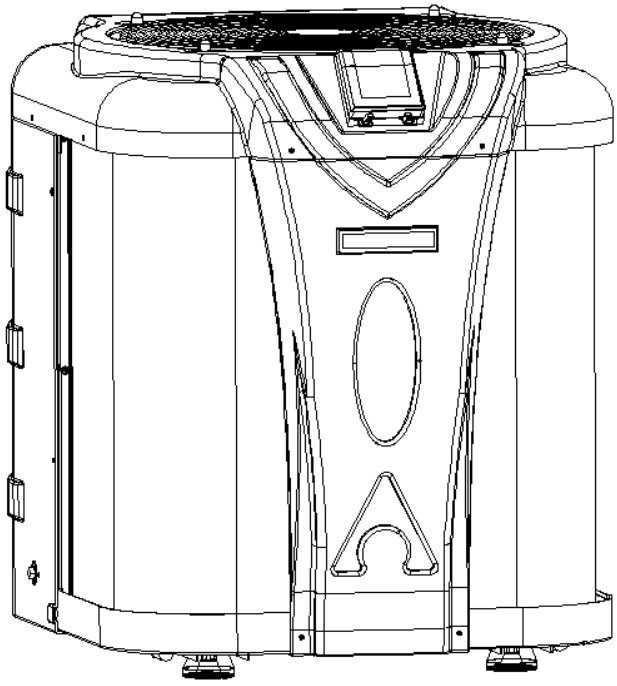
EN	**SWIMMING POOL HEAT PUMP**	**User and service manual**
FR	**POMPE À CHALEUR POUR PISCINE**	**Manuel d’installation et d’utilisation**
NL	**ZWEMBAD WARMTEPOMP**	**Gebruiker en service manual**
ES	**BOMBA DE CALOR PARA PISCINA**	**Manual del usuario y de servicio**
DE	**SCHWIMMBAD-WÄRMEPUMPE**	**Benutzer- und Wartungshandbuch**
IT	**PISCINA POMPA DI CALORE**	**Istruzioni per l'uso e di servizio**
PT	**BOMBA DE CALOR DE PISCINA**	**Manual do usuário e serviço**

APH3 INVERBOOST



Regulation (EU) n° 517/2014 of 16/04/14 on fluorinated greenhouse gases and repealing Regulation (EC) n° 842/2006

Leak checks

1. Operators of equipment that contains fluorinated greenhouses gases in quantities of 5 tons of CO_2, equivalent or more and not contained in foams shall ensure that the equipment is checked for leaks.

2. For equipment that contains fluorinated greenhouse gases in quantities of 5 tons of CO_2 equivalent or more, but of less than 50 tons of CO_2 equivalent: at least every 12 months.

Picture of the equivalence CO_2

1. Load in kg and Tons amounting CO_2.

Load and Tons amounting CO_2	**Frequency of test**
From 7 at 75 kg load = from 5 at 50 Tons	Each year

Do no release R32 coolant liquid into the atmosphere. This is a fluoride greenhouse effect gas covered by the Kyoto agreement with a global warming potencial (GWP) = 675 -(see the European Community regulations on fluoride greenhouse effect gases Regulation (EU) No 517/2014).

Concerning the Gas R32, 7.40kg amounting at 5 tons of CO_2, commitment to check each year.

Training and certification

1. The operator of the relevant application shall ensure that the relevant personnel have obtained the necessary certification, which implies appropriate knowledge of the applicable regulations and standards as well as the necessary competence in emission prevention and recovery of fluorinated greenhouse gases and handling safety the relevant type and size of equipment.

Record keeping

1. Operators of equipment which is required to be checked for leaks, shall establish and maintain records for each piece of such equipment specifying the following information:

a) The quantity and type of fluorinated greenhouse gases installed;
b) The quantities of fluorinated greenhouse gases added during installation, maintenance or servicing or due to leakage;
c) Whether the quantities of installed fluorinated greenhouse gases have been recycled or reclaimed, including the name and address of the recycling or reclamation facility and, where applicable, the certificate number;
d) The quantity of fluorinated greenhouse gases recovered
e) The identity of the undertaking which installed, serviced, maintained and where applicable repaired or decommissioned the equipment, including, where applicable, the number of its certificate;
f) The dates and results of the checks carried out;
g) If the equipment was decommissioned, the measures taken to recover and dispose of the fluorinated greenhouse gases.

2. The operator shall keep the records for at least five years, undertakings carrying out the activities for operators shall keep copies of the records for at least five years.

User and Service manual

SWIMMING POOL HEAT PUMP

APH3 INVERBOOST (R32 gas)

INDEX

Thank you for using APH3 INVERBOOST swimming pool heat pump for your pool heating, it will heat your pool water and keep the constant temperature when the air ambient temperature is at -20 to 50℃

⚠ **ATTENTION: This manual includes all the necessary information with the use and the installation of your heat pump.**

* The installer must read the manual and attentively follow the instructions in 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 will invalidate the guarantee.
* The manufacturer declines any responsibility for the damage caused by any third party, object ingression and of the errors due to the installation that do not follow the manual guidelines. Any use that is not as intended by the manufacturer will invalidate the guarantee.

⚠**WARNING:**

Important notice:

- Please always keep the heat pump in a well ventilated place and away from anything which could cause fire.
- Do not braze or weld the pipe if there is refrigerant inside machine. Please do not charge the gas when in a confined space.
- Please always empty the water in heat pump during winter time or when the ambient temperature drops below 0℃, or else the Titanium exchanger will be damaged because of being frozen, in such case, your warranty will be lost.
- Please always cut the power supply if you want to open the cabinet to reach inside the heat pump.
- The vacuum must be made to the heat pump before charging the R32 gas through the shut-off valve, located inside the machine.
- Please keep the display controller in a dry area to protect the display controller from being damaged by humidity.
- Action of filling gas must be conducted by professional with R32 operating license.

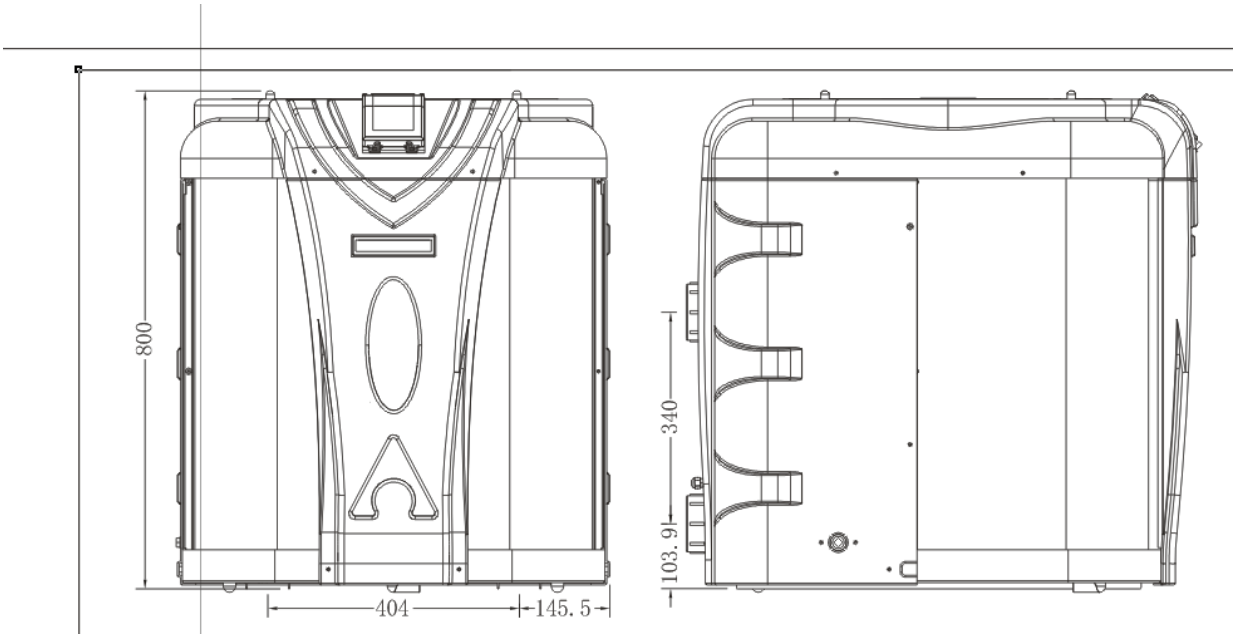
1. Description

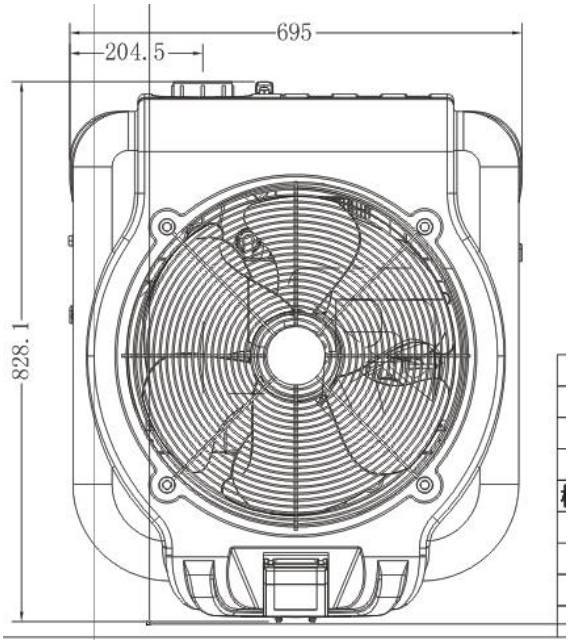
1.1 With your Heat Pump is supplied：

- Water connection assembly 50 mm (pcs: 2)
- User and service manual
- Condensed connection（Water nozzle， Drain hose， 4-way connection）
- 10 meters’ signal wire(Display, Modbus)
- Waterproof box
- Winter cover

1.2 Dimension

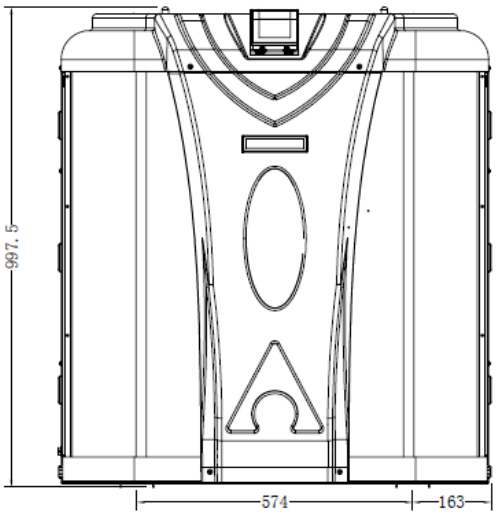
Model 68837/68838

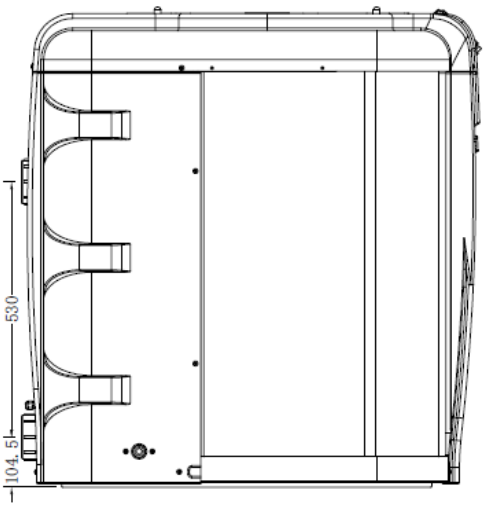


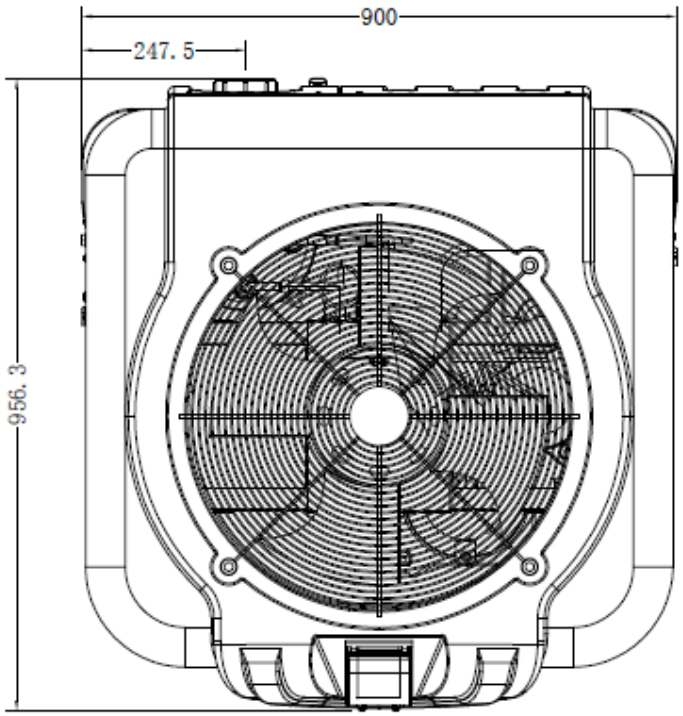


1. Description

Models 68839/68840







2. Transport information

2.1 Delivery of the unit

For the transportation, the heat pump are fixed on the pallet and covered with a cardboard box.
To protect from any damage, the heat pump must be transferred in its package.
All material, Even if the transport is chargeable to supplier, can be damaged during its routing at the customer and it is the responsibility of the addressee to make sure of the correspondence of the delivery.
The addressee has to written all the reserves at the reception on the delivery note of the carrier if he notices damages of the packaging. **DO NOT FORGET TO CONFIRM BY REGISTERED LETTER TO THE CARRIER UNDER 48 H.**

2.2 Stock advice

* The warehouse should be bright, spacious, open, well ventilated, have ventilation equipment and no fire source.
* Heat pumps must be stored and transferred in vertical position in its original packaging. If it is not the case, it cannot be operated until a minimum period of 24H has passed before the unit can have the electrical power turned on.

