



## Mini Chiller

Owner's Manual  

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Air Conditioners



Thank you for choosing our air conditioners.  
Please read this Owner's Manual carefully before operation and retain it for future reference.  
If you have lost the Owner's Manual, please contact the local agent or visit [www.greeproducts.es](http://www.greeproducts.es) or send an email to [info@greeproducts.es](mailto:info@greeproducts.es) for the electronic version.

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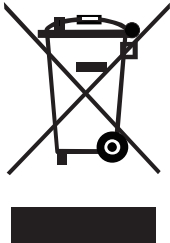
## 1 Instruction to Users

Thank you for choosing our mini chillers. Please read this manual carefully before installation and use the unit correctly according to the following procedure.

- ◆ After receipt of the unit, check it for appearance, unit model compared with your desire and attachments.
- ◆ For proper installation and future maintenance please read this Instruction and keep it carefully.
- ◆ Design and installation work of the unit must be performed by authorized personnel according to applicable laws and regulations and this Instruction.
- ◆ After installation work, the unit cannot be energized unless there is not any problem in check.
- ◆ Ensure periodical clean and maintenance of the unit after normal operation of the unit for longer life and reliable operation.
- ◆ For improvement of products, there should be not additional notice of amendment of the contents.

**! Notice!**

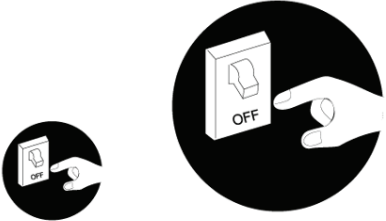



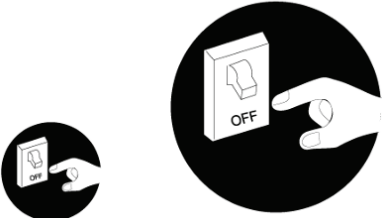


- ◆ If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- ◆ The appliance shall be installed in accordance with national wiring regulations.

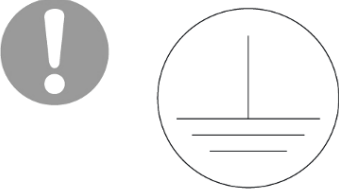
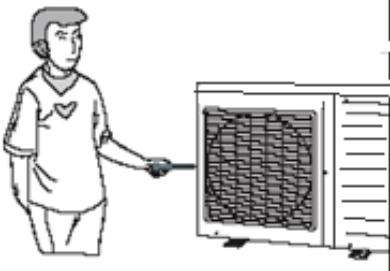


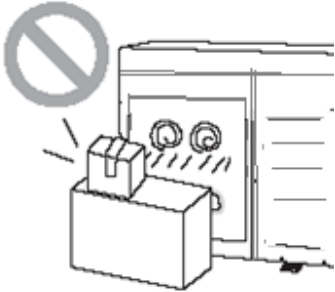

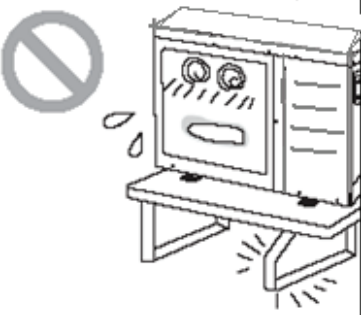
	<p><b>Correct Disposed of this product</b></p> <p>This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.</p>
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R410A(R32/125:50/50):2087.5

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.

## 2 Safety Considerations

Please read the following contents carefully before operating.		
WARNING		
<p>■ Once abnormality like burning smell occurs, please cut off the power supply immediately and then contact with service center.</p>  <p>If the abnormality still exists, the unit may be damaged and electric shock or fire may result.</p>	<p>■ Don't operate the unit with wet hands.</p>  <p>Otherwise, it may cause electric shock.</p>	<p>■ Before installation, please see if the voltage of local place accords with that on nameplate of unit and capacity of power supply, power cord or socket is suitable for input power of this unit.</p> 
<p>■ Special circuit must be adopted for power supply to prevent fire.</p>  <p>Do not use octopus multipurpose plug or mobile terminal board for wire connection.</p>	<p>■ Be sure to pull out the power plug and drain the unit when unit is not in use for a long time.</p>  <p>Otherwise, the accumulated dust may cause overheating, fire or freeze of the plate heat exchanger in winter.</p>	<p>■ Never damage the electric wire or use the one which is not specified.</p>  <p>■ Otherwise, it may cause overheating or fire.</p>
<p>■ Before cleaning please cut off the power supply.</p>  <p>Otherwise, it may cause electric shock or damage.</p>	<p>■ The power supply must adopt special circuit with leakage switch and enough capacity.</p>	<p>■ User can not change power cord socket without prior consent. Wiring working must be done by professionals. Ensure good earthing and don't change earthing mode of unit.</p>

<p>■ <b>Earthing: the unit must be earthed reliably ! The earthing wire should connect with special device of buildings.</b></p>  <p>If not, please ask the qualified personnel to install. Furthermore, don't connect earth wire to gas pipe, water pipe, drainage pipe or any other improper places which professional does not recognize.</p>	<p>■ <b>Never insert any foreign matter into unit to avoid damage . And never insert your hands into the air outlet of the unit.</b></p> 	<p>■ <b>Don't attempt to repair the unit by yourself.</b></p>  <p>Improper repair may cause electric shock or fire, so you should contact the service center to repair.</p>
<p>■ <b>Don't step on the top of the unit or place anything on it.</b></p>  <p>There is the danger of fall of things or people.</p>	<p>■ <b>Never block the air inlet and outlet of unit.</b></p>  <p>It may reduce efficiency or cause stop of the unit and even fire.</p>	<p>■ <b>Keep pressurized spray, gas holder and so on away from the unit above 1m .</b></p>  <p>It may cause fire or explosion.</p>
<p>■ <b>Please note whether the installation stand is firm enough or not.</b></p>  <p>If damaged, it may cause fall of the unit and injury of people.</p>	<p>■ <b>Unit should be installed at the place with good ventilation to save energy.</b></p>	<p>■ <b>When there is not water in the unit, never power the unit on to run.</b></p>

**⚠ Notice!**

- (1) Before installation, please check if the adopted power is accordance with that listed on nameplate, and check the safety of power.
- (2) Before using, please check and confirm if wires and water pipes are connected correctly to avoid water leakage, electric shock or fire etc.
- (3) Don't operate the unit with wet hands, and don't allow children to operate the unit.

- (4) ON/OFF in this manual indicates the ON/OFF of the control; power cut-off means to stop supplying power to the unit.
- (5) Don't directly expose the unit under the corrosive ambient with water or dampness.
- (6) The air inlet/outlet of the unit cannot be blocked by other objects.
- (7) Water in the unit and pipeline should be discharged when the unit is not in use to prevent the pipeline and water pump from frost-cracking.
- (8) Never press the button with sharp objects to protect manual controller. Never use other wires instead of special communication line of the unit to protect control elements. Never clean the manual controller with benzene, thinner or chemical cloth to avoid fading of surface and failure of elements. Clean the unit with the cloth soaked in neutral eradicator .Slightly clean the display screen and connecting parts to avoid fading.
- (9) The power cord must be separated with the communication line.
- (10) Maximum and minimum water operating temperatures:

	Minimum water operating temperatures	Maximum water operating temperatures
Cooling	7 °C	25 °C
Heating	25 °C	60 °C

Maximum and minimum water operating pressures:

	Minimum water operating pressures	Maximum water operating pressures
Cooling Heating	0.05 MPa	0.25 MPa

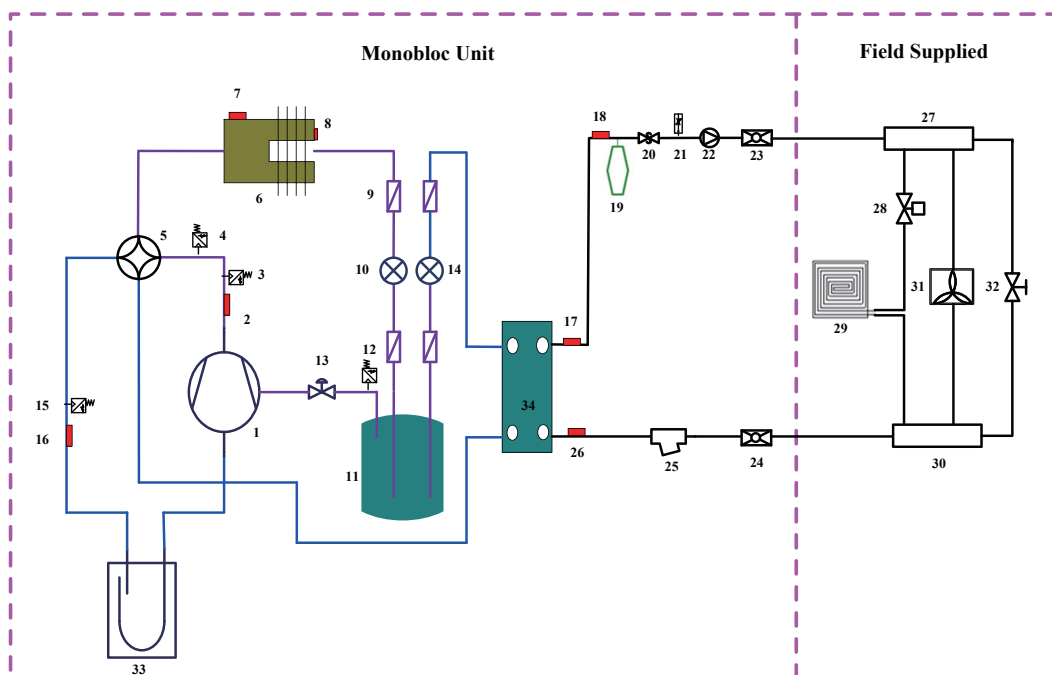
Maximum and minimum entering water pressures:

	Minimum entering water pressures	Maximum entering water pressures
Cooling Heating	0.05 MPa	0.25 MPa

The range of external static pressures at which the appliance was tested (add-on heat pumps, and appliances with supplementary heaters,only); If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

If there is any question, please contact with local dealer, authorized service center, agencies or our company directly.

### 3 Diagram of the Operating Principle



No.	Name	No.	Name	No.	Name	No.	Name
1	Inverter compressor	10	EXV 1	19	Expansion tank	28	2-way valve
2	Discharge temperature sensor	11	Flasher	20	Safety valve	29	Floor radiator
3	High-pressure switch	12	Pressure sensor	21	Flow switch	30	Water collector
4	High pressure sensor	13	Solenoid valve	22	Water pump	31	FCU
5	4-way valve	14	EXV 2	23	Outlet pipe connector	32	By-pass valve
6	Finned heat exchanger	15	Pressure sensor	24	Inlet pipe connector	33	Vapor liquid separator
7	Environment temperature sensor	16	Suction temperature sensor	25	Filter	34	Plate heat exchanger
8	Defrosting temperature sensor	17	Outlet water temperature sensor (plate heat exchanger)	26	Inlet temperature sensor (plate heat exchanger)		
9	Filter	18	Outlet temperature sensor (auxiliary heater)	27	Water separator		

## 4 Operating Principle of the Unit

The Mini chiller is composed of the monobloc unit. Operation functions include:

- (1) Cooling;
- (2) Heating;
- (3) Emergency mode;
- (4) Holiday mode;
- (5) Forced Operation Mode;
- (6) Quiet mode;
- (7) Weather-dependent Operation;
- (8) Floor debugging;
- (9) Air removal of the water system;
- (10) Operation of backup heat source

**Cooling:** in cooling mode, refrigerant is condensed in the aluminum fin-copper tube and evaporated in the plate heat exchanger. Via heat exchange with water in the plate heat exchanger, the temperature of water decreases and it releases heat while the refrigerant absorbs heat and evaporates. With the help of the wired controller, the outflow temperature can meet the user's requirement. Through control of valves, the low-temperature water in the system can reach the indoor fan coil and underground pipes, and exchanges heat with the indoor air so that the indoor temperature decreases to the required range.

**Heating:** in heating mode, refrigerant evaporates in the aluminum fin-copper tube and is condensed in the plate heat exchanger. Via heat exchange with water in the plate heat exchanger, the water absorbs heat and its temperature increase while the refrigerant releases heat and is condensed. With the help of the wired controller, the outflow temperature can meet the user's requirement. Through the control of valve, the high-temperature water in the system can reach the indoor fan coil and underground pipes, and exchanges heat with the indoor air so that the indoor temperature increases to the required range.

**Emergency mode:** this mode is only available for heating. When the monobloc unit stops due to malfunction, it will enter the corresponding emergency mode; At the heating mode, after entering the emergency mode, only when the electric heater has been installed, can heating be available, otherwise heating fails. When the setting outflow temperature or indoor temperature is reached, the electric heater will stop running.

**Holiday mode:** this mode is only available for heating mode. This mode is set to keep indoor temperature or leaving water temperature in a certain range so as to prevent water system of the unit

from freezing or protect certain indoor articles from freezing damage. When the monobloc unit stops due to malfunction, two e-heaters (once installed) of the unit will run.

**Forced Operation Mode:** this mode is only used for refrigerant recovery and debugging for the unit.

**Quiet mode:** it is available in cooling and heating. In this mode, the monobloc unit will reduce the running noise via automatic control.

**Weather-dependent Operation:** this mode is available for cooling and heating. In weather-dependent mode, the setting value (remote room air temperature or leaving water temperature) is detected and controlled automatically when the outdoor air temperature is changed.

**Floor debugging:** this function is intended to preheat the floor periodically for the first use.

**Air removal of the water system:** this function is intended to replenish water and remove air in the water system to make the equipment run at the stabilized water pressure.

**Operation of backup heat source:** in this mode, when the outdoor temperature is lower than the triggering temperature of the backup heat source and the unit stops owing to some malfunction or protection which remains after the compressor has stopped for three minutes, then the heat source will function to supply heat for the room.

## 5 Nomenclature

<b>HL</b>	<b>R</b>	<b>12</b>	<b>Pd</b>	<b>/</b>	<b>Na</b>	<b>-</b>	<b>M</b>
1	2	3	4		5		6

NO.	Description	Options
1	Air-cooled Mini Chiller	-
2	Heat Pump	-
3	Nominal Heating Capacity	8=8kW;10=10kW; 12=12kW; 14=14kW
4	Compressor Style	Pd=DC Inverter; Default=On/Off
5	Refrigerant Type	Na- R410A
6	Power Supply	K=220V-240V,1Ph,50Hz; M=380V-415V,3Ph,50Hz; H=380, 3Ph; 60Hz

### Model Line-Up

Model Name	Capacity		Power supply
	Heating <sup>1</sup> ,kW	Cooling <sup>2</sup> ,kW	
HLR8Pd/Na-K	8	6.2	220-240V,1Ph,50Hz
HLR10Pd/Na-K	10	7.5	
HLR12Pd/Na-M	12	9.5	380-415V,3Ph,50Hz
HLR14Pd/Na-M	14	11	

#### Notes:

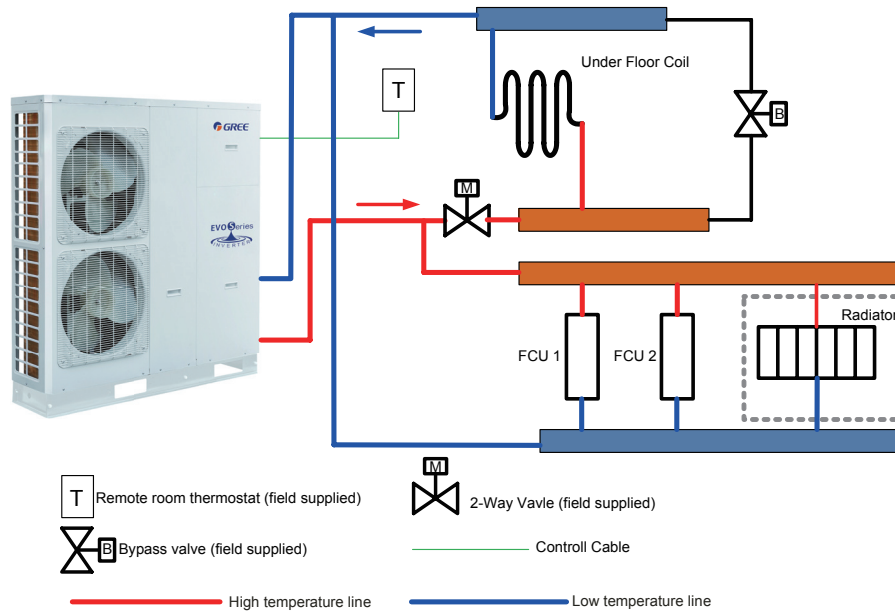
<sup>1</sup>Capacities and power inputs are based on the following conditions:  
Indoor Water Temperature 40°C/45°C, Outdoor Air Temperature 7°C DB/6°C WB;

<sup>2</sup>Capacities and power inputs are based on the following conditions:  
Indoor Water Temperature 12°C/7°C, Outdoor Air Temperature 35°C DB/-.



## 6 Installation Example

### CASE 1: Connection of Terminals for Heating and Cooling (Under floor Loop, Fan Coil Unit, and Radiator)



#### Notes:

- ① The two-way valve is very important to prevent dew condensation on the floor and radiator while cooling mode;
- ② Type of thermostat and specification should be complied with installation of this manual;
- ③ The by-pass valve must be installed to secure enough water flow rate, and should be installed at the collector.

### CASE 2: Connection between the Electric Heater and the Main Unit

Two groups of electric heaters are available, as well as control terminals for two groups of auxiliary electric heaters. These two groups of electric heaters can be activated at the same time. When only one group of the electric heater is installed, please follow the wiring of any group of the diagram shown below.

(1) See the following statement for installation of two groups of auxiliary electric heaters, including wiring of the AC contactor, the thermostat and the tank-type electric heater.

#### ◆ Wiring of the AC Contactor

L1, L2 and L3 are three-phase input terminals. T1, T2 and T3 are three-phase output terminals. A1 and A2 are terminals of input and output signals which are used to control the AC contactors. NO and NC are normally open and closed terminals of the AC contactors.

The tank-type electric heater and AC contacts should be selected according to the selection instructions and the thermostat and its upper limit should be decided by the protection function of the electric heater.

In order to ensure product quality and service life, it is unallowable to do wiring directly at the main board by the user themselves to prevent the main board from being damaged. The AC contactor control signal input terminal X17 (AC contactor 1) and X18 (AC contactor 2) of the main board AP1 should be connected to terminal 7 and terminal 8 of the electric box. The single pins of terminal CN26 (AC contactor 1) and CN27 (AC contactor 2) should be connected to terminal 35 and 36 of the electric box. Besides, other two pins of CN 26 and CN27 both should be connected to XT2 (see the diagram below for more details).

Only qualified cables are allowed and see the table below for the corresponding wiring terminals.

No.	Wiring Terminal
AC Contactor 1	7—A1
	35—2T1
AC Contactor 2	8—A1
	36—2T2

◆ **Wiring of the Thermostat**

The proper limit of the thermostat should be selected based on the protection function of the electric heater.

