SYSTÈMES

HCW

SYSTEMS

Inverter

HCW POOL HEATER

HCWI 50 ~ 15 763 ~ 50 000 Btu/h
HCWI 65 ~ 21 939 ~ 65 000 Btu/h
HCWI 78 ~ 23 884 ~ 78 000 Btu/h
HCWI 90 ~ 29 600 ~ 90 000 Btu/h

Installation Manual & User Manual

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1. PREFACE

1. In order to offer quality, reliability and versatility to our customers, this product has been manufactured to meet strict production standards. This manual includes all the information you need to install, troubleshoot, drain and maintain the product. Read this manual carefully before disassembling the appliance or performing any maintenance work. The manufacturer is not responsible for any breakage or injury that may occur if the product is improperly installed, maintained or repaired. It is essential that the instructions provided in this manual be followed at all times. The device must be installed by qualified personnel.

- The appliance can only be repaired by qualified personnel at an authorized installation center or retailer.
- Maintenance must be performed according to the schedule recommended in this manual.
- Use only spare parts as standard.

Failure to comply with these recommendations would void the guarantee.

- The pool heater heats the pool water and helps maintain a constant temperature. The indoor model can be hidden almost completely to better blend in with the décor of luxurious homes.

This type of pool heater has the following characteristics:

1. Durability
   The heat exchanger is made of PVC and titanium resistant to prolonged exposure to corrosive substances such as chlorine.
2. Convenience
   The appliance must be installed outdoors. For two-room models, the evaporator can be installed in the shed.
3. Quiet operation
   The unit is equipped with a highly efficient rotary or scroll compressor and a quiet fan motor.
4. Advanced Control Mode
   The device is controlled by a microcomputer, which allows the adjustment of all operating parameters. The operating status can be displayed on the secondary control unit. You can also choose remote control.

Warning

Do not use means to speed up the defrosting process or to clean,
Other than those remixed by the manufacturer.
The device must be stored in a room without interruption
Functional ignition sources (e.g., open flames, function-
gas appliance or electric heater in operation.)
Do not puncture or burn
Be aware that refrigerants must not contain any odor,
The appliance must be installed, operated and stored in a room with a floor area greater than X.
NOTE: The manufacturer may provide other appropriate examples or additional information about the odor of the refrigerant.

1. PREFACE

- This device can be used by children aged 8 years and older and people with physical abilities, sensory or mental impairment or lack of experience and knowledge if supervised or instructions regarding the safe use of the appliance and understand the hazards involved. Children should not play with the device. Cleaning and maintenance of the user should not be carried out by children without supervision.

- If the power cord is damaged, it should be replaced by the manufacturer, their service agent, or qualified persons to avoid hazards.

- The device must be installed in accordance with national wiring regulations.

- Do not use your air conditioner in a damp room such as a bathroom or laundry room.

- Before gaining access to the terminals, all power circuits must be disconnected.

- An all-pole disconnect device that has clearances of at least 3 mm in all poles shall have a leakage current of up to 10 mA, the residual current (RCD) device having a nominal residual operating current not exceeding 30 mA, and the disconnection shall be incorporated into the fixed wiring in accordance with the wiring rules.

- Do not use any means to speed up the defrosting process or to clean up, other than those Recommended by the manufacturer.

- The appliance must be stored in a room without continuous ignition sources (e.g. open flames, gas appliance in operation or electric heater in operation).

- Do not puncture or burn

- The appliance must be installed, used and stored in a room with a floor area greater than X m2
  Be aware that refrigerants may not contain an odor. The installation of piping must be limited to a minimum of X m2. Space where refrigerant lines must comply with national gas regulations. Maintenance should only be carried out in accordance with the manufacturer's recommendations. The appliance should be stored in a well-ventilated area where the size of the room corresponds to the area of the room as specified for operation. Any work procedure that implements safety measures must only be carried out by competent persons.

- Transportation of equipment containing flammable refrigerants
  Compliance with transport regulations
  Marking equipment with signals
  Compliance with local regulations
  Equipment/Appliance Storage
  Equipment storage must be in accordance with the manufacturer's instructions.
  Storage of packaged equipment (unsold)
  The protection of the storage packaging must be constructed in such a way that mechanical damage to the
  The equipment inside the package will not cause the refrigerant charge to leak.
  The maximum number of pieces of equipment that can be stored together will be determined by local regulations.

Caution and warning

1. The unit can only be repaired by qualified personnel at the installation center or by an authorized retailer. (For the European market)

2. This appliance is not intended for use by persons (including children) with a reduced physical sensory or mental abilities, or lack of experience and knowledge, unless they have been supervising or instructing a person responsible for their safety. (For the European market)

3. Please make sure the unit and power connection have a good grounding, otherwise may cause electric shock.

4. If the power cord is damaged, it should be replaced by the manufacturer or our service agent or a similarly qualified person in order to avoid a hazard.

5. Directive 2002/96/CE (DEEE):
   The crossed-out trash can symbol on the bottom of the unit indicates that this product, at the end of the of its useful life, must be handled separately from the product, the waste must be sent to a recycling of electrical and electronic devices or returned to the dealer at the time of purchase of an equivalent device.

6. Directive 2002/95/EC (RoHs): This product complies with Directive 2002/95/EC (RoHs) on restrictions on the use of harmful substances in electrical and electronic appliances.

7. The appliance CANNOT be installed near the flammable gas. Once there is a gas leak, a fire may occur.

8. Make sure there is a circuit breaker for the unit, the lack of a circuit breaker may result in electric shock or fire.

9. The heat pump located inside the unit is equipped with an overload protection system. It does not allow the device to start for at least 3 minutes from a previous shutdown.

10. The unit may only be repaired by qualified personnel at an installation center or authorized retailer. (For North American Market)

11. Installation must be carried out in accordance with the NEC/CEC by an authorized person only. (For North American Market)

12. USE POWER WIRES THAT ARE SUITABLE FOR 75.

13. Caution: Single wall heat exchanger, not suitable for drinking water connection.

2. SPECIFICATIONS

2.1 Pool heater performance data

****** REFRIGERANT: R410A**

DEVICE		HCWI 50	HCWI 65
Heating capacity (27/24.3 °C)		4.62 -14.07	6.43 -19.05
		15 763 - 50 000	21 939 - 65 000
Heating power consumption		0.537 - 2.56	0.684 - 3.74
COP		8.60 - 5.50	9.40 - 5.09
Heating capacity (27/24.3 °C)	kW	4.53 -9.76	6.02 -14.90
	Btu/h	15 456 - 45 025	20 500 - 50 800
Heating power consumption	kW	0.560 - 1.840	0.67 – 3.08
COP		8.09 - 5.30	8.98 - 4.84
Heating capacity (10/6.8 °C)	kW	2.23 - 6.56	3.14 - 9.01
	Btu/h	7 610 - 22 380	10 700 - 30 700
Heating power consumption	kW	0.497 - 1.680	0.79 - 2.41
COP		4.49 - 3.90	3.97 - 3.73
Power		220-240V~/60Hz	
Breaker (A) * (To be confirmed with an electrician)	A	20	30
Compressor quantity		1	
Compressor		Rotary	
Number of Fan		1	
Noise	dB(A)	43-50	42-54
Water Connexion	mm	50	50
Water flow volume	m^3/h	4.7	6.3
Water pressure drop (max)	kPa	3.5	5.5
Unit net dimensions (L/W/H)	mm	See diagram of the unit	
Unit Shipping Dimensions (L/W/H)	mm	See device label	
Net Weight	kg	See nameplate	
Shipping Weight	kg	See device label	

NOTE : The use of Siemens GFI circuit breakers is highly recommended

Heating: Outdoor Air Temperature: 27°C /24.3 °C , Inlet Water Temperature:26°C
Outdoor air temperature: 15 °C /12 °C , Inlet water temperature:26 °C

Operating Range: Ambient Temperature: -7 - 43°C
Water temperature: 9 - 40°C

2. SPECIFICATIONS

2.1 Pool heater performance data

****** REFRIGERANT: R410A**

APPAREIL		HCWI 78	HCWI 90
Heating capacity (27/24.3 °C)		7.00 - 22.86	8.67-26.37
		23 884 -78 000	29 600-90 000
Heating power consumption		0.67 -4.35	0.84 - 3.88
COP		10.44 - 5.26	10.3 - 6.78
Heating capacity (27/24.3 °C)	kW	6.76 - 17.00	7.41 – 21.70
	Btu/h	23 100 - 58 000	23 884 – 62 900
Heating power consumption	kW	0.67 - 3.30	0.73 – 4.52
COP		10.09 - 5.15	10.1 – 4.8
Heating capacity (10/6.8 °C)	kW	4.32-10.85	5.39 – 14.50
	Btu/h	14 700 - 37 000	17 060 – 51 000
Heating power consumption	kW	0.986 - 2.62	0.88 – 3.63
COP		4.38 - 4.14	6.1 – 4.0
Power supply		220-240V-/60Hz	
Breaker (A) * (To be confirmed with an electrician)	A	40	50
Compressor quantity		1	
Compressor		Rotary	
Number of Fan		1	
Noise	dB(A)	49-52	49-56
Water connexion	mm	50	50
Water flow volume	m^3/h	7.5	7.5
Water pressure drop (max)	kPa	7.8	11.0
Unit net dimensions (L/W/H)	mm	See diagram of the unit	
Unit Shipping Dimensions (L/W/H)	RPM	See device label	
Net Weight		See nameplate	
Shipping Weight	dB (A)	See device label	

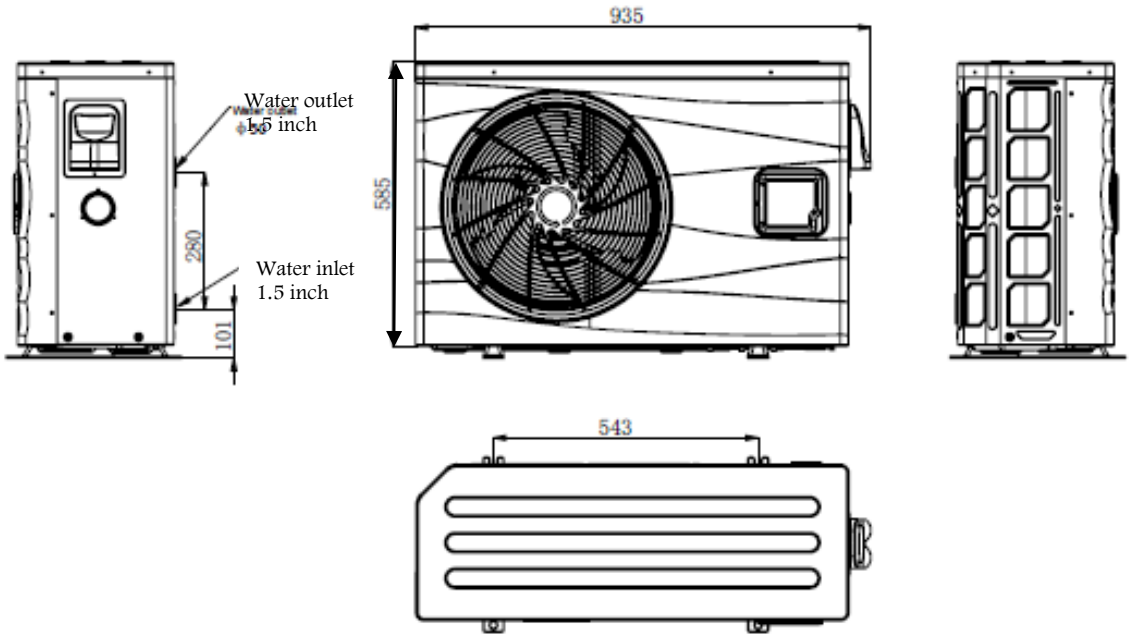
NOTE : The use of Siemens GFI circuit breakers is highly recommended

Heating: Outdoor Air Temperature: 27°C /24.3 °C , Inlet Water Temperature:26°C
Outdoor air temperature: 15 °C /12 °C , Inlet water temperature:26 °C

