

SWIMMING POOL

HEAT PUMP UNIT



ATECPOOL
INTERNACIONAL ESPAÑA

Installation & Instruction Manual



To our customers

1. Dear customers, please read this manual carefully before you install the product, otherwise it may lead to damage to the heat pump or may injure operators as well as cause financial loss.
2. With the development of science and technology, the product will be improved as well, so you are invited to keep up with the latest products.
3. If you need any further technical information, please contact our local distributor.
4. Attention:
 - 4.1 Before install the heat pump, please check whether the local power supply corresponds with the requirement of the heat pump.
For details, refer to the label on the unit or performance data in this manual.
 - 4.2 Please install the electrical protection devices, according to the local regulations.
 - 4.3 Connecting the heat pump to a ground wire is necessary, in order to prevent electrical shock caused by an unexpected short circuit inside the unit.
 - 4.4 An electrical wiring diagram is provided in this manual.
 - 4.5 For safety reasons, please do not change or repair the heat pump by yourself. If it is necessary, please contact your local distributor for help.
 - 4.6 Do not put any objects into the heat pump when running. It may touch the fan and damage it or lead to accidents (especially for the children).
 - 4.7 Do not use the heat pump without the grid or plate work since it may lead to accidents or abnormal operation of the unit.
 - 4.8 If the unit is soaked in water, please contact our local distributor immediately.
The unit can only be restarted after a completed inspection by professional technicians.
 - 4.9 Unqualified technicians are not allowed to adjust any switches, valves or controllers in the unit.

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1. Performance data and specifications

1.1 Performance and features

- High efficiency

With a COP value up to 5.0 our heat pumps are very efficient when transferring heat from the air to the swimming pool water. You can save as much as 80% of cost compared to an electrical heater.

- Long life-span

The heat exchanger is made of PVC & Titanium tube, which can withstand and prolong exposure to swimming pool water.

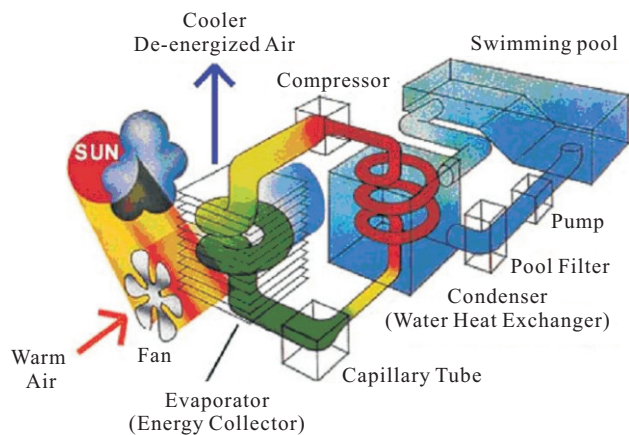
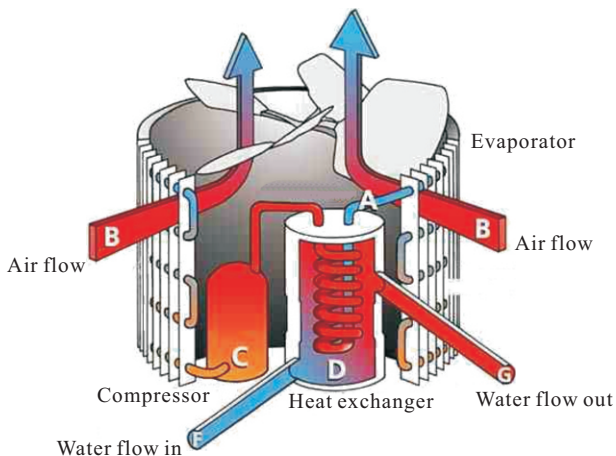
- Easy control and operation

The unit is very easy to operate: simply switch it on and set the desired pool water temperature.

The system includes a micro-computer controller, allowing all operation parameters to be set.

Operation status can be displayed on the controller with LCD display.

1.2 System diagram



- Heat pumps utilize the sun's free heat by collecting and absorbing energy from the outside air. This energy is then compressed and transferred to the pool water. Your existing water pump circulates the water through the heater, usually next to the pool equipment, and the water warms up. The heat pump timer could be set to operate during daylight hours, for example, usually 9am to 5pm.
- The unit contains a fan that draws in outside air and directs it over the surface of the EVAPORATOR (energy collector). The liquid refrigerant within the EVAPORATOR coil absorbs the heat from the outside air becomes a gas.
- The warm gas in the coil passes through the COMPRESSOR concentrating and increasing the heat to form a very hot gas which then passes to the CONDENSER (water heat exchanger). It is here that the heat exchange occurs as the hot gas gives off heat to the cool swimming pool water circulating through the coil.
- The pool water becomes warmer, and the hot gas cooling as it flows through the CONDENSER coil returns to its liquid form and, after passing on through the CAPILLARY TUBE, the whole process begins again.
- The state of the heat pump technology can efficiently collect heat from the outside air down to the 7°C to 10 range. For tropic and subtropical climates, this means that the pool can be maintained at 26°C to 32°C

SWIMMING POOL HEAT PUMP

1.3 Performance Data of Swimming Pool Heat Pump Unit

Code		WBR-9.5H-A	WBR-11.3H-A	WBR-12.5H-A	WBR-14.0H-A	WBR-17.0H-A	
Rated heating capacity	W	9500	11300	12500	14000	17000	
	BTU/h	32500	38500	42600	47800	58000	
Input power heating	W	1980	2400	2600	2900	3500	
Running current heating	A	9.5	11.5	12.4	13.9	16.7	
COP	w/w	4.8	4.8	4.8	4.8	4.8	
Power supply	V/PH/Hz	220/1/50					
Quantity of compressor		1					
Compressor		Rotary				Scroll	
Quantity of fan		1					
Input power of Fan	W	150	150	150	150	150	
Fan rotate speed	RPM	850	850	850	850	850	
Noise	dB(A)	55	55	55	55	58	
Water connection	mm	50	50	50	50	50	
Water flow volume	m ³ /h	4-7	5-8	6-8	6-9	7-11	
Water pressure drop	KPa	20	20	20	25	25	
Unit dimension	L	mm	660	660	660	660	660
	W		660	660	660	660	660
	H		860	860	860	860	860
Packing dimension	L	mm	740	740	740	740	740
	W		700	700	700	700	700
	H		890	890	890	890	890
Weight	Net weight	Kg	79	80	85	86	103
	Gross weight		90	92	92	98	115

Code		WBR-14.0H-A-S	WBR-17.0H-A-S	WBR-21.0H-A-S	WBR-26.0H-A-S	WBR-35.0H-A-S	
Rated heating capacity	W	14000	17000	21000	26000	35000	
	BTU/h	47800	58000	71600	89000	119400	
Input power heating	W	2900	3500	4400	5400	7100	
Running current heating	A	5.2	6.3	7.9	9.7	12.7	
COP	w/w	4.8	4.8	4.8	4.8	4.9	
Power supply	V/PH/HZ	415/3/50					
Quantity of compressor		1				2	
Compressor		Scroll					
Quantity of fan		1				2	
Input power of Fan	W	150	150	150	150	2x150	
Fan rotate speed	RPM	850	850	850	850	850	
Noise	dB(A)	55	58	58	58	61	
Water connection	mm/inch	50	50	50	50	2	
Water flow volume	m ³ /h	6-9	7-11	9-14	11-16	15-20	
Water pressure drop	kpa	25	25	30	30	20	
Unit dimension	L	mm	660	660	660	660	1446
	W		660	660	660	660	730
	H		860	860	960	960	1060
Packing dimension	L	mm	740	740	740	740	1630
	W		700	700	700	700	810
	H		890	890	990	990	1180
Weight	Net weight	Kg	84	100	104	112	240
	Gross weight		96	112	117	125	270

Remarks:

1. Measurement conditions: air temp: DB/WB 24°C/19°C, inlet water temp: 27°C, ambient temperature range: 0~35°C
2. If any discrepancies of data is found between above list and nameplate on the heat pump please refer to the data on the nameplate as updated one.

