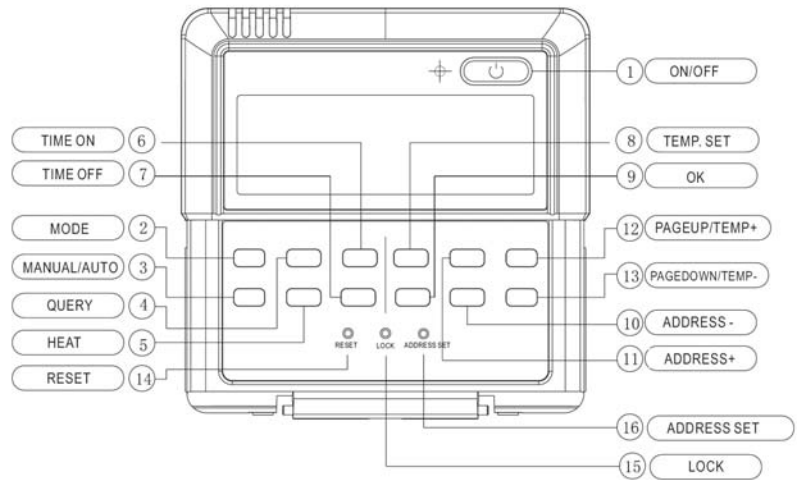
27—Transformer output

28—“ON/OFF” port

4.2 Controller

4.2.1 Infrared Controller

□ □ □ □ □ □ □ □ □ □



1. Power On/Off and Temperature Adjustment Operation Description

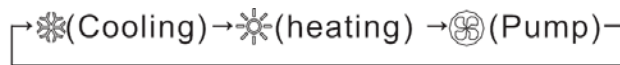
1. Power On/Off

In the power off status, press this key and the startup indicator comes on, and the wire controller enters the startup status and keeps the current set information such as temperature value, timing. In the startup status, press this button once, and the startup indicator goes off and transmits the shutdown information.

2. Mode Selection

In the power off status, press this button to select the operation mode. This function is invalid at power on status.

Modes shifted sequence as follows:



3. Manual/Auto Selection

Press this button; you could select [MANUAL/AUTO] these 2 modes. When select Manual mode, you could increase or decrease the online units via [PAGEUP/TEMP+] and [PAGEDOWN/TEMP-].

4. Query

Press this button to query the status information of outdoor units 0~15(Outdoor unit 0 by default). After entering the query status, use [ADDRESS+] and [ADDRESS-] keys to query information of the previous or next outdoor unit. After selecting to query a specific outdoor unit, use the [PAGEDOWN/TEMP+] and [PAGEDOWN/TEMP-] keys to query the status information of this outdoor unit. The query sequence is: Outlet water temperature T1->Outdoor pipe temperature T3->Outdoor environment temperature T4->Setting temperature Ts->Current of compressor A and Current of compressor B -> Fault->Protection->Outlet water temperature T1.since there are many fault protection codes for the outdoor unit, the wire controller only displays the two fault protection messages with the highest priority when you check the fault protection information.

5. Lock

This button has no effect to KJR-08B/BE.

6. Timing

Every time when you press [TIME ON] button, the HOUR and MINUTE of timing startup blink at a frequency of 2Hz. They stop blinking 2 seconds after you stop adjustment. Press [TIME ON] key to select the timing HOUR for adjusting, and the timing hour blinks at frequency of 2Hz. Use the [PAGEUP/TEMP+] and [PAGEDOWN/TEMP-] keys to adjust the MINUTE. If you keep idle without adjustment operation within 8 seconds after entering the timing setup status, the system will confirm the time setup and exit the timing setup status. Press [TIME OFF] key, as per the above method to set close time.

Long press [TIME ON] button, you could cancel this function. Long press [TIME OFF] button, you could cancel this function.

□ □□M□ □□□ □□tton

Setup the total water outlet temperature in cooling and heating mode. Setup tank or pool temperature in water heating mode.

□ □□ □□tton

Once finished upon, press OK key, wire controller will delivery order to main unit.