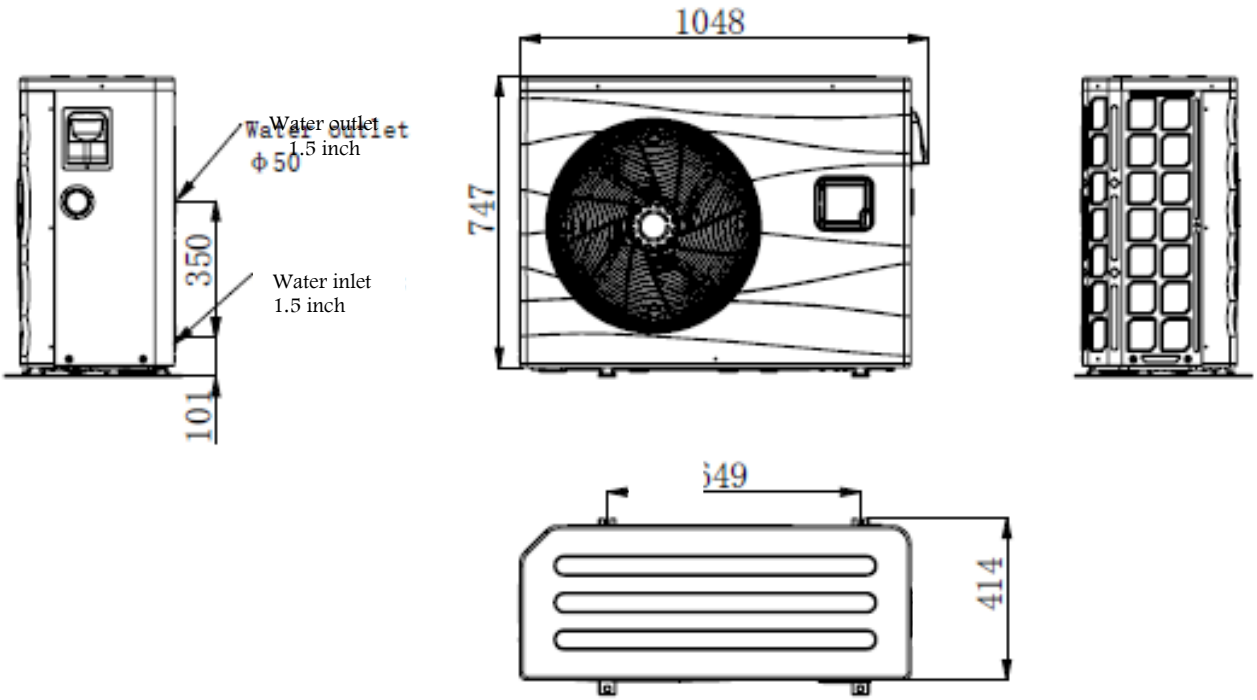
Operating Range: Ambient Temperature: -7 - 43°C
Water temperature: 9 - 40°C

2.2 Pool heater dimensions

Model : HCWI 50 Unit: inches

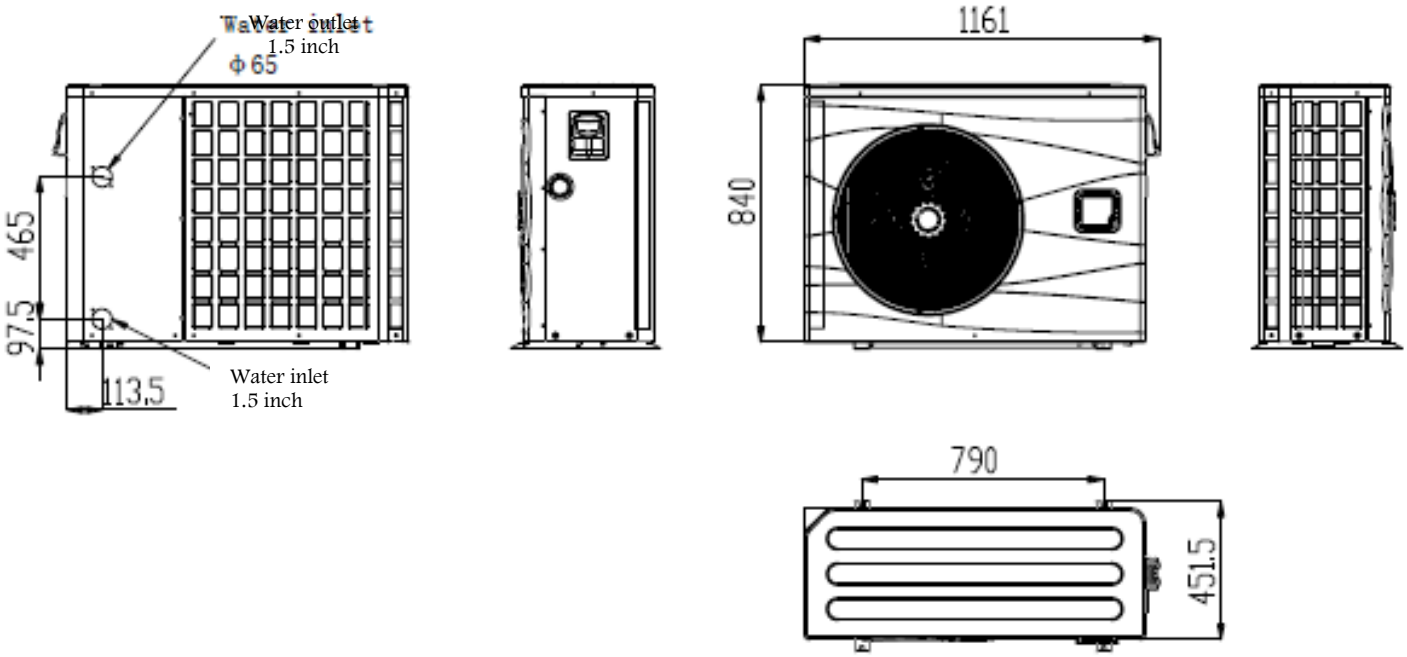


Model : HCWI 65 / HCWI 78 Unit: inches



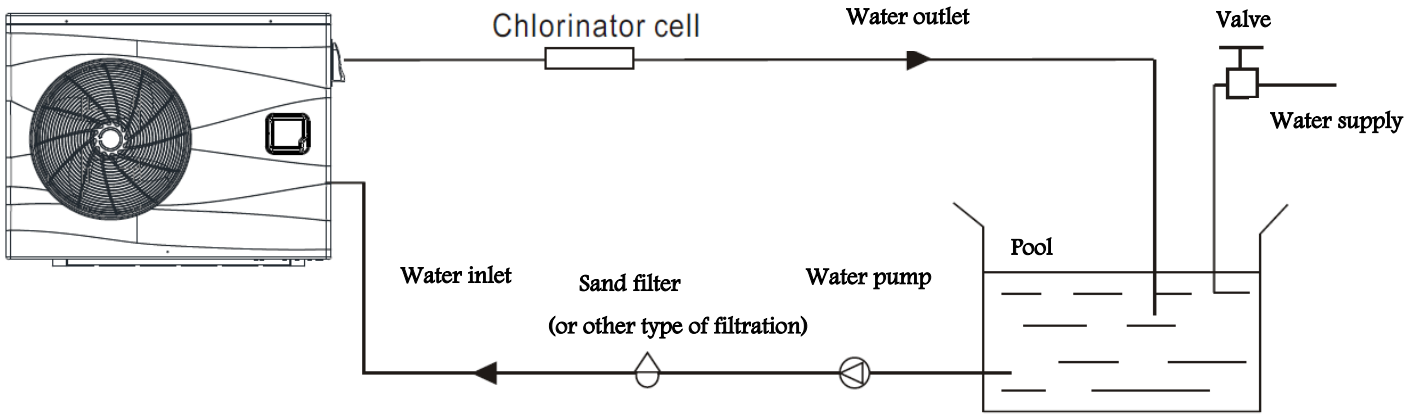
2.2 Pool heater dimensions

Model : HCWI 90 Unit: inches



3. INSTALLATION & CONNECTION

3.1 Installation diagram



Installation Item:

The manufacturer only supplies the main module; the other items shown in the diagram are necessary parts of *the system and are provided by the user or installer.*

Warning:

Use the following procedure when starting up for the first time:

1. Open the valve and fill with water
2. Make sure the pump and water inlet hose are filled with water
3. Close the valve and turn the machine on.

CAUTION: It is essential that the water level in the pipe is higher than the pool water level.

*** The schematic diagram is provided for reference only. Please check the water inlet/outlet label on the heat pump during plumbing installation.

The controller is mounted on the wall

3.2 Heat pump location

The device works well in any outdoor location as long as all three elements are present:

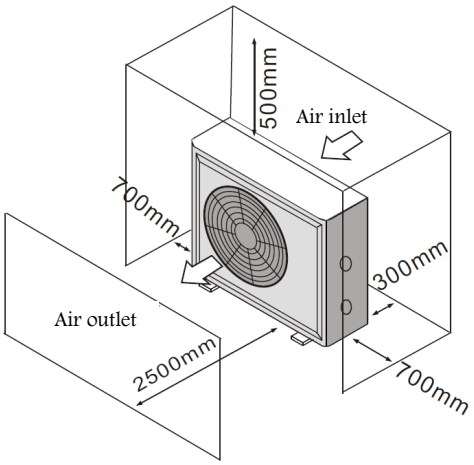
1. Fresh air 2. Electricity 3. Pool water filtration piping

** Consult your supplier for indoor pools.

The device can be installed virtually anywhere outdoors. For indoor pools please consult the supplier. Unlike the gas water heater, the HCW SYSTEMS pool heater can be exposed to draughts without ignition flame problems.

DO NOT place the unit in an enclosed area where airflow is limited and where the air discharged from the pool heater may be reused. There should be good air circulation around the unit.
DO NOT place the unit near shrubs that will block air intake. This type of location would not allow a continuous flow of fresh air and the effectiveness of the device would be reduced.

**** Any non-compliant installation or an unmaintained appliance will affect the performance of the appliance and may be denied the warranty.**



3.3 How far from the pool?

Typically, the device is installed within 7.5 metres (24.5 feet) of the pool. The further away you are from the pool, the more heat you lose along the pipes. Most of the piping is buried. Heat loss is therefore negligible for lengths of up to 15 metres (one length from the device to the pool and another from the pool to the device 30 meters total) Unless the soil is wet or the water table is high. The estimated heat loss over a length of 30 meters is around 0.6 kw per hour (2000 BTUs) for every 5°C difference between the temperature of the pool water and the temperature of the ground surroundding the pipe, which increases the walking time of about 3 to 5%.

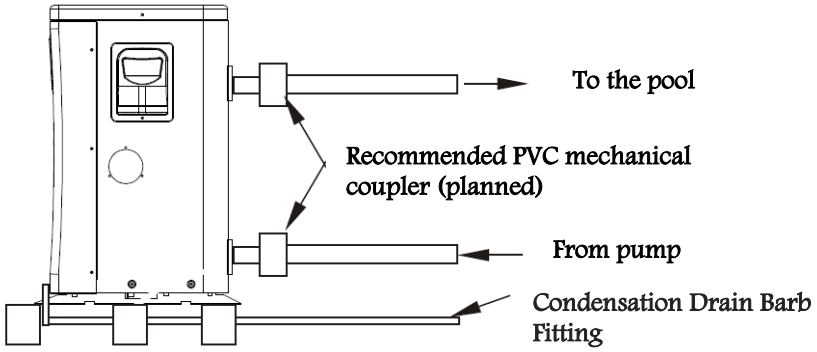
3.4 Heat pump plumbing

The pool heater's titanium rated flow heat exchanger exclusive to the pool heater does not require any special plumbing other than a bypass device (adjust the flow rate according to the manufacturer's recommendations.) Pressure drop on water varies depending on the model (see Full Features). The drop in water pressure is less than 10 Kpa at the most. Since there is no residual heat or flame, copper piping is not required. PVC piping can be connected directly to the unit.

Location: Connect the device to the discharge line of the pool pump, downstream of any filter and pump, and upstream of any distributor of chemical products, (chlorinator, ozonator).

Base models are equipped with fittings ready to receive 1.5" PVC pipe that connect to the pool or spa filtration piping. Using a fitting
Increasing from 2" to 1.5", 2" piping can be connected directly to the device.

It is recommended to add a PVC coupler to the water inlet and outlet of the device to facilitate maintenance in the event of breakage or emptying when stored for the winter.



Condensation: Since the pool heater cools the air by about 4 to 5°C, condensation can form on the evaporator fins. If the relative humidity is very high, it may be accumulate several liters of condensation per hour. Condensation water drips from the fins, is collected in the bottom tray and then discharged through the barbed connection of the condensation drain on the side of the tray. This fitting is ready to receive a 3/4" clear vinyl pipe that can be installed by hand and directed to a suitable drain.

Condensation water can easily be mistaken for a water leak from the appliance

NB: *To make sure in a simple and quick way that it is indeed condensation water, the device can be turned off while leaving the pool pump running. If the water stops to flow from the bottom plate, it's condensation. To be even more reassured quickly, the drain water can be analyzed. If the water does not contain chlorine, it is condensation.*

3.5 Pool Heater Electrical Circuit

NOTE: Although the heat exchanger is isolated from the rest of the unit, it is only a protection to prevent electricity from coming into contact with the pool water. A grounding of the device is still required to avoid short circuits inside the device. An electrical power supply is also required.

The unit is equipped with a molded junction box and a standard waterproof electrical connector. Simply remove the screws and the panel, before inserting the power supply cables through the connection. and connect them to the 3 connections already present in the junction box (4 connections if it is a three-phase system). To complete the electrical connection, the heater must be connected swimming pool by using a protective tube, underground power cable or other means that complies with local electrical regulations and an AC electrical supply circuit equipped with adequate protection by circuit breaker, disconnect switch or overload device.

Disconnection :

A disconnecting device (circuit breaker, switch with or without fuses) must be visible and accessible from the location of the appliance. This practice is common in residential and commercial air conditioner and heat pumps. It prevents a device from being turned on remotely without supervision and turns the device off for maintenance.

