

SWIMMING POOL HEAT PUMP UNIT

Installation & Instruction Manual

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1. PREFACE

1.1 Caution Warning

1. The unit can only be repaired by qualified installer centre personnel or an authorised dealer. (for Europe market)
2. This appliance is not intended for use by persons (including children) with reduced physical sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. (for Europe market)
Children should be supervised to ensure that they do not play with the appliance.
3. Please make sure that the unit and power connection have good earthing, otherwise may cause electrical shock.
4. If the supply cord is damaged, it must be replaced by the manufacturer or our service agent or similarly qualified person in order to avoid a hazard.
5. Directive 2002/96/EC (WEEE):
The symbol depicting a crossed-out waste bin that is underneath the appliance indicates that this product, at the end of its useful life, must be handled separately from domestic waste, must be taken to a recycling centre for electric and electronic devices or handed back to the dealer when purchasing an equivalent appliance.
6. Directive 2002/95/EC (RoHS): This product is compliant with directive 2002/95/EC (RoHS) concerning restrictions for the use of harmful substances in electric and electronic devices.
7. The unit CANNOT be installed near the flammable gas. Once there is any leakage of the gas, fire can occur.
8. Make sure that there is circuit breaker for the unit, lack of circuit breaker can lead to electrical shock or fire.
9. The heat pump located inside the unit is equipped with an over-load protection system. It does not allow for the unit to start for at least 3 minutes from a previous stoppage.
10. The unit can only be repaired by the qualified personnel of an installer center or an authorized dealer. (for North America market)
11. Installation must be performed in accordance with the NEC/CEC by authorized person only. (for North America market)
12. USE SUPPLY WIRES SUITABLE FOR 75°C.
13. Caution: Single wall heat exchanger, not suitable for potable water connection.
14. That the appliances shall be installed in accordance with national wiring regulations.
15. If a stationary appliance is not fitted with a supply cord and a plug, or with other means for disconnection from the supply mains having a condition in all poles that provide full disconnection under overvoltage category III conditions, the instructions shall state that means for disconnection must be incorporated in the fixed wiring in the fixed wiring in accordance with the wiring rules.
16. 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. 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.
17. An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.

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 instructions 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 authorised dealer.
- Maintenance and operation must be carried out according to the recommended time and frequency, as stated 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.

Our heat pump has following characteristics:

1 Durable

The heat exchanger is made of PVC & Copper Nickle 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 a low-noise fan motor, which guarantees 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.

5 working conditions

Outlet water temp. : 9 ~ 40°C

indoor temp: -15~43°C

2.SPECIFICATION

2.1 Performance data of Swimming Pool Heat Pump Unit

*** REFRIGERANT : R410A

| UNIT | | SF010P G/Evap | SF015P G/Evap |
|-----------------------------|-------------------|------------------------------|---------------|
| Heating capacity | kW | 4.5 | 6.8 |
| | Btu/h | 15300 | 23200 |
| Heating Power Input | kW | 0.9 | 1.1 |
| Running Current | A | 4.1 | 5.1 |
| Power Supply | | 230V~/50Hz | 230V~/50Hz |
| Compressor Quantity | | 1 | 1 |
| Compressor | | rotary | rotary |
| Fan Quantity | | 1 | 1 |
| Fan Power Input | W | 90 | 90 |
| Fan Rotate Speed | RPM | 850 | 850 |
| Fan Direction | | horizontal | horizontal |
| Noise | dB(A) | 47 | 47 |
| Water Connection | mm | 50 | 50 |
| Water Flow Volume | m ³ /h | 1.5 | 2.2 |
| Water Pressure Drop(max) | kPa | 4 | 4 |
| Unit Net Dimensions(L/W/H) | mm | See the drawing of the units | |
| Unit Ship Dimensions(L/W/H) | mm | See package lable | |
| Net Weight | kg | see nameplate | |
| Shipping Weight | kg | see package label | |

| UNIT | | SF020P G/Evap | SF030P G/Evap |
|-----------------------------|-------------------|------------------------------|---------------|
| Heating capacity | kW | 9.2 | 13.8 |
| | Btu/h | 31400 | 47000 |
| Heating Power Input | kW | 1.5 | 2.1 |
| Running Current | A | 6.7 | 10.4 |
| Power Supply | | 230V~/50Hz | 230V~/50Hz |
| Compressor Quantity | | 1 | 1 |
| Compressor | | rotary | rotary |
| Fan Quantity | | 1 | 1 |
| Fan Power Input | W | 120 | 120 |
| Fan Rotate Speed | RPM | 850 | 850 |
| Fan Direction | | horizontal | horizontal |
| Noise | dB(A) | 51 | 54 |
| Water Connection | mm | 50 | 50 |
| Water Flow Volume | m ³ /h | 3.0 | 4.5 |
| Water Pressure Drop(max) | kPa | 6 | 6 |
| Unit Net Dimensions(L/W/H) | mm | See the drawing of the units | |
| Unit Ship Dimensions(L/W/H) | mm | See package lable | |
| Net Weight | kg | see nameplate | |
| Shipping Weight | kg | see package label | |