1□ □□□□□□□□ □□tton

Press this button at Check mode; when select the next modular, the operation status of the next modular will display; if the current modular is 15# and the next one is 0#.

Press this button for add address at wire address setting mode. If the wire controller address is 15, press this key will display the next address is 0.

11. □□□□□□□□□□ □□tton

Press this button at query mode; when select the previous modular, the operation status of the previous modular will display; if the current modular is 0# and the previous one is 15#.

Press this button for minus address at wire address setting mode. If the wire controller address is 0, press this key will display the next address is 15.

12 □ 13 □□□□□□□□□□ □ □□M□□□□□□□□ □□tton

In manual mode, press these keys could add or minus the unit quantity.

In the main page, press these keys could check the operation parameter of the unit.

In temperature setting page, add or minus the temperature setting.

In timing ON/OFF setting, press these keys to adjust the time of startup or closedown.

14. □□□□□ □□tton □□idd□n□

Use a 1mm-diameter round stick to press this button, and the current setting will be cancelled and the wire controller enters the reset status.

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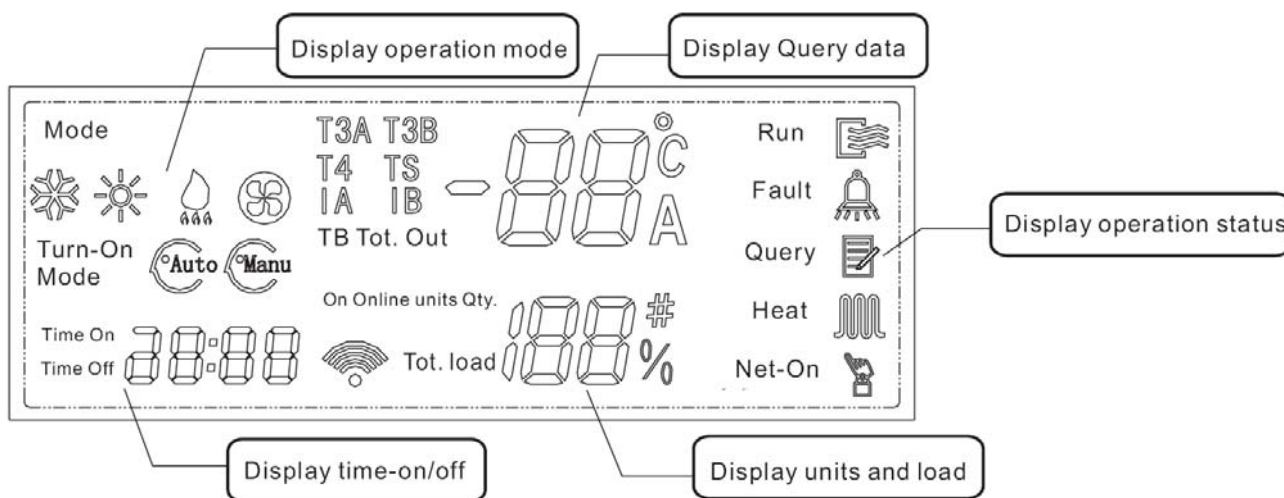
Use a 1mm-diameter round bar to lock the current setting. Press this button again to unlock.

1□ □□□□□□□ □□□ □□tton □□idd□n□

The address of wire controller is set by press this button. The address range 0~15, therefore, 16 wire controller could be parallel at most.