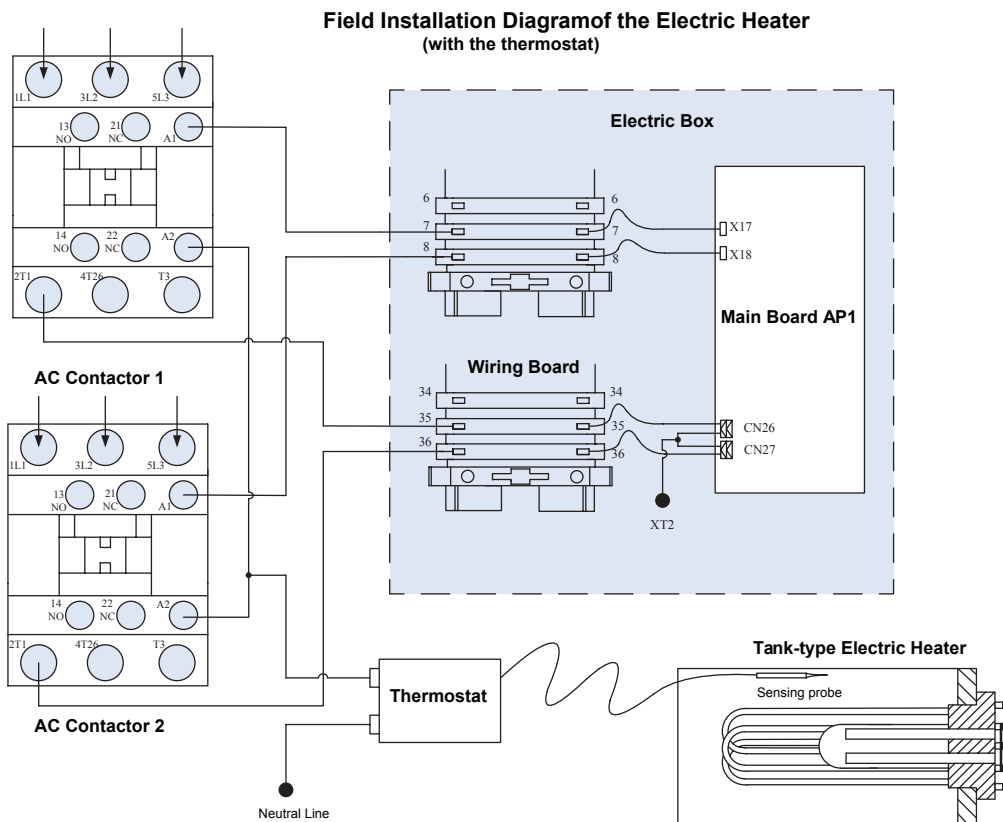
Firstly, short-circuit the ON/OFF control signal output terminals of AC contactor 1 and AC contactor 2, and then connect them with the thermostat in series. Do not let the temperature of the external wall of the tank-type electric heater too high (see the diagram below for more details). After that, apply heat-conducting paste on the sensing probe and then insert it to the sensing hole to sense the temperature of the external wall of the tank-type electric heater.

◆ **Wiring of the Tank-type Electric Tank**

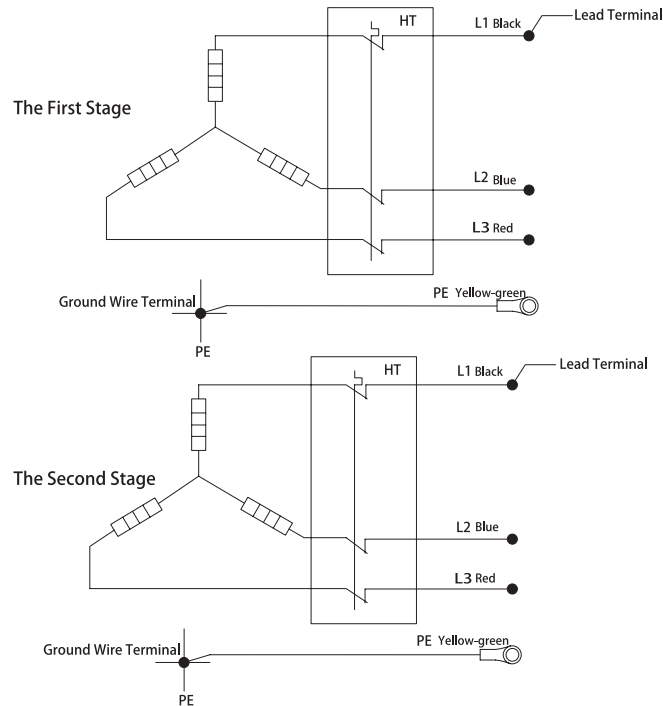
The tank-type electric heater with proper power output should be used and the heating pipe should be installed at the water inlet side of the unit.

Three-phase wiring for the electric heater should be supplied by the user themselves. A new electric box is recommended to be used. See the diagram below for more details.

When protection function of the thermostat is required, the sensing probe applied with heat-conducting paste should be inserted into the sensing hole after wiring of the electric heater has been finished.



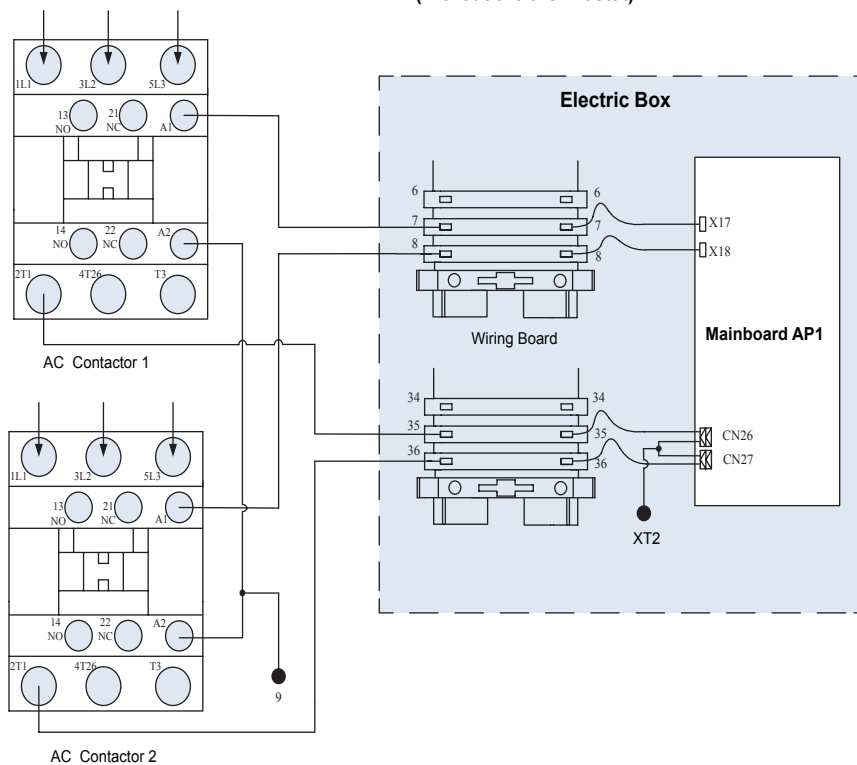
**Electric Wiring Diagram of the Electric Heater**



(2) See the following statement for installation of two groups of auxiliary electric heaters, including wiring of the AC contactors and the tank-type electric heater.

- ◆ Wiring of the AC contactors is the same as that stated above.
- ◆ When the thermostat is not required, do the wiring as shown in the diagram below. The output terminal used to control the thermostat should be short-circuited and then be connected to terminal 9 ( it is the terminal for the neutral line).
- ◆ Wiring of the tank-type electric heater is the same as that stated above.

**Field Instalation Diagram of the Electric Heater  
(without the thermostat)**

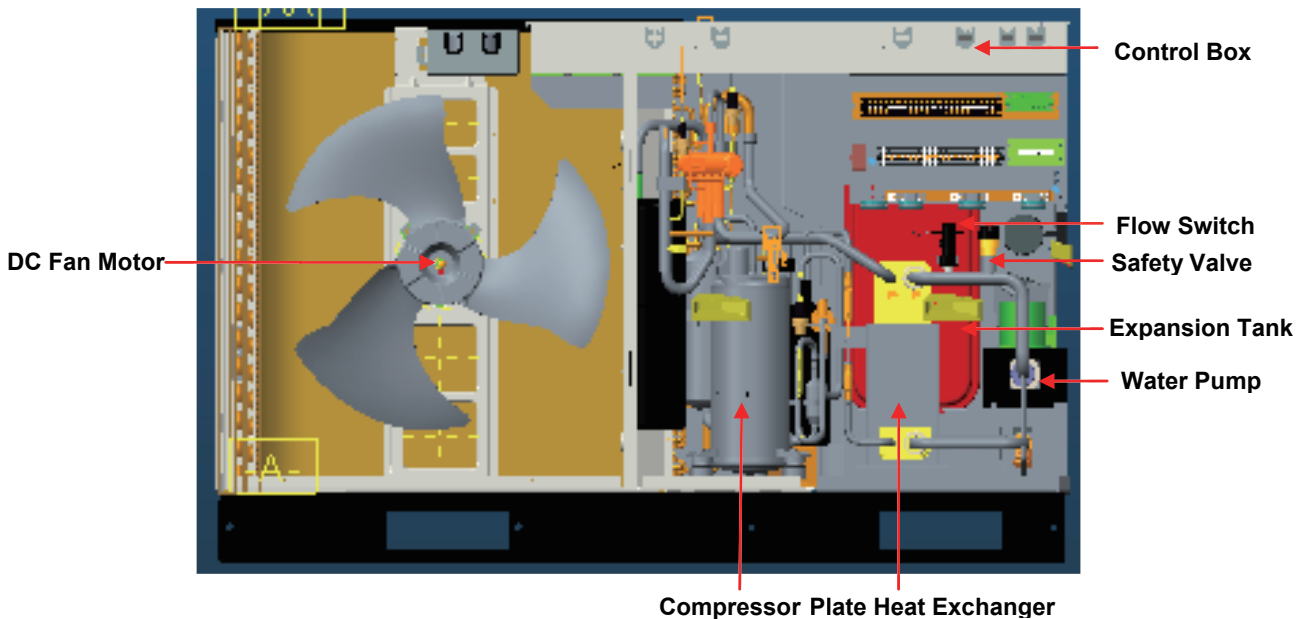


**Notes:**

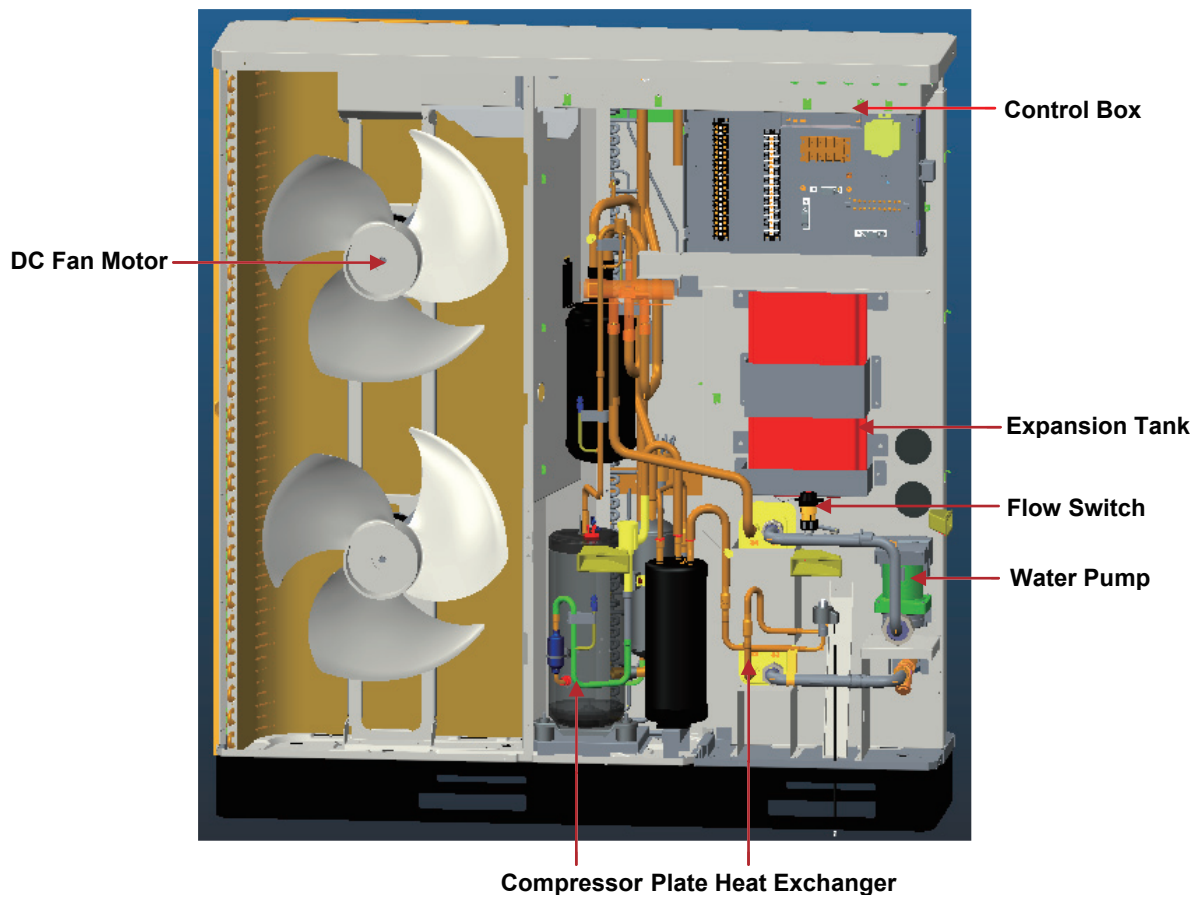
- ① During installation, the electric heater should be supplied with three-phase power separately. When only one group of the electric heater is installed, please follow the wiring of any group of the diagram shown above.
- ② Quantity of the AC contactors should match with that of the electric heater installed. Proper AC contactors which meet the actual demands should be adopted.
- ③ The wiring mode depends on if the tank-type electric heater is equipped with a thermostat or not.
- ④ Proper power lines should be used and those that do not meet actual demands should be avoided.
- ⑤ Never open the electric box for wiring of the mainboard by the user themselves.

**7 Main Components**

(1) HLR8Pd/Na-K, HLR10Pd/Na-K



(2) HLR12Pd/Na-M, HLR14Pd/Na-M



## 8 Installation Guideline of the Unit

### 8.1 Instruction to installation

- (1) Installation of the unit must be in accordance with national and local safety codes.
- (2) Installation quality will directly affect the normal use of the air conditioner unit. The user is prohibited from installation. Please contact your dealer after buying this machine. Professional installation workers will provide installation and test services according to installation manual.
- (3) Do not connect to power until all installation work is completed.

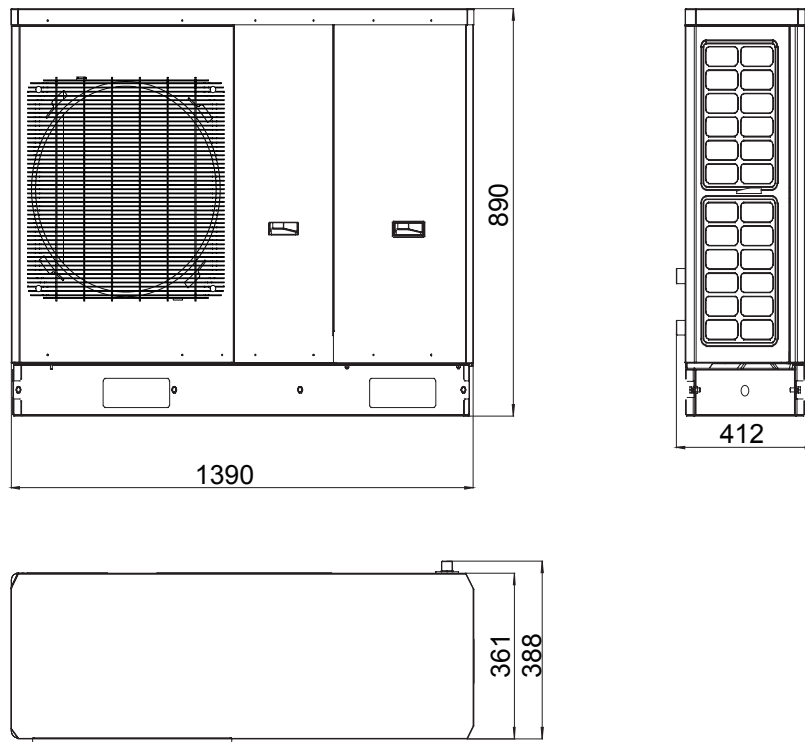
### 8.2 Installation of the Monobloc Unit

#### 8.2.1 Selection of the Installation Location of the Monobloc Unit

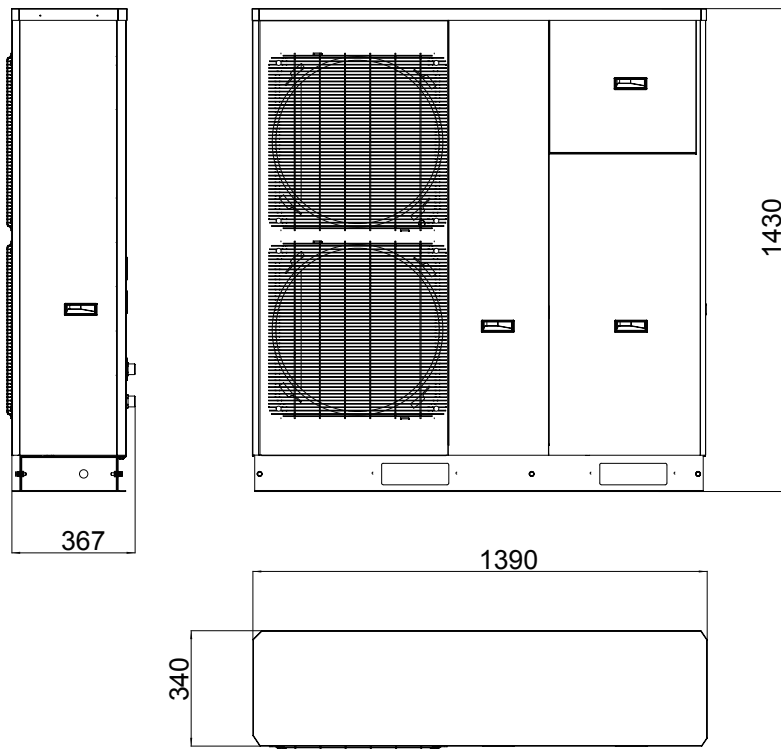
- (1) The monobloc unit must be installed on a firm and solid support.
- (2) Avoid placing the monobloc unit under window or between two constructions, hence to prevent normal operating noise from entering the room.
- (3) Air flow at inlet and outlet shall not be blocked.
- (4) Install at a well-ventilated place, so that the machine can absorb and discharge sufficient air.
- (5) Do not install at a place where flammable or explosive goods exist or a place subject to severe dust, salty fog and polluted air.

