Heat Pump Pool and Spa Heater
QUICK START GUIDE

Model ECO500
50,000 BTU Heat & Cool
SECTION 1 - GENERAL INFORMATION

CONTACTING
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SAFETY

For personal safety, and to avoid damage to equipment, follow all safety instructions displayed in this guide. Repair and service of your heat pump must be performed by qualified service personnel. Failure to properly install, operate, maintain, or repair the heat pump will void factory warranty. Please note "WARNING" signals relate to personal safety, while "CAUTION" signals promote avoiding damage to equipment. Follow all National Electric Codes (NEC) unless State or Local guidelines supersede. When installing and using your heat pump, basic safety precautions must always be followed

**WARNING** - Failure to heed the following may result in injury or death. Heat pumps contain no owner-repairable components. Electrical Installation should be by Licensed Electrician only. Service to the refrigerant circuit must be performed only by qualified HVAC Technicians. Heat pumps utilize high voltage and rotating equipment. Use caution when servicing. Heater contains refrigerant under pressure. Recover refrigerant before opening system. Prolonged immersion in water warmer than normal body temperature can cause fatal Hyperthermia. The use of alcohol, drugs, or medication can greatly increase the risk of fatal Hyperthermia. Persons having an adverse medical history, or pregnant women, should consult a physician before using a hot tub or spa. In addition, children and the extreme elderly should be supervised by a responsible adult.

**CAUTION** - Failure to heed the following may result in equipment damage. Improper water chemistry can cause damage to pump, filter, pool shell, etc. To avoid equipment damage, maintain Pool/Spa water per standards detailed later in this manual. Water flow exceeding max flow requires a bypass. Damage due to excessive water flow will void warranty.

SAVE THESE INSTRUCTIONS

WINTERIZING

In areas where freezing conditions are a rare occurrence, allow the filtration system to run continuously throughout the freeze period. Typically, during light freeze conditions, circulating (moving) water will not freeze. In areas where freezing conditions are prevalent and sustained, the heat pump must be winterized as follows:

1) Disconnect all electrical power to the heater; turn off circulating pump.

2) At the two (2) connection unions, disconnect the plumbing to the heater (removal is counter-clockwise).
3) If your unit has an external drain plug, remove plug. This plug would be located at lower, front corner of heater (position may vary between models). Allow water to drain out of the condenser. Replace the winterizing plug by threading the plug in clockwise until just snug, then apply an additional 1/8 turn.

4) If no drain plug is found, unit is self-draining from unions. Check online manuals for appropriate winterizing procedures on heat pumps older than 2005.

5) To prevent insects and vermin from entering the plumbing during the winterized period, partially reconnect the two (2) plumbing connection unions: couple each union one or two threads; this will permit condensation to drain, but will prevent most insects and animals from entering the plumbing circuit.

START UP
To ready a winterized heat pump for use, simply retighten plumbing connection unions. Hand-tight is generally sufficient.

Warning
A. DO NOT use this unit for any other purpose than to regulate swimming pool water temperature. Utilization for any other application will void warranty.
B. The inlet & outlet connection joint can not support any other piping system’s weight.
C. Make sure outlet air does not hurt any person, animal & plant.
D. Please make sure to switch off the power before any examination and repair.

Precautions
A. The unit must be installed & maintained by 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. The unit will automatically start up upon power available although power stop during operation.
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 opening the tap of inlet pipe.
F. Do not put your hand or pole into air outlet of evaporator, forbid to disassemble 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.

I. Application
1- Set swimming pool water temp efficiently and economically to provide you comfort and pleasure
2- User may choose the model technical parameter according to professional guide, this series of swimming pool heater has been optimized in factory (refer to technical parameter table).
Technical Parameters

