# WiFi Swimming Pool Heat Pump User and Service manual



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Thank you for using swimming pool heat pump for your pool heating, it will heat your pool water and keep a constant temperature when the ambient air temperature is at -5 to  $43^{\circ}$ C

# ATTENTION: This manual includes all the necessary information about the use and

# the installation of your heat pump.

The installer must read the manual and attentively follow the instructions of implementation and maintenance.

The installer is responsible for the installation of the product and should follow all the instructions of the manufacturer and the regulations in application. Incorrect installation against the manual implies the exclusion of the entire guarantee.

The manufacturer declines any responsibility for the damage caused to people, objects and for errors due to the installation against the manual. Any use that isn't in accordance with the origin of its manufacturing will be regarded as dangerous.

**WARNING:** Please empty the water in heat pump always during winter time or when the ambient temperature drops below  $0^{\circ}$ C, or else the Titanium exchanger will be damaged because of being frozen, in such case, your warranty will be lost.

**WARNING:** Please always cut the power supply if you want to open the cabinet to reach inside the heat pump, because there is high voltage electricity inside.

**WARNING:** Please keep the display controller in a dry area, or close the insulation cover to protect the display controller from being damaged by humidity.

# 1. Specifications

# 1.1 Technical data

	Model	PHP03Hs-W	PHP06Hs-W	PHP09Hs-W	PHP12Hs-W	PHP16	PI	HP21	PHP21T	PHP25T
Heating capacity A26/W26	kW	3.9	6	8.7	12	16		21	21	25
Power consumption	КW	0.75	1.05	1.50	2.05	2.70		3.58	3.58	4.2
СОР		5.20	5.71	5.80	5.85	5.93	5	5.87	5.87	5.95
Heating capacity A15/W26	kW	3,0	4,5	6,45	8,9	11,8	1	15.0	15.0	17,5
Power consumption	kW	0.7	1.02	1.98	2.65	3.35		3.9	3.9	4.7
СОР		4.29	4.41	4.45	4.49	4.45		1.48	4.48	4.49
Maximum volume(good insulation)	m³	20	25	35	65	80		90	90	120
Running current	А	3.4	4,6	6.5	9,1	11,5	1	15.5	7.5	8.5
Power supply	V/Ph/Hz		220-240/1/50 380/3/50					/3/50		
Controller			Electronic/LED							
Condenser			Titanjum heat exchanger							
Compressor quantity			1							
Compressor type			Rotary							
Refrigerant					R410	Da				
Fan quantity					1					
Fan power input	w	68	80	80	12	0	400	400	400	400
Fan speed	RPM				830~8	370				
Air Flow			Horizontal Vertica				Vertical			
Noise level (10m)	dB(A)	39	39 40 40 43 47 47 47					50		
Noise level (1m)	dB(A)	48	49	49	52	2	56	56	56	59
Water connection	mm				50					
Nominal water flow	m³/h	2,5	2,5	5 2,8	3,5	5	6,2	6,2	6,2	7,1
Maximum pressure loss	kPa	12	12	12	15	5	18	18	18	18

\* Above data are subjects to modification without notice.

# 2. Dimension



Model	PHP03Hs-W	PHP06Hs-W PHP09Hs-W	PHP12Hs-W
Α	850	990	1026
В	485	622	655
С	182.5	183	190
D	300	330	350
E	270	305	326
F	253	290	306
G	510	560	620
Н	160	230	340
I	103	103	108
J	22	20	22

Unit: mm

# Model PHP25T





# 3. Installation and connection

# 3.1 Notes

The factory only supplies the heat pump. All other components, including a bypass if necessary, must be provided by the user or the installer.

#### Attention:

Please observe the following rules when installing the heat pump:

- 1. Any addition of chemicals must take place in the piping located **downstream** from the heat pump.
- 2. Install a bypass if the water flow from the swimming pool pump is more than 20% greater than the allowable flow through the heat exchanger of the heat pump.
- 3. Install the heat pump above the water level of the swimming pool.
- 4. Always place the heat pump on a solid foundation and use the included rubber mounts to avoid vibration and noise.
- 5. Always hold the heat pump upright. If the unit has been held at an angle, wait at least 24 hours before starting the heat pump.

