



Pool heat pump

INSTALLATION AND USER MANUAL

TABLE OF CONTENTS

Attention	4
Warnings	4
1 GENERAL USE	4
2 DEVICE FEATURES	5
3. TECHNICAL PARAMETERS	6
3.1 Note	7
3.2 Options for Device Protection	7
4 Implementation	8
4.1 Ventilation and Accessibility of the Device	8
4.2 Additional Recommendations	8
4.3 Water supply and discharge connection. Connecting the pipe	9
4.4 Minimum and maximum flow rates	9
5. CHLORINATORS, BROMINATORS, AND OTHER AUTOMATIC SYSTEMS	10
5.1 Basic connections, In-Line Chlorinator or Brominator	10
5.2 Salt chlorinator	10
5.3 Pressure chlorinator or brominator	10
6. CONNECTION TO THE POWER SUPPLY	11
7. DEVICE OPERATION (50/100/120 MODELS)	12
7.1 Display	12
7.2. Adjusting the Water Temperature	12
7.3 Timer Setting	12
7.4 Wi-Fi Connection	13
8. DEVICE OPERATION (MODELS INV 60/ INV 65/ INV 80/ INV 105)	16
8.1 Display	16
8.2. Mode of Operation	16
8.3. Adjusting the water temperature	17
8.4. Setting the clock	17
8.5. Setting the timer	17
8.6. Cancel Timer	18
8.7. Wi-Fi connection	18
9. VERIFICATION	20
9.1 Inspection Before Operation	20
9.2 Testing the Device	20
10. PRECAUTIONS TO TAKE	21
10.1 Attention	21
10.2 Safety Instructions	21

10.3 Attention.....	21
10.4 Precautionary Statements.....	22
11. MAINTENANCE.....	22
12. DIAGNOSIS AND SOLUTIONS FOR THE MOST COMMON PROBLEMS.....	23
13. ALARM CODES (50/10/120 MODELS).....	24
14. ALARM CODES (MODELS INV 60/ INV 65/ INV 80/ INV 105).....	25

Attention

- A. DO NOT use this device for any purpose other than to regulate the temperature of the water in a swimming pool. Any other use voids the warranty.
- B. The inlet & outlet connection joint cannot support any other piping system's weight.
- C. Make sure that the air outlet cannot injure a person or animal, or affect your plants.
- D. Turn off the power supply before any examination, maintenance, or repair.

Warnings

- A. The unit must be installed & maintained by a professional technician; the Power layout must comply with local concerned regulation. Please read the manual carefully.
- B. Set proper temperature in order to get desired water temperature.
- C. Please do not stack substances that can block air flow near inlet or outlet area.
- D. If the unit shuts off during a power shortage, it will automatically start up when power returns.
- E. If the machine is stopped for a long time or in winter season, please cut off the power supply and drain water clear of the machine by disconnecting the water inlet and outlet.
- F. Do not put your hand or objects into air outlet of evaporator, forbidden to disassemble unit with the working fan.
- G. If any abnormal status occurs such as abnormal noise, smell, smoke, electricity leakage, please switch off power immediately and contact your local dealer, please do not check the unit by yourself.
- H. Do not store combustible or flammable material near unit.

1. GENERAL USE

- Choose a pool water temperature at an appropriate but also economical degree, in order to maximize your comfort and enjoyment.

2. DEVICE FEATURES

- A titanium heat exchanger, with a high efficiency coefficient
- High accuracy of temperature control and display
- A water pressure detection and protection system (High pressure, low pressure & water flow protection system)
- Automatic shut-off if the outside temperature is too low
- Automatic defrost
- An internationally renowned compressor manufacturer
- Easy installation and operation
- WI-FI connection, allows you to control the pool's heat pump from the SMART LIFE app.