FORBIDDEN

2.3 Transfer to the final position

* During the unpacking of the product and the transfer from the pallet to the final place of installation, it is necessary to maintain the heat pump in a vertical position.
* Smoking and the use of flames are prohibited near R32machine.
* Water connection are not to be used as load bearing handles. The manufacturer would not take the responsibility in case of damage to the water pipes.

3. Specifications

Technical data APH3 INVERBOOST pool heat pumps
CE Standard, R32, ABS Cabinet

Model		**68837**	**68838**	**68839**	**68840**
*** Performance at Air 28℃, Water 28℃, Humidity 80%**					
Heating capacity	kW	13-3	15.5-3.2	20.5-4.6	24-6
Power consumption	kW	1.94-0.19	2.28-0.21	3.05-0.29	3.41-0.37
C.O.P.		16-6.7	15.4-6.8	16-6.7	16.3-7
*** Performance at Air 15℃, Water 26℃, Humidity 70%**					
Heating capacity	kW	9.6-2	11.3-2	14-3	18.5-4.2
Power consumption	kW	1.84-0.26	2.22-0.31	2.7-0.36	3.55-0.53
C.O.P.		8.0-5.2	6.6-5.1	8.2-5.1	7.92-5.21
Compressor type		MITSUBISHI	MITSUBISHI	MITSUBISHI	MITSUBISHI
Voltage		220~240V /50Hz or 60Hz/1PH			
Rated current	A	8.1	9.8	12.0	16.0
Minimum fuse	A	13	15	18	24
Advised pool volume	m^3	18-66	28-86	58-122	68-135
Advised water flux	m^3/h	4.0	5.0	6.0	8.0
Water pressure drop	Kpa	14	15	18	20
Heat exchanger		Twist-titanium tube in PVC			
Water connection	mm	50			
Fan quantity		1			
Ventilation type		Vertical			
Fan speed	RPM	550-850	550-850	550-850	550-850
Power input of Fan	W	10-120	10-120	10-120	10-120
Noise level(1m)	dB(A)	40-54	41-56	41-56	42-60
Refrigerant (R32)	g	1400	1800	1800	2600
CO2 equivalent	T	0.95	1.22	1.22	1.76
Net weight	kg	70	75	92	111
Gross weight	kg	88	94	115	137
Net dimension	mm	820*695*830	820*695*830	950*900*1025	950*900*1025
Packing dimension	mm	920*755*980	920*755*980	1050*960*1175	1050*960*1175

* Above data are subjects to modification without notice.

4. Accessories and options

4.1 Accessories list

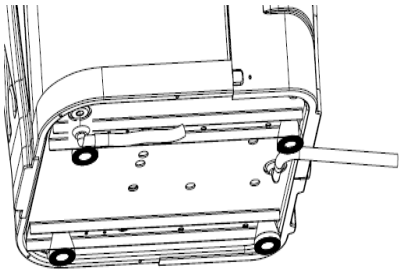
 Water nozzle, 3 pcs 4-way connection,1 pc Drain hose 4pcs	 Waterproof box, 1 pc	 Water connection assembly 2 sets Winter cover 1pc
 10M Signal wire 1 pc	 Modbus signal wire 1 pc	 Anti-vibration base, 4 pcs

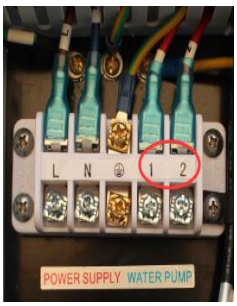
4.2 The Kit By-Pass

The kit By-Pass is the essential accessory for the installation of your heat pump, it is also a tool for the optimization of the heating of the water. The valves allows the optimum flow of water using a manometer to make sure the optimized running of the compressor, see paragraph 5.6 controls of the pressure.

4. Accessories and options

4.3 Accessories Installation

<table>
<tr>
<td>   </td>
<td>Draining plug
1. Install the draining plug under the bottom panel
2. Connect with a water pipe to drain out the water.

Note: Lift the heat pump to install the draining plug. Never overturn the heat pump, it could damage the compressor.
You have to put the drain pipes with silicone or liquid Teflon to avoid leaks.</td>
</tr>
<tr>
<td>   </td>
<td>Water Inlet & outlet junction
1. Install the two joints like the picture shows
2. Screw them onto the water Inlet & outlet connection</td>
</tr>
<tr>
<td>  
</td>
<td>Mains cable wiring
1. Open the cover of the terminal box (marked red) on the side of machine
2. Tight the cables in the correct connections, L N E, inside the terminal block.</td>
</tr>
<tr>
<td>  
</td>
<td>Filtration pump wiring (Dry contact)
1. Open the cover of the terminal box (marked red) on the side of machine
2. Tight the cables in the correct connections, 1 2, inside the terminal block.</td>
</tr>
</table>

5. Location and connection

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. Always place the heat pump on a solid foundation and use the included rubber mounts to avoid vibration and noise.
3. Always hold the heat pump upright. If the unit has been held at an angle, wait at least 24 hours before applying mains power to the heat pump.

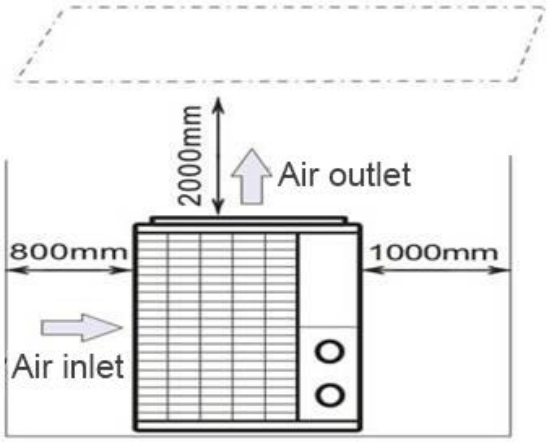
5.1 Heat pump location

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 **outdoor** 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.

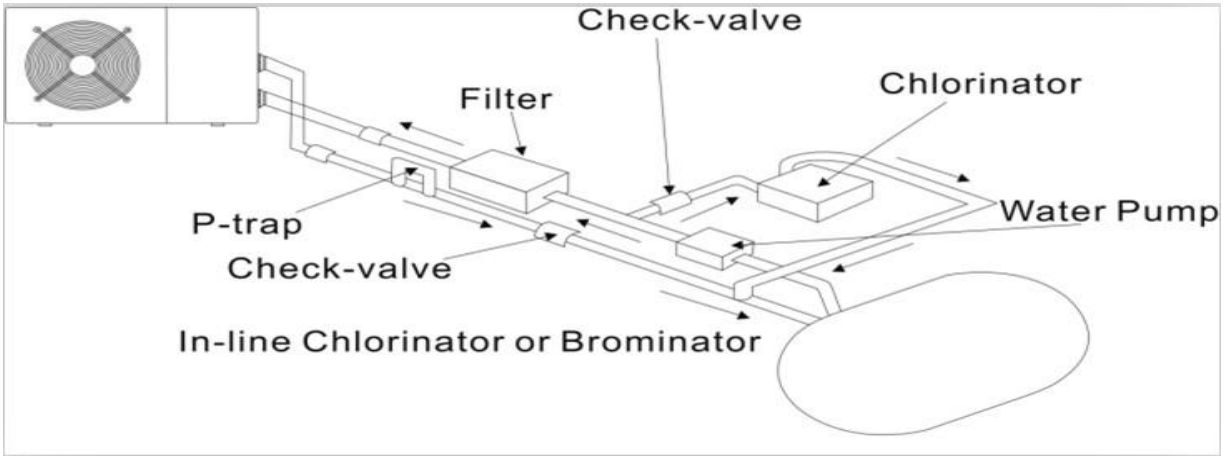


5. Location and connection

5.2 Check-valve installation

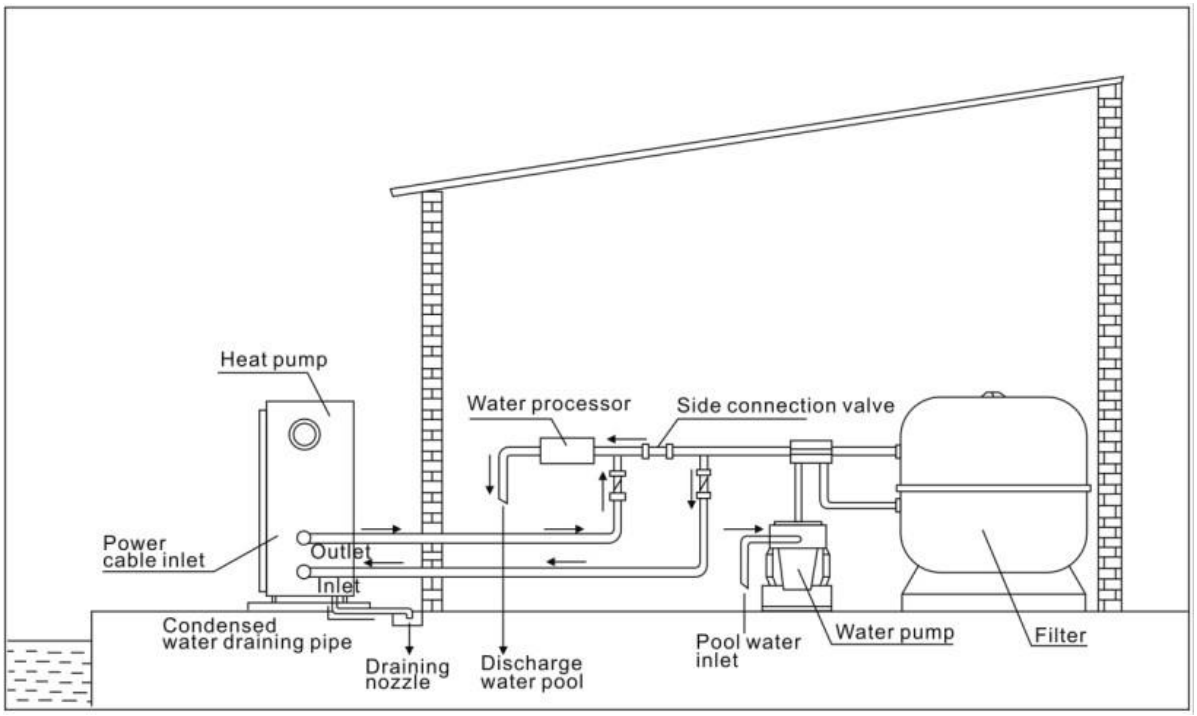
NOTE

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 SMART 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.



5. Location and connection

5.3 Typical arrangement



This arrangement is only an illustrative example.

NOTE

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

ATTENTION:
In order to heat the water in the pool (or hot tub), the filtration 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.

5.4 Initial operation

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

1. Switch on the filtration 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  on the LED 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 turn off the filtration pump, the unit should also turn off automatically, if not, then adjust the flow switch.

5. Allow the heat pump and the filtration pump to run 24 hours a day until the desired water temperature is reached. The heat pump will stop running at this point +1°C. After this, it will restart automatically (as long as the filtration pump is running) whenever the swimming pool water temperature drops 1 degree below the set temperature (for example, if you set the temperature 28°C, the heat pump will stop when the temperature at 29°C. While it will restart when the temperature of the water down to 27°C)

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.

NOTE

Water Flow Switch:
It is equipped with a flow switch for protecting the HP unit running with adequate water flow rate. It will turn on when the filtration pump runs and shut it off when the pump shuts off.

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.

5.5 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.

NOTE

> The amount of condensation may be as much as several litters per hour at high relative humidity. This is sometimes mistakenly regarded as a water leak.