<table>
<thead>
<tr>
<th>Model</th>
<th>50HC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating capacity</td>
<td>50000 BTU</td>
</tr>
<tr>
<td>Cooling capacity</td>
<td>29000 BTU</td>
</tr>
<tr>
<td>Voltage 208-240v</td>
<td></td>
</tr>
<tr>
<td>Frequency/phase – 60Hz/1 PH</td>
<td></td>
</tr>
<tr>
<td>Compressor RLA/LRA</td>
<td>11.6A/60.2A</td>
</tr>
<tr>
<td>Fan motor rating</td>
<td>0.5 A</td>
</tr>
<tr>
<td>Refrigerant(R410A)</td>
<td>56.4oz</td>
</tr>
<tr>
<td>Noise</td>
<td>≤50 dB(A)</td>
</tr>
</tbody>
</table>

Dimension

![Diagram of 50HC model with dimensions](image)
Installation Guide

1. Electric Wiring Diagram
Users' Electric Box

Heat pump

Breaker/fuse
(Customer prepare)

Power Supply
230V/60Hz

L1
L2

Earthing

Water pump

Breaker/fuse
(Customer prepare)

contactor

SPA Control
(230V/60Hz-0.5A)

Water pump

1. The 5 & 6 terminal are the connectors with switch of customer remote control system.
   - If heat pump is remote control system, please connect terminals 5 & 6 with a wire.
2. If switch on 5 & 6 terminal (the customer remote control system), heat pump will operate as instructed on LED of heater, LED indicator light up as current heat pump operation status.
   - If switch off 5 & 6 terminal (no customer remote control system), heat pump will stop.
   - All indicators light out.
2. Installation instruction and requirement

The swimming pool heater must be installed by a professional. The users are not qualified to install by themselves, otherwise damage may happen to the heater or threat the body safety of the user.

A. Installation
1. The swimming pool heater should be installed in a place with good ventilation;
2. The frame must be fixed by bolts to concrete foundation or brackets. The concrete foundation must be solid and fastened; the bracket must be strong enough antirust treated.
3. Please don’t stack substances that will block air flow near inlet or outlet area, and there is no barrier within 50cm behind the main machine, or the efficiency of the heater will be reduced or even stopped.
4. When the machine is running, there will be condensation water discharged from the bottom, please pay attention to it. Please hold the drainage nozzle (accessory) into the hole and clip it well, and then connect a pipe to drain the condensation water out.

B. Wiring
1. Connect to appropriate power supply; the voltage should comply with the rated voltage of the products. Earth the machine well.
2. Wiring must be handled by a professional technician according to the circuit diagram.
3. Set leakage protector according to the local code for wiring.
4. The layout of power cable and signal cable should be orderly and not affecting each other.

C. Switch on after finishing all wiring construction and re-checking.
**Operation Instruction**

![Diagram of operation display](image)

**Picture for keys**

**Operation Display**

a. The display shows Time when the machine is off

b. The display shows Temperature of the swimming pool water when the machine is on.

**Water temperature setting (Heating machine has no cooling function)**

a. Press MODE key can switch HEAT-SPA-COOL circulating mode.

b. Available no matter the machine is on or off. Press HEAT or COOL light up.

c. Press the key △ or ▽ to set water temperature. The controller indicates flashing temp.

Press △ or ▽ to adjust to your desired water temp.

d. 5 seconds later, the controller display will back to the normal mode.

**SPA water temperature setting (For machine with spa function only):**

a. Available no matter the machine is on or off. Press MODE to SPA light up.

b. Press the key △ or ▽ to set water temperature. The controller indicates flashing temp.

Press △ or ▽ to adjust to your desired water temp

c. 5 seconds later, the controller display will back to the normal mode.

**Time setting (Military Based Time is USED – FYI)**

a. Available no matter the machine is on or off.

b. Press  key to set time. When the clock on the screen is flashing, press  again to set
hour. Use ▲ or ▼ to adjust hour. Before the flashing stops, press ⊿ to set minute. Use ▲ or ▼ to adjust. After adjusting, press ⊿ and water temperature will be displayed. 30 seconds later, the controller display will be back to the normal mode.