3. TECHNICAL PARAMETERS

Model	50	INV 60	INV 65	INV 80	INV 105
Heating capacity	50000	60,000 BTU	65,000 BTUs	80,000 BTU	105,000 BTUs
Circuit breaker	20A	20A	20 A	30A	40A
Voltage/Freq/Phase	240/60/1				
Current (Air 80°F, Water 80°F, 90Hz)	16A	16A	16 A	21A	27A
BTU Water/Air/Humidity/80/80/80°F					
Silent mode	48000	24770	26000	33000	41804
Normal mode		45300	48800	56500	84550
Strong Mode		57000	64000	77300	105000
COP Water/Air/Humidity/80/80/80°F					
Silent mode	5,8	10,7	10,5	11	9.3
Normal mode		7,7	7,4	6,7	6
Strong Mode		4,9	5,5	5,4	5
BTU Water/Air/Humidity/80/80/63°F					
Silent mode	41000	23340	24000	29500	36781
Normal mode		42130	43300	54500	78150
Strong Mode		55000	60300	72050	98096
COP Water/Air/Humidity/80/80/63°F					
Silent mode	5,3	10	9	9,5	6.63
Normal mode		7,2	6,8	6,3	5.5
Strong Mode		4,4	5,3	5,1	4.88
BTU Water/Air/Humidity/80/50/63°F					
Silent mode	28000	11500	13800	17060	25056
Normal mode		26100	27500	33100	54500
Strong Mode		36800	41000	44300	72652
COP Water/Air/Humidity/80/50/63°F					
Silent mode	4	4,5	5	5,3	5
Normal mode		4,3	4,4	4,5	4,1
Strong Mode		4,1	3,8	3,8	3,6
Water-flowing GPMUS	9 to 45	9 to 45	9 to 45	15 to 45	15 to 80
Length/Height and Width (inch)	38/22/12	38/22/12	40/24/12	40/24/12,5	46/28/17
Rated Current	8.1A	8.7A	8.85 A	15.25A	23.5A
Fan Motor (FLA)	0.52A	0.53A	0.50 A	0.45 A	0.83A

Design Pressure (High)	≤500 PSIG	≤500 PSIG	≤500 PSIG	≤500 PSIG	≤500 PSIG
Design Pressure (Low)	≤250 PSIG	≤250 PSIG	≤250 PSIG	≤250 PSIG	≤250 PSIG
Refrigerant (R410A or R32)	45 oz (R410A)	29 oz (R32)/ 48 oz (R410A)	35 oz (R32)/ 48 oz (R410A)	48 oz (R32)	44 oz (R32)/ 64 oz (R410A)
Net Weight, Pounds (kg)	120(55)	120(55)	132(60)	140(64)	177(80)
Decibels (at 3 meters)	38 - 50	38 - 50	38 - 50	38 - 52	38 - 52
MCA	19.9 A	19.9 A	19.9 A	26.1 A	33.5 A
BCSC	19.9A	19.9A	19.9A	26.1A	33.5A
MOP	20	20	20	30	40

3.1 Note:

- This product is designed to operate between 7°C to 35°C (45F – 95F). Efficiency will not be guaranteed out of this range and parameters are different under various conditions.
- Related parameters are subject to adjustment periodically for technical improvement without further notice. For details please refer to nameplate.
- This machine works in heating and cooling mode.

3.2 Options for Device Protection

N.B: The pool heater must be grounded

Model		50	INV 60	INV 65	INV 80	INV 105
Circuit breaker	Effective Current A	20	20	20	30	40
Fuse A		20	20	20	30	40

4. SETUP

The choice of where to install your pool heat pump is very important. You must comply with the following instructions.

4.1 Ventilation and Accessibility of the Appliance

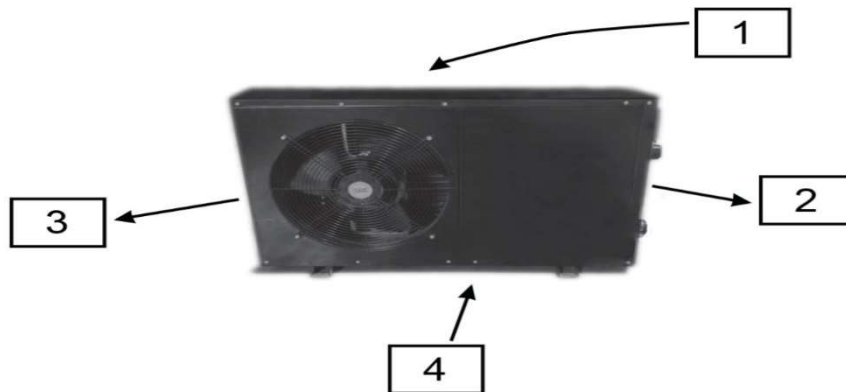
Your heat pump works, in large part, in symbiosis with the surrounding air: it is important that there be adequate ventilation all around the heat pump. Therefore, the device should not be installed in a closed space such as a garden shed or a basement.

Important: Your heat pump must have sufficient free space around it to function properly.

You must also leave spaces free of obstructions, as specified in the table below.

	ALL MODELS
(1) facing the evaporator coil	60 cm = 2 pieds
(2) Facing other surfaces	120 cm = 4 feet
(3) in front of the fan*	120 cm = 4 pieds
(4) in front of the service panel	120 = 4 feet

* Objects should be placed as far away as possible from where the air is evacuated.



4.2 Additional Recommendations

You should not install your unit under a roof to prevent your heat pump from being buried under snow or receiving too much water if the roof is not equipped with gutters.