3.6 Initial Start-up

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

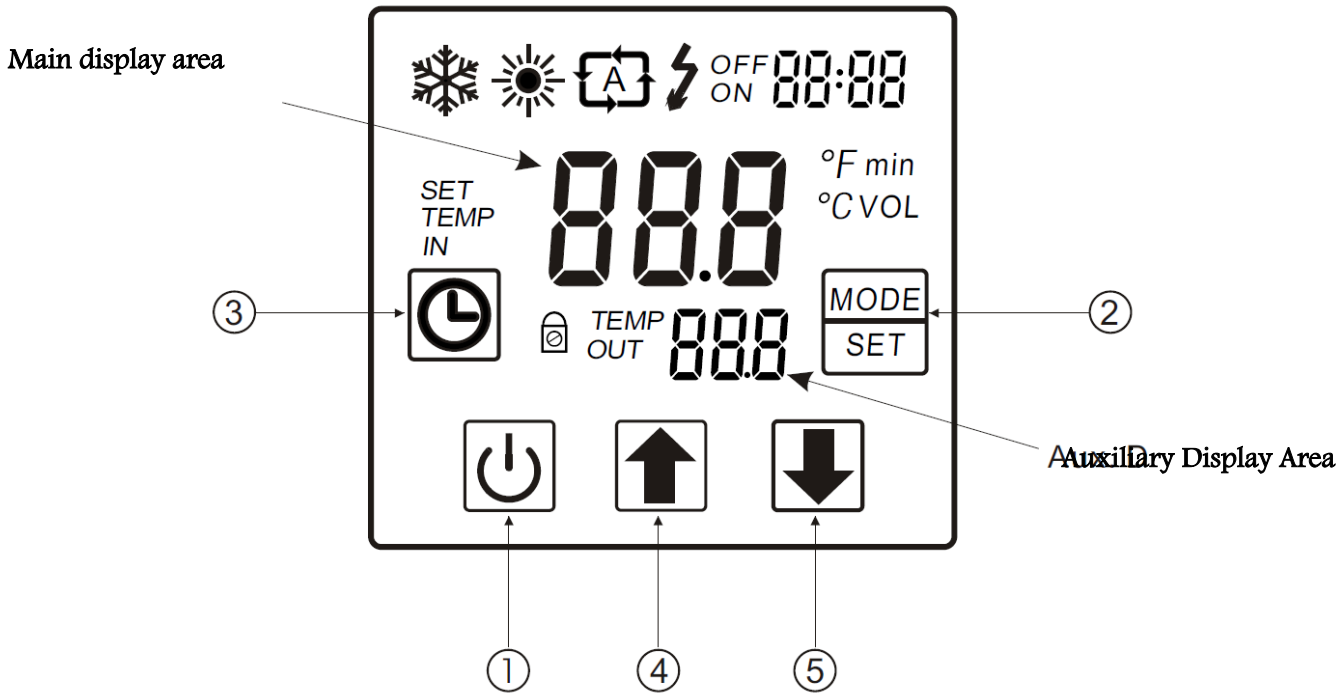
Start-up procedure:

1. Turn on the pool pump. Make sure there are no water leaks and check that water is moving in and out of the pool.
2. Feed the device with electricity, then press the button on the controller. The pool heater should start within a few seconds.
3. After a few minutes of operation, make sure that the air coming out of the top or in front of the unit has cooled to 5 to 10°C.
4. While leaving the unit running, turn off the filter pump. The pool heater should turn off automatically.
5. Allow the pool heater and pool pump to run 24 hours a day until the pool water has reached the desired temperature. When the water entering the pool heater reaches the temperature requested during the adjustment, the unit stops working. As soon as the temperature of the pool water drops more than 2°C above the programmed temperature, the pool heater will automatically switch on again (provided that the pool pump is also running).

Self-timer :

The unit is equipped with a 3-minute self-timer to protect the components of the electronic circuit and to eliminate the need for restart and cycling of the contactor. This self-timer restarts the device automatically about 3 minutes after each interruption of the main control circuit. Even a brief power outage will activate the self-timer, which prevents the device from restarting until 3 minutes have elapsed and preventing the device from starting until the 5-minute countdown is complete

4.1 Controller Function



1) Fonctions Buttons

#	Symbol	Nom	Function
①		On / Off	Press this button to start or turn off the device, Cancel the current operation or return to the upper part of the interface
②	MODE SET	Mode	Press this button to change modes or save the parameter.
③		Clock	Press this button to set the clock and timer
④		Up	Press this button to increase or increase the value of the parameter.
⑤		Down	Press this button to lower or decrease the parameter value

2) Display functions

Symbol	Meaning	Function
	Cooling mode	It appears when the device is in cooling mode.
	Heating mode	It appears when the appliance is in heating mode and flashes in defrost.
	Automatic mode	It is displayed when the device is in automatic mode.
	Electric heating	It is shown when the device is in electric heating mode. (Pool unit without this display)
ON	Timer On	It appears when the device sets the timer
OFF	Timer Off	It appears when the device sets the timer
IN	Water inlet	It appears when the main display area gives the water temperature input. (Measured value)
OUT	Out of the water	It appears when the AUX display area gives the temperature of the water. (Measured value)
TEMP	Temperature	It appears when the main display area / AUX gives the temperature
VOL	Debit	It appears when the main display area gives the value of the water flow
min	Minute	It appears when the main display area gives a minute value
° F	Fahrenheit	It appears when the main display area/AUX gives a value in Fahrenheit
° C	Celcius	It appears when the main display area/AUX gives a value in centigrade
SET	Parameter Adjustment	It appears when the parameter can be adjusted.
	Locked	It is displayed when the keypad is locked

2. The use of the data controller

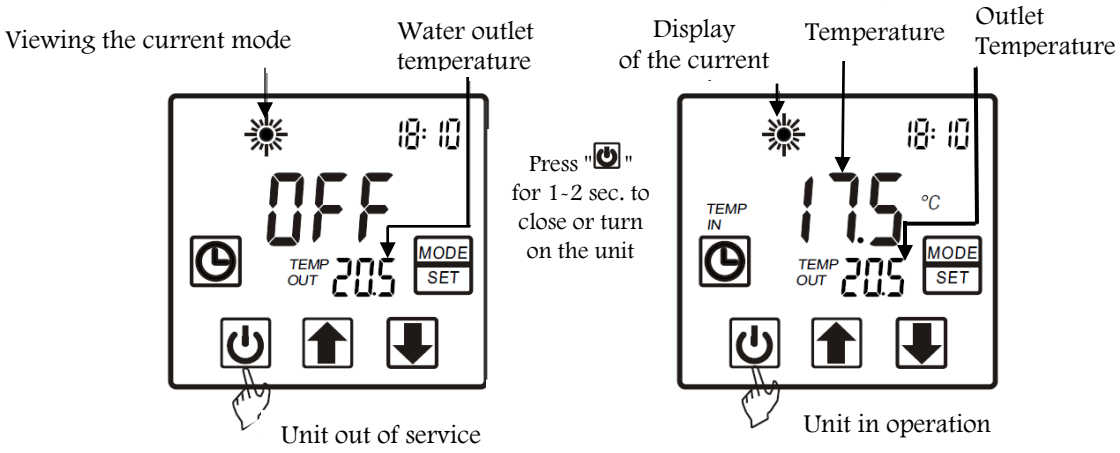
2.1 Starting and stopping

In the Off interface, press " ⏻ " for 1~2 seconds to start the unit and the displays on the control will display the water outlet temperature.

In the running interface, press " ⏻ " for 1~2 seconds to shut down the unit and the display on the controller will show OFF.

Attention: Starting and stopping the device can only be activated from the main screen. When the screen is completely or half off, press any key to return to the main start/stop screen.
When the device is turned on through the controller, if the emergency switch is used to turn off the device, the main screen of the controller will display as follows: the operations are the same as in the main START/STOP interface

Example :

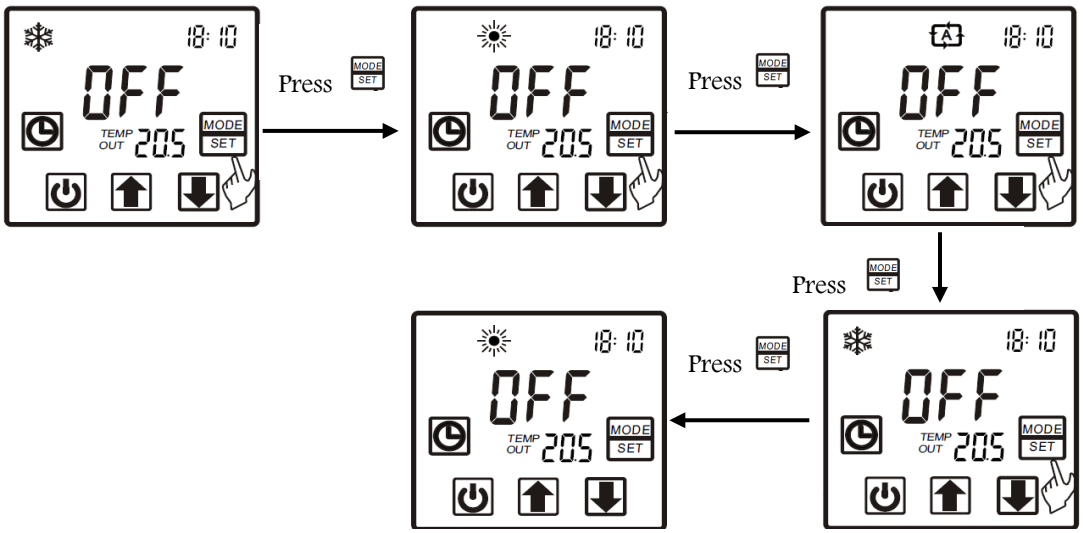


2.2 Change of mode

If it is a cooling/heating unit, in the main interface, you can change the different Cooling, heating, automatic mode by pressing MODE SET.

Caution: Switching modes is unnecessary if the unit you purchase is a cooling-only or heat-only unit.

Example :



2.3 Temperature Adjustment

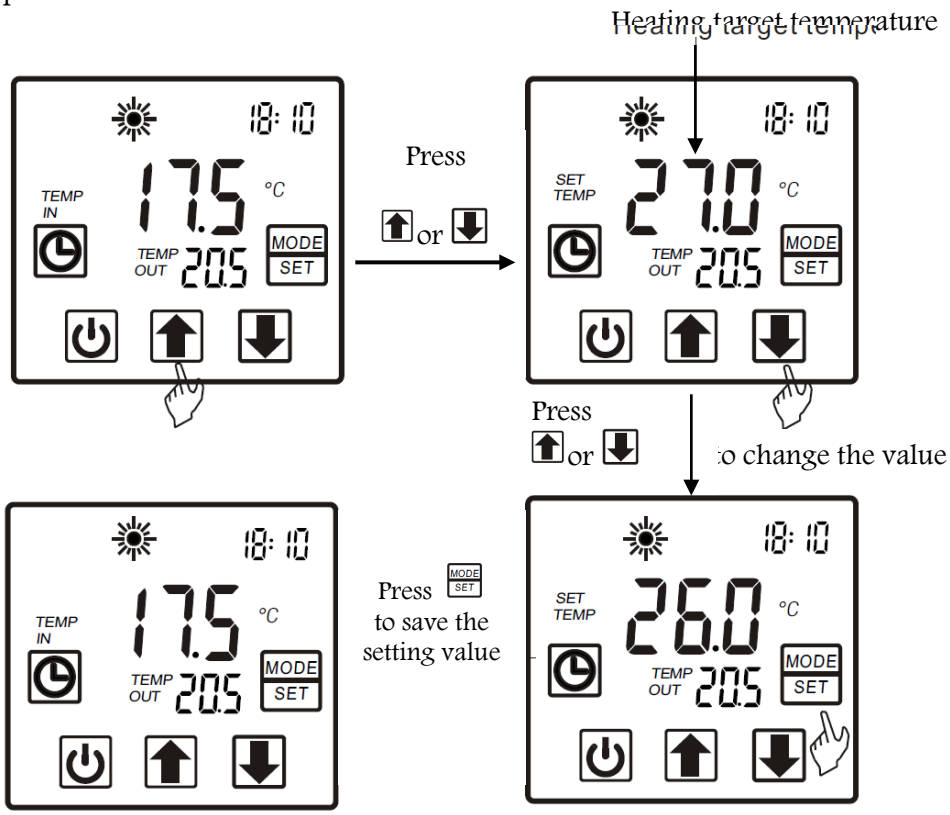
In the main interface, press ⬆ or ⬇ and the current mode temperature value will flash, then press ⬆ to increase the temperature value or press ⬇ to decrease it.

Tap MODE SET to save the setting setting and return to the main interface.

Tap ⏻ can't save the setting setting but return to the main interface

Caution If there is no operation for 5 seconds, the system will remember the setting of the parameters and will return to the main interface.