#### 3.2 Heat pump location

The unit will work properly in any desired location as long as the following three items are present:

#### 1. Fresh air – 2. Electricity – 3. Swimming pool filters

The unit may be installed in virtually any <u>outdoor</u> location as long as the specified minimum distances to other objects are maintained (see drawing below). Please consult your installer for installation with an indoor pool. Installation in a windy location does not present any problem at all, unlike the situation with a gas heater (including pilot flame problems).

**ATTENTION:** Never install the unit in a closed room with a limited air volume in which the air expelled from the unit will be reused, or close to shrubbery that could block the air inlet. Such locations impair the continuous supply of fresh air, resulting in reduced efficiency and possibly preventing sufficient heat output.

See the drawing below for minimum dimensions.





# 3.3 Distance from your swimming pool

The heat pump is normally installed within a perimeter area extending 7.5 m from the swimming pool. The greater the distance from the pool, the greater the heat loss in the pipes. As the pipes are mostly underground, the heat loss is low for distances up to 30 m (15 m from and to the pump; 30 m in total) unless the ground is wet or the groundwater level is high. A rough estimate of the heat loss per 30 m is 0.6 kWh (2,000 BTU) for every 5 °C difference between the water temperature in the pool and the temperature of the soil surrounding the pipe. This increases the operating time by 3% to 5%.

#### 3.4 Check-valve installation

Note: If automatic dosing equipment for chlorine and acidity (pH) is used, it is essential to protect the heat pump against excessively high chemical concentrations which may corrode the heat exchanger. For this reason, equipment of this sort must always be fitted in the piping on the **downstream** side of the heat pump, and it is recommended to install a check-valve to prevent reverse flow in the absence of water circulation.

Damage to the heat pump caused by failure to observe this instruction is not covered by the warranty.



#### 3.5 Typical arrangement



Note: This arrangement is only an illustrative example.



# 3.6 Adjusting the bypass

Use the following procedure to adjust the bypass:

- fully open all three valves
- slowly close valve 1 until the water pressure is increased by approximately 100 to 200 g
- Close valve 3 approximately half-way to adjust the gas pressure in the cooling system
- If the display shows "ON" or error code EE3, close valve 2 step by step, to increase water flow and stop when the code disappears.

Optimal operation of the heat pump occurs when the cooling gas pressure is  $22 \pm 2$  bar. This pressure can be read on the pressure gauge next to the control heat pump panel. Under these conditions the water flow through the unit is also optimal.

Note: Operation without a bypass or with improper bypass adjustment may result in sub-optimal heat pump operation and possibly damage to the heat pump, which renders the warranty null and void.

# 3.7 Electrical connection

Note: Although the heat pump is electrically isolated from the rest of the swimming pool system, this only prevents the flow of electrical current to or from the water in the pool. Earthing is still required for protection against short-circuits inside the unit. Always provide a good earth connection.

Before connecting the unit, verify that the supply voltage matches the operating voltage of the heat pump.

It is recommended to connect the heat pump to a circuit with its own fuse or circuit breaker (slow type; curve D) and to use adequate wiring (see table below).

Connect the electrical wires to the terminal block marked ' POWER SUPPLY '.

A second terminal block marked 'WATER PUMP' is located next to the first one. The filter pump (max. 5 A / 240 V) can be connected to the second terminal block here. This allows the filter pump operation to be controlled by the heat pump.



Note: In the case of three-phase models, swapping two phases may cause the electric motors to run in the reverse direction, which can lead to damage. For this reason, the unit has a built-in protective device that breaks the circuit if the connection is not correct. If the red LED above this safety device lights up, **you must swap the connections of two of the phase wires**.

Model	Voltage (V)	Fuse or	Rated current (A)	Wire diameter mm <sup>2</sup>
		circuit		(with max. 15 m length)
		breaker (A)		
PHP06Hs-W	220–240	16	6.6	2x 1.5 + 1.5
PHP09Hs-W	220–240	16	9.2	2x 2.5 + 2.5
PHP12Hs-W	220–240	20	12.1	2x 2.5 + 2.5
PHP16	220–240	25	16.5	2x 6 + 6
PHP21	220–240	32	20.9	2x 6 + 6
PHP21T	3x 380	20	7.9	4x 2.5 + 2.5
PHP25T	3x 380	20	8.9	4x 2.5 + 2.5

#### 3.8 Initial operation

# Note: In order to heat the water in the pool (or hot tub), the filter pump must be running to cause the water to circulate through the heat pump. The heat pump will not start up if the water is not circulating.

