

# MANUALE DI USO E INSTALLAZIONE

## USE MANUAL AND INSTALLATION

Pompa di calore  
Heat Pump

### **ATHENA**

A-07	A-07S
A-11	A-11S
A-13	A-13S
A-15	A-15S



# ENGLISH
















## CONTENTS

Part I: General Information .....	40
1.1 Caution .....	40
1.2 Specification.....	41
1.3 Dimensions.....	42
Part II Installation.....	44
2.1 Transportation .....	44
2.2 Installation site requirement.....	45
2.3 Minimum distance to wall.....	46
2.4 Installation guide.....	50
2.5 Recommended hydraulic connection .....	51
2.6 Electrical Connection .....	53
2.7 Trial Operation .....	55
Part III Control System .....	60
3.1 Controller position .....	60
3.2 Controller introduction.....	63
3.3 Operation introduction .....	65
Part IV Maintenance .....	68
Part V Trouble shooting .....	70
Part VI Wiring Diagram .....	72
Disposal.....	75



# Part I: General Information

## 1.1 Caution

-  1. Ensure proper operation on the unit,
-  2. The unit must be installed and repaired by qualified technician.
-  3. A leakage protection switch must be installed near the unit.
-  4. Do not use any damaged cables and switches to avoid any leakage.
-  5. Do not open the electrical box of the unit without shutting off power supply.
-  6. Along transportation, don't incline the unit more than 45° in any direction.
-  7. Before maintenance, please shut off the power to the unit first.
-  8. The unit is designed for outdoor installation, do not install it in a close space without good ventilation.
-  9. Do not install the unit near inflammable or explosive goods.
-  10. Do not block the air intake or outlet of the unit.
-  11. When the unit is in off status for more than 5 hours with the ambient temperature lower than 2°C, please drain the unit to prevent the formulation of ice in it.
-  12. This unit is not intended for operation by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience or knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
-  13. Keep safety distance between the unit and other equipment or structures according local norm, and ensure that adequate space for maintenance or service operations.
-  14. Power supply: the diameter of electrical cables must be suitable for the unit and the power supply voltage must correspond with the value indicated on the units. All units must be earthed in conformity with legislation in force in the country concerned.
-  15. Please attention that hot water produced by the unit is not to be used for drink.

## 1.2.1 Specification of Athena

Pompa di calore DC Inverter aria-acqua trivalente							
Codice				A-07	A-11	A-13	A-15
Raffreddamento Puissance frigorifique Cooling capacity	Potenza	Nom. (min-max)	kW	5.0 (2.0~5.6)	8.2 (3.2~9.0)	10.0 (4.2~11.2)	13.0 (5.3~14.3)
	Ass. elettrico	Nom. (min-max)	kW	1.78 (0.75~2.3)	2.87 (1.31~3.57)	3.57 (1.72~4.79)	4.56 (2.15~6.08)
	EER	Nominale	W/W	2.81	2.85	2.80	2.85
Riscaldamento Heating capacity Puissance calorifique	Potenza	Nom. (min-max)	kW	7.0 (3.0~7.5)	11.40 ( 5.1~12.5)	13.5 ( 6.4~15.0)	15.2 ( 7.1~16.5)
	Ass. elettrico	Nom. (min-max)	kW	1.7 (0.75~1.95)	2.85 (1.28~3.21)	3.40 (1.62~3.90)	3.75 (2.08~4.85)
	COP	Nominale	W/W	4.06	4.00	3.97	4.05
Classe energetica - Energy class - Classe énergétique			-	A++/A++			
Alimentazione - Power Supply - Alimentation électrique			V/Ph/Hz	220~240/1/50			
Compressore - Compressor - Compressor			-	EVI DC Inverter	EVI DC Inverter	EVI DC Inverter	EVI DC Inverter
Numero compressori - Number of compressors			-	1	1	1	1
Ventilatore - Ventilateur - fan			-	1	1	2	2
Refrigerante - Réfrigérant - Refrigerant			-	R410a	R410a	R410a	R410a
Regolazione - Ajustement - Regulation			-	EEV	EEV	EEV	EEV
Sbrinamento - Dégivrage - Defrosting			-	Auto-defrosting	Auto-defrosting	Auto-defrosting	Auto-defrosting
Scambiatore di calore - Heat exchanger			-	Scambiatore a piastre - Brazed plate heat exchanger (SWEP)			
Tubazioni - Raccords - Water connection			Inch	1	1	1	1
Perdita di carico dell'acqua - Water pressure drop			Kpa	15	15	24	31
Portata d'acqua nom. (min-max) - Nominal water flow rates (min-max)			m³/h	0.85 (0.75~1.25)	1.40 (1.30~2.00)	1.70 (1.50~2.40)	2.10 (1.80~2.80)
Pressione sonora - Niveau sonore - Sound level			dB(A)	52	54	56	58
Temperatura max AT - Max water temperature			°C	60	60	60	60
Temperatura max ACS - Max DHW temperature			°C	55	55	55	55
Dimensioni UE- UE Dimensions - OU Dimensions (L x P x H)			mm	1070 x 500 x 800	1070 x 500 x 800	1110 x 470 x 860	1110 x 470 x 1001
Peso - Poids de l'unité - Weight			Kg	78	102	109	130
Grado di protezione - Degree of protection			-	IPX4	IPX4	IPX4	IPX4
Limiti di funzionamento			Ambiente esterno	°C	-25~43		

### Test condition:

1. A7/W35: Outdoor air temperature 7°C DB/6°C WB, water inlet/outlet temperature 30°C/35°C
2. A7/W35: Outdoor air temperature 35°C, inlet/outlet temperature 12°C/7°C

## 1.2.2 Specification of Athena

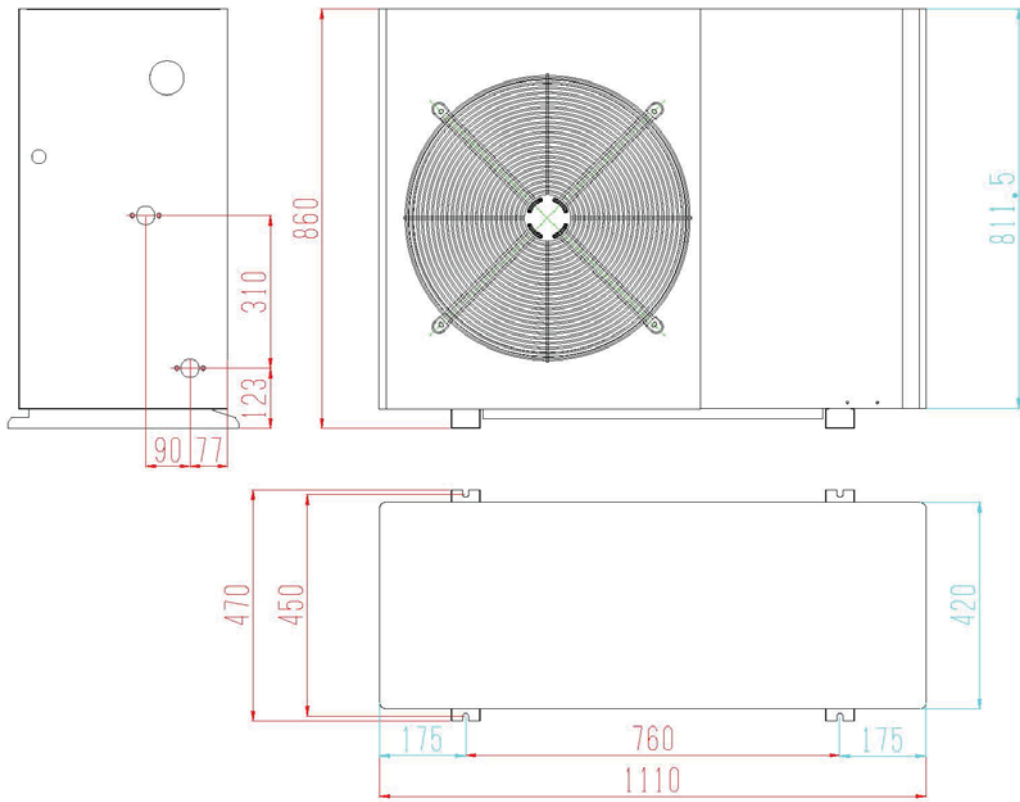
Pompa di calore DC Inverter aria-acqua trivalente				A-07S	A-11S	A-13S	A-15S	
Codice Set								
Raffreddamento Puissance frigorifique Cooling capacity	Potenza	Nom. (min-max)	kW	5.0 (2.0~5.6)	8.2 (3.2~9.0)	10.0 (4.2~11.2)	13.0 (5.3~14.3)	
	Ass. elettrico	Nom. (min-max)	kW	1.78 (0.75~2.3)	2.87 (1.31~3.57)	3.57 (1.72~4.79)	4.56 (2.15~6.08)	
	EER	Nominale	W/W	2.81	2,85	2,80	2,85	
Riscaldamento Heating capacity Puissance calorifique	Potenza	Nom. (min-max)	kW	7.0 (3.0~7.5)	11.40 ( 5.1~12.5)	13.5 ( 6.4~15.0)	15.2 ( 7.1~16.5)	
	Ass. elettrico	Nom. (min-max)	kW	1.7 (0.75~1.95)	2.85 (1.28~3.21)	3.40 (1.62~3.90)	3.75 (2.08~4.85)	
	COP	Nominale	W/W	4.06	4.00	3.97	4.05	
Classe energetica - Energy class - Classe énergétique			-	A++/A++				
Alimentazione - Power Supply - Alimentation électrique			V/Ph/Hz	220~240/1/50				
Compressore - Compressor - Compresseur			-	EVI DC Inverter	EVI DC Inverter	EVI DC Inverter	EVI DC Inverter	
Numero compressori - Number of compressors			-	1	1	1	1	
Ventilatore - Ventilateur - fan			-	1	1	2	2	
Refrigerante - Réfrigérant Refrigerant	Tipo -Type		-	R410a	R410a	R410a	R410a	
	Carica agg. oltre la precarica di 5 m		gr/m	55	100	100	100	
Regolazione - Ajustement - Regulation			-	EEV	EEV	EEV	EEV	
Sbrinamento - Dégivrage - Defrosting			-	Auto-defrosting	Auto-defrosting	Auto-defrosting	Auto-defrosting	
Scambiatore di calore - Heat exchanger			-	Scambiatore a piastre - Brazed plate heat exchanger (SWEP)				
Tubazioni acqua - Raccords - Water connection			Inch	1	1	1	1	
Tubazioni frigorifere Raccords de tuyauterie Gas connection	Dimensioni - Dimension		mm/inch	Ø6,35-Ø12,7 / 1/4"-1/2"	Ø9,52-Ø15,88/3/8"-5/8"	Ø9,52-Ø15,88/3/8"-5/8"	Ø9,52-Ø15,88/3/8"-5/8"	
	Max lunghezza con precarica		m	5	5	5	5	
	Max lunghezza ammissibile		m	12	12	12	12	
	Max dislivello ammissibile		m	10	10	10	10	
Perdita di carico dell'acqua - Water pressure drop			Kpa	15	15	24	31	
Portata d'acqua nom. (min-max) - Nominal water flow rates (min-max)			m³/h	0.85 (0.75~1.25)	1.40 (1.30~2.00)	1.70 (1.50~2.40)	2.10 (1.80~2.80)	
Pressione sonora - Niveau sonore - Sound level			dB(A)	52	54	56	58	
Temp. max AT - Max water temp. / Temp. max ACS - Max DHW temp.			°C	60 / 55	60 / 55	60 / 55	60 / 55	
Dimensioni UE- UE Dimensions - OU Dimensions (L x P x H)			mm	1070 x 500 x 800	1070 x 500 x 800	1110 x 470 x 860	1110 x 470 x 1001	
Dimensioni UI- UI Dimensions - IU Dimensions (L x P x H)			mm	460 x 231 x 600	460 x 231 x 600	460 x 231 x 600	460 x 231 x 600	
Peso - Poids de l'unité - Weight			Kg	78	102	109	130	
Grado di protezione - Degree of protection			-	IPX4	IPX4	IPX4	IPX4	
Limiti di funzionamento			Ambiente esterno	°C	-25~43			

### Test condition:

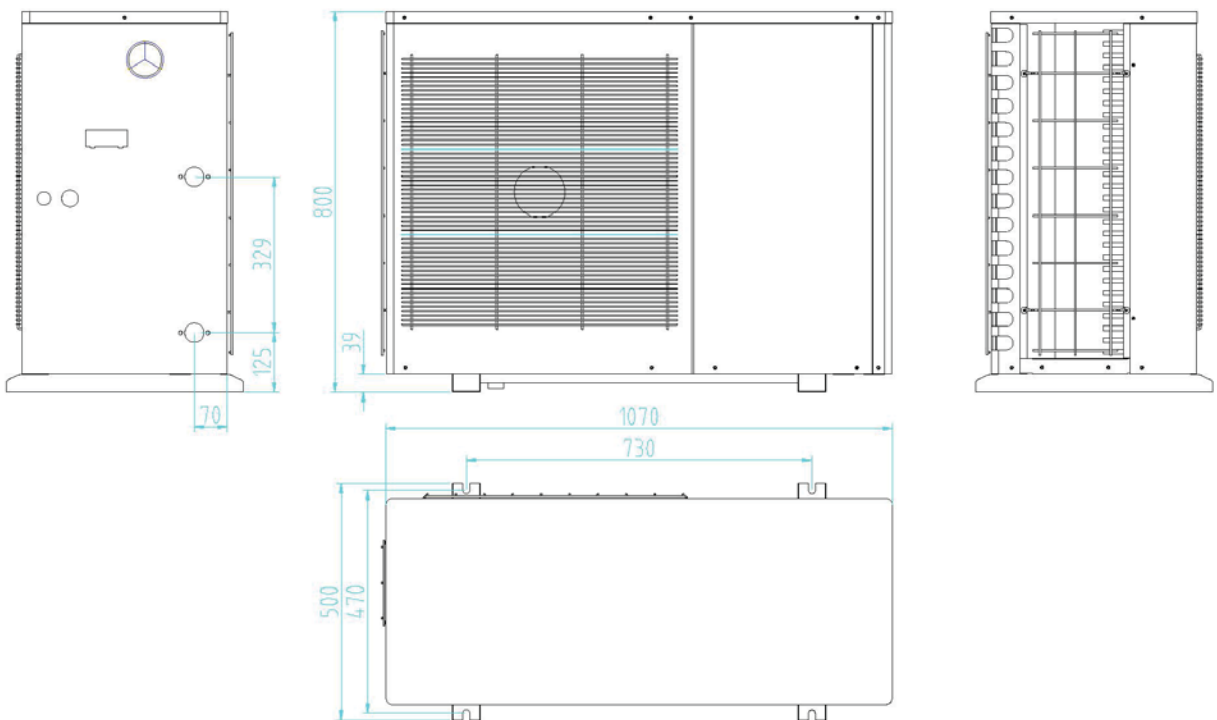
1. A7/W35: temp. Aria esterna 7°C DB/6°C WB, temp. ingresso/uscita acqua 30°C/35°C
2. A7/W35: temp. Aria esterna 35°C, temp. ingresso/uscita acqua 12°C/7°C

# 1.3 Dimensions

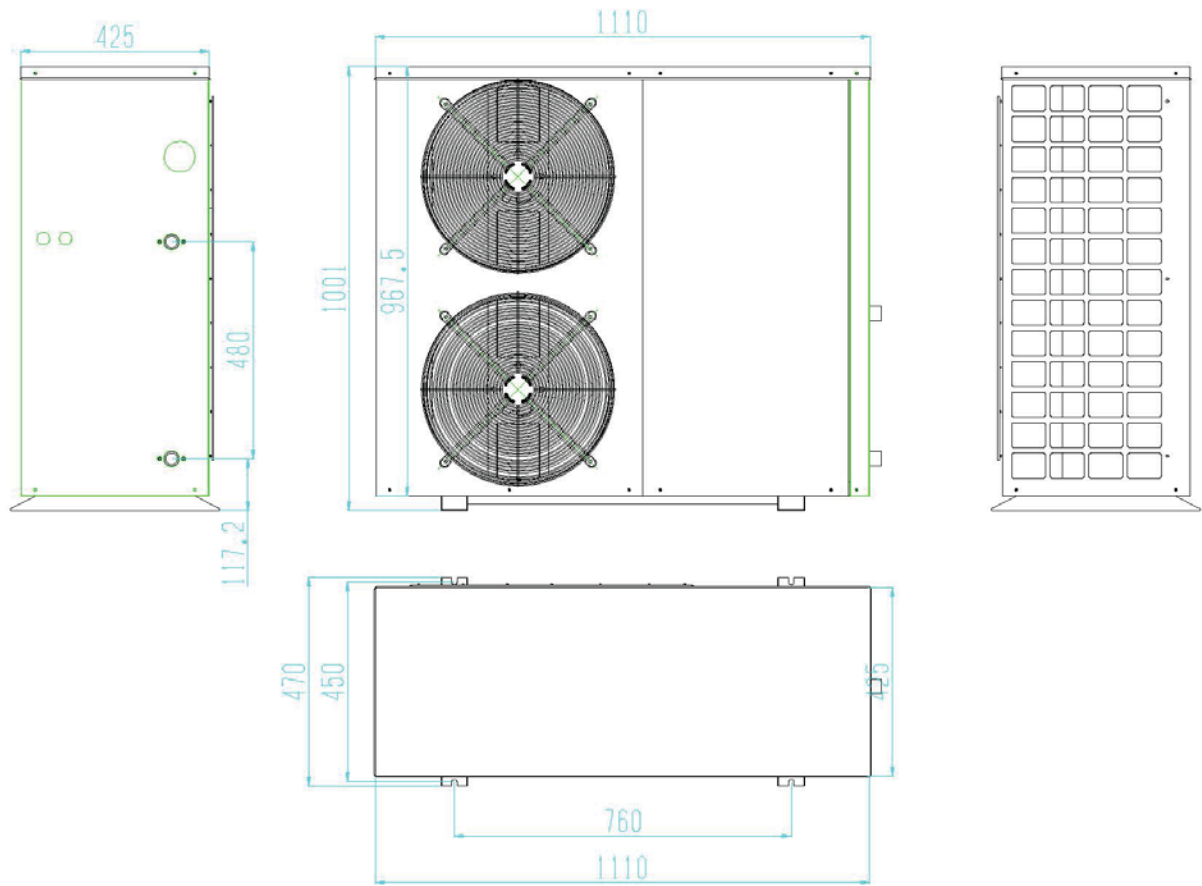
A-13/A-13S (O)