5.6 Pressure gauge display (R32)

Examine the pressure gauge which indicates the refrigerant gas pressure of the unit, the below table shows the normal value of the gas pressure (R32) when the machine is in power off or running conditions.

Unit Condition	**Power Off**			
Ambient (℃)	-5~5	5~15	15~25	25~35
Water temp (℃)	/	/	/	/
Pressure gauge (Mpa)	0.68~0.93	0.93~1.25	1.25~1.64	1.64~2.1

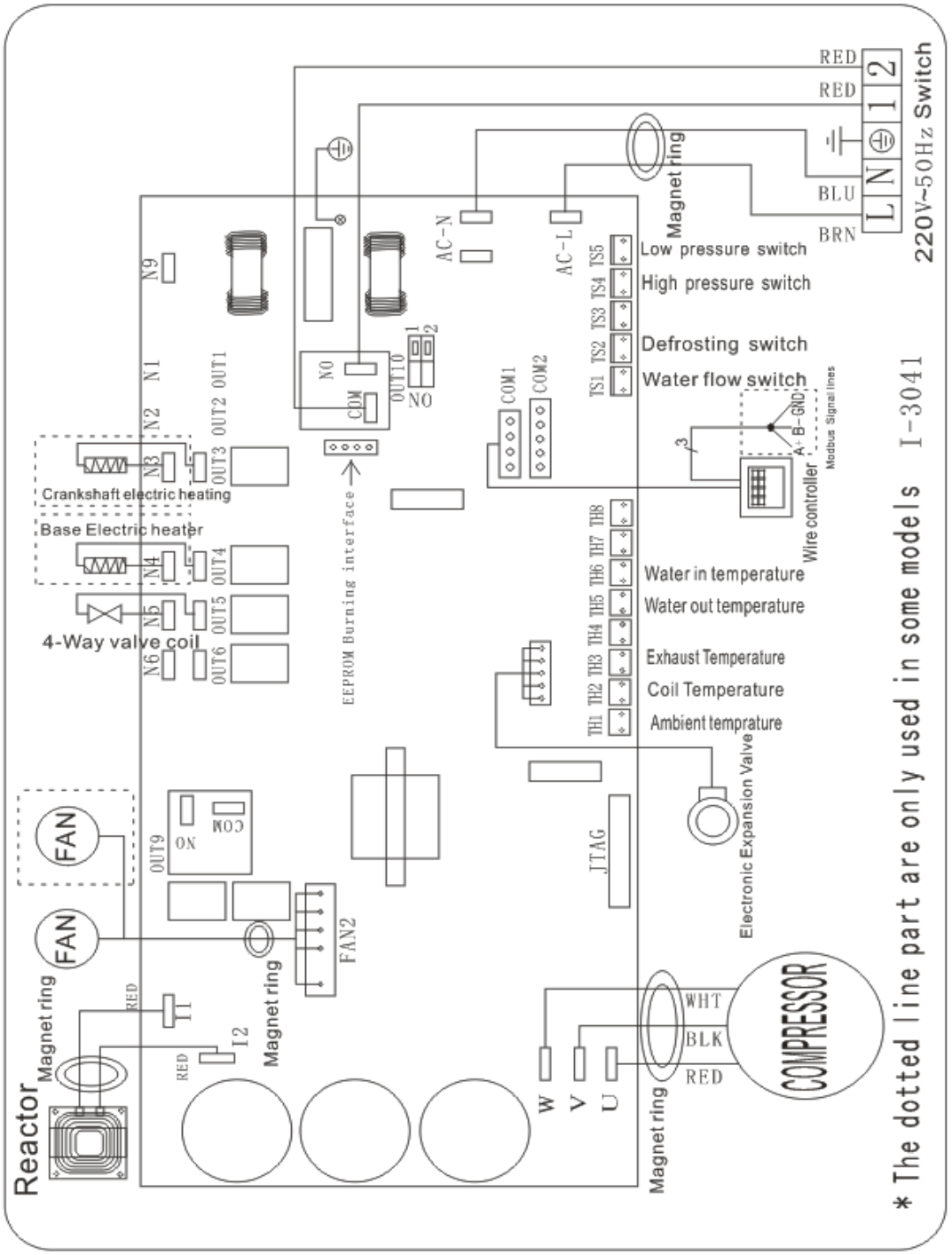
Unit Condition	**Running**				
Ambient (℃)	/	/	/	/	/
Water temp (℃)	10~15	15~20	20~25	25~30	30~35
Pressure gauge (Mpa)	1.3~1.8	1.5~1.9	1.6~2.3	1.9~2.8	2.1~3.5