Heating: Outdoor air temp:24°C/19°C, Inlet water temp:26°C

2.SPECIFICATION

2.1 Performance data of Swimming Pool Heat Pump Unit

*** REFRIGERANT : R410A (SF050P G/Evap,SF050/3P G/Evap,SF060/3P G/Evap)

*** REFRIGERANT : R407C (SF060P G/Evap)

| UNIT | | SF050P G/Evap | SF050/3P G/Evap |
|-----------------------------|-------------------|------------------------------|-----------------|
| Heating capacity | kW | 22 | 22 |
| | Btu/h | 75000 | 75000 |
| Heating Power Input | kW | 3.6 | 3.6 |
| Running Current | A | 16.1 | 7.3 |
| Power Supply | | 230V~50Hz | 380V/3N~50Hz |
| Compressor Quantity | | 1 | 1 |
| Compressor | | scroll | scroll |
| Fan Quantity | | 2 | 2 |
| Fan Power Input | W | 120×2 | 120×2 |
| Fan Rotate Speed | RPM | 850 | 850 |
| Fan Direction | | horizontal | horizontal |
| Noise | dB(A) | 56 | 56 |
| Water Connection | mm | 50 | 50 |
| Water Flow Volume | m ³ /h | 7.5 | 7.5 |
| Water Pressure Drop(max) | kPa | 20 | 20 |
| Unit Net Dimensions(L/W/H) | mm | See the drawing of the units | |
| Unit Ship Dimensions(L/W/H) | mm | See package lable | |
| Net Weight | kg | see nameplate | |
| Shipping Weight | kg | see package label | |

| UNIT | | SF060P G/Evap | SF060/3P G/Evap |
|-----------------------------|-------------------|------------------------------|-----------------|
| Heating capacity | kW | 26 | 26 |
| | Btu/h | 88000 | 88000 |
| Heating Power Input | kW | 4.3 | 4.3 |
| Running Current | A | 21.3 | 8.7 |
| Power Supply | | 230V~50Hz | 380V/3N~/50Hz |
| Compressor Quantity | | 1 | 1 |
| Compressor | | scroll | scroll |
| Fan Quantity | | 2 | 2 |
| Fan Power Input | W | 120×2 | 120×2 |
| Fan Rotate Speed | RPM | 850 | 850 |
| Fan Direction | | horizontal | horizontal |
| Noise | dB(A) | 56 | 56 |
| Water Connection | mm | 50 | 50 |
| Water Flow Volume | m ³ /h | 9 | 9 |
| Water Pressure Drop(max) | kPa | 20 | 20 |
| Unit Net Dimensions(L/W/H) | mm | See the drawing of the units | |
| Unit Ship Dimensions(L/W/H) | mm | See package lable | |
| Net Weight | kg | see nameplate | |
| Shipping Weight | kg | see package label | |

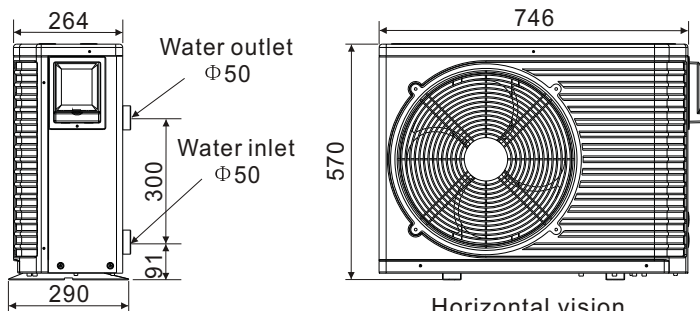
Heating: Outdoor air temp:24℃/19℃, Inlet water temp:26℃

2.SPECIFICATION

2.2 The dimensions for Swimming Pool Heat Pump Unit

Model: SF010P G/Evap

unit: mm

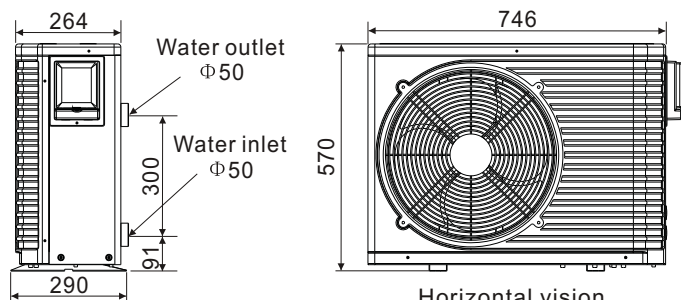


Horizontal vision

Vertical vision

Model: SF015P G/Evap

unit: mm



Horizontal vision

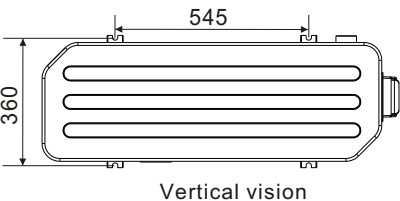
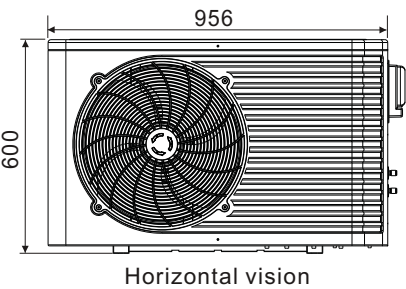
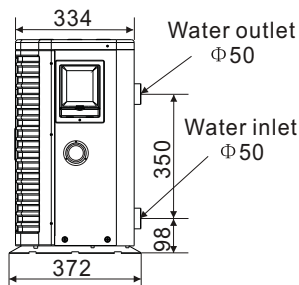
Vertical vision