After all connections have been made and checked, carry out the following procedure:

- 1. Switch on the filter pump. Check for leaks and verify that water is flowing from and to the swimming pool.
- 2. Connect power to the heat pump and press the On/Off button  $\bigcirc$  on the electronic control panel. The unit will start up after the time delay expires (see below).
- 3. After a few minutes, check whether the air blowing out of the unit is cooler.
- 4. When you turn off the filter pump , the unit should also turn off automatically, if not adjust the flow switch.
- 5. Allow the heat pump and the filter pump to run 24 hours a day until the desired water temperature is reached. The heat pump will stop running at this point. After this, it will restart automatically (as long as the filter pump is running) whenever the swimming pool water temperature drops 2 degrees below the set temperature.

Depending on the initial temperature of the water in the swimming pool and the air temperature, it may take several days to heat the water to the desired temperature. A good swimming pool cover can dramatically reduce the required length of time.

#### Water Flow Switch:

It is equipped with a flow switch to prevent the heat pump of running with inadequate water flow rate. It will turn on when the pool pump runs and shuts off when the pump shuts off. If the pool water level is more than 1m above or below the heat pump's automatic adjustment knob, your dealer may need to adjust its initial startup.

**Time delay** -The heat pump has a built-in 3-minute start-up delay to protect the circuitry and avoid excessive contact wear. The unit will restart automatically after this time delay expires. Even a brief power interruption will trigger this time delay and prevent the unit from restarting immediately. Additional power interruptions during this delay period do not affect the 3-minute duration of the delay.

# 3.9 Condensation

The air drawn into the heat pump is strongly cooled by the operation of the heat pump for heating the pool water, which may cause condensation on the fins of the evaporator. The amount of condensation may be as much as several litres per hour at high relative humidity. This is sometimes mistakenly regarded as a water leak.

# 4. Accessories

#### 4.2 Accessories Installation

		<ul> <li>Anti-vibration bases</li> <li>1. Take out 4 Anti-vibration bases</li> <li>2. Put them one by one on the bottom of the machine like the picture.</li> </ul>
		Water Inlet & outlet junction 1. Use the pipe tape to connect the water Inlet & outlet junction onto the heat pump 2. Install the two joints like the picture shows 3. Screw them onto the water Inlet & outlet junction
<image/>	<image/>	<ul> <li>10M Signal wiring</li> <li>1. Take one side of the 10M Signal wire, to connect with the controller.</li> <li>2. The other side needs to be pulled through the hole, like the third picture shows.</li> <li>3. Then connect to the PC board inside the machine : the brown one first joint; the blue one second joint; the yellow one third joint.</li> </ul>

	Cable wiring 1. Connect the power supply wire through the white hole like the picture shows. 2. Fix the other side on joints inside the electric box.
	Water pump wiring 1. Connect the water pump wire through the white marked hole 2. Fix the other side on joints inside the electric box.

# 5. Electrical Wiring

# 5.1 WIFI SWIMMING POOL HEAT PUMP WIRING DIADRA

PHP 03/06/09/12Hs-W



# NOTE:

(1)The above electrical wiring diagrams are only for your reference, please subject the heat pump to the posted wiring diagram.

(2)The swimming pool heat pump must be earthed well, although the unit heat exchanger is electrically isolated from the rest of the unit .Earthing the unit is still required to protect you against short circuits inside the unit .Bonding is also required.

**Disconnect:** A disconnector (circuit breaker, fused or un-fused switch) should be located within sight of and easily accessible from the unit .This is common practice on commercial and residential heat pumps. It prevents remotely-energizing unattended equipment and permits turning off power to the unit while the unit is being serviced.

# 6. Display Controller Operation

# 6.1 The buttons of LED wire controller

∧ጱ▣≳☀८腳
SET IN NO. ROOM OUT VALVE

When the heat pump is running or standby, the LED display shows the inlet water temperature and setting temperature.

# 6.2 Start/stop the heat pump.

Press to start the heat pump, the LED display shows the desired water temperature for 5 seconds, then shows the inlet water temperature.