6. Electrical Wiring

6.1 Inverter swimming pool heat pump wiring diagram

Ref.68837/68838/68839

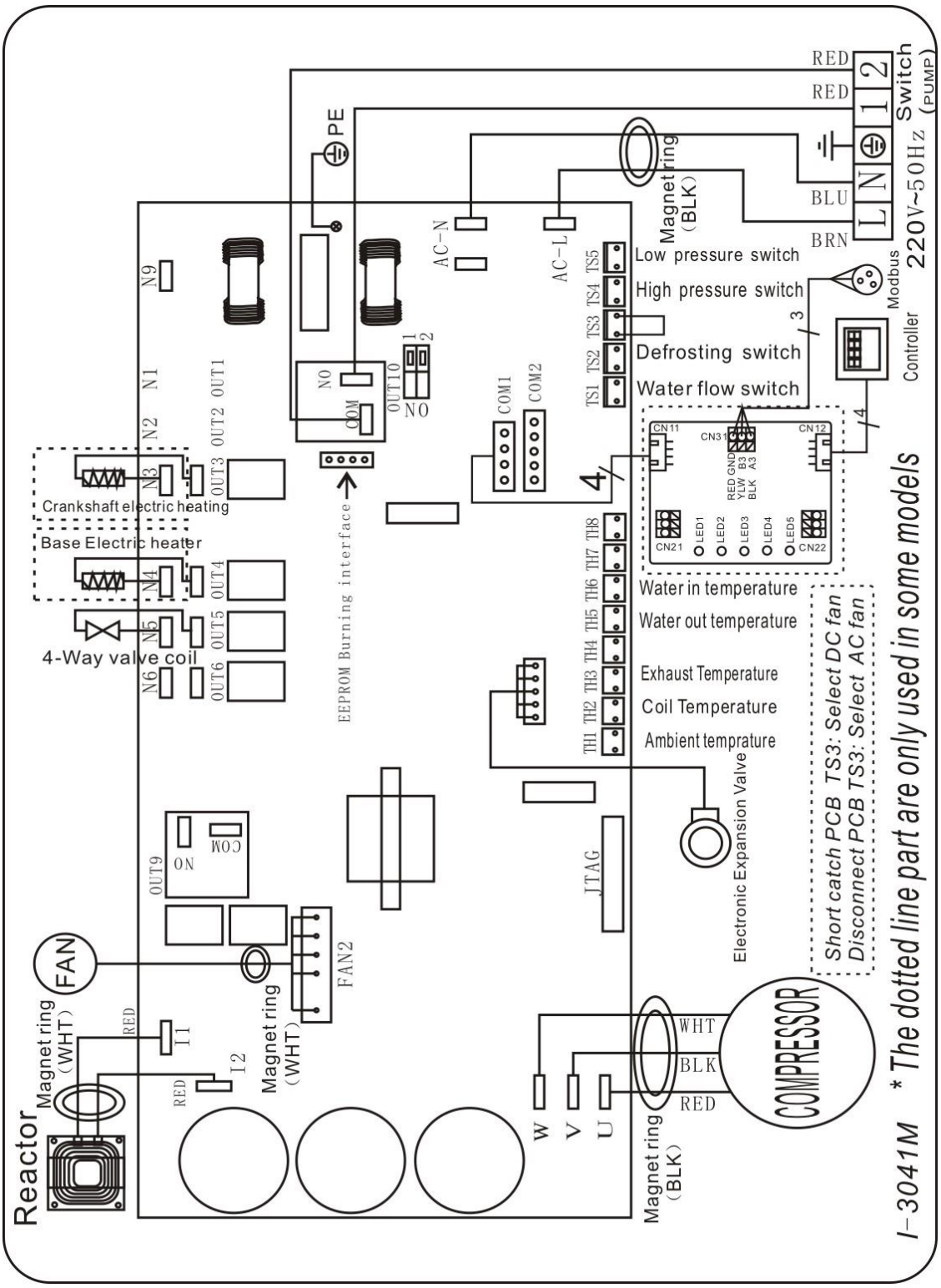
Basic Electrical Wiring



6.2 Inverter swimming pool heat pump wiring diagram

Ref.68837/68838/68839

Electrical Wiring with MODBUS module

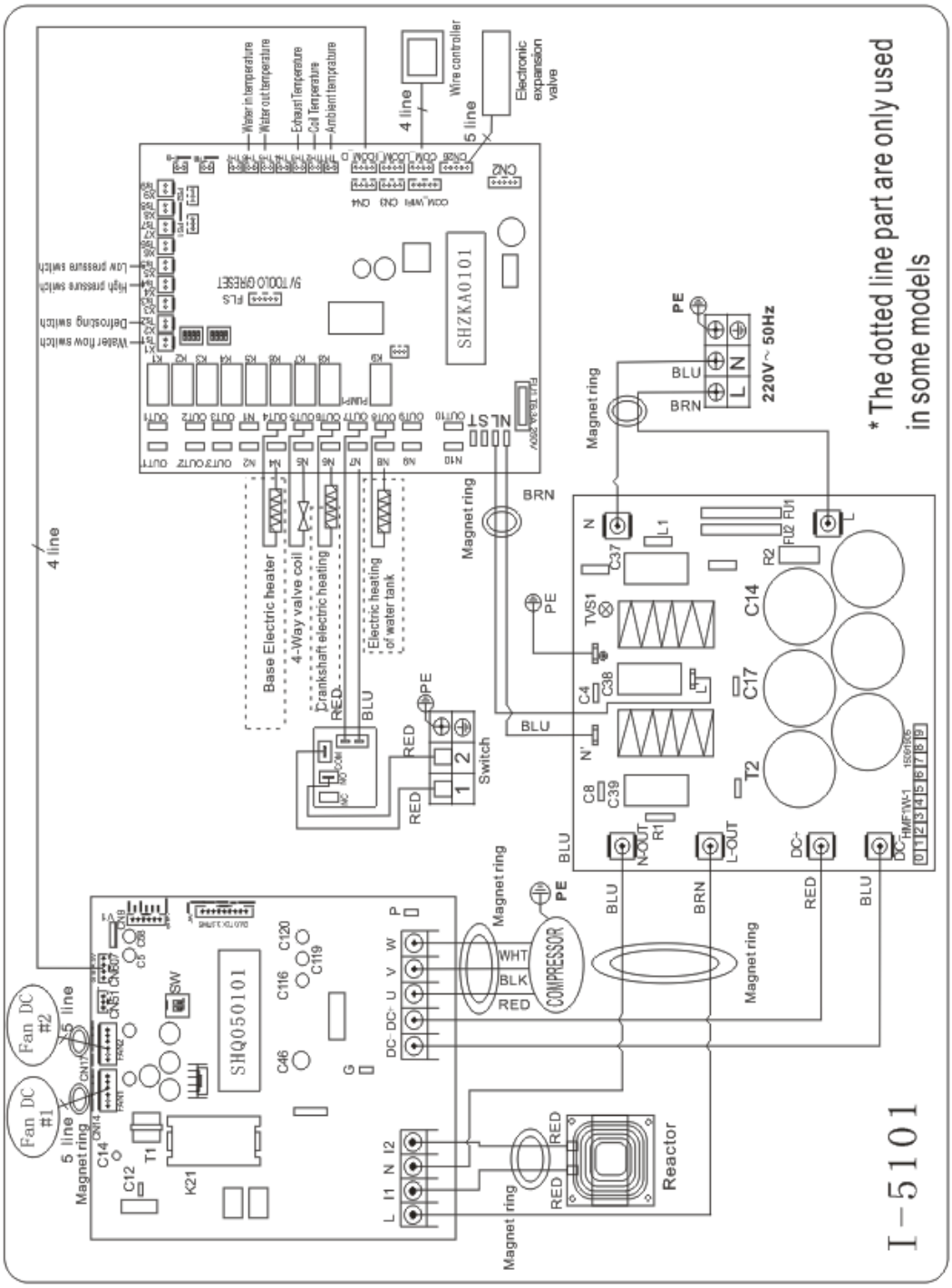


6. Electrical Wiring

6.3 Inverter swimming pool heat pump wiring diagram

68840

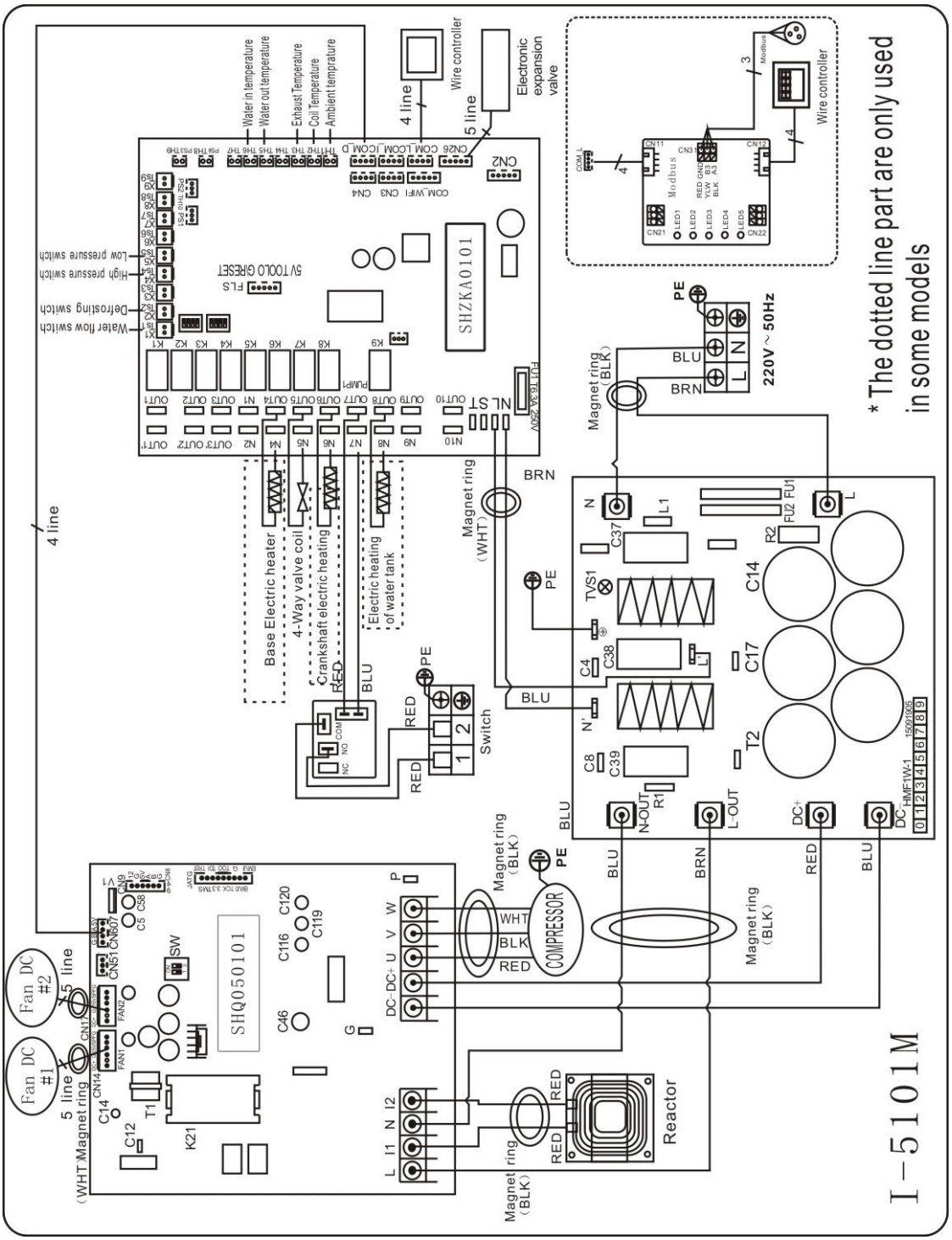
Basic Electrical Wiring



6.4 Inverter swimming pool heat pump wiring diagram

68840

Electrical Wiring with MODBUS module



6.5 Electrical protection

The power supply for the heat pump must come, preferably, from an exclusive circuit with regulatory protection components (30mA differential protection) and a magneto-thermal switch.

- The electrical installation must be carried out by a specialized professional (electrician) in accordance with the standards and regulations in force in the country of installation.

- The heat pump circuit must be connected to a safety earth circuit at the terminal block.

- The cables must be properly installed to prevent interference.

- The pump is intended for connection to a general power supply with earth connection.

- Section of the cable; This section is indicative and should be checked and adapted according to the needs and conditions of use.

- The tolerance of acceptable voltage variation is +/- 10% during operation.

The connections must be dimensioned according to the power of the device and the state of installation.

Models	**Circuit breaker**	**Maximum length of the wire**			
		2,5 mm²	4 mm²	6 mm²	10 mm²
68837	13 A	45 m	75 m	110 m	185 m
68838	15 A	34m	54m	80 m	135 m
68839	18 A	32 m	50 m	75 m	128m
68840	24 A	/	35m	52 m	95m

⚠ **These values are given as a guideline, only an authorized electrician can determine the values corresponding to your installation. The electric cable must be equipped with a ground connection and with a circuit breaker with difference 30mA.**

6. Electrical Wiring

6.6 Installation of the remote display

Photo(1) Photo(2) Photo(3) Photo(4)



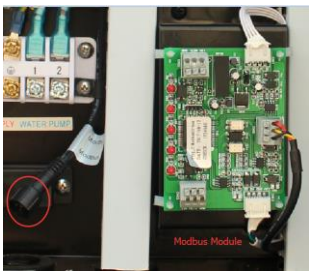

- The side with plug connects with the control panel (photo1)
- The other side of the signal wire. (photo2)
- Open the cover of the terminal box and pass through it the cable of the remote screen. (photo3,)
- Insert the wiring into the designated position (upper right corner) on the Modbus Module. (photo4)

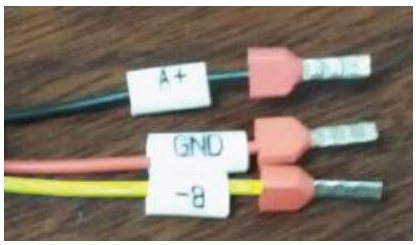
6.7 Installation of the Modbus Signal Wire

Photo(5) Photo(6) Photo(7)



Photo(8) Photo(9)



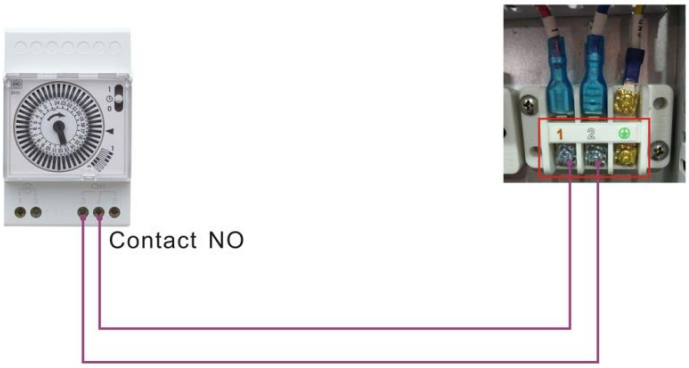


- Open the Back panel (photo5)
- Take the Modbus signal wire from the accessories (photo 6) and put the one end through the hole (Photo 7)
- Put the round end of the signal wire into the designated position. (photo 8)
- Three wire terminal：“A+” ，“B- ”， “GND” (Photo 9)

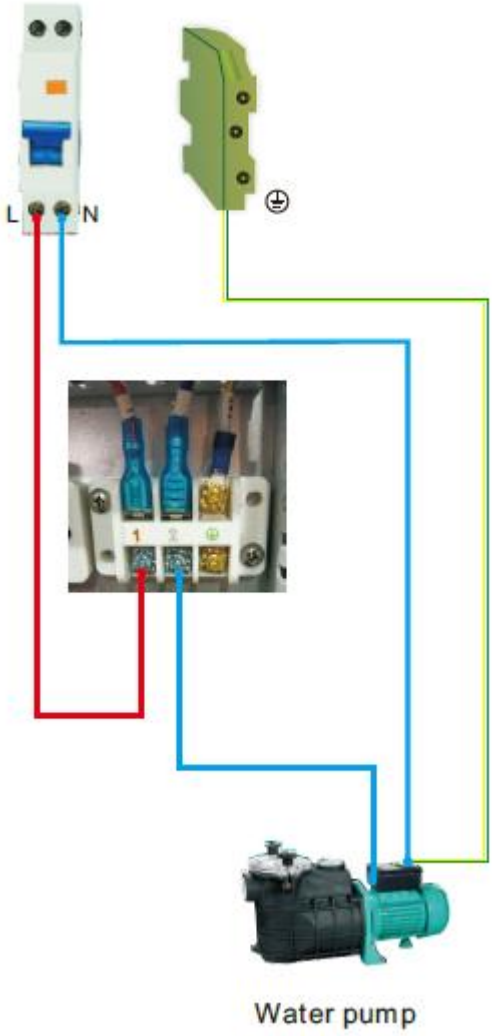
6. Electrical Wiring

Dry contact timer connection

Timer



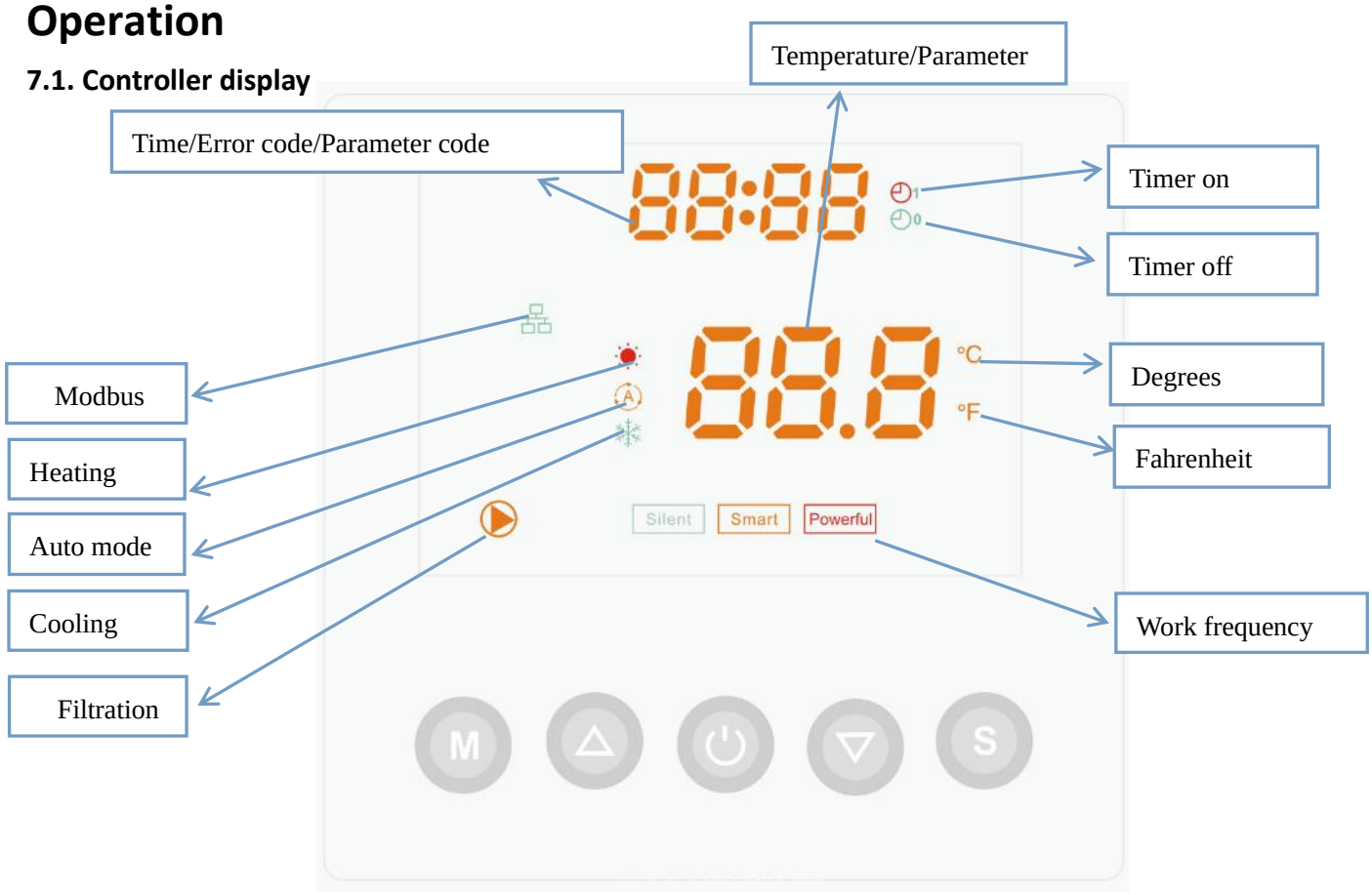
Dry contact pump connection



7. Start-up of the Heat Pump

Operation

7.1. Controller display



7.2. Turn on/Turn off the heat pump

Press to turn on the heat pump, it will show setting temperature firstly, after 5 second, it show water inlet temperature.