A-11/A-11S (O)  
A-07/A-07S (O)



## A-15/A-15S (O)

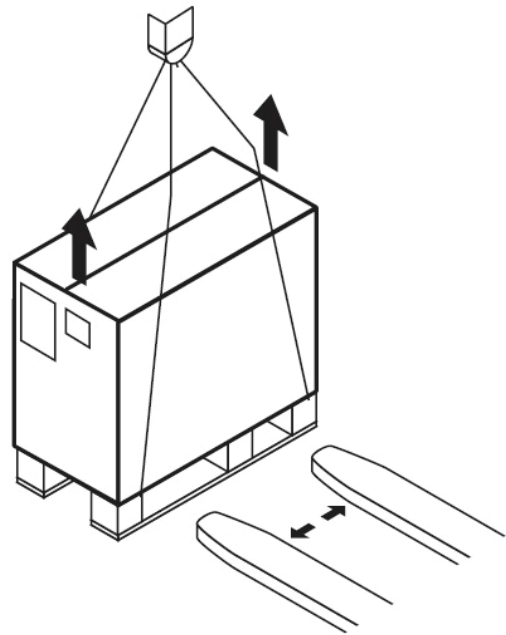


## Part II Installation

### 2.1 Transportation

Along transportation, don't incline the unit more than  $45^\circ$  in any direction.

The unit in its packaging can be transported with a lift truck or hand truck.



## 2.2 Installation site requirement

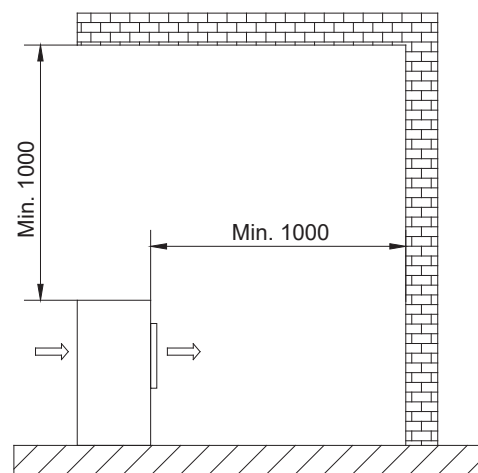
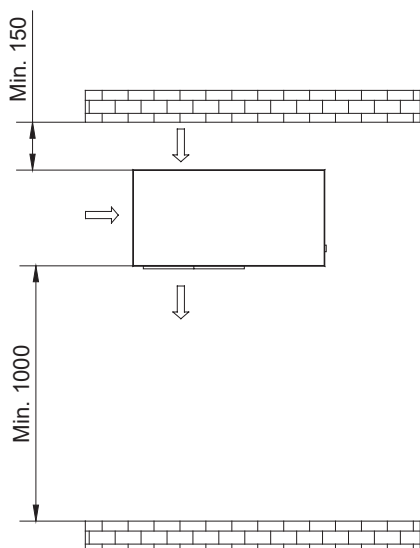
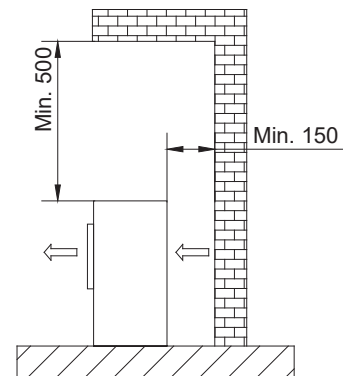
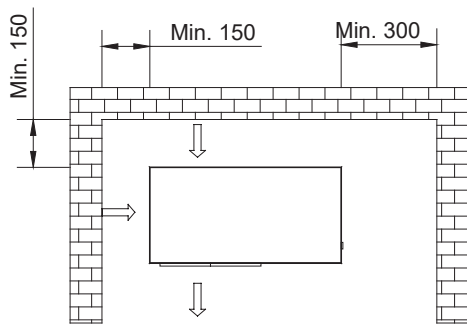
This unit is designed for outdoor installation, do not install it in an close space.

Please consider the condition as following factors when selecting installation site.

- The installation site should be large enough and well ventilation.
- The installation site should be convenient for water drainage.
- Select a smooth, horizontal site where it can support the weight of the unit.
- Do not install the unit where there is pollution, accumulation, fallen leaves or bad ventilation.
- Don't install the unit near inflammable or explosive goods.

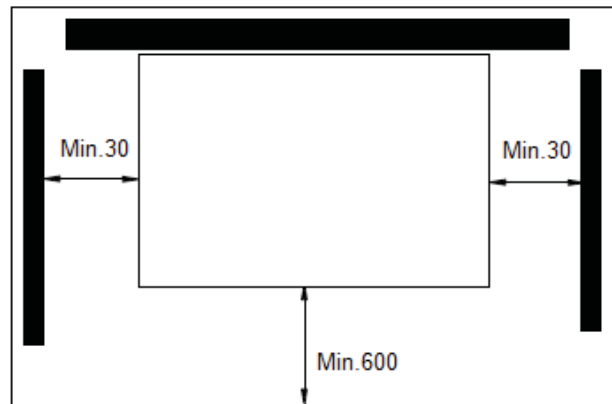
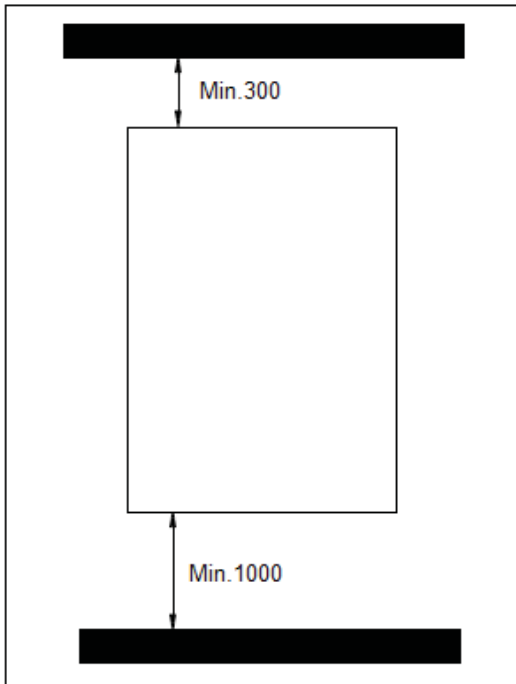
## 2.3 Minimum distance to wall

### Outdoor Unit





## Unità Interna



## 2.4 Routing the refrigerant lines

**The outdoor unit is pre-filled with refrigerant R410A.**

No additional filling is required for lines up to 5 m in length.

Minimum line length : 3 m

Maximum line length :12 m

Max. height differential

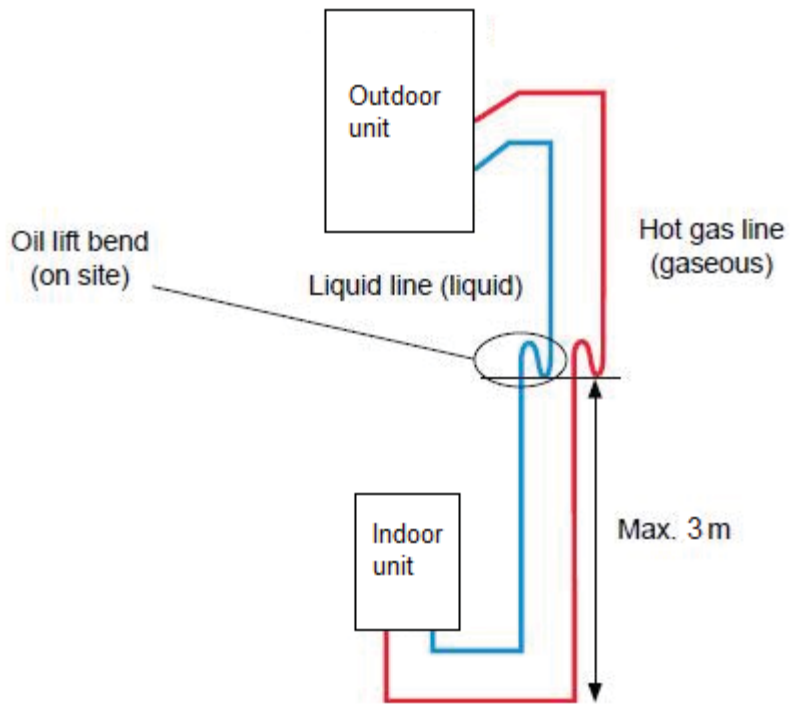
Indoor to outdoor unit : 10m

**Line lengths between 5 and 12 m must be topped up with an additional 60 g/m refrigerant R410A.**

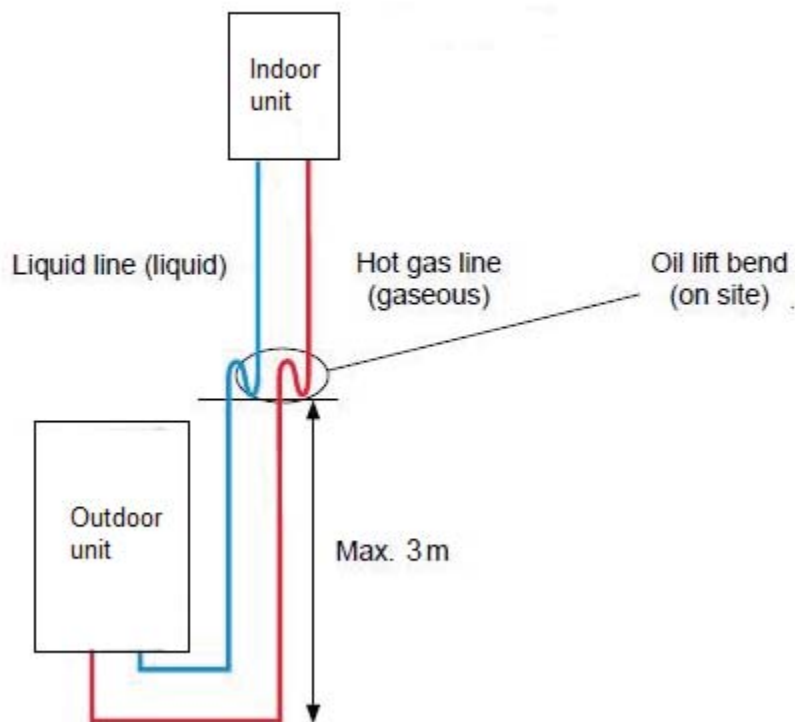
### Height differentials

If the height differential between the indoor and the outdoor units is  $>3\text{m}$ , both refrigerant lines will require oil riser elbows to prevent oil shortages in the compressor.

### Outdoor unit higher than indoor unit

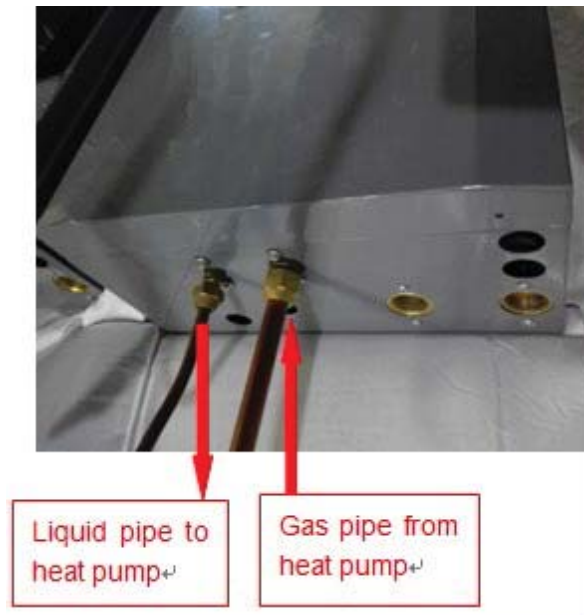


**Indoor unit higher than outdoor unit**

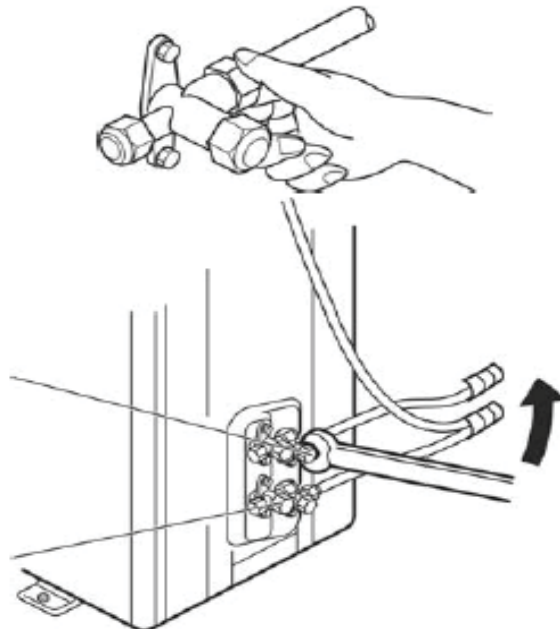


## 2.5 Connecting and filling the refrigerant lines

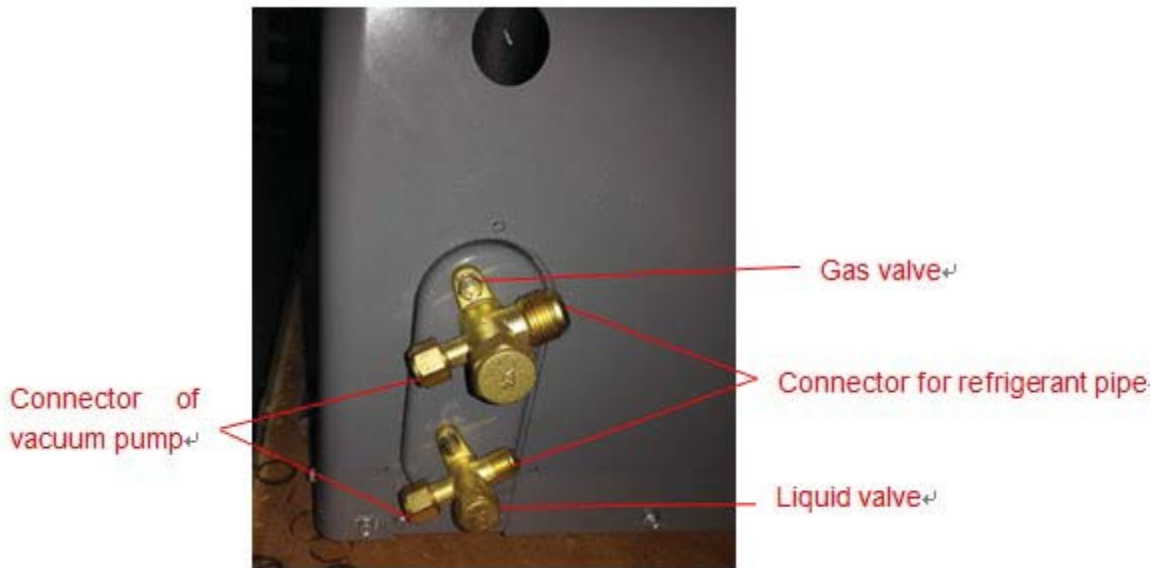
1. Connect the copper pipe to indoor unit.



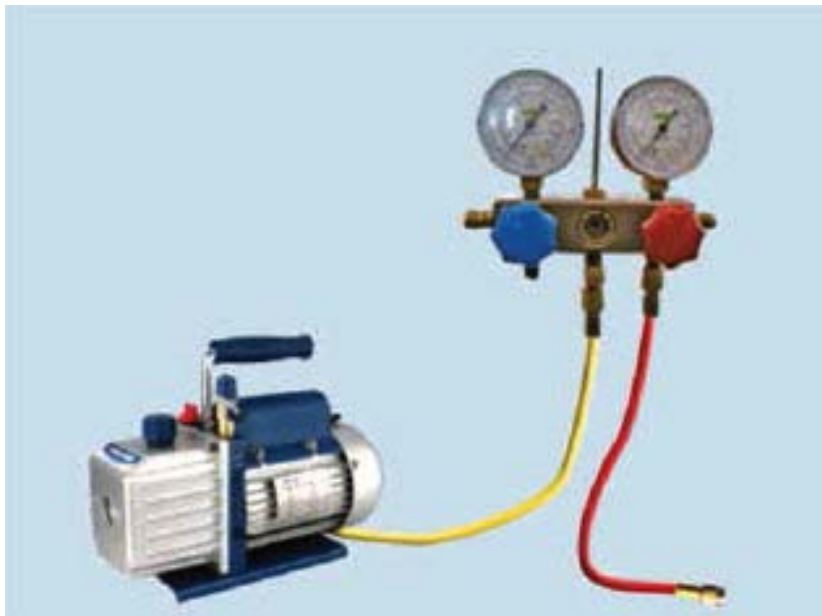
2. Wipe the quick connectors with clean cloth to prohibit dust and impurity entering the pipes.  
Align the centre of the pipe and fully screw in the angular nuts with finger.



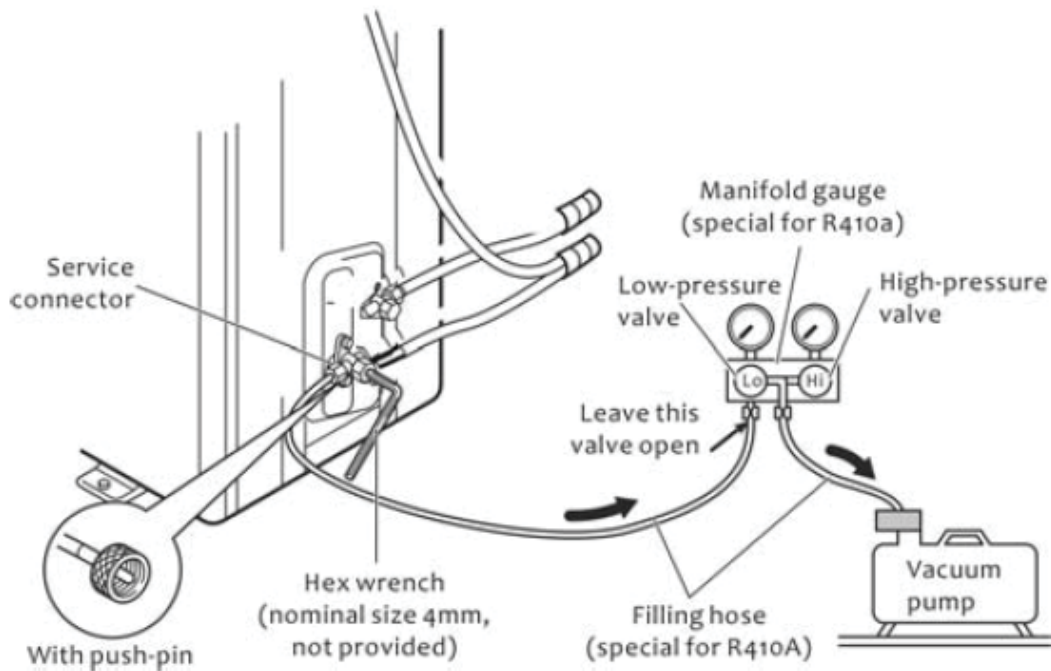
3. Connect other side of copper pipe to outdoor unit.



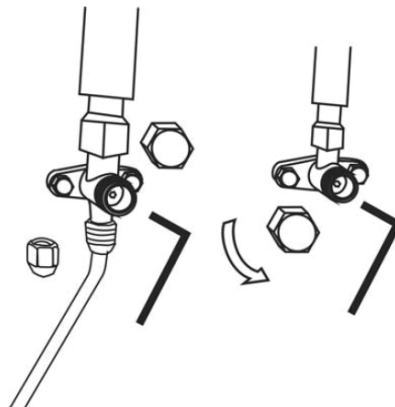
4. A vacuum pump and manifold gauge are needed. Connect the pressure gauge to the vacuum pump. Use vacuum pump to remove the air from indoor unit and copper pipe.



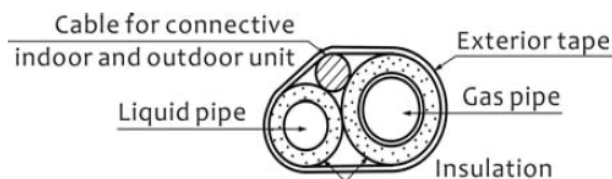
5. When vacuuming the indoor unit and copper pipe, please do not turn on gas / liquid valve, otherwise refrigerant leakage. Vacuum the unit for at least 15 minutes till negative value shown on the pressure gauge, and close the manifold gauge.



6. Use a 5mm hex wrench to open two valves.



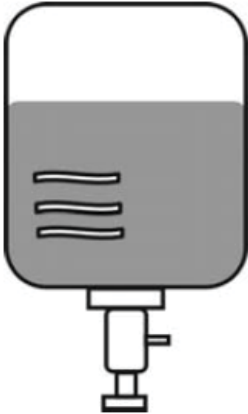
7. Remove the service pipe of pressure gauge. Put copper nut back. Tighten them with a wrench. Connect the electric cable as per wiring diagram, and bundle it with the connecting pipe.



8. After confirming that there is no leakage from the system, when the compressor is not in

operation, charge additional R410a refrigerant with specified amount to the unit through the service connector on liquid valve.

Be sure to charge the specified amount of refrigerant in liquid state to the liquid pipe. Since R410a is a mixed refrigerant, adding it in gas form may cause the refrigerant composition to change, preventing normal operation.



## 2.6 Testing the refrigerant lines for leaks

### 2.6.1 Checking the refrigerant circuit for leaks

R 410A is an air-displacing, non-toxic gas. Uncontrolled release of refrigerant may result in breathing difficulties and asphyxiation.

### 2.6.2 Check the connections for refrigerant leaks:

- All flared connections on the refrigerant lines between the indoor and outdoor unit.
- All soldered joints and screw connections on the refrigerant lines in the indoor and outdoor

## 2.7 Installation guide

### 2.7.1 Installation

- Install 4 pieces shockproof rubber pad under the feet of the unit.
- If the unit work with a water tank, the vertical distance between the unit and the water tank should be less than 6m, and the horizontal distance should be less than 20m.
- Connect the condensate drainage connector to the hole at the bottom sheet.

### Accessories

Accessories inside the package as below table

No	Item	Quantity
1	Instruction Manual	1

2	Condensate drainage connector	1
3	shockproof rubber pads	4

### 2.7.2 Design of the store tank in the system

1 - kW is the unit for cooling capacity, L is the unit for (G) minimum water flow volume in the formula. Comfortable type air conditioner

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

Process type cooling

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

2 - 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:

#### Minimum and maximum water flow rates:

Item Model	Water flow rate(m <sup>3</sup> /h)		
	Nominal	Minimum	Maximum
A-07	0.85	0.75	1.25
A-11	1.4	1.3	2.0
A-13	1.7	1.5	2.4
A-15	2.1	1.8	2.8

### Ethylene glycol solutions

Water and ethylene glycol solutions used as a thermal vector in the place of water reduce the performance values given in the following table.

	Freezing point (°C)					
	0	-5	-10	-15	-20	-25
Percentage of ethylene glycol in weight						
	0	12%	20%	28%	35%	40%
cPf	1	0.98	0.97	0.965	0.96	0.955
cQ	1	1.02	1.04	1.075	1.11	1.14
cdp	1	1.07	1.11	1.18	1.22	1.24

cPf: correction factor refrigerating capacity

cQ: correction factor flow rate

cdp: correction factor pressure drop

During winter leaving the unit unused, please drain water out completely from unit if no antifreeze were charged into pipeline, or keep power on (at standby or off status) and ensure that water is contained inside of unit.

When ambient temperature lower 5°C running cooling mode must be charged antifreeze. Refer to upper parameters for the charged volume.

### Fouling factors

The performance data given refer to conditions with clean evaporator plates (fouling factor=1). For different fouling factors, multiply the figures in the performance tables by the coefficient given in the following table.

Fouling factors (m <sup>2</sup> °C/W)	Evaporator		
		fk1	
4.4 x 10 <sup>-5</sup>	-	-	-
0.86 x 10 <sup>-4</sup>	0.96	0.99	0.99
1.72 x 10 <sup>-4</sup>	0.93	0.98	0.98

f1: capacity correction factor

fk1: compressor power input correction factor

fx1: total power input correction factor

### 2.7.3 Anti-freezing protection

When the heat pump stop running and environment temperature ≤ 5°C, the circulation pump will run for 1 minute every 30 minutes to detect anti-freezing, to enter or exit first stage or second stage anti-freezing when satisfy corresponding conditions.

1) When 2°C < inlet water temperature ≤ 4°C, and environment temperature ≤ 5°C, enter first stage anti-freezing protection, circulation pump works until outlet water temperature ≥ 6°C, or environment temperature > 2°C, to exit first stage anti-freezing protection.

2) When inlet water temperature ≤ 2°C and environment temperature ≤ 1°C, enter second stage anti-freezing protection, the unit is automatically turned on and run in heating mode, until inlet water temperature ≥ 20°C, or environment temperature > 2°C, to exit second stage anti-freezing protection.

3) When failure in inlet water temperature sensor, then detect environment temperature, when environment temperature ≤ 2°C, enter first stage anti-freezing protection, circulation pump works until environment temperature > 2°C, to exit first stage anti-freezing protection.

4) The second stage anti-freezing protection needs to detect both inlet water temperature and environment temperature. When inlet water temperature ≤ 2°C and environment temperature ≤ 1°C, enter second stage anti-freezing protection, the unit is automatically turned on and run in heating mode, until inlet water temperature ≥ 20°C, to exit second stage anti-freezing protection, but do not exit first stage anti-freezing protection, only exit first stage



anti-freezing protection when environment temperature > 2°C.

5) When failure in environment temperature sensor, if compressor stops for 30 minutes, then use coil temperature sensor to instead.

6) When failure in inlet water temperature sensor, then use outlet water temperature sensor to instead.

7) When failure in inlet and outlet water temperature sensor, if environment temperature or coil temperature after compressor stops for 30 minutes, meets conditions of anti-freezing, then enter anti-freezing protection.

## 2.7.4 Work in series

1) When several machines work in series, one machine works as master, the others work as slave

a. The slave machine operates according to instructions of heating requirement from master machine.

b. Machines stop working when water temperature reaches the setting value of master machine.

c. Slave machine operate according to water temperature setting value of master machine and provide heating. It stops or protects according to failure in itself.

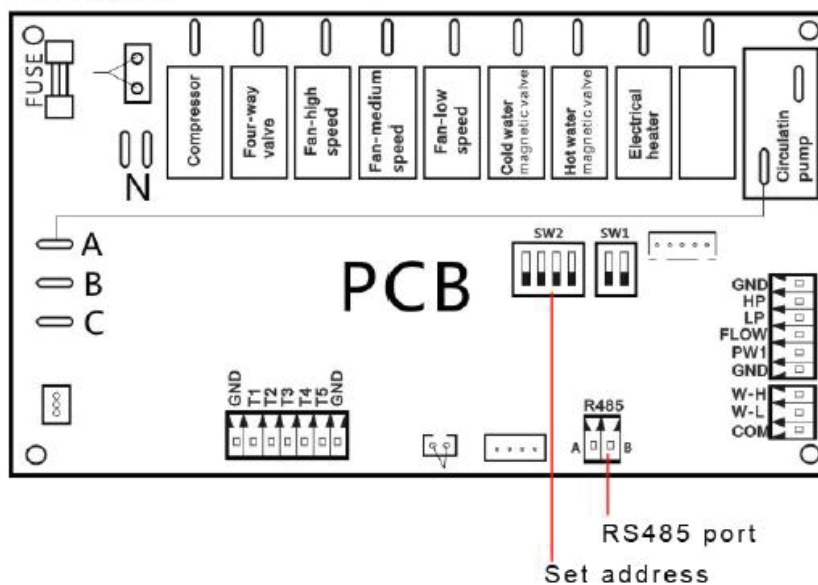
2) Quantity of machines in series: Maximum 8 machines work in series, which can be of same or different capacity.

a. Machines start working from machine 1 to machine 8 in turn.

b. Machines stop working from machine 8 to machine 1 in turn.

3) It can display master or slave on current control panel of each machine. When machines work in series, the bigger capacity machine is as master.

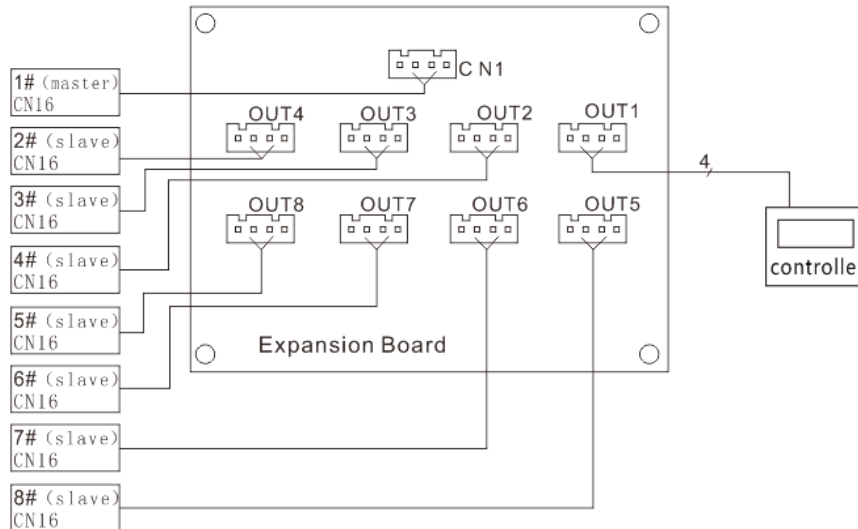
### 1. RS485 port



Multiple machines can be run jointly with work in series function. The master unit control all slaves. 1. Take the controller (of all machines) out from port CN16 on PCB. Connect signal wire to CN16. 2. Set address. When several units work in series, every unit must be set address by switch bit on PCB as following form.

Bit switch	Unit address							
	#1(master)	#2(slave)	#3(slave)	#4(slave)	#5(slave)	#6(slave)	#7(slave)	#8(slave)
1	ON	OFF	OFF	OFF	ON	OFF	OFF	ON
2	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
3	OFF	OFF	ON	OFF	OFF	OFF	ON	ON
4	OFF	OFF	OFF	ON	ON	ON	ON	ON

3. Use signal wire to connect to expansion board. Master unit connects CN1 on expansion board. Controller (with work in series function) connects OUT1 on expansion board. Slave units connect OUT2 to OUT8 at random.



4. After wiring connection, set the quantity of machines work in series by controller.

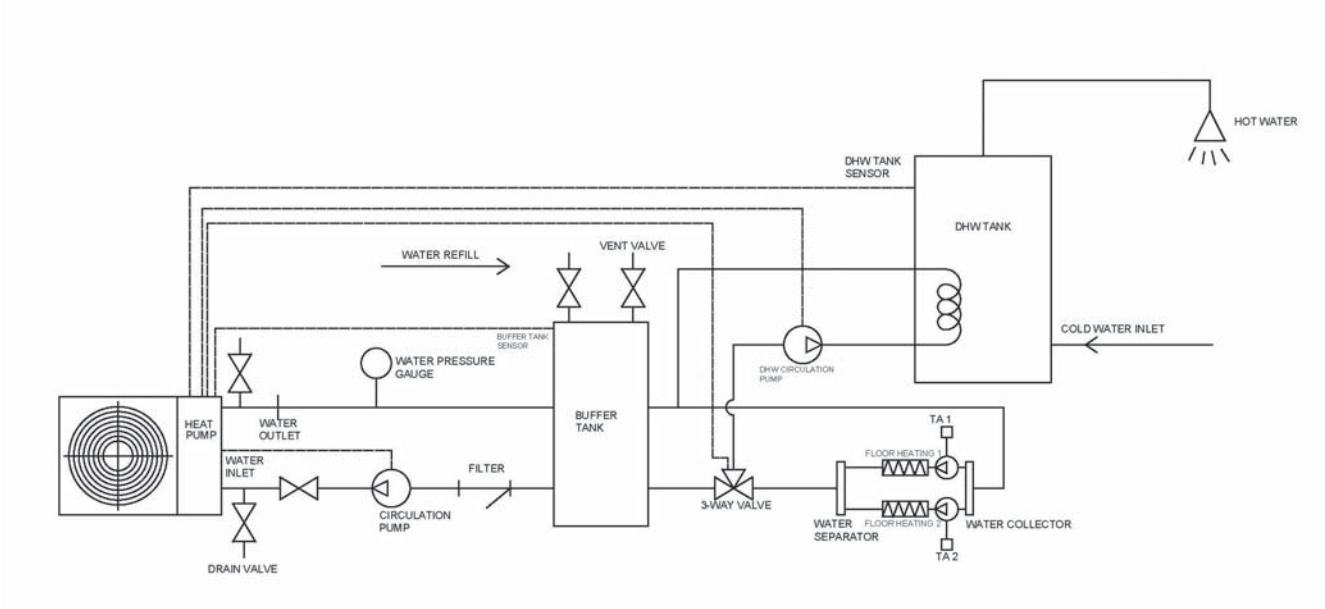
In main menu, press button for 3 seconds till there is a beep. Enter parameter 10 by pressing or , press button, press or to set quantity of machines work in series. Press button to save the setting.

5. Inquire parameters of machines work in series.

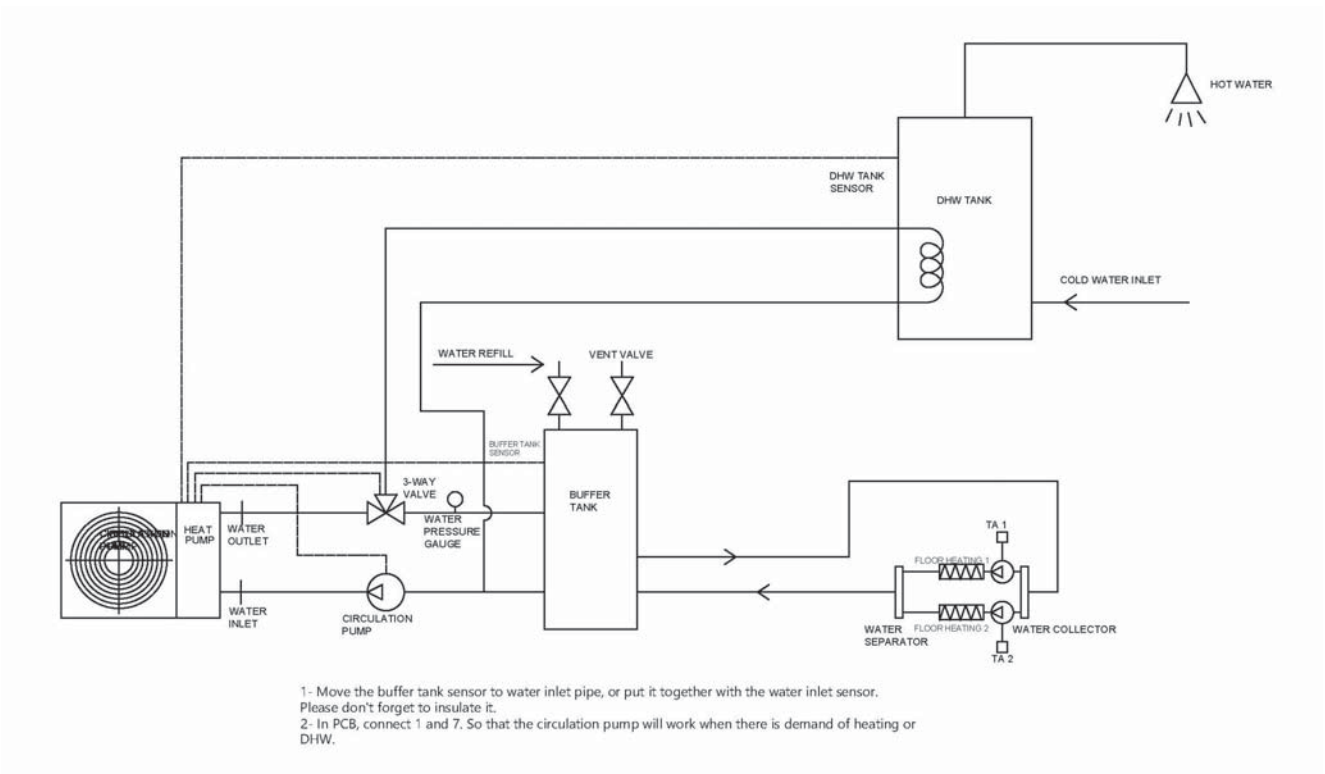
In main menu, press button for 3 seconds till there is a beep. Enter parameter 11 by pressing or , press button, press or to choose No. of machine to inquire parameters from 00 to 11 in table 1.

## 2.8.1 Recommended hydraulic connection - Monobloc

### Solution 1

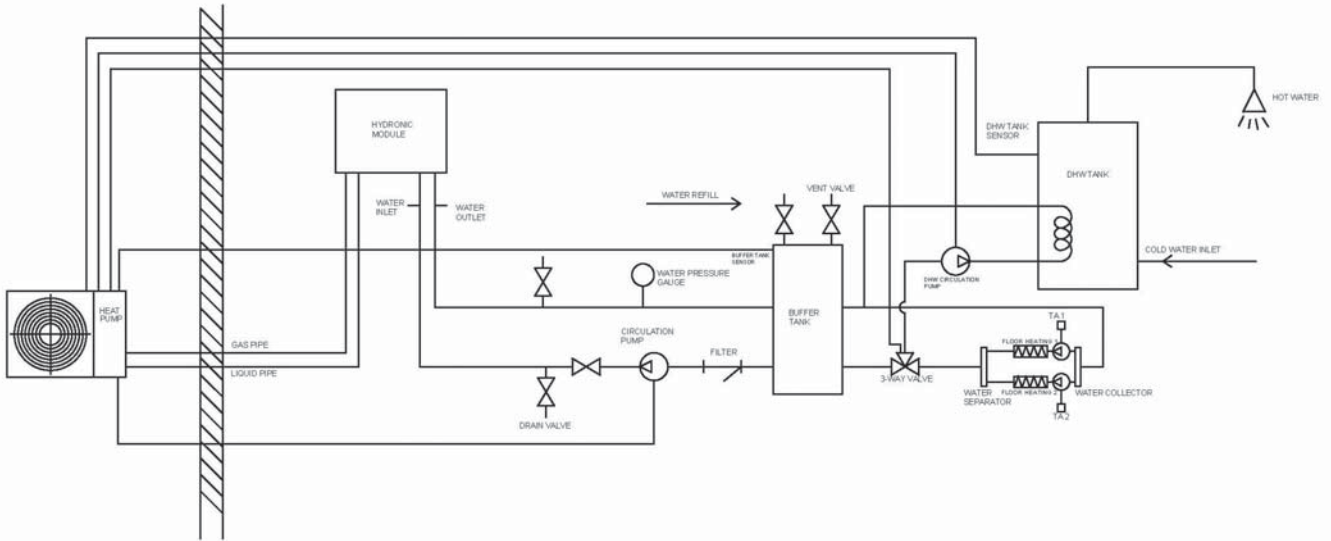


### Solution 2

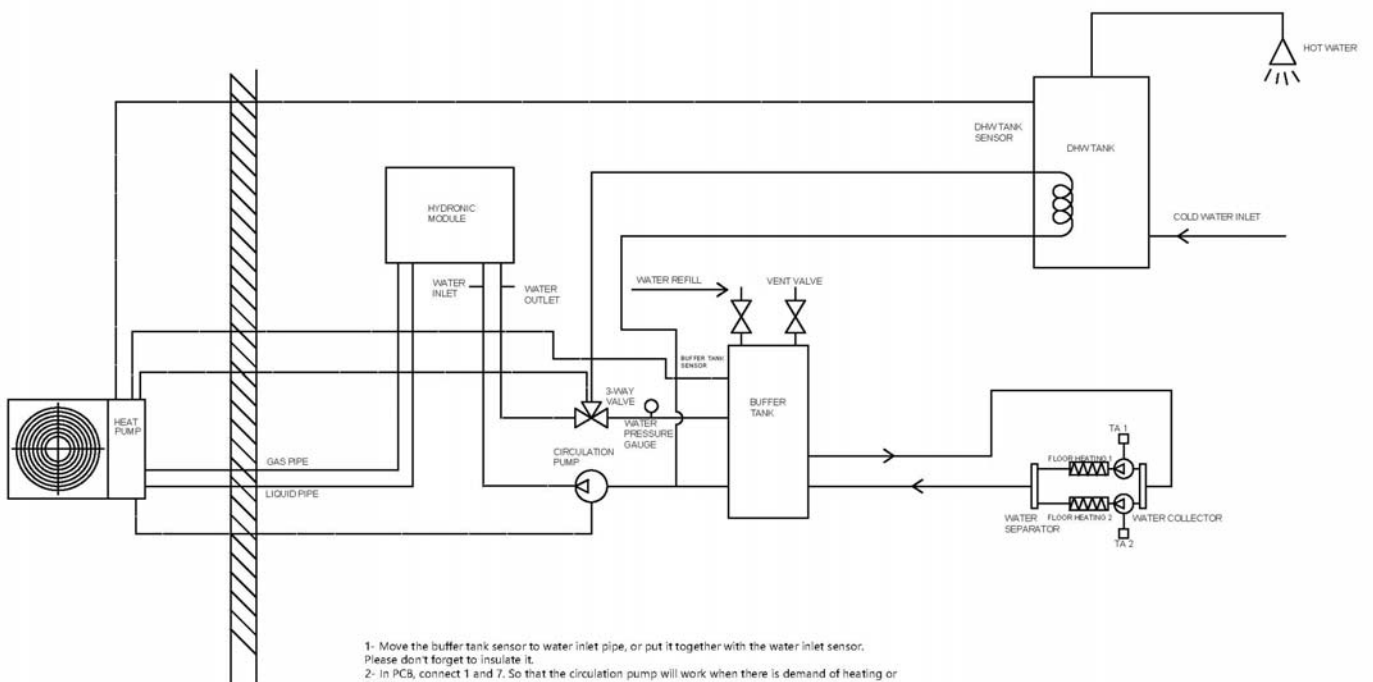


## 2.8.2 Recommended hydraulic connection - Split

### Solution 3



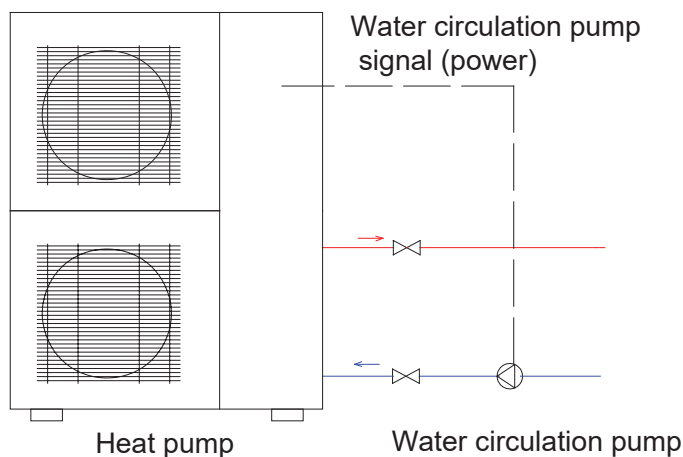
### Solution 4



- 1- Move the buffer tank sensor to water inlet pipe, or put it together with the water inlet sensor. Please don't forget to insulate it.
- 2- In PCB, connect 1 and 7. So that the circulation pump will work when there is demand of heating or DHW.

## 2.9 Electrical Connection

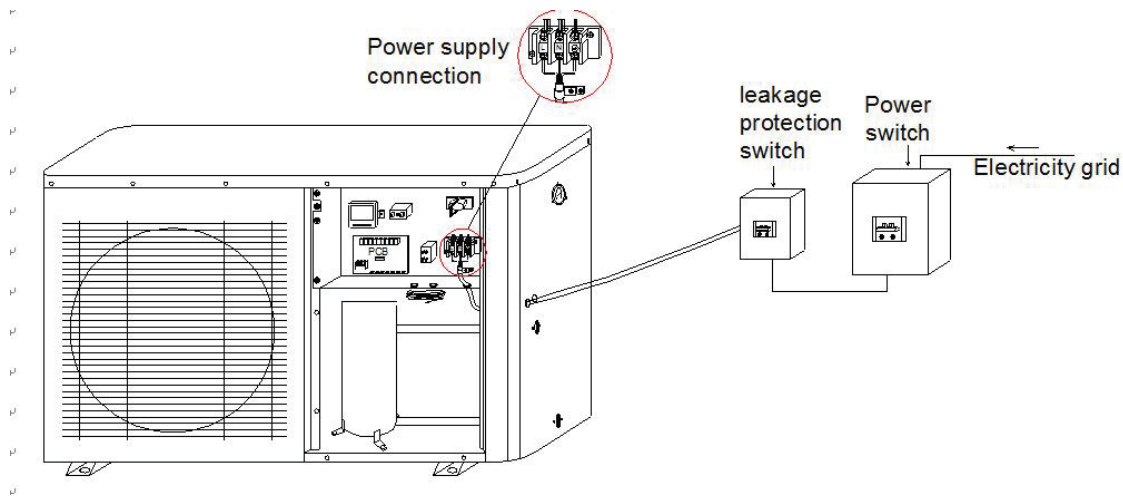
- ⚠ 1. Ensure proper operation on the unit to ensure security, the unit must be installed and repaired by qualified technician.
  - ⚠ 2. A leakage protection switch must be installed near the unit.
  - ⚠ 3. Do not use any damaged cable and switch.
  - ⚠ 4. Do not open the electrical box without shutting off all power to the unit.
- All the wiring must meet the local electrical safety norm and performed by qualified electricians.
  - Ensure that the heat pump water heater is well connected to the earth, do not disconnect the earth connection of the power in any condition.
  - Provide a separate power supply which meets rated requirements for the unit.
  - When the unit connects to the electricity network, there must be a short-circuit protection.
  - Choose the suitable cable when use the power outdoor.
  - Do not control the unit on or off by the main power switch.
  - Connect the signal (power) from PCB to water circulation pump.



### The Specification of Power

Following information is for reference, please subject to the local safety norm.

Type	A-11	A-13	A-15
Power supply	220-240V/1Ph/50Hz	220-240V/1Ph/50Hz	220-240V/1Ph/50Hz
Circuit Breaker/Fuse(A)	25/25	40/40	60/60
Min. power wiring (mm <sup>2</sup> )	3x4	3x4	3x6



## 2.10 Trial Operation

- The unit should only be operated by qualified technician.
- Please drain air inside hydraulic system before operation.
- The unit is designed according to the conditions as follows: the range of ambient temperature is  $-25^{\circ}\text{C}\sim 43^{\circ}\text{C}$  and the range of water pressure is  $0.15\sim 0.8\text{Mpa}$ .

### 2.10.1 Preparation

The following items should be checked before startup:

- The heat pump should be connected completely.
- All valves that could impair the proper flow of the heating water in the heating circuit must be open.
- The air intake and air outlet paths must be cleared.
- The ventilator must turn in the direction indicated by the arrow.
- The settings of the heat pump controller must be adapted to the heating system in accordance with the controller's operating instructions.
- Ensure the condensate outflow functions.
- Drain the air inside hydraulic system.

### 2.10.2 Trial run

- Turn on the power, start up the unit by the controller, after 30 seconds, the unit (compressor) start to work, then observe whether the unit works normally.
- When you restart the unit, the compressor will start up after three minutes to protect the compressor.

### 2.10.3 Caution

When following happen during trial operation, please stop the unit immediately and cut off the power and contact with our authorized agent or maintenance technician.

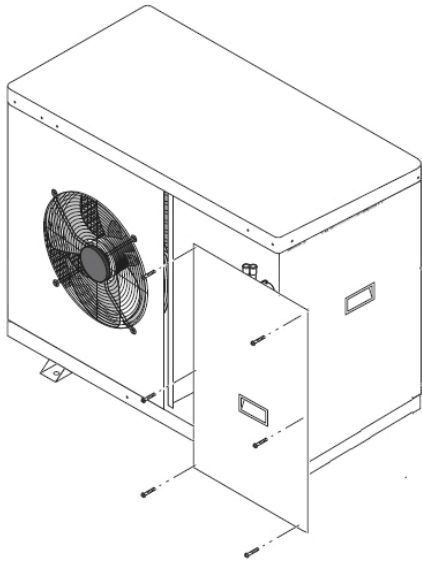
Fuse blown or protection activated frequently

- The wire and switches are heated abnormally
- Abnormal sounds coming from the unit
- Abnormal smell comes out of the unit.
- Electricity leakage

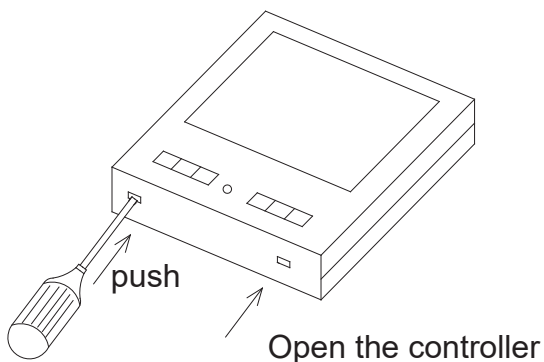
## Part III Control System

### 3.1 Controller position

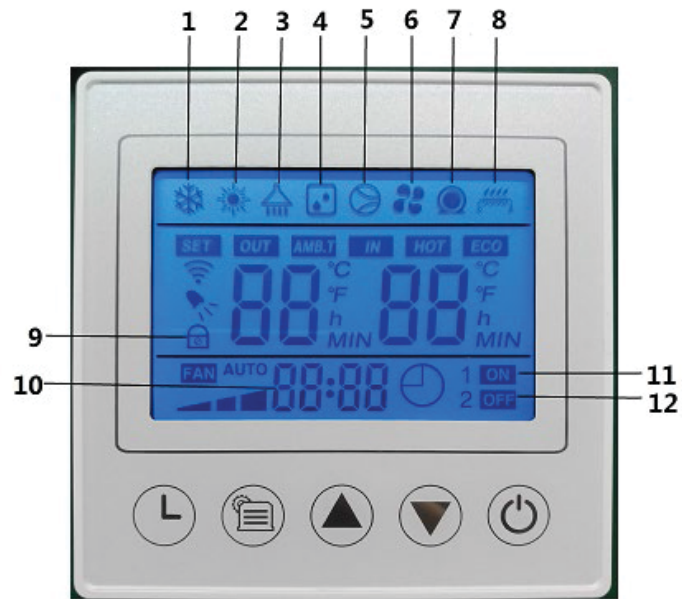
The controller is installed inside the unit before factory, open the front panel as following picture, you will find the controller.



There is 8 meters cable for the controller, it is allowable to move the controller to outside the unit, but avoid a place with sunshine and rain. The controller should be open to move it as following picture.



### 3.2 Controller introduction



1	Cooling	7	Water pump
2	Heating	8	E-heater
3	DHW	9	Lock the keys
4	Defrosting	10	Clock
5	Compressor	11	Timer on
6	Fan	12	Timer off

### 3.3 Operation introduction



Standby status





Heating status



Cooling status






DHW status





Heating+DHW status

### 3.31 Description of control button






#### ❖ On/Off button

1. When the screen is locked, press  button for 5 seconds to unlock the screen;
2. In unlock status, press  button for 1 second to switch on/off;
3. In other setting status, press  button to back to main menu.





#### ❖ Function button

1. In main menu, press  button to switch working mode.
2. Long press  button to enter parameter setting

#### ❖ Up and down button





1. Press  or  button to turn the page to inquire or set parameter.
2. Combine  button to inquire or set parameter.
3. In main menu, press  or  button to adjust the set temperature of current mode.

#### ❖ Timer button

1. In main menu, press  button for 10 seconds to enter clock setting status.
2. In main menu, press  button to enter timer setting status, combine  and  button to set the timer on and timer off of the timer 1 and 2.

### 3.32 operation instruction

#### ❖ User parameter inquiry (can set when unit is on or off)







1. In main menu, press  button for 5 seconds to enter user parameter inquiry menu, press  or  button to inquire parameters.
2. In user parameter inquiry menu, if there is no operation for 30 seconds, will automatically exit user parameter inquiry and back to main menu. Or press  button to back to main menu.

**Table 1**

Item	Description	Unit	Range	Remark
00	DHW tank temp	°C	-30~105	
01	Frequency of compressor	Hz	0~99	
02	Current of compressor	A	0~105	
03	DC bus voltage	V	0~105	x10
04	Temp of IPM module	°C	-30~105	
05	AC voltage	V	0~105	x10
06	AC current	A	0~105	
07	Current operating power of compressor	W	0~105	x100
08	Fan speed	RPM	-30~105	x10
09	Target overheat of air return in main circuit	°C	-30~105	/10
10	Actual overheat of air return in main circuit	°C	-30~105	
11	EEV step in main circuit	P	-30~105	x10
12	EEV step in auxiliary circuit	P	-30~105	x10
13	High pressure	Kpa	-30~105	x100
14	Saturated evaporation temperature of high pressure	°C	-30~105	
15	Current exhaust superheat	°C	-30~105	
16	Low pressure in main circuit	Kpa	-30~105	x100
17	Low pressure saturated evaporation temperature in main circuit	°C	-30~105	
18	Target overheat of air return in auxiliary circuit	°C	-30~105	
19	Actual overheat of air return in auxiliary circuit	°C	-30~105	
20	Low pressure in auxiliary circuit	Kpa	-30~105	x100
21	Inlet temp of auxiliary circuit	°C	-30~105	low pressure saturated evaporation temp in auxiliary circuit
22	Outlet temp of auxiliary circuit	°C	-30~105	EVI air return temp

23	Exhaust temp	°C	-30~140	
24	Outdoor coil temp	°C	-30~105	
25	Outdoor environment temp	°C	-30~105	
26	Buffer tank temp	°C	-30~105	
27	Temp of after throttling	°C	-30~105	
28	Inlet water temp	°C	-30~105	
29	Outlet water temp	°C	-30~105	
30	Air return temp	°C	-30~105	
31	Multiple units working		0:NO 1:YES	
32	Status of multiple units working		0:OFF 1:ON	
33	Status of water pump		0:OFF 1:ON	

❖ **Factory parameter inquiry and setting (can set when unit is on or off)**

- In main menu, press  button for 3 seconds to enter factory parameter inquiry menu, press  button to enter factory parameter setting menu, and press  or  button to set factory parameters, then press  button to save and back to inquiry status.
- In factory parameters inquiry or setting menu, if there is no operation for 30 seconds, will automatically exit factory parameter inquiry or setting menu and back to main menu. Or press  button to back to main menu.

**Table 2**










Item	Description	Range	Default Value	Remark
00	DHW mode temp difference	1-15°C	5°C	
01	Working mode of water pump	0-2	2	0- On/off as compressor on/off, when compressor is off, run for 1min every parameter 2 setting. 1- On/off as compressor on/off, when compressor is off, run 30s more 2- On/off as the unit on/off
02	Running time of water pump	1-30 Min	5 Min	

03	Max target air return overheat of main valve curve A in heating mode	0-10°C	1°C	
04	Max target air return overheat of main valve curve A in cooling mode	0-10°C	4°C	
05	Regulating cycle of main valve	20-150	40S	
06	Target air return overheat of auxiliary valve	-10-20°C	20	
07	Reserved	00-16	00	
08	Reserved	0/1	1	
09	Reserved	20-90°C	55	












**Note:**

1. Set the temperature difference between the measured water temperature and purpose water temperature
2. By setting the temperature difference, the unit can start up/stop automatically.
3. For example, the default value is 5°C, when the measured temperature is lower than purpose water temperature by 5°C, the unit will run automatically. The unit will not stop until the measured temperature reaches the purpose water temperature you set.


❖ **Clock setting (can set when unit is on or off)**

1. In main menu, press  button for 10 seconds to enter clock setting menu.
2. In clock setting menu, press  button, the hour flashes, press  or  to set the hour.
3. After the hour is set, press  button again, the minute flashes, press  or  to set the minute.
4. After the minute is set, press  button again to save the clock setting and back to main menu.
5. In clock setting menu, if there is no operation for 30 seconds, will automatically save clock setting and back to main menu.
6. In clock setting menu, press  button to save clock setting and back to main menu.




### ❖ **Timer on / off setting (can set only when unit is off)**

1. In main menu, press  button to enter timer 1 setting.
2. In timer 1 setting, press  button again, hour of timer on flashes, press  or  to set the hour of timer on.
3. After the hour of timer on is set, press  button again, the minute flashes, press  or  to set the minute of timer on.
4. After the minute of timer on is set, press  button again to enter hour setting of timer off, setting as timer on.
5. After the timer off is set, press  button again to save timer 1 setting. And enter timer on and off setting of timer 2. The setting is same as setting of timer 1.
6. In timer setting menu, press  button to cancel the current setting of timer on/off.
7. In timer setting menu, if there is no operation for 30 seconds, will automatically save timer setting and back to main menu.
8. In timer setting menu, press  button to save timer setting and back to main menu.



### ❖ **Lock and unlock buttons**

1. In locked status, press  button for 5 seconds, the buzzer will sound and unlock the buttons.
2. If there is no operation for 60 seconds, buttons will be locked automatically, and the backlight will be off.



### ❖ **Forced defrosting**

1. In ON status, press  and  button simultaneously for 5 seconds to enter forced defrosting.
2. Press  button to exit the forced defrosting.



### ❖ **Forced electric heating**

In ON status, press  and  button simultaneously for 5 seconds to enter / exit forced electric heating.

### ❖ **Capacity test mode**

In ON status, press  and  button simultaneously for 15 seconds to enter capacity test. And will exit when unit is off.

### ❖ **Restore factory settings**

Press  and  button simultaneously for 5 seconds to restore factory settings.

### ❖ **Connector of three way valve control**

There is connector of three way valve control on the PCB. It is ON when in DHW mode.

### ❖ **Connector of dry contact control**

There is connector of dry contact control on the PCB. In heating or cooling mode, when there is ON signal from thermostats, the circulating pump of heat pump will start. When there is OFF signal from thermostats, the circulating pump of heat pump will stop.

## **Part IV Maintenance**

Before performing any maintenance on the unit, you should turn the unit off first and shut off the power.

A well-maintained heat pump could save your energy costs and make the unit durable, but must be done by a qualified technician. Below are some tips for your reference to help your heat pump gives you optimum performance.

1. Turn the power off when the unit is being maintained.
2. Do not use petrol, naphtha, dissolvent and any other chemicals on the unit, otherwise, it may damage the surface. External heat pump parts can be wiped with a damp cloth and domestic cleaner.
3. Avoid leaning or putting objects on the device.
4. Keep dry and drafty round the unit. Clean heat exchangers regularly (usually once per 1~2 months) to keep a good heat exchange efficiency.
5. If the unit will be shut down for a long time, you should drain the water in the pipe, turn the

power off and cover it with protective cover, Check it roundly before you start it again.

6. It is advised to use the phosphoric acid whose temperature is about 50 ~ 60 °C and consistency is 15% to clean the heat exchanger of the unit. First start the circulation pump to clean it for 3 hours, and then flush it with tap water for three times. Do not use any amyctic detergent to clean the heat exchanger and the tank.

7. Change the installation place

If the customer wants to change the site, please contact with the dealer or the local Customer Service for help.

## Part V Trouble shooting

**Table 3**

Fault Code	Fault	Possible Causes	Treatment
F0	Communication failure between PCB and driver board	<ul style="list-style-type: none"> <li>◇Open circuit or short circuit between PCB and driver board</li> <li>◇PCB is damaged</li> <li>◇Driver board is damaged</li> </ul>	<ul style="list-style-type: none"> <li>◇Repair or Replace the cable between PCB and driver board</li> <li>◇Replace PCB</li> <li>◇Replace driver board</li> </ul>
F1	Communication failure between controller and PCB	<ul style="list-style-type: none"> <li>◇Open circuit or short circuit between controller and PCB</li> <li>◇Controller is damaged</li> <li>◇PCB is damaged</li> </ul>	<ul style="list-style-type: none"> <li>◇Repair or Replace the cable between controller and PCB</li> <li>◇Replace controller</li> <li>◇Replace PCB</li> </ul>
F2	Abnormal start of compressor (Open-phase, reverse rotation)	<ul style="list-style-type: none"> <li>◇Failure of the driver module of system</li> </ul>	<ul style="list-style-type: none"> <li>◇Replace driver board</li> </ul>
F3	Out of step of compressor	<ul style="list-style-type: none"> <li>◇Failure of the driver module of system</li> </ul>	<ul style="list-style-type: none"> <li>◇Replace driver board</li> </ul>
F4	IPM module failure	<ul style="list-style-type: none"> <li>◇Failure of the driver module of system</li> </ul>	<ul style="list-style-type: none"> <li>◇Replace driver board</li> </ul>
F5	Overheat protection of compressor	<ul style="list-style-type: none"> <li>◇Compressor is overheated</li> </ul>	



F6	Outdoor DC fan failure	◇Driving of DC fan is failure	
E0	Inlet water temp sensor failure	◇The cable of the sensor open or short circuit ◇The probe of the sensor fall off ◇the sensor short circuit	◇Reconnect the cable of the sensor ◇Retighten the probe ◇Repair or replace the cable ◇Replace PCB
E1	Outlet temp sensor failure		
E2	After throttling temp sensor failure		
E3	Air suction temp sensor failure		
E4	Outdoor coil temp sensor failure		
E5	Outdoor environment temp sensor failure		
E6	Exhaust temp sensor failure		
E7	EVI return circuit air return temp sensor failure		
E8	High pressure sensor failure		
E9	Low pressure sensor failure		
EA	Economizer inlet temp sensor failure		
EB	Indoor environment temp sensor failure		
EC	Economizer outlet temp sensor failure		
ED	Buffer tank sensor		

	failure		
EH	DHW water tank sensor failure		
EE	Main board EE failure	◇Data error	
EF	Driver board EE failure	◇Data error	
P1	AC current protection of outdoor unit		
P2	Current protection of compressor		
P3	AC voltage too high / too low protection of outdoor unit		
P4	DC bus voltage too high / too low protection		
P5	IPM overheat protection		
P6	Overheat protection of exhaust temp	◇Exhaust temp is too high	
P7	High pressure failure	<ul style="list-style-type: none"> <li>◇Insufficient water flow</li> <li>◇The heat exchanger is Scaling.</li> <li>◇High pressure switch is damaged</li> <li>◇Water pump is damaged</li> <li>◇Refrigeration system failure</li> <li>◇PCB failure</li> </ul>	<ul style="list-style-type: none"> <li>◇Clean strainer</li> <li>◇Discharge air in hydraulic system</li> <li>◇Check whether there is any block in hydraulic system</li> <li>◇Clean refrigeration system</li> <li>◇Replace the high pressure switch</li> <li>◇Check whether there is problem with the circulation pump.</li> <li>◇Drain out the superfluous refrigerant</li> </ul>
P8	Low pressure failure	◇Insufficient of refrigerant	◇Check leakages and fill refrigerant

		<ul style="list-style-type: none"> <li>◇refrigerant leakage</li> <li>◇Electronic expansion valve is damaged</li> <li>◇ Low pressure switch is damaged</li> <li>◇Fan motor is damaged</li> <li>◇PCB is damaged</li> <li>◇The evaporator are dirty</li> </ul>	<p>according rated label.</p> <ul style="list-style-type: none"> <li>◇Replace the low pressure switch</li> <li>◇Clean the evaporator</li> <li>◇Replace fan motor</li> <li>◇Replace electronic expansion valve</li> <li>◇Replace PCB</li> </ul>
P9	Overheat protection of outer coil in cooling	◇Cooling coil temp is too high	◇Check if the outdoor fan is dirty and affect the heat exchange.
PH	Environment temp is too high in heating	◇Environment temp is too high	◇The failure will disappear when environment temp fall
PA	Anti-freezing protection of inner coil in cooling		
PB	Overheat protection of inner coil in heating		
PC	Water flow failure	<ul style="list-style-type: none"> <li>◇Flow switch is damaged</li> <li>◇Insufficient water flow</li> <li>◇There is air in hydraulic system</li> <li>◇Circulating pump is damaged</li> <li>◇Water tank lack of water</li> </ul>	<ul style="list-style-type: none"> <li>◇Replace water flow switch</li> <li>◇Clean filter</li> <li>◇Discharge air</li> <li>◇Check whether there is any problem with the water pump.</li> <li>◇Ensure the water tank is full fill and the water pressure is over 0.15Mpa</li> </ul>
H1	Temp difference between water inlet and water outlet is too high	◇Insufficient water flow	◇Ensure the water tank is full fill and the water pressure is over 0.15Mpa

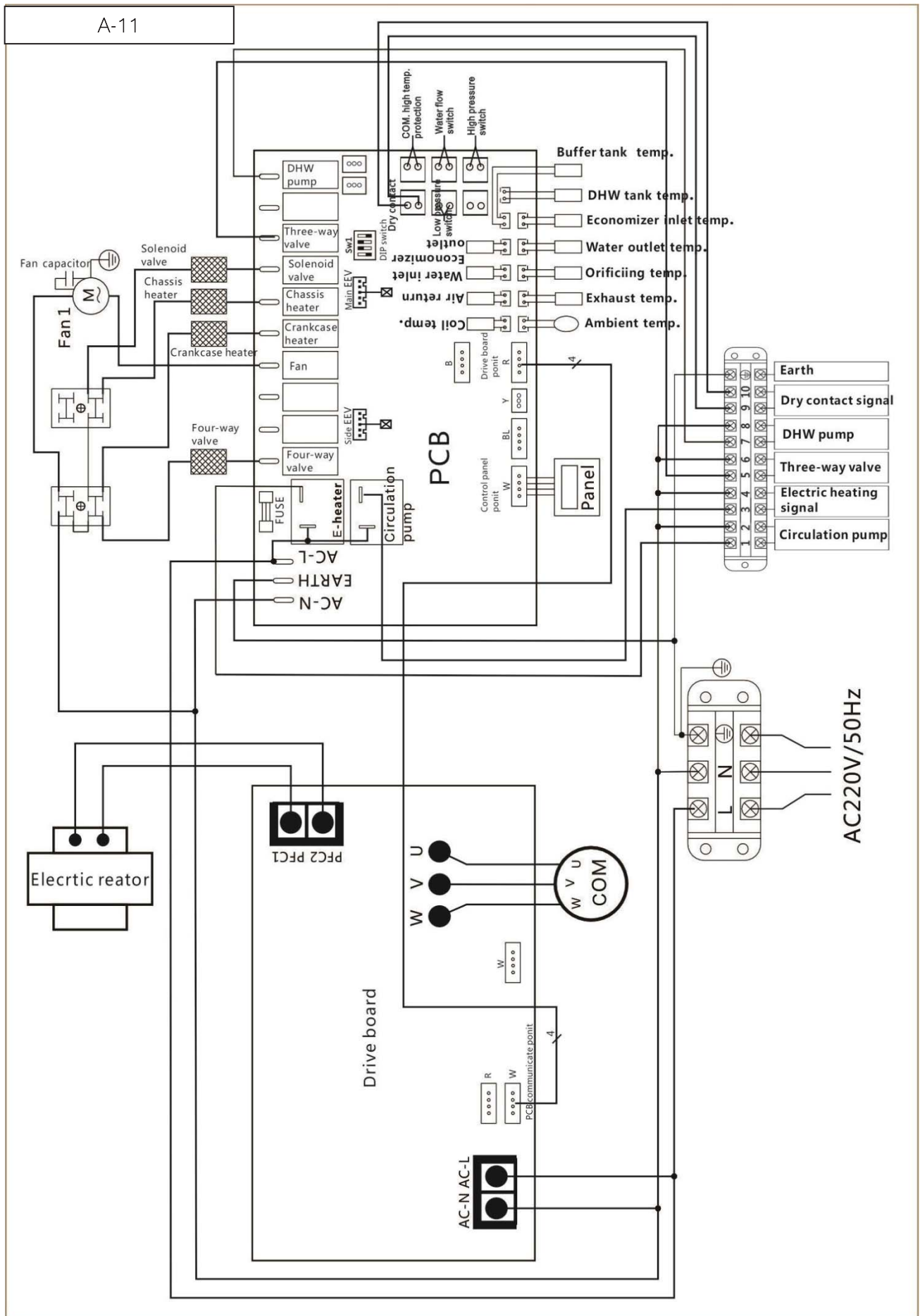
Note: when fault happen, the fault code will show on the screen and the alarm will sound.

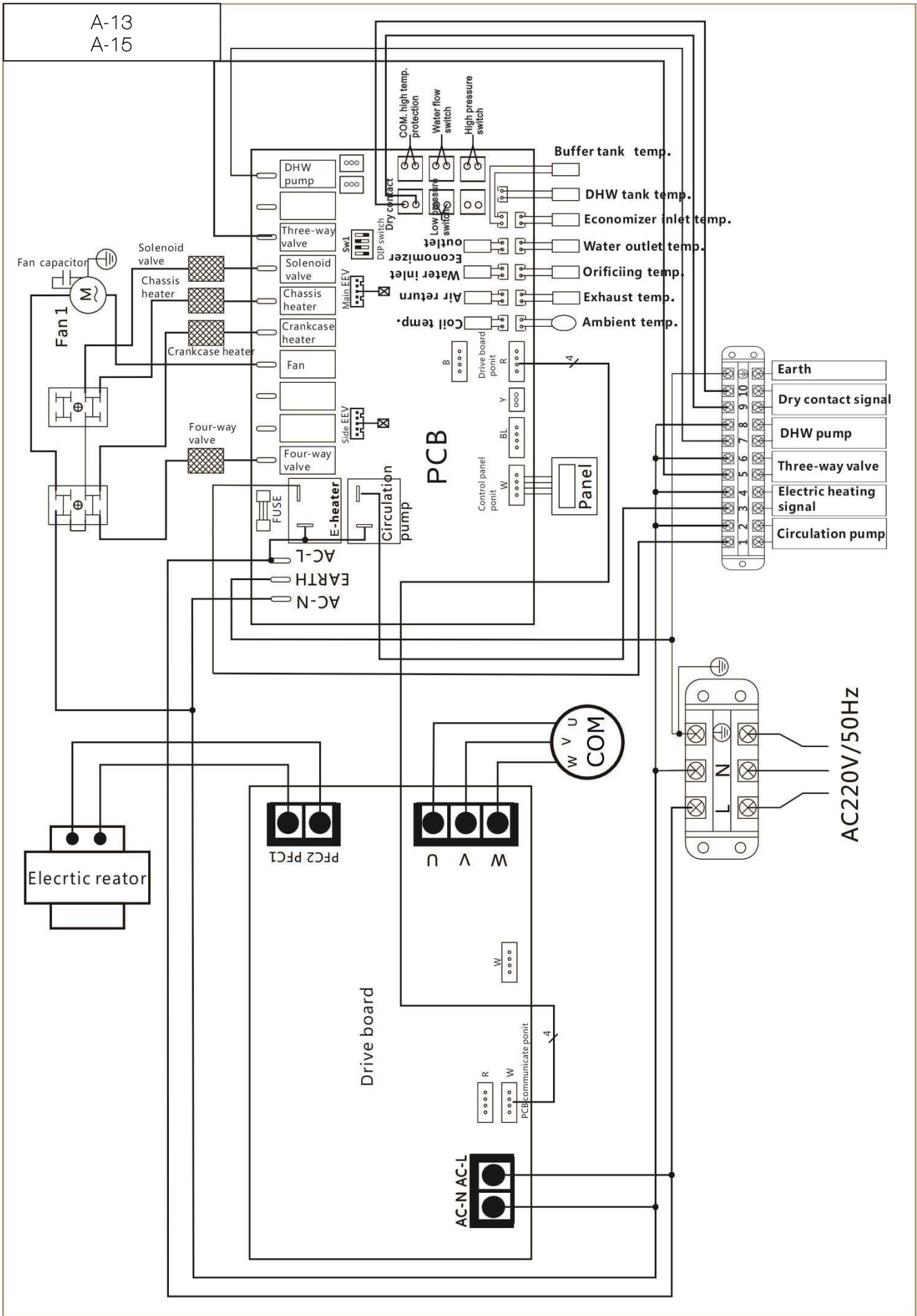
**Table 4 The possible causes and treatment of common failure.**

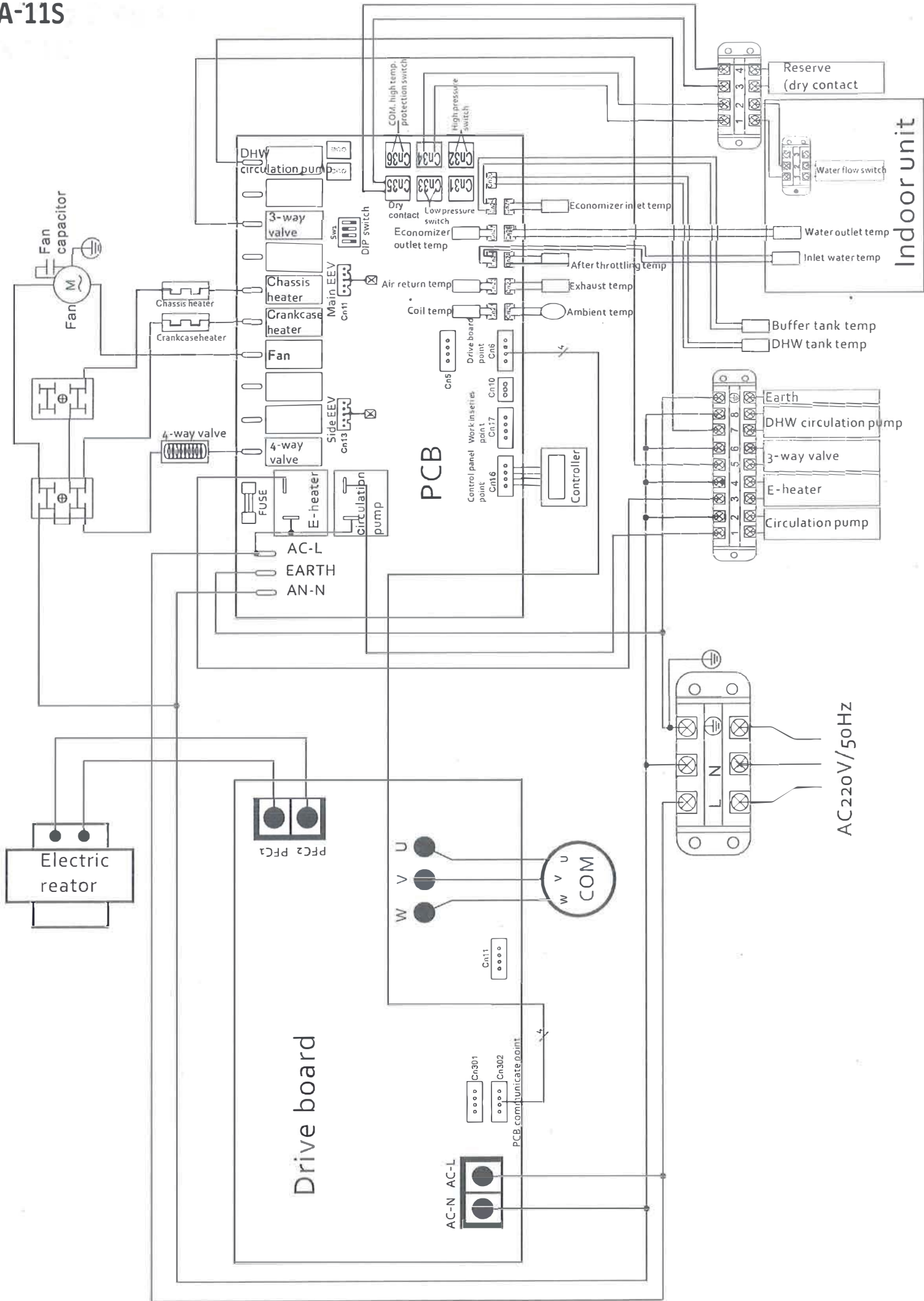
Fault Condition	Possible Causes	Treatment
The unit doesn't work	<ul style="list-style-type: none"> <li>◇ Power fault</li> <li>◇ Bad connection to the power</li> <li>◇ Fuse blow</li> </ul>	<ul style="list-style-type: none"> <li>◇ Turn off the switch, check the Power source</li> <li>◇ Find the causes and renovate them</li> <li>◇ Replace the fuse</li> </ul>
The pump is working but too noisy and the water is not cycled	<ul style="list-style-type: none"> <li>◇ Lack water In the system</li> <li>◇ There is air in the water circulation</li> <li>◇ Any valve in the system is not open</li> <li>◇ Filter stoppage</li> </ul>	<ul style="list-style-type: none"> <li>◇ Check the water make-up device and fill in with water</li> <li>◇ Discharge the air in water system</li> <li>◇ Open all valves</li> <li>◇ Clean filters</li> </ul>
Low heating capacity	<ul style="list-style-type: none"> <li>◇ Inadequate refrigerant</li> <li>◇ bad insulation of the water system</li> <li>◇ Drying filter stoppage</li> <li>◇ Air side heat exchanger is unefficient</li> <li>◇ Inadequate water-flow</li> </ul>	<ul style="list-style-type: none"> <li>◇ Leak hunting and fill in standard quantity of refrigerant</li> <li>◇ Improve the heat insulation</li> <li>◇ Replace the drying filter</li> <li>◇ Clean the heat exchanger</li> <li>◇ Clean the water filter</li> </ul>
The compressor doesn't work	<ul style="list-style-type: none"> <li>◇ Power failure</li> <li>◇ Compressor contactor destroyed</li> <li>◇ Poor connection</li> <li>◇ Overheating protection</li> <li>◇ water outlet temperature is too high</li> <li>◇ Inadequate water-flow</li> </ul>	<ul style="list-style-type: none"> <li>◇ Check it and solve the problems</li> <li>◇ Replace contactor</li> <li>◇ Check and renovate it</li> <li>◇ Check and solve the problems</li> <li>◇ Reset a proper temperature</li> <li>◇ Clean the water filter and discharge the air in the water system</li> </ul>
The compressor works but too noisy	<ul style="list-style-type: none"> <li>◇ Liquid refrigerant goes into the compressor</li> <li>◇ interior components destroyed</li> <li>◇ Inadequate refrigeration oil</li> </ul>	<ul style="list-style-type: none"> <li>◇ Check the expansion valve</li> <li>◇ Replace the compressor</li> <li>◇ Add in adequate refrigeration oil</li> </ul>
The fan doesn't work	<ul style="list-style-type: none"> <li>◇ Capacitor damaged</li> <li>◇ The fans are not fixed well</li> <li>◇ The electromotor burned out</li> </ul>	<ul style="list-style-type: none"> <li>◇ Replace it</li> <li>◇ Fix it well again</li> <li>◇ Replace the electromotor</li> </ul>

	<ul style="list-style-type: none"> <li>◇ Contactor destroyed</li> </ul>	<ul style="list-style-type: none"> <li>◇ Replace the Contactor</li> </ul>
Compressor works but not heating	<ul style="list-style-type: none"> <li>◇ Refrigerant leakage</li> <li>◇ Compressor fault</li> </ul>	<ul style="list-style-type: none"> <li>◇ Leak hunting and fill in standard quantity of refrigerant</li> <li>◇ Replace the compressor</li> </ul>
Low water-flow protection	<ul style="list-style-type: none"> <li>◇ Hydraulic switch destroyed</li> <li>◇ Inadequate water-flow</li> </ul>	<ul style="list-style-type: none"> <li>◇ Replace the switch</li> <li>◇ Clean the filter and discharge the air</li> </ul>
Excessive discharge pressure	<ul style="list-style-type: none"> <li>◇ Too much refrigerant</li> <li>◇ Non-condensable gas in the Refrigeration cycle</li> <li>◇ Inadequate water-flow</li> </ul>	<ul style="list-style-type: none"> <li>◇ Draw off the superfluous refrigerant</li> <li>◇ Drive the gas out</li> <li>◇ Check the circulation and increase the flow</li> </ul>
Low suction pressure	<ul style="list-style-type: none"> <li>◇ Drying filter stoppage</li> <li>◇ Lack of refrigerant</li> <li>◇ Excessive pressure drop in the heat exchanger</li> </ul>	<ul style="list-style-type: none"> <li>◇ Replace the filter</li> <li>◇ Leak hunting and fill in standard quantity of refrigerant</li> <li>◇ Check the opening of electronic expansion valve</li> </ul>

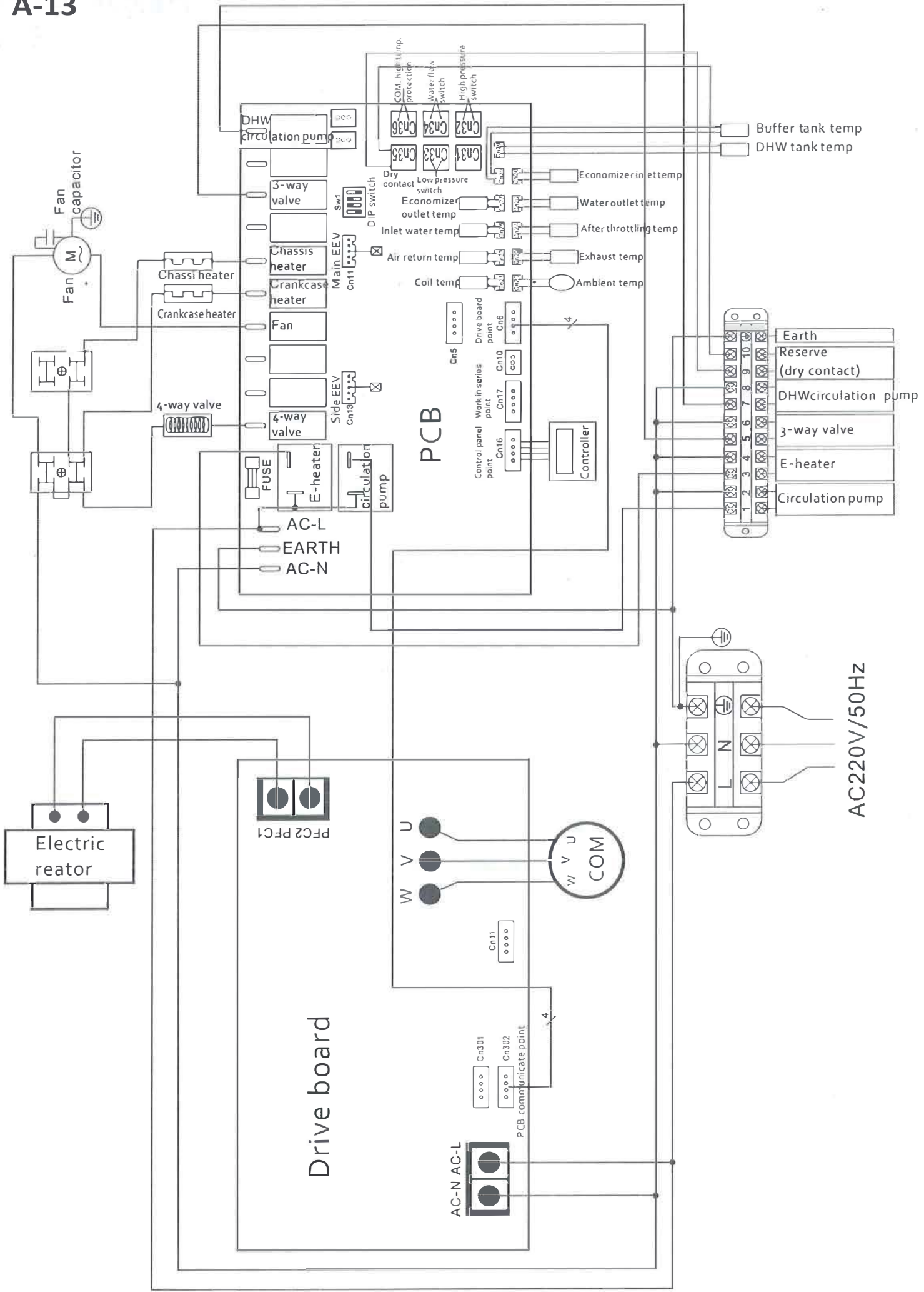
# Part VI Wiring Diagram

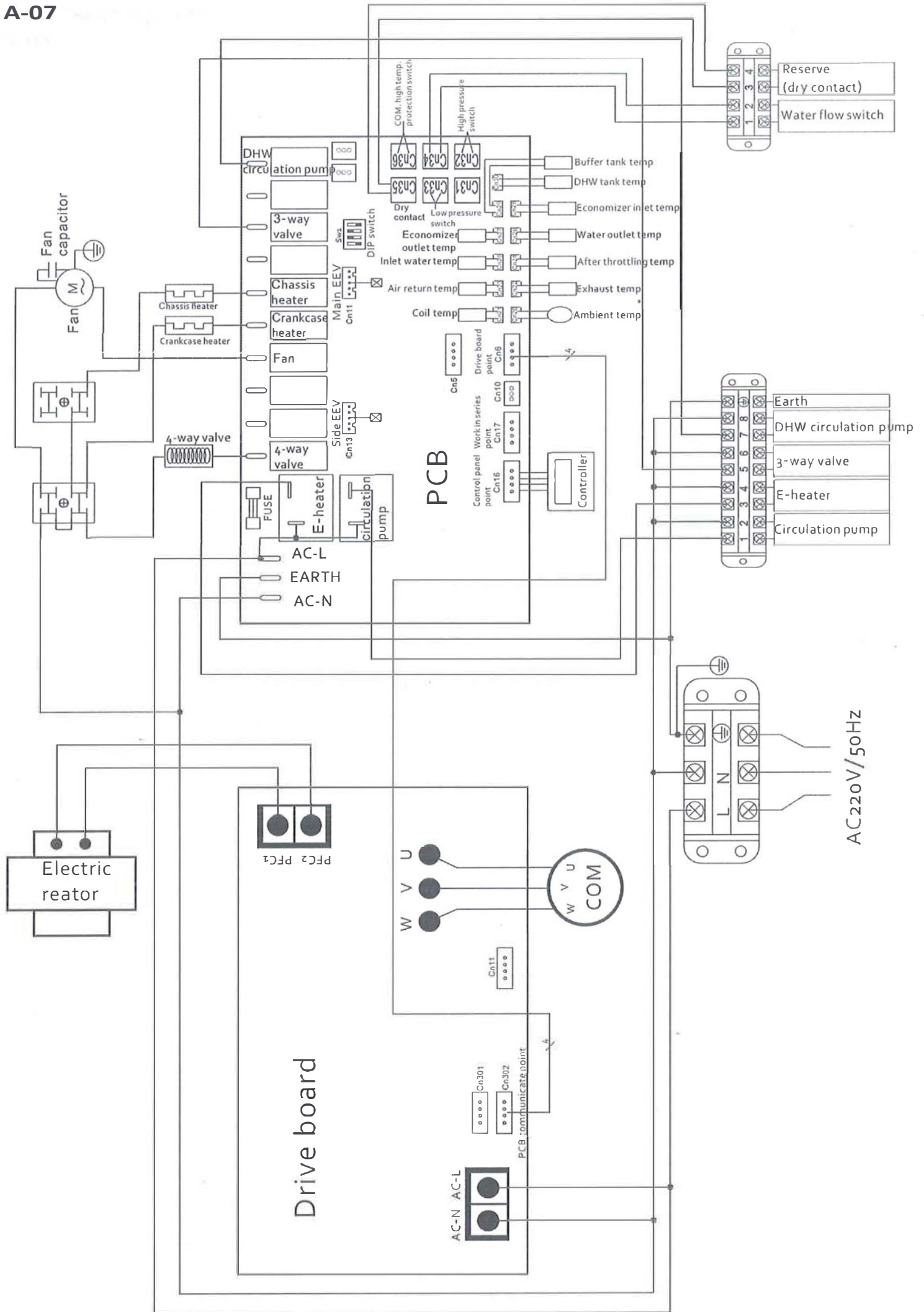




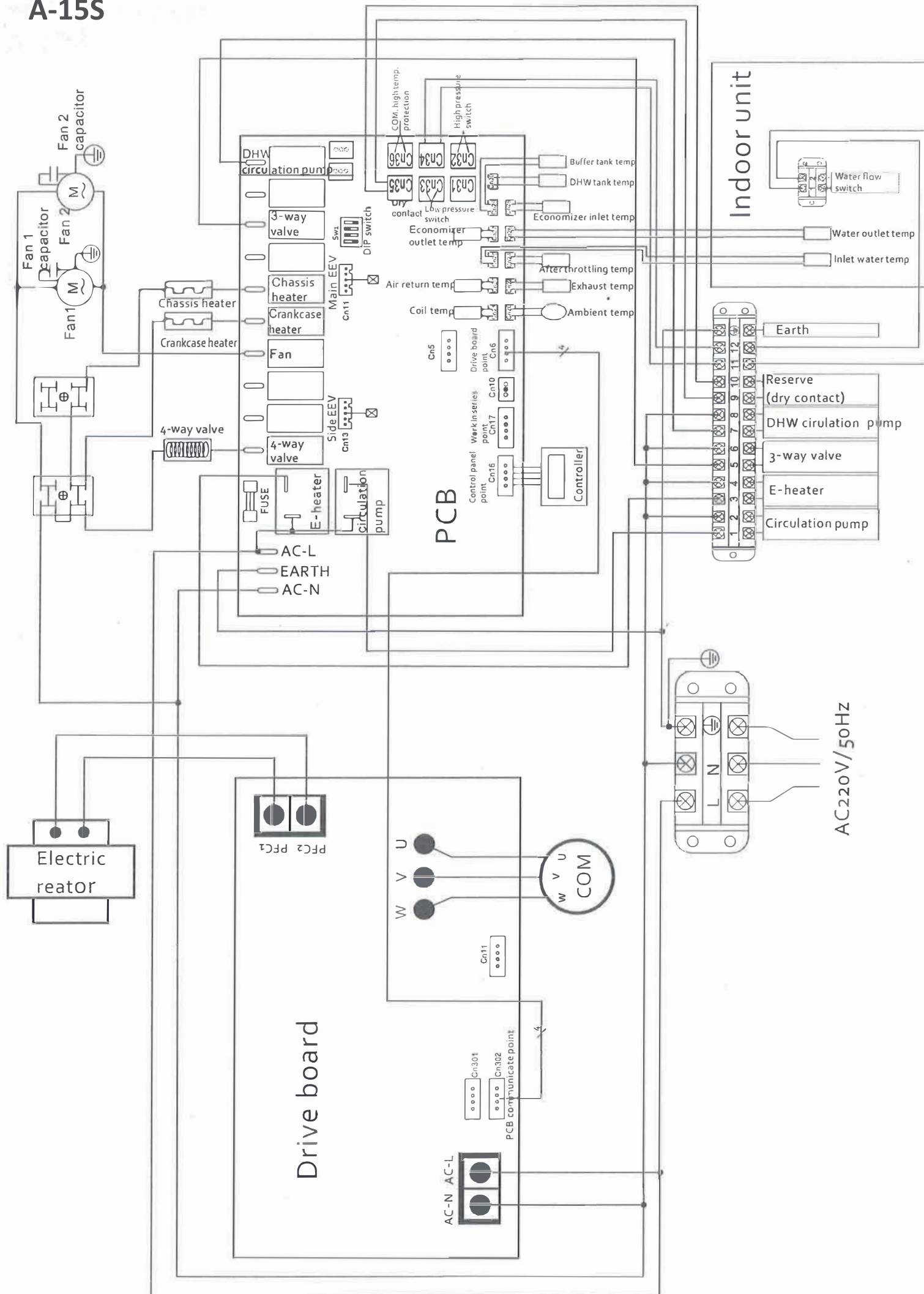


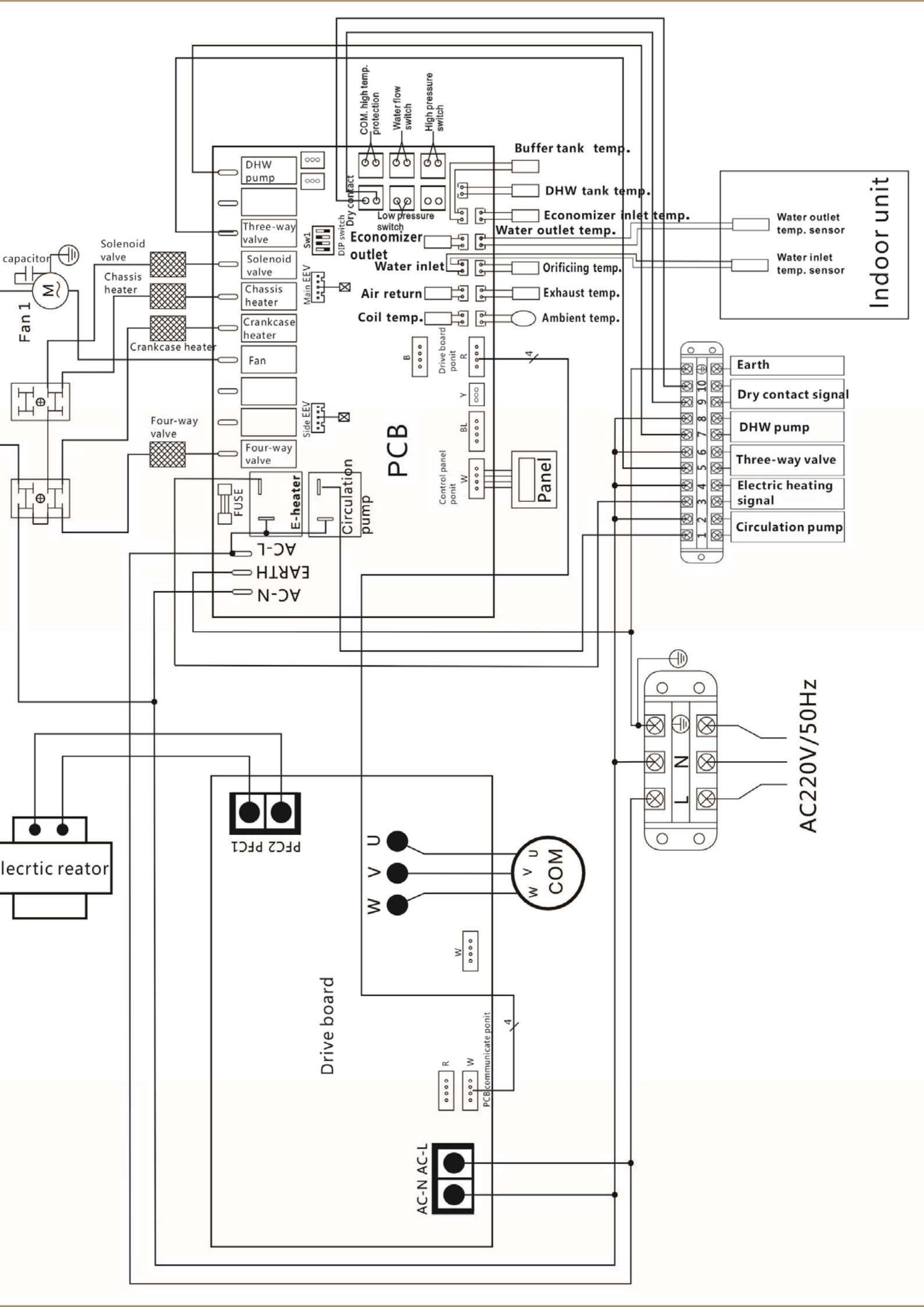






# A-15S





## Disposal

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

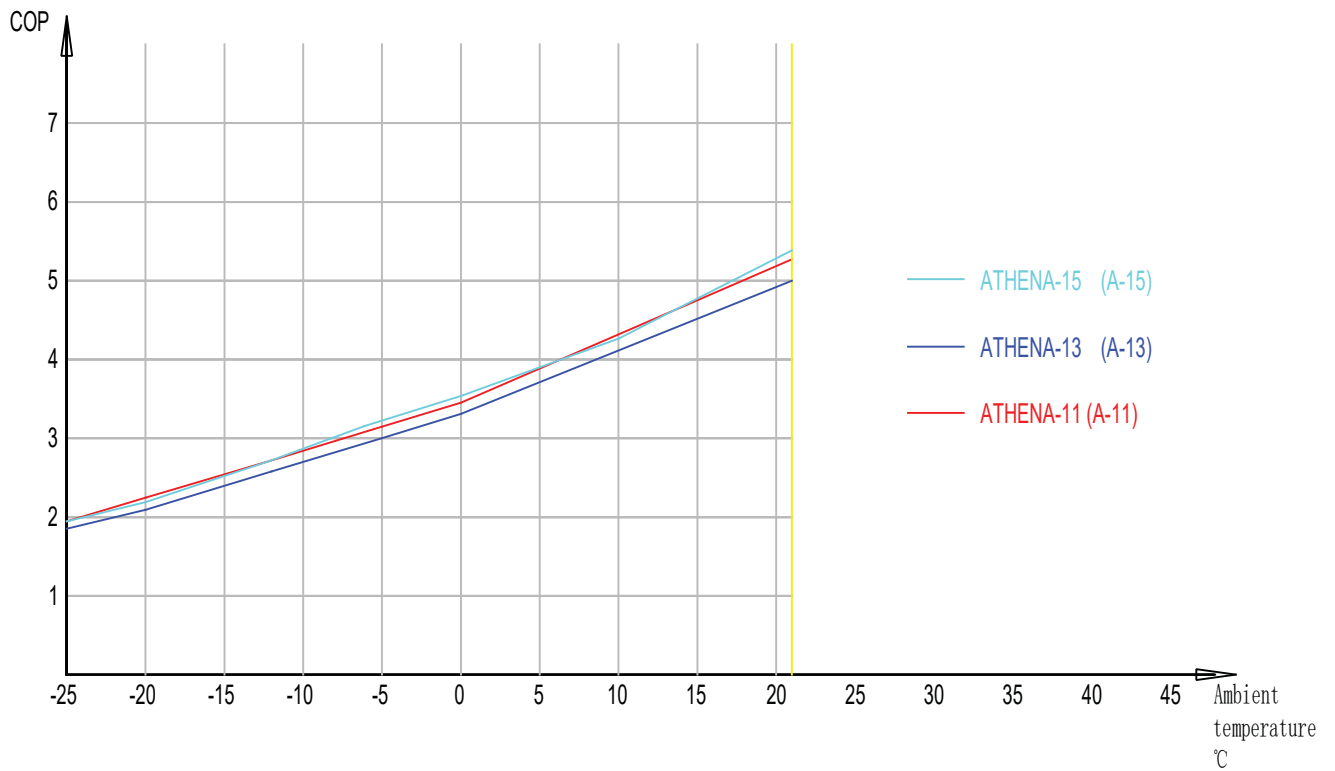
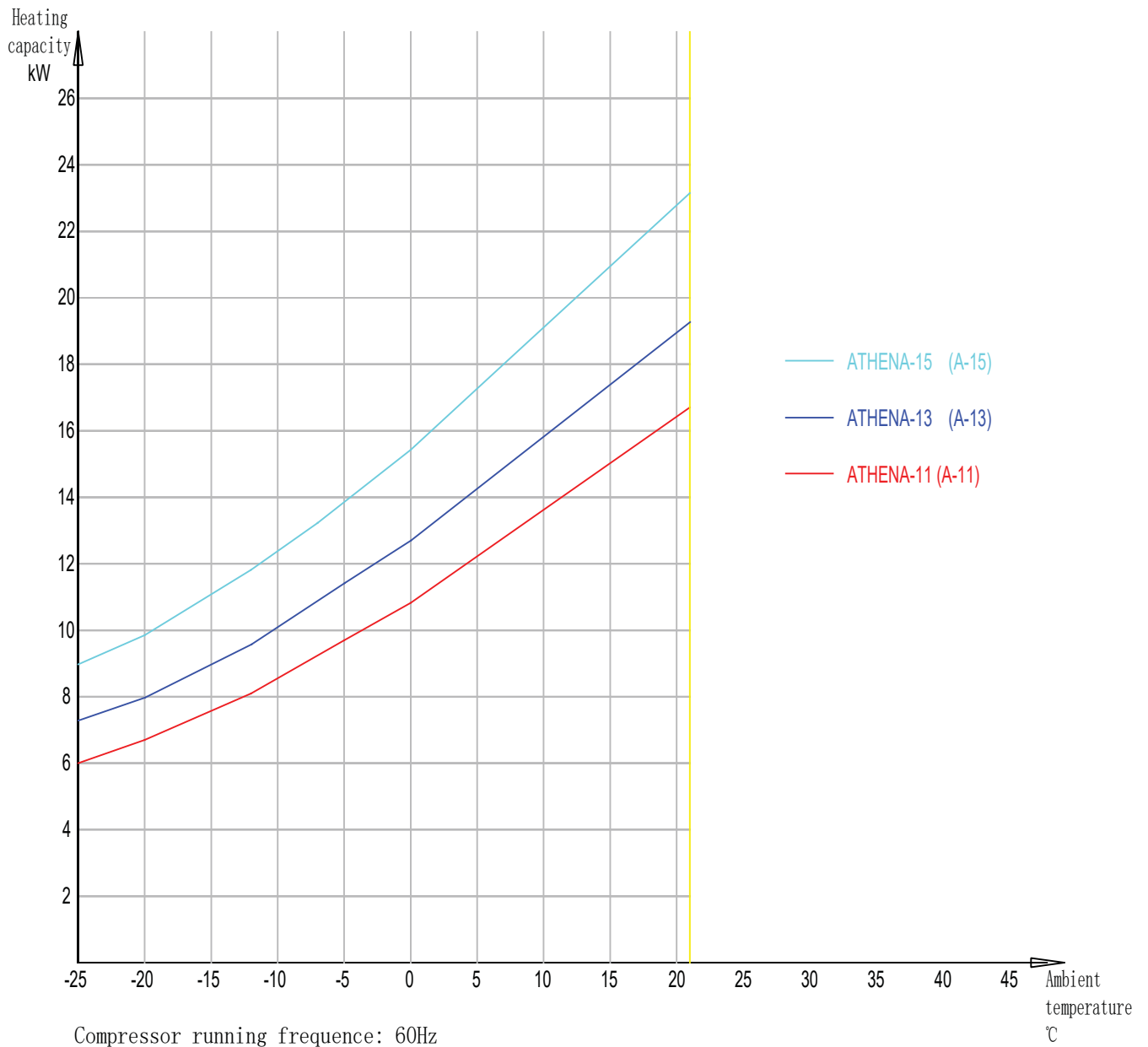
Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.

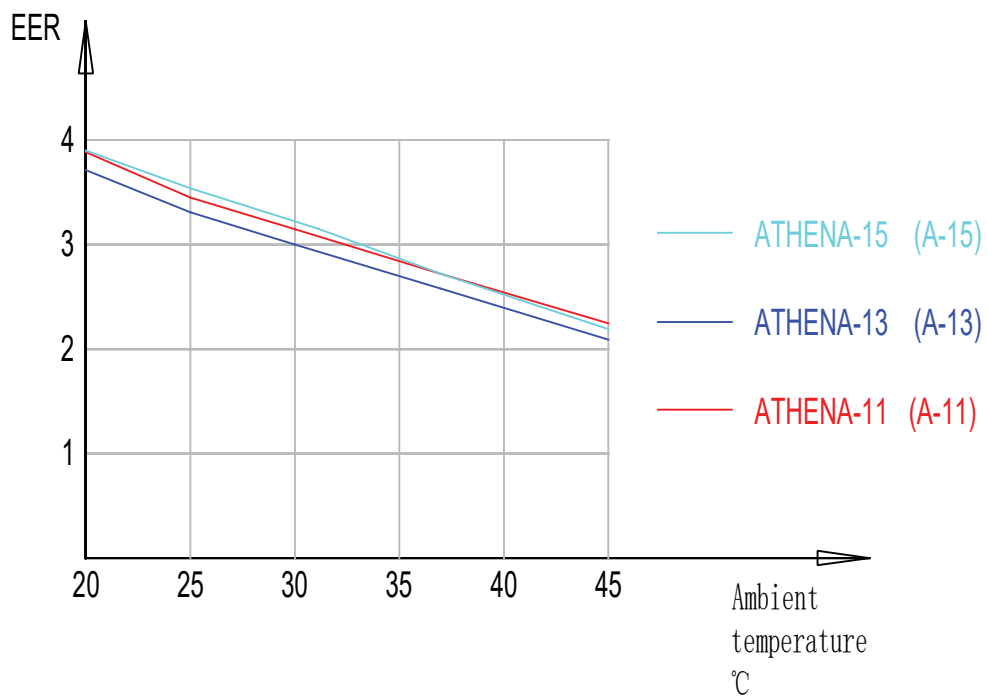
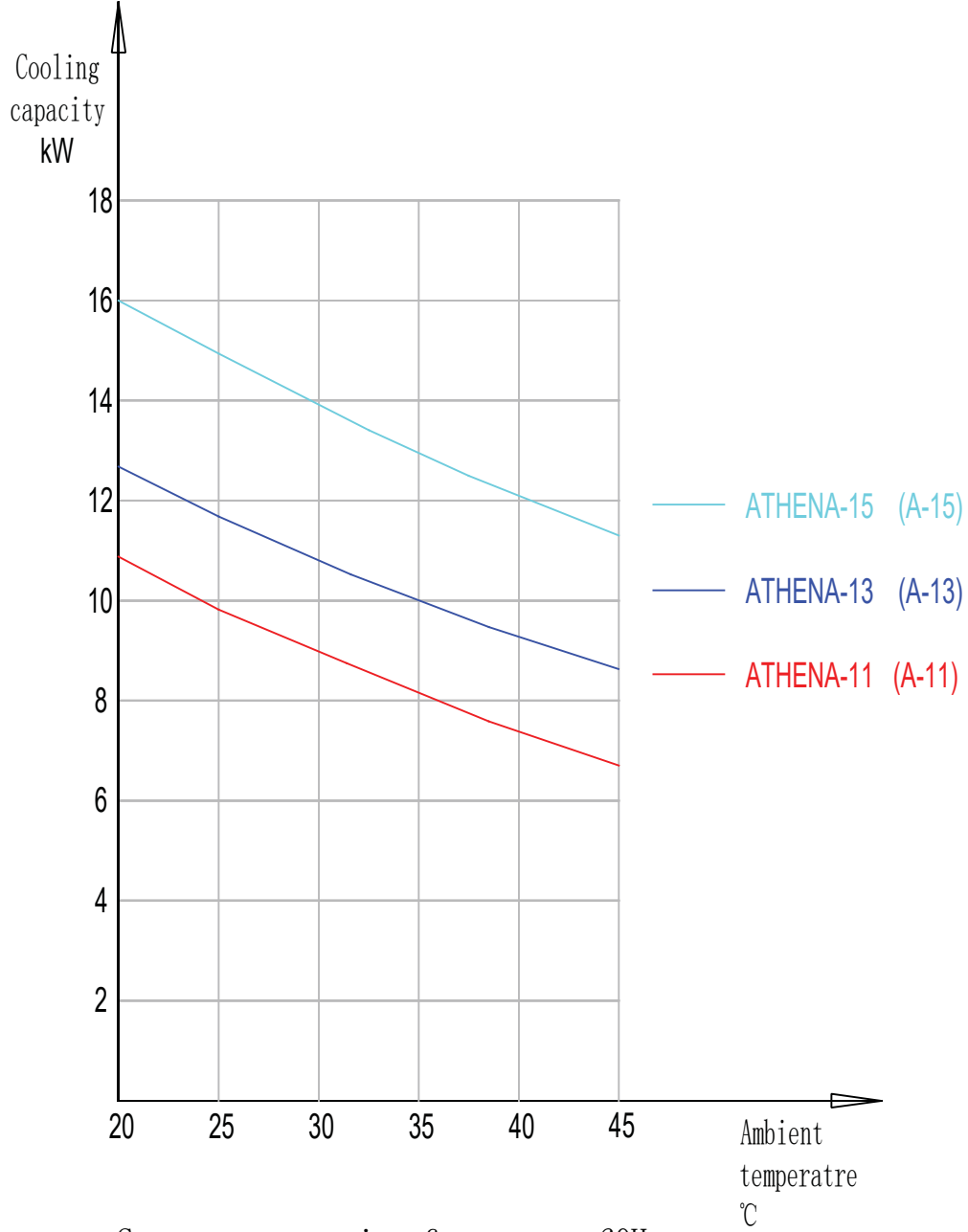
Contact your local government for information regarding the collection systems available. If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging you health and well-being.

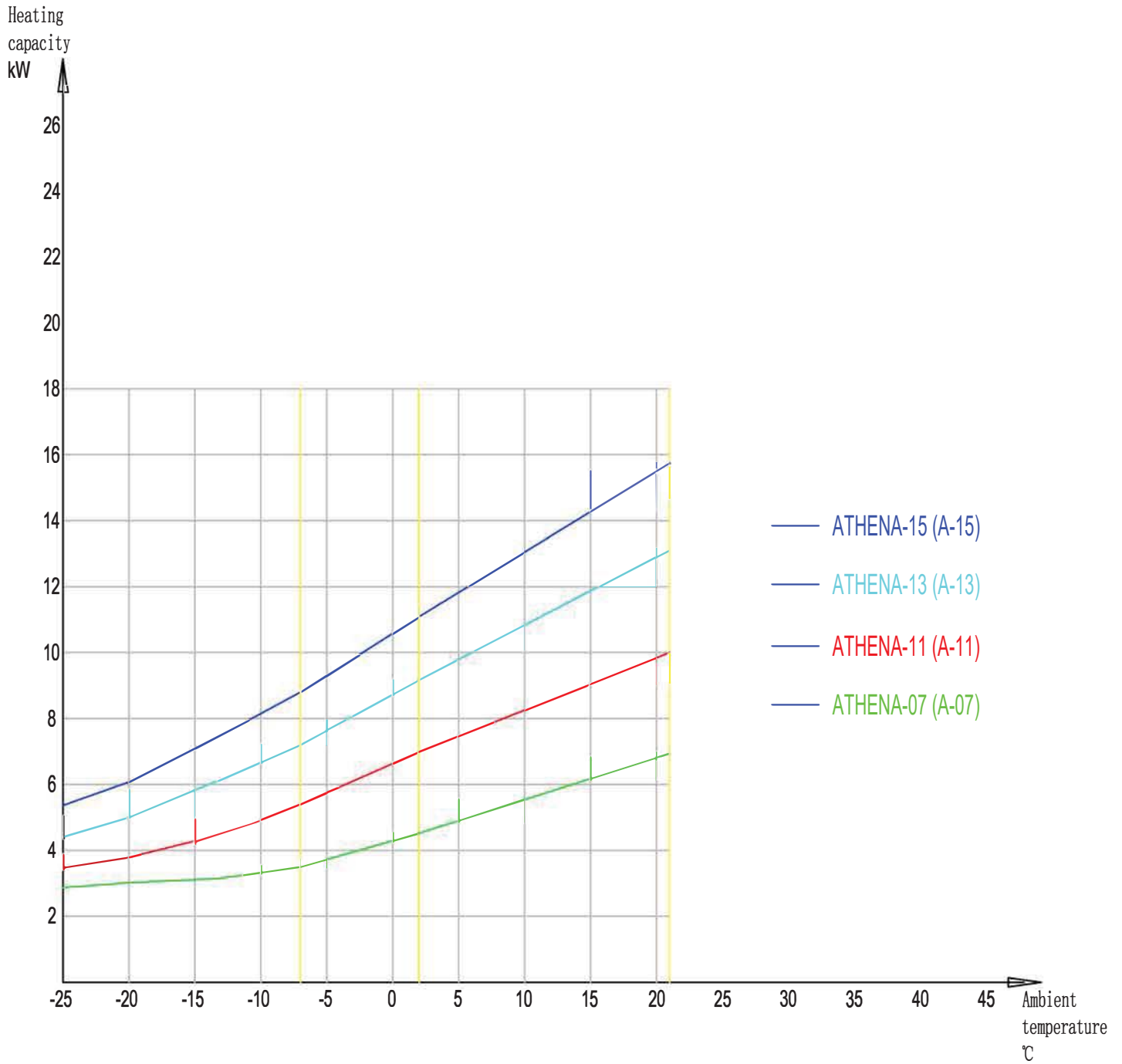


There won't be a further notice if anything changes as the unit improved.

If there is anything difference with rating label, please subject to the rating label on the unit.

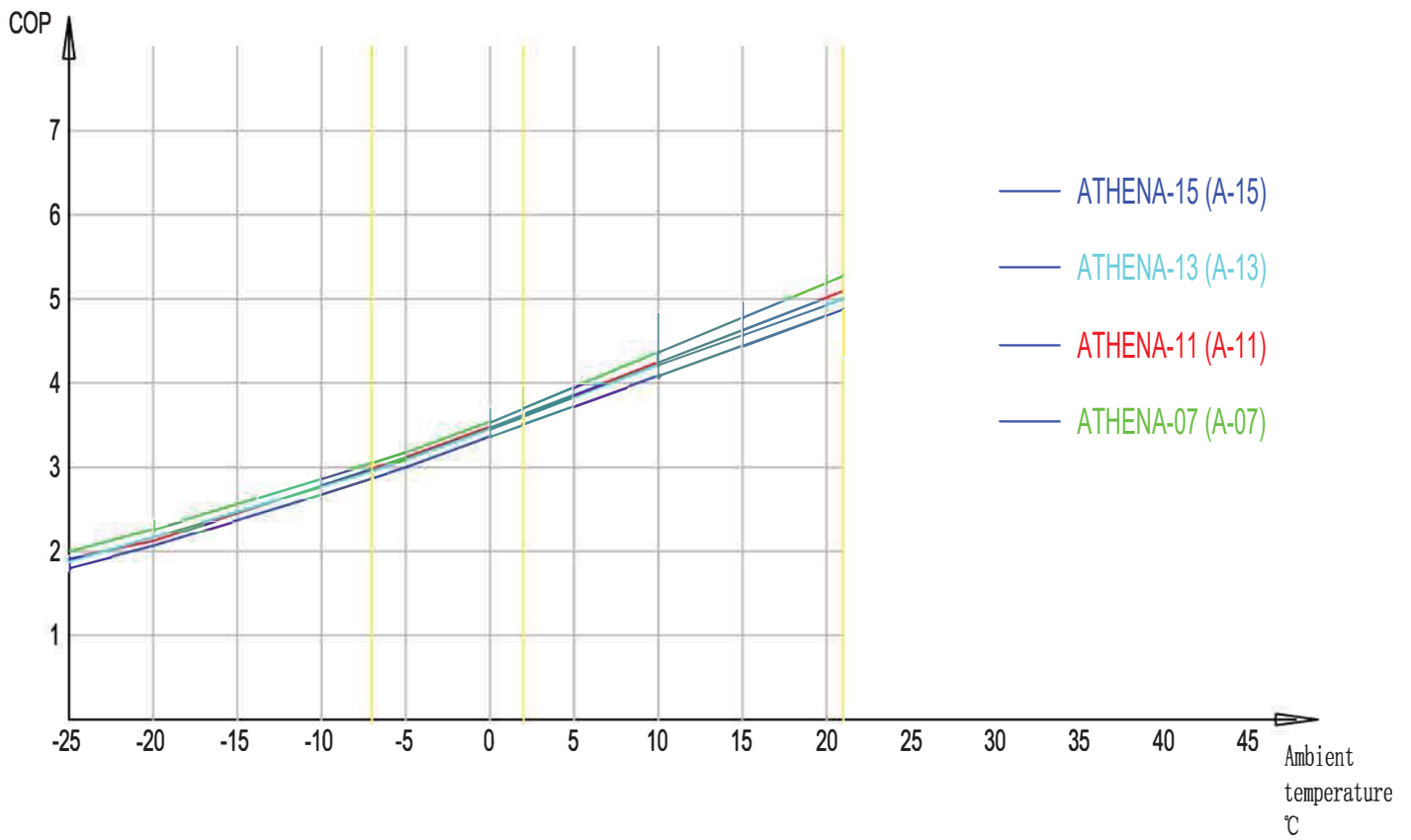




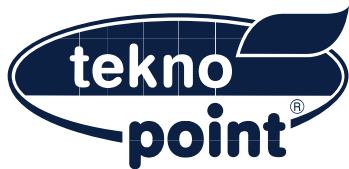


Compressor running frequency: 60Hz  
 Inlet water temperature: 40°C  
 Outlet water temperature: 45°C





Compressor running frequency: 60Hz  
 Inlet water temperature: 40°C  
 Outlet water temperature: 45°C



#### HEADQUARTERS

TEKNO POINT ITALIA S.R.L.

Via dell'Artigianato, 5 | 30020 Marcon (VE) - Italy  
Tel. 041 5020421 | Fax 041 5029514  
commerciale@teknopoint.com  
www.teknopoint.com



## IL CLIMA DI CASA MIA

MADE

IN

ITALY

Dal 1992 TEKNO POINT produce e distribuisce sistemi di climatizzazione, riscaldamento e ventilazione. Con l'obbiettivo di offrire comfort e qualità della vita per tutti i tipi di ambienti, TEKNO POINT sviluppa soluzioni innovative di climatizzazione applicabili ad edifici storici e di nuova progettazione.

Coniugando innovazione, creatività e funzionalità, con la produzione di questo catalogo "Sistemi di Climatizzazione" TEKNO POINT si conferma oggi, azienda di riferimento per progettisti, costruttori e installatori.