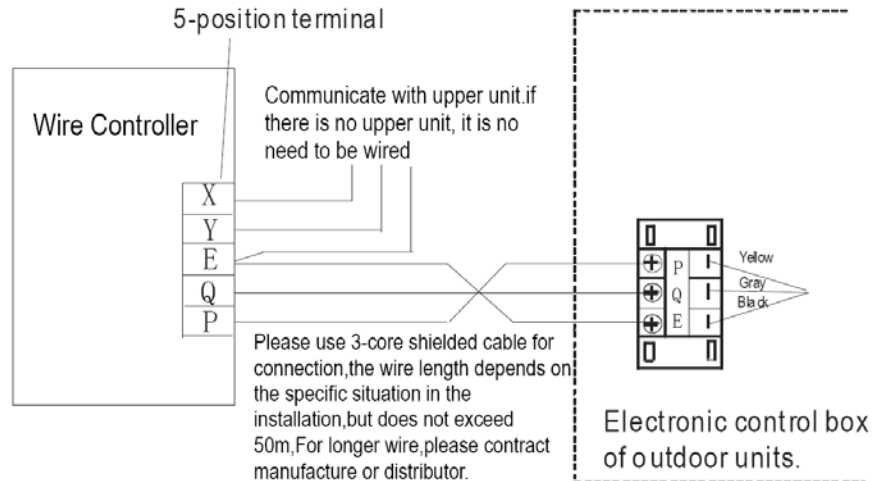
When there is only one wire controller, it is no necessary to execute this setting, because the address of wire controller has been set to '0'(main wire controller) in the factory.

□□a□ □ and □□n□t□i□o□n□ d□s□r□i□t□i□o□n□ o□□□□□ s□r□□n□ o□□i□r□d□ c□o□n□t□r□o□ll□r□□