2.SPECIFICATION

2.2 The dimensions for Swimming Pool Heat Pump Unit

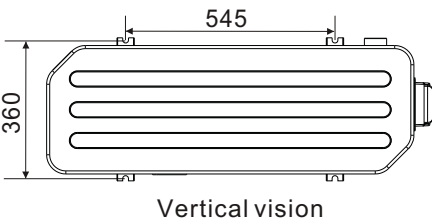
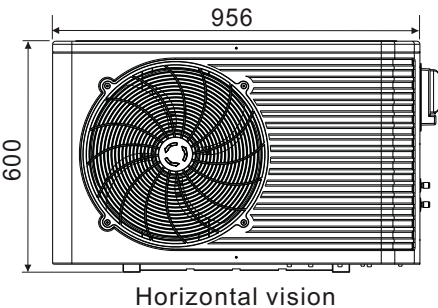
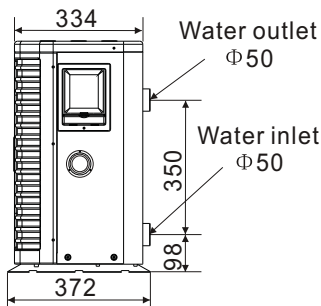
Models: SF020P G/Evap

unit: mm



Models: SF030P G/Evap

unit: mm

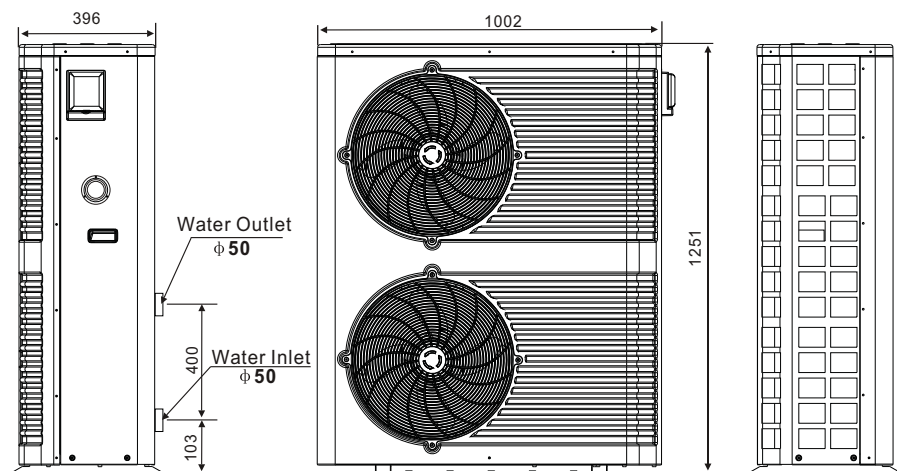


2.SPECIFICATION

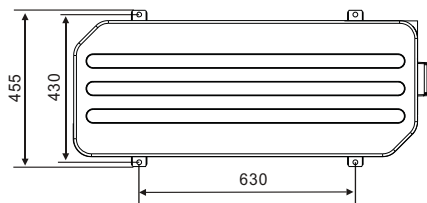
2.2 The dimensions for Swimming Pool Heat Pump Unit

Model: SF050P G/Evap
SF050/3P G/Evap
SF060P G/Evap
SF060/3P G/Evap

unit: mm



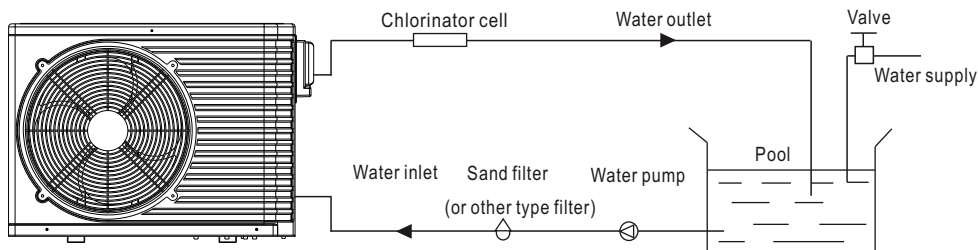
Horizontal vision



Vertical vision

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 the 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 the 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.

3.INSTALLATION AND CONNECTION

3.2 Swimming Pool Heat Pumps Location

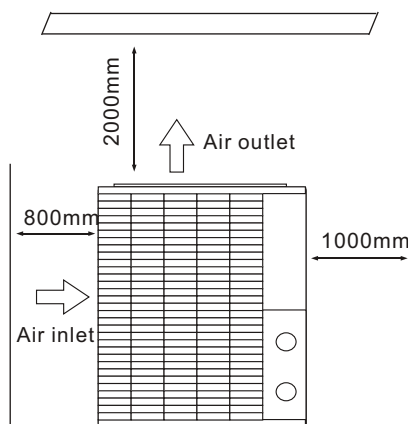
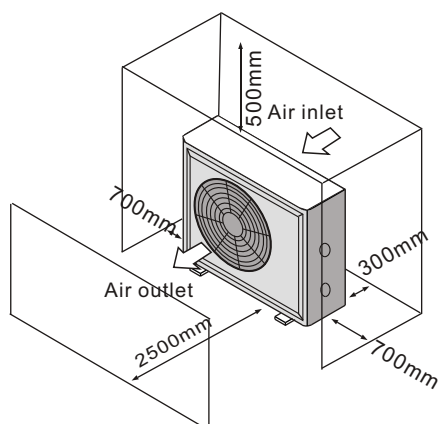
The unit will perform well in any outdoor location provided that the following three factors are presented:

1. Fresh Air - 2. Electricity - 3. Pool filter piping

The unit may be installed virtually anywhere outdoors. 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 its efficiency and may prevent adequate heat delivery.