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Code		WBR-45.0H-A-S	WBR-50.0H-A-S	WBR-90.0H-A-S	WBR-135.0H-A-S	WBR-158.0H-A-S	
Rated heating capacity	W	45000	50000	90000	135000	158000	
	BTU/h	153500	170600	307000	460000	539000	
Input power heating	W	9200	10200	18400	27500	32200	
Running current heating	A	16.4	18.2	32.9	40.6	47.5	
COP	w/w	4.9	4.9	4.9	4.9	4.9	
Power supply	V/PH/HZ	415/3/50			415-460/3/60		
Quantity of compressor		2		3	3		
Compressor		Scroll			Scroll		
Quantity of fan		2		3	2		
Input power of Fan	W	2x150	2x150	3x150	1100x2	1100x2	
Fan rotate speed	RPM	850	850	850	850	850	
Noise	dB(A)	61	61	63	65	65	
Water connection	mm/inch	2	2	75	110	110	
Water flow volume	m ³ /h	18-23	20-25	35-50	60-70	70-80	
Water pressure drop	kpa	25	25	30	40	40	
Unit dimension	L	mm	1446	1446	2150	2200	2200
	W		730	730	765	1200	1200
	H		1260	1260	1290	2050	2050
Packing dimension	L	mm	1630	1630	2190	2330	2330
	W		810	810	840	1280	1280
	H		1380	1380	1400	2230	2230
Weight	Net weight	Kg	250	260	510	850	850
	Gross weight		280	290	570	890	890

Remarks:

1. Measurement conditions: air temp: DB/WB 24°C/19°C, inlet water temp: 27°C, ambient temperature range: 0~35°C
2. If any discrepancies of data is found between above list and nameplate on the heat pump please refer to the data on the nameplate as updated one.

SWIMMING POOL HEAT PUMP

Code		WBR-9.5H-B1	WBR-12.5H-B1	WBR-14.0H-B1	WBR-17.0H-B1	
Rated heating capacity	W	9500	12500	14000	17000	
	BTU/h	32500	42600	47800	58000	
Input power heating	W	1900	2500	2800	3400	
Running current heating	A	9.1	12.0	13.4	16.3	
COP	w/w	5.0	5.0	5.0	5.0	
Power supply	V/PH/Hz	220/1/50				
Quantity of compressor		1			1	
Compressor		Rotary			Scroll	
Quantity of fan		1			1	
Input power of Fan	W	50	50	50	90	
Fan rotate speed	RPM	900	900	900	850	
Noise	dB(A)	50	55	58	58	
Water connection	mm	50	50	50	50	
Water flow volume	m ³ /h	4-7	5-8	6-9	7-11	
Water pressure drop	KPa	25	25	25	25	
Unit dimension	L	mm	1120	1120	1120	1120
	W		470	470	470	470
	H		690	690	690	938
Packing dimension	L	mm	1165	1165	1165	1165
	W		485	485	485	485
	H		730	730	730	980
Weight	Net weight	Kg	76	85	86	115
	Gross weight		85	92	98	120

Code		WBR-14.0H-B1-S	WBR-17.0H-B1-S	WBR-21.0H-B1-S	WBR-26.0H-B1-S	
Rated heating capacity	W	14000	17000	21000	26000	
	BTU/h	47800	58000	71600	89000	
Input power heating	W	2750	3300	4040	5000	
Running current heating	A	4.9	5.9	7.2	8.9	
COP	w/w	5.1	5.1	5.2	5.2	
Power supply	V/PH/HZ	415/3/50				
Quantity of compressor		1		1		
Compressor		Scroll		Scroll		
Quantity of fan		1		2		
Input power of Fan	W	50	90	2x90	2x90	
Fan rotate speed	RPM	900	850	840	840	
Noise	dB(A)	58	58	60	60	
Water connection	mm	50	50	50	50	
Water flow volume	m ³ /h	6-9	7-11	9-14	11-16	
Water pressure drop	kpa	25	25	25	25	
Unit dimension	L	mm	1120	1120	1120	1120
	W		470	470	470	470
	H		690	938	1245	1245
Packing dimension	L	mm	1165	1165	1165	1165
	W		485	485	485	485
	H		730	980	1290	1290
Weight	Net weight	Kg	84	115	112	117
	Gross weight		96	120	125	130

Remarks:

1. Measurement conditions: air temp:DB/WB 24°C/19°C, inlet water temp:27°C, ambient temperature range: 0~35°C
2. If any discrepancies of data is found between above list and nameplate on the heat pump please refer to the data on the nameplate as updated one.

2. Installation of the heat pump unit

2.1 Remarks

The factory only provides the heat pump unit; the other parts, including a contingent by-pass, are to be provided by the user or the installer.

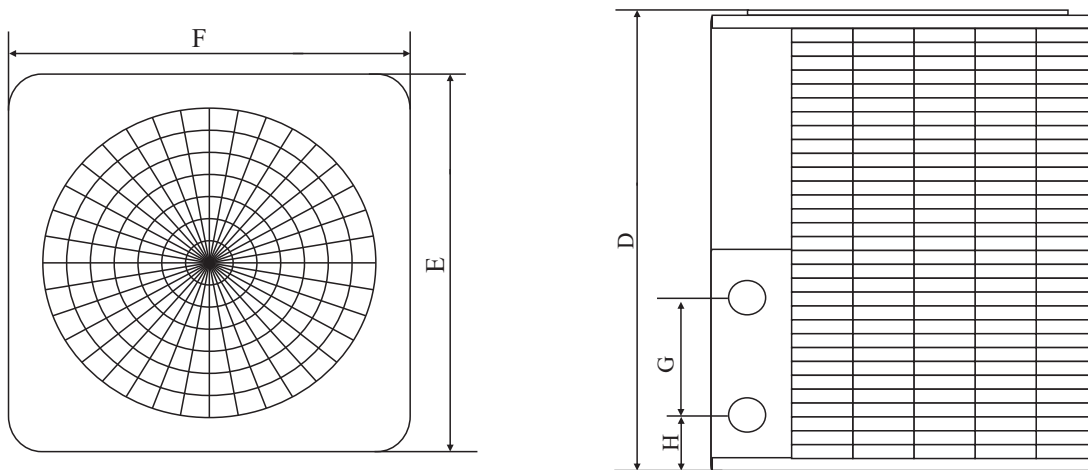
Attention:

Please take the following steps when installing the heat pump:

1. Each addition of chemicals has to be performed through the conduits located downstream of the heat pump.
2. Install a by-pass when the flow of the pool pump exceeds the authorized flow through the heat exchanger of the heat pump with 20%.
3. Always place the heat pump on a solid base and use the supplied silent blocks in order to avoid vibrations and noise.
4. Always keep the heat pump in upright position. If the unit has been tilted, you should wait for at least 24 hours before turning it on .