Description of the operation:



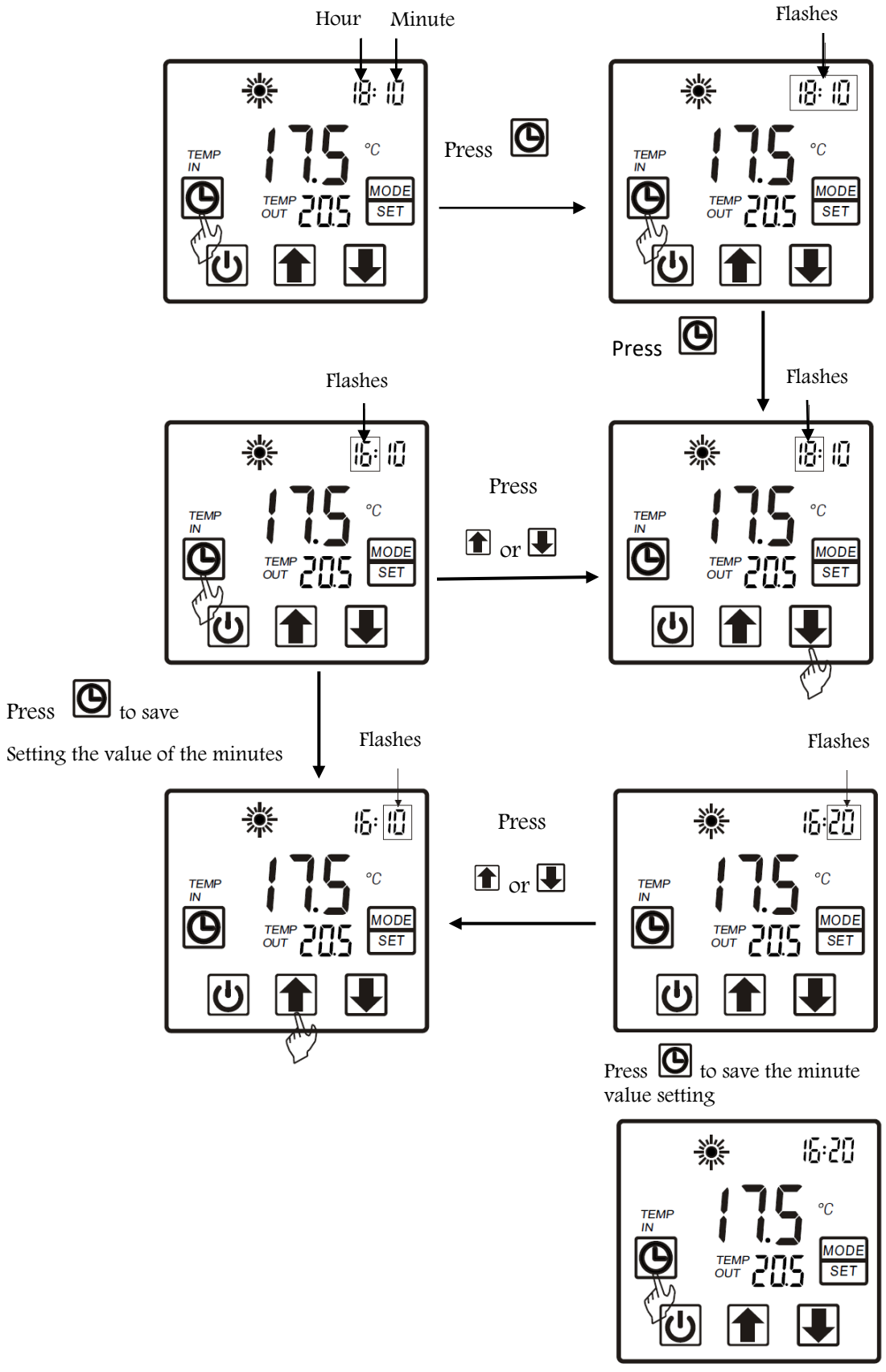
2.4 Setting the clock

In the main interface, double-tap 🕒, the hour value will start flashing and tap ⬆ to increase the value or tap ⬇ to decrease the value and tap 🕒 to save the setting.

At the same time, the minutes value will start flashing, press to ⬆ increase the value or press ⬇ to decrease the value and press 🕒 to save the setting setting and return to the main interface.

Be careful, if there is no operation for 5 seconds, the system will remember the setting of the parameters and will return to the main interface.

Example :

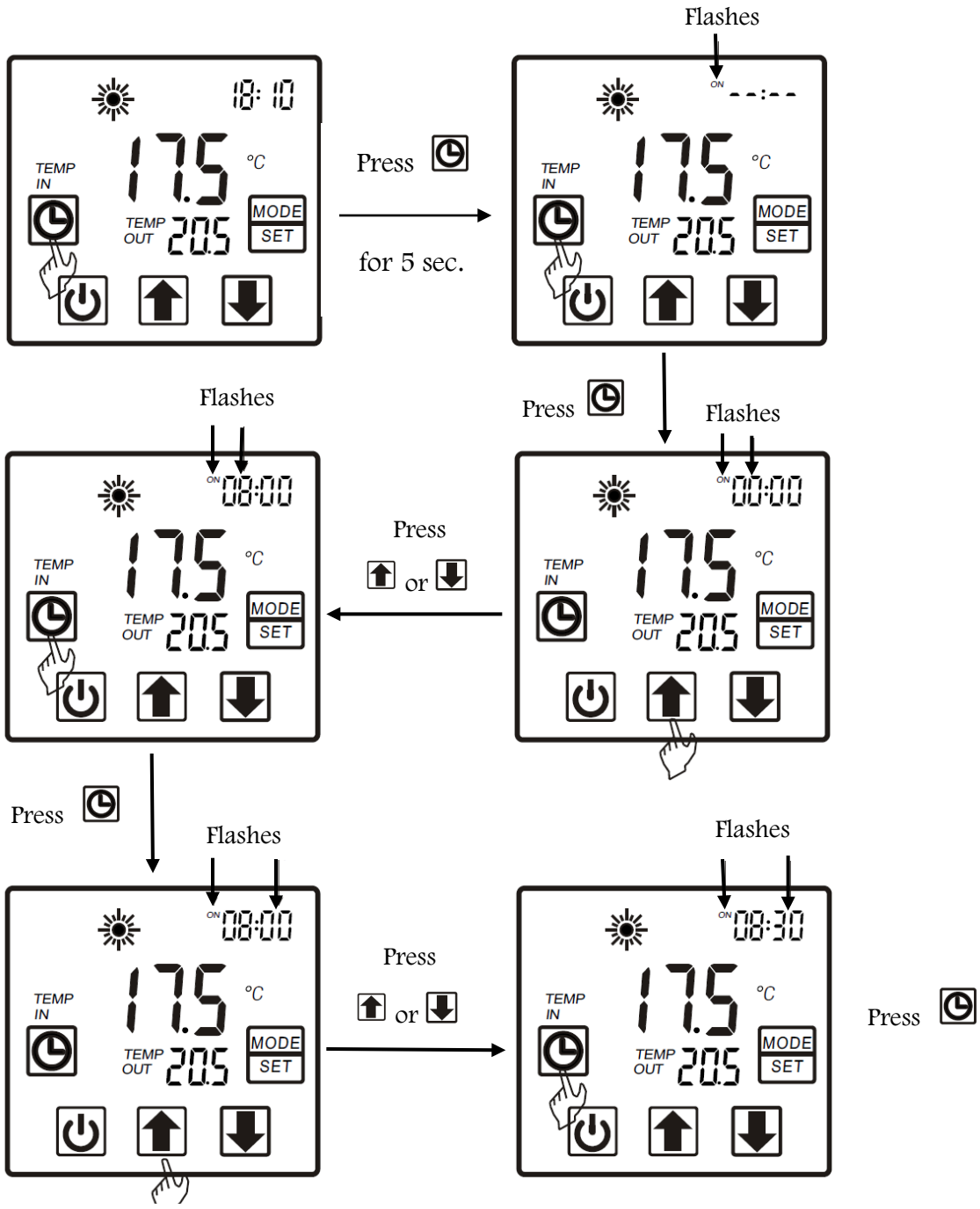

Hour
Minute
Flashes
Press
Press
Flashes
Flashes
Press
or
Press
to save
Setting the value of the minutes
Flashes
Flashes
Press
or
Press
to save the minute
value setting
TEMP IN
TEMP OUT
MODE
SET
°C

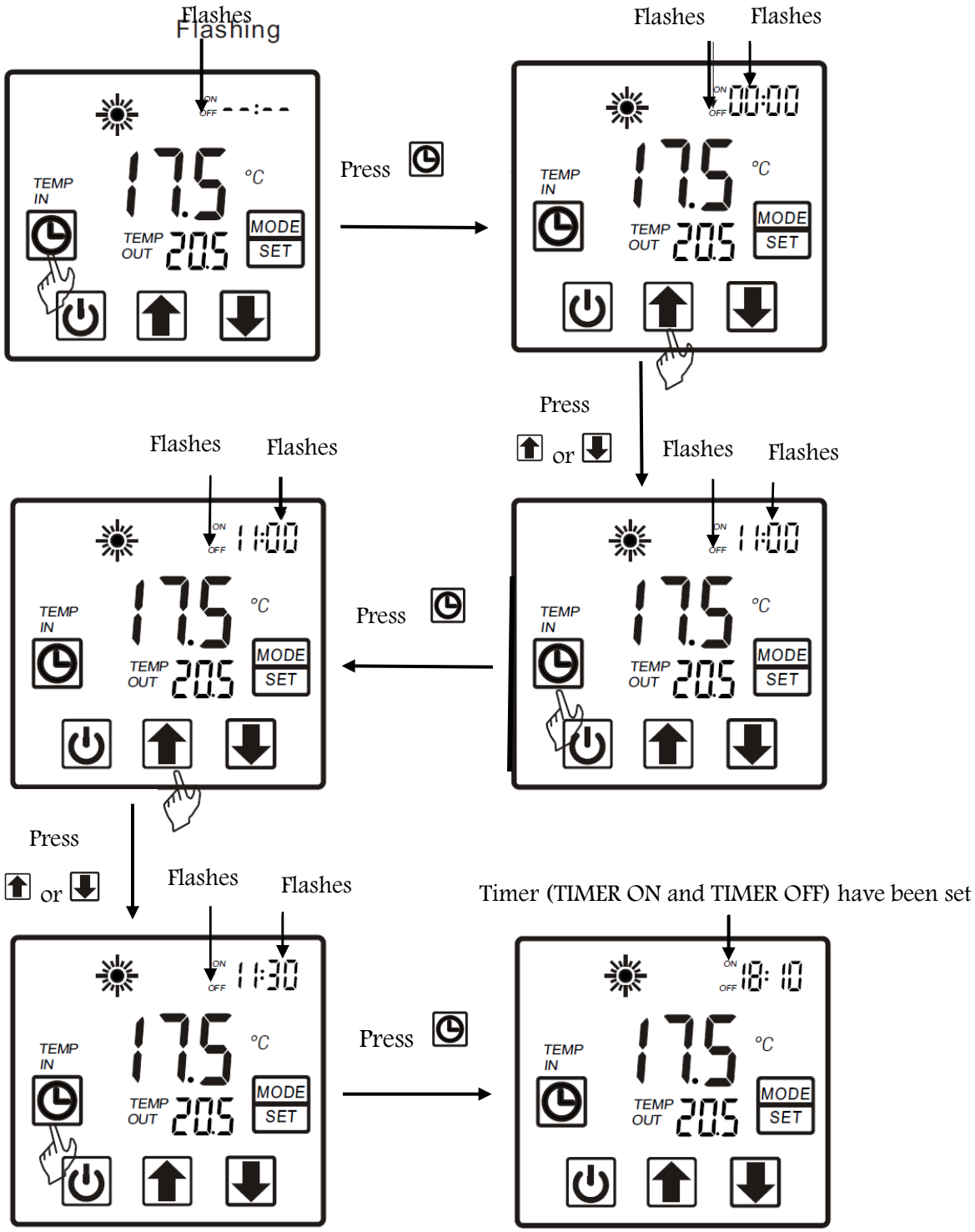
2.5 Timer setting (*** Not applicable on all models)

In the main interface, press for 5 seconds and the "ON" will flash, at this time press again to adjust the ON timer times. Press again to adjust the minutes of the timer ON. Press to adjust the times of the OFF. Press to adjust the minutes of the OFF. Press the button to exit the timer setting adjustment mode.

Warning: 1) If there is no operation for 5 seconds, the system will remember the clock setting and return to the main interface.

Note: ON means the time the timer starts, the OFF means the time the timer stops.