#### 8.2.2 Outline Dimensions of the Monobloc Unit

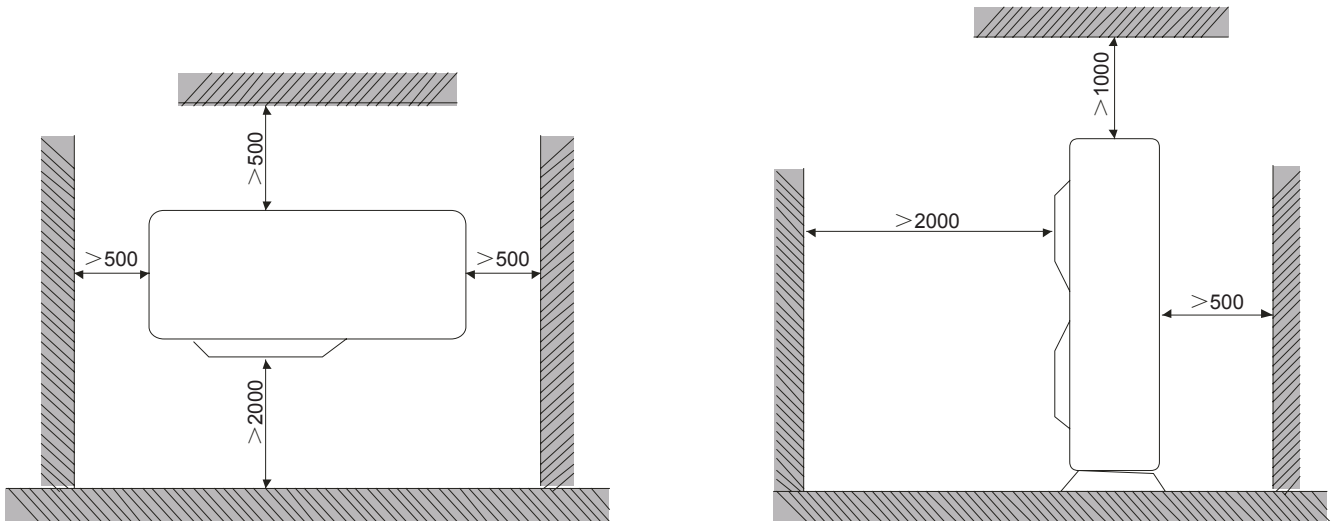
- (1) HLR8Pd/Na-K, HLR10Pd/Na-K



(2) HLR12Pd/Na-M, HLR14Pd/Na-M



### 8.2.3 Space Requirements for Installation



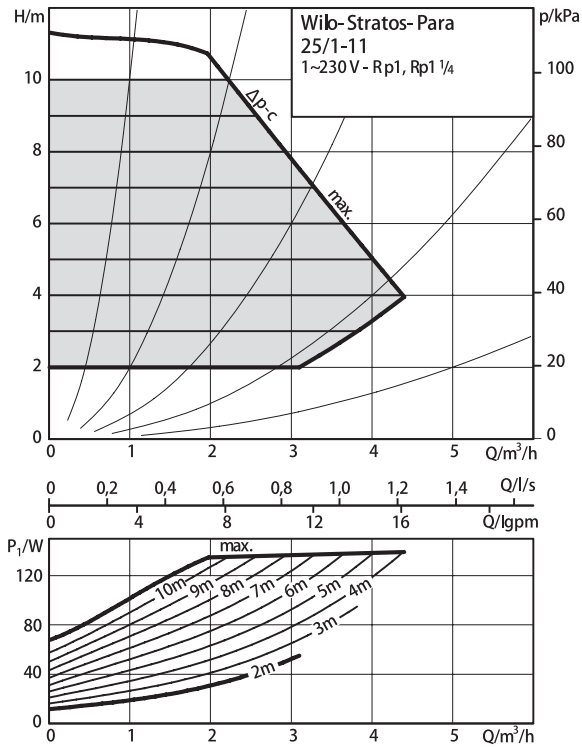
### 8.2.4 Precautions on installation of the Monobloc Unit

- (1) When moving the monobloc unit, it is necessary to adopt 2 pieces of long enough rope to hand the unit from 4 directions. Included angle between the rope when hanging and moving must be 40° below to prevent center of the unit from moving.
- (2) The monobloc unit should be installed on concrete base that is 10cm height.
- (3) Requirements on installation space dimension of unit's bodies are shown in following drawing.
- (4) The monobloc unit must be lifted by using designated lifting hole. Take care to protect the unit during lift. To avoid rusting, do not knock the metal parts.

### 8.3 Water Volume and Pump Capacity (with pump)

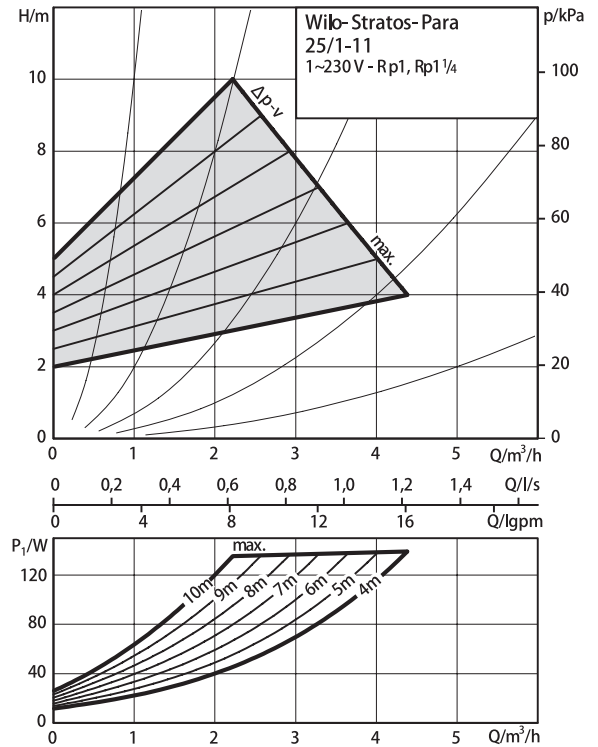
#### Wilo-Stratos PARA 25/1-11

$\Delta p$ -c (constant)



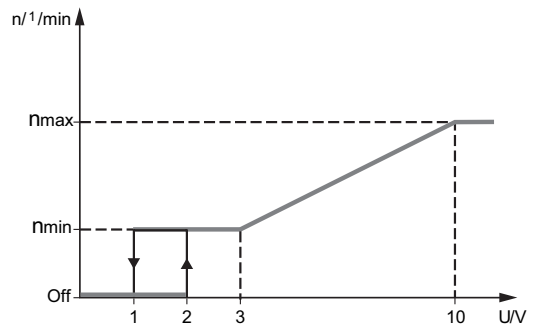
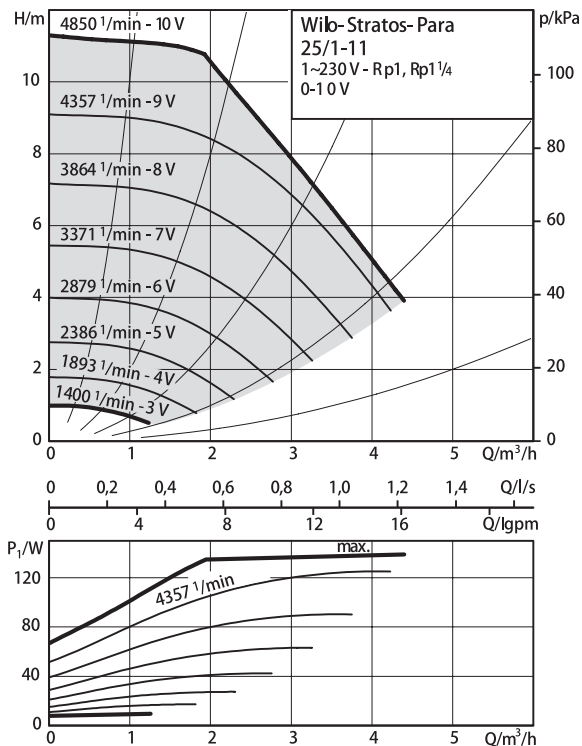
#### Wilo-Stratos PARA 25/1-11

$\Delta p$ -v (variable)



#### Wilo-Stratos PARA 25/1-11

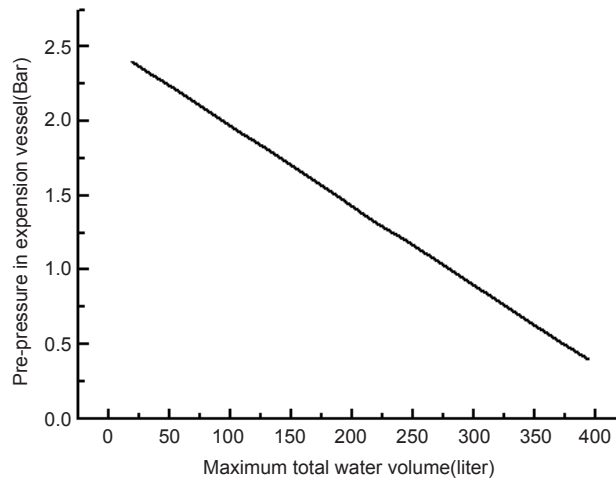
External control mode via Analog-In 0-10 V



**Note:** during operation, the water pump will adjust its output based on the actual load.



### 8.4 Water Volume and Expansion Vessel Pressure



**Notes:**

- ① The expansion vessel is 10 liter and 1bar pre-pressurized;
- ② Total water volume of 280 liter is default; if total water is changed because of installation condition, the pre-pressure should be adjusted to secure proper operation;
- ③ Minimum total water volume is 20 liter;
- ④ To adjust pre-pressure, use nitrogen gas by certificated installer.

### 8.5 Selection of Expansion Vessels

Formula:

$$V = \frac{C \cdot e}{1 - \frac{1 + P_1}{1 + P_2}}$$

V--- Volume of expansion vessel

C--- Total water volume

P<sub>1</sub>--- Pre-set pressure of expansion vessel

P<sub>2</sub>-- The highest pressure during running of the system (that is the action pressure of safety valve.)

e---The expansion factor of water (the difference between the expansion factor of the original water temperature and that of highest water temperature.)

Water expansion factor in different temperature	
Temperature(°C)	Expansion factor e
0	0.00013
4	0
10	0.00027
20	0.00177
30	0.00435
40	0.00782
45	0.0099
50	0.0121
55	0.0145
60	0.0171
65	0.0198
70	0.0227
75	0.0258
80	0.029
85	0.0324
90	0.0359
95	0.0396
100	0.0434

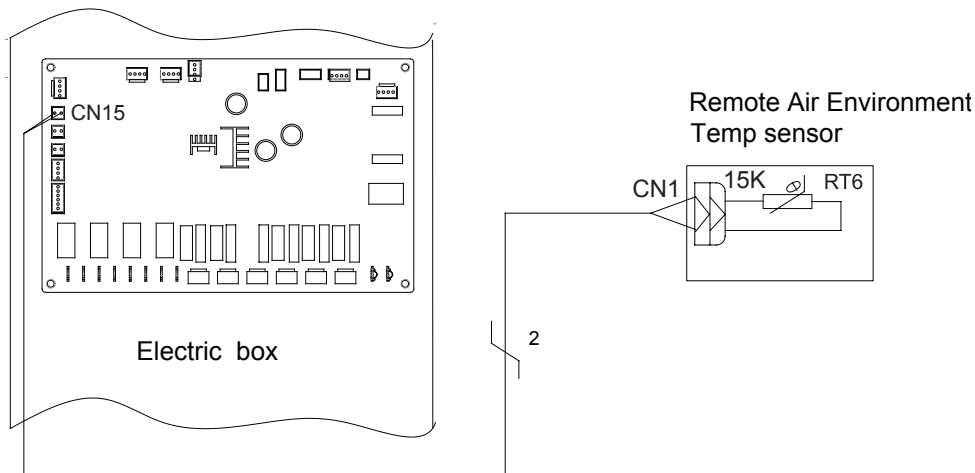
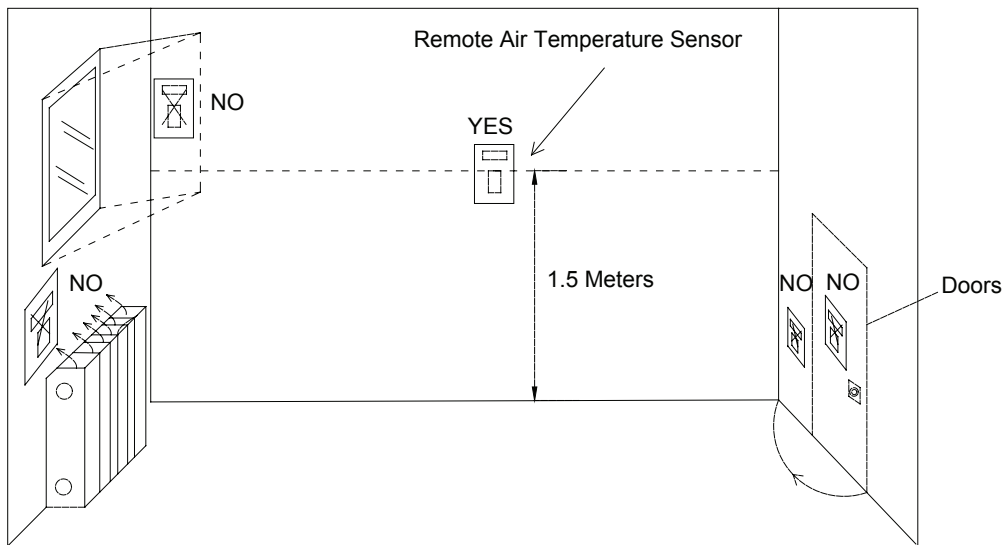
## 9 Remote Air Temperature Sensor



Front side



Back side

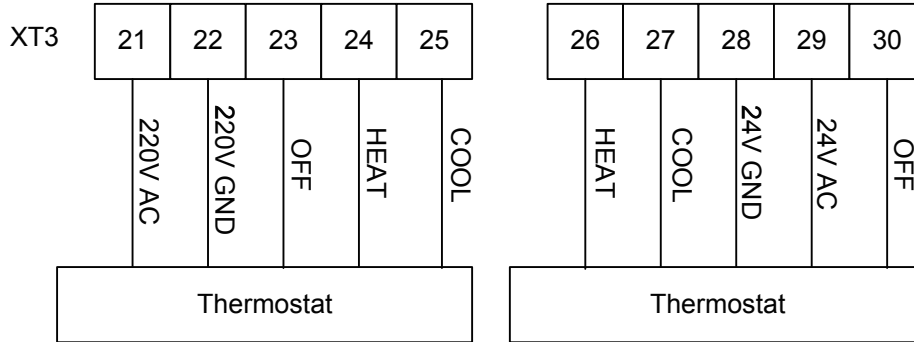


### Notes:

- ① Distance between the monobloc unit and the remote air temperature sensor should be less than 15 meters due to length of the connection cable of remote air temperature sensor;
- ② Height from floor is approximately 1.5 meters;
- ③ Remote air temperature sensor can not be located where the area may be hidden when door is open;
- ④ Remote air temperature sensor can not be located where external thermal influence may be applied;
- ⑤ Remote air temperature sensor should be installed where space heating is mainly applied;
- ⑥ After the remote air temperature sensor is installed, it should be set to "With" through the wired controller so as to set the remote air temperature to the control point.

## 10 Thermostat

Installation of the thermostat is very similar to that of the remote air temperature sensor.



### How to Wire Thermostat

- (1) Uncover the front cover of the monobloc unit and open the control box.
- (2) Identify the power specification of the thermostat, if it is 230V , find terminal block XT3 as NO.21~25; Otherwise, if it is 24V, find terminal block XT3 as NO.26~30;
- (3) If it is the heating/cooling thermostat, please connect wire as per the figure above;

#### ⚠ CAUTION!

- ① Never use 230V AC and 24V AC thermostat at the same time, otherwise, it will cause short circuit and power cut-off by the circuit breaker;
- ② Setting temperature by the thermostat(heating or cooling) should be within the temperature range of the product ;
- ③ For other constrains, please refer to previous pages about the remote air temperature sensor;
- ④ Do not connect external electric loads. Wire 220V AC(24V AC) and 220V GND(24V GND) should be used only for the electric thermostat.
- ⑤ Never connect external electric loads such as valves, fan coil units, etc. If connected, the mainboard of the unit can be seriously damaged.
- ⑥ Installation of the thermostat is very similar to that of the remote air temperature sensor.

## 11 2-Way Valve

The 2-way valve is required to control water flow for cooling operation. The role of 2-way valve is to cut off water flow into the underfloor loop when the fan coil unit is equipped for cooling operation.

### General Information

Type	Power	Operating Mode	Supported
NO 2-wire	230V 50Hz 1Ph AC	Closing water flow	Yes
		Opening water flow	Yes
NC 2-wire	230V 50Hz 1Ph AC	Closing water flow	Yes
		Opening water flow	Yes

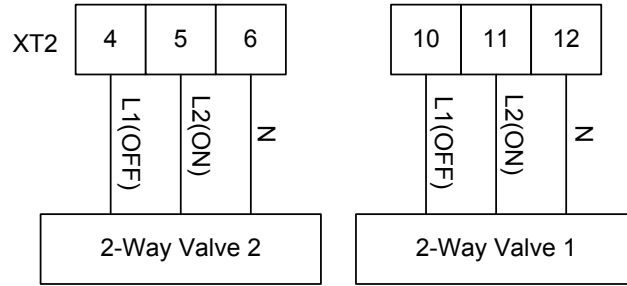
- (1) Normal Open type. When electric power is NOT supplied, the valve is open. (When electric power is supplied, the valve is closed.)
- (2) Normal Closed type. When electric power is NOT supplied, the valve is closed. (When electric power is supplied, the valve is open.)

### How to Wire 2-Way Valve:

Follow steps below to wire the 2-way valve.

Step 1. Uncover the front cover of the unit and open the control box.

Step 2. Find the terminal block and connect wires as below.



**! WARNING!**

① Normal Open type should be connected to wire (ON) and wire (N) for valve closing in cooling mode.

② Normal Closed type should be connected to wire (OFF) and wire (N) for valve closing in cooling mode.

(ON) : Line signal (for Normal Open type) from PCB to 2-way valve

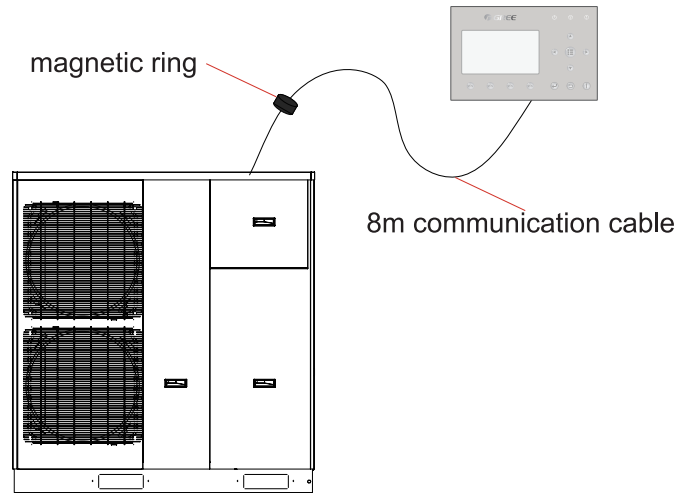
(OFF) : Line signal (for Normal Closed type) from PCB to 2-way valve

(N) : Neutral signal from PCB to 2-way valve

The 2-way valve 2 is reserved without any control program. At the field installation, it should be wired at the terminal board of the 2-way valve 1.

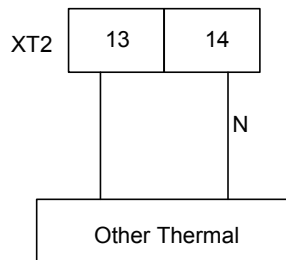
### 12 Wired Controller

Wired controller wiring guidance:



### 13 Other Auxiliary Heat Sources

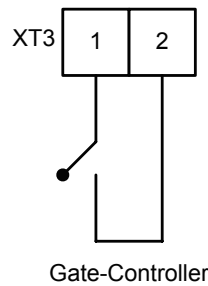
Other auxiliary heat sources are allowed for the equipment and controlled in such a way that the mainboard will output 230V when outdoor temperature is lower than the set point for startup of the auxiliary heat source.