2.2 Dimensions for Swimming Pool Heat Pump Unit- Monobloc

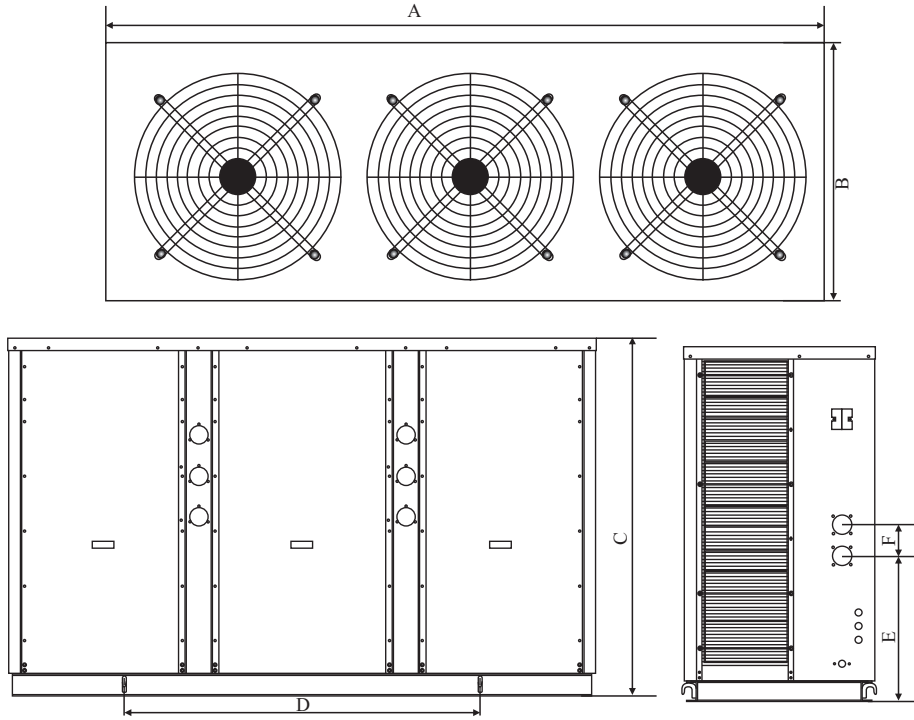
Vertical series



Unit: mm

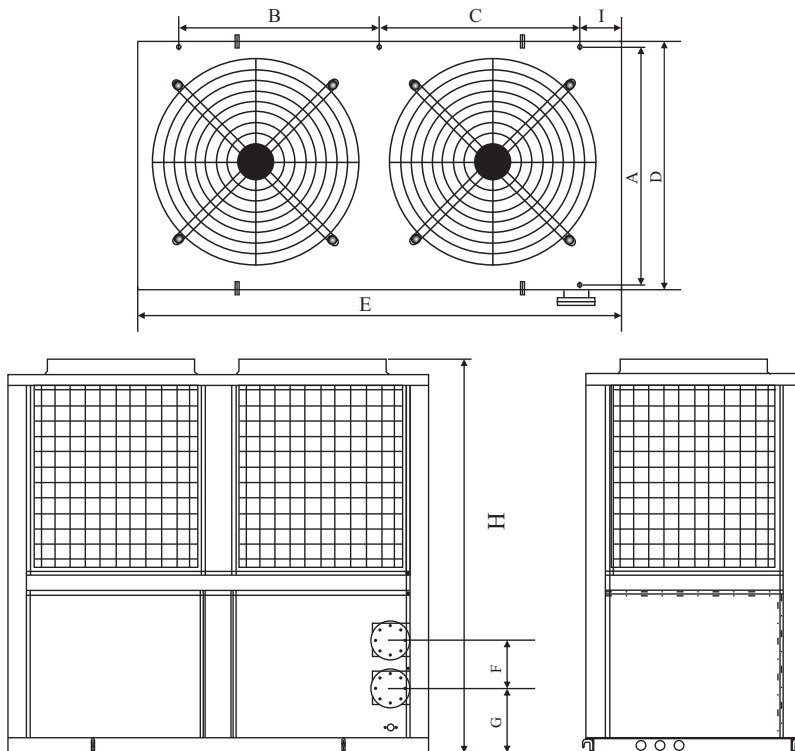
Unit Model \ Size	D	E	G	F	H
WBR-9.5H-A	855	660	370	660	105
WBR-11.5H-A					
WBR-12.5H-A					
WBR-14.0H-A					
WBR-17.0H-A					
WBR-14.0H-A-S					
WBR-17.0H-A-S					
WBR-21.0H-A-S	955	660	370	660	105
WBR-26.0H-A-S					

SWIMMING POOL HEAT PUMP



Unit: mm

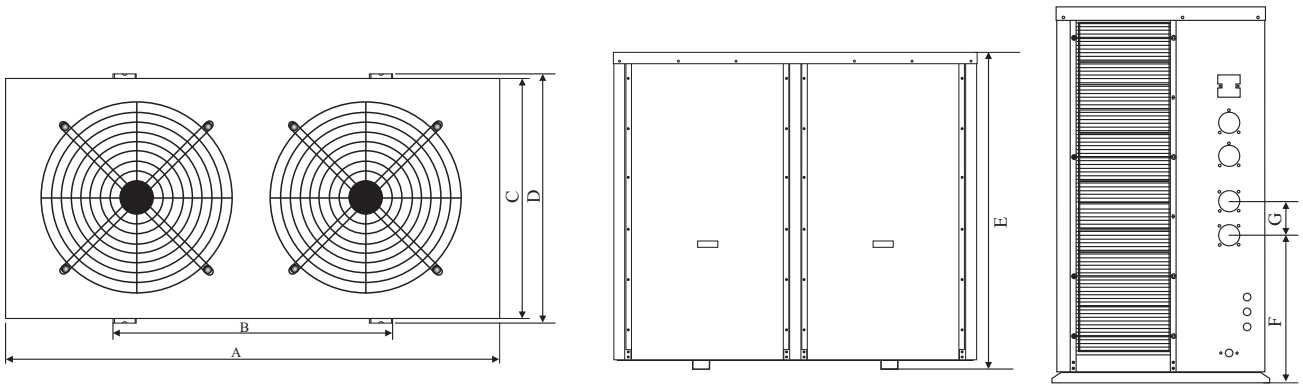
Unit Model \ Size	A	B	C	D	E	F
WBR-90.0H-A-S	2150	770	1300	1300	540	115



Unit: mm

Unit Model \ Size	A	B	C	D	E	F	G	H	I
WBR-135.0H-A-S	1085	900	900	1130	2200	245	340	2050	200
WBR-158.0H-A-S									

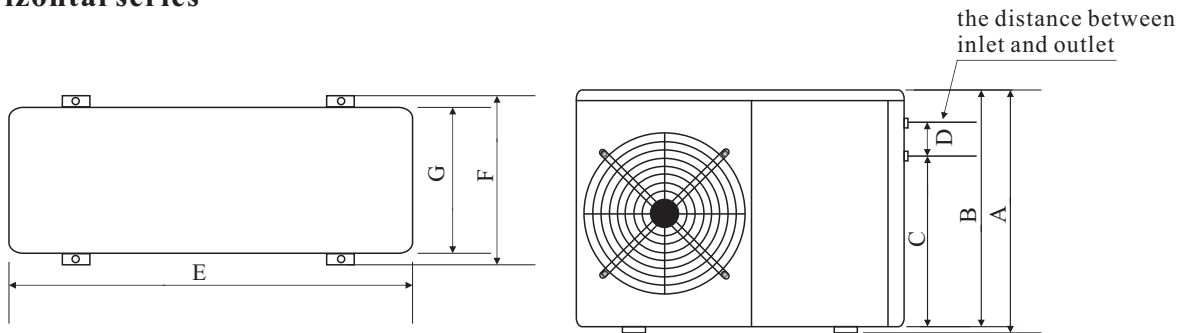
SWIMMING POOL HEAT PUMP



Unit: mm

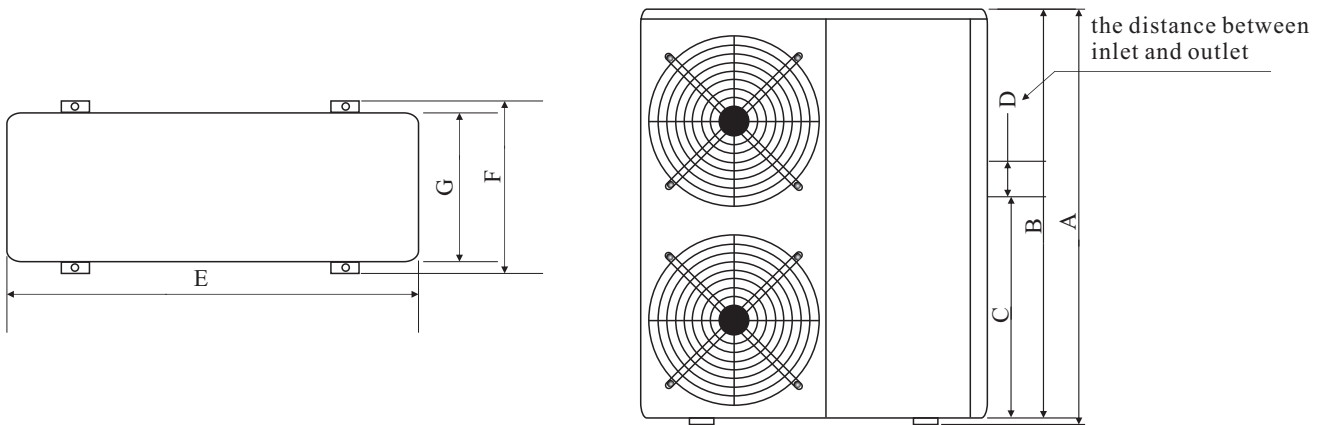
Unit Model	Size	A	B	C	D	E	F	G
WBR-35.0H-A-S		1450	750	700	730	1260	495	115
WBR-45.0H-A-S								
WBR-50.0H-A-S								

Horizontal series



Unit: mm

Unit Model	Size	A	B	C	D	E	F	G
WBR-9.5H-B1		690	667	400	115	1110	470	420
WBR-12.5H-B1								
WBR-14.0H-B1								
WBR-14.0H-B1-S								
WBR-17.0H-B1		940	915	650	115	1110	470	420
WBR-17.0H-B1-S								



Unit: mm

Unit Model	Size	A	B	C	D	E	F	G
WBR-21.0H-B1-S		1245	1220	650	115	1110	470	420
WBR-26.0H-B1-S								