Flashes
Flashing
Press
Flashes
Flashes
Press
or
Flashes
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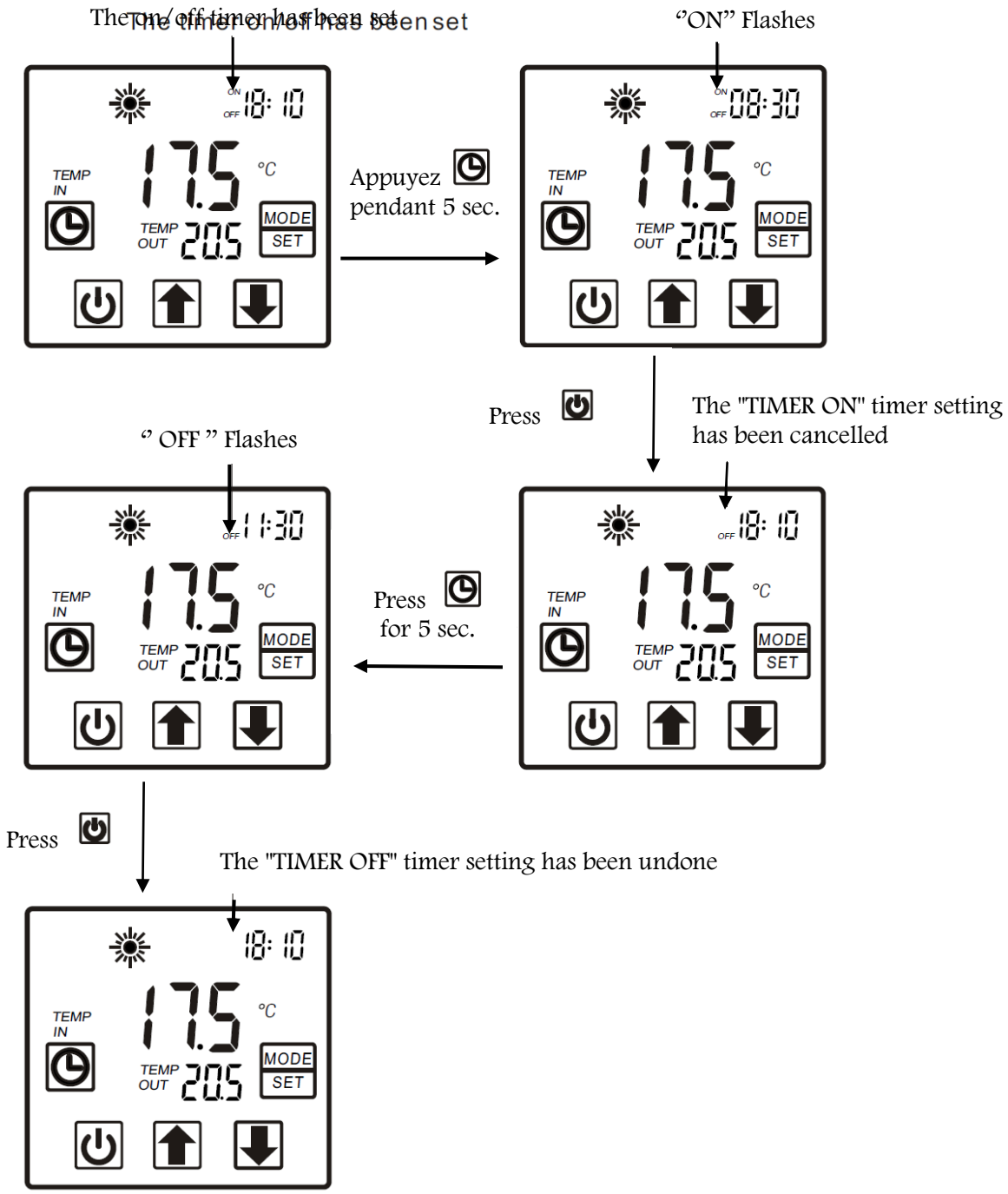
Flashes
Press
Press
or
Flashes
Flashes
Press
Timer (TIMER ON and TIMER OFF) have been set
TEMP IN
TEMP OUT
MODE
SET
°C

2.6 Overriding the timer setting

Press for 5 seconds and the "ON" will flash. Press the button (ON times flash). Press (ON minutes flash), press , OFF flashes. Press , the OFF will disappear. After this first operation, hold for 5 seconds, until you see the ONN flashing, Press and the ON will disappear.

Example :

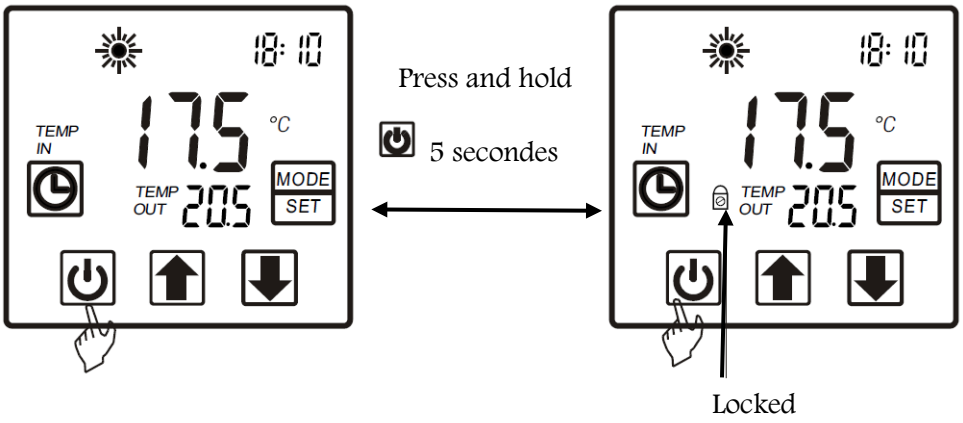


2.7 Keypad lock

To avoid malfunction, please lock the controller after adjusting the settings.

On the main interface, press for 5 seconds, the keyboard will be locked. When the keyboard is locked, press for 5 seconds, the keyboard will be unlocked.

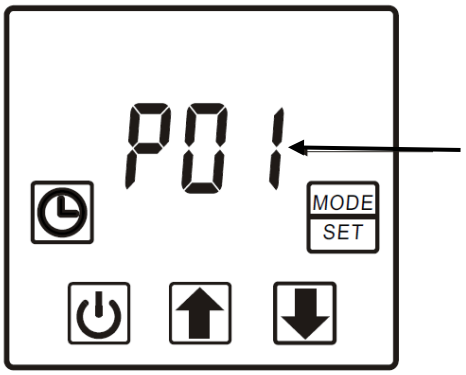
NOTES: When the device is in an alarming state, the key lock can be removed automatically.



2.8 Display of the malfunction

There will be a malfunction code displayed on the controller's screen when relative a malfunction occurs. You can refer to the malfunction table to know the cause and solution of the failure.

Example :



4.2.9 Settings table

Description	Default setting	Remarque
Heating inlet target temperature.	27°C	Adjustable
Cooling inlet target temperature.	27°C	Adjustable
Automatic inlet target temperature.	27°C	Adjustable

Remark:
The controller may display the temperature unit in "°F" or "°C" depending on the model unit you purchased.

4 Fault table

Common Causes and Solutions of Failures

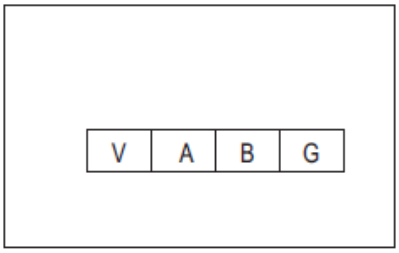
Protection / Error	Error displayed	Reason	Solution
Failure of the water inlet temp sensor	P01	The water inlet probe is broken or shorted	Check or change the temperature sensor
Failure of the water outlet temp sensor	P02	The water outlet probe is broken or shorted	Check or change the temperature sensor
Ambient Temp Probe Failure	P04	The room temperature sensor is broken or shorted	Check or change the temperature sensor
Coil 1 temp probe failure	P05	The temperature sensor is broken or shorted	Check or change the temperature sensor
Coil 2 temp probe failure	P15	The temperature sensor is broken or shorted	Check or change the temperature sensor
Suction temp probe failure	P07	The temp. evaporator probe is broken or shorted	Check or change the temperature sensor
Discharge temperature sensor failure	P081	The temperature sensor is broken or shorted	Check or change the temperature sensor
Exhaust air protector on temperature	P082	The compressor is overloaded	Check if the compressor system Normal operation
Antifreeze Temperature Sensor Failure	P09	The antifreeze temperature sensor is broken or shorted	Check and replace this temperature sensor
Pressure sensor failure	PP	The pressure sensor is damaged	Check or change the pressure sensor or pressure
High Pressure Protection	E01	The gas pressure is high. The low-pressure switch is broken	Check the pressure switch and cooling system
Low Pressure Protection	E02	Low pressure1 protection	Check the pressure switch and cooling system
Water Flow Switch Protection	E03	No or little water in the system	Check the flow of water through the hose and water pump
Anti-freeze protection of the water circuit	E05	Water temperature or room temperature is too low	Check the water temperature or room temperature
Temperature is too different between water inlet and outlet	E06	The volume of water flow is not sufficient. The water pressure differential of the system is low	Check the flow volume, the water The system is blocked or not
Frost protection	E07	The water flow is not sufficient	Check the flow of water through the pipe and whether the water circulation system is blocked or not
First frost protection display	E19	The room temperature is too low	Check the room temperature.
Second freeze protection display	E29	The room temperature is too low	Check the room temperature.
Compressor overcurrent protection	E051	Compressor is overloaded	Check if the compressor is working normally
Communication Failure	E08	The water flow is insufficient, the pressure difference is too low	Check the flow of water in the pipe and whether the water circulation system is blocked or not
Communication Failure (Speed Control Module)	E081	Speed and Main Control Module Failed to communicate with the adapter	Check the communication connexion
AT low protection	TP	The room temperature is too low	Check the room temperature.
EC fan feedback failure	F051	Problem with the fan Motor and fan stop working	Check if the fan motor is damaged or not locked
Défaillance du moteur du ventilateur1	F031	1. The motor is in the locked state 2. The connection between the DC fan motor and the motor fan is in bad contact	1.Change to a new fan motor 2.Check the connection and make sure that they are in good contact
Fan Motor Failure1	F032	1. The motor is in the locked state 2. The connection between the DC fan motor and the motor fan is in bad contact	1.Change to a new fan motor 2.Check the connection and make sure that they are in good contact

Frequency Conversion Board Fault Chart:

Protection / Error	Error displayed	Reason	Solution
Alarme Drv1 MOP	F01	MOP drive alarm	Resume after 150 seconds
Onduleur hors ligne	F02	Frequency conversion board and main board communication failure	Check the communication connexion
Protection IPM	F03	IPM modular protection	Resumption after 150sec
Driver failure	F04	Lack of phase, step or drive hardware damage	Check the measurement voltage check Frequency Conversion Card Hardware
DC Fan Failure	F05	Motor current feedback open circuit or short circuit	Check if the current return wires to the motor are connected
IPM Overcurrent	F06	IPM Input current is large	Check and adjust the current measurement
Inv. DC Overvoltage	F07	DC bus voltage>Dc bus over-voltage protection value	Check the input voltage measurement
Inv. DC Lessvoltage	F08	DC bus voltage<Dc bus over-voltage protection value	Check the input voltage measurement
Inv. Input Lessvolt.	F09	The input voltage is low , causing the input current is high	Check the input voltage measurement
Inv. Input Overvolt.	F10	The input voltage is too high, more than	Check the input voltage measurement
Inv. Sampling Volt.	F11	Outrage protection curent RMS	Check and adjust the current measurement
Comm. Err DSP-PFC	F12	The input voltage sampling fault	Check the communication connexion
Input Over Cur.	F26	DSP and PFC connect fault	Check the input current of the device if is higher than the current rate
PFC fault	F27	The equipment load is too large	Check that the PFC switch tube is short circuit or not
IPM Overheating	F15	The PFC circuit protection	Check and adjust the current measurement
Weak Magnetic Warn	F16	The IPM module is overheat	Check the input voltage of the board's inverter (single-phase unit: 230V, three-phase unit: 400V)
Inv. Input Out Phase	F17	Compressor magnetic force is no t	Check and measure voltage adjustment
IPM Sampling Cur.	F18	IPM sampling electricity is fault	Check and adjust the current measurement
Inv. Temp. Probe Fail	F19	Fault	Inspect and replace the sensor
Inverter Overheating	F20	display Reason Élimination Methods	Check and adjust the current measurement
Inv. Overheating Warn	F22	The input voltage lost phase	Check and adjust the current measurement
Comp. Over Cur. Warn	F23	Compressor electricity is large	Overcurrent of the compressor protection
Input Over Cur. Warn	F24	Input current is too large	Check and adjust the current measurement
EEPROM Error Warn	F25	MCU error	Check if the chip is damaged Replace the chip
V15V over/undervoltage fault	F28	The V15V is overload or undervoltage	Check the V15V input voltage in the range 13.5V~16.5V or not