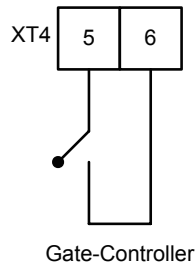
### 14 Gate-controller

If there is gate control function, installation guide follow as:

(1) HLR8Pd/Na-K, HLR10Pd/Na-K



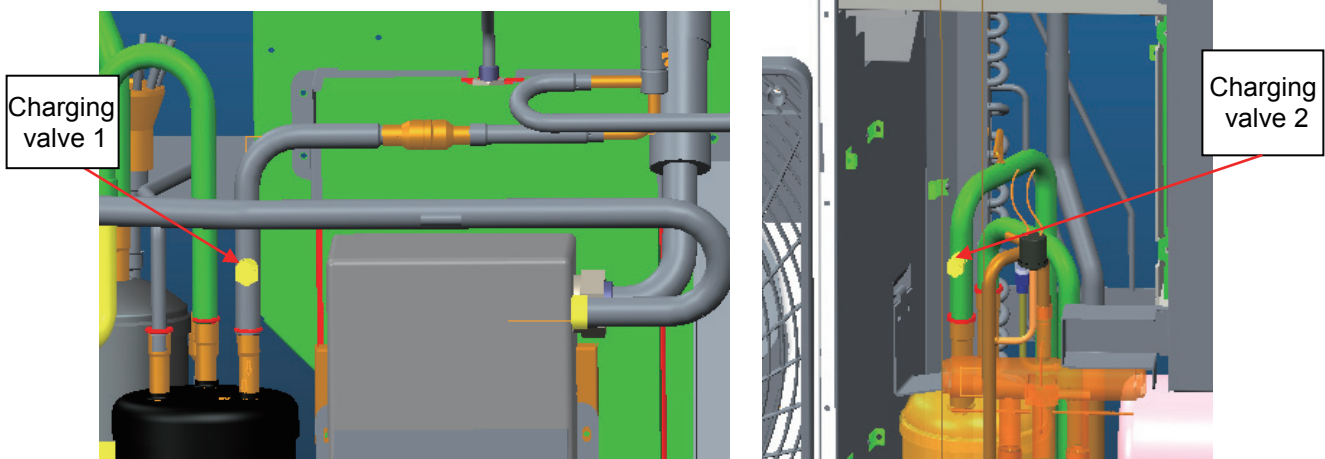
(2) HLR12Pd/Na-M, HLR14Pd/Na-M



## 15 Charging and Discharging of Refrigerant

The unit has been charged with refrigerant before delivery. Overcharging or undercharging will cause the compressor to run improperly or be damaged. When refrigerant is required to be charged or discharged for installation, maintenance and other reasons, please follow steps below and nominal charged volume on the nameplate.

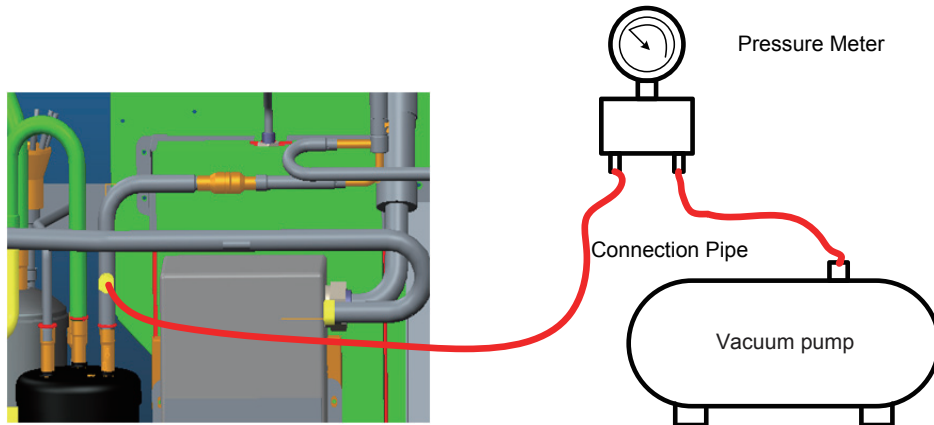
(1) Discharging: remove metal sheets of the outer casing, connect a hose to the charging valve and then discharge refrigerant.



### Notes:

- ① Discharge is allowed unless the unit has been stopped. (Cut off the power and repower it 1 minutes later)
- ② Protective measures should be taken during discharging to avoid frost bites.
- ③ When discharging is finished, if vacuuming cannot be done immediately, remove the hose to avoid air or foreign matters entering the unit.

(2) Vacuuming: When discharging is finished, use hoses to connect the charging valve, manometer and vacuum pump to vacuum the unit.



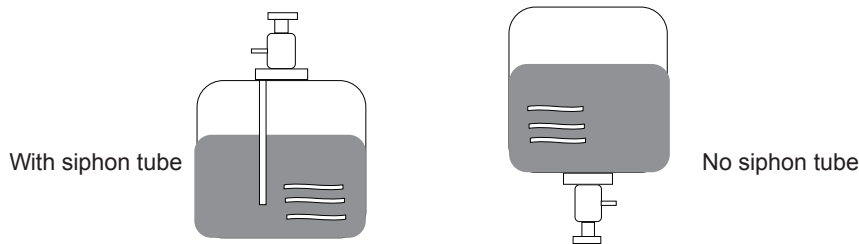
**Note:** when vacuuming is finished, pressure inside the unit should be kept lower than 80Pa for at least 30 minutes to make sure there is no leak. Either charging valve 1 or charging valve 2 can be used for vacuuming.

(3) Charging: when vacuuming is finished and it is certain that there is no leak, charging can be done.

- ◆ Be sure to charge the specified amount of refrigerant in liquid state.

Since this refrigerant is a mixed refrigerant, adding it in gas form may cause the refrigerant composition to change, preventing normal operation.

- ◆ Before charging, check whether the refrigerant cylinder is equipped with a siphon tube or not.



## 16 Electric Wiring

### 16.1 Wiring Principle

#### General principles

- ◆ Wires, equipment and connectors supplied for use on the site must be in compliance with provisions of regulations and engineering requirements.
- ◆ Only certificated electricians are allowed to perform wire connection on the site.
- ◆ Before connection work is started, the power supply must be shut off.
- ◆ Installers shall be responsible for any damage due to incorrect connection of the external circuit of the unit.
- ◆ Caution --- only copper wires are allowed to be used.

#### Connection of power cable to the electric cabinet of the unit

- ◆ Power cables should be laid out through cabling trough, conduit tube or cable channel.
- ◆ Power cables to be connected into the electric cabinet must be protected with rubber or plastic to prevent scratch by edge of metal plate.
- ◆ Power cables close to the electric cabinet of the unit must be fixed reliably to make the power terminal in the cabinet free from an external force.
- ◆ Power cable must be grounded reliably.

### 16.2 Specification of Power Supply Wire and Leakage Switch

Power cable specifications and Leakage switch types in the following list are recommended.

Model	Power Supply	Leakage Switch	Minimum Sectional Area of Earth Wire	Minimum Sectional Area of Power Supply Wire
	V,Ph,Hz	(A)	(mm <sup>2</sup> )	(mm <sup>2</sup> )
HLR8Pd/Na-K	220-240V,1Ph,50Hz	20	2.1	3×2.1
HLR10Pd/Na-K		20	2.1	3×2.1
HLR12Pd/Na-M	380-415V,3Ph,50Hz	13	1.3	5×1.3
HLR14Pd/Na-M		13	1.3	5×1.3

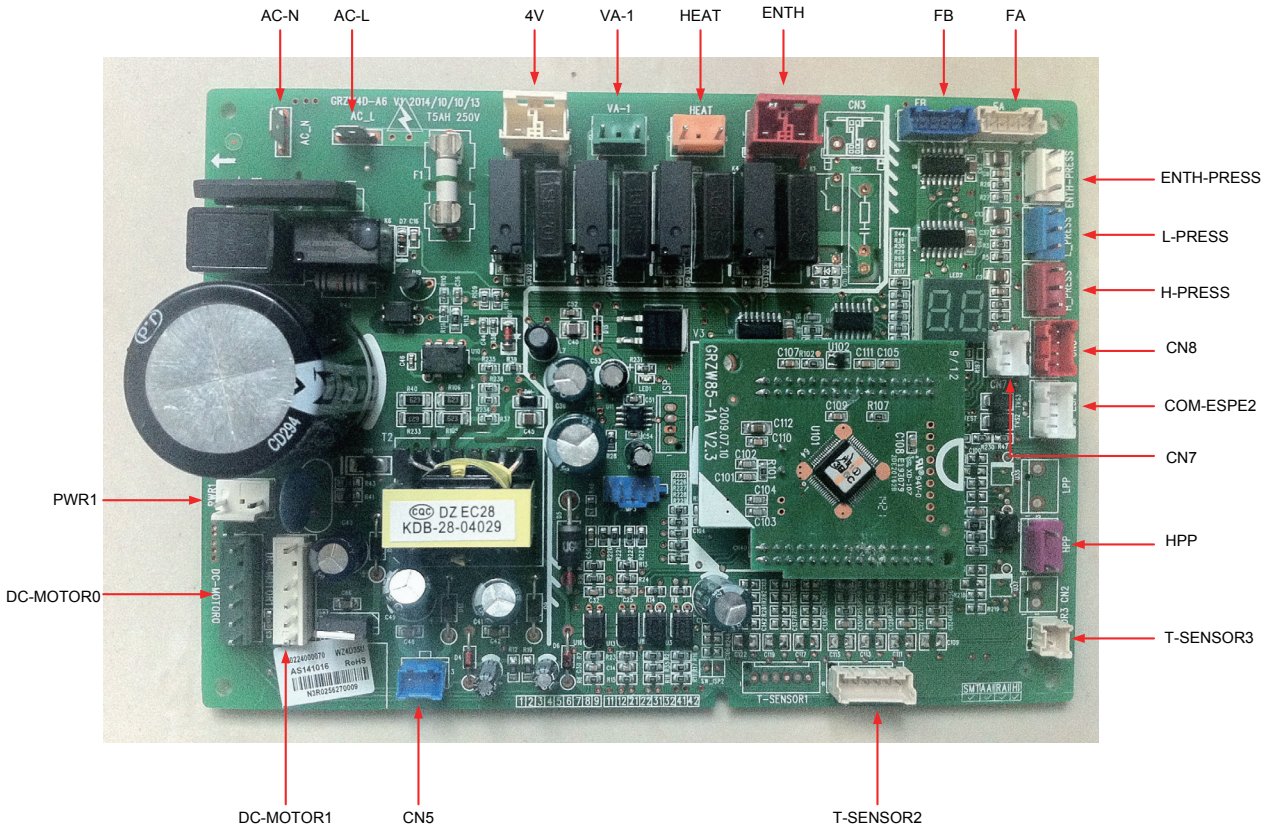
**Notes:**

- ① The leakage switch is necessary for additional installation. If circuit breakers with leakage protection are in use, action response time must be less than 0.1 second, leakage circuit must be 30mA.
- ② The above selected power cable diameters are determined based on assumption of distance from the distribution cabinet to the unit less than 75m. If cables are laid out in a distance of 75m to 150m, diameter of power cable must be increased to a further grade.
- ③ The power supply must be of rated voltage of the unit and special electrical line for air-conditioning.
- ④ All electrical installation shall be carried out by professional technicians in accordance with the local laws and regulations.
- ⑤ Ensure safe grounding and the grounding wire shall be connected with the special grounding equipment of the building and must be installed by professional technicians.
- ⑥ The specifications of the breaker and power cable listed in the table above are determined based on the maximum power (maximum amps) of the unit.
- ⑦ The specifications of the power cable listed in the table above are applied to the conduit-guarded multi-wire copper cable (like, YJV XLPE insulated power cable) used at 40°C and resistible to 90°C(see IEC 60364-5-52). If the working condition changes, they should be modified according to the related national standard.
- ⑧ The specifications of the breaker listed in the table above are applied to the breaker with the working temperature at 40°C. If the working condition changes, they should be modified according to the related national standard.

## 17 Wring Diagram

### 17.1 Control Board

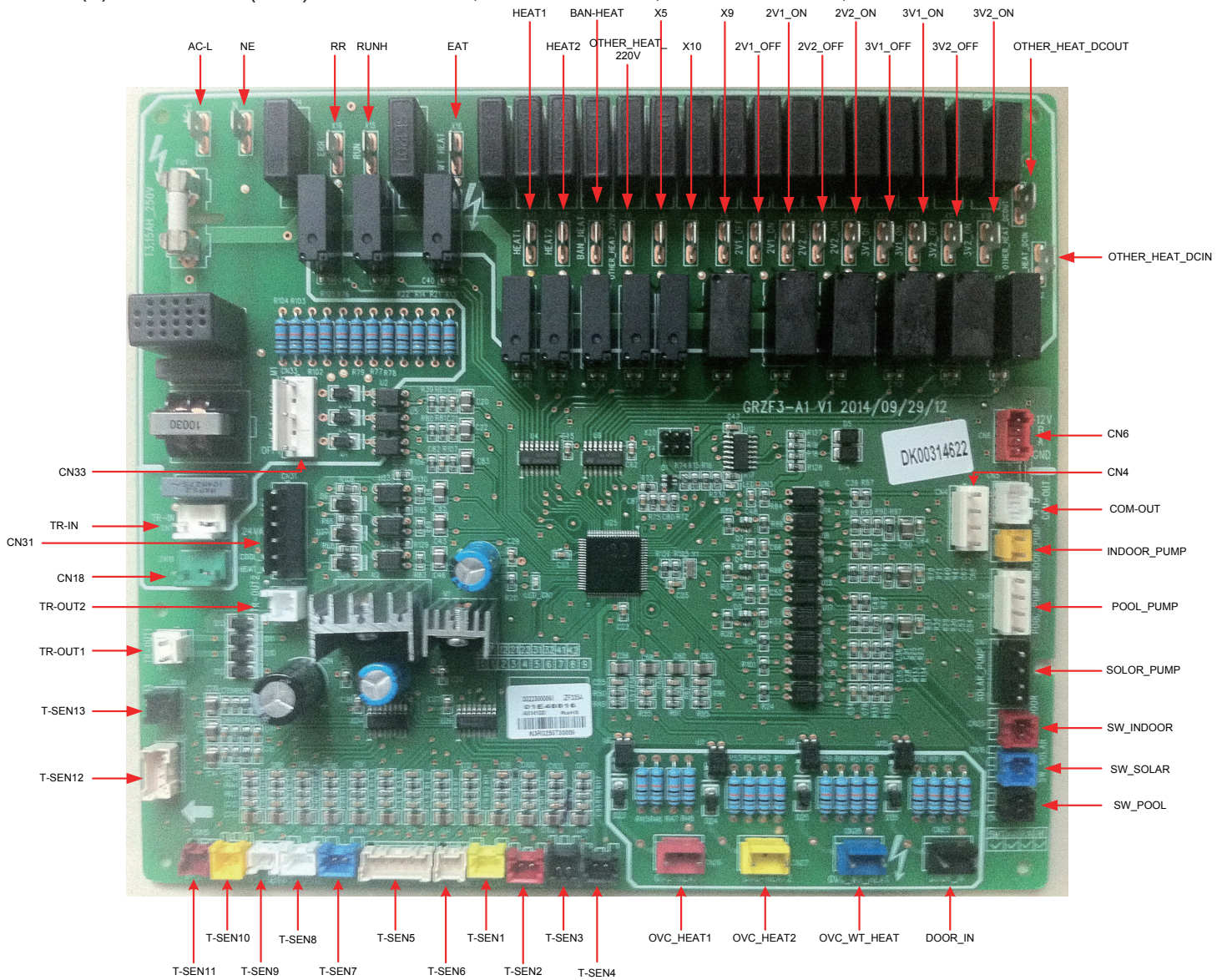
(1) Main Board (AP2):HLR8Pd/Na-K, HLR10Pd/Na-K, HLR12Pd/Na-M, HLR14Pd/Na-M



Silk Screen	Specification
AC_N	Neutral wire input of power supply
AC_L	Live wire input of power supply
4V	4-way valve
VA-1	E-heater of chassis
HEAT	Electric heating tape
ENTH	Solenoid valve
FB	To EXV2,pipe electric expansion valve,1-4 pin: driving impulse output; 5 pin: +12V;
FA	To EXV1,pipe electric expansion valve,1-4 pin: driving impulse output; 5 pin: +12V;
ENTH-PRESS	Signal input of pressure sensor 1 pin: GND; 2 pin: signal input; 3 pin: +5V;
L-PRESS	Signal input of pressure sensor 1 pin: GND; 2 pin: signal input; 3 pin: +5V;
H-PRESS	Signal input of pressure sensor 1 pin: GND; 2 pin: signal input; 3 pin: +5V;
CN8	To the wired controller, communication cable: 1 pin earthed, 2 pin B, 3 pin A, 4 pin+12power supply;
CN7	Communication between AP1 and AP2;communication cable 2 pin B, 3 pinA
COM-ESPE2	Pin for communication with the drive
HPP	High pressure switch
T-SENSOR3	1 hole: +3.3V 2 hole: detection ; suction temperature sensor
T-SENSOR2	1, 2 hole: pipe temperature; 3, 4 hole: environment; 5, 6 hole: exhaust
CN5	Supply 18V DC power to the drive.
DC-MOTOR1	DC fan 1 pin: strong power supply; 3 pin: fan GND; 4 pin: +15V; 5 pin: control signal; 6pin:feedback signal;
DC-MOTOR0	DC fan 1 pin: strong power supply; 3 pin: fan GND; 4 pin: +15V; 5 pin: control signal; 6pin:feedback signal;
PWR1	Supply 310V DC power to the drive.



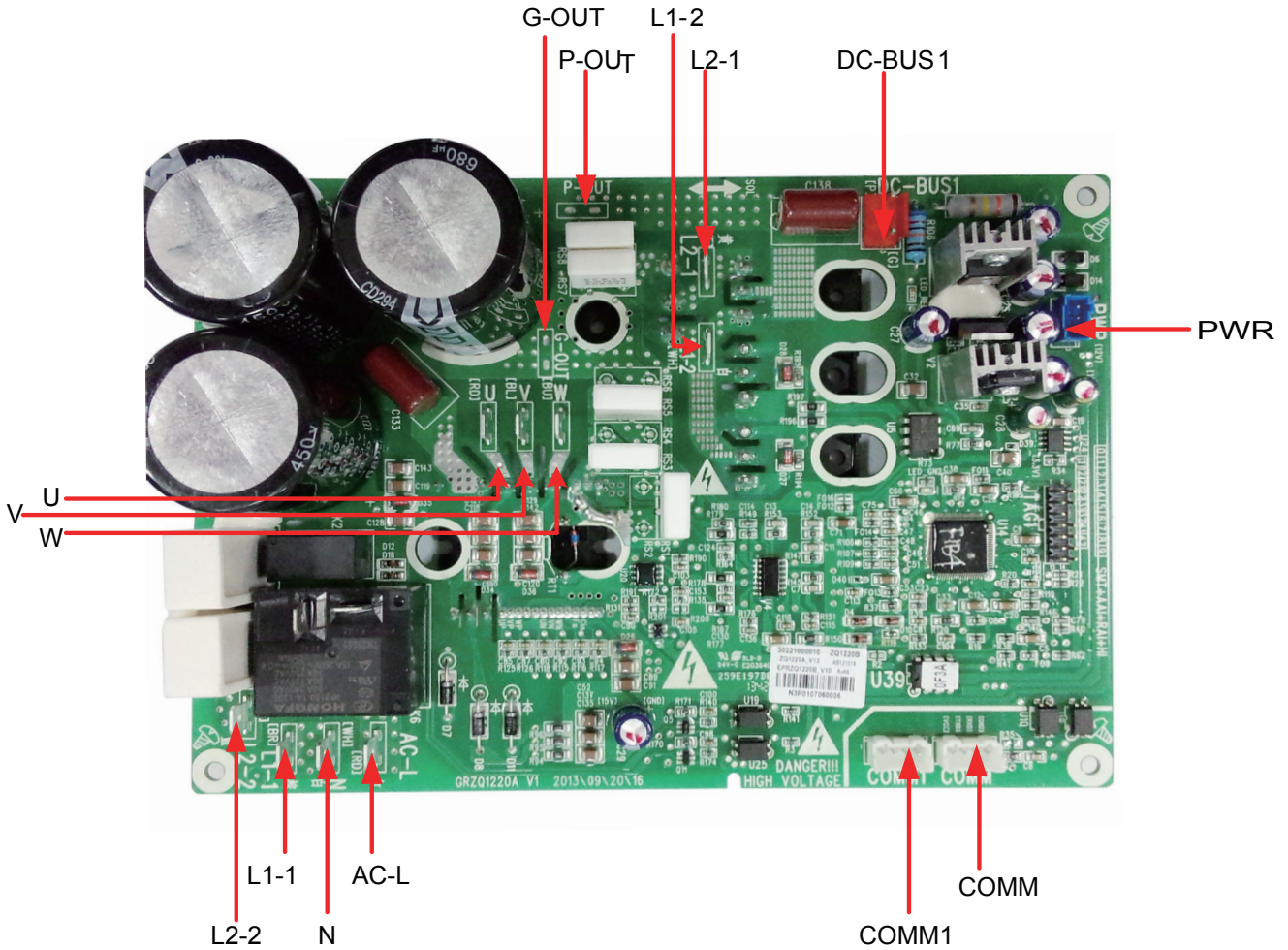
(2) Main Board (AP1):HLR8Pd/Na-K, HLR10Pd/Na-K, HLR12Pd/Na-M, HLR14Pd/Na-M



Silk Screen	Location	Introduction
AC-L	-	Live wire of power supply
N	-	Neutral wire of power supply
ERR	X19	Error indicator
RUN	X15	Running indicator
HEAT1	X17	E-heater 1
HEAT2	X18	E-heater 2
BAN_HEAT	X3	Antifreeze heater for the heat exchanger
OTHER_HEAT_220V	X6	Assistant heat by 220VAC
X5	X5	Reserved
X10	X10	Reserved
X9	X9	Reserved
2V1_OFF	X8	Electric magnetic 2-way valve1 is normally closed.
2V1_ON	X7	Electric magnetic 2-way valve1 is normally open.