Be careful not to install your heat pump so that the sun hits the regulator directly. This would not damage it but its display will be more difficult to read.

Similarly, you should not install an automatic sprinkler near your pool heat pump. The appliance should be installed on a flat, firm, and level surface. A concrete slab or equivalent would be preferable. Consider that your appliance will produce condensation. There will therefore be a flow of water around the device.

It is highly recommended to use a solar blanket to cover the pool in order to reduce the heat and evaporation loss, mainly during colder nights

4.3 Water supply and discharge connection. Connecting the piping

The connections of all models have a diameter of 1 ½' inches.

4.4 Minimum and Maximum Flows

For maximum performance, your heat pump must operate with a water flow rate within the limits below:

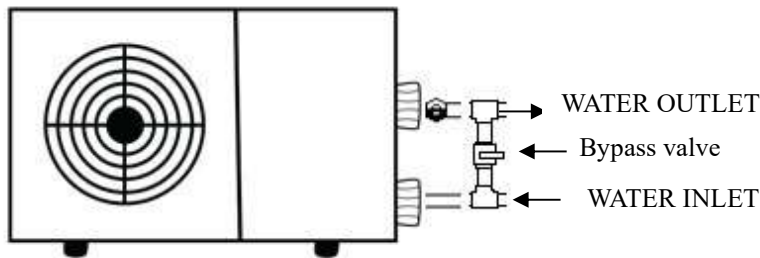
Model	50	INV 60	INV 65	INV 80	INV 105
Water-flowing GPMUS	9 to 45	9 to 45	9 to 45	15 to 45	15 to 80

With a water flow rate of less than 57 L/m (9 US GPM) and more than 302.4 L/m (80 US GPM*), the heat pump will not operate properly and will sustain damage.

A set of valves (Fig. A) to insulate the heat pump and adjust the flow rate must be installed.

We recommend the installation of this valve set (Fig. A) in order to be able to adjust the ideal flow of water flowing through the heat exchanger (condenser). An adjustable automatic bypass valve must be installed when a water pump of 2 HP and above is used to circulate pool water

	CAREFUL	<i>If the water flows prescribed above are not respected, damage will result and your heat pump warranty will be void.</i>
--	----------------	--



Closed bypass valve for operation.

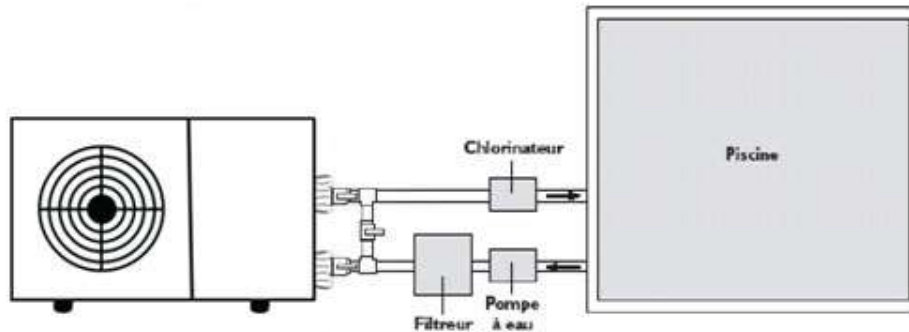
*Based on the model shown in the table. Your water pump must be able to supply each heat pump.

One US gallon per minute (1GPM US) = 3.78 liters per minute (3.78 l/m)

5. CHLORINATORS, BROMINATORS, AND OTHER AUTOMATIC SYSTEMS

5.1 Basic connections, In-Line Chlorinator or Brominator

This connection is mandatory to guarantee the life of your pool heat pump



Any automatic distribution system for chemicals, chlorine, bromine or others, must be installed so that the water outlet of the distribution system is located after the pool heat pump. The heat pump warranty is invalid for any non-compliant installation.

5.2 Salt chlorinator

Salt chlorinators are made to be installed like line chlorinators. Therefore, they must be installed as prescribed in the section (in LINE CHLORINATOR OR BROMINATOR).