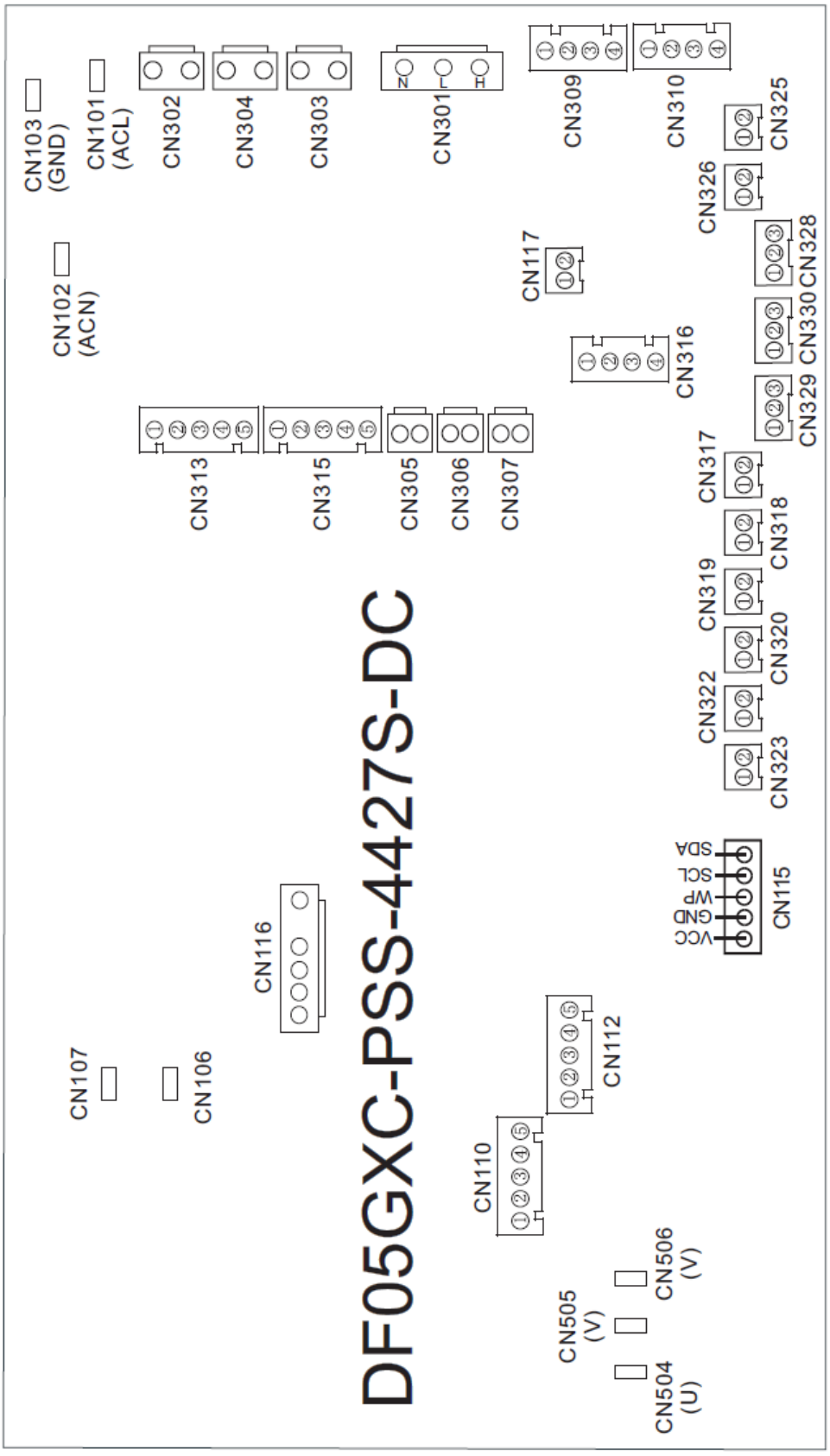
5. Diagramme d'interface

5.1 Wire Control Interface Diagram and Definition



Indication	Description
+12V	12V (Power +)
485A	485A
485B	485B
GND	GND (Power-)

5.2 Controller Interface Schema and Definition



Main board of the input and output interface instructions below

Numéro	Symbole	Description
01	CN504-5/6(U/V/W)	Compressor
02	CN110	Drive debug port
03	CN112	Driver program port
04	CN116	DC fan
05	CN106 CN107	Resistance
06	CN313	Electronic expansion valve
07	CN315	Electronic expansion valve(Reserved)
08	CN305	Water flow switch
09	CN306	System high pressure
10	CN307	System low pressure
11	CN102	Neutral wire
12	CN103	Grounding
13	CN101	Live wire
14	CN302	Crankshaft heating belt
15	CN304	4-way valve
16	CN303	Water pump
17	CN301	AC fan(H)/Chassis heating belt(L)
18	CN117	Reserved
19	CN316	Program port
20	CN309	Color line controller communication/Wifi/AC transformer/Flow meter
21	CN310	The port for centralized control
22	CN325	Water input temperature
23	CN326	Water output temperature
24	CN328	Low pressure sensor
25	CN330	Reserved
26	CN329	Water flow meter(Reserved)
27	CN317	System fan coil temperature

Number	Symbol	Description
28	CN318	System exhaust temperature
29	CN319	Ambient temperature
30	CN320	System suction temperature
31	CN322	Port:Bit1
32	CN323	Port:Bit2
33	CN115	EEPROM program port

- Check the water supply and drain systems regularly. Try to avoid running out of water or air, which could reduce its effectiveness and reliability. Clean the pool or spa filter frequently so that the unit is damaged due to a filter or clogged
- The location of the appliance should be dry, clean and well ventilated. Clean the side fins regularly to allow for good heat exchange and to save energy.
- Regularly check the power supply and connection to the appliance. If the appliance begins to function abnormally, turn it off and contact a qualified technician.
- Check the power supply and cable connection often. If the unit starts to work abnormally, turn it off and contact the qualified technician.
- Drain the water pump and water lines completely to prevent ice from forming in the pump.
  Water draining at the base of the water pump should be done if the unit is not to be used for an extended period of time. Carefully check the components of the unit and fill the water lines completely before using the system after a long period of inactivity.
- Controls in the area
  Before work begins on systems containing flammable refrigerants, safety controls are necessary to minimize the risk of ignition. For the repair of a refrigeration system, the following precautions must be observed before performing work on the system.
- Working procedure
  The work shall be undertaken in accordance with a controlled procedure so as to minimise the risk of a presence of flammable gases or vapours during the execution of the work.
- General area of work
  All maintenance personnel and others working in the local area should be instructed on the nature of the work being performed. Working in confined spaces should be avoided. The area around the workspace should be sectioned. Ensure that conditions in the area have been made safe by flammable material control.
- Checking for the presence of refrigerant
  The area should be checked with a suitable refrigerant detector before and during work, making sure that the technician is aware of potentially flammable atmospheres. Ensure that the leak detection equipment used is suitable for use with flammable refrigerants, i.e. spark-proof, properly sealed.
- Presence of fire extinguisher
  If welding or open heat work is to be performed on the refrigeration equipment or any related part, appropriate fire-extinguishing equipment must be readily available. Have a dry powder or CO2 fire extinguisher adjacent to the loading area.
- No ignition source
  No person performing work in connection with a refrigeration system involving the exposure of any piping that contains a flammable refrigerant shall use all sources of inflamed lighting in such a way as to create a risk of fire or explosion. Any possible ignition sources, including smoking, should be sufficiently distant from the site of installation, repair, removal and disposal, during which a flammable refrigerant may eventually be released into the surrounding space. Before work begins, the area around the equipment should be inspected to ensure that there are no flammability hazards or ignition hazards. Non-smoking signs must be posted.

- Ventilated area
  Make sure the area is in the open air or properly ventilated before performing any work on the appliance. A certain degree of ventilation must be maintained during the period during which the work is being carried out. Ventilation must safely disperse any refrigerant discharge and preferably expel it outside into the atmosphere.

- Refrigeration Equipment Controls
  When electrical components are changed, they must be suitable for their intended use and the correct specification. At all times, the manufacturer's care and maintenance instructions must be followed. If in doubt, consult the manufacturer's technical service for assistance.
  The following checks must be carried out on installations using flammable refrigerants: The load size is in accordance with the size of the room in which the refrigerant containing the parts are installed;
  Ventilation machines and outlets are functioning properly and are not obstructed; if an indirect refrigeration circuit is used, the secondary circuit must be checked for the presence of refrigerant;
  Equipment markings continue to be visible and legible. Markings and signs that are illegible must be corrected;
  Refrigeration hoses or components are installed in a position where they are unlikely to be exposed to any substance that may corrode refrigerant-containing components, unless
  The components are made of materials that are inherently resistant to being corroded or adequately protected against such corrosion.

- Electrical Appliance Controls
  Repair and maintenance of electrical components should include initial safety checks and component inspection procedures. If there is a fault that could compromise safety, then the power supply must be connected to the circuit until it is safely handled. If the defect cannot be corrected immediately, but it is necessary to continue the operation, a
  Adequate temporary solution should be used. This should be reported to the equipment owner so that all parties are notified.

  Initial security checks include:
  . That capacitors are discharged: this must be done in a safe way to avoid any possibility sparks;
  . That no live electrical components and wiring are exposed during charging, recovery, or purging of the system;
  . That there is a continuity of land connection.

- Repair of sealed components
  1) During the repair of sealed components, all power supplies must be disconnected from the equipment being worked before any removal of the sealed covers, etc. If it is absolutely necessary to have a power supply to the equipment during maintenance, leak detection equipment should be located at the most critical point to warn of a potentially hazardous situation.
  2) Special attention should be paid to the following to ensure that when working on the electricity, the housing is not modified in such a way that the protection level is affected. This includes
  cable damage, excessive number of connections, terminals not made to original specifications, damage to seals, improper fit of cable glands, etc.

- Make sure the device is properly mounted.
  Ensure that joints or sealants have not degraded to the point where they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts must conform to the manufacturer's specifications.
  NOTE: The use of silicon sealant may inhibit the effectiveness of certain types of leakage detection equipment.
  Intrinsically safe components do not need to be isolated before working on them.

- Intrinsically safe component repair
  Do not apply permanent inductive or capacitive loads to the circuit without ensuring that it will not exceed the allowable voltage and current for the equipment in use.
  Normally safe components are the only types that can be worked live in a flammable atmosphere. The test equipment must be at the correct power. Replace components only with parts specified by the manufacturer. Other parts can result in the ignition of the refrigerant into the atmosphere from a leak.

- Cabling
  Check that the wiring will not be subjected to wear, corrosion, excessive pressure, vibration, etc.
  abrupt shutdowns or any other adverse environmental effects. The control also includes taking into account the effects of aging or continuous vibration from sources such as compressors or fans in the device.

- Detection of flammable refrigerants
  Under no circumstances should potential sources of ignition be used in the search for or detection of refrigerant leaks. A metal halide torch (or any other detector that uses an open flame) should not be used.

- Leak detection methods
  The following leak detection methods are considered acceptable for containment systems: flammable refrigerants. Electronic leak detectors should be used to detect flammable refrigerants, but sensitivity may not be adequate or may require recalibration. (Detection equipment must be calibrated in a refrigerant-free zone.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment should be set to a percentage of the LFL of the refrigerant and should be calibrated to the refrigerant used and the appropriate percentage of gas (25% maximum) is confirmed.
  Leak detection fluids are suitable for most refrigerants, but for the use of detergents,
  The concentration of chlorine should be avoided because chlorine can react with the refrigerant and corrode copper piping. If a leak is suspected, all open flames should be removed/extinguished. If a refrigerant leak is found that requires brazing, all the refrigerant must be recovered from the system, or isolated (by means of a shut-off valve) in a part of the system away from the leak. The oxygen-free nitrogen (OFN) must then be purged through the system before and during the brewing process.

❖ Removal and evacuation

When entering the refrigerant circuit for repairs or any other purpose, conventional procedures must be used. However, it is important that best practices are followed since flammability is a consideration. The following procedure must be followed:

. Remove refrigerant;
. Purge the circuit with inert gas;
. Evacuate;
. Purge again with an inert gas;
. Open the circuit by cutting or soldering.

The refrigerant charge should be recovered in the appropriate recovery cylinders. The system must be "flushed" with OFN to make the unit safe. It may be necessary to repeat this process sometimes.
Compressed air or oxygen should not be used for this task. Flushing should be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is reached, then venting to the atmosphere, and finally pulling to the vacuum. This process should be repeated until no refrigerant is in the system. When the final load of the OFN is used, the system must be vented down from the pressure atmosphere to allow the work. This operation is absolutely vital in the event of mixing where an operation on the piping must take place. Make sure that the outlet of the drain pump is not close to ignition sources and that there is enough ventilation available to work on the unit

❖ Labelling

The equipment must be labelled as having been taken out of service and drained of refrigerant. The label must be dated and signed. Make sure there are labels on the equipment indicating that the equipment contains a flammable refrigerant.

❖ Recovery

When removing refrigerant from a system, whether for maintenance or decommissioning, it is recommended that all refrigerants be disposed of safely. When transferring refrigerant into cylinders, ensure that only the correct refrigerant cylinders are used. Ensure that the number of cylinders is sufficient to fill the full load of the system. Ensure that all cylinders to be used are designated for the refrigerant being recovered and labelled for that refrigerant (i.e., cylinders specifically for refrigerant recovery). Cylinders must be equipped with a pressure relief valve and an associated shut-off valve device and be in good working order. Empty recovery bottles are removed and, if possible, cooled before recovery. The recovery equipment must be in good working order with a set of instructions regarding the equipment that is readily available and suitable for the recovery of flammable refrigerants. In addition, a set of calibrated scales must be available and in good working order. Hoses must be equipped with leak-free disconnect fittings that are in good condition. Recovery equipment must be in good working order with a set of equipment instructions that is readily available and must be suitable for flammable refrigerant recovery. In addition, a set of calibrated scales must be available and in good working order. Hoses must be equipped with leak-free disconnect fittings that are in good condition. Before using the recovery machine, verify that it is in good working order, has been properly maintained, and that all associated electrical controls and components are sealed to prevent ignition in the event of a refrigerant release. Consult the manufacturer if in doubt.
The recovered refrigerant must be returned to the refrigerant supplier within the correct time in the recovery bottles and the corresponding waste transfer note arranged. Do not mix refrigerants
in the recovery units and especially not in the cylinders. If compressors or com- sor oil need to be removed, make sure they have been vented to an acceptable level to ensure that the flammable refrigerant does not remain in the lubricant. The evacuation process must be carried out before the compressor is returned to the suppliers. Only electric heating of the compressor body should be used to speed up this process. When oil is discharged from a system, it must be transported outdoors safely.