2.3 Location of the heat pump

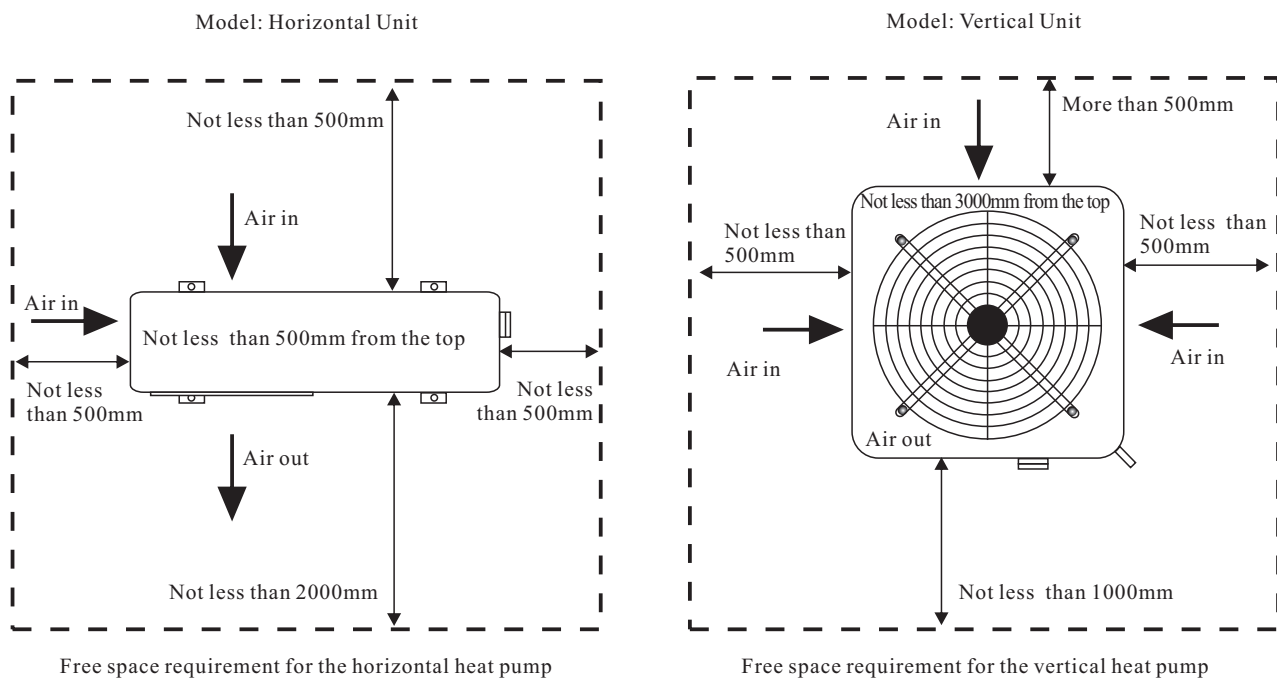
The unit will perform well on any location provided three factors are present:

1. Fresh air -- 2. Electricity – 3. Pool filter piping

The unit may be installed virtually anywhere **outdoors** providing minimum distance requirements are met with respect to other objects (see diagram below). For indoor pools please consult your installer. If the unit is placed in a windy area, no problems occur with e. g. the pilot light, as opposed to what is often the case with gas heaters.

Attention: Do not place the unit in an enclosed area with a limited air volume where the unit's discharged air will be re-circulated or near shrubs that could block the air inlet. These locations deny the unit a continuous fresh air supply, which reduces its efficiency and may prevent adequate heat yield.

See diagram below for minimum required distances.



Cautions

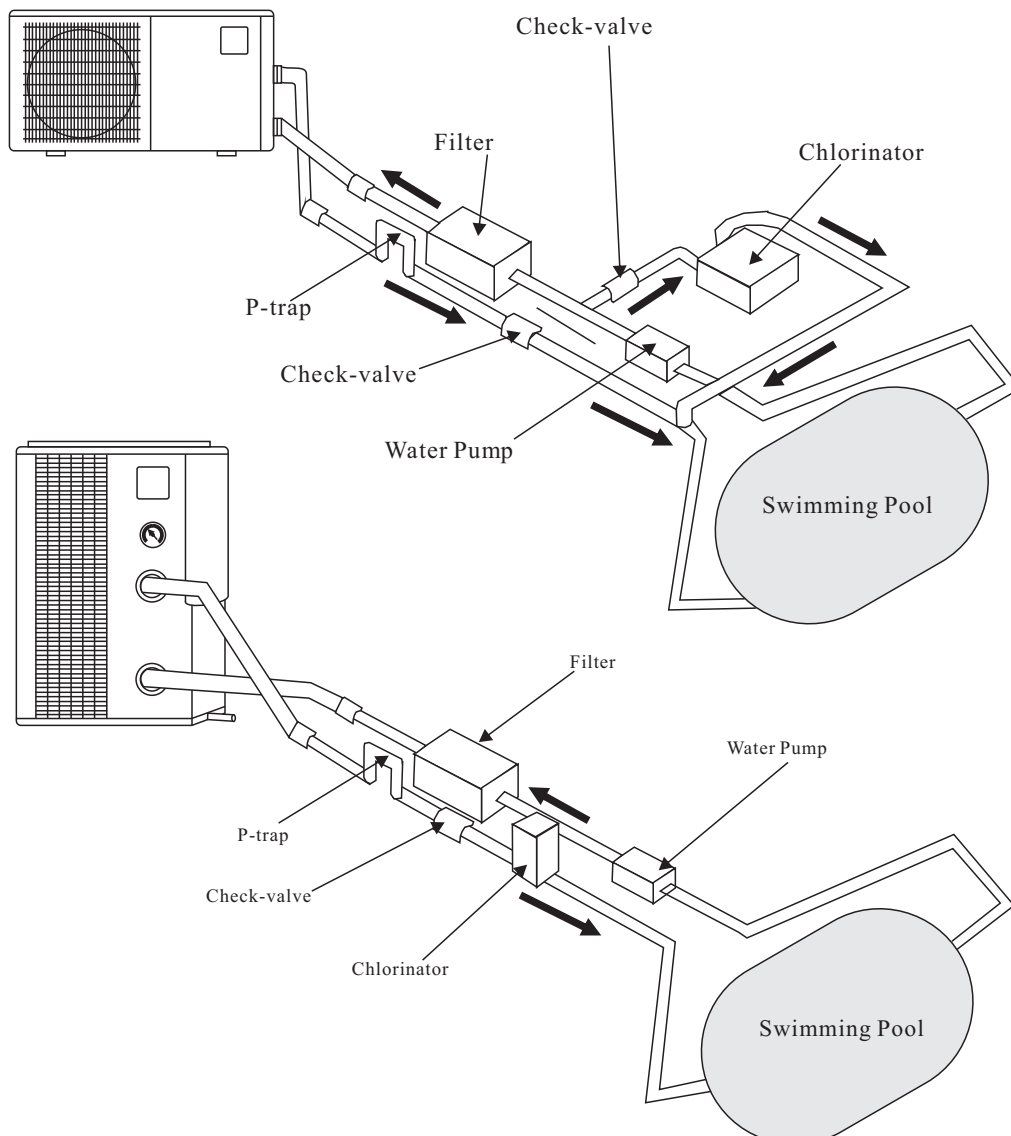
- Do not put your hands or any other object into the air outlet and fan. It could damage the heat pump and cause injuries.
- In case any abnormality was found in the heat pump, please cut off the power at once and contact a professional technician.
- It is strongly suggested to place a guard around the machine to keep children away from the heat pump.