3.3 How Close To Your Pool?

Normally, the pool heat pump is installed within 7.5 metres 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 up 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% to 5% increase in run time.

3. INSTALLATION AND CONNECTION

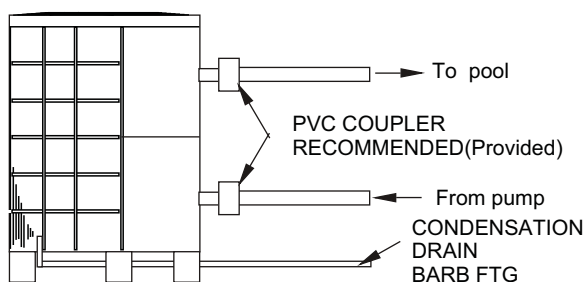
3.4 Swimming Pool Heat Pumps Plumbing

The Swimming Pool Heat Pumps 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 is less than 10kPa at max. Flow rate. Since there is no residual heat or flame Temperatures, 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 40mm NB PVC pipe for connection to the pool or spa filtration piping. By using a 50 NB to 40NB you can plumb 50NB 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 of 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 litres an hour. The water will run down the fins into the base pan and drain out through the barbed plastic condensation drain fitting on the side of the base pan. This fitting is designed to accept 3/4" clear vinyl tubing which can be pushed on by hand and run to a suitable drain. It is easy to mistake the condensation for a water leak inside the unit.

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 of the base pan, it is condensation. AN EVEN QUICKER WAY IS to TEST THE DRAIN WATER FOR CHLORINE - if there is no chlorine present, then it's condensation.

3. INSTALLATION AND CONNECTION

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, fused 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-energizing 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.

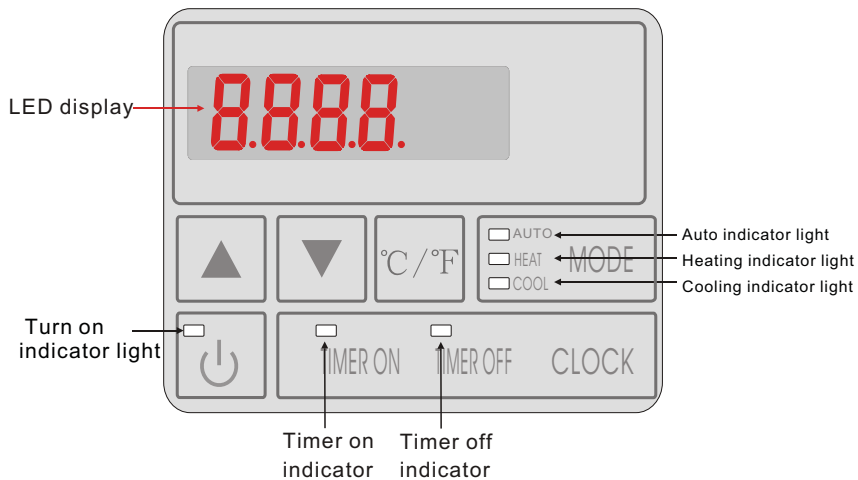
Start up Procedure- After installation is completed, you should follow these steps:

1. Turn on your filter pump. Check for water leaks and verify flow to and from the pool.
2. Turn on the 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 off 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 below set temperature.

Time Delay- The unit is equipped with a 3 minute 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 | Press 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-off |
| | 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. |

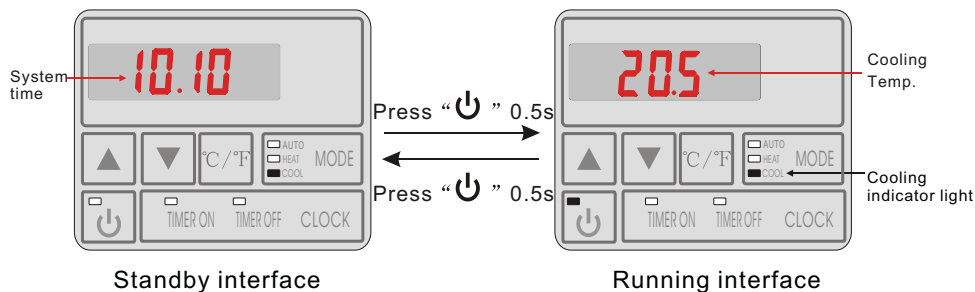
4. USAGE AND OPERATION

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 turn on the unit;

When the unit is on, press the key “” 0.5s to show down the unit;

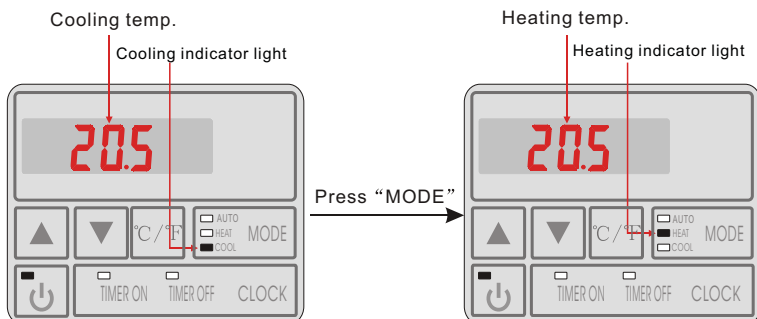


4.2.2 Mode switch

You can choose unit mode.