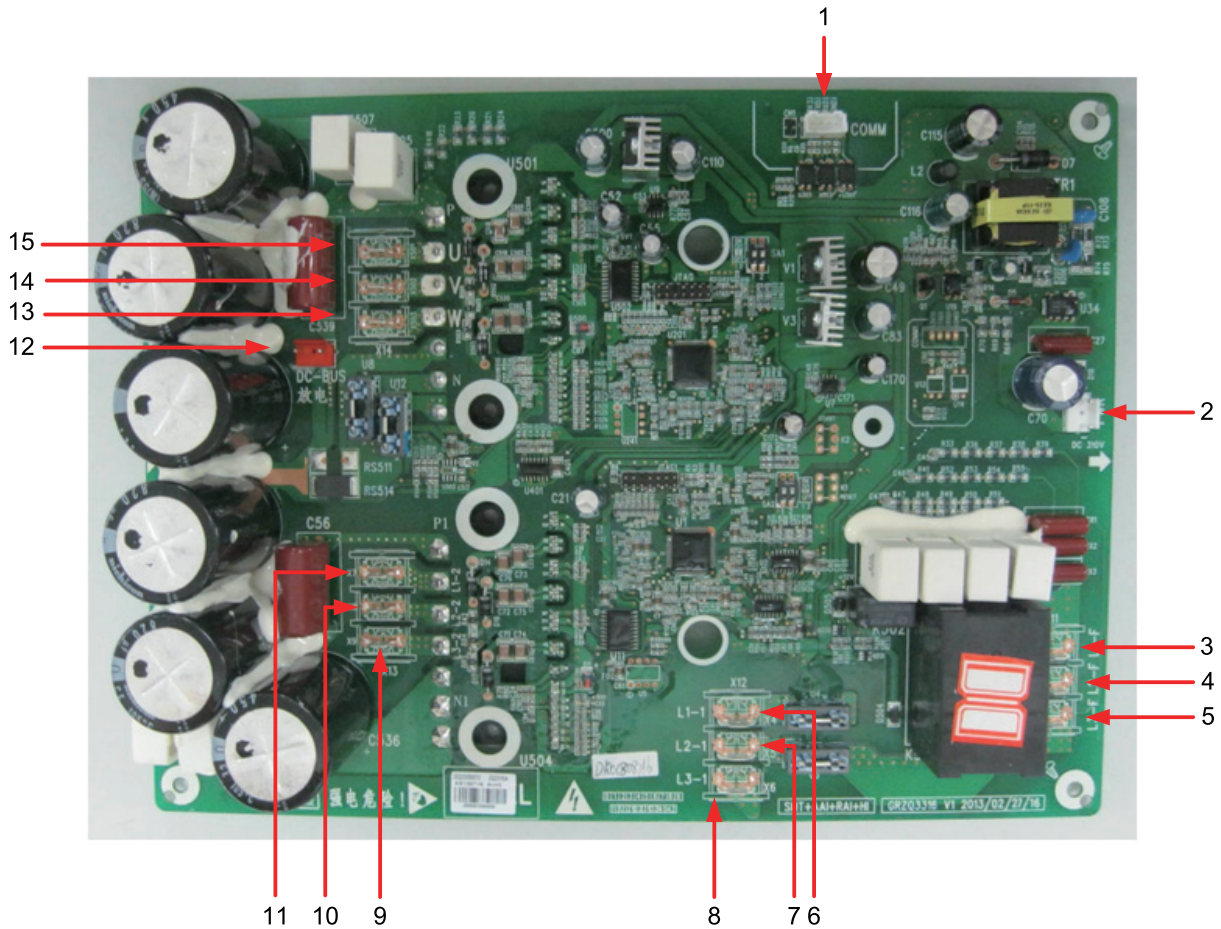
2V2_OFF	X14	Electric magnetic 2-way valve2 is normally closed.
2V2_ON	X13	Electric magnetic 2-way valve2 is normally open.
OTHER_HEAT_DCOUT	X1	The dc output of auxiliary heat
OTHER_HEAT_DCIN	X2	The dc input of auxiliary heat
COM-OUT	CN5	Connect to AP2
CN6	CN6	Connect the wired controller
INDOR_PUMP	CN4	Control and feedback of the water pump for the main unit
CN8	CN8	Feedback of the water pump for the main unit
POOL_PUMP	CN9	Control and feedback of the water pump for the swimming pool
SW_INDOOR	CN25	Detection input of water flow switch for indoor
SW_POOL	CN17	Detection input of water flow switch for pool
DOOR_IN	CN23	Door detection input
OVC-HEAT1	CN26	E-heater of unit1 adhesion-proof protection detector
OVC-HEAT2	CN27	E-heater of unit2 adhesion-proof protection detector
T-SEN4	CN20	Terminal of temperature sensor4
T-SEN3	CN22	Terminal of temperature sensor3
T-SEN2	CN21	Terminal of temperature sensor2
T-SEN1	CN11	Terminal of temperature sensor1
T-SEN6	CN12	Terminal of temperature sensor6
T-SEN5	CN10	Terminal of temperature sensor5
T-SEN7	CN29	Terminal of temperature sensor7
T-SEN8	CN32	Terminal of temperature sensor8
T-SEN9	CN30	Terminal of temperature sensor9
T-SEN10	CN24	Terminal of temperature sensor10
T-SEN11	CN15	Terminal of temperature sensor11
T-SEN12	CN13	Terminal of temperature sensor12
T-SEN13	CN14	Terminal of temperature sensor13
TR-OUT1	CN2	Transformer output 1 (12V)
TR-OUT2	CN3	Transformer output 2 (24V)
CN18	CN18	Power supply interface of the thermostat (220~240V)
TR-IN	CN1	220V input of transformer
CN31	CN31	Power supply interface and control signal of the thermostat (24V))
CN33	CN33	Control signal of the thermostat

(3) Drive Board (AP4):HLR8Pd/Na-K, HLR10Pd/Na-K



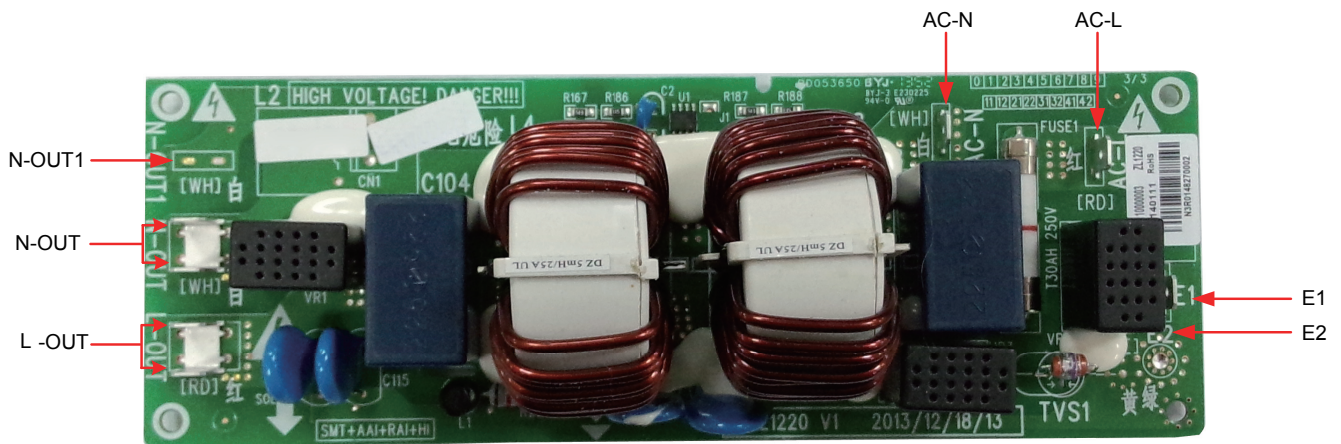
Silk Screen	Introduction
AC-L	Live line input of the drive board
N	Neutral line input of the drive board
L1-1	To PFC inductor brown line
L1-2	To PFC inductor white line
L2-1	To PFC inductor white line
L2-2	To PFC inductor blue line
U	To compressor phase U
V	To compressor phase V
W	To compressor phase W
DC-BUS1	Pin for electric discharge of the high-voltage bar during test.
P-OUT	Reserved
G-OUT	Reserved
COMM COMM1	Communication interface[1-3.3V,2-TX,3-RX,4-GND]
PWR	Power input of the drive board [1-GND,2-18V,3-15V]

(4) Drive Board (AP4):HLR12Pd/Na-M, HLR14Pd/Na-M



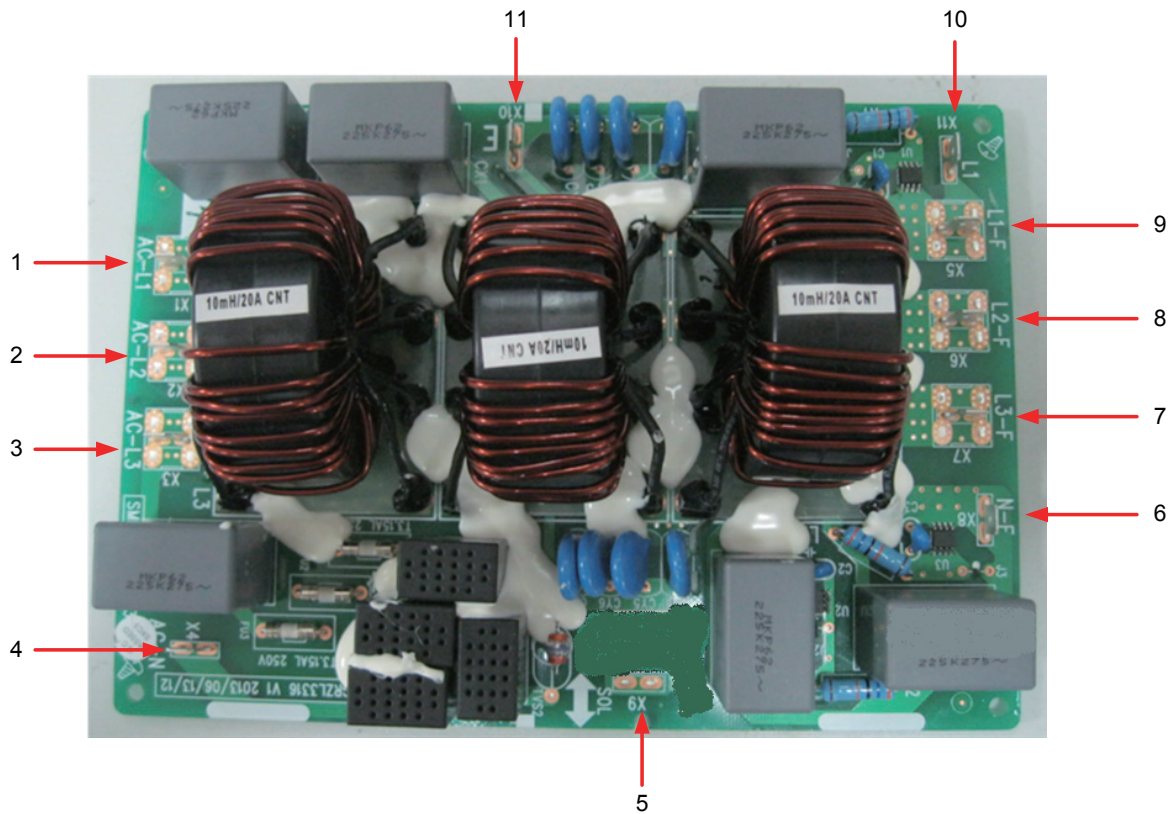
No	Silk Screen	Introduction
1	COMM	Communication interface [1-3.3V, 2-TX, 3-RX, 4-GND]
2	PWR	Switch power interface [1-310VDC, 3-GND]
3	X1	Connector to filter L1-F
4	X2	Connector to filter L2-F
5	X3	Connector to filter L3-F
6	X4	Connector to L1-1 OF PFC reactor 1
7	X5	Connector to L2-1 OF PFC reactor 2
8	X6	Connector to L3-1 OF PFC reactor 3
9	X9	Connector to L3-2 of PFC reactor 3
10	X8	Connector to L2-2 of PFC reactor 2
11	X7	Connector to L1-2 of PFC reactor 1
12	DC-BUS	Pin for electric discharge of the high-voltage bar during test.
13	X501	Connector to the compressor phase-U
14	X502	Connector to the compressor phase-V
15	X503	Connector to the compressor phase-W

(5) Filter Board (AP3): HLR8Pd/Na-K, HLR10Pd/Na-K



Silk Screen	Introduction
AC-N	Neutral line of the power supply for the main unit
AC-L	Live line of the power supply for the main unit
N-OUT	Neutral line output of the filter board (to the drive board)
	Neutral line output of the filter board (to the main board )
N-OUT1	Reserved
L-OUT	Live line output of the filter board (to the drive and main boards)
E1	To the grounding line of the main unit
E2	Reserved

(6) Filter Board (AP3):HLR12Pd/Na-M, HLR14Pd/Na-M



No	Silk Screen	Introduction
1	X1	Connector to power supply output line AC-L1
2	X2	Connector to power supply output line AC-L2
3	X3	Connector to power supply output line AC-L3
4	X4	Connector to power supply neutral line AC-N
5	X5	Connector to power supply output line L1-F (drive board L1-F and AC-L)
6	X6	Connector to power supply output line L2-F (drive board L2-F)
7	X7	Connector to power supply output line L3-F (drive board L3-F)
8	X8	Connector to power supply neutral line N-F (mainboard AC-N)
9	X9	Connector to the grounding line E , reserved
10	X10	Connector to the grounding line E

## 17.2 Electric Wiring

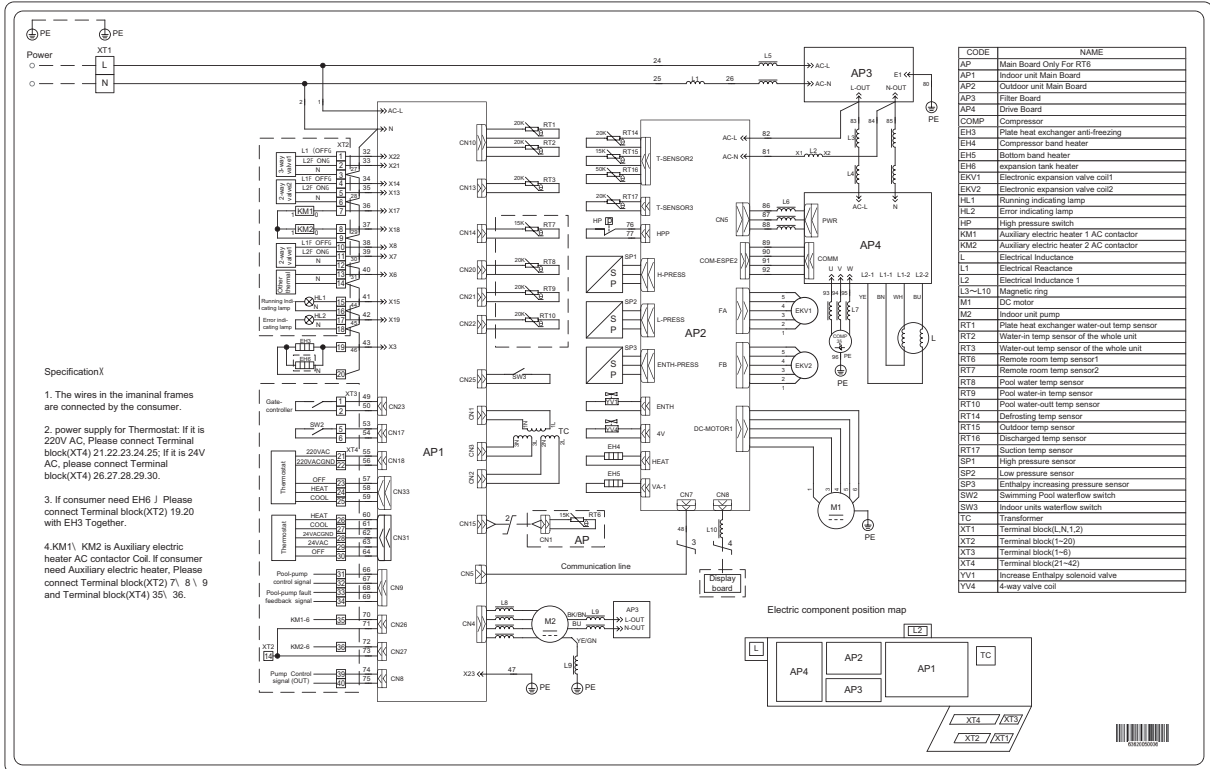
### 17.2.1 Wiring Principle

Refer to Section 15.1.