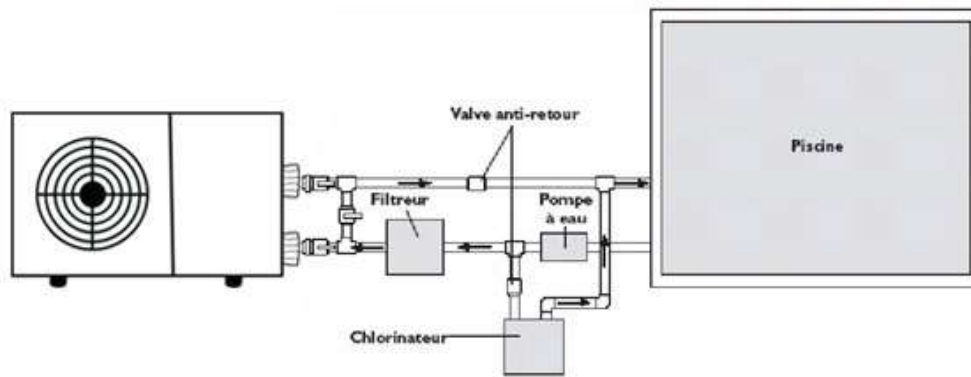
5.3 Pressure chlorinator or brominator

Pressured Chlorinators or brominators feed a small amount of water at the outlet of the filter, then add chemicals, and pump this highly concentrated solution back into the pool. Non-return valves must therefore be highly resistant to corrosion. Use only valves provided or recommended by the manufacturer of your chlorinator or brominator.



CAREFUL

Pool heat pumps must operate normally with a water pressure of (12-15 PSI). The maximum operating pressure is 2 bar (30 PSI) of water pressure. Failure to comply with the pressures prescribed above will void the warranty of your heat pump.



6. CONNECTION TO THE POWER SUPPLY

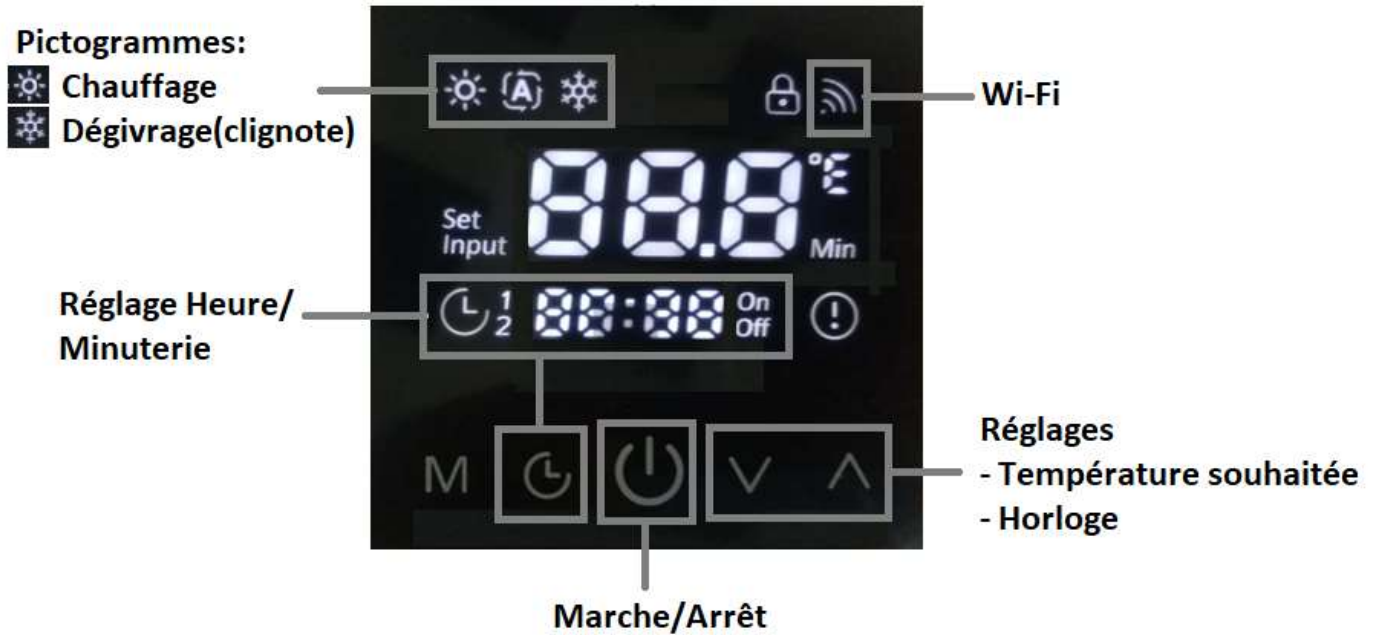
To ensure your safety and the proper functioning of the device, the electrical connections must be performed by a qualified electrician according to national codes, provincial and local regulations.

A circuit breaker must be installed close to the heat pump, in an accessible location.

Never open the electrical box without shutting off the power to all sources used for the operation of the heat pump. If your heat pump has a pool pump control option, remember to close the circuit breaker to this pump.

The spec sheet for the heat pump contains all the requirements for voltage and amps. If the power cord is damaged, it must be replaced by a qualified electrician.