#### 6.3 Choose heating/cooling/Automatic mode:

Press until "heat" or "Cool" "Automatic" light is on.

#### 6.4 Setting the real time



#### 6.5 Water temperature setting:

On standby or running mode, press 🔳 🖃 to adjust the desired water temperature

#### 6.6 Automatic start/stop of the heat pump

Long press the button, enter the time setting for group 1 timing on/off settings, click the button to enter
hours setting, press 🗭 or 🖃 button to change the time, after setting completed, click the 💷 button
to enter minutes setting, press 庄 or Ebutton to change the time, after setting completed , click on the
button to enter regular shutdown Settings, set method is same with timing setting, after setting
completed, click the to enter next group setting. Same setting method based on above operation.
During timing setting state , click the to cancel current timing setting.
During the the main interface ,Press 🛨 🖃 to set the current mode's setting
temperature.

# 6.7Running data query and setting

Long press button to enter parameters query state, in the query conditions click the button to enter parameter setting state, combined with and and button to change the parameter value, press button again to determine modification, During the parameter query condition press the button to return the main interface;No operation is retained in the query condition. **Special note:** During Automatic mode, the icon is displayed; During Cooling mode, icon is is displayed; During Defrosting , icon is displayed; During Heating mode, icon is displayed; ICONS and in are used to identify the WIFI signals, its twinkle when its not connect with the server; its keeps on means

# 7. System Parameter:

connection well .

Parameter	Meaning	Range	Default	Remarks
P00	Memory function	0 (No) \1 (Yes)	1	Adjustable
P01	Operate at set time everyday	0 (No) \1 (Yes)	1	Adjustable
P02	Water temperature difference back to restart	<b>2-10</b> ℃	3	Adjustable
P03	Water Temperature difference to stop	<b>0-3</b> ℃	0	Adjustable
P04	Defrosting interval	30-90Min	40Min	Adjustable
P05	Defrosting on temperature (evaporator coil temperature)	-30—0℃	-3℃	Adjustable
P06	Defrosting exit temperature (evaporator coil temperature)	<b>2-30</b> ℃	<b>13</b> ℃	Adjustable
P07	Defrosting exit time	1-15Min	8Min	Adjustable
P08	Gas exhaust temperature protection value	95-120°C	118℃	Adjustable
P09	Max. water set temperature	40~65	40	Adjustable
P10	Water pump operation mode	0 (Special) \1 (Normal)	1	Adjustable
P11	Water pump stop time after reaching water set temperature	3-20min	15	Adjustable
P13	Heating/Cooling option	0(Single cooling)/	1	Adjustable

		1 (Heating/Cooling) /		
P1/	Flectronic expansion valve action cycle		300	Adjustable
P15	Degree of super heat setting	$-9^{\circ}C \sim 9^{\circ}C$	3°C	
P16	expansion valve forced opening gas	90°50 80°C∼110°C	<u> </u>	
110	exhaust temperature			Aujustable
P17	Electronic expansion valve opening setting (under defrosting)	20~450P	400P	3 digits visible
P18	Electronic expansion valve minx. Opening setting	50~200P	150P	3 digits visible
P19	Electronic expansion valve manual setting	20~450P	350P	Adjustable
P20	Electronic expansion valve manual setting option	0 (No) /1(Yes)	1	0:manual/1: automatical
P22	expansion valve forced opening gas exhaust temperature	80°C~110°C	<b>100</b> ℃	Adjustable
AO	Water inlet temperature	-9~99℃		Actual measurement
A1	Water outlet temperature	-9~99℃		Actual measurement
A2	Evaporator coil temperature (under heating mode)	-9~99℃		Actual measurement
A3	Gas exhaust temperature	-9~99℃		Actual measurement
A4	Ambient temperature	-9~99℃		Actual measurement
A5	Gas suction temperature	-9~99℃		Actual measurement
A6	Expansion valve opening	150~480P		Actual measurement