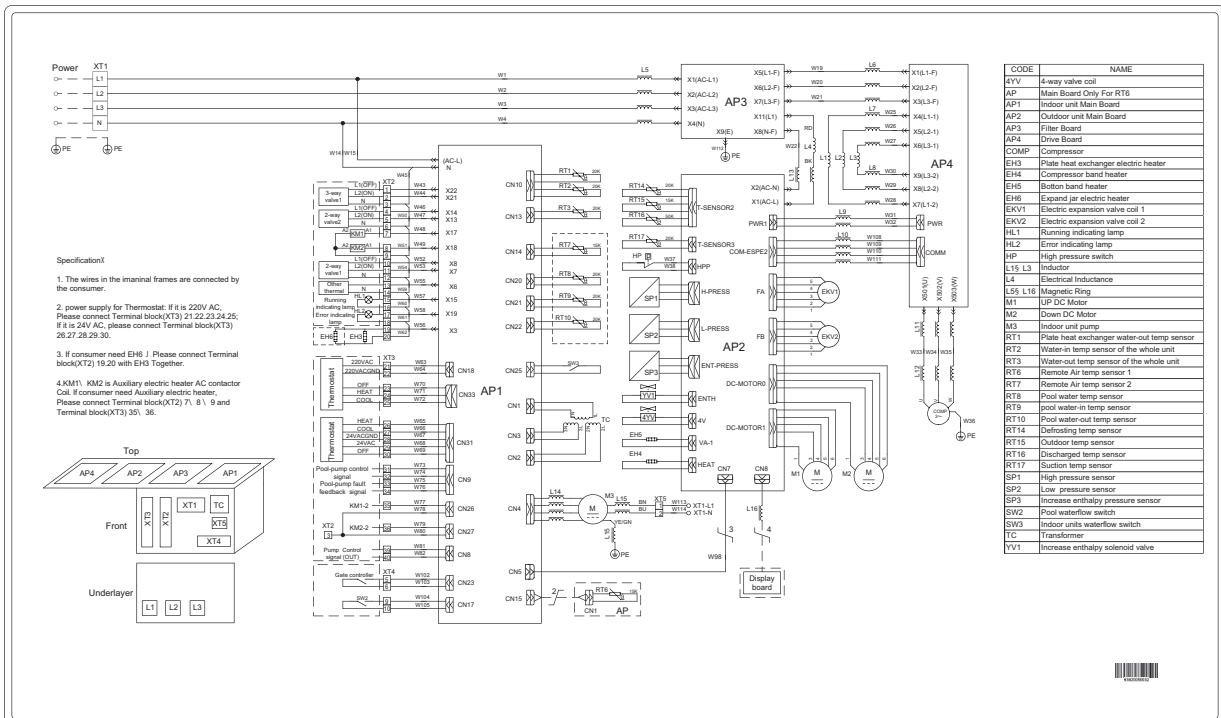
### 17.2.2 Electric Wiring Design

Wiring diagram: monobloc unit.

- ◆ HLR8Pd/Na-K, HLR10Pd/Na-K



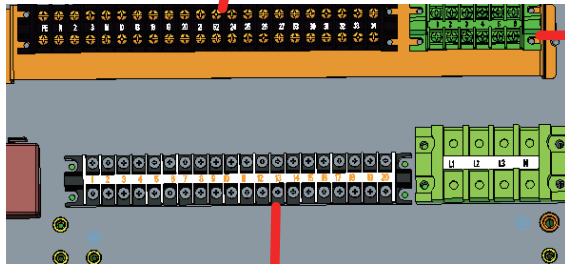
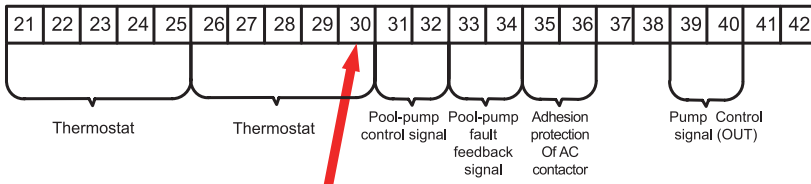
- ◆ HLR12Pd/Na-M, HLR14Pd/Na-M



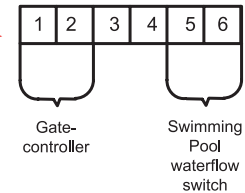
### 17.2.3 Terminal Board

◆ HLR8Pd/Na-K, HLR10Pd/Na-K

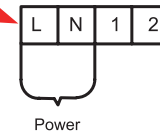
Terminal board XT4



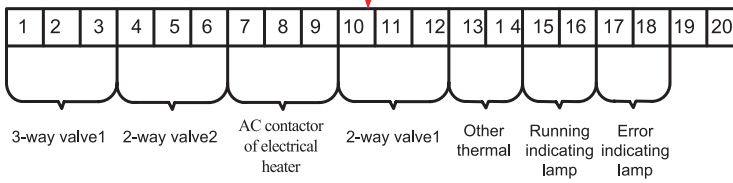
Terminal board XT3



Terminal board XT1

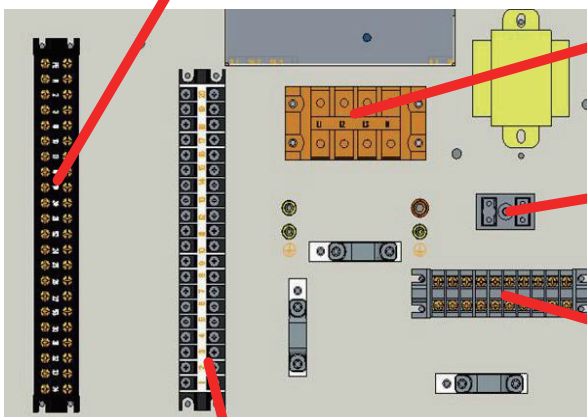
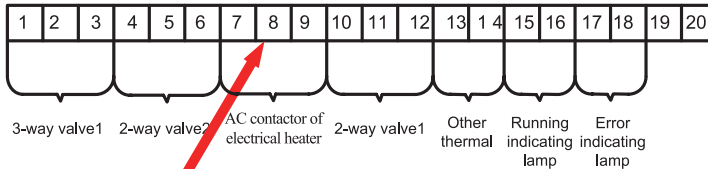


Terminal board XT2

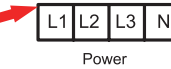


◆ HLR12Pd/Na-M, HLR14Pd/Na-M

Terminal board XT2



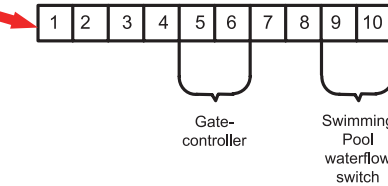
Terminal board XT1



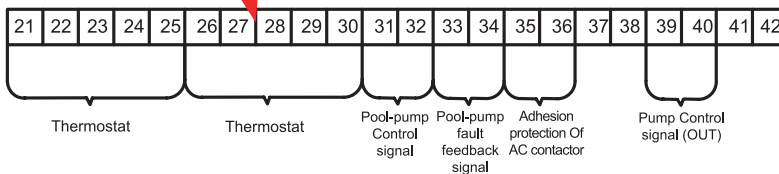
Terminal board XT5



Terminal board XT4



Terminal board XT3





## 18 Commissioning

### 18.1 Check before startup

For safety of users and unit, the unit must be started up for check before debugging. The procedures are as below:

The following items shall be performed by qualified service men.		
Confirm together with the sales engineer, dealer, installing contractor and customers for the following items finished or to be finished.		
No.	Confirmation of Installation	√
1	If the contents of Application for Installation of this Unit by Installer are real. If not, debugging will be refused.	<input type="checkbox"/>
2	Is there written notice in which amendment items are shown in respect of unqualified installation?	<input type="checkbox"/>
3	Are Application for Installation and Debugging list filed together?	<input type="checkbox"/>
No.	Pre-check	√
1	Is appearance of the unit and internal pipeline system ok during conveying, carrying or installation?	<input type="checkbox"/>
2	Check the accessories attached with the unit for quantity, package and so on.	<input type="checkbox"/>
3	Make sure there are drawings in terms of electricity, control, design of pipeline and so on.	<input type="checkbox"/>
4	Check if installation of the unit is stable enough and there is enough space for operation and repair.	<input type="checkbox"/>
5	Completely test refrigerant pressure of each unit and perform leakage detection of the unit.	<input type="checkbox"/>
6	Does power supply accord with the nameplate? Do power cords conform to applicable requirements?	<input type="checkbox"/>
7	Is power supply and control wiring connected properly according to wiring diagram? Is earthing safe? Is each terminal stable?	<input type="checkbox"/>
8	Are connection pipe, water pump, manometer, thermometer, valve etc. are installed properly?	<input type="checkbox"/>
9	Is each valve in the system open or closed according to requirements?	<input type="checkbox"/>
10	Confirm that the customers and inspection personnel of Part A are at site.	<input type="checkbox"/>
11	Is Installation Check-up Table completed and signed by the installation contractor?	<input type="checkbox"/>
Attention: If there is any item marked with ×, please notify the contractor. Items listed above are just for reference.		
Confirmed Items after pre-checking	<b>General Evaluation: Debugging</b> <input type="checkbox"/> <b>Amendment</b> <input type="checkbox"/>	
	Judge the following items (if there is not any filling, qualification will be regarded.)	
	a: Power supply and electric control system	b: Loading calculation
	c: Heating problems of Unit	d: Noise problem
	e: Pipeline problem	f: Others
	Normal debugging work can't be performed unless all installation items are qualified. If there is any problem, it must be solved firstly. The installer will be responsible for all costs for delay of debugging and re-debugging incurred by any problem which is not solved immediately.	
	Submit schedule of amending reports to installer.	
	Is the written amending report which should be signed after communication provided to installer?	
	Yes ( )    No ( )	

## 18.2 Test run

Test run is testing whether the unit can run normally via preoperation. If the unit cannot run normally, find and solve problems until the test run is satisfactory. All inspections must meet the requirements before performing the test run. Test run should follow the content and steps of the table below:

The following procedure should be executed by experience and qualified maintenance men.	
No.	Start up the pretest procedure
Notice: before test, ensure that all power must be cut off, including the far- end power switch, otherwise, it may cause casualty.	
1	Ensure that the compressor of the unit is preheated for 8h.
⚠Caution: heat the lubricating oil at least 8h in advance to prevent refrigerant from mixing with the lubricating oil, which may cause damage to the compressor when starting up the unit.	
2	Check whether the oil temperature of the compressor is obviously higher than the outdoor ambient temperature.
⚠Caution: if the oil temperature of the compressor is obviously higher than the outdoor ambient temperature, it means that the heating tape of compressor is damaged. In that case, the compressor will be damaged easily. Therefore, repair the heating tape before using the unit.	
3	Check whether the phase sequence of the main power supply is correct. If not, correct the phase sequence firstly.
⚠Recheck the phase sequence before start-up to avoid reverse rotation of the compressor which may damage the unit.	
4	Apply the universal electric meter to measure the insulation resistance between each outdoor phase and earth as well as between phases.
⚠Caution: defective earthing may cause electric shock.	
No.	Ready to start
1	Cut off all temporary power supply, resume all the insurance and check the electricity for the last time.
	Check the power supply and voltage of the control circuit; _____V must be $\pm 10\%$ within the range of rated operating power.
No.	Start up the unit
1	Check all the conditions needed to start up the unit: oil temperature, mode, required load etc.
2	Start up the unit, and observe the operation of compressor, electric expanding valve, fan motor and water pump etc.
	Note: the unit will be damaged under abnormal running state. Do not operate the unit in states of high pressure and high current.
Others:	
Items for acceptance after debugging	Estimation or suggestion on the general running situation: good, modify
	Identify the potential problem (nothing means the installation and debugging are in accordance with the requirements.)
	a. problem of power supply and electric control system: b. problem of load calculation:
	c. outdoor refrigerant system: d. noise problem:
	e. problem of indoor and piping system: h. other problems:
	During operation, it is needed to charge for the maintenance due to non-quality problems such as incorrect installation and maintenance.
	<b>Acceptance</b>
Is the user trained as required? Please sign. Yes( ) No( )	

## 19 Daily Operation and Maintenance

In order to avoid damage of the unit, all protecting devices in the unit had been set before delivery, so please do not adjust or remove them.

For the first startup of the unit or next startup of unit after long-period stop (above 1 day) by cutting off the power, please electrify the unit in advance to preheat the unit for more than 8 hours.

Never put sundries on the unit and accessories. Keep dry, clean and ventilated around the unit.

Remove the dust accumulated on the condenser fin timely to ensure performance of the unit and to avoid stop of the unit for protection.

In order to avoid protection or damage of the unit caused by blockage of the water system, clean the filter in water system periodically and frequently check water replenishing device.

In order to ensure anti-freezing protection, never cut off the power if ambient temperature is below zero in winter.

In order to avoid frost crack of the unit, water in the unit and pipeline system not used for a long period should be drained.

Never frequently make the unit on/off and close the manual valve of the water system during operation of the unit by users.

Ensure frequent check to the working condition of each part to see if there is oil stain at pipeline joint and charge valve to avoid leakage of refrigerant.

If malfunction of the unit is out of control of users, please timely contact with authorized service center.

### Notes:

The water pressure gage is installed in the returning water line in the unit. Please adjust the hydraulics system pressure according to next items:

- ① If the pressure is less than 0.5 bar, please recharge the water immediately;
- ② When recharging, the hydraulics system pressure should be not more than 2.5Bar.

### Troubleshooting

Malfunctions	Reasons	Troubleshooting
Compressor does not start up	<ul style="list-style-type: none"> <li>① Power supply has problem.</li> <li>② Connection wire is loose.</li> <li>③ Malfunction of mainboard.</li> <li>④ Malfunction of compressor.</li> </ul>	<ul style="list-style-type: none"> <li>① Phase sequence is reverse.</li> <li>② Check out and re-fix.</li> <li>③ Find out the reasons and repair.</li> <li>④ Replace compressor.</li> </ul>
Heavy noise of fan	<ul style="list-style-type: none"> <li>① Fixing bolt of fan is loose.</li> <li>② Fan blade touches shell or grill.</li> <li>③ Operation of fan is unreliable.</li> </ul>	<ul style="list-style-type: none"> <li>① Re-fix fixing bolt of fan.</li> <li>② Find out the reasons and adjust.</li> <li>③ Replace fan.</li> </ul>
Heavy noise of compressor	<ul style="list-style-type: none"> <li>① Liquid slugging happens when liquid refrigerant enters into compressor.</li> <li>② Internal parts in compressor are broken.</li> </ul>	<ul style="list-style-type: none"> <li>① Check if expansion valve is failure and temp. sensor is loose .If that, repair it.</li> <li>② Replace compressor.</li> </ul>
Water pump does not run or runs abnormally	<ul style="list-style-type: none"> <li>① Malfunction of power supply or terminal.</li> <li>② Malfunction of relay.</li> <li>③ There is air in water pipe.</li> </ul>	<ul style="list-style-type: none"> <li>① Find out the reasons and repair.</li> <li>② Replace relay.</li> <li>③ Evacuate.</li> </ul>
Compressor starts or stops frequently	<ul style="list-style-type: none"> <li>① Poor or excess refrigerant.</li> <li>② Poor circulation of water system.</li> <li>③ Low load.</li> </ul>	<ul style="list-style-type: none"> <li>① Discharge or add part of refrigerant.</li> <li>② Water system is blocked or there is air in it.Check water pump, valve and pipeline. Clean water filter or evacuate.</li> <li>③ Adjust the load or add accumulating devices.</li> </ul>
The unit does not heat although compressor is running	<ul style="list-style-type: none"> <li>① Leakage of refrigerant.</li> <li>② Malfunction of compressor.</li> </ul>	<ul style="list-style-type: none"> <li>① Repair by leakage detection and add refrigerant.</li> <li>② Replace compressor.</li> </ul>
Poor efficiency of hot water heating	<ul style="list-style-type: none"> <li>① Poor heat insulation of water system.</li> <li>② Poor heat exchange of evaporator.</li> <li>③ Poor refrigerant</li> <li>④ Blockage of heat exchanger at water side.</li> </ul>	<ul style="list-style-type: none"> <li>① Enhance heat insulation efficiency of the system.</li> <li>② Check if air in or out of unit is normal and clean evaporator of the unit.</li> <li>③ Check if refrigerant of unit leaks.</li> <li>④ Clean or replace heat exchanger.</li> </ul>



## Mini Chiller

Manual de usuario

Aires acondicionados



Muchas gracias por haber elegido nuestros aires acondicionados.  
Lea atentamente este Manual del propietario antes de poner su máquina en servicio y consérvelo para futuras consultas.  
Si pierde su Manual del propietario, póngase en contacto con su agente local, visite [www.greeproducts.es](http://www.greeproducts.es) o envíenos un mensaje de correo electrónico a [info@greeproducts.es](mailto:info@greeproducts.es) para que le enviemos la versión electrónica.

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## 1 Instrucciones para el usuario

Muchas gracias por haber elegido nuestros mini chillers. Lea atentamente este manual antes de la instalación y emplee la unidad correctamente conforme al procedimiento indicado a continuación.

- ◆ Tras recibir su unidad, inspeccione su aspecto y compruebe si se trata del modelo deseado y sus accesorios.
- ◆ Lea y conserve cuidadosamente estas instrucciones para llevar a cabo la instalación correctamente y para futuras labores de mantenimiento.
- ◆ Las labores de instalación de la unidad deberán ser ejecutadas por personal autorizado conforme a las leyes y reglamentos aplicables y a las presentes instrucciones.
- ◆ Tras las labores de instalación, no deberá establecerse el suministro eléctrico de la unidad hasta que no se hayan resuelto todos los problemas.
- ◆ Disponga una limpieza y un mantenimiento periódicos de la unidad tras su puesta en servicio para aumentar su vida útil y garantizar su funcionamiento.
- ◆ Para mejorar nuestros productos, nos reservamos el derecho a modificar los contenidos sin previo aviso.

### Nota

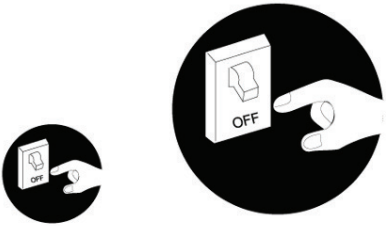
- ◆ Para evitar riesgos, si el cable de alimentación se encuentra dañado, deberá ser reemplazado por el fabricante, sus agentes de servicio técnico o personas con una cualificación similar.
- ◆ El equipo deberá instalarse en cumplimiento de las normas nacionales de cableado.

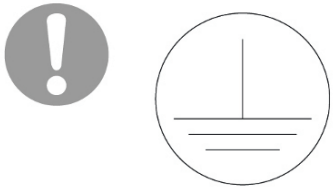
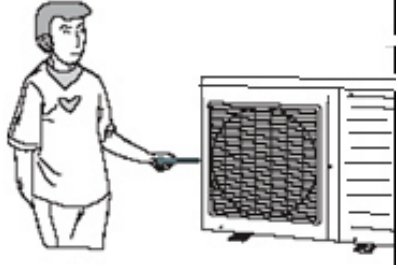


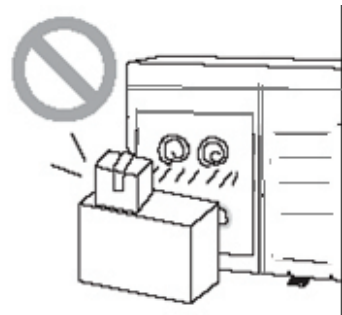


	<b>Eliminación correcta de este producto</b>
	<p>Esta marca indica que el producto no debe desecharse junto con los residuos domésticos en el territorio de la UE. Para evitar posibles daños al medio ambiente o a la salud por vertido incontrolado de residuos, recíclelo de modo responsable para promover la reutilización sostenible de sus materias primas. Para devolver su dispositivo usado, haga uso de los sistemas de devolución y recogida o póngase en contacto con el distribuidor al que se lo haya comprado. Éstos se encargarán de reciclar su producto de modo seguro para el medio ambiente.</p>

R410A(R32/125:50/50):2087.5

Este producto puede ser empleado por niños mayores de 8 años y por personas con deficiencias motoras, sensoriales o intelectuales, así como carentes de experiencia y conocimientos siempre que se encuentren bajo la supervisión de otras personas o hayan recibido previamente instrucciones acerca del uso seguro del producto y comprendan los riesgos que éste implica. No deberá permitirse a los niños jugar con el producto. No deberá permitirse a los niños limpiar ni mantener el producto sin supervisión.