7. DEVICE OPERATION WI-FI (50/100/120 MODELS)







Note: The pool heater will be turned on when the pictogram  is turned on.






7.1 Display

- The time and temperature are displayed at all times.




7.2. Adjusting the Water Temperature

- Press the button   to adjust and set the desired water temperature degree.
- The control display will return to normal mode 5 seconds later.
- To switch from Fahrenheit to Celsius, press for 5 seconds  +  keys.









7.3 Setting the Timer

- The time setting is accessible whether the device is on or off.
- Press the key  for 3s to enter the clock setting interface, and when you enter the clock setting interface, the hour and minute positions will flash together. Press the  again and the time position will flash for a few minutes.
- Then adjust the position of the hours with the  and  keys; Press the  again after setting







the time position, then the time position will flash for a few minutes.

- Adjust the minutes with the  and  at this time.
- When you finish setting the minute position, please press the  to return to the main screen.

Note: When the WI-FI connection is established, the time adjusts automatically.

- Short press  to enter the timer setting screen, when timer group 1 or 2 flashes (you can select a timer group by pressing the  or ).
- When the current timer group is selected, the timer group flashes. At this point, press  to access the current timer group settings.
- To activate the timer, keep the button  pressed until ON/OFF is activated.
- On the timer setting interface, if you short press the key , you can delete the timer function.
- Press the  and  keys simultaneously for 10 seconds, you can recover the default values of the parameters.

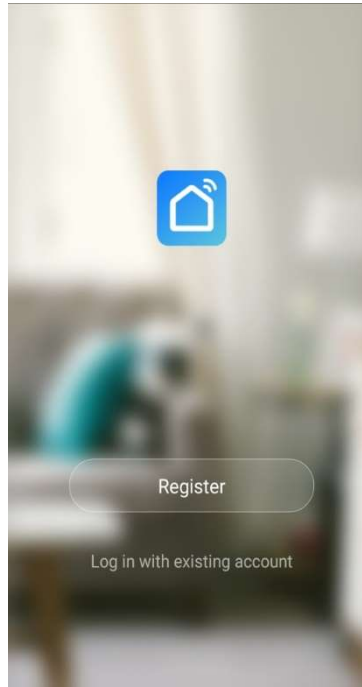
7.4 Wi-Fi Connection



- If you press and hold the keys  and  for 5 seconds, you can enter the smart network setup mode. The icon  is flashing, this means that the distribution network is working properly.
- When the icon  is constantly on, please press and hold the + keys for 5 seconds to enter the network configuration.
- Software download and installation:

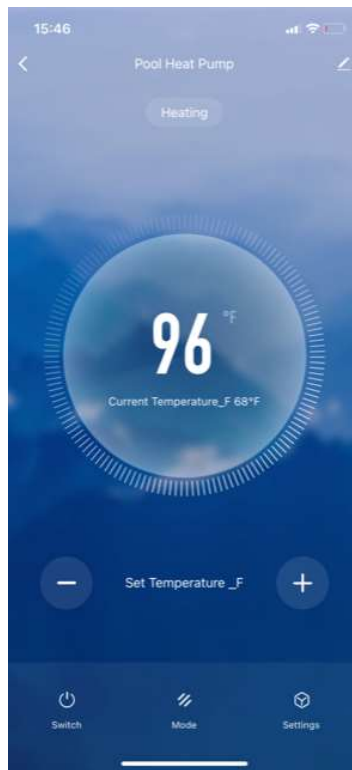
- Search for "Smart Life" in the Apple/Google Store to download and install :



- Registration.



- Turn on the phone's WiFi feature and connect the WiFi hotspot.
- When the icon  lights up and flashes quickly, the app will be able to find the heat pump automatically, if not, click "+" in the top right corner or "Add Device" in the interface.
- If "Device Detected", "Device Registered with the Smart Cloud" and "Device Initialization" are complete, the connection is successful. If "device is added successfully" is displayed, the network is configured successfully.
- On this screen, you can change the device name and select the installation location, then click "Finish" to go directly to the main interface of device operation;
- Once the connection is successfully established, the icon  will remain lit and this will be the access screen in the application:



- Using the app:



Press the on/off button to turn the heat pump on and off;