2.4 Distance from the pool

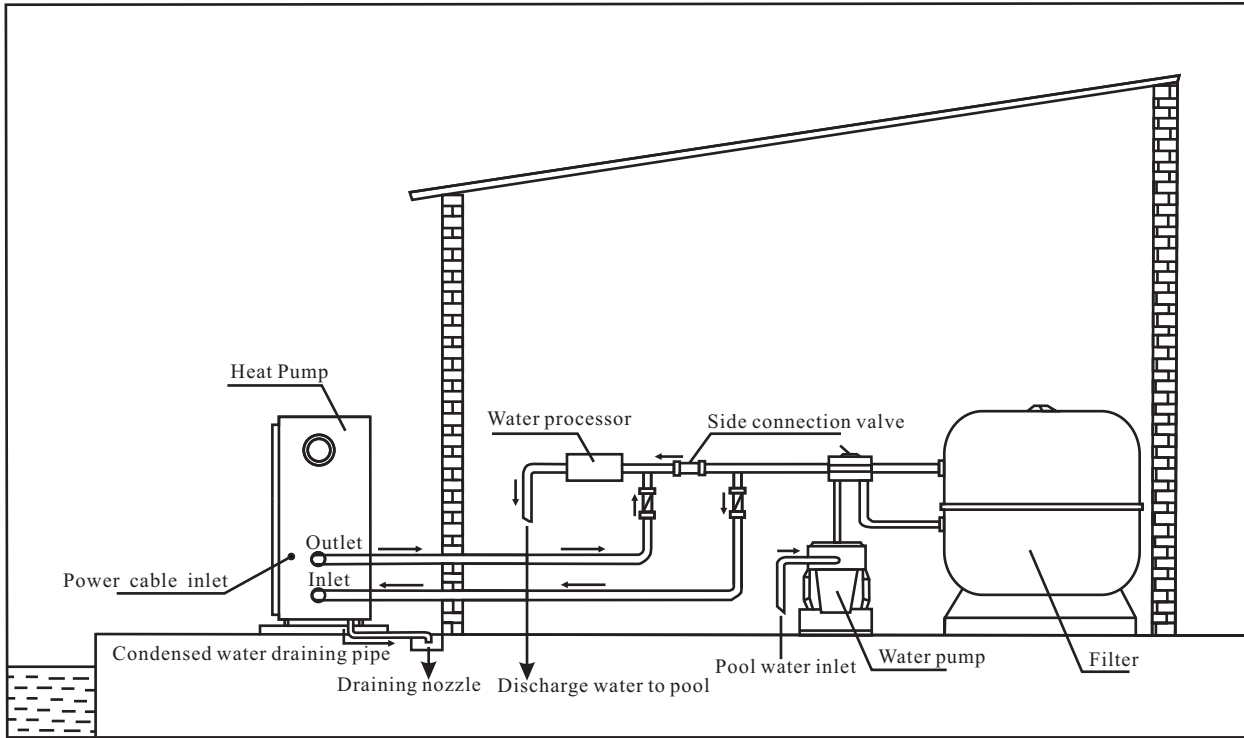
Normally, the pool heat pump is installed within a 7.5 meter radius of the pool. The greater the distance from the pool, the greater the heat loss from the piping. Since the piping is buried for the most part, heat loss is minimal for distances of up to 30 meters (15 meters to and from the pump= 30 meters total), unless the soil is wet or the water level is high. Heat loss per 30 meters could roughly be estimated at 0.6kw-hour (2000 BTU) for every 5 °C temperature difference between the pool water and the soil surrounding the pipe, which translates to an operation time increase of 3-5%.

2.5 Installation of the check-valve

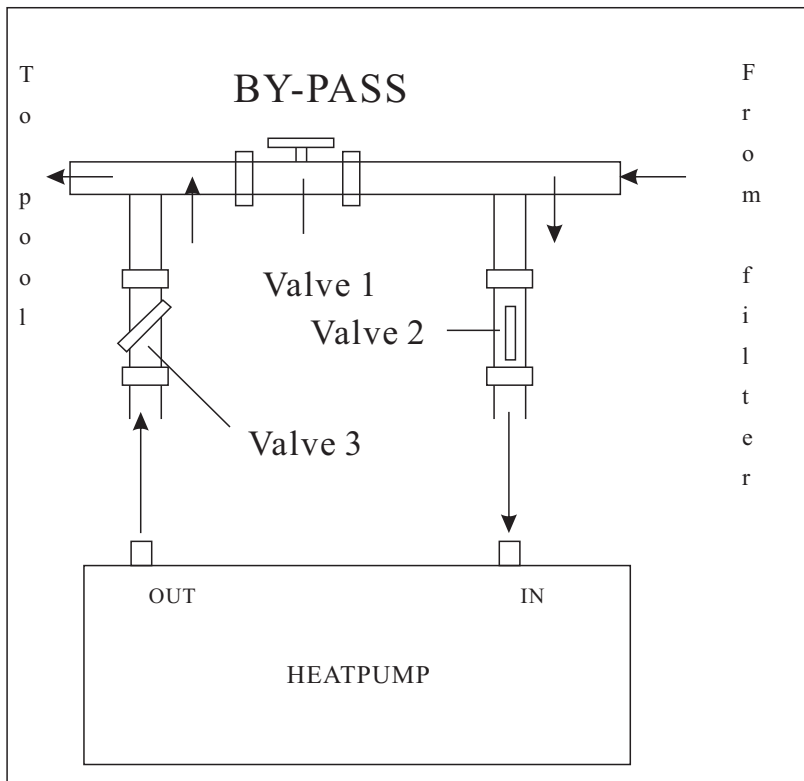
Attention- When using automatic chlorine and PH dosage systems, it is of uttermost importance to protect the heat pump from high concentrations of these chemicals that could corrode the heat exchanger. Therefore, such systems should add the chemicals in the conduits located **DOWNSTREAM** of the heat pump and it is recommended to install a check-valve in order to prevent backflow when there is no water circulation. Damage to the heat pump caused by disregarding any of these recommendations will invalidate the warranty.



2.6 Pool system set up



2.7 Connecting the by-pass



2.8 Electrical hook-up

Important—Although the heat pump is electrically isolated from the rest of the unit, this only prevents the passage of electricity to or from the pool water. Grounding the unit is still required to protect yourself from short circuits inside the unit. Make for adequate ground connection.

Check if the electrical mains voltage corresponds with the operating voltage of the heat pump prior to hooking up the unit.

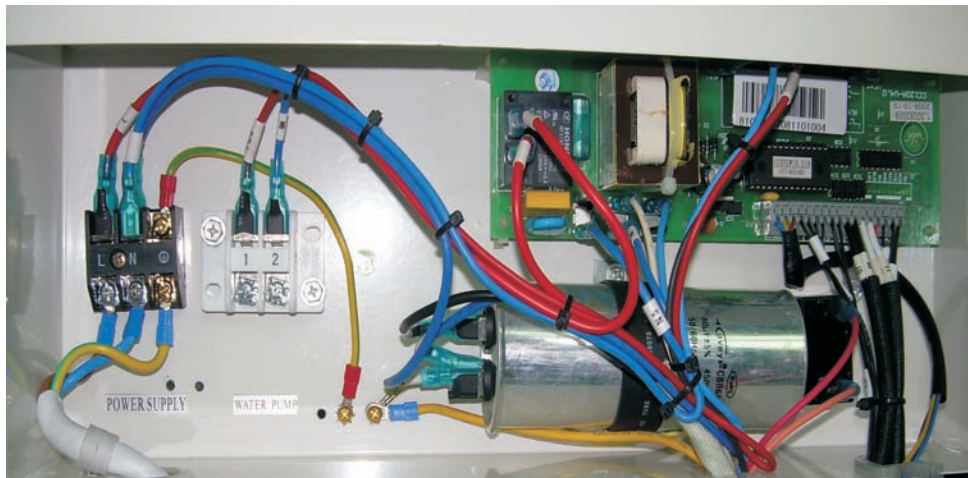
It is recommended to use a separate fuse (slow type-D-curve) as well as adequate wiring (see table below).

For horizontal models : remove the panel on the right of the fan opening.

For vertical models: remove the curve panel in the front side.

Connect the electrical wires with the terminal block labelled “Power Supply” .

Next to this connection, there is a second terminal block labelled “Water Pump” , to which the filter pump (max. 5A/240V) can be connected. This connection makes it possible to control filter pump operation with the heat pump. See further at Parameter setting table (Parameter 9) for the different possibilities.



Remarks—for models with 3 phases, switching 2 phases may cause inversion in the rotational direction of electrical motors, which could damage the unit. Therefore, a protection device has been built in, which will interrupt the circuit if the connection has not been performed correctly.