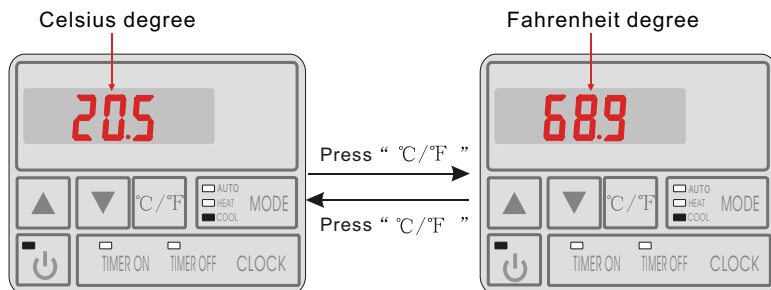
In the unit on or off state, you can choose cooling, heating or automatic mode by pressing "MODE" button.

Attention: if the unit is only for heating/cooling, 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

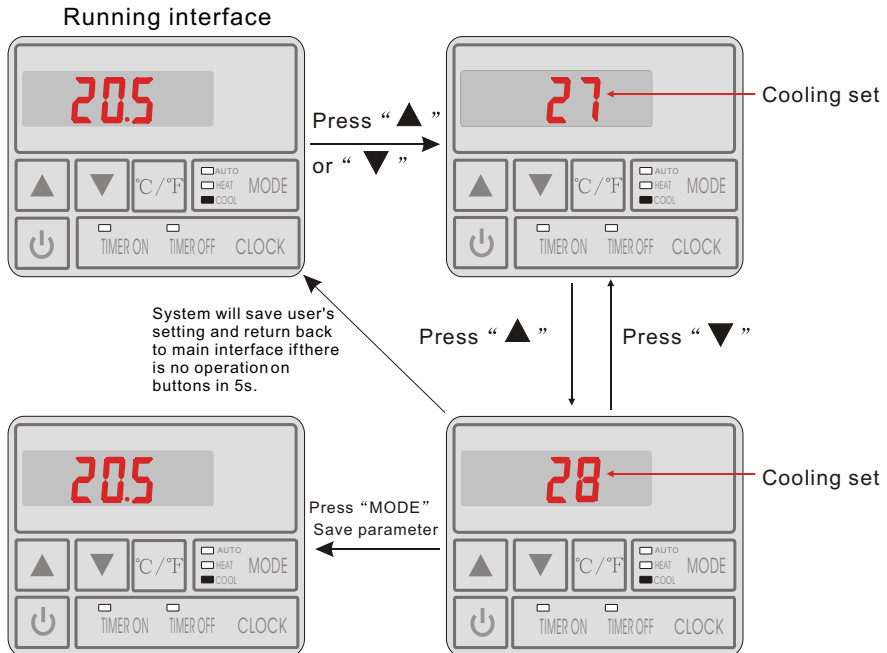
4.2.4 Setting temperature

In the main interface, press “▲” or “▼” and the current mode target-temperature 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 operation for 5s, system would remember parameter setting and back to the main interface.