❖ Decommissioning

Before performing this procedure, it is essential that the technician is fully familiar with the equipment and all its details. It is recommended that good practices be followed by all refrigerants
are safely recovered. Before the task is performed, a sample of oil and coolant should:
be taken in the event that an analysis is required before the reuse of the recovered refrigerant. This is essential that power is available before the task begins.

a) Familiarize yourself with the equipment and how it works.
b) Insulate the system electrically.
c) Before attempting the procedure, make sure that:
. Mechanical handling equipment is available, as required, for the handling of refrigerant cylinders;
. All personal protective equipment is available and used correctly;
. The recovery process is supervised at all times by a competent person;
. The equipment and recovery bottles comply with the appropriate standards.
d) Pump the refrigerant system, if possible.
e) If a vacuum is not possible, make a manifold so that the refrigerant can be removed from various parts of the system.
f) Make sure the cylinder is located on the scale before retrieval takes place.
g) Start the recovery machine and operate according to the manufacturer's instructions.
h) Do not overfill the bottles. (No more than 80% liquid charge vol.).
i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
j) When the cylinders have been filled correctly and the process is complete, make sure that:
cylinders and equipment are removed from the site promptly and all equipment isolation valves are Closed.
(k) The recovered refrigerant shall not be charged into another refrigeration system unless it is cleaned and checked.

❖ Billing Procedures

In addition to conventional pricing procedures, the following requirements must be followed.

- Ensure that contamination of the various refrigerants does not occur when using the equipment load. Pipes or lines should be as short as possible to minimize the amount of refrigerant they contain.
- The bottles must be held vertically.
- Make sure the refrigeration system is grounded before charging the system with refrigerant.
- Label the system when charging is complete (if it hasn't already).
- Extreme care should be taken not to overfill the refrigeration system.

Before recharging the system, it must be subjected to a pressure test with OFN. The system should be tested for leaks at the end of charging, but before commissioning. A follow-up leak test must be performed before leaving the site.

❖ The security wire model is 5*20_5A/250VAC and must meet the requirements of explosion-proof

6.1 Cable Specification

(1) Single-phase unit

Maximum Rated Capacity	Phases	Grounding	MCB	Protective distance	Signal Line
No more than 10A	2x1.5mm²	1.5 mm²	30A	30Ma less than 0.1 sec.	n x 0.5 mm²
10~16A	2x2.5 mm²	2.5 mm²	32A	30Ma less than 0.1 sec.	
16~25A	2x4 mm²	4 mm²	40A	30Ma less than 0.1 sec.	
25~32A	2x6 mm²	6 mm²	40A	30Ma less than 0.1 sec.	
32~40A	2x10 mm²	10 mm²	63A	30Ma less than 0.1 sec.	
40~63A	2x16 mm²	16 mm²	80A	30Ma less than 0.1 sec.	
63~75A	2x25 mm²	25 mm²	100A	30Ma less than 0.1 sec.	
75~101A	2x25 mm²	25 mm²	125A	30Ma less than 0.1 sec.	
101~123A	2x35 mm²	35 mm²	160A	30Ma less than 0.1 sec.	
123~148A	2x50 mm²	50 mm²	225A	30Ma less than 0.1 sec.	
148~186A	2x70 mm²	70 mm²	250A	30Ma less than 0.1 sec.	
186~224A	2x95 mm²	95 mm²	280A	30Ma less than 0.1 sec.	

(2) Three-phase unit

Maximum Rated Capacity	Phases	Grounding	MCB	Protective distance	Signal Line
No more than 10A	3x1.5mm²	1.5 mm²	30A	30Ma less than 0.1 sec.	n x 0.5 mm²
10~16A	3x2.5 mm²	2.5 mm²	32A	30Ma less than 0.1 sec.	
16~25A	3x4 mm²	4 mm²	40A	30Ma less than 0.1 sec.	
25~32A	3x6 mm²	6 mm²	40A	30Ma less than 0.1 sec.	
32~40A	3x10 mm²	10 mm²	63A	30Ma less than 0.1 sec.	
40~63A	3x16 mm²	16 mm²	80A	30Ma less than 0.1 sec.	
63~75A	3x25 mm²	25 mm²	100A	30Ma less than 0.1 sec.	
75~101A	3x25 mm²	25 mm²	125A	30Ma less than 0.1 sec.	
101~123A	3x35 mm²	35 mm²	160A	30Ma less than 0.1 sec.	
123~148A	3x50 mm²	50 mm²	225A	30Ma less than 0.1 sec.	
148~186A	3x70 mm²	70 mm²	250A	30Ma less than 0.1 sec.	
186~224A	3x95 mm²	95 mm²	280A	30Ma less than 0.1 sec.	

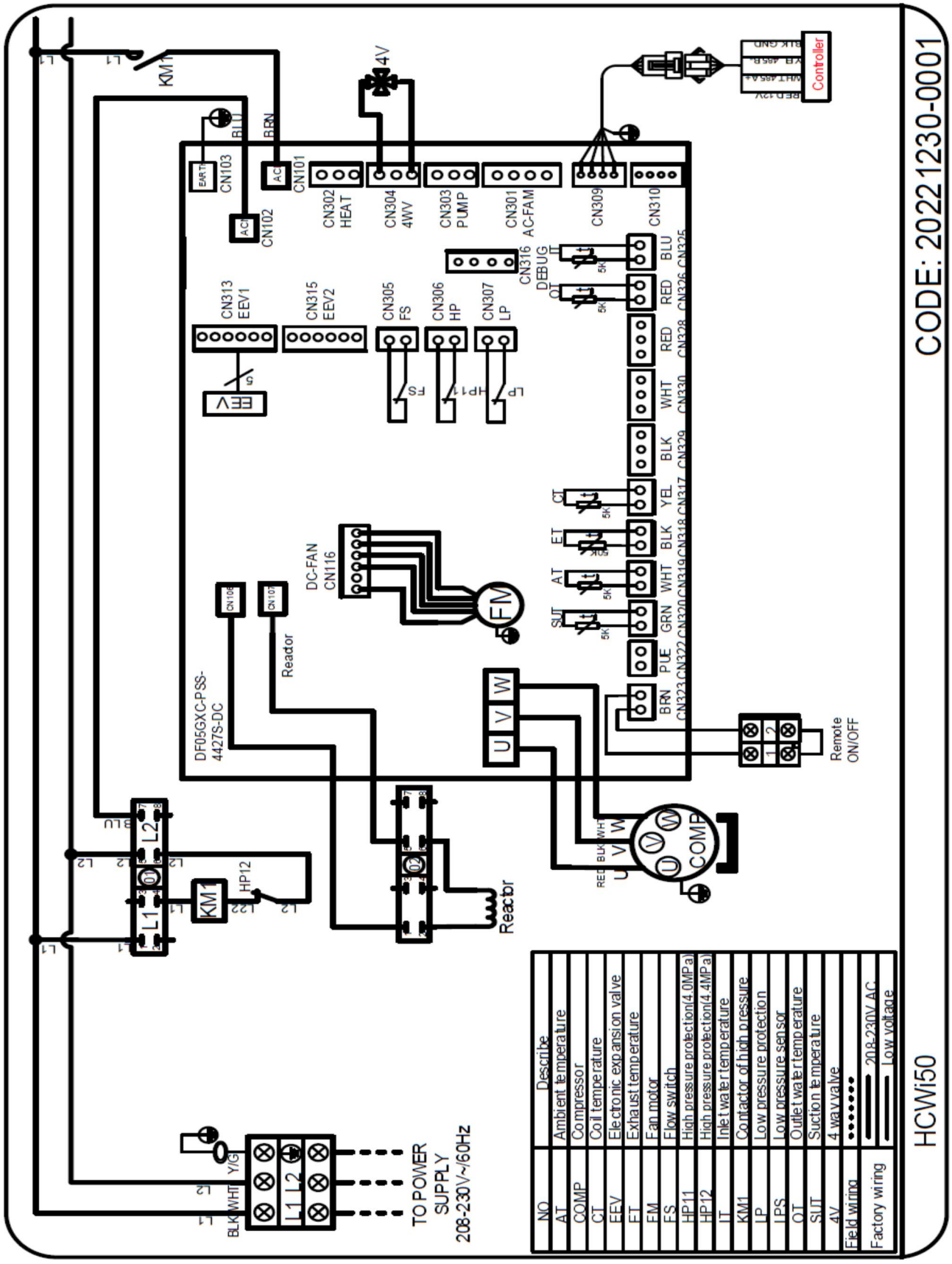
When the device is installed outdoors, please use the cable which can withstand UV rays.

6.2 Refrigerant saturation temperature comparison chart

Pressure (MPa)	0	0.3	0.5	0.8	1	1.3	1.5	1.8	2	2.3
Temperature (R410A) (°C)	-51.3	-20	-9	4	11	19	24	31	35	39
Temperature (R32) (°C)	-52.5	-20	-9	3.5	10	18	23	29.5	33.3	38.7
Pression (MPa)	2.5	2.8	3	3.3	3.5	3.8	4	4.5	5	5.5
Temperature (R410A) (°C)	43	47	51	55	57	61	64	70	74	80
Temperature (R32) (°C)	42	46.5	49.5	53.5	56	60	62	67.5	71.5	77.4