Model	Voltage(volt)	Fuse(A)	Nominal current(A)	Cable diameter(mm ²) (for max.length of 15 meters)
WBR-9.5H-A	220-240	16	9.5	2x2.5+2.5
WBR-11.3H-A	220-240	16	11.5	2x2.5+2.5
WBR-12.5H-A	220-240	20	12.4	2x2.5+2.5
WBR-14.0H-A	220-240	25	13.9	2x4.0+4.0
WBR-17.0H-A	220-240	25	16.7	2x4.0+4.0
WBR-14.0H-A-S	3x380	10	5.2	4x2.5+2.5
WBR-17.0H-A-S	3x380	10	6.2	4x2.5+2.5
WBR-21.0H-A-S	3x380	16	7.9	4x2.5+2.5
WBR-26.0H-A-S	3x380	16	9.7	4x2.5+2.5

Model	Voltage(volt)	Fuse(A)	Nominal current(A)	Cable diameter(mm ²) (for max.length of 15 meters)
WBR-35.0H-A-S	3x415	20	12.7	4x2.5+2.5
WBR-45.0H-A-S	3x415	25	16.4	4x4.0+4.0
WBR-50.0H-A-S	3x415	32	18.2	4x4.0+4.0
WBR-90.0H-A-S	3x415	60	32.9	4x10.0+10.0
WBR-135.0H-A-S	3x415	80	40.6	3x16.0+2x10.0
WBR-158.0H-A-S	3x415	80	47.6	3x16.0+2x10.0
WBR-9.5H-B1	220-240	16	9.1	2x2.5+2.5
WBR-12.5H-B1	220-240	20	12.0	2x2.5+2.5
WBR-14.0H-B1	220-240	25	13.4	2x4.0+4.0
WBR-17.0H-B1	220-240	25	16.3	2x4.0+4.0
WBR-14.0H-B1-S	3x415	10	4.9	4x2.5+2.5
WBR-17.0H-B1-S	3x415	16	5.9	4x2.5+2.5
WBR-21.0H-B1-S	3x415	16	7.2	4x2.5+2.5
WBR-26.0H-B1-S	3x415	16	8.9	4x2.5+2.5

2.9 First time start-up

Note- In order for the unit to heat the pool (or spa), the filter pump must be running so that the water can circulate through the heat pump. Without this circulation, the heat pump will not start.

When all connections have been made and checked, you should follow these steps:

1. Turn on the filter pump. Check for leaks and verify flow to and from the pool.
2. Turn on the electrical power supply to the unit, then press the ON/ OFF key on the electronic control panel. The unit should start when the time delay period has lapsed.
3. When the unit has been running for a couple of minutes, check if the air leaving the unit is cooler.
4. Check the performance of the flow switch as follows: with the unit running, turn the filter pump off. The unit should also switch off automatically. If not, the flow switch must be readjusted.
5. All the unit and filter pump to run 24 hours a day until the desired pool water temperature is reached. When the set temperature is reached, the unit switches itself off. The unit will now automatically restart (as long as your filter pump is running) when the temperature of the pool water experiences a drop of more than 1°C below the set temperature.

Depending on the starting temperature of the pool water and the air temperature, it can take several days for the water to reach the desired temperature. Covering the pool can drastically reduced this period.

Water flow switch—the unit is equipped with a flow switch that is switched on when enough water has flowed through the unit and that is switched off when the water flow becomes too low. (e. g. when the filter pump is switched off).

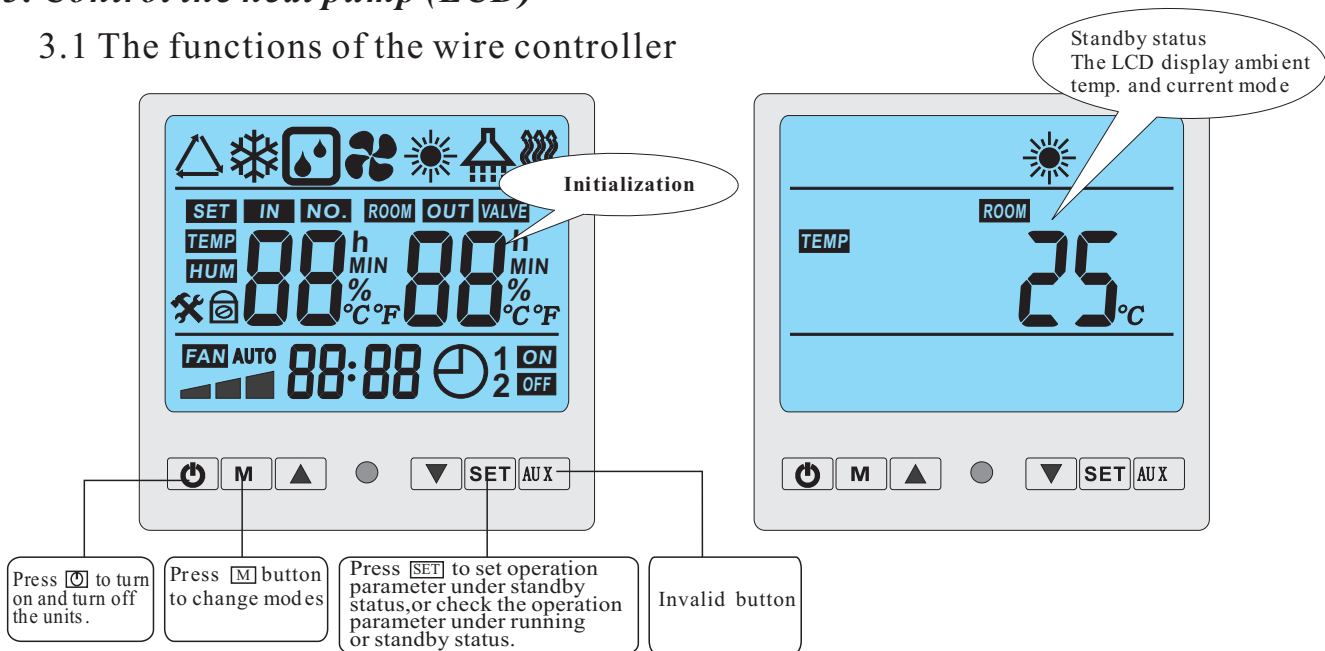
Time delay—the unit is equipped with a built-in 3-minute start delay included to protect electrical components and contacts. After this time delay, the unit will automatically be restarted. Even a brief interruption of the power supply will activate the start delay and prevent the unit from starting immediately. Additional interruptions of the power supply during the delay period will have no effect on the 3-minute countdown.

2.10 Condensation

When the swimming pool water is being heated by the heat pump, the incoming air is cooled down quite a bit, which can cause condensation on the fins of the evaporator. Condensed volumes can attain several litres per hour under high atmospheric humidity. Sometimes, this is wrongfully interpreted as a water leak.

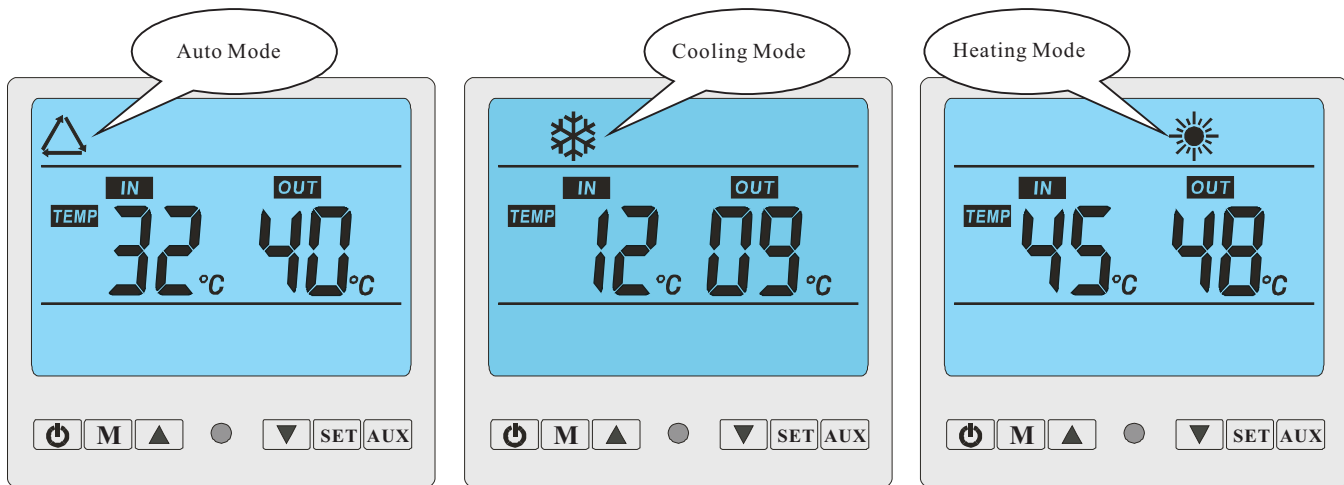
3. Control the heat pump (LCD)

3.1 The functions of the wire controller



3.2 How to change mode

- Press “M” , to choose the (Auto ,cooling ,heating)mode one by one under the standby status and running status.