Press to turn off the heat pump.

7.3. Water temperature setting

Press or directly to setting target water temperature.

Cooling: 6℃≤Tset≤35℃

Heating: 15℃≤Tset≤41℃

Remark: When defrosting, the heating symbol will flash

7.4. Lock/Unlock the screen

Press and on the same time in 5 second to lock the screen, and Press and on the same time in 5 second again to cancel the locking.

7.5. Working frequency

Press 

to choose three mode as below: Silent / Smart /Powerful

The set frequency indicator light is always on, while the working frequency light flashes.
When the set frequency stage is the same with the working one, its frequency light will flash.

7.5.1 

Choose the Powerful, the light will be on, the heat pump will operate in 'Full output' only.

7.5.2 

While you choose the ***Smart***, the heat pump will operate in 'Small output' ,'Medium output' and 'Full output'

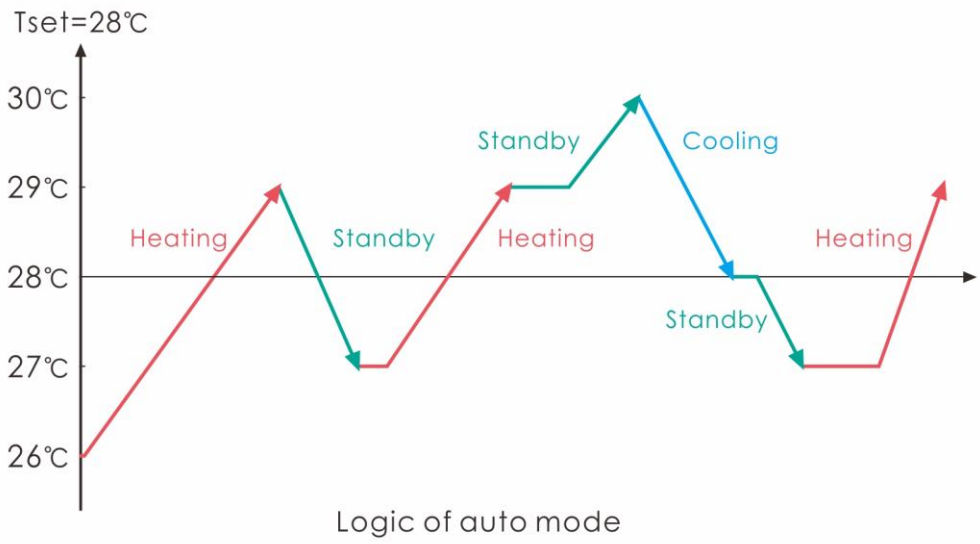
7.5.3 

While you choose the ***Silent,*** the heat pump will just operate in 'Medium output' and 'Small output'
When in 'Small output', the light of Silent will flash.
When in 'Medium output', the lamp of Silent is lighting, the lamp of Smart will be flash.

7.5.4 Working mode

There are 3 modes for the unit, Heating only, Auto mode(heating and cooling switch), Cooling only.

Operation logic of Auto Mode: set temperature: 28℃



Logic of auto mode

7.5.4.Heating operation logic

Working status		Working mode	Water in temperature-T1	For example , water in temperature-T1	Heat pump working level
1	Start-up of heat pump	When you select the "Smart working mode "	T1< Tset-1	T1< 27℃	Powerful mode-frequency F9
2			Tset-1≦T1 < Tset	27℃≦T1 <28℃	Frequency： F9 -F8-F7,...,-F2
3			Tset≦ T1 <Tset+ 1	28℃≦ T1 <29℃	Silent mode-frequency F2
4			T1≧Tset+1	T1≧29℃	HP will be Standby ,stop working till the water in temperature dropping to less 28℃.
5		When you select the "Silent working mode".	T1< Tset	T1< 28℃	Smart mode -frequency F5.
6			Tset≦T1 < Tset+1	28℃≦T1 < 29℃	Silent mode-frequency F2/F1.
7			T1≧Tset+1	T1≧29℃	HP will be Standby ,stop working till the water in temperature dropping to less 28℃.
8		When you select the "Powerful working mode."	T1<Tset+1	T1<29℃	Powerful mode-frequency F10/F9
9			T1≧ Tset+1	T1≧29℃	HP will be Standby, stop working till the water in temperature dropping to less 28℃.
10	Re-start to heat water in standby status	When HP is working at " Smart mode"	T1≧Tset	T1≧28℃	Standby
11			Tset＞T1≧Tset-1	28℃＞T1≧27℃	Silent-frequency F2
12			Tset-1＞T1≧Tset-2	27℃＞T1≧26℃	Frequency： F2 -F3-F4,...,-F9
13			<Tset-2	<26℃	Powerful-frequency F9
14		When HP is working at " Silent mode"	≧Tset	≧28℃	Standby
15			Tset＞T1≧Tset-1	28℃＞T1≧27℃	Silent mode-frequency F2/F1
16			T1<Tset-1	T1<27℃	Smart -frequency F5
17		When HP is working at " Powerful mode"	T1<Tset-1	T1<27℃	Powerful -frequency F10/F9

7.5.5. Cooling operation logic

Working status		Working mode	Water in temperature	For example , water in temperature	Heat pump working level
1	Start-up of heat pump	When you select the "Smart working mode "	T1≦Tset-1	T1≦27℃	Standby.
2			Tset-1<T1 ≦Tset	27℃< T1 ≦ 28℃	Silent mode-frequency F2
3			Tset<T1≦Tset+1	28< T1 ≦29℃	frequency： F9 -F8-F7,...,- F2
4			T1≧Tset+1	T1≧29℃	Powerful mode-F9
5		When you select the "Silent working mode".	T1≦Tset-1	≦27℃	Standby
6			Tset-1<T1 ≦Tset	27℃< T1≦28℃	Silent mode - frequency F2/F1
7			T1>Tset	T1>28℃	Smart mode -frequency F5
8		When you select the "Powerful working mode."	T1>Tset-1	T1>27℃	Powerful mode-frequency F10/F9
9			T1≦Tset-1	T1≦27℃	Standby
10	Re-start to cool water in standby status	Smart	T1≦Tset-1	T1≦27℃	Standby
11			Tset ≦T1 <Tset+1	28 ≦T1 <29℃	Silent- frequency F2
12			Tset+1 ≦T1 <Tset+2	29 ≦T1 <30℃	Frequency: F2 -F3-F4,...,- F9
13			T1≧Tset+2	T1≧30℃	Powerful mode -frequency F9
14		Silent	Tset<T1≦Tset+1	28< T1≦29℃	Silent mode-frequency F2/F1
15			T1＞Tset+1	T1＞29℃	Smart mode-frequency F5
16		Powerful	T1＞Tset+1	T1＞29℃	Powerful mode-frequency F10/F9
17			T1≦Tset-1	T1≦27℃	Standby

7.6. Parameter checking or setting

7.6.1 Press  5S and then press  to check the parameter from d0-d14.

Code	Parameter	Range	Remark
d0	IPM module temperature	0-120℃	Real value
d1	Water inlet temp.	-9℃～99℃	Real value
d2	Water outlet temp.	-9℃～99℃	Real value
d3	Ambient temp.	-30℃～70℃	Real value<-9 flash
d4	Frequency limitation code	0,1,2,4,8,16	Real value
d5	Coil temperature	-30℃～70℃	Real value<-9 flash
d6	Gas exhaust temperature	0℃～125℃	Real value
d7	Step of EEV	0～99	N*5
d8	Compressor running frequency	0～99Hz	Real value
d9	Compressor current	0～30A	Real value
d10	Current fan speed	0-1200 （rpm）	Real value
d11	Error code for last time	All error code	
d12	MODBUS COM	0 - 5	Only Modbus function
d13	MODBUS ID Address.	1 - 88	Only Modbus function
d14	Product code parameter	001- 999	Only Modbus function

7. Start-up of the Heat Pump

Remark:

(1) In the time programming mode, when the display is off, you can start the machine manually by turning on the display and the machine will work until the scheduled programming.

(2) d4: 0 - no limit frequency; 1-coil temperature limited frequency; 2 - overheating or overcooling limited frequency; 4 - drive current limited frequency; 8 - drive voltage limited frequency; 16 - drive high temperature limited frequency.

(3)Product code parameter P(Modbus Only): Press  and  at the same time in 5 second, the first digital number in the upper flash, press  or  to choose the target number from 0-F, then press  go to adjust the second number. So does the third and forth number. Lastly press  to save the setting and exit, or it automatically exist after 15 seconds.

Code with connect	Parameter P	Description
68837	OCE5	APH3 INVERBOOST 14KW
68838	OCE6	APH3 INVERBOOST 17KW
68839	OCE7	APH3 INVERBOOST 21KW
68840	OCE8	APH3 INVERBOOST 26KW

7.6.2 Press  5S and then press  to check the parameter from P0-P7.

Code	Name	Range	Default	Remark
P0	Mandatory defrosting	0-1	0	0: defrosting mode;1: mandatory defrosting.
P1	Working mode	0-2	1	1: Heating mode; 0: cooling mode; 2: Auto mode
P2	Timer on/off	0-1	0	1: Timer on/off is under function; 0: Timer on/off is out of function (The setting of P5 and P6 won't work)
P3	Filtration pump	0-1	0	1: Always running， 0: Depends on the running of compressor
P4	Current time	HH:MM	00：00	0-23:0-59
P5	Timer on	HH:MM	00：00	0-23:0-59
P6	Timer off	HH:MM	00：00	0-23:0-59
P7	T1 Inlet water temp. correction	-9～9	0	Default setting: 0
P8	Debug mode	0-1	0	1: P9，P10，P11(could be adjusted) 0: automatic(not adjusted)
P9	Compressor frequency	18-110	50	Manual adjustment
P10	EEV Initial opening	0-470	350	Manual adjustment
P11	DC fan speed	300-1000	500	Manual adjustment
P12	MODBUS COM	0 - 5	0	Only Modbus function
P13	MODBUS ID Address..	1 - 88	9	Only Modbus function

7.6.2.1 When there is on one parameter checking, Press M again, and then press △ or ▽ to setting relative parameter.

7.6.2.2. When there is on parameter checking **Current time**, Press M again to set the HOUR, then press △ or ▽ to adjust "HOUR" from 0-23. Press M once again to set the MINUTE, press △ or ▽ to adjust the MINUTE from 0 to 59. and press M to save the new setting.

7.6.2.3. When there is on parameter checking **Timer on setting**, Press M again to set the HOUR, then press △ or ▽ to adjust "HOUR" from 0-23. Press M again to set the MINUTE, press △ or ▽ to adjust the MINUTE from 0 to 59. and press M to save the new setting.

7.6.2.4. When there is on parameter checking **Timer off setting**, Press M again to set the HOUR, then press △ or ▽ to adjust "HOUR" from 0-23. Press M again to set the MINUTE, press △ or ▽ to adjust the " MINUTE" from 0 to 59. and press M to save the new setting.

7.6.3 Parameter settings or checking: P8/P9/P10/P11

7.6.3.1. Press M first and then press S and ▽ on the same time in 15 second, the screen flash and press △ or ▽ to enter parameter checking.

7.6.3.2. Press M again and press △ or ▽ to set parameter if needed, and press M to confirm the setting then press ⏻ to save the setting and exit.

7.6.4 Filtration pump logic: P3=1: Always running; P3=0: Depends on the running of compressor

Option 1; P3=0 Filtration pump is related to heat pump operation to start and stop.

Filtration pump starts 60s before compressor, filtration pump start 30s and then the water flow switch detect flow. Before the heat pump enters into Standby mode, the compressor stops first and after 5 minutes filtration pump stops.

	Condition	**Example**	**Water pump working logic**	
Heating mode	P3=0, T1≥Tset-0.5℃, last for 30 minutes	P3=0, T1≥27.5℃, last for 30 minutes	1. Then it enters into standby mode for 1 hour (It will not restart except turn it on manually.)	2. After 1 hour, the filtration pump will restart for 5 minutes. If the T1≤27℃, the heat pump will start to work until T1≥27.5℃ and last for 30 minutes to go into standby
Cooling mode	P3=0, T1≤Tset+0.5℃, last for 30 minutes	P3=0, T1≤28.5℃, last for 30 minutes	1. Then it enters into standby mode for 1 hour (It will not restart except turn it on manually.)	2. After 1 hour, the filtration pump will restart for 5 minutes. If it tests T1≥29℃, the heat pump will start to work until T1≤28.5℃ and last for 30 minutes to go into standby

Option 2; P3=1 Filtration pump is always on, P2=0 the timer function is no active

Under condition P3=1, whenT1≥Tset+1℃(T1≥29℃) last for 3 minutes, heat pump will be in standby, while filtration pump is always on.