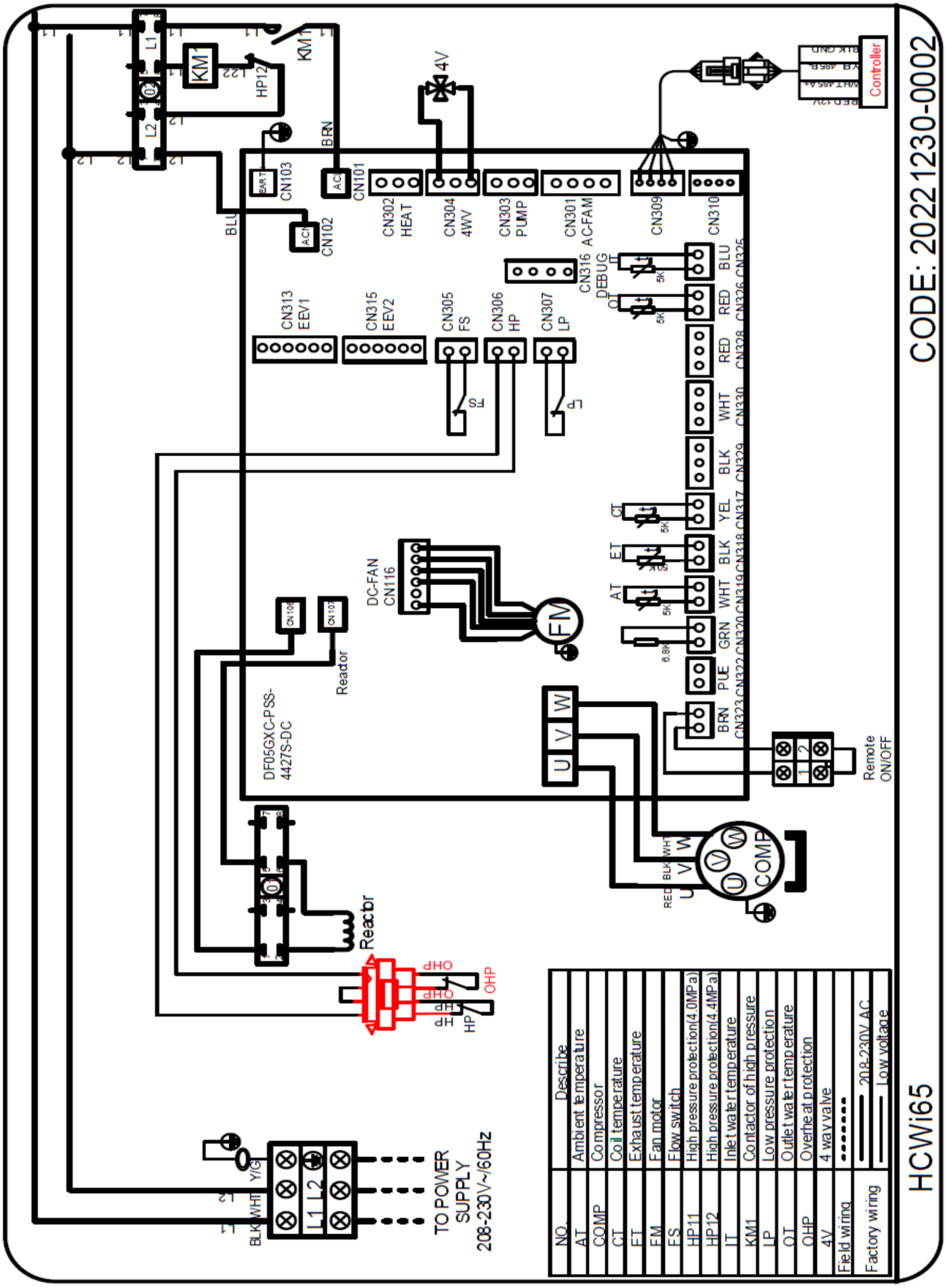
6.3 Electrical diagram of the device

HCWI 50



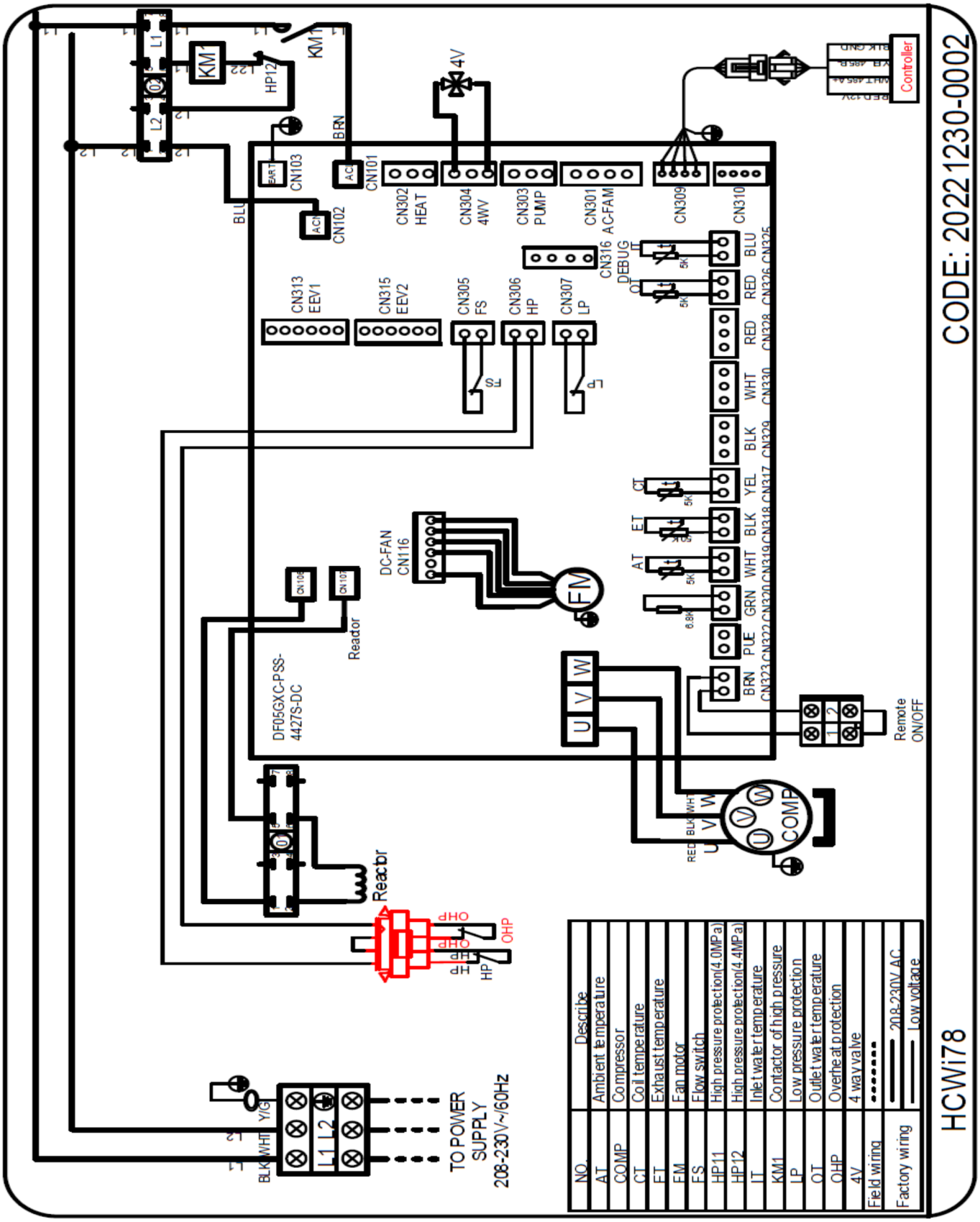
6.3 Electrical diagram of the device

HCWI 65



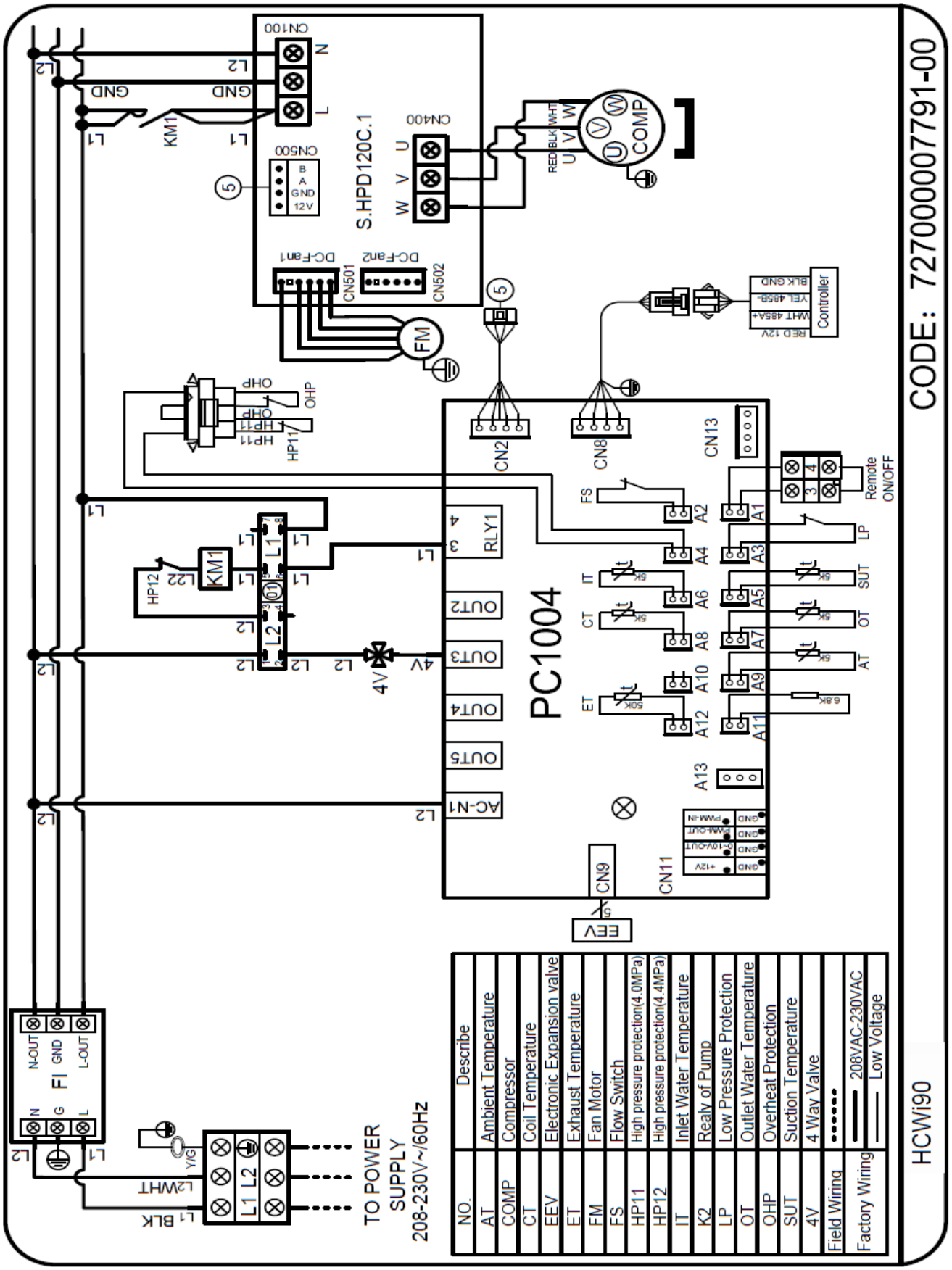
6.3 Electrical diagram of the device

HCWI 78



6.3 Electrical diagram of the device

HCWI 90



WINTERIZATION

HCW SYSTEMS HEATPUMP

❖ To ensure that your pool heater is in perfect working order, please follow the following procedure :

1. Close the breaker and remove the hoses.

2. Plug the bottom hole with a plug and then, rinse the inside of the exchanger by inserting a garden hose in the top orifice. Leave The water drains for 30 to 45 seconds.

3. Remove the bottom cap and suck up the remaining water in the exchanger using a vacuum cleaner (Shop Vac) by inserting the hose into the bottom port while partially blocking the top orifice with your hand

4. Put a cap on the bottom orifice.

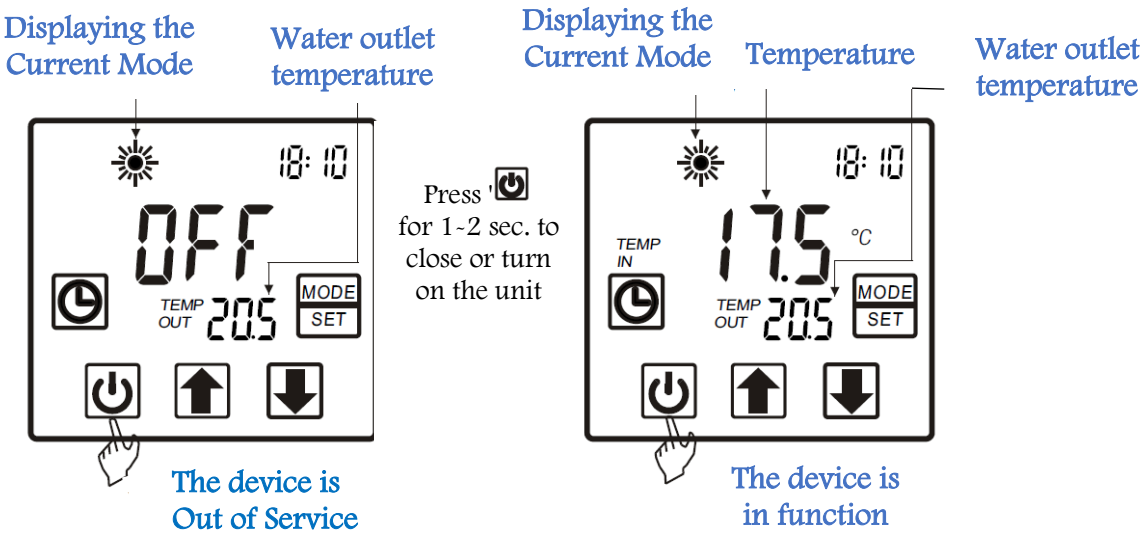
5. You can put a cover for extra protection that you can find at your retailer for good winter protection. (Optional)

There you go !!!
You're ready to get through the winter.

Quick start-up

Inverter HCW Heatpump
HCWI 50 / HCWI 65 / HCWI 78 / HCWI 90

1. Make the electrical connection and turn on the circuit breaker.



1. To *turn the device on or off*, press and hold ⏻ for 1 sec. then let go. *OFF* will appear, so the device is Off. A number appears, it is the temperature of the pool water. The device is therefore ready to meet the demand.

1. To *increase or decrease the desired temperature* , press ⬆ or ⬇. The chosen temperature will appear 5 seconds when flashing. Press ⬆ to increase it or tap ⬇ to decrease it. Your device will keep the water at this temperature.

1. MODE SET Your device uses only 1 mode:

~~Cool~~ Heat ~~Automatique~~

The mode chosen in Quebec should ALWAYS be in water heating mode ☀.

Suite – Quick Start

2. *To adjust the time*, tap , the number in the top right corner will flash. Press again to flash the hours, then adjust using the arrows , then press again to flash the minutes. Tap to save. *The time is now adjusted.*

3. By pressing 2 seconds , ON appears flashing. This is to enter the TIMER ON/TIMER OFF mode to stop and start the device at a fixed time.

***** We do not recommend the use of this mode because our climate requires that the device is always on to maintain the chosen temperature.**

So if ON appears to the left of the time and flashes, press to cancel it. If it no longer flashes, press for 2 seconds to make it flash and then press to cancel it.

To *lock the controller*, press 5 seconds . A padlock will appear. To unlock it, press it again for 5 seconds, the lock will disappear.

*** For more information, please refer to your installation manual and check out our videos on our website:

https://hcwsystems.com/thermopompes/video

Limited Warranty
HCW Inverter Heatpump

HCW SYSTEMES offers a limited warranty
on HCW Inverter Heat Pump model :

3 years - parts and labor.
5 years – compressor (part only)
10 years - Titanium heat exchanger (part only)

During this period, HCW SYSTEMES agrees to provide the related labour with the service required to replace defective parts of the pool heater only. HCW SYSTEMES will not be responsible for any costs related to the replacement of an entire unit. Labor services provided by HCW SYSTEMES for the replacement of defective parts must be performed during normal working hours.

HCW SYSTEMES will not, in any place, be responsible for paying the costs of the labor provided if the parts are not defective during the execution of a service call at the consumer' s premises.

VERY IMPORTANT

THE CHARGES BELOW ARE EXCLUDED FROM THE WARRANTY AND WILL BE APPLICABLE ON THE 31ST DAY AFTER THE ORIGINAL INSTALLATION DATE.

a) The travel expenses of the approved technician
b) Assessment fees
c) The costs of removal and reinstallation of the equipment by the approved technician
d) The cost of transportation and delivery of replacement parts or the unit itself.

Exception :
For service calls to be made in a remote area or region more than 30 km from our distribution network, travel expenses are the responsibility of the consumer from the first day of purchase.

Service Call:
An unjustified service call or result of the negligence of the owner of the reversible pool heater to perform routine checks and that his installation manual and instructions for use suggests, will result in a charge at it equivalent to the time incurred by the certified technician.

** Change without notice.

https://hcwsystems.com