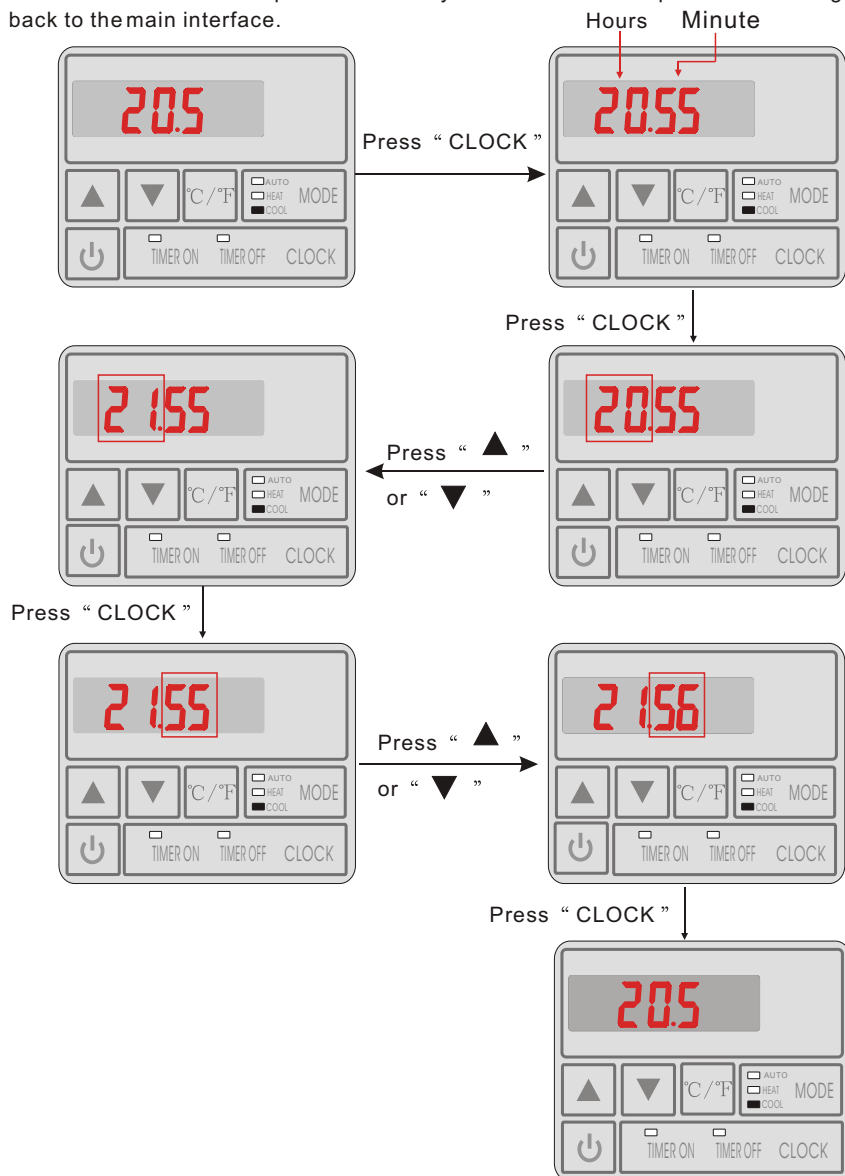
4. USAGE AND OPERATION

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.



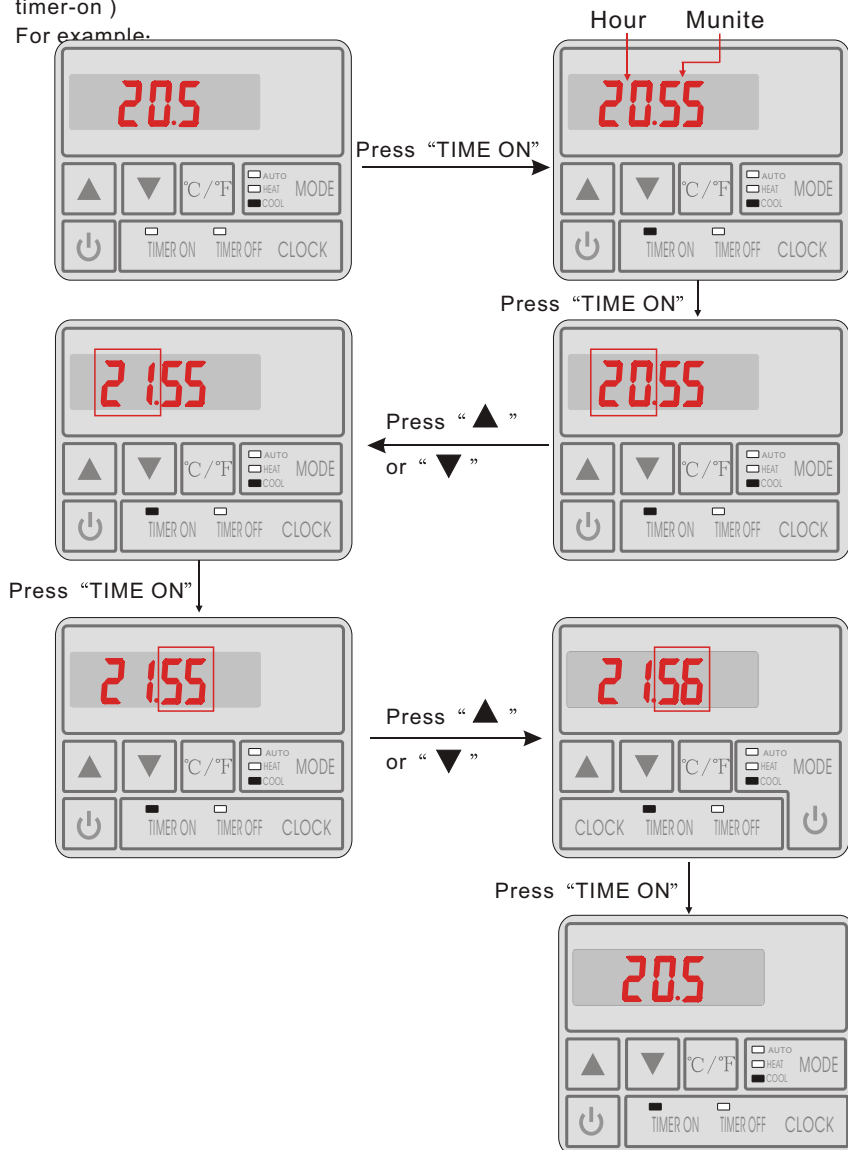
4. USAGE AND OPERATION

4.2.6 Timersetting

(1) You can set the timer of unit on

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

For example:




4. USAGE AND OPERATION

(2) The setting of cancelling the timer

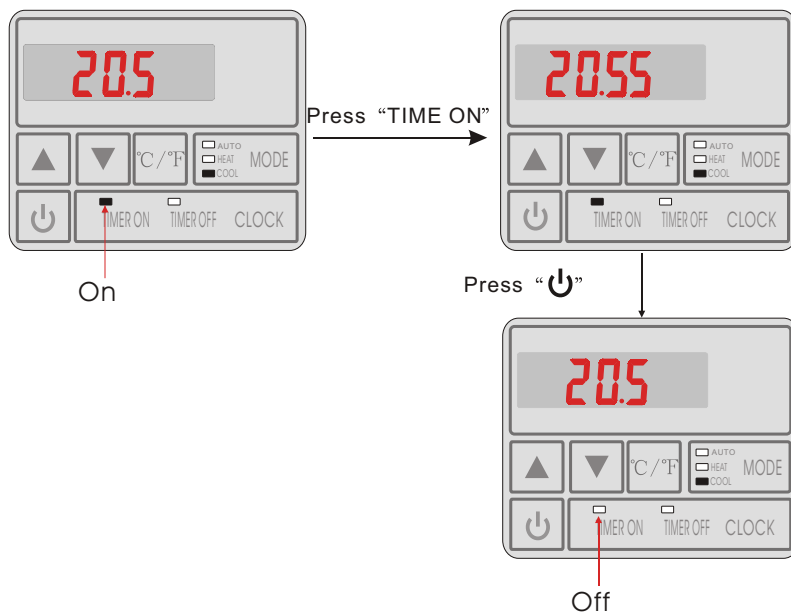
If there is no need to set timer on or timer off, the timer setting can be cancelled.

At unit on or off state, press “TIME On” to enter timer-on setting interface, then press

“” to cancel the timer-on, at this timer, the timer-on light turn off.


(press “TIME Off” to enter timer-off setting interface, then press

“” to cancel the timer-off, at this timer, the timer-off light turn off.



4.2.7 Keyboard lock

To avoid mis-operations, 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, pressing “” for 5 seconds, when hearing one sound, the keyboard is open.

NOTES: When the unit is in alarming state, the key lock can be removed automatically.

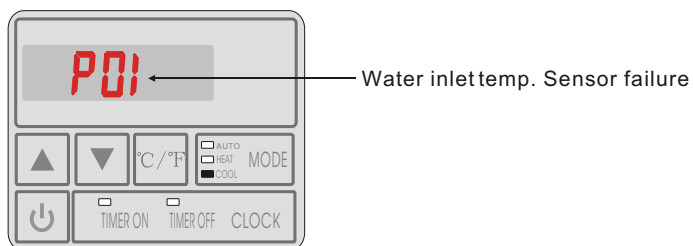
4. USAGE AND OPERATION

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. USAGE AND OPERATION

4.3 Parameter table

| Digit | meaning | default | Adjust(yes/no) |
|-------|---|---------------------|----------------|
| R01 | Return water temp. Setting(cooling mode) | 27℃ | Adjustable |
| R02 | Return water temp. Setting(heating mode) | 27℃ | Adjustable |
| R03 | Return water temp. Setting(auto mode) | 27℃ | 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

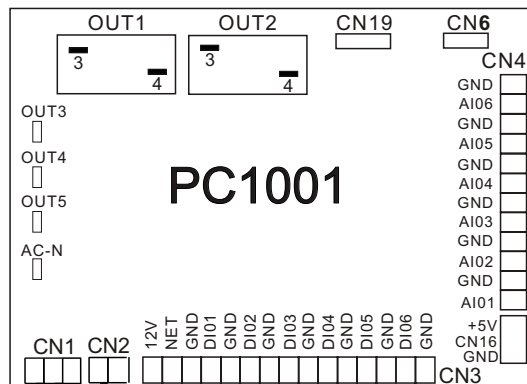
- Check the water supply device and the release often. You should avoid the condition of no water or air entering into system, as this will influence unit's performance and reliability. You should clear the pool/spa filter regularly to avoid damage to the unit as a result of the dirty of clogged filter.
- The area around the unit should be dry, clean and well ventilated. Clean the side heating exchanger regularly 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 period of no usage.

5.2 Trouble Shooting Guide

| Malfunction | Display | Canse | Solution |
|--|---------|---|---|
| Water inlet temp. Sensor failure | P01 | The water inlet temp. Sensor is open or shortcircuit | Check or change thewater inlet temp. Sensor |
| Water outlet temp. Sensor failure | P02 | The water outlet temp. sensor is open or shortcircuit | Check or change thewater outlet temp. Sensor |
| Ambient temp. Sensor failure | P04 | The ambient temp. sensor is open or shortcircuit | Check or change the ambient temp. Sensor |
| Pipe temp. Sensor failure | P05 | The pipe temp. sensor is open or short circuit | Check or change thepipe temp. Sensor |
| Evaporator temp. Sensor failure | P07 | The evaporator temp. Sensor is open or shortcircuit | Check or change the evaporator temp. Sensor |
| High pressure protect | E01 | The exhaust pressure is high , high pressure switch action | Check high pressure switch and cooling return circuit |
| Low pressure protect | E02 | The suction pressure is low, Low pressure switch action | Check low pressure switchand cooling return circuit |
| Flow switch failure | E03 | No water or litterwater in water system | Check the flow volume, water pump is failure or not |
| Temp. is too much different between water-inlet and outlet | E06 | Water flow volume not enough, Water system pressure difference is small | Check the flow volume, water system is jammed or not |
| Antifreezing under cooling mode | E07 | Water flow volume not enough | Check the flow volume, water system is jammed or not |
| The primary anti-freezing protection start. | E19 | Ambient temperature is too low | |
| The second anti-freezing protection start | E29 | Ambient temperature is too low | |
| Communication failure | E08 | Communication failure between remote wire controller and main board | Check the wire connection between remote wire controller and main board |