Under option 2, with activation of the timer; P2=1 to start and stop the filtration pump according the programming of the P4 (time), P5 (timer ON) and P6 (timer OFF)

Condition for the heat pump start, timer ON actives;

When the timer reaches **the set time of TIMER ON**, the filtration pump will start and after 5 minutes the heat pump start. The heat pump stays in stop if the water in temperature is ≥ Tset+1℃, before the TIMER OFF, the filtration is still activated.

Condition to stop the heat pump, timer OFF actives;

When the timer reaches the set time of the TIMER OFF, the heat pump will stop and after 5 minutes the filtration pump stops.

If heat pump is turned ON/OFF manually, the filtration pump will start and stop accordingly.

NOTE :

Tset = Tseting water temperature

For example : Tset = 28℃ Tseting water temperature in your pool heat pump

Tset-0.5 = less 0.5℃ than Tseting temperature, Tset- 0.5 = 28-0.5=27.5℃

Tset+0.5= more 1℃ than Tseting temperature, Tset+ 0.5 = 28+0.5=28.5℃

7.7. Reset function：

Long press“ and M ” in 10 second to reset the data.

7.8. 

7.8.1 It show current time or timer on/off if there is in parameter P4,P5,P6.

7.8.2 It show error code when there is troubleshooting in the heat pump.

Remark: it shows current time with below situation:

a、Compressor start within 10 minutes

b、Heat pump operation frequency change

c、During defrosting

d、Working mode is cooling mode

7.9. 

7.9.1 Normally it show the temperature.

7.9.2 It show the parameter when there is parameter checking.

7.9.3 It show the parameter code when there is in P4, P5, P6.

8. Troubleshooting

8.1 Error code display on LED wire controller

Malfunction	Error code	Reason	Solution
Inlet water temperature sensor failure d1-TH6	PP01	1. The sensor in open or short circuit 2. The wiring of sensor is loose	1. Check or change the sensor 2.Re-fix the wiring of the sensors
Outlet water temperature sensor failure d2-TH5	PP02	1. The sensor in open or short circuit 2. The wiring of sensor is loose	1. Check or change the sensor 2.Re-fix the wiring of the sensors
Heating piping sensor failure d5-TH2	PP03	1. The sensor in open or short circuit 2. The wiring of sensor is loose	1. Check or change the sensor 2.Re-fix the wiring of the sensors
Ambient temperature sensor failure d3-TH1	PP05	1. The sensor in open or short circuit 2. The wiring of sensor is loose	1. Check or change the sensor 2.Re-fix the wiring of the sensors
Exhaust piping sensor failure d6-TH3	PP06	1. The sensor in open or short circuit 2. The wiring of sensor is loose	1. Check or change the sensor 2.Re-fix the wiring of the sensors
Antifreeze protection in Winter	PP07	Ambient temperature or water inlet temperature is too low	1. Check the d1((inlet water temp.) and d3(outlet water temp.) 2. Normal protection
Low ambient temperature protection	PP08	1. Out of the normal operating ambient temperature for this machine by checking d3 2. Sensor abnormality d3-TH1	1. Stop using, beyond the scope of using 2.Change the sensor
Piping temperature too high protection under cooling mode d5-TH2	PP10	1. Ambient or the water temperature is too high in cooling mode 2. Refrigeration system is abnormal 3. Pipe temperature sensor(d5-TH2) failure	1. Check the ambient temperature 2. Check refrigeration system 3. Change the pipe temperature sensor (d5-TH2)
Over low protection for outlet water temperature in cooling mode	PP11	1. Low water flow 2. Outlet water temperature sensor d2-TH5 abnormal 3. The difference of outlet water temperature and set temperature is 7℃ or above in cooling mode	1. Check filtration pump and waterway system 2. Change outlet water temperature sensor d2-TH5 3. Change the set temperature.
High pressure failure TS4	EE01	1. Ambient temperature is too high 2. Water temperature is too high 3. Water flow is too low 4. Fan motor speed is abnormal or fan motor is damaged under cooling mode 5. Gas system jammed 6. High pressure wire is loose or damaged 7. Too much refrigerant	1. Choose the silent mode. 2. Check the water flow or filtration pump 3. Check the fan motor under cooling mode, replace a new one if it is abnormal. 4. Check and repair the refrigerating system 5. Reconnect the high pressure wire or replace a new high pressure switch 6. Check and repair the refrigerating system

8. Troubleshooting

Malfunction	Error code	Reason	Solution
Low pressure failure TS5	EE02	1. EEV has blocked or pipe system is jammed 2. Fan motor speed is abnormal or fan motor is damaged under heating mode 3. Gas leakage 4. Low pressure wire is loose or damaged	1.Check the EEV and piping system 2. Check the fan motor under heating mode, replace a new one if it is abnormal 3. Check refrigeration system or check the pressure value through the high-pressure gauge. 4. Reconnect the low pressure wire or replace a new low pressure switch
Water flow failure TS1	EE03 Or "ON"	1. The wiring of water flow switch is loose or water flow switch damaged 2. No/Insufficient water flow.	1. Check the wiring of water flow switch or change a new one. 2. Check the filtration pump or the waterway system if there is air or jammed inside
Over heating protection for water temperature (d2-TH5) in heating mode	EE04	1. Low water flow 2. Water flow switch is stuck and the water supply stops 3. d2-TH5 outlet water temperature sensor is abnormal 4. The difference of outlet water temperature and set temperature is 7℃ or above in heating mode	1. Check the water flow switch if it works well 2. Check the filtration pump or the waterway system if there is air or jammed inside 3. Check d2-TH5 outlet water temperature sensor or replace a new one. 4. Change the set temperature.
d6-TH3 Exhaust too high protection	EE05	1. Lack of gas 2. Low water flow 3. Piping system has been blocked 4. Exhaust temp. sensor failure d6-TH3 5. Ambient temperature is too high	1. Check the pressure gauge, and fill with some gas if it is lack of gas 2. Check the filtration pump or the waterway system if there is air or jammed inside 3. Check the piping system if there was any block 4. Change a new exhaust temp. sensor d6-TH3 5. Check whether the current ambient temp. and water temp. are beyond the running temp. of the machine
Controller failure	EE06	1. Signal is not well connected or damaged 2. Controller failure	1. Stop the power supply and restart. 2. Re-connect the signal wire or replace a new one 3. Replace a new controller

8. Troubleshooting

Malfunction	Error code	Reason	Solution
Compressor current protection	EE07	1. The compressor current is too large instantaneously 2. Wrong connection for compressor phase sequence 3. Compressor accumulations of liquid and oil lead to the current becomes larger 4. Compressor or driver board damaged 5. The water flow is abnormal 6. Power fluctuations within a short time	1.Check if the power in the normal range 2. Check the compressor 3. Check the compressor phase 4. Check the phase sequence connection 5. Check the waterway system and filtration pump 6. Check mains power input
Communication failure between controller and main board	EE08	1. Signal wire is not well connected or damaged 2. Controller failure 3. Driving failure	1. Stop the power supply and restart. Re-connect the signal wire or replace a new one 2. Check the controller or replace a new one 3. Check the driving system or update it.
Communication failure between Main control board and Driving board	EE09	1. Poor connection of communication wire 2. PCB failure 3. The wire is damaged	1. Stop the power supply and restart. 2. Reconnect the communication wire or replace a new one 3. Check the wirings according to the electric diagram 4. Replace a new PCB
VDC voltage too high protection	EE10	1. Line voltage is too high 2. Driver board is damaged.	1. Check whether the power supply is normal 2. Change driver board or main board
IPM module protection	EE11	1. Data mistake 2. Wrong compressor phase connection 3. Compressor liquid and oil accumulation lead to the current becomes larger 4.Poor heat dissipation of drive module or high ambient temperature 5. Compressor or driver board damaged	1. Program error, turn off electricity supply and restart after 3 minutes 2. Check compressor sequence connection 3. Check the pressure of system by pressure gauge 4. Check if the ambient and water temperature is over high 5. If it is the refrigration system failure, send it to the service center 6. Change driver board
VDC voltage too low protection	EE12	1. Mother line voltage is too low 2. Driver board is damaged.	1. Check if the power supply is in the normal range 2. Change driver board

8. Troubleshooting

Malfunction	Error code	Reason	Solution
Input current over high protection.	EE13	1. The compressor current is too large momentary 2. The water flow is abnormal 3. Power fluctuations within a short time 4. Wrong reactor	1. Check the compressor if it works normally 2. Check the waterway system 3. Check if the power is in the normal range 4. Check if the reactor is used correctly.
IPM module thermal circuit is abnormal	EE14	1. Output abnormity of IPM module thermal circuit 2. Fan motor is abnormal or damaged 3. Fan blade is broken	1. Check if the motor speed is too low or fan motor is damaged, replace it by a new one. 2. Replace a new driver board 3. Change the fan blade if it is broken
IPM module temperature too high protection	EE15	1. Output exception of IPM module thermal circuit 2. Fan motor is abnormal or damaged 3. Fan blade is broken 4.The screw on driver board is loose	1. Check the main board or replace the driver board 2. Check if the motor speed is too low or fan motor is damaged, replace it by a new one if any failure. 3. Change the fan blade if it is broken 4. Check the screw on driver board
PFC module protection	EE16	1. Output exception of PFC module 2. Fan motor is abnormal or damaged 3. Fan blade is broken 4. Input voltage leap, input power is abnormal	1.Check the main board or replace the driver board 2. Check if the motor speed is too low or fan motor is damaged, replace it by a new one. 3. Change the fan blade 4. Check the input voltage
DC fan motor failure	EE17	1. DC motor is damaged 2. For the tri-phase check if the neutral is connected 3. Main board is damaged 4. The fan blade is stuck	1. Detect DC motor for mono phase machine, replace a new one if any failure 2. Check the wiring connection for tri-phase machine 3. Check the board, replace a new driver board or main board if any failure 4. Check if there is any barrier in front of fan blade and remove it
PFC module thermal circuit is abnormal	EE18	The driver board is damaged	1. Check if the motor speed is too low or fan motor is damaged, replace it by a new one. 2. Change a new driver board

8. Troubleshooting

Malfunction	Error code	Reason	Solution
PFC module high temperature protection	EE19	1. PFC module thermal circuit output abnormal 2. Fan motor is abnormal or damaged 3. Fan blade is broken 4. The screw in the driver board is not tight	1. Check the main board or replace the driver board 2. Check if the motor speed is too low or fan motor is damaged, replace it by a new one if any failure. 3. Change the fan blade if it is broken 4. Check the screw on driver board
Input power failure	EE20	The supply voltage fluctuates too much	Check whether the voltage is stable
Software control exception	EE21	1. Compressor runs out of step 2. Wrong program 3. Impurity inside compressor causes the unstable rotate speed	1. Check the main board or change a new one 2. Update the correct program 3. Check the refrigeration system
Current detection circuit failure	EE22	1. Voltage signal abnormal 2. Driver board is damaged 3. Main board failure	1. Change a new main board 2. Change a new driver board
Compressor start failure	EE23	1. Main board is damaged 2. Compressor wiring error or poor contact or unconnected 3. Liquid accumulation inside 4. Wrong phase connection for compressor	1. Check the main board or change a new one 2. Check the compressor wiring according to the circuit diagram 3. Check the compressor or change a new one
Ambient Temperature device failure on Driver board	EE24	Ambient Temperature device failure	Change driver board or main board
Compressor phase failure	EE25	Compressors U, V, W are just connected to one phase or two phases.	Check the actual wiring according to the circuit diagram
Four-way valve reversal failure	EE26	1. Four-way valve reversal failure 2. Lack of refrigerant (no detect when d5-TH2 or d3-TH1 malfunction)	1. Switch to Cooling mode to check the 4-way valve if it has been reversed correctly 2. Change a new 4-way valve 3. Fill with gas
EEPROM data read malfunction	EE27	1. Wrong EEPROM data in the program or failed input of EEPROM data 2. Main board failure	1. Re-enter correct EEPROM data 2. Change a new main board
The inter-chip communication failure on the main control board	EE28	Main board failure	1. Stop electricity supply and restart it 2. Change a new main board