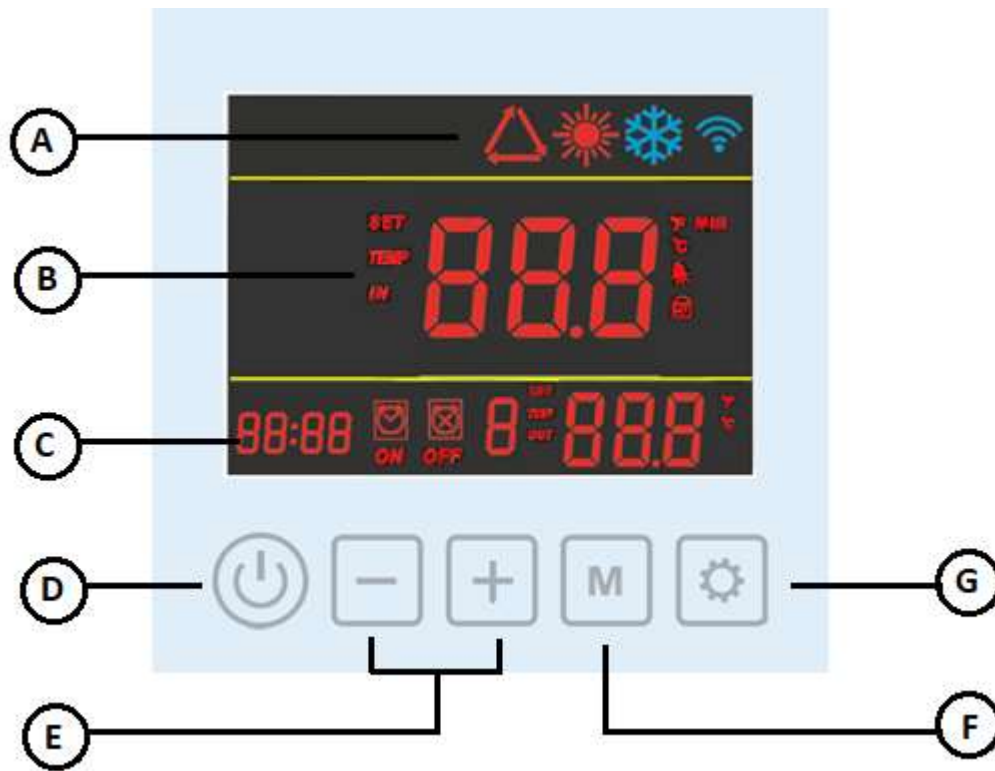
Press the timer button to set the timer.



At any time, you can press the  and  buttons to adjust the temperature.

Caution: If the heat pump has an error code, this code will be displayed on the main screen of the app. In this case, turn off the circuit breaker and contact your installer/seller as soon as possible.

8. DEVICE OPERATION INVERTER WI-FI (MODELS INV 60/ INV 65/ INV 80/ INV 105)











- A – Operation Mode Display
- B - Bulletin Board
- C – Clock
- D – On/Off
- E – Setting (Desired Temperature and Clock/Timer)
- F – Mode of operation
- G – Clock/Timer Configuration



8.1 Display

- a. The time is displayed when the device is in 'off' mode.
- b. The water temperature is displayed when the device is running.










8.2. Mode of operation

- a. Press the button  for 3 seconds to turn the machine on/off.
- b. Press the button  for 3 seconds to change the mode: STRONG , NORMAL , SILENT,  and COOLING .
- c. To switch from Fahrenheit to Celsius, press and hold  +  keys when the heat pump is OFF.











8.3. Adjusting the Water Temperature

- a. Press the key  or  to set water temperature. The controller indicates flashing temp.
- b. The controller display will return to normal mode a few seconds later.

8.4. Setting the Clock

- a. Available no matter whether the machine is on or off.
- b. Press the key . The dial to change the time flashes.
- c. Press the key  or  to set the required time. You can press and hold  or  to change automatically.
- d. Press the key . The dial to change the minutes flashes.
- e. Press the key  or  to set the minutes.
- f. Weigh the key  to finish the setting.





8.5. Setting the Timer

- a. Press and hold  for 3 seconds to set the timer.
- b. The dial - Timer 1 - flashes. Press the key  or  to set the required time. You can press and hold  or  to change automatically.
- c. Press the key . The dial to change the minutes flashes. Press the key  or  to set the minutes.
- d. Press the key  to finish the configuration of the minute. The dial - Timer 2 - flashes, you can repeat the procedure to set another timer.
- e. Press the key  to return to the home page.
- f. In the home page, it can show the timer frame number that has been set.

8.6. Cancel Timer

When the set ON time and OFF time are the same, the current timer is canceled.