6. Appendix

6.1 Connection of PCB illustration



Connections explanation:

| No. | Symbol | Meaning |
|-----|-------------|--|
| 1 | OUT1 | Compressor of system1 (220-230VAC) |
| 2 | OUT2 | Water pump (220-230VAC) |
| 3 | OUT3 | 4way valve (220-230VAC) |
| 4 | OUT4 | High speed off fan motor (220-230VAC) |
| 5 | OUT5 | Low speed off 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.(input) |
| 17 | AI04 GND | Temp. Of coil (input) |
| 18 | AI05 GND | Ambient temp.(input) |
| 19 | AI06 GND | Adjustable fan speed/Exhaust temperature |
| 20 | CN1 | Primary transformer |
| 21 | CN2 | Secondary transformer |
| 22 | CN6 | Without use |
| 23 | CN19 | Electronic expansion valve |
| 24 | 5V CN16 GND | Flow meter |

6. Appendix

6.3 Cable specification

1. Single phase unit


| Nameplate maximum current | Phase line | Earth line | MCB | Creepage protector | Signal line |
|---------------------------|---------------------------|------------------|------|------------------------|---------------------------|
| No more than 10A | $2 \times 1.5\text{mm}^2$ | 1.5mm^2 | 20A | 30mA less than 0.1 sec | $n \times 0.5\text{mm}^2$ |
| 10~16A | $2 \times 2.5\text{mm}^2$ | 2.5mm^2 | 32A | 30mA less than 0.1 sec | |
| 16~25A | $2 \times 4\text{mm}^2$ | 4mm^2 | 40A | 30mA less than 0.1 sec | |
| 25~32A | $2 \times 6\text{mm}^2$ | 6mm^2 | 40A | 30mA less than 0.1 sec | |
| 32~40A | $2 \times 10\text{mm}^2$ | 10mm^2 | 63A | 30mA less than 0.1 sec | |
| 40~63A | $2 \times 16\text{mm}^2$ | 16mm^2 | 80A | 30mA less than 0.1 sec | |
| 63~75A | $2 \times 25\text{mm}^2$ | 25mm^2 | 100A | 30mA less than 0.1 sec | |
| 75~101A | $2 \times 25\text{mm}^2$ | 25mm^2 | 125A | 30mA less than 0.1 sec | |
| 101~123A | $2 \times 35\text{mm}^2$ | 35mm^2 | 160A | 30mA less than 0.1 sec | |
| 123~148A | $2 \times 50\text{mm}^2$ | 50mm^2 | 225A | 30mA less than 0.1 sec | |
| 148~186A | $2 \times 70\text{mm}^2$ | 70mm^2 | 250A | 30mA less than 0.1 sec | |
| 186~224A | $2 \times 95\text{mm}^2$ | 95mm^2 | 280A | 30mA less than 0.1 sec | |

2. Three phase unit

| Nameplate maximum current | Phase line | Earth line | MCB | Creepage protector | Signal line |
|---------------------------|---------------------------|------------------|------|------------------------|---------------------------|
| No more than 10A | $3 \times 1.5\text{mm}^2$ | 1.5mm^2 | 20A | 30mA less than 0.1 sec | $n \times 0.5\text{mm}^2$ |
| 10~16A | $3 \times 2.5\text{mm}^2$ | 2.5mm^2 | 32A | 30mA less than 0.1 sec | |
| 16~25A | $3 \times 4\text{mm}^2$ | 4mm^2 | 40A | 30mA less than 0.1 sec | |
| 25~32A | $3 \times 6\text{mm}^2$ | 6mm^2 | 40A | 30mA less than 0.1 sec | |
| 32~40A | $3 \times 10\text{mm}^2$ | 10mm^2 | 63A | 30mA less than 0.1 sec | |
| 40~63A | $3 \times 16\text{mm}^2$ | 16mm^2 | 80A | 30mA less than 0.1 sec | |
| 63~75A | $3 \times 25\text{mm}^2$ | 25mm^2 | 100A | 30mA less than 0.1 sec | |
| 75~101A | $3 \times 25\text{mm}^2$ | 25mm^2 | 125A | 30mA less than 0.1 sec | |
| 101~123A | $3 \times 35\text{mm}^2$ | 35mm^2 | 160A | 30mA less than 0.1 sec | |
| 123~148A | $3 \times 50\text{mm}^2$ | 50mm^2 | 225A | 30mA less than 0.1 sec | |
| 148~186A | $3 \times 70\text{mm}^2$ | 70mm^2 | 250A | 30mA less than 0.1 sec | |
| 186~224A | $3 \times 95\text{mm}^2$ | 95mm^2 | 280A | 30mA less than 0.1 sec | |

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

Note: _____

| | |
|---|---|
| | Correct Disposal of this product |
|  | <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> |