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

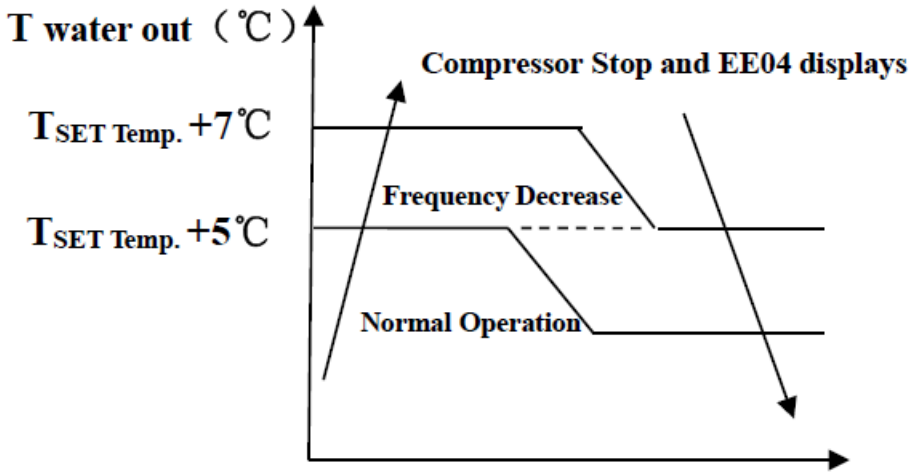
Malfunctions	Observing	Reasons	Solution
Heat pump is not running	LED wire controller no display.	No power supply	Check cable and circuit breaker if it is connected
	LED wire controller. Displays the actual time.	Heat pump under standby status	Startup heat pump to run.
	LED wire controller displays the actual water temperature.	1. Water temperature is reaching to setting value, HP under constant temperature status. 2. Heat pump just starts to run. 3. Under defrosting.	1. Verify water temperature setting. 2. Startup heat pump after a few minutes. 3. LED wire controller should display "Defrosting".
Water temperature is cooling when HP runs under heating mode	LED wire controller displays actual water temperature and no error code displays.	1. Choose the wrong mode. 2. Figures show defects. 3. Controller defect.	1. Adjust the mode to proper running 2. Replace the defect LED wire controller, and then check the status after changing the running mode, verifying the water inlet and outlet temperature. 3. Replace or repair the heat pump unit
Short running	LED displays actual water temperature, no error code displays.	1. Fan NO running. 2. Air ventilation is not enough. 3. Refrigerant is not enough.	1. Check the cable connections between the motor and fan, if necessary, it should be replaced. 2. Check the location of heat pump unit, and eliminate all obstacles to make good air ventilation. 3 Replace or repair the heat pump unit.
Water stains	Water stains on heat pump unit.	1. Concreting. 2. Water leakage.	1. No action. 2. Check the titanium heat exchanger carefully if it is any defect.
Too much ice on evaporator	Too much ice on evaporator.		1. Check the location of heat pump unit, and eliminate all obstacles to make good air ventilation. 2. Replace or repair the heat pump unit.

8. Troubleshooting

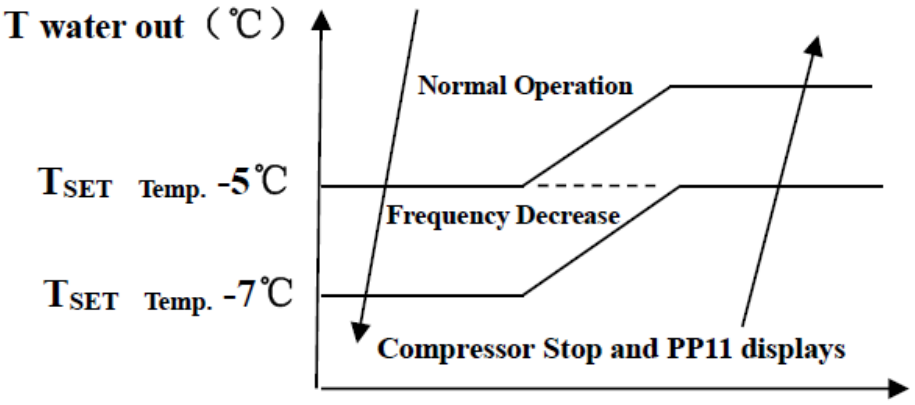
Remarks:

1. In heating mode, if the water out temperature is higher than the set temperature over 7℃, LED controller
displays EE04 for water over-heating protection.

1. In cooling mode, if the water out temperature is lower than the set temperature over 7℃, LED controller displays PP11 for water over-cooling protection.



EE04 Water Overheating Protection



PP11 Water Overcooling Protection

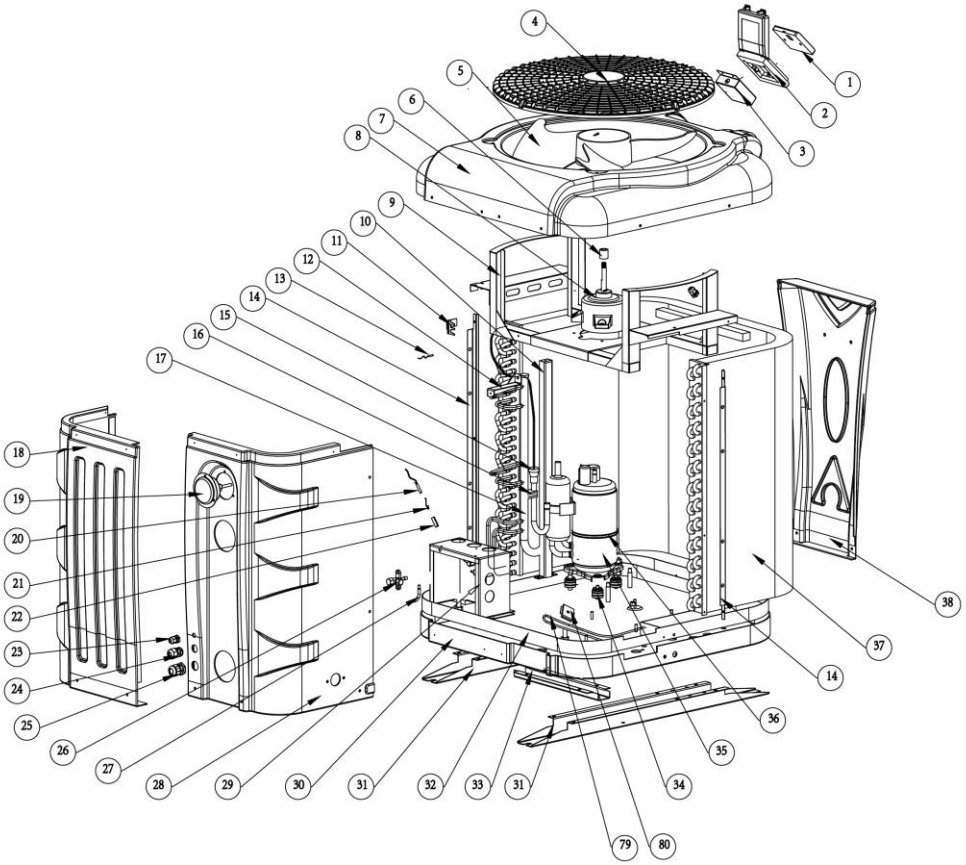
For example as below:

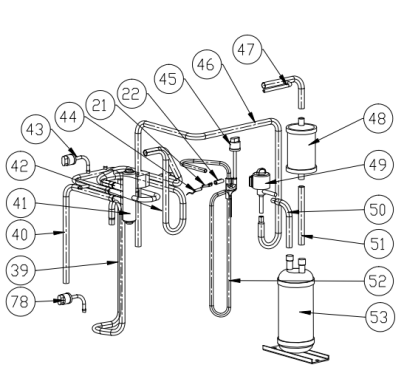
Mode	Output water temperature	Set Point Temperature	Condition	Malfunction
Heating mode	**36**℃	**29**℃	Tout -Tset ≧**7**℃	EE04 Overheating protection for water temperature (d2-TH5)
Cooling mode	**23**℃	**30**℃	Tset -Tout ≧**7**℃	PP11 Too low protection for water temperature (d2-TH5)

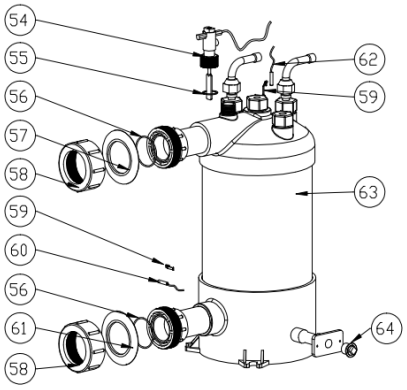
9. Exploded Diagram

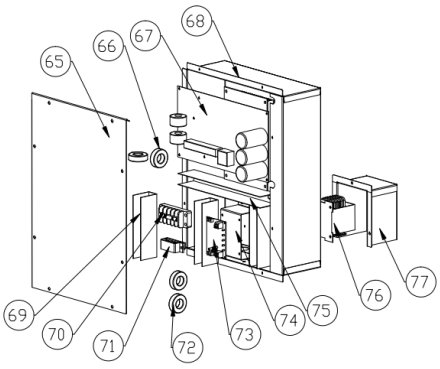
9. 1 Exploded Diagram

Model:68837/68838









9. Exploded Diagram

Part list 68837

NO	ERP	Spare parts	NO	ERP	Spare parts
1	117020183	Controller	41	121000006	4 way valve
2	113712007	Waterproof controller box	42	113030104	4-way valve to exchanger
3	108010075	Controller box	43	112100046	Low pressure switch 0.1-0.3
4	133020043	Fan grill	44	117110021	Discharge temp. sensor d6-TH3
5	132000015	Fan blade	45	112100030	High pressure switch
6	108010024	Fan motor tube	46	113080070	EEV to distribution piping
7	133270007	Top cover	47	113170034	Exchanger to filter
8	112000031	Fan motor	48	120000066	Filter
9	108640010	Fan motor bracket	49	119000021	EEV
10	108640008	Pillar	50	113120021	Liquid storage tank to EEV
11	133020010	Ambient temperature sensor clip	51	113130016	Filter to Liquid storage tank
12	108640004	Pillar	52	113010206	Gas exhaust
13	117110020	Ambient temperature sensor. d3-TH1	53	105000004	Liquid storage tank
14	108640014	Protective mesh baffle	54	112100021-1	Water flow switch
15	103000183	Distribution tube	55	112100021-1	Sealing ring
16	136020005	Rubber fixing block	56	133020026	Rubber ring on water connection
17	103000183	Collective piping	57	133020012	Red rubber ring
18	133270004	Side panel	58	102050004	Water connection sets
19	106000011	Pressure gauge	59	117110011	Water outlet temperature sensor d2-TH5
20	117110004	Evaporator temperature sensor d5-TH2	60	108010025	Exchanger temperature sensor clip
21	113190001	Clip	61	133020011	Blue rubber ring
22	113190001	Sensor holder	62	117110012	Water inlet temperature sensor d1-TH6
23	110000008	Cable connector	63	102040629	Titanium heat exchanger
24	110000011	Cable connector	64	150000110	Drainage plug
25	110000012	Cable connector	65	108640006	Electric control box cover
26	120000091	Globe valve	66	117240002	magnet ring
27	113100008	Coupling tool	67	117100047	PCB
28	133270003	Side panel	68	108640015	Electric control box
29	108640003	Electric control box support	69	136020003	Trunking
30	133270006	Bottom plate	70	115000004	5-ways terminal block
31	108640019	Chassis foot	71	136010004	Clip
32	108640021	Base tray	72	117240003	Magnet ring
33	108640020	Chassis foot	73	117010095	Modbus Module
34	101000181	Compressor + damping feet	74	108640016	Module support
35	101000181	Compressor + damping feet	75	136020003	Trunking
36	142000074	Compressor heating resistor	76	117230003	Reactor
37	103000183	Evaporator	77	108640007	Reactor box
38	133270002	Front panel	78	116000074	Low pressure switch 0.2-0.35
39	113020296	Gas return piping	79	142000028	Evaporator heating resistor
40	113060116	4-way valve to gas collect pipe	80	108480015	Evaporator heating resistor support