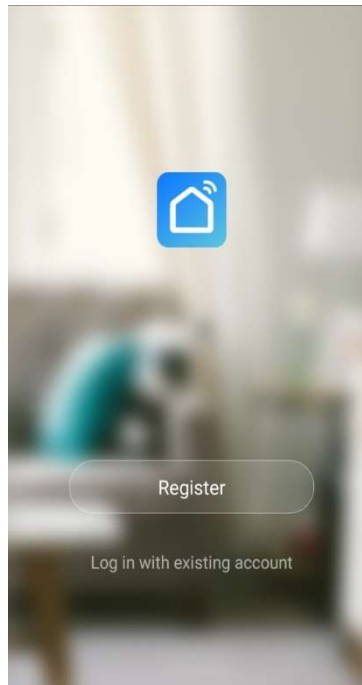
8.7. Wi-Fi Connection


- If you press and hold the  +  +  keys for 3 seconds, you can enter the smart network setup mode. The icon  is flashing, this means that the distribution network is working properly.
- Software download and installation:

- Search for "Smart Life" in the Apple/Google Store to download and install :




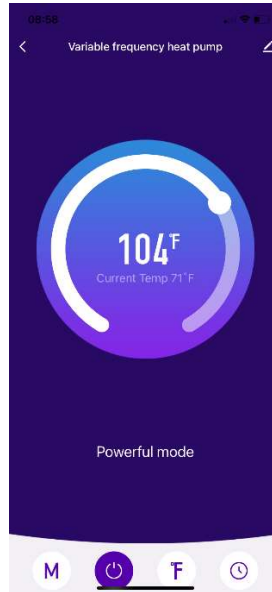
- Registration.




- Turn on the phone's WiFi feature and connect the WiFi hotspot.
- When the icon  lights up and flashes quickly, the app will be able to find the heat pump automatically, if not, click "+" in the top right corner or "Add Device" in the interface.
- If "Device Detected", "Device Registered with the Smart Cloud" and "Device Initialization"


are complete, the connection is successful. If "device is added successfully" is displayed, the network is configured successfully.


- On this screen, you can change the device name and select the installation location, then click "Finish" to go directly to the main interface of device operation;
- Once the connection is successfully established, the icon  will remain lit and this will be the access screen in the application:




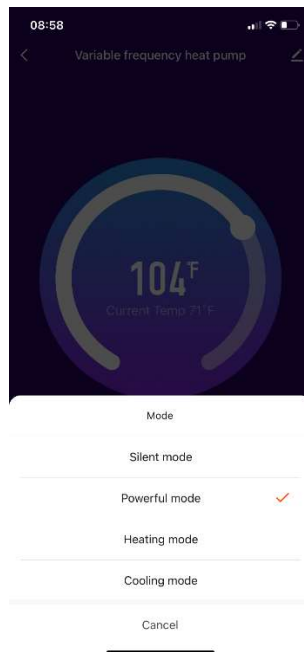
- Using the app:

 Press the on/off button to turn the heat pump on and off;

 Press the timer button to set the timer.

 Press the button to switch between C deg and F deg.

 Press the button to change the operating mode:



Caution: If the heat pump has an error code, this code will be displayed on the main screen of the app. In this case, turn off the circuit breaker and contact your installer/seller as soon as possible.

9. VERIFICATION

9.1 Inspection Before Use of the Device

- A. Check installation of the whole machine and the pipe connections according to the pipe connecting drawing; (Blue water IN / Red water OUT)
- B. Check the electric wiring according to the electric wiring diagram; and grounding connection.
- C. Make sure that the main machine power switch is off
- D. Check the temperature setting.
- E. Check the air inlet and outlet.

9.2 Device Testing

- A. The user must “Start the Pump before the Machine, And Turn off the Machine before the Pump”, or the machine will be damaged.;
- B. The user should start the pump, check for any leakage of water; and then set suitable temperature in the thermostat, and then switch on power supply.
- C. In order to protect the swimming pool heater, the machine is equipped with a time lag starting function, when starting the machine, the blower will run 3 minutes earlier than the compressor.
- D. After the swimming pool heater starts up, check for any abnormal noise from the machine.

10. PRECAUTIONS TO BE TAKEN

10.1 Caution

- A. Set proper temperature in order to get comfortable water temperature; to avoid overheating.
- B. Please don't stack substances that can block air flow near inlet or outlet area, or the efficiency of the heater will be reduced or even stopped.
- C. Please don't put hands into outlet of the swimming pool heater, and don't remove the screen of the fan at any time.
- D. If there are abnormal conditions such as noise, smell, smoke and electrical leakage, please switch off the machine immediately and contact the local dealer. Don't try to repair it yourself.
- E. Don't use or stock combustible gas or liquid such as thinners, paint and fuel to avoid fire.
- F. In order to optimize the heating effect, please install heat preservation insulation on pipes between swimming pool and the heater. During running period of the swimming pool heater, please use a recommended cover on the swimming pool.
- G. Connecting pipes of the swimming pool and the heater should be $\leq 10\text{m}$, or the heating effect of the heater cannot be ensured.