3.3 How to change parameter

- When heat pump is in standby status, Press “SET” button to enter Parameter setting interface
- Press “SET” again to start setting Parameter from 00 -10 (see Parameter Table)
- In parameter setting Parameter 00-01 can be changed only by pressing ▲ or ▼.
- Parameter 02-10 must be firstly unlocked by pressing ▲ and ▼ at the same time for 3-5 seconds until a sound of “Beep” is heard. Then press ▲ or ▼ to change the setting.
- Data will be stored in 3-5 seconds without any press on the controller and display will return to main interface. Parameter 02-10 must be adjusted by professional technicians.

Important: Whilst running, all parameters can be only checked by pressing “SET” button, but never be changed!

SWIMMING POOL HEAT PUMP

Parameter 00
Desired water temperature in cooling mode (8-28°C)
default setting: 12°C

Parameter 01
Desired water temperature in heating mode (15-40°C)
default setting: 40°C

Parameter 02
Defrosting cycle

Parameter 03
Evaporator temperature set point for starting defrosting (0-30°C) Default setting -7°C, “-” can not be displayed.

Parameter 04
Evaporator temperature set point for stopping defrosting (2-30°C)
Default setting 13°C

Parameter 05
Maximum duration for defrosting (1-12 min)
Default setting 8 min

Parameter 06
Number of compressors in the system

Parameter 07
Restart after power failure.

Parameter 08
Restart after power failure.
Type:
0 cooling only
1 cooling&heating
2 auxiliary elec heating
3 cooling+heating

Parameter 09
Different working mode of water pump.

Parameter 10
Desired water temperature in auto mode

SWIMMING POOL HEAT PUMP

The heat pump's running setting parameter can be set on the wire controller.

Please set the parameter according to the below table:

Parameter	Definition	Range	Default	Remark
00	Desired water temperature in cooling mode	8~28℃	12℃	Ajusted by Technicians
01	Desired water temperature in heating mode	15~40℃	40℃	Ajusted by Technicians
02	Defrosting cycle	30~90Min	45Min	Ajusted by Technicians
03	Evaporator temperature set point for starting defrosting	-30~0℃	-7℃ “-” is not displayed	Ajusted by Technicians
04	Evaporator temperature set point for stopping defrosting	2~30℃	13℃	Ajusted by Technicians
05	Maximum duration for defrosting	1~15Min	8Min	Ajusted by Technicians
06	Number of compressors in the system	1~2	1	Ajusted by Technicians
07	Restart after power failure	0~1	1 (Yes)	Ajusted by Technicians
08	Type: Cooling only 0/ Heating & cooling 1/ Heating & cooling + Auxiliary heating 2/ Heating only 3/	0~3	1	Ajusted by Technicians
09	Different working mode of water pump: water pump keeps working always 0/ water pump works in accordance with heat pump 1 /	0~1	0	Ajusted by Technicians
10	Desire water temperature in auto mode	8~40℃	30℃	Ajusted by Technicians

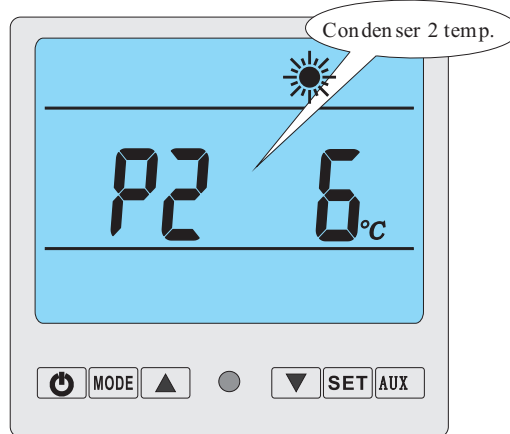
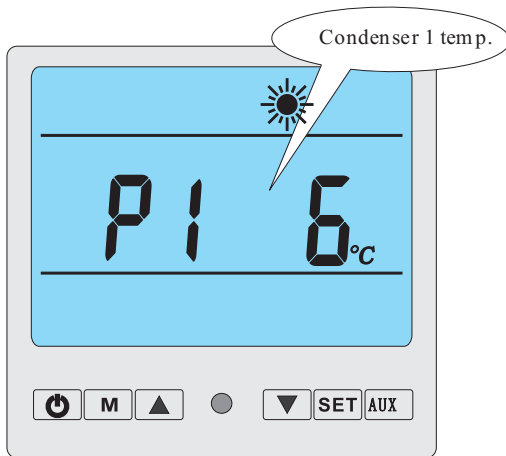
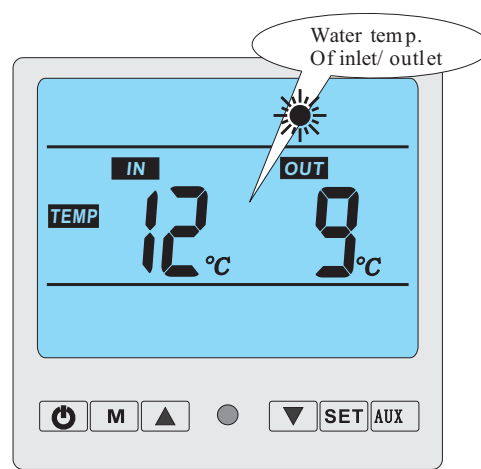
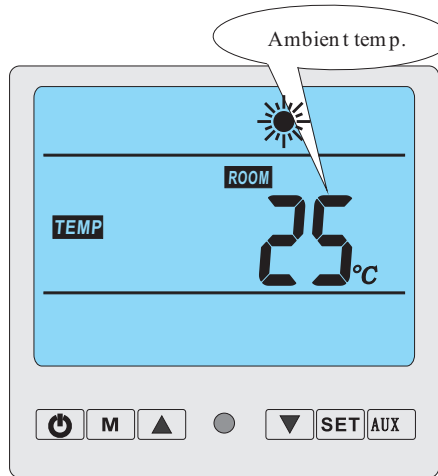
Important: Icon “-” which stands for below “0” degree **CAN NOT** be displayed here. Value “1-30” stands “-1℃ ” to “-30℃ ” .Default setting “7℃ ” actually stands for “-7℃ ” .

3.4 How to know current status

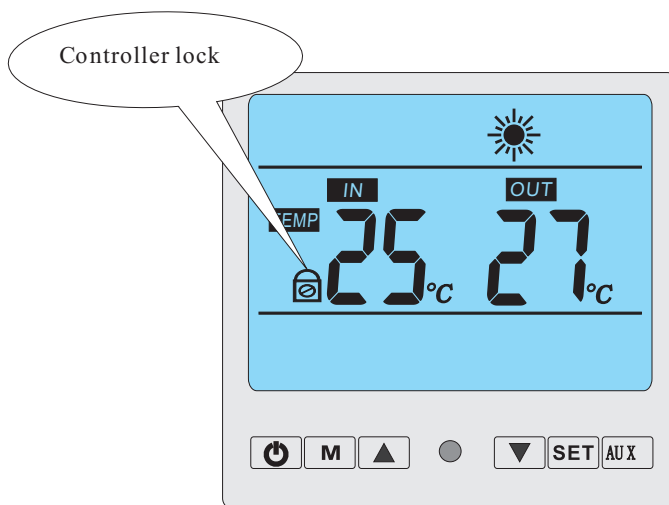
When heat pump is in running status, press ▲ and ▼ to check the current status of the unit. You can check water-in / water-out temperature, condenser temperature and ambient temperature. Please note no press on the controller for 5 seconds, controller will return to main interface, which displays water-in and water-out temperature.

When heat pump is in standby status, controller will display only ambient temperature.

Remarks: Standby status means the unit is connected with electricity but not running .Parameter 00-10 can **ONLY** be changed under standby status!



3.5 Controller lock



- ⦿ Regardless the heat pump is in running or standby status, press ▲ and ▼ at the same time for 3 seconds, all buttons will be locked and display as above. Press ▲ and ▲ for 3 seconds for unlocking.

4. Control the heat pump (LED)

Preparation before startup

A) Inspection of the heat pump







- Check whether the outer appearance of the unit or pipeline system in the unit is damaged during transportation.
- Check whether the ventilator fan does not touch any part of the unit.