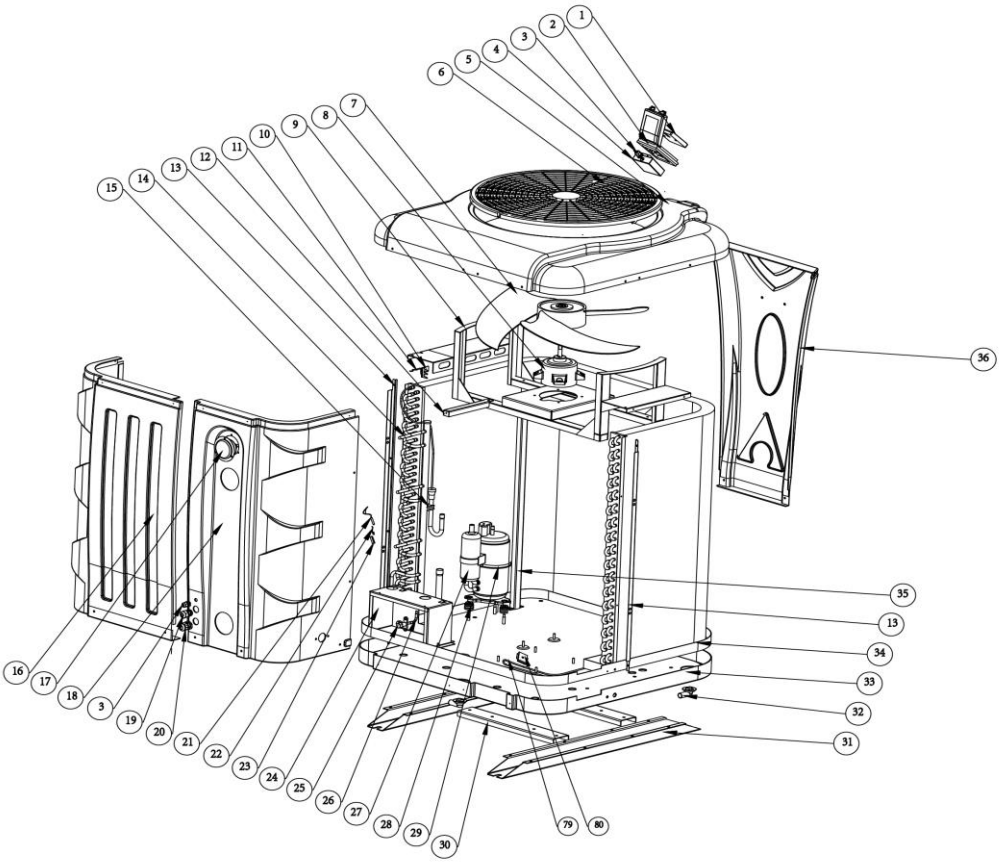
9. Exploded Diagram

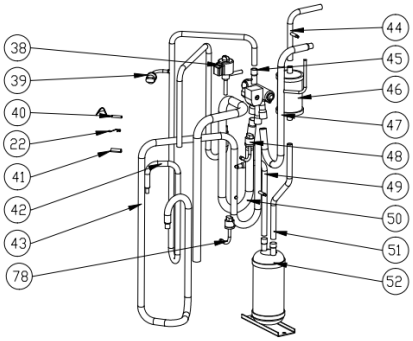
Part list 68838

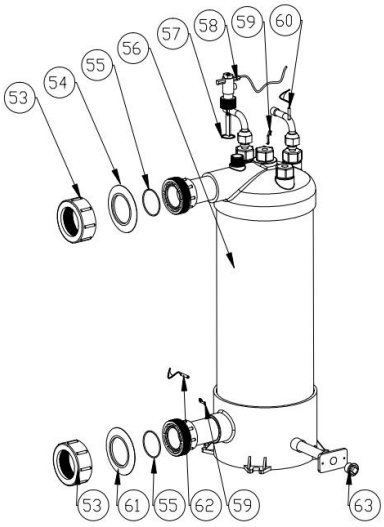
NO	ERP	Spare parts	NO	ERP	Spare parts
1	117020183	Controller	41	121000006	4 way valve
2	113712007	Waterproof controller box	42	113030104	4-way valve to exchanger
3	108010075	Controller box	43	112100046	Low pressure switch 0.1-0.3
4	133020043	Fan grill	44	117110021	Discharge temp. sensor d6-TH3
5	132000015	Fan blade	45	112100030	High pressure switch
6	108010024	Fan motor tube	46	113080070	EEV to distribution piping
7	133270007	Top cover	47	113170034	Exchanger to filter
8	112000031	Fan motor	48	120000066	Filter
9	108640010	Fan motor bracket	49	119000021	EEV
10	108640008	Pillar	50	113120021	Liquid storage tank to EEV
11	133020010	Ambient temperature sensor clip	51	113130016	Filter to Liquid storage tank
12	108640004	Pillar	52	113010206	Gas exhaust
13	117110020	Ambient temperature sensor. d3-TH1	53	105000004	Liquid storage tank
14	108640014	Protective mesh baffle	54	112100021-1	Water flow switch
15	103000184	Distribution tube	55	112100021-1	Sealing ring
16	136020005	Rubber fixing block	56	133020026	Rubber ring on water connection
17	103000184	Collective piping	57	133020012	Red rubber ring
18	133270004	Side panel	58	102050004	Water connection sets
19	106000011	Pressure gauge	59	117110011	Water outlet temperature sensor d2-TH5
20	117110004	Evaporator temperature sensor d5-TH2	60	108010025	Exchanger temperature sensor clip
21	113190001	Clip	61	133020011	Blue rubber ring
22	113190001	Sensor holder	62	117110012	Water inlet temperature sensor d1-TH6
23	110000008	Cable connector	63	102040626	Titanium heat exchanger
24	110000011	Cable connector	64	150000110	Drainage plug
25	110000012	Cable connector	65	108640006	Electric control box cover
26	120000091	Globe valve	66	117240002	magnet ring
27	113100008	Coupling tool	67	117100047	PCB
28	133270003	Side panel	68	108640015	Electric control box
29	108640003	Electric control box support	69	136020003	Trunking
30	133270006	Bottom plate	70	115000004	5-ways terminal block
31	108640019	Chassis foot	71	136010004	Clip
32	108640018	Base tray	72	117240003	magnet ring
33	108640020	Chassis foot	73	117010095	Modbus Module
34	101000189	Compressor + damping feet	74	108640016	Module support
35	101000189	Compressor + damping feet	75	136020003	Trunking
36	142000074	Compressor heating resistor	76	117230003	Reactor
37	103000184	Evaporator	77	108640007	Reactor box
38	133270002	Front panel	78	116000074	Low pressure switch 0.2-0.35
39	113020296	Gas return piping	79	142000028	Evaporator heating resistor
40	113060116	4-way valve to gas collect pipe	80	108480015	Evaporator heating resistor support

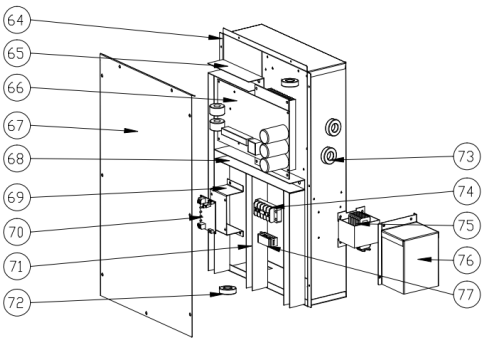
9. Exploded Diagram

Model:68839/68840









9. Exploded Diagram

Part list 68839

NO	ERP	Spare parts	NO	ERP	Spare parts
1	117020183	Controller	41	113190001	Sensor holder
2	113712007	Waterproof controller box	42	113010237	Gas exhaust
3	110000008	Cable connector	43	113020333	Gas return piping
4	108010075	Controller box	44	113170035	Exchanger to filter
5	133280007	Top cover	45	121000009	4 way valve
6	133020042	Fan grill	46	120000066	Filter
7	132000023	Fan blade	47	113030102	4-way valve to exchanger
8	112000031	Fan motor	48	112100046	Low pressure switch 0.1-0.3
9	108650011	Fan motor bracket	49	113120024	Liquid storage tank to EEV
10	133020010	Ambient temperature sensor clip	50	113060114	4-way valve to gas collect pipe
11	117110020	Ambient temperature sensor d3-TH1	51	113130019	Filter to Liquid storage tank
12	108650004	Pillar	52	105000004	Liquid storage tank
13	108650018	Protective mesh baffle	53	102050004	Water connection sets
14	103000185	Evaporator	54	133020012	Red rubber ring
15	136020005	Rubber fixing block	55	133020026	Rubber ring on water connection
16	133280003	Side panel	56	102040630	Titanium heat exchanger
17	106000011	Pressure gauge	57	112100021-1	Sealing ring
18	133280004	Side panel	58	112100021-1	Water flow switch
19	110000011	Cable connector	59	108010025	Exchanger temperature sensor clip
20	110000012	Cable connector	60	117110011	Water outlet temperature sensor d2-TH5
21	117110004	Evaporator temperature sensor d5-TH2	61	133020011	Blue rubber ring
22	113190001	Clip	62	117110012	Water inlet temperature sensor d1-TH6
23	113190001	Sensor holder	63	150000110	Drainage plug
24	108650003	Electric control box support	64	108650014	Electric control box
25	120000091	Globe valve	65	136020003	Trunking
26	113100008	Coupling tool	66	117100048	PCB
27	101000189	Compressor + damping feet	67	108650015	Electric control box cover
28	101000189	Compressor + damping feet	68	136020003	Trunking
29	142000074	Compressor heating resistor	69	108640016	Module support
30	108650022	Chassis foot	70	117010095	Modbus Module
31	108650023	Chassis foot	71	136020003	Trunking
32	136010023	Water nozzle	72	117240002	Magnet ring
33	133280006	Bottom plate	73	117240003	Magnet ring
34	108650021	Base tray	74	115000004	5-ways terminal block
35	108650009	Pillar	75	117230002	Reactor
36	133280002	Front panel	76	108650008	Reactor box
37	113080071	EEV to distribution piping	77	136010004	Clip
38	119000021	EEV	78	116000062	Low pressure switch 0.2-0.35
39	112100030	High pressure switch	79	142000147	Evaporator heating resistor
40	117110021	Discharge temp. sensor d6-TH3	80	108480015	Evaporator heating resistor support

9. Exploded Diagram

Part list 68840

NO	ERP	Spare parts	NO	ERP	Spare parts
1	117020183	Controller	41	113190001	Sensor holder
2	113712007	Waterproof controller box	42	113010233	Gas exhaust
3	110000008	Cable connector	43	113020329	Gas return piping
4	108010075	Controller box	44	113170035	Exchanger to filter
5	133280007	Top cover	45	121000009	4 way valve
6	133020042	Fan grill	46	120000066	Filter
7	132000023	Fan blade	47	113030102	4-way valve to exchanger
8	112000031	Fan motor	48	112100046	Low pressure switch 0.1-0.3
9	108650011	Fan motor bracket	49	113120024	Liquid storage tank to EEV
10	133020010	Ambient temp. sensor clip	50	113060114	4-way valve to gas collect pipe
11	117110020	Ambient temperature sensor. d3-TH1	51	113130019	Filter to Liquid storage tank
12	108650004	Pillar	52	105000004	Liquid storage tank
13	108650018	Protective mesh baffle	53	102050004	Water connection sets
14	103000186	Evaporator	54	133020012	Red rubber ring
15	136020005	Rubber fixing block	55	133020026	Rubber ring on water connection
16	133280003	Side panel	56	102040627	Titanium heat exchanger
17	106000011	Pressure gauge	57	112100021-1	Sealing ring
18	133280004	Side panel	58	112100021-1	Water flow switch
19	110000011	Cable connector	59	108010025	Exchanger temperature sensor clip
20	110000012	Cable connector	60	117110011	Water outlet temperature sensor d2-TH5
21	117110004	Evaporator temperature sensor d5-TH2	61	133020011	Blue rubber ring
22	113190001	Clip	62	117110012	Water inlet temperature sensor d1-TH6
23	113190001	Sensor holder	63	150000110	Drainage plug
24	108650003	Electric control box support	64	108650014	Electric control box
25	120000091	Globe valve	65	136020003	Trunking
26	113100008	Coupling tool	66	117100048	PCB
27	101000185	Compressor + damping feet	67	108650015	Electric control box cover
28	101000185	Compressor + damping feet	68	136020003	Trunking
29	142000074	Compressor heating resistor	69	108640016	Module support
30	108650022	Chassis foot	70	117010095	Modbus Module
31	108650023	Chassis foot	71	136020003	Trunking
32	136010023	Water nozzle	72	117240002	Magnet ring
33	133280006	Bottom plate	73	117240003	Magnet ring
34	108650021	Base tray	74	115000004	5-ways terminal block
35	108650009	Pillar	75	117230002	Reactor
36	133280002	Front panel	76	108650008	Reactor box
37	113080071	EEV to distribution piping	77	136010004	Clip
38	119000022	EEV	78	116000062	Low pressure switch 0.2-0.35
39	112100030	High pressure switch	79	142000147	Evaporator heating resistor
40	117110021	Discharge temp. sensor d6-TH3	80	108480015	Evaporator heating resistor support

9. Exploded Diagram

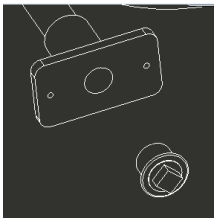
9.3 Maintenance

(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 HP unit.

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

(3) Only a qualified technician is authorized to operate the cooling system pressure.

(4) Please always drain the water from the heat pump when it is stopped during the winter or when the ambient temperature falls below 0 ℃, otherwise the titanium exchanger will be damaged by freezing, in which case it will be lost the guarantee. You should discharge the water from the drainage, if HP unit will stop running for a long time (especially during the winter season).



(5) In the way, you should check the unit is water fully before the unit start to run again.

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

(7) When the unit is running, there is all the time a little water discharge under the unit