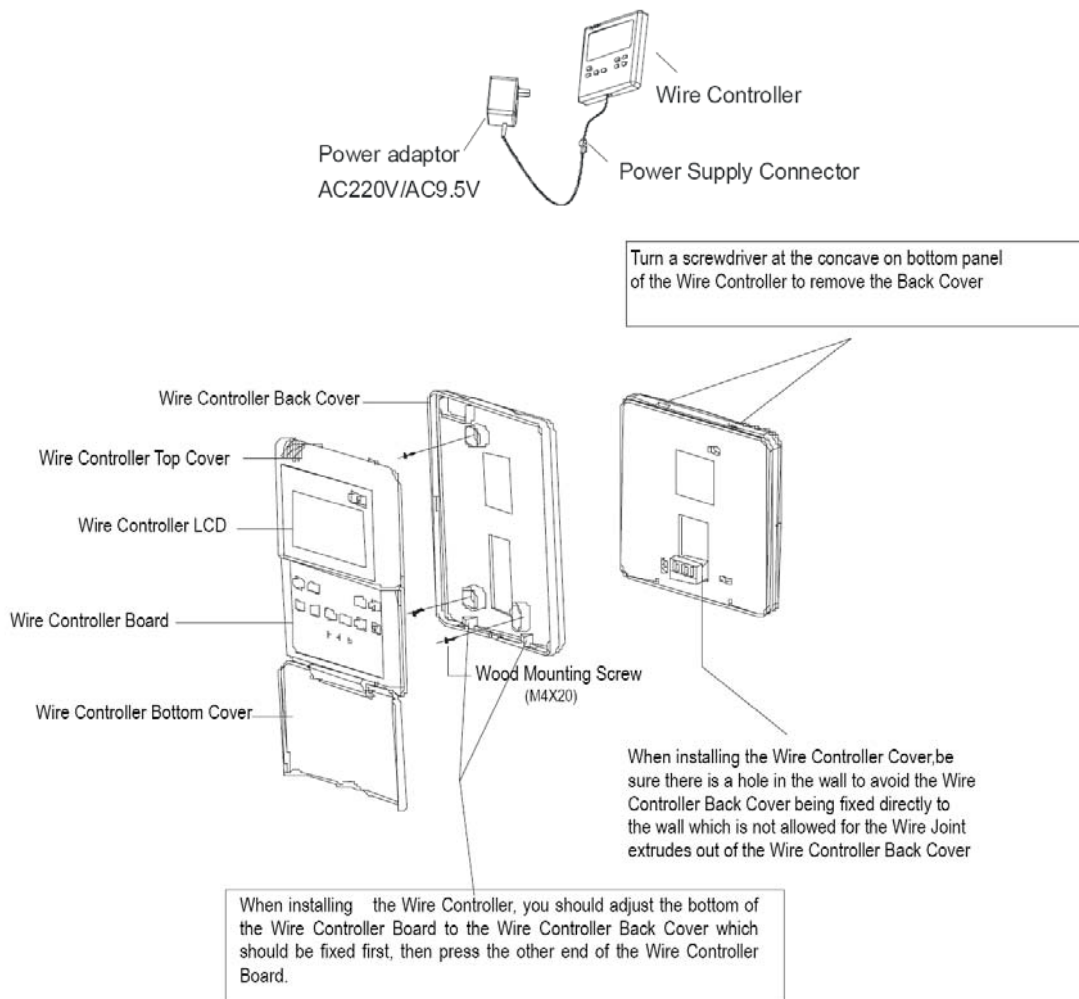


Installation procedure

1. The wiring procedure and principles are shown in the figure:



2. Power connection:



Note

- Never turn screws too tightly, or else the cover would be dented or the Liquid Crystal breaks.
- Please leave enough long cable for maintenance of the Wire Controller Board.

Operation procedure of remote control

1. Press AUTO/MANUAL mode at shutdown status, you could select MANUAL or AUTO turn-on mode as you want. The function is invalid at startup status.

In Manual mode, press [PAGEUP/TEMP+] or [PAGEDOWN/TEMP-] button for select your require online unit quantity.

2. Press [TEMP SET], [PAGEUP/TEMP +], [PAGEDOWN/TEMP -] button, for select your require temperature.

For KJR-08B/BE: Cooling range:5~17°C; Heating range:45~50°C.

3. Press [ON/OFF] button, running indicator of wire controller is light, unit is start to run, and display running status at wire controller. Press this button once again, unit will stop running.

- Operation procedure of Time ON

1. Press [TIME ON] button adjust your require time by [PAGEUP/TEMP+] or [PAGEDOWN/TEMP-] (MINUTE and HOUR could be shifted by this button). Use the same method to set Time off.

(Note: Time ON/OFF is relative time.)

- Operation procedure of disable the function of Time ON/OFF.

1. Long press [TIME ON] button, you could cancel this function. Long press [TIME OFF] button, you could cancel this function.

- Operation procedure of units information querying

1. Press [QUERY] entering Check status.

2. Press [ADDRESS+] or [ADDRESS-] button, select the unit you are wanted to query.

3. Press [PAGEUP/TEMP+] or [PAGEDOWN/TEMP-] button to query the units information, which includes outdoor ambient temperature T4, pipe temperature T3, setting temperature Ts, CEB out water temp. TB, online quantity and compressor current, etc.

- Operation procedure of system information querying

1. Press [PAGEUP/TEMP+] or [PAGEDOWN/TEMP-] button in the main page, system information could be queried.

- Operation procedure of water temperature setting

1. Press [TEMP SET] button of wire controller when background light is on.

2. Press [PAGEUP/TEMP+] or [PAGEDOWN/TEMP-] button select your require water temperature. Once selected upon, temperature value will blinks a couple of seconds then confirm it.