# 8. Troubleshooting

# 8.1 Error code display on LED wire controller

Malfunction	Error code	Solutions
Heating condenser sensor failure	Er P1	Check or change the sensor
Exhaust temperature sensor failure	Er P2	Check or change the sensor
Inlet water temperature sensor failure	Er P3	Check or change the sensor
Outlet water temperature sensor failure	Er P4	Check or change the sensor
Ambient temperature sensor failure	Er P7	Check or change the sensor
Gas return sensor failure	Er P8	Check or change the sensor
	Er P9	1.Check if there is any gas leakage ,re-fill the
Low pressure protection		refrigerant
		2.Replace the filter or capillary

First grade antifreeze protection in Winter	Er PC	Water pump will run automatically for first grade
Casand grade entifranza protection in	Em DC	Lest sums will start besting for second grade
Second grade antimeeze protection in	Er PU	Heat pump will start neating for second grade
Winter		antifreeze
Water flow switch	Er PL	Check water flow /switch
		1. Replace the compressor discharge temperature
		sensor.
Full such terms and use to a bight protection	Er 3	2. Reconnect or clean compressor discharge
Exhaust temperature too high protection.		temperature sensor and wrap it with insulation
		tape.
		3. Replace the controller or PC Board.
	Er 4	1. Discharge redundant refrigerant from heat
High pressure protection		pump gas system
		2.Clean the water exchanger or water fifter
Communication failure	Er 8	Check the wire connection
	Defrost	
Defrosting	instructions	

# 8.2 Other Malfunctions and Solutions (No display on LED wire controller)

Malfunctions	Observation	Reasons	Solution
	LED wire controller shows no display	No power supply	Check whether cable and circuit breaker are connected
Heat nump is	LED wire controller displays the actual time	Heat pump under standby status	Startup heat pump to run.
not running	LED wire controller displays the actual water temperature	<ol> <li>Water temperature is reaching set value, heat pump under constant temperature status</li> <li>Heat pump just starts to run</li> <li>Under defrosting</li> </ol>	<ol> <li>Verify water temperature setting</li> <li>Startup heat pump after a few minutes</li> <li>LED wire controller should display "Defrosting"</li> </ol>
Water temperature is cooling when heat pump runs under heating mode	LED wire controller displays actual water temperature and no error code displays	<ol> <li>Chose the wrong mode</li> <li>Figures show defects</li> <li>Controller defect</li> </ol>	<ol> <li>Adjust the mode</li> <li>Replace the defect LED</li> <li>wire controller, and then</li> <li>check the status after</li> <li>changing the running</li> <li>mode, verifying the water</li> <li>inlet and outlet temperature</li> <li>Replace or repair the</li> <li>heat pump</li> </ol>

			1 Check the cable
			connections between the
			motor and fan, if
			necessary, they should be
	LED displays actual water	1. Fan NOT running	replaced
Short running	temperature, no error code	2. Not enough air ventilation	2. Check the location of the
	displays	3.Not enough refrigerant	heat pump, and eliminate
			all obstacles to assure a
			good air ventilation
			3 Replace or repair the
			heat pump
			1. No action
water stains	Water stains on heat pump	1. Concreting	2. Check the titanium heat
	unit	2. Water leakage	exchanger carefully if it
			shows any defects
			1. Check the location of
			heat pump, and eliminate
Too much ice	Too much ice on		all obstacles to assure a
on evaporator	evaporator		good air ventilation
			2. Replace or repair the
			heat pump

#### 9. Maintenance

(1) You should check the water supply system regularly to avoid the air entering the system and occurrence of low water flow, because it would reduce the performance and reliability of the heat pump.

(2) Clean your pools and filtration system regularly to avoid the damage of the unit as a result of a dirty or clogged filter.

(3) You should discharge the water from the bottom of the water pump if the heat pump will stop running for a long time (specially during the winter season).

(4) On any other moment, you should check if the unit has enough water before the unit starts to run again.

(5) After the unit is conditioned for the winter season, it is preferred to cover the heat pump with the special winter heat pump cover.

(6) When the unit is running, there is allways a little water discharge under the unit.

# WIFI Controller Function Specification

# 1. Android WIFI Module Set Up Steps:



Scan the QR codeto download or use the below link:https://fir.im/124bto download and operate based on below steps .