## 2 Advertencias de seguridad

Lea la siguiente información antes de emplear la unidad.		
ADVERTENCIA		
<p>■ Si advierte alguna anomalía como, por ejemplo, olor a quemado, interrumpa inmediatamente el suministro eléctrico y póngase en contacto con su centro de servicios.</p>  <p>Si la anomalía persiste, la unidad puede sufrir daños y puede provocar electrocución o incendios.</p>	<p>■ No maneje la unidad con las manos húmedas.</p>  <p>De lo contrario, existe riesgo de electrocución.</p>	<p>■ Antes de la instalación, compruebe que la tensión de la red eléctrica local se corresponda con la indicada en la placa de especificaciones de la unidad, y de que el suministro eléctrico, el cable de alimentación y la toma de corriente sean adecuados para alimentar la unidad.</p> 
<p>■ Para evitar incendios deberán emplearse circuitos especiales en el sistema de suministro eléctrico.</p>  <p>No emplee conectores de usos múltiples tipo pulpo o placas de bornes para conectar cables.</p>	<p>■ Asegúrese de extraer el enchufe y drenar la unidad si ésta no va a emplearse durante un periodo prolongado.</p>  <p>De lo contrario, el polvo acumulado podría provocar sobrecalentamiento o incendios, y el intercambiador de calor de placas podría helarse en invierno.</p>	<p>■ No dañe jamás el cable eléctrico ni emplee cables eléctricos no especificados.</p>  <p>De lo contrario, podría provocar sobrecalentamiento o incendio.</p>
<p>■ Antes de la limpieza, interrumpa el suministro eléctrico.</p>  <p>De lo contrario, existe riesgo de electrocución o daños.</p>	<p>■ El suministro eléctrico deberá contar con un circuito especial provisto de disyuntor de fugas y disponer de la capacidad suficiente.</p>	<p>■ El usuario no deberá cambiar la toma de corriente del cable de alimentación sin consentimiento previo. Las labores de cableado deberán ser ejecutadas por profesionales. Asegúrese de que la unidad esté bien conectada a tierra y no cambie su modo de puesta a tierra.</p>

<p>■ <b>Puesta a tierra: ¡La unidad deberá ponerse a tierra de modo fiable! El cable de puesta a tierra deberá estar conectado al dispositivo especial del edificio.</b></p>  <p>De lo contrario, solicite su instalación a personal especializado. Además, el cable de puesta a tierra no deberá conectarse a una tubería de gas, agua o drenaje, así como a otros lugares inadecuados desde un punto de vista profesional.</p>	<p>■ <b>Para evitar daños, no introduzca nunca materiales extraños en la unidad ni introduzca nunca sus manos en la salida de aire de la unidad.</b></p> 	<p>■ <b>No intente reparar la unidad por su cuenta.</b></p>  <p>Una reparación incorrecta puede provocar electrocución o incendios. Solicite la reparación al centro de servicios.</p>
<p>■ <b>No pise la unidad ni coloque nada sobre ella.</b></p>  <p>Existe riesgo de caída de objetos o personas.</p>	<p>■ <b>Nunca bloquee la entrada ni la salida de aire de la unidad.</b></p>  <p>Puede reducir la eficiencia o provocar la detención de la unidad, e incluso provocar incendios.</p>	<p>■ <b>No coloque sprays de aire comprimido, depósitos de gas o similares a menos de 1 m de la unidad.</b></p>  <p>Podrían provocar incendios o explosiones.</p>
<p>■ <b>Compruebe que el lugar de instalación sea lo suficientemente estable.</b></p>  <p>Si se encuentra dañado, podría provocar la caída de la unidad y lesiones físicas.</p>	<p>■ <b>Para ahorrar energía, la unidad deberá instalarse en un lugar bien ventilado.</b></p>	<p>■ <b>Nunca encienda la unidad cuando no haya agua dentro de ella.</b></p>

**⚠ Nota**

- (1) Antes de la instalación, asegúrese de que el suministro eléctrico cumpla los requisitos indicados en la placa de características.
- (2) Antes de emplear la unidad, compruebe y confirme que los cables y tubos de agua estén correctamente conectados para evitar fugas de agua, electrocución o incendios, etc.
- (3) No maneje la unidad con las manos húmedas ni permita que los niños la manejen.



- (4) Cuando en este manual se habla de "encender" y "apagar", nos referimos al encendido y al apagado del control; cuando hablamos de interrumpir el suministro eléctrico, nos referimos a interrumpir el suministro eléctrico de la unidad.
- (5) No exponga directamente la unidad a entornos corrosivos con agua o humedad.
- (6) La entrada y la salida de aire de la unidad no deben bloquearse con objetos.
- (7) El agua presente en la unidad y los tubos deberá drenarse cuando la unidad no se esté usando para evitar que las tuberías y la bomba de agua se rompan por congelación.
- (8) Para evitar daños al controlador manual, nunca pulse los botones con objetos afilados. Nunca emplee cables distintos a los de la línea de comunicación especial de la unidad para evitar daños a los elementos de control. Nunca limpie el controlador manual con benceno, disolvente o paños químicos para que la superficie no se despinte y evitar daños a los elementos. Limpie la unidad con un paño humedecido en detergente neutro. Limpie la pantallas y los componentes de conexión con suavidad para evitar que se despinten.
- (9) El cable de alimentación debe estar separado de la línea de comunicación.
- (10) Temperaturas de servicio de agua máximas y mínimas:

	Temperaturas de servicio de agua mínimas	Temperaturas de servicio de agua máximas
Refrigeración	7 °C	25 °C
Calefacción	25 °C	60 °C

Presiones de servicio de agua máximas y mínimas:

	Presiones de servicio de agua mínimas	Presiones de servicio de agua máximas
Refrigeración Calefacción	0,05 MPa	0,25 MPa

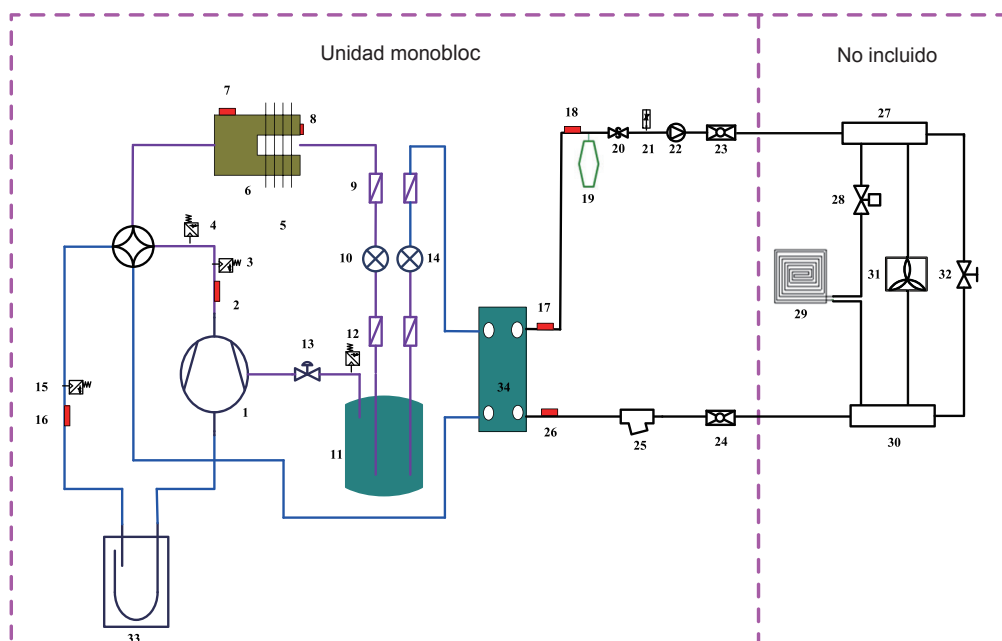
Presiones de entrada de agua máximas y mínimas:

	Presiones de entrada de agua mínimas	Presiones de entrada de agua máximas
Refrigeración Calefacción	0,05 MPa	0,25 MPa

El rango de presiones estáticas exteriores en el que se ha probado el dispositivo (solo bombas de calor añadidas y dispositivos con calefactores suplementarios). Para evitar riesgos, si el cable de alimentación se encuentra dañado, deberá ser sustituido por el fabricante, su agente de servicio o personas con una cualificación similar.

En caso de dudas, póngase en contacto con su distribuidor local, centro de servicios autorizado, agencias o directamente con nuestra empresa.

### 3 Diagrama del principio de funcionamiento



N.º	Nombre	N.º	Nombre	N.º	Nombre	N.º	Nombre
1	Compresor inverter	10	EXV 1	19	Depósito de expansión	28	Válvula de 2 vías
2	Sensor de temperatura de impulsión	11	Evaporador	20	Válvula de seguridad	29	Radiador de suelo
3	Interruptor de alta presión	12	Sensor de presión	21	Interruptor de flujo	30	Colector de agua
4	Sensor de alta presión	13	Válvula de solenoide	22	Bomba de agua	31	Ventiloconvector
5	Válvula de 4 vías	14	EXV 2	23	Conector de tubo de salida	32	Válvula de derivación
6	Intercambiador de calor de aletas	15	Sensor de presión	24	Conector de tubo de entrada	33	Separador de líquido y vapor
7	Sensor de temperatura ambiente	16	Sensor de temperatura de aspiración	25	Filtro	34	Intercambiador de calor de placas
8	Sensor de temperatura de descongelación	17	Sensor de temperatura de salida (intercambiador de calor de placas)	26	Sensor de temperatura de entrada (intercambiador de calor de placas)		
9	Filtro	18	Sensor de temperatura de salida (resistencia auxiliar)	27	Separador de agua		

## 4 Principio de funcionamiento de la unidad

El mini chiller se compone de una unidad monobloc. Funciones:

- (1) Refrigeración
- (2) Calefacción
- (3) Modo de emergencia
- (4) Modo de vacaciones
- (5) Modo de funcionamiento forzado
- (6) Modo silencioso
- (7) Modo de funcionamiento en función del tiempo
- (8) Depuración de suelo
- (9) Purga de aire del sistema de agua
- (10) Funcionamiento de la fuente de calor de apoyo

**Refrigeración:** En modo de refrigeración, el refrigerante se condensa en los tubos de cobre y aletas de aluminio y se evapora en el intercambiador de calor de placas. Mediante intercambio de calor con el agua del intercambiador de calor de placas, la temperatura del agua disminuye y libera calor, mientras que el refrigerante absorbe calor y se evapora. Con ayuda del controlador por cable es posible ajustar la temperatura de salida a las necesidades del usuario. Mediante el control de las válvulas, el agua a baja temperatura del sistema accede al ventiloconvector interior y a los tubos subterráneos e intercambia calor con el aire interior para que la temperatura interior se reduzca al rango deseado.

**Calefacción:** En modo de calefacción, el refrigerante se evapora en los tubos de cobre y aletas de aluminio y se condensa en el intercambiador de calor de placas. Mediante intercambio de calor con el agua del intercambiador de calor de placas, el agua absorbe calor y aumenta su temperatura, mientras que el refrigerante cede calor y se condensa. Con ayuda del controlador por cable es posible ajustar la temperatura de salida a las necesidades del usuario. Mediante el control de las válvulas, el agua a alta temperatura del sistema accede al ventiloconvector interior y a los tubos subterráneos e intercambia calor con el aire interior para que la temperatura interior se aumente al rango deseado.

**Modo de emergencia:** Este modo sólo está disponible para el modo de calefacción. Cuando la unidad monobloc se detiene debido a una avería, se activa el modo de emergencia correspondiente. Una vez activado el modo de emergencia, sólo habrá calefacción si está instalada la resistencia auxiliar. Una vez alcanzada la temperatura de salida de agua o la temperatura interior de consigna, la resistencia eléctrica dejará de funcionar.

**Modo de vacaciones:** Este modo sólo está disponible para el modo de calefacción. Este modo se ajusta para mantener la temperatura interior o la temperatura de salida del agua dentro de determinado rango para evitar que el sistema de agua de la unidad se congele o para proteger determinados elementos interiores frente a la congelación. Si la unidad monobloc se detiene debido a una avería, las dos resistencias eléctricas de la unidad comenzarán a funcionar si se encuentran instaladas.

**Modo de funcionamiento forzado:** Este modo sólo se emplea para recuperar refrigerante y para depurar la unidad.

**Modo silencioso:** Está disponible en los modos de refrigeración y calefacción. En este modo, la unidad monobloc reduce el ruido de funcionamiento mediante un control automático.

**Modo en función del clima:** Este modo está disponible para refrigeración y calefacción. En el modo en función del clima, el valor de consigna (temperatura de aire interior remoto o temperatura de salida de agua) se detecta y controla de modo automático si cambia la temperatura del aire exterior.

**Depuración del suelo:** Esta función sirve para precalentar el suelo periódicamente para la primera puesta en servicio.

**Purga de aire del sistema de agua:** Esta función sirve para reponer el agua y eliminar el aire del sistema de agua, para que el equipo pueda funcionar con una presión de agua estable.

**Funcionamiento de la fuente de calor de apoyo:** En este modo, si la temperatura exterior es inferior a la temperatura de activación de la fuente de calor de apoyo y la unidad se detiene por algún error o protección que se mantiene después de que el compresor se haya detenido durante tres minutos, la fuente de calor funcionará para suministrar calor a la habitación.

## 5 Denominaciones

HL	R	12	Pd	/	Na	-	M
1	2	3	4		5		6

N.º	Descripción	Opciones
1	Mini Chiller con refrigeración por aire	-
2	Bomba de calor	-
3	Capacidad de calefacción nominal	8 = 8kW; 10 = 10 kW; 12 = 12 kW; 14 = 14 kW
4	Tipo de compresor	Pd = Inverter CC; por defecto = encendido/apagado
5	Tipo de refrigerante	Na- R410A
6	Alimentación	K = 220 V-240 V, 1 fase, 50 Hz; M = 380 V-415 V, 3 fases, 50 Hz; H = 380, 3 fases; 60 Hz

### Serie de modelos

Nombre de modelo	Capacidad		Suministro eléctrico
	Calefacción <sup>1</sup> , kW	Refrigeración <sup>2</sup> , kW	
HLR8Pd/Na-K	8	6,2	220-240 V, 1 fase, 50 Hz
HLR10Pd/Na-K	10	7,5	
HLR12Pd/Na-M	12	9,5	380-415 V, 3 fases, 50 Hz
HLR14Pd/Na-M	14	11	

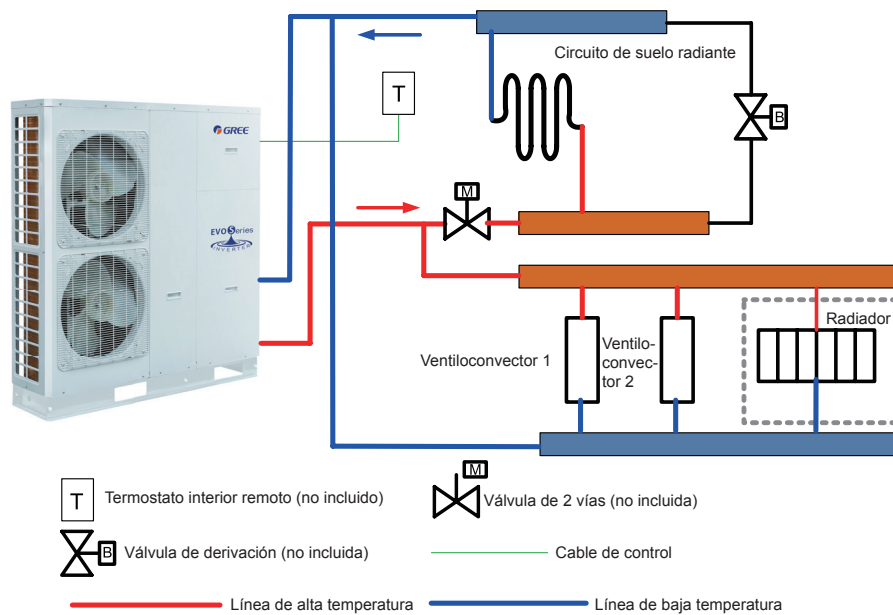
### Notas:

<sup>1</sup> Las capacidades y potencias absorbidas se basan en las siguientes condiciones:  
Temperatura de agua interior: 40 °C/45 °C, temperatura de aire exterior: 7 °C DB/ 6 °C WB;

<sup>2</sup> Las capacidades y potencias absorbidas se basan en las siguientes condiciones:  
Temperatura de agua interior: 12 °C/7 °C, temperatura de aire exterior: 35°C DB/-.

## 6 Ejemplo de instalación

### CASO 1: Conexión de terminales para calefacción y refrigeración (circuito de suelo radiante, ventiloconvector y radiador)



#### Notas:

- ① La válvula de dos vías es muy importante para evitar que se condense rocío en el suelo y el radiador durante el modo de refrigeración.
- ② El tipo de termostato y sus especificaciones deberán cumplir los requisitos de este manual de instalación.
- ③ La válvula de derivación deberá instalarse para garantizar un caudal de agua suficiente, y deberá instalarse en el colector.

#### CASO 2: Conexión entre la resistencia eléctrica y la unidad principal

Hay dos grupos de resistencias eléctricas disponibles, así como terminales de control para dos grupos de resistencias eléctricas auxiliares. Estos dos grupos de resistencias eléctricas pueden activarse al mismo tiempo. Si solo hay un grupo de resistencias eléctricas instalado, efectúe el cableado conforme a cualquiera de los grupos del diagrama de abajo.

(1) Lea las siguientes instrucciones para instalar dos grupos de resistencias eléctricas auxiliares, incluidos el cableado del contactor CA, del termostato y de la resistencia eléctrica para depósitos.

##### ◆ Cableado del contactor CA

L1, L2 y L3 son los terminales de entrada trifásicos. T1, T2 y T3 son los terminales de salida trifásicos. A1 y A2 son los terminales para señales de entrada y salida empleados para controlar los contactores de CA. NO y NC son los terminales normalmente abierto y normalmente cerrado de los contactores de CA.

La resistencia eléctrica para depósitos y los contactos de CA deben elegirse conforme a las instrucciones de selección, y el termostato y su límite superior deberán decidirse en función de la función de protección de la resistencia eléctrica.

Con el fin de garantizar la calidad del producto y su vida útil, se prohíbe efectuar las labores de cableado de la placa base por parte del propio usuario, para evitar que la dañe. Los terminales de entrada de la señal de control del contactor de CA, X17 (contactor de CA 1) y X18 (contactor de CA 2) de la placa base AP1 deberán conectarse a los terminales 7 y 8 del armario eléctrico. Las clavijas individuales del terminal CN26 (contactor de CA 1) y CN27 (contactor de CA 2) deberán conectarse a los terminales 35 y 36 del armario eléctrico. Además, las otras dos clavijas de CN26 y CN27 deberán conectarse a XT2 (para más información, véase el diagrama de abajo).

Solo se permite emplear cables adecuados. Véanse los terminales correspondientes en la siguiente tabla.

N.º	de terminal de conexión
Contactor de CA 1	7—A1
	35—2T1
Contactor de CA 2	8—A1
	36—2T2

◆ **Cableado del termostato**

El límite adecuado del termostato deberá seleccionarse en base a la función de protección de la resistencia eléctrica.

En primer lugar, cortocircuite los terminales de salida de la señal de control de encendido y apagado de los contactores de CA 1 y 2, y después conecte el termostato en serie. No permita que la temperatura de la pared exterior de la resistencia eléctrica para depósitos alcance valores excesivos (para más información, véase el siguiente diagrama). A continuación, aplique una pasta termoconductor a la sonda e insértela en su receptáculo para detectar la temperatura de la pared exterior de la resistencia eléctrica para depósitos.

◆ **Cableado de la resistencia eléctrica para depósitos**

Deberá emplearse una resistencia eléctrica para depósitos adecuada, e instalarse una tubería de calefacción en el lado de entrada de agua de la unidad.

El cableado trifásico para la resistencia eléctrica deberá ser aportado por el propio usuario. Se recomienda emplear un armario eléctrico nuevo. Para más información, véase el siguiente diagrama.

Si se necesita la función de protección del termostato, la sonda deberá insertarse con pasta termoconductor a en su receptáculo una vez finalizado el cableado de la resistencia eléctrica.