3. KJR-08B/BE temperature range:

Cooling: 5~17°C

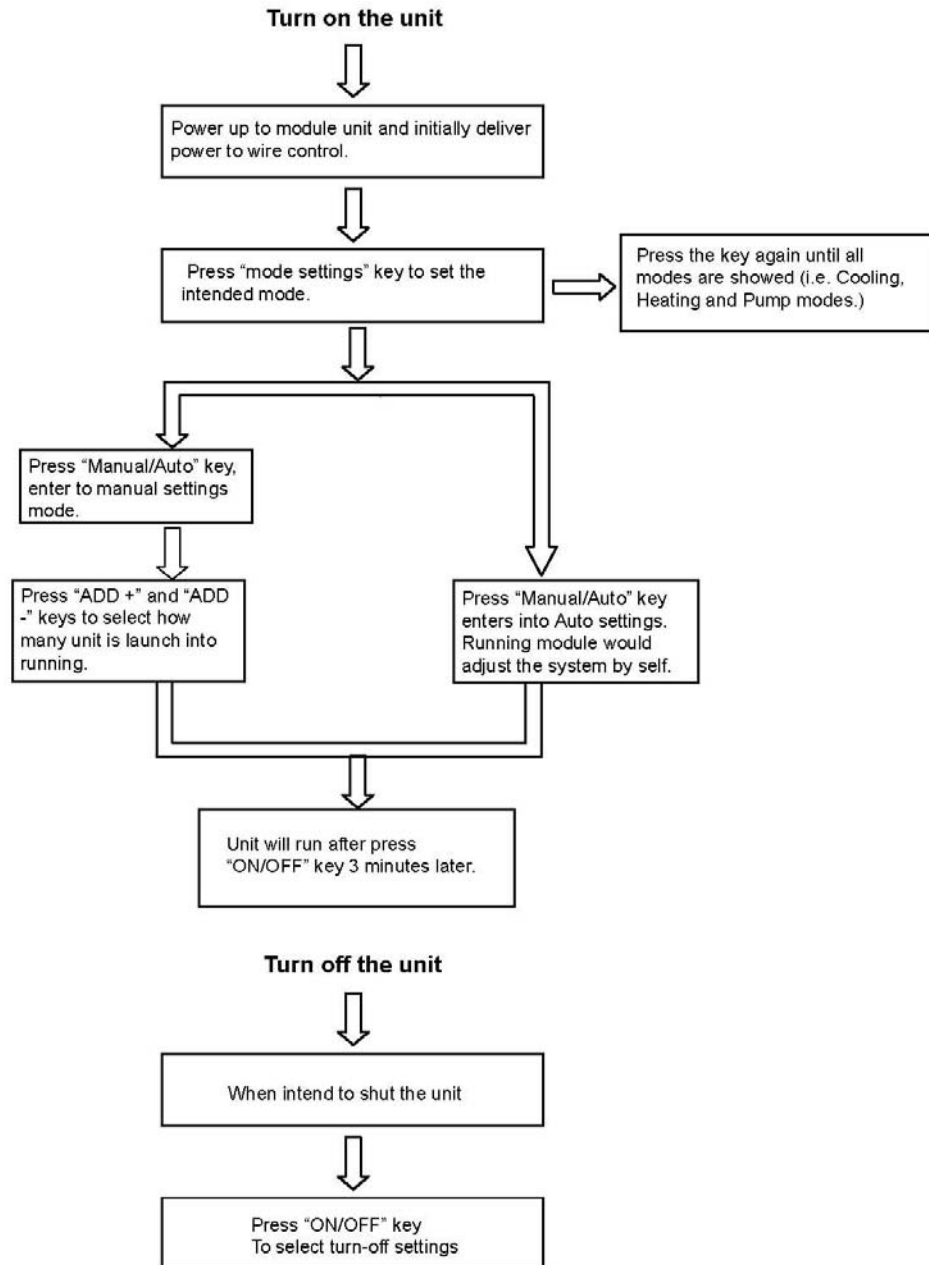
Heating: 45~50°C

- Fault alarm handing

When unit fails or the wire controller detects failure of communication with the outdoor units, the indicator blinks. After all faults of the system and the wire controller are eliminated, the indicator stops blinking. The fault indicator and the operation indicator share the same LCD.

4.3 □ □ □ □ □

Follow the following diagram for system ON/OFF:





Air Conditioning Systems

Cooling & Heating

TRUST AIR-CONDITIONING EQUIPMENT CO.

Shiraz office: 8 th floor, Alvand Bldg., Dostan St.,
Moaliabad Ave., SHIRAZ, IRAN., Post code: 71877-14446

Tel.: +98-71-36341070

Fax.: +98-71-36341094

Tehran office: No. 19- koohe nour St.- Motahhari St.-
TEHRAN, IRAN., Post code: 15876-73111

Tel.: +98-21-89389

Fax.: +98-21-88541903

Ahwaz office: No. 309- Kaveh St.- AHWAZ, IRAN., Post code: 61939-
47911

Tel.: +98-61-32230647-8

Fax.: +98-61-32230647

E-mail: info@trustacs.com

Web site: <http://www.trustacs.com>

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برترین نام و نشان های تجاری ایران