10.2 Safety Instructions

- A. Please keep the main power supply switch far away from the children.
- B. When a power cut happens during running, and later the power is restored, the heater will start up automatically. So please switch off the power supply when there is a power cut, and reset temp when power is restored.
- C. Please switch off the main power supply in lightning and storm weather to prevent from machine damage that caused by lightning.
- D. If the machine is stopped for a long time, please cut off the power supply and drain water out of the exchanger by disconnecting the inlet/outlet pipe.

10.3 Caution

- DO NOT use this device for any purpose other than to regulate the temperature of the water in a swimming pool. Any other use voids the warranty.
- The inlet and outlet connection joints cannot withstand the gravity of any other piping system.
- Make sure that the air outlet cannot injure a person or animal, or affect your plants.
- Turn off the power supply before any examination, maintenance, or repair.



CAREFUL

Do not use any other means to speed up the defrosting process or to clean other than those recommended in this manual

10.4 Precautionary Statements

- The appliance must be installed and maintained by a professional technician; The power supply must comply with local regulations. Please read the Guide carefully.
- Select a temperature degree that will allow you to achieve the desired water temperature.
- Be careful not to place objects that could impede airflow near the air inlet and outlet of the unit.
- If the power supply is turned off while the unit is in operation, it will automatically turn back on when the power is restored.
- If you are shutting down the unit for a long period of time, or during the winter, turn off the power supply and turn on the water inlet valve to purge the system of the water accumulated inside.
- Do not place your hand or any object (tool) in the air outlet of the evaporator. You are strictly forbidden to try to open the pool heater with the fan on.
- If you detect a situation that seems abnormal to you, e.g. louder than usual noise, smoke, smell, loss of electricity, immediately turn off the power and contact your local retailer. Do not attempt to check the device yourself.
- Do not store hazardous or flammable materials near the pool heater
- Replace components only with manufacturer-recommended parts

11. MAINTENANCE



CAREFUL

For winterization, close the main circuit breaker, drain the appliance by disconnecting the water inlet and outlet. Suck the remaining water into the heat exchanger, using a wet and dry waste sweeper.

- Turn off the circuit breaker before maintenance or repair.
- Clean the appliance with regular household cleaning products or water and a soft cloth. NEVER use solvents or gasoline.
- For winterization, close the main circuit breaker, drain the water clear of the machine by disconnecting the water inlet and outlet. Suck the remaining water into the heat exchanger, using a wet and dry waste sweeper. Cover the machine body with a plastic foil to avoid dust (recommended).



CAREFUL

To ensure your safety and the proper functioning of the appliance, all maintenance, service and repair operations must be performed by a qualified person

12. DIAGNOSIS AND SOLUTIONS FOR THE MOST COMMON PROBLEMS

Problem	Cause	Solutions
Won't start	The unit is off or the circuit breaker is in the OFF position	Increase the temperature with the boom and/or turn the circuit breaker to the ON position
	Faulty circuit breaker	Replace the circuit breaker
	Circuit breaker tripped	Turn it back on, if the problem persists have the circuit breaker checked by a certified electrician
The air is circulating but the heating system is not adequate	Blocked air inlet or outlet	Clean with a garden hose
	3-minute start-up time.	Please wait
	Temperature set too low.	Increase the temperature accordingly

Caution: Do not disassemble or attempt to repair the appliance by yourself. Leave it to the professionals.

13. ALARM CODES (50/10/120 MODELS)

E 1	High pressure protection
E 2	Low pressure protection
E 3	Low water pressure protection
E 4	Over current (3 phase machine)
E 6	Compressor exhaust overload protection
PP 1	Pool (SPA)heater sensor failure
PP 2	Exhaust sensor failure
PP 3	Coil pipe sensor failure
PP 5	Air temp sensor failure
PP 7	When the temperature<+45°F , auto stop protection (not Failure)

14. ALARM CODES (MODELS INV 60/ INV 65/ INV 80/ INV 105)

E 03	Low water pressure protection
E 04	When the temperature < +36°F, auto stop protection (not Failure)
E 05	High pressure protection
E 06	Low pressure protection
E 12	Discharge temperature failure
E 15	Water inlet temperature failure
E 16	Outer coil temperature failure
E 20	Inverter module abnormal protection
E 21	Ambient temperature failure
E 27	Water outlet temperature failure
E 29	Suction temperature failure
E 35	Compressor electric current protect
E 42	Inner coil temperature failure



TTI FABRICATION Inc.
684 Jean-Neveu Street
Longueuil, QC, J4G 1P1
Canada
www.ttifab.com