**Diagrama de instalación de la resistencia eléctrica (con el termostato)**

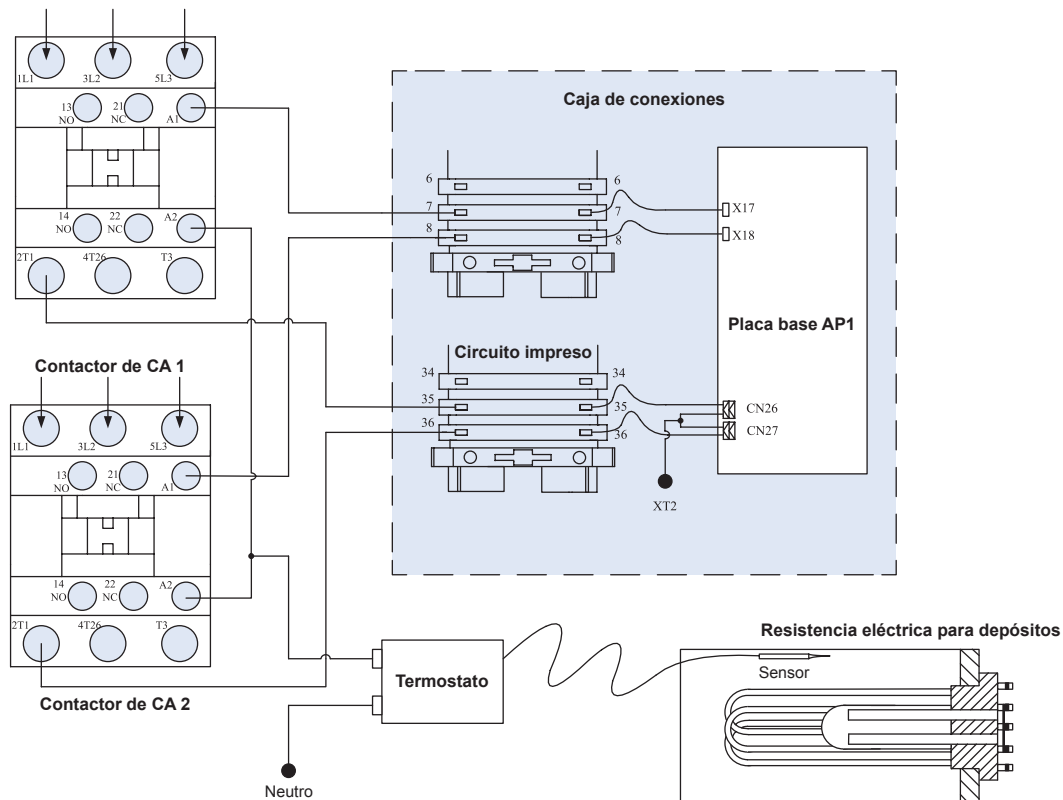
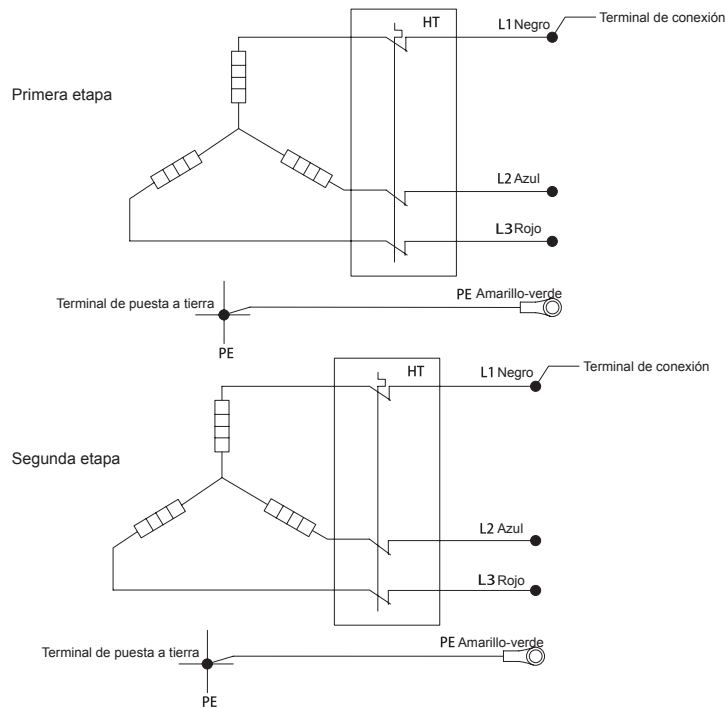


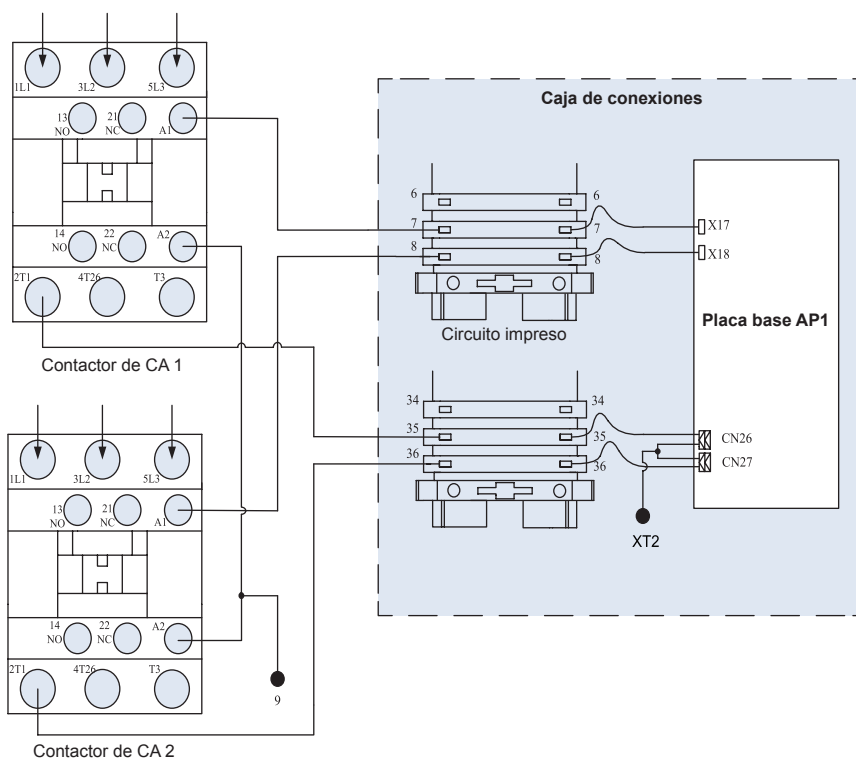
Diagrama de cableado de la resistencia eléctrica



(2) Lea las siguientes instrucciones para instalar dos grupos de resistencias eléctricas auxiliares, incluidos el cableado de los contactores de CA y de la resistencia eléctrica para depósitos.

- ◆ El cableado de los contactores de CA se realiza del modo indicado anteriormente.
- ◆ Si no se necesita el termostato, realice el cableado del modo mostrado en el siguiente diagrama. El terminal de salida empleado para controlar el termostato deberá cortocircuitarse y, a continuación, conectarse al terminal 9 (el terminal del neutro).
- ◆ El cableado de la resistencia eléctrica para depósitos se realiza del modo indicado anteriormente.

Diagrama de instalación de la resistencia eléctrica (sin el termostato)



**Notas:**

① Durante la instalación, la resistencia eléctrica deberá alimentarse con corriente trifásica por separado.

Si solo hay un grupo de resistencias eléctricas instalado, efectúe el cableado de cualquiera de los grupos del diagrama anterior.

② La cantidad de contactores de CA deberá coincidir con la de resistencias eléctricas instaladas. Deberán emplearse contactores de CA adecuados que cumplan los requisitos reales.

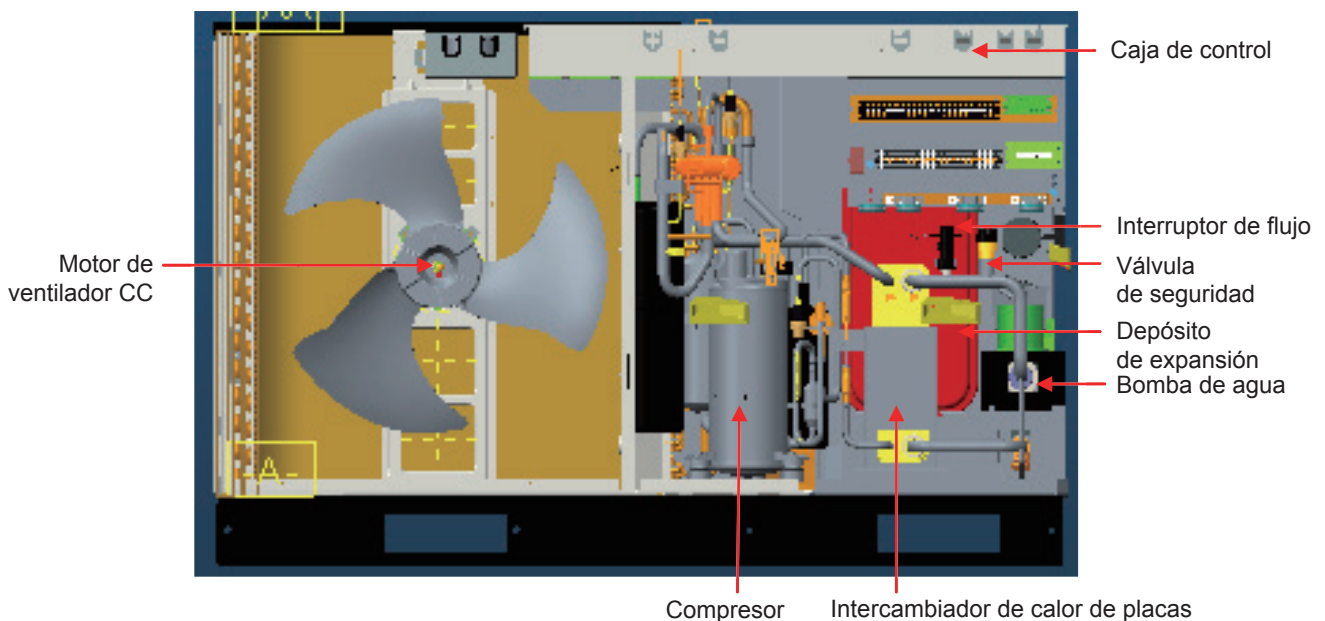
③ El modo de cableado depende de si la resistencia eléctrica para depósitos está equipada o no con un termostato.

④ Deberán emplearse líneas de suministro eléctrico adecuadas, y evitarse aquellas que no cumplan los requisitos actuales.

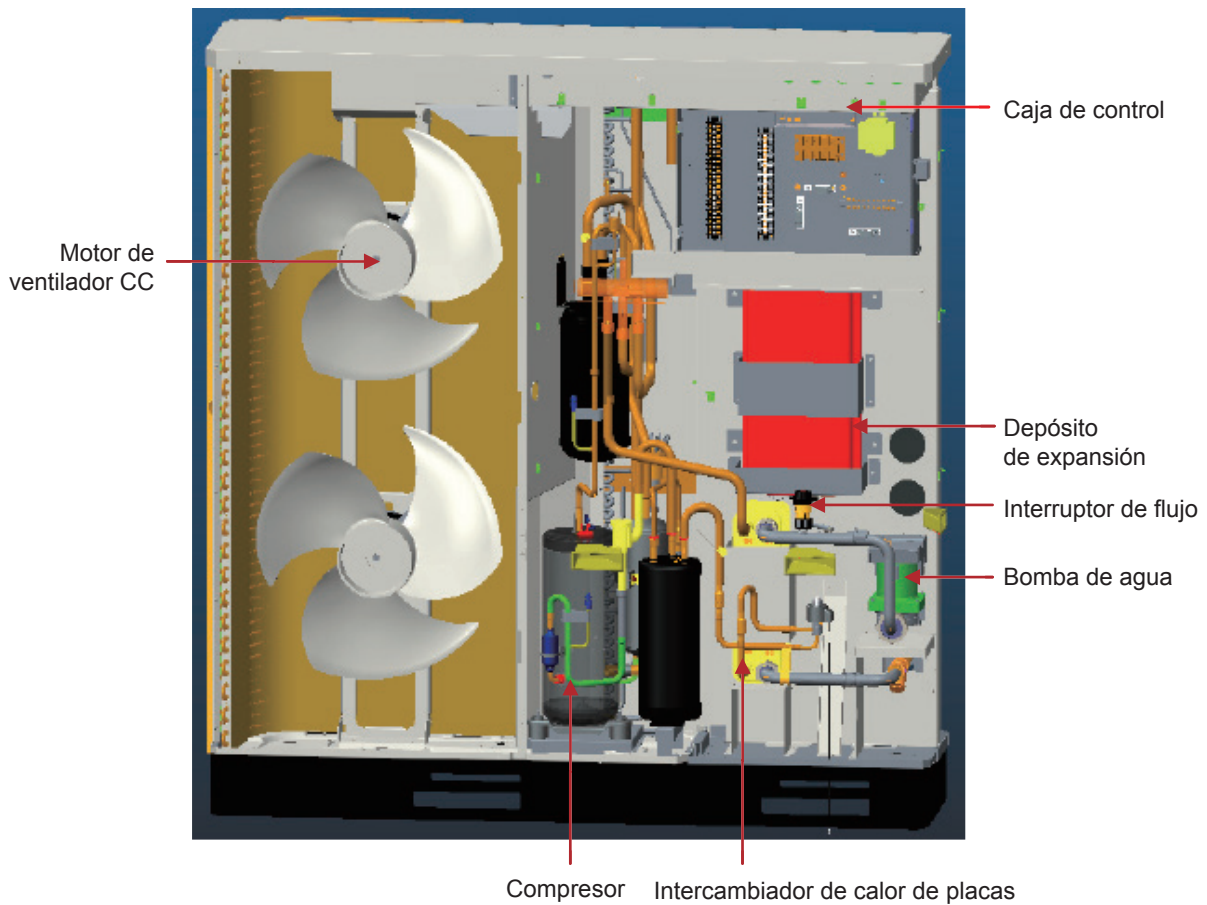
⑤ El usuario nunca deberá abrir el armario eléctrico para cablear la placa base por sí mismo.

## 7 Componentes principales

(1) HLR8Pd/Na-K, HLR10Pd/Na-K



(2) HLR12Pd/Na-M, HLR14Pd/Na-M





## 19 Servicio diario y mantenimiento

Para evitar daños a la unidad, todos los dispositivos de protección de la misma vienen instalados de fábrica: no los ajuste ni los retire.

Para la primera puesta en servicio de la unidad o posteriores puestas en servicio tras largas interrupciones (de más de 1 día de duración) con interrupción del suministro eléctrico, establezca el suministro eléctrico de la unidad 8 horas antes para precalentarla.

Nunca coloque objetos sobre la unidad o sus accesorios. Mantenga el ambiente en torno a la unidad seco, limpio y ventilado.

Retire puntualmente el polvo acumulado sobre las aletas del condensador para garantizar el rendimiento de la unidad y para evitar interrupciones de seguridad de la unidad.

Para evitar pausas de seguridad o daños a la unidad causados por bloqueo del sistema de agua, limpie periódicamente el filtro del sistema de agua y compruebe frecuentemente el dispositivo de reposición de agua.

Para garantizar la protección frente a la congelación, nunca interrumpa el suministro eléctrico en invierno cuando la temperatura ambiente sea inferior a los cero grados.

Para evitar que la unidad se rompa por congelación, deberá purgarse el agua de la unidad y su sistema de tuberías en caso de que no se vaya a emplear durante un largo periodo de tiempo.

Nunca encienda y apague la unidad frecuentemente ni cierre la válvula manual del sistema de agua cuando la unidad esté siendo manejada por los usuarios.

Asegúrese de revisar frecuentemente el estado de funcionamiento de cada componente para ver si hay manchas de aceite en las juntas de los tubos y la válvula de carga con el fin de evitar fugas de refrigerante.

Si se produce una avería que los usuarios no puedan controlar, póngase en contacto puntualmente con un centro de servicios autorizado.

### Notas:

Hay un manómetro de agua instalado en la línea de retorno de agua de la unidad. Ajuste la presión del sistema hidráulico conforme a los siguientes puntos:

- ① Si la presión es inferior a 0,5 bar, recargue agua inmediatamente.
- ② Al recargar agua, la presión del sistema hidráulico no deberá superar los 2,5 bar.

### Solución de errores

Errores	Razones	Solución de errores
El compresor no arranca	<ul style="list-style-type: none"> <li>① Problema de suministro eléctrico.</li> <li>② Cable de conexión suelto.</li> <li>③ Avería de la placa base.</li> <li>④ Avería del compresor.</li> </ul>	<ul style="list-style-type: none"> <li>① Secuencia de fases invertida.</li> <li>② Compruébelo y vuelva a fijarlo.</li> <li>③ Averiguar las razones y reparar.</li> <li>④ Sustituya el compresor.</li> </ul>
El ventilador hace mucho ruido	<ul style="list-style-type: none"> <li>① El tornillo de fijación del ventilador está suelto.</li> <li>② Las aspas del ventilador rozan la carcasa o la rejilla.</li> <li>③ El ventilador funciona de modo poco fiable.</li> </ul>	<ul style="list-style-type: none"> <li>① Vuelva a fijar el tornillo del ventilador.</li> <li>② Averiguar las razones y ajustar.</li> <li>③ Sustituya el ventilador.</li> </ul>
El compresor hace mucho ruido	<ul style="list-style-type: none"> <li>① El refrigerante líquido golpea al entrar en el compresor.</li> <li>② Hay piezas internas del compresor rotas.</li> </ul>	<ul style="list-style-type: none"> <li>① Compruebe si la válvula de expansión está averiada y el sensor de temperatura está suelto. Si es así, repárelos.</li> <li>② Sustituya el compresor.</li> </ul>
La bomba de agua no funciona o funciona de modo anómalo	<ul style="list-style-type: none"> <li>① Avería del suministro eléctrico o terminal.</li> <li>② Avería de relé.</li> <li>③ Hay aire en el tubo de agua.</li> </ul>	<ul style="list-style-type: none"> <li>① Averiguar las razones y reparar.</li> <li>② Sustituya el relé.</li> <li>③ Púrguelo.</li> </ul>
El compresor arranca o se detiene frecuentemente	<ul style="list-style-type: none"> <li>① Falta o exceso de refrigerante.</li> <li>② Mala circulación del sistema de agua.</li> <li>③ Carga baja.</li> </ul>	<ul style="list-style-type: none"> <li>① Drene o añada refrigerante.</li> <li>② El sistema de agua está bloqueado o contiene aire. Compruebe la bomba de agua, la válvula y la tubería. Limpie el filtro de agua o purgue el aire.</li> <li>③ Ajuste la carga o añada acumuladores.</li> </ul>
La unidad no calienta aunque el compresor está funcionando	<ul style="list-style-type: none"> <li>① Fuga de refrigerante.</li> <li>② Avería del compresor.</li> </ul>	<ul style="list-style-type: none"> <li>① Repárela detectando la fuga y añada refrigerante.</li> <li>② Sustituya el compresor.</li> </ul>
Calentamiento de agua poco eficiente	<ul style="list-style-type: none"> <li>① Aislamiento térmico deficiente del sistema de agua.</li> <li>② Intercambio de calor deficiente del evaporador.</li> <li>③ Refrigerante de mala calidad</li> <li>④ Bloqueo del intercambiador de calor por el lado del agua.</li> </ul>	<ul style="list-style-type: none"> <li>① Mejore la eficiencia del aislamiento térmico del sistema.</li> <li>② Compruebe si el aire que entra y sale de la unidad es normal y limpie el evaporador de la unidad.</li> <li>③ Compruebe si hay fugas de refrigerante en la unidad.</li> <li>④ Limpie o sustituya el intercambiador de calor.</li> </ul>