Timer on and off

a. Press ⊿ set timer on. When the indicator light is on and the time is flashing, press ⊿ again to set hour. Use ▲ or ▼ to adjust. Before the flashing stops, press ⊿ to set minute.

b. Use ▲ or ▼ to adjust. After adjusting, press ⊿ and water temperature will be seen. 30 seconds later, the controller display will be back to the normal mode.

c. Press ⊿ to set timer off. When the indicator light is on and the time is flashing, press ⊿ again to set hour. Use ▲ or ▼ to adjust before flashing stop, press ⊿ to set minute. Use ▲ or ▼ to adjust. After adjusting, press ⊿ and water temperature will be seen. 30 seconds later, the controller display will be back to the normal mode.

Cancel timer on and off

Press ⊿ or ⊿ to cancel timer on and off. When the number is flashing, press ⊿ when timer indicator light is off and LED shows water temperature, the timer on and off is canceled. 30 seconds later, the controller display will be back to the normal mode.

Testing

1. Inspection before use
A. Check installation of the whole machine and the pipe connections according to the pipe connecting drawing;
B. Check the electric wiring according to the electric wiring diagram; and ground the connection.
C. Make sure that the main machine power switch is off
D. Check the temperature setting.
E. Check the air inlet and outlet.

2. Troubleshooting
A. The user must “Start the Pump before the Machine, And Turn off the Heat Pump 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 heat pump, 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.

Precautions
Attention
A. Set proper temperature in order to get comfortable water temperature; to avoid overheating or overcooling.
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 ≤10m, or the heating effect of the heater cannot be ensured.

Safety
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 clear of the machine by opening the tap of inlet pipe.

Maintenance
A. “Cut off” power supply of the heater before any examination and repair.
B. In winter seasons, please drain water clear of the machine, “cut off” power supply to prevent any machine damage, and cover the machine body with plastic foil to avoid dust.
C. Please clean this machine with household detergents or clean water, NEVER gasoline, thinners or any similar fuel.
D. Check bolts, cables and connections regularly.

**Trouble shooting for common faults**

<table>
<thead>
<tr>
<th>Faulty</th>
<th>Reason</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not starting</td>
<td>Main power is off</td>
<td>Wait for power to be reinstated</td>
</tr>
<tr>
<td></td>
<td>Switch off</td>
<td>Switch on</td>
</tr>
<tr>
<td></td>
<td>Burnt out fuse</td>
<td>Replace it</td>
</tr>
<tr>
<td></td>
<td>Circuit breaker drops out</td>
<td>Switch Circuit Breaker back on</td>
</tr>
<tr>
<td>There is air outlet but</td>
<td>Blocked air inlet</td>
<td>Clean out the stem</td>
</tr>
<tr>
<td>the heating is not</td>
<td>Blocked air outlet</td>
<td>Clean out the stem</td>
</tr>
<tr>
<td>satisfactory</td>
<td>3 minutes time lag protection</td>
<td>Please wait</td>
</tr>
<tr>
<td></td>
<td>Temperature set too low</td>
<td>Increase temperature setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>accordingly</td>
</tr>
</tbody>
</table>

If the above mentioned faults cannot be solved, please contact the professional and inform model and detailed faulty condition.

Atten: Please don’t disassemble and repair the swimming pool heater by yourself, please leave it to the professionals.

**Failure code**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 1</td>
<td>High pressure protection</td>
</tr>
<tr>
<td>EE 2</td>
<td>Low pressure protection</td>
</tr>
<tr>
<td>EE 3</td>
<td>Low water pressure protection</td>
</tr>
<tr>
<td>EE 4</td>
<td>Over current (3 phase machine)</td>
</tr>
<tr>
<td>PP 1</td>
<td>Pool (SPA) heater sensor failure</td>
</tr>
<tr>
<td>PP 2</td>
<td>Exhaust sensor failure</td>
</tr>
<tr>
<td>PP 3</td>
<td>Coil pipe sensor failure</td>
</tr>
<tr>
<td>PP 4</td>
<td>Intake pipe sensor failure</td>
</tr>
<tr>
<td>PP 5</td>
<td>Air temp sensor failure</td>
</tr>
<tr>
<td>PP 6</td>
<td>Compressor exhaust overload protection</td>
</tr>
<tr>
<td>PP 7</td>
<td>When the temperature &lt;= +32°C, auto stop protection (not Failure)</td>
</tr>
</tbody>
</table>