Step 1:

• Turn it on, when the drive by wire controller is out of full screen, buzzer rings a sound like "Di", it shows to be in the AP mode. Only when being in the AP mode, the heat pump can be equipped with the WIFI module;

Enter the AP mode by hand (Press the button of ++++ for 3 seconds in the same time. When entering the AP mode, the button **SET** is twinkling;

Step 2:

• Turn on the WIFI on phone and get it connected to the WIFI hot spot, the WIFI hot spot should be connected to the internet, show on the picture: Connected to WIFI hot spot "TP-LINK\_1906";



Step 3:

• Open the APP on the phone, type the account and password to login like the pictures below. (If without account, register one according to the link at the bottom)

<b>K</b> Form of Registration	K by email	
	Tip:enter email and password to register	Pool Contor
	Enter email address(can not be empty)	Puol Center
	Enter password	
	Confirmed password	17666568573
	I accept the Millerment of Chico	
		Remember me
by email	Register	Login
	Had an account already? Click toLogin	
		Register   Forget password

• Successfully login in the main interface of server, like the picture shows:



Step 4:

- Click the " AP mode " to search the swimming pool WIFI signal
- Note: if the wireless network signal is not found, please slide the screen to search again!



• Select the pool machine WIFI signal and connect, such as: connect the pool machine WIFI signal "Z\_088810"; Enter the correct WIFI password, according to the determination of the connection.

K Bind pool system	
PW-JSB	
Confirm	

#### Step 5:

• After a successful connection to WIFI signal for the pool machine, the system can be used normally



# 2. IOS WIFI Module Set Up Steps:

Open "Appstore" ,search "pool system",the first App appeared is the correct one ,download and operate based on below steps.



(There is a difference compare the Android version of the connection from step4.)

Step 1:

• Turn it on, when the drive by wire controller is out of full screen, buzzer rings a sound like "Di", it shows to be in the AP mode. Only when being in the AP mode, the heat pump can be equipped with the WIFI module;

Enter the AP mode by hand (Press the button of +++ for 3 seconds in the

same time. When entering the AP mode, the button **SET** is twinkling;

Step 2:

• Turn on the WIFI on phone and get it connected to the WIFI hot spot, the WIFI hot spot should be connected to the internet, show on the picture: Connected to WIFI hot spot "TP-LINK\_1906";

Settings Wi-Fi	
Wi-Fi	
TP-LINK_1906	₽ \$ ()
CHOOSE A NETWORK	
USER_7E8116	₽ ╤ ()
you	<b>₽</b> ╤ (j)
Other	
Ask to Join Networks	
Known networks will be joined autor networks are available, you will have network.	matically. If no known a to manually select a

Step 3:

• Open the APP on the phone, type the account and password to login like the pictures below. (If without account, register one according to the link at the bottom)

K Form of Registration	K by email	
	Tip:enter email and password to register	
	Enter email address(can not be empty)	Pool Center
	Enter password	
	Confirmed password	17666568573
	<ul> <li>I accept the Agricement of Onico.</li> </ul>	🖻 Remember me
by email	Register	Login
	Had an account already? Click toLogin	
		Register   Forget password

• Successfully login in the main interface of server, like the picture shows:



• Step 4: Click the AP mode to enter the following interface, operate the wire controller or press the button to enter the AP mode.



Then go back to the phone and click "set"  $\rightarrow$  "Wi-Fi" search WIFI signal, as follows:

	<b>&lt;</b> In	ställningar Wi-Fi	
Select this kind of		Wi-Fi	
WIFI connection	~	Z_0846AE	<b>≈</b> (i)
	VÄLJ ETT NÄTVERK		
		360免费WiFi-6C	<b>₽ 奈 (j</b> )
		Black	<b>₽ 奈 (j</b> )
		HAIMAN	≞ <del>?</del> ()
		PW-JSB	<b>₽ 奈 (j)</b>
		TSL-888	≞ 奈 (Ì)
		Annat	
	Frå	ga om anslutning	
	Auto nätv nytt	omatisk anslutning till kända nätverk. On rerk är tillgängliga tillfrågas du före anslu nätverk.	n inga kända utning till ett

After the connection is completed, go back to the AP Mode and click "Bring pool system and get online "

<	pool system has been found
	Pool system found and in derect connection status
	Bring pool System and get online

Enter the next interface and input the WIFI password for connection



#### Step 5:

• After a successful connection to WIFI signal for the pool machine, the system can be used normally