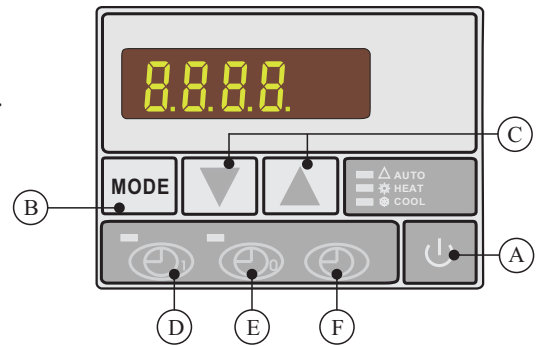
B) Verifying the electrical connections

- Check whether power supply complies with specifications in this manual or on the label placed on the unit.
- Check whether the power cabling is connected correctly and firm according to the wiring diagram.

Adequate grounding is required to protect against electrical shock.

4.1 Illustration of controller

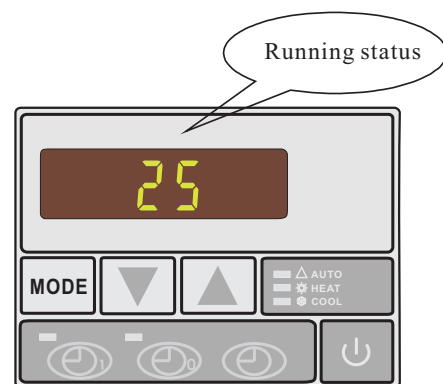
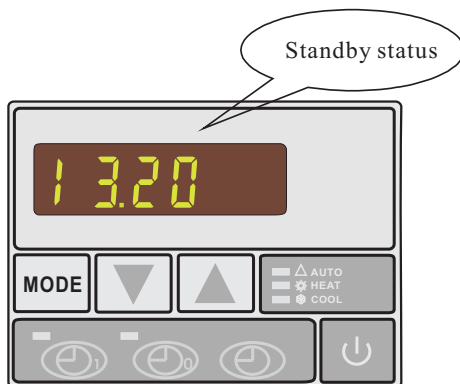
- A.  : Switch on or off heat pump.
- B. **MODE** : Select auto, heating or cooling mode.
Relevant indicator would be on when selected.
- C.  or  : Press to change figures.
- D.  : Timer on setting button.
- E.  : Timer off setting button.
- F.  : Time setting button.



4.2 How to start heat pump

Connected with power, the controller will display the time. This means the unit is in standby.

Press  to start the Heat pump. The controller display will show inlet water temperature now.



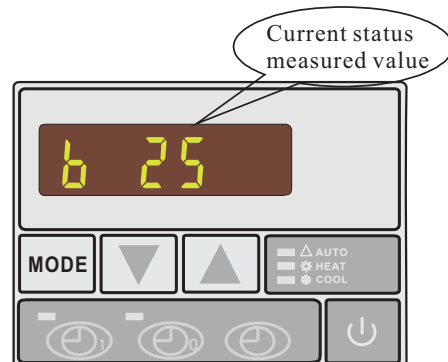
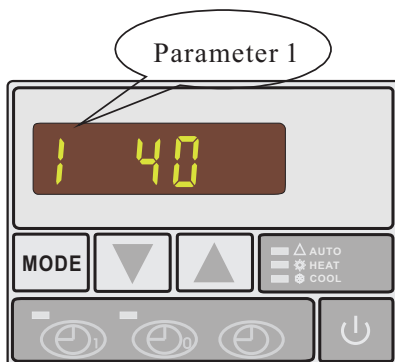
4.3 How to change mode

Press MODE button to select auto, heating or cooling mode, related indicator light on the right side of controller will be on as a symbol.

4.4 How to check parameter setting & measured values of current status

In standby or running status press ▼ or ▲ to find parameter 0-A and measured values of current status.

Parameter	Definition	Range	Default	Remark
0	Desired water temperature in cooling mode	8~28℃	12℃	Ajusted by Technicians
1	Desired water temperature in heating mode	15~40℃	40℃	Ajusted by Technicians
2	Defrosting cycle	30~90Min	45Min	Ajusted by Technicians
3	Evaporator temperature set point for starting defrosting	-30~0℃	-7℃	Ajusted by Technicians
4	Evaporator temperature set point for stopping defrosting	2~30℃	13℃	Ajusted by Technicians
5	Maximum duration for defrosting	1~15Min	8Min	Ajusted by Technicians
6	Number of compressors in the system	1~2	1	Ajusted by Technicians
7	Restart after power failure	0~1	1 (Yes)	Ajusted by Technicians
8	Type: Cooling only 0/ Heating & cooling 1/ Heating & cooling + Auxiliary heating 2/ Heating only 3/	0~3	1	Ajusted by Technicians
9	Different working mode of water pump: water pump keeps working always 0/ water pump works in accordance with heat pump 1 /	0~1	0	Ajusted by Technicians
A	Desired water temperature in auto mode	8~40℃	30℃	Ajusted by Technicians
B	Actual inlet water temp.	-9~90℃		Measured Value
C	Actual outlet water temp.	-9~90℃		Measured Value
D	Coil temp. in system 1	-9~90℃		Measured Value
E	Coil temp. in system 2	-9~90℃		Measured Value
F	Ambient temp.	-9~90℃		Measured Value



4.5 How to change parameter setting

1. In standby status press ▼ or ▲ to find parameter 0-A and measured values of current status B-F.
2. Press ▼ & ▲ at the same time for 5 seconds continuously to activate parameter setting.
3. Change value on setting until a BEEP is heard while display remains indicating parameter with its value flashing.
4. No pressing the controller for 5s PCB will store data automatically and return to standby status.

4.6 How to set the clock

1. In standby status press Ⓢ button, hour figures will be flashing and ready to be modified by ▼ or ▲.
2. Press Ⓢ button for second time, minute figures will be flashing and ready to be modified by ▲ or ▼.
3. Press Ⓢ button for final confirmation of time setting.

4.7 How to set timer on and timer off

- a) Press Ⓢ to activate timer on setting, hour and minute figures will be flashing together.
- b) Press Ⓢ again to have active hour setting, hour figure will be flashing and ready to be modified by ▲ or ▼.
- c) Press Ⓢ again to have active minute setting, minute figure will be flashing and ready to be modified by ▲ or ▼.
- d) Press Ⓢ to confirm the setting and display will return to standby status. Timer on indicator green light would be on as a symbol.
- e) Operate the same to timer off by using Ⓢ instead of Ⓢ . timer off indicator red light would be on as a symbol.

Note: Timer on and timer off can be selected both or separately.

4.8 How to cancel timer on and timer off

Press Ⓢ or Ⓢ to activate, relative indicator light would be flashing, press Ⓢ for cancellation of timer on or timer off.

4.9 Keypad lock and unlock

Except parameter setting, in other situation press ▼ & ▲ at the same for 3 s, keypad would be locked after BEEP . To unlock it please press both buttons together again for another 3 s.

5. Protection systems

5.1 Water flow switch

Equipped with flow switch the heat pump will not work when the filter pump is not working (and the water is not circulating).

This system prevents the heat pump from heating only the water present in the heat pump itself.

The protection also stops the heat pump if water circulation is cut off or stopped.

5.2 Refrigerant gas high and low pressure protection

The high pressure protection makes sure the heat pump is not damaged in case of over pressurisation of the gas. The low pressure protection emits a signal when refrigerant is escaping from the conduits and the unit can not be kept running.

5.3 Overheating protection on the compressor

This protection protects the compressor from overheating.

5.4 Automatic defrost control

When the air is very humid and cold, ice can form on the evaporator. In that event, a thin layer of ice appears that will grow increasingly bigger as long as the heat pump is running. When the temperature of the evaporator has become too low, automatic defrost control will be activated, which will reverse the heat pump cycle so that hot refrigerant gas is sent through the evaporator during a brief period of time to defrost it.

5.5 Temperature difference between inflowing and outflowing water

During normal operation of the heat pump, the temperature difference between inflowing and outflowing water will approximate 1 to 2°C. In the event that the pressure switch does not work and that the water stops circulating, the temperature probe monitoring the outflowing water will always detect a rise in temperature. As soon as the temperature difference between inflowing and outflowing water exceeds 13°C, the heat pump will be automatically turned off.

5.6 Low temperature cut-out

If, during cooling, the temperature of the outflowing water reaches 5°C or drops below this temperature, the heat pump will turn itself off until the water temperature reaches or exceeds 7°C again.

5.7 Anti-frost protection during winter

This protection can only be activated if the heat pump is in STAND-BY status.

5.8 First anti-frost protection

If the filter pump is controlled by the heat pump