SYSTÈMES

HCW

SYSTEMS

HCW SWIMMING POOL HEAT PUMP
NO REVERSIBLE

PASHW030 ~ 50 000 btu
PASHW045 ~ 80 000 btu

Installation & Instruction Manual

CONTENTS

1. PREFACE

- In order to provide our customers with quality, reliability and versatility, this product has been made to strict production standards. This manual includes all the necessary information about installation, debugging, discharging and maintenance. Please read this manual carefully before you open or maintain the unit. The manufacture of this product will not be held responsible if someone is injured or the unit is damaged, as a result of improper installation, debugging, or unnecessary maintenance. It is vital that the instruction within this manual are adhered to at all times. The unit must be installed by qualified personnel.

- The unit can only be repaired by qualified installer centre, personnel or an authorized dealer.

- Maintenance and operation must be carried out according to the recommended time and frequency, as started in this manual.

- Use genuine standard spare parts only.
  Failure to comply with these recommendations will invalidate the warranty.

- Swimming Pool Heat Pump Unit heats the swimming pool water and keeps the temperature constant. For split type unit, The indoor unit can be Discretely hidden or semi-hidden to suit a luxury house.

1. **Durable**
   The heat exchanger is made of PVC & Copper Nickel tube which can withstand prolonged exposure to swimming pool water.

2. **Installation flexibility**
   The unit can be installed outdoors or indoors.

3. **Quiet operation**
   The unit comprises an efficient rotary/scroll compressor and low-noise fan motor, which guaranteed its quiet operation.

4. **Advanced controlling**
   The unit includes micro-computer controlling, allowing all operation parameters to be set. Operation status can be displayed on the LED wire controller. Remote controller can be chosen as future option.

2. SPECIFICATION

2.1 Performance data of Swimming Pool Heat Pump Unit

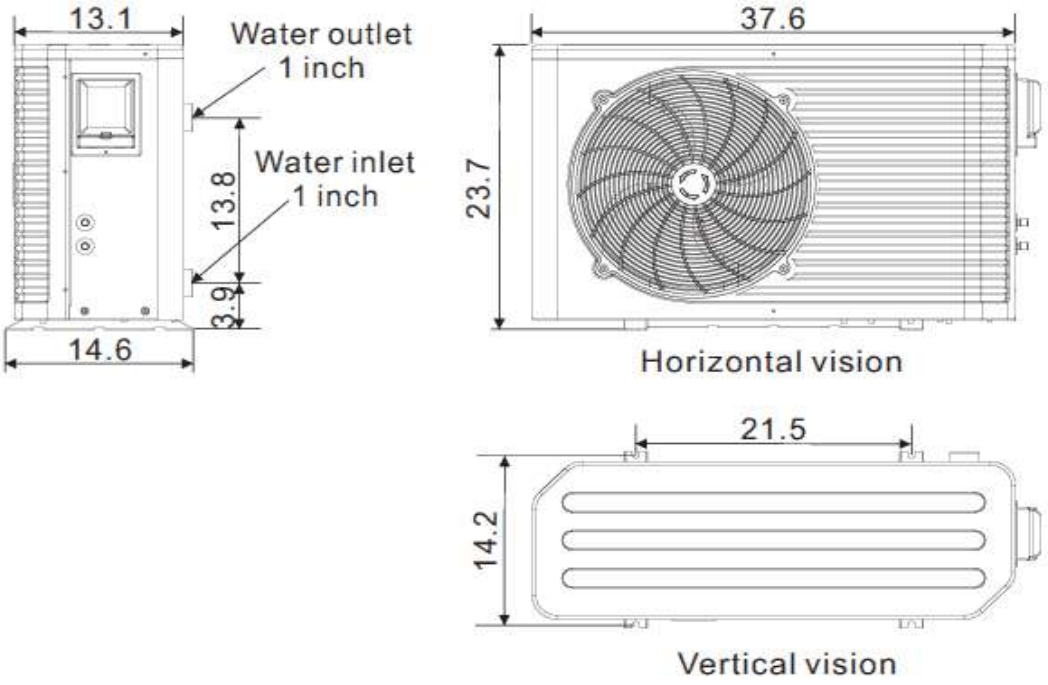
**** REFRIGERANT: R410A

UNIT		PASHW030-P	PASHW045-P
Heating Capacity	Kw	14.7	23.4
	Btu/h	50 000	80 000
Heating Power Input	kw	2.1	3.6
Running Current	A	10.2	16
Power Supply		208-230V~/60Hz	208-230V~60Hz
Compressor Quantity		1	1
Compressor		Rotary	Scroll
Fan Number		1	1
Fan Power Input	W	120	180
Fan Rotate Speed	RPM	850	850
Fan Direction		Horizontal	Horizontal
Noise	dB(A)	54	56
Water Connection	inch	1	1.5
Water Flow Volume	gal/min	30	36
Water Pressure Drop (max)	kPa	10	10
Unit Net Dimensions (L/W/H)	inch	See the drawing of the unit	
Unit Ship Dimensions (L/W/H)	inch	See package label	
Net Weight		See nameplate	
Shipping Weight		See package label	

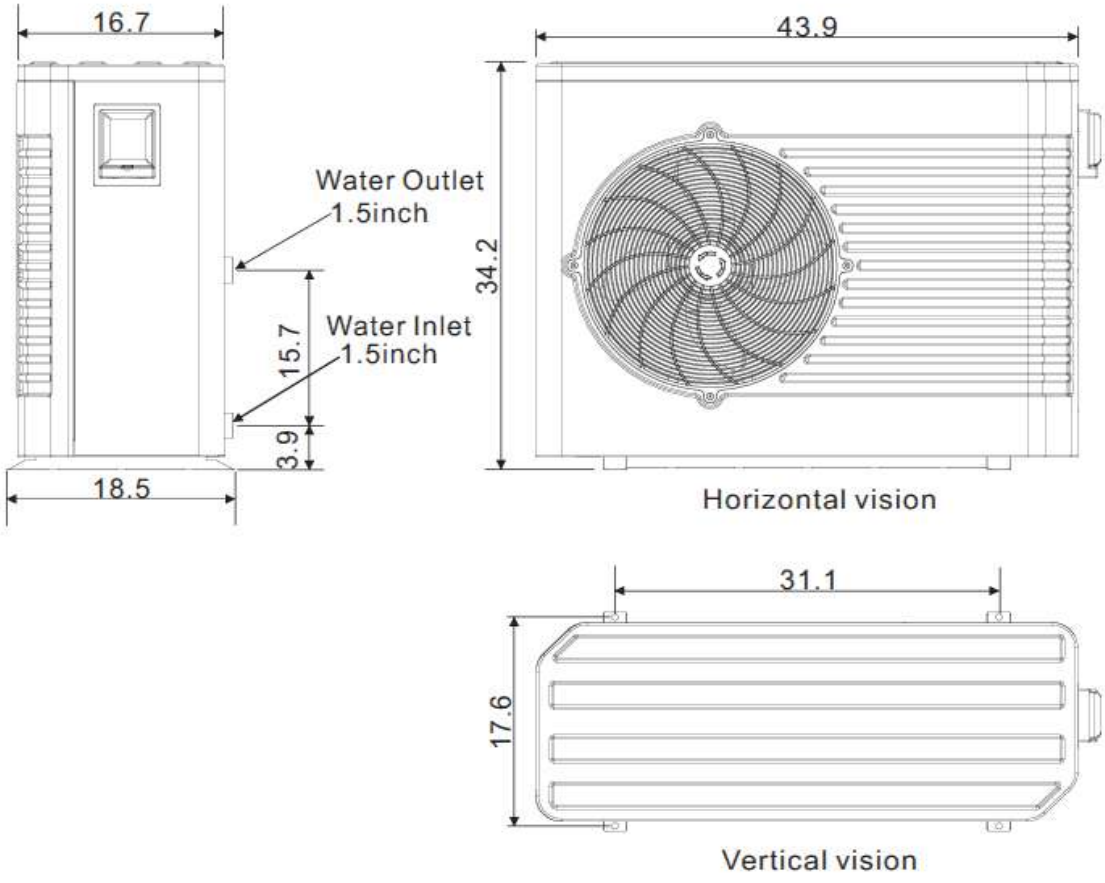
Heating : Ambient temp. (DB/WB) : 80.6°F / 71.2°F, Inlet water temp: 80°F
Heating mode : Ambient temp. Operating envelope 45°F ~ 95°F

2.2 The dimensions for Swimming Pool Heat Pump Unit

PASHW030-P Unit : inch

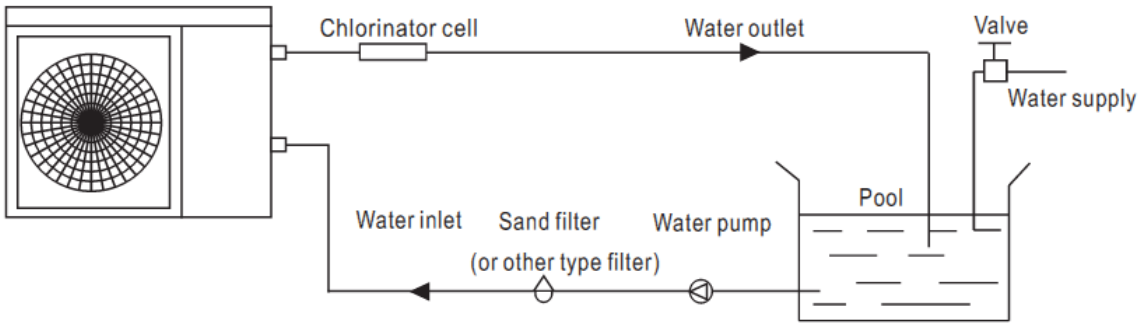


PASHW045-P Unit : inch



3. INSTALLATION AND CONNECTION

3.1 Installation illustration



Installation items:
The factory only provides the main unit and the water unit; the other items in the illustration are necessary spare parts for the water system, that provided by users or installer.

ATTENTION :

Please follow these steps when using for the first time:
1- Open valve and charge water
2- Make sure that the pump and water-in-pipe have been filled with water
3- Close the valve and start the unit

ATTN: It is necessary that the water-in-pipe is higher than the pool surface.

Installation must be performed in accordance with the requirements of NEC and CEC by authorized personnel only.

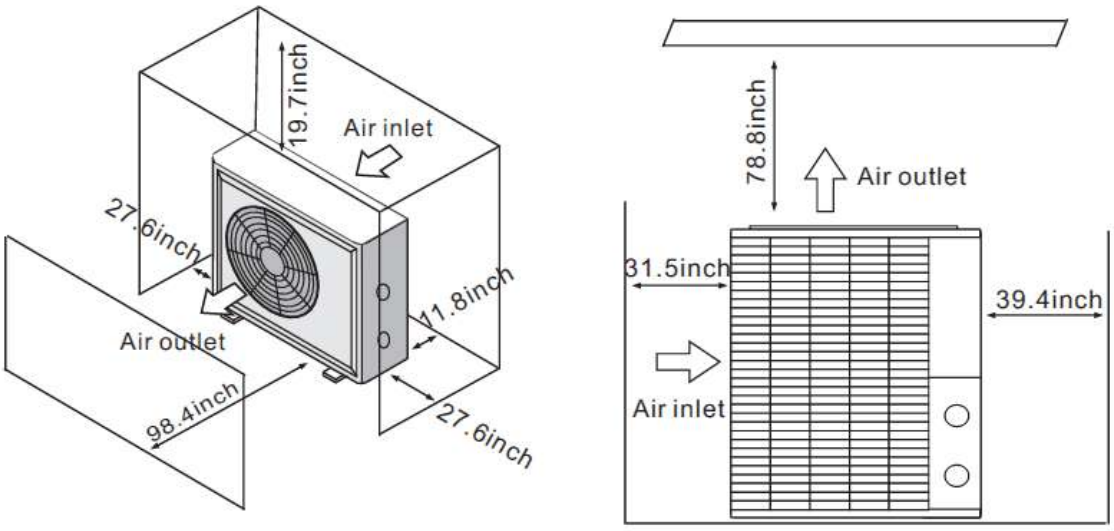
3.2 Swimming Pool Heat Pumps Location

The unit will perform well in any outdoor location provided that the following three factors are presented:

1. Fresh ~ 2. Electricity ~ 3. Pool filter piping

The unit may be installed virtually anywhere outdoor. For indoor pools please consult the supplier. Unlike a gas heater, it has no draft or pilot light problem in a windy area.

DO NOT place the unit in an enclosed area with a limited air volume, where the units discharge air will be re-circulated.
DO NOT place the unit to shrubs which can block air inlet. These locations deny the unit of a continuous source of fresh air which reduces it efficiency and may prevent adequate heat delivery.



3.3 How Close To Your Pool?

Normally, the pool heat pump is installed within 7.5 meters of the pool. The longer the distance from the pool, the greater the heat loss from the piping. For the most part, the piping is buried. Therefore, the heat loss is minimal for runs of to 15 meters (15 meters to and from the pump = 30 meters total), unless the ground is wet or the water table is high. A very rough estimate of heat loss per 30 meters is 0.6 kW-hour, (2000 BTU) for every 5˚C difference in temperature between the pool water and the ground surrounding the pipe, which translates to about 3% increase in run time.

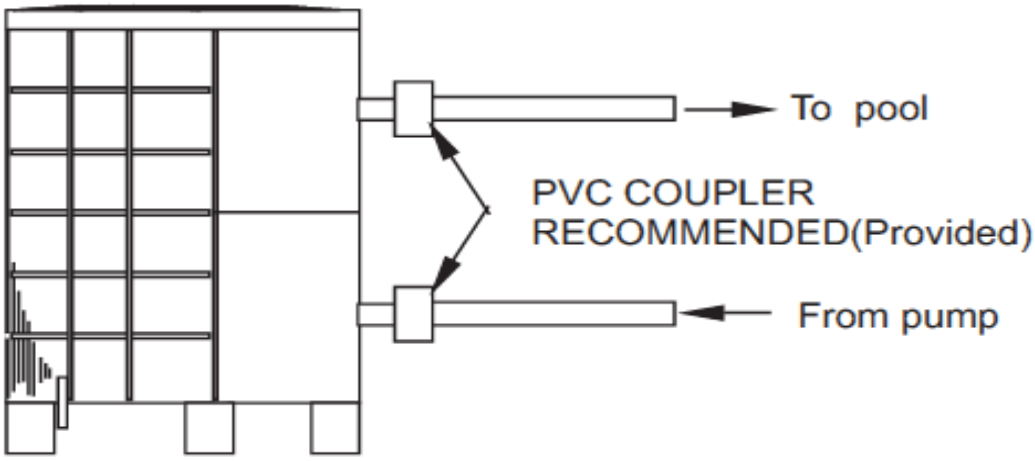
3.2 Swimming Pool Heat Pumps Plumbing

The Swimming Pool Heat Pump exclusive rated flow titanium heat exchanger requires no special plumbing arrangements except bypass (please set the flow rate according to the nameplate). The water pressure drop in less than 10 kPa at max. Flow rate. Since there is no residual heat or flame Temperature, The unit does not need copper heat sink piping. PVC pipe can be run straight into the unit.

Location : Connect the unit in the pool pump discharge (return) line downstream of all filter and pool pumps, and upstream of any chlorinators, ozonators or chemical pumps.

Standard model have slip glue fittings which accept 1.5 inch PVC pipe for connection to the pool or spa filtration piping. When the water connector is 1 inch to 1.5 inch you can plumb 1.5 inch PVC piping straight into the unit.

Give serious consideration to adding a quick coupler fitting at the unit inlet and outlet to allow easy draining od unit for winterizing and to provide easier access should servicing be required.



Condensation: Since the Heat pump cools down the air about 4~5˚C, water may condense on the fins of the horseshoe shaped evaporator. If the relative humidity is very high, this could be as much as several liters an hour. The water will run down the fins into the basepan and drain out through the barbed plastic condensation drain fitting on the side of the basepan. This fitting is designed to accept ½ inch clear vinyl tubing which can be pushed on by hand and run to suitable drain. It is easy to mistake the condensation for a water leak inside the heat pump.

NB: A quick way to verify that the water is condensation is to shut off the unit and keep the pool pump running. If the water stops running out the basepan. It is condensation. AN EVEN QUICKER WAY is to TEST THE DRAIN WATER FOR CHLORINE – if there no chlorine present, then it's condensation

3.5 Swimming Pool Heat Pumps Electrical Wiring

NOTE: Although the unit heat exchanger is electrically isolated from the rest of the unit, it simply prevents the flow of electricity to or from the pool water. Grounding the unit is still required to protect you against short circuits inside the unit. Bonding is also required.

The unit has a separate molded-in junction box with a standard electrical conduit nipple already in place. Just remove the screws and the front panel, feed your supply lines in through the conduit nipple and wire-nut the electric supply wires to the three connections already in the junction box (four connections if three phase). To complete electrical hookup, connect Heat Pump by electrical conduit, UF cable or other suitable means as specified (as permitted by local electrical authorities) to a dedicated AC power supply branch circuit equipped with the proper circuit breaker, disconnect or time delay fuse protection.

Disconnect – A disconnect means (circuit breaker, fuse or un-fused switch) should be located within sight of and readily accessible from the unit. This is common practice on commercial and residential air conditioners and heat pumps. It prevents remotely-energi-zing unattended equipment and permits turning off power at the unit while the unit is being serviced.

3.6 Initial Startup of the Unit

NOTE: In order for the unit to heat the pool or spa, the filter pump must be running to circulate water through the heat exchanger.

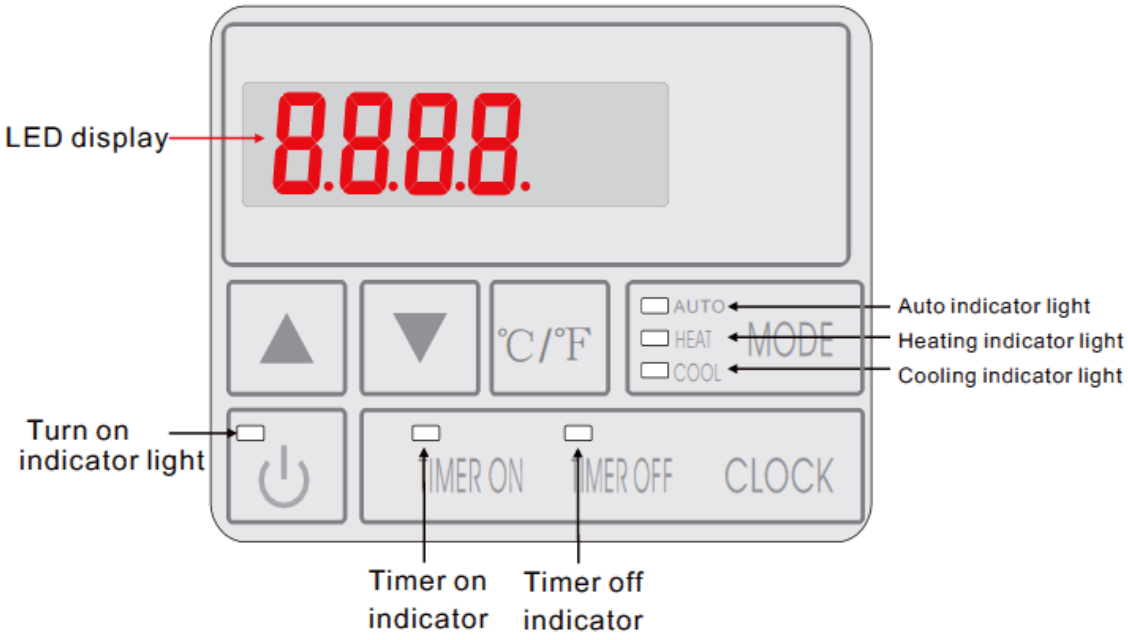
Startup Procedure – After installation is completed, you should follow these steps:

1. Turn on your filter pump. Check for water leaks and verify flow to and from the pool.
2. Turn on electrical power supply to the unit, then press the key ON/OFF of wire controller. It should start in several seconds.
3. After running a few minutes make sure the air leaving the top (side) of the unit is cooler (Between 5-10˚C)
4. With the unit operating turn the filter pump off. The unit should also turn of automatically.
5. Allow the unit and pool pump to run 24 hours per day until desired pool water temperature is reached. When the water-in temperature reach setting. The unit just shuts off. The unit will now automatically restart (as long as your pool pump is running) when the pool temperature drops more than 2˚C bellow set temperature

Time Delay – The unit is equipped with a 3 minutes built-in solid state restart delay included to protect control circuit components and to eliminate restart cycling and contactor chatter. This time delay will automatically restart the unit approximately 3 minutes after each control circuit interruption. Even a brief power interruption will activate the solid state 3 minute restart delay and prevent the unit from starting until the 5 minute countdown is completed. Power interruptions during the delay period will have no effect on the 3 minute countdown.

4. USAGE AND OPERATION

4.1 Function of wire controller



Key	Key Name	Key function
⏻	ON/OFF	Pressure this key to turn on/off the unit
MODE	Mode	Press this key to change the working mode
CLOCK	Timer	Press this key to set system time
˚C/˚F	Choose key	Press this key to choose the Celsius degree or Fahrenheit degree
TIMER ON	TIMER ON	Press this key to set timer-on
TIMER OFF	TIMER OFF	Press this key to set timer
▲	Up	Press this key to select the upward option or increase the parameter value.
▼	Down	Press this key to select the downward option or decrease the parameter value.

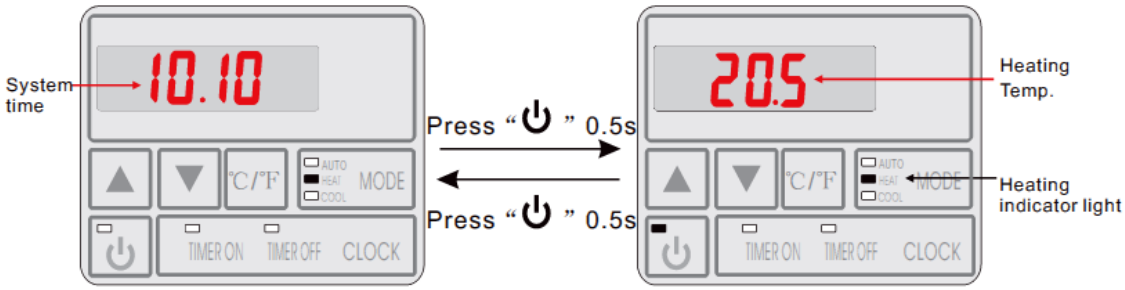
4. USAGE AND OPERATION

4.2 Usage of wire controller

4.2.1 Turn ON/OFF the unit

When the unit is off, press the key "⏻" 0.5s to turned on the unit

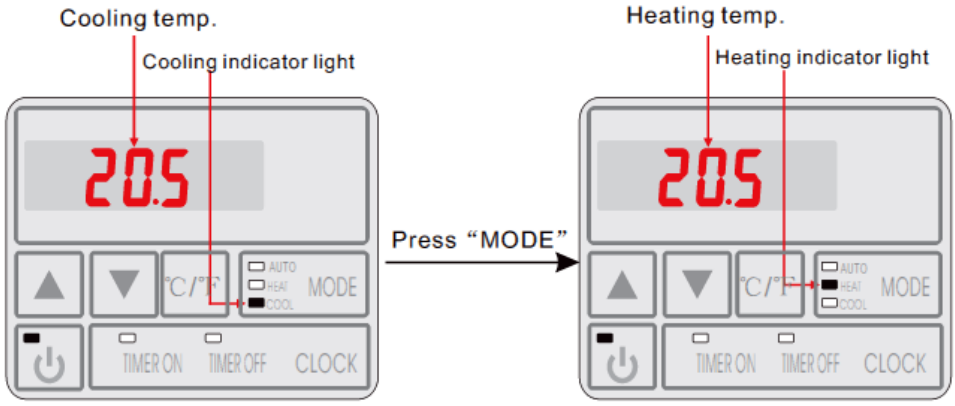
When the unit is on, press the key "⏻" 0.5s to show down the unit



4.2.2 Mode switch

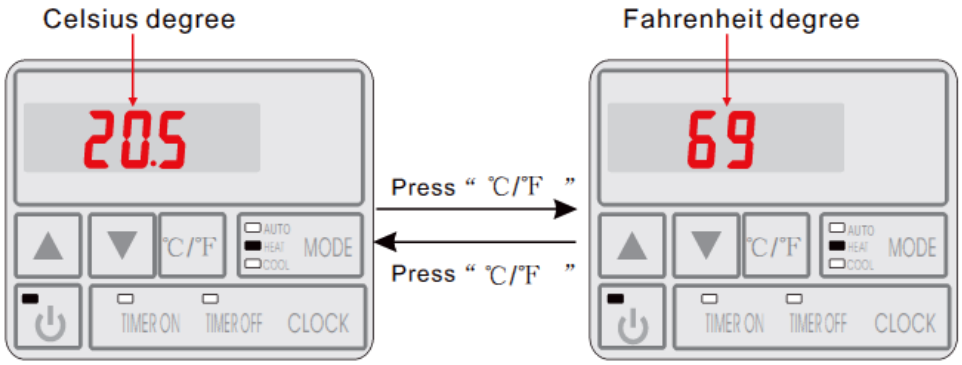
You can choose unit mode (The function is only available for heating & cooling unit). In the unit on or off state, you can choose cooling, heating or automatic mode by pressing "MODE" button.

Attention : if the unit is for heating only or coling only, the mode switching operation is invalid



4.2.3 Temperature selection

Choose display type of unit temperature, when the unit is on, press mode button ˚C/˚F And choose Celsius degree or Fahrenheit degree freely.



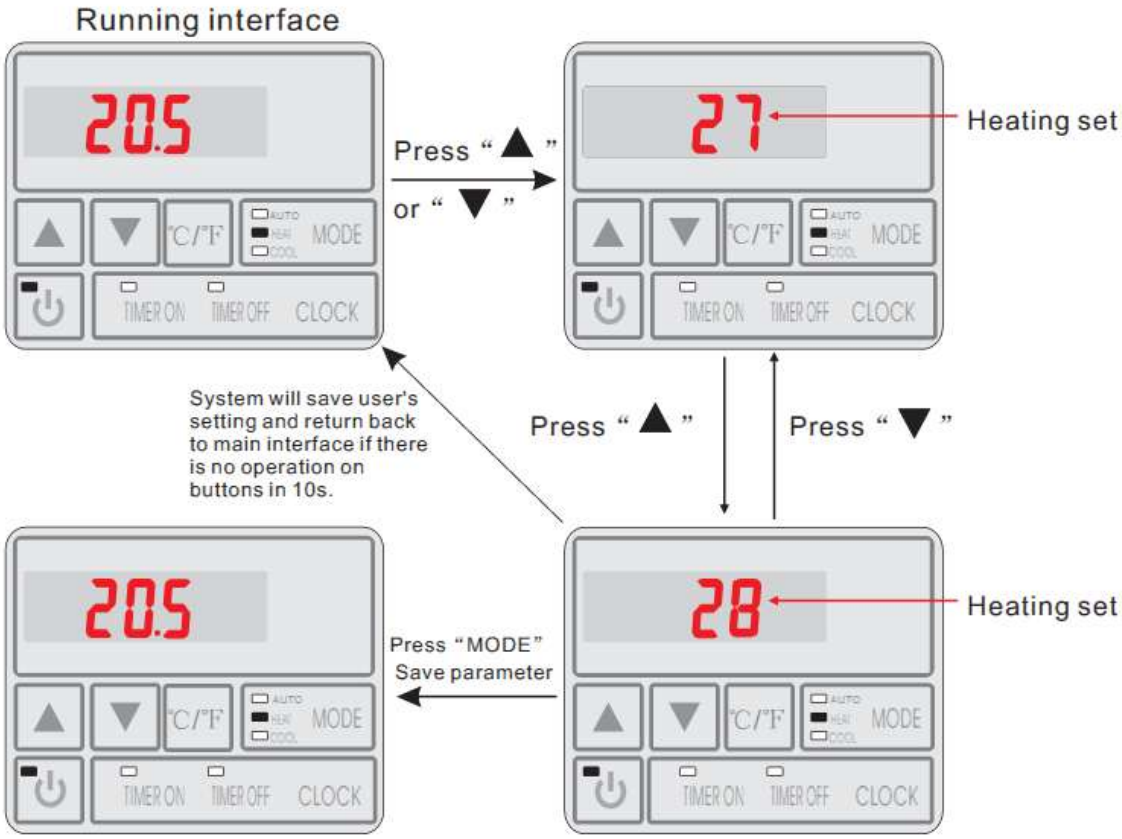
4. USAGE AND OPERATION

4.2.4 Setting temperature

In main interface, press "▲ " or " ▼ " and the current mode target-temprature flashes, then press "▲ " to increase the temp. Value, or press " ▼" to decrease it. Press "MODE" can save setting parameter and back to the main interface.

Press "⏻" can not save setting parameter but back to the main interface.

ATTENTION : If there is no opearation fir 5s, system would remember parameter setting and back to the main interface.



4. USAGE AND OPERATION

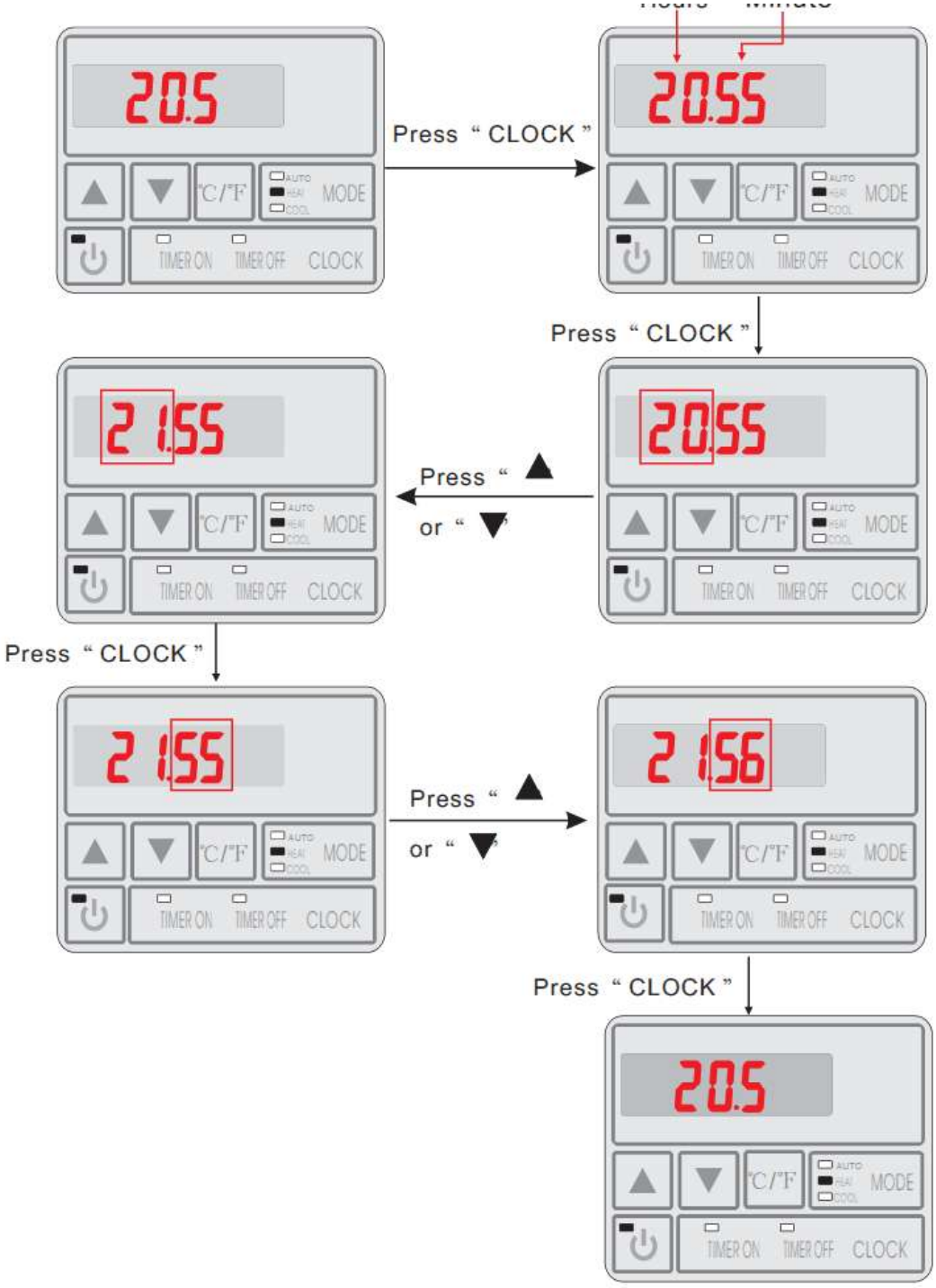
4.2.5 Clock setting

In the main interface, press "CLOCK" twice. Hours start to flashing, and press " ▲ " to increase value or press " ▼ " to decrease value, and press "CLOCK" to setting. At the same time, minute start to flashing, press " ▲ " to increase value or press " ▼ " to decrease value, and press "CLOCK" to save setting.

Press "⏻" can not save setting parameter and back to main interface.

ATTENTION : If there is no operation for 5s system will remember parameter setting and back to the main interface.

Hours Minute



4. USAGE AND OPERATION

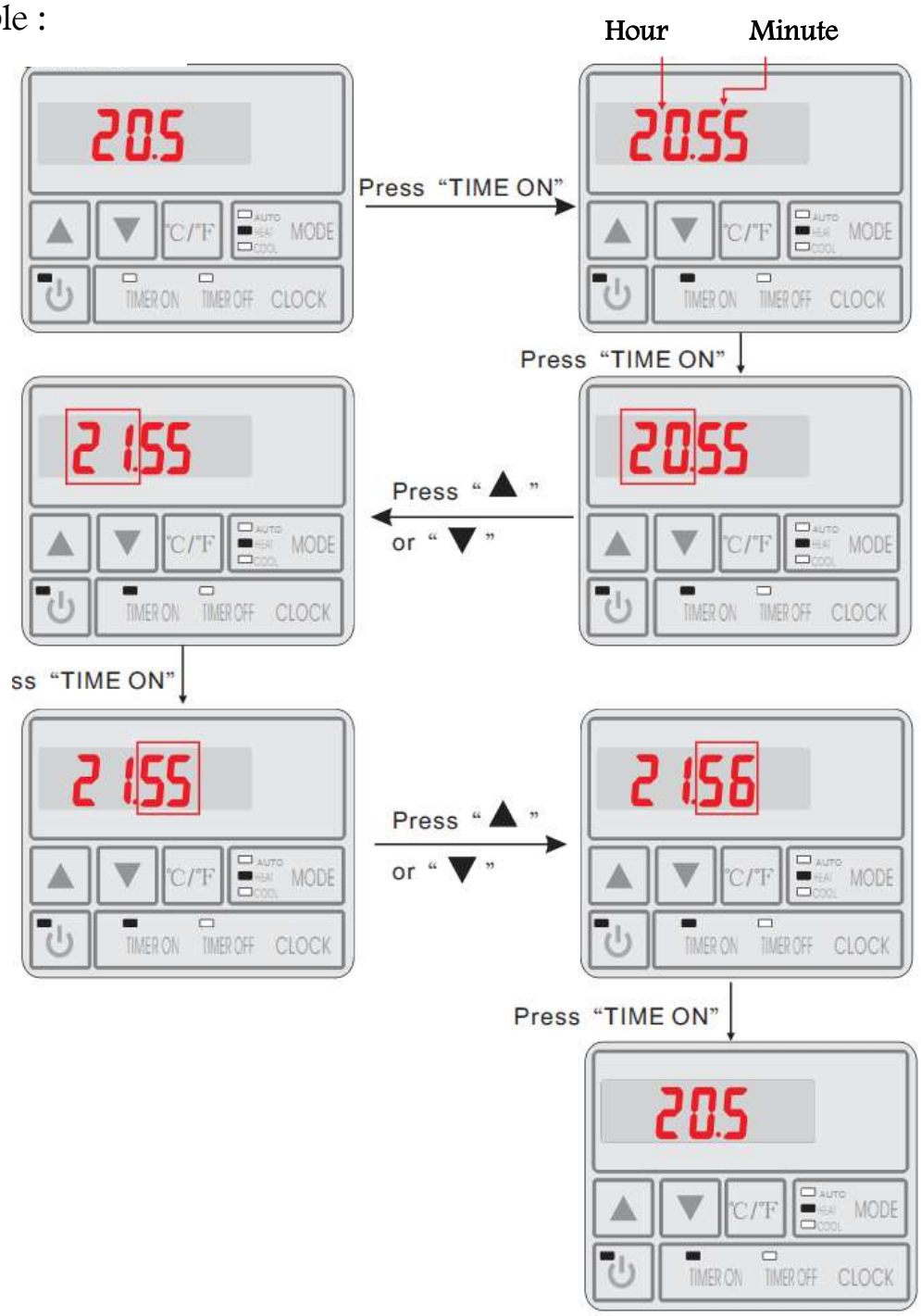
4.2.6 Timer setting

(1) You can set the timer of the unit on

In the on or off state, press "TIMER ON" to enter timer-on interface. Press "TIMER ON" And time-hour-bit flashing. Press " ▲ " or " ▼ " to change the hours value. Press "TIMER ON" to save hours. At the same time, minutes-bit flashing. Press " ▲ " or " ▼ " to change the minute value. Press "TIMER ON" to save and exit. At this time, "TIMER ON" LED light is on. (The time-off setting is to pressn"TIMER

OFF", the other operation is the same as timer-on).

For example :

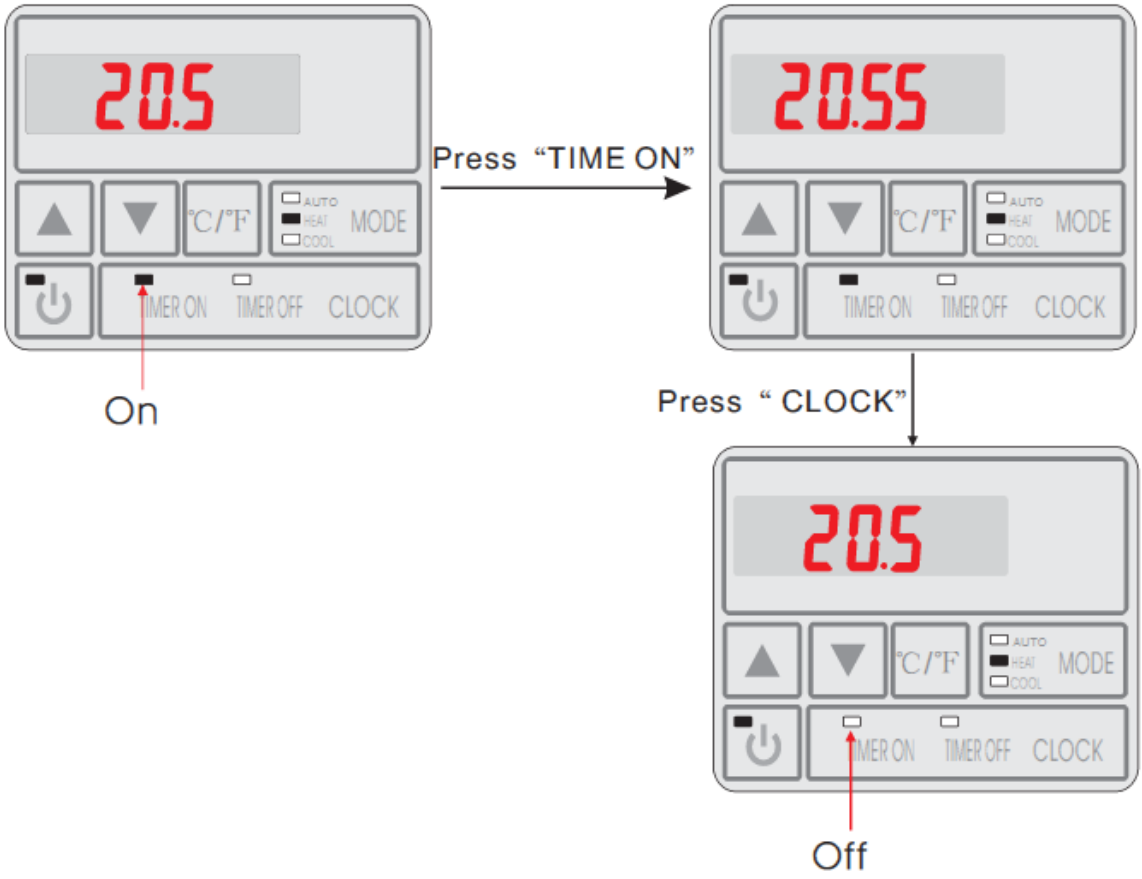


4. USAGE AND OPERATION

(2) The setting of cancelling the timer

If there is no need to set timer on or timer off, the timer setting can be cancelled. At unit on or off state, press "TIMER ON" to enter timer-on setting interface, then press "⏻" to cancel the timer-on, at this timer, the timer-on light turn off.

(Press "TIMER OFF" to enter timer-off setting interface, then press "⏻" to cancel the timer-off, at this timer, the timer-off light turn off.



4.2.6 Keyboard Lock

To avoid mis-operation, please lock the controller after parameter setting. At the main interface, pressing "⏻" for 5 seconds, when hearing one sound, the keyboard is locked. When the keyboard is locked, pressin "⏻" for 5 seconds, when hearing one sound, the keyboard lock is open.

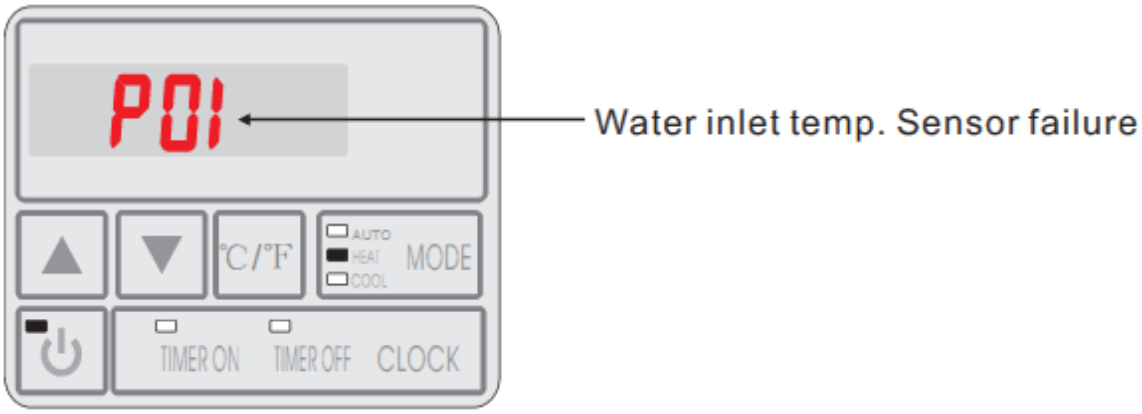
NOTE: When the unit is alarming state, the key lock can be removed automaticly.

4. USAGE AND OPERATION

4.2.8 Malfunction display

There will be malfunction code showing on the controller screen when relative malfunction occurs. You can refer to the malfunction table to find out the failure cause and solution.

For example:



4.3 Parameter table

Digit	meaning	Range	Default	Adjust (yes/no)
R01	Return water temp. Setting (cooling model)		81°F	Adjustable
R02	Return water temp. Setting (heatin model)		81°F	Adjustable
R03	Return water temp. Setting (auto mode)		81°F	Adjustable
T02	Inlet water temp.		True testing figure	
T03	Outlet water temp.		True testing figure	
T04	Pipe temp.		True testing figure	
T05	Ambient temp.		True testing figure	
T01	Evaporator temp.		True testing figure	

5. MAINTENANCE AND INSPECTION

5.1 Maintenance

- Check the water supply device and the release often. You should avoid the condition of no water or air entering into system, as this will influence unit's.
- The area around the unit should be dry, clean and well ventilated. Clean the side heating Exchanger regularity to maintain good heat exchange as conserve energy.

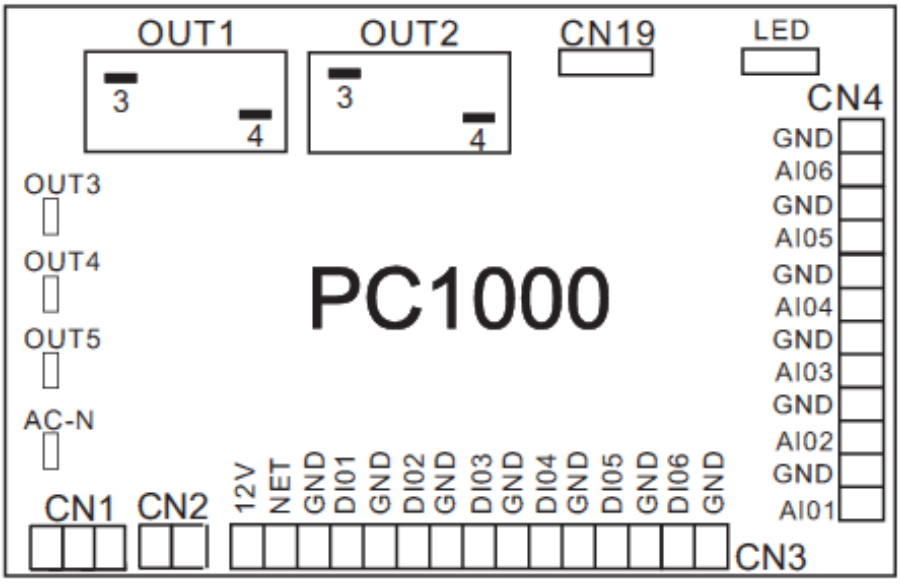
- ❖ The operation pressure of the refrigerant system should only be serviced by a certified technician.
- ❖ Check the power supply and cable connection often. Should the unit begin to operate abnormally switch it off and contact the qualified technician.
- ❖ Discharge all water in the water pump and water system, so that freezing of the water in the pump or water system does not occur. You should discharge the water at the bottom of water pump if the unit will not be used for an extended period of time. You should check the unit thoroughly and fill the system with water fully before using it for the first time after a prolonged of no usage.

5.2 Trouble Shooting Guide

Malfunction	LED Controller	Reason	Resolution
Water inlet temp. Sensor failure	P01	The sensor is open or short circuit	Check or change the sensor
Water outlet temp. Sensor failure	P02	The sensor is open or short circuit	Check or change the sensor
Coil sensor failure	P05	The sensor is open or short circuit	Check or change the sensor
Ambient sensor falure	P04	The sensor is open or short circuit	Check or change the sensor
Temp. differencial between water-in and water-out is too large	E06	Water flow volume not enough, water pressure difference is too low	Check the water flow volume or system obstruction
Anti freezing under cooling mode	E07	Outlet water is too low	Check the water flow volume or outlet water temp. sensor
The first class freezing protection in winter	E19	Ambient or inlet water temp. is too low	
The second class freezing protection in winter	E29	Ambient or inlet water temp. is too lower	
High pressure protect	E01	Gas System pressure is too high	Check through the high pressure switch and the gas system pressure to judge wheter the gas loop is blocked or the freon is suitable
Low pressure protect	E02	Gas System pressure is too low	Check through the low pressure switch and the gas system pressure to judge whether there is leaking or the freon is not enough
Flow switch failure	E03	No water/little water in water system	
3times water-in and water-out temp. difference protection in 30 minutes	E06	Water flow rate not enough	Check the water flow rate, or water system is jammed or not
Defrosting	Defrost Code Display		
Communication failure	E08	LED controller and the PCB connection failure	Check the wire connection

6. APPENDIX

Appendix 1: Connection of PCB illustration



Connections explanation :

No.	Symbol	Meaning
1	OUT1	Compressor of system 1 (220~230VAC)
2	OUT2	Water pump (220~230VAC)
3	OUT3	4way valve (220~230VAC)
4	OUT4	High speed of fan motor (220~230VAC)
5	OUT5	Low speed of fan motor (220~230VAC)
6	AC~N	Neutral wire
7	NET GND 12V	Wire controller
8	DI01 GND	On/Off Switch (input) (no use)
9	DI02 GND	Flow switch (input) (normal close)
10	DI03 GND	Low pressure protect
11	DI04 GND	High pressure protect
12	DI05 GND	No use
13	DI06 GND	No use
14	AI01 GND	Suction temp. (Input)
15	AI02 GND	Water in temp. (input)
16	AI03 GND	Water out temp. (inlet)
17	AI04 GND	Temp. Of Coil (input)
18	AI05 GND	Ambient temp. (input)
19	AI06 GND	No use

6. APPENDIX

Appendix 2: Cable specification

1. Single phase unit

MCA	Phase line (AWG)	Earth line (AWG)
No more than 13A	16	16
13~18A	14	14
18~25A	12	12
25~30A	10	10
30~40A	8	8
40~55A	6	6
55~70A	4	4

2. Recommend circuit breaker to use

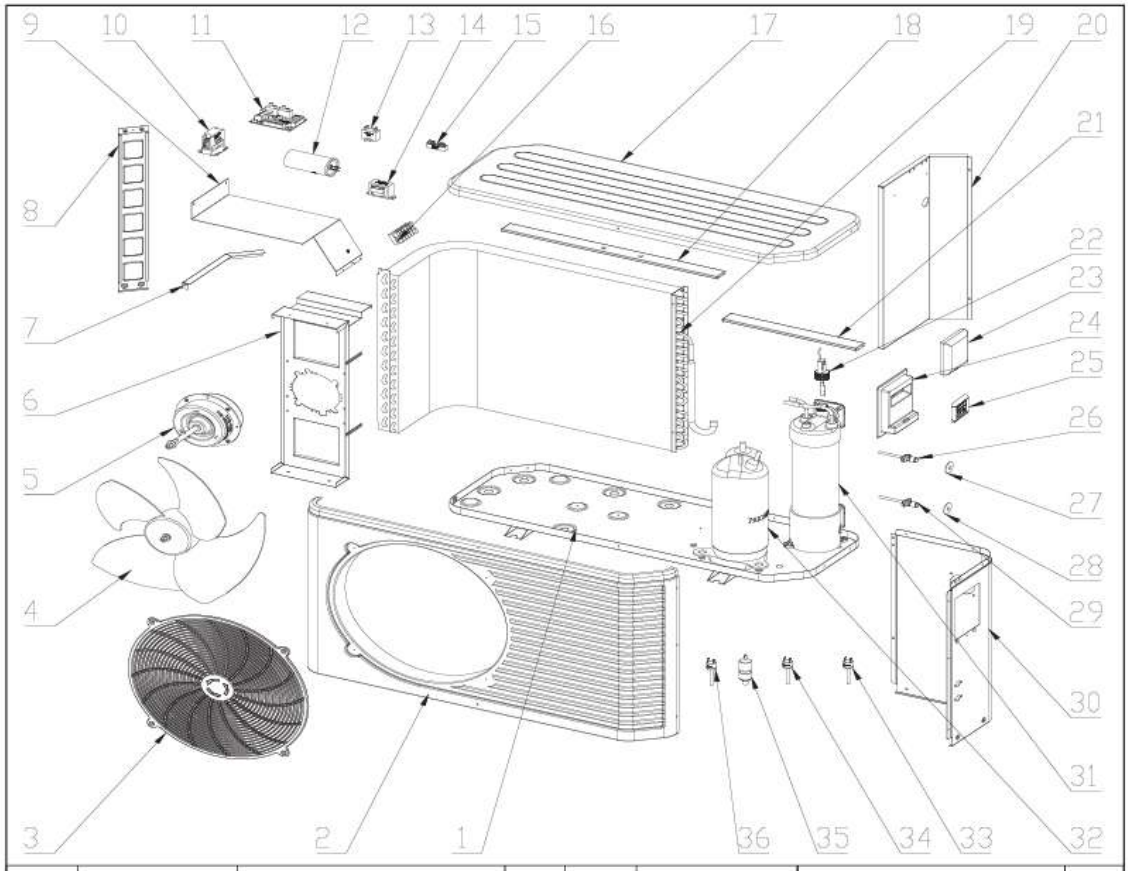
UNIT	BREAKER
PASHW030~P~JI	20A
PASHW045~P~JI	40A

When the unit be installed at outdoor, please use the cable which can against UV.

6. APPENDIX

Appendix 3: Explosive view of the unit

MODEL : PASHW030-P

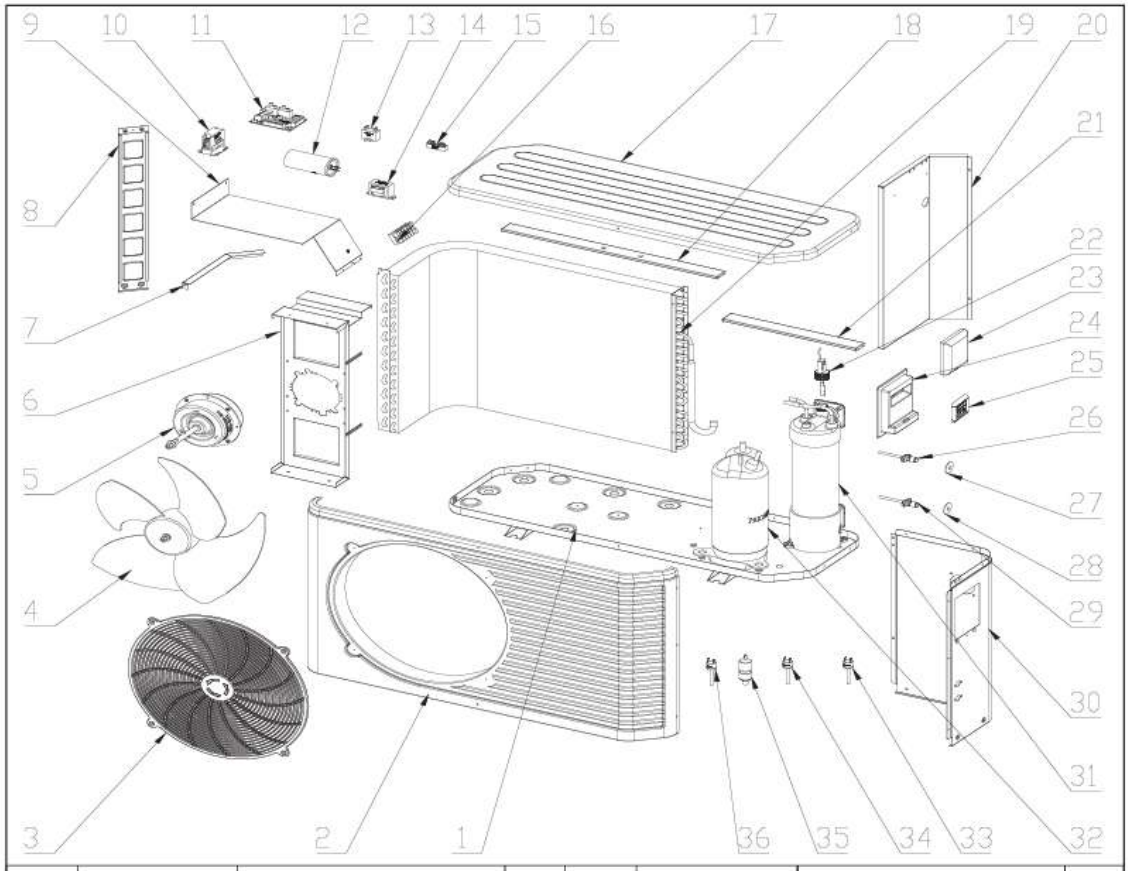


No.	Code	Parts name		No.	Code	Parts name	
1	32012-210246	Chassis		22	20000-360005	Water flow switch	
2	32012-210245	Front panel		23	2000-2111	Water-proof box	
3	20000-220188	Fan protection net		24	20000-220243	Handle	
4	3500-2701	Axial fan		25	95005-310188	LED200	
5	20000-330124	Axial fan motor		26	20000-140353	Needle valve	
6	32012-210229	Fan bracket		27	20000-260068	Rubber ring	
7	32012-210226	Top support plate 3		28	20000-260069	Rubber ring	
8	32012-210247	Left rear plate		29	20000-140353	Needle valve	
9	32012-210228	Electrical box		30	32012-210248	Right-side panel	
10	20000-360006	AC Contactor		31	32012-120033	Titanium heat exchanger	
11	95005-310145	HW200 PC 1000		32	20000-110110	compressor	
12	2000-3502	Compressor capacitor		33	2000-3603	Pressure switch	
13	2000-3501	Fan capacitor		34	20000-360059	Pressure switch	
14	20000-370006	Transformer		35	2004-1445	(R410A) Filter	
15	2000-3909	Two-seat connector		36	2001-3605	Pressure switch	
16	2001-3907	Five-seat connector					
17	32012-210244	Top Cover					
18	32012-210225	Top support plate 2					
19	32012-120029	Fin heat exchanger					
20	32012-210227	Middle separation panel					
21	32012-210224	Top support plate 1					

6. APPENDIX

Appendix 3: Explosive view of the unit

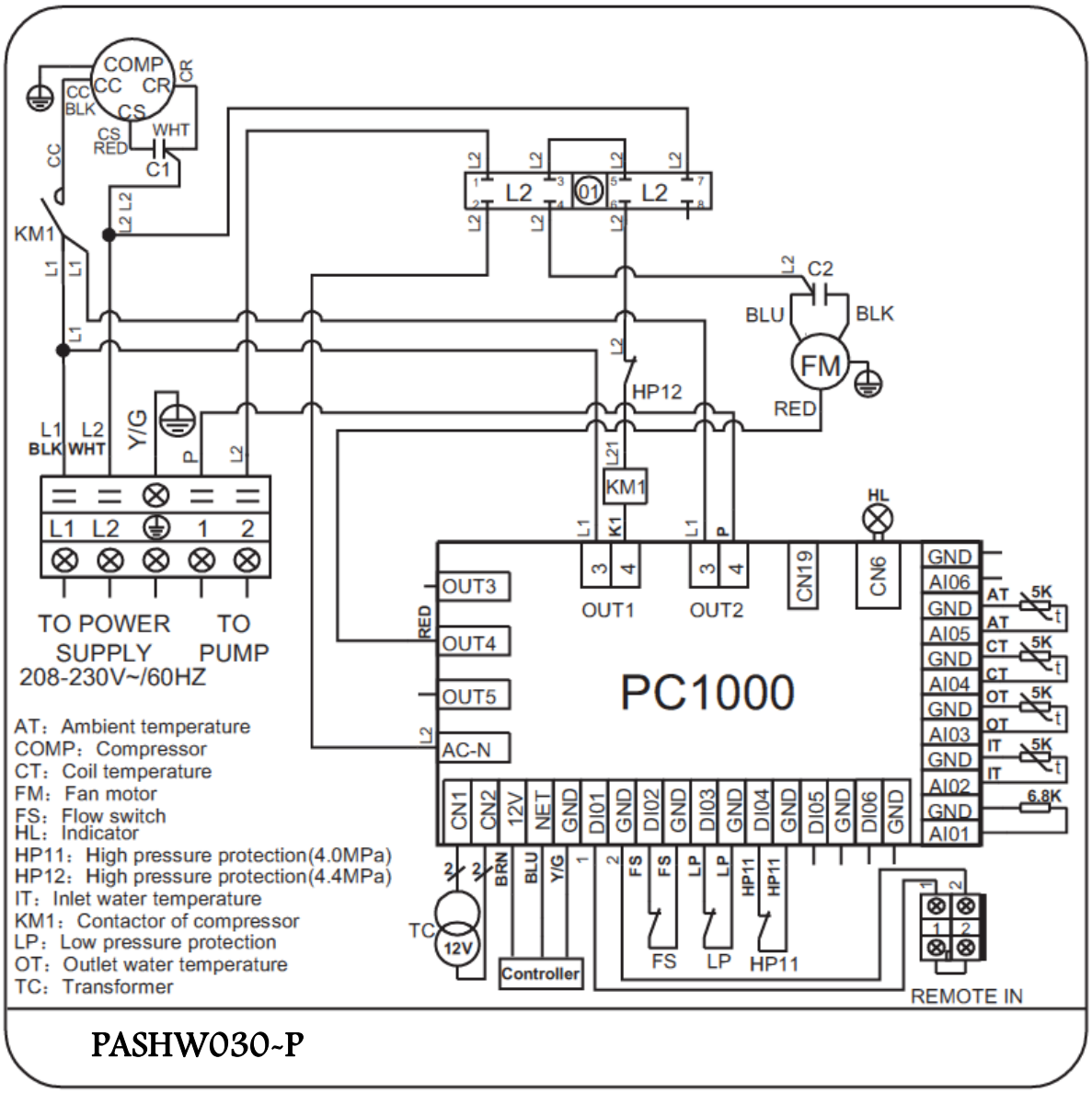
MODEL : PASHW045-P



No.	Code	Parts name		No.	Code	Parts name	
1	20000-110038	Compressor		22	2001-3906	Three-seat connector	
2	20000-140353	Needle valve		23	2000-3510	Compressor capacitor	
3	3500-1401	Liquid-gas separator		24	2000-3524	Compressor capacitor	
4	2004-1445	Filter		25	32009-210118	Cover of electrical box	
5	2000-3603	Pressure switch		26	95005-310145	Main controller	
6	2001-3605	Pressure switch		27	20000-360007	AC contactor	
7	20000-360059	Pressure switch		28	20000-360035	Start Relay	
8	32010-210015	Chasis		29	2000-3509	Fan capacitor	
9	32010-210017	Front pannel		30	20000-370006	Transformer	
10	20000-220169	Fan protection net		31	32009-210117	Electrical box	
11	20000-270004	Axial fan		32	20000-360005	Water flow switch	
12	20000-330143	Axian fan motor		33	32010-120012	Titanium heat exchanger	
13	32009-210204	Fan bracket		34	32009-120021	Fin heat exchanger	
14	32010-210018	Left rear plate					
15	32009-210202	Support plate					
16	32009-210025	Support panel					
17	32009-210205	Top cover					
18	32009-210023	Middle separation panel					
19	32010-210016	Right-side panel					
20	95005-310188	Wire controller					
21	2001-3909	Three-seat connector					

6. APPENDIX

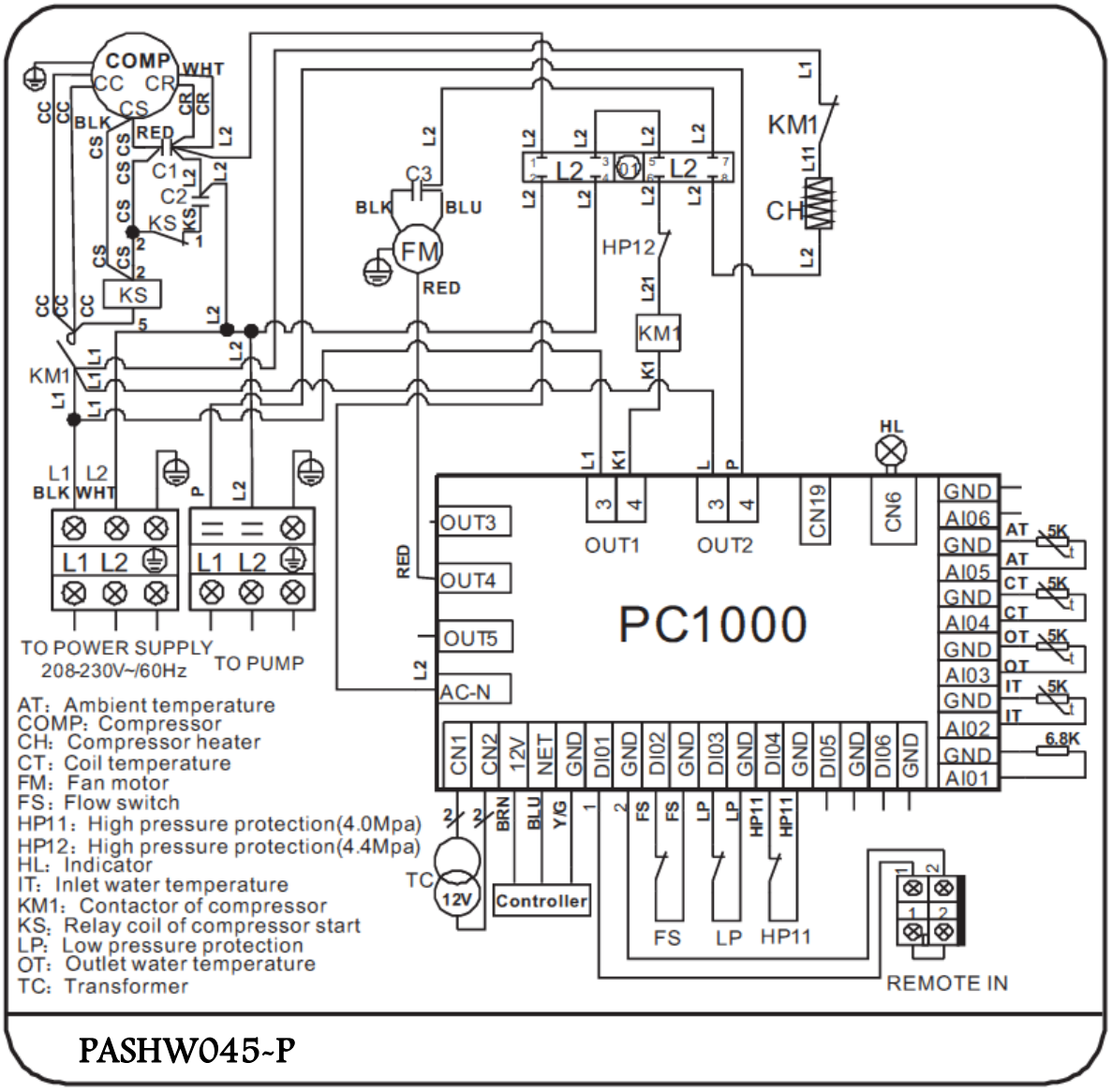
Appendix 5: Circuit diagram of the unit



PASHW030-P

6. APPENDIX

Appendix 6: Circuit diagram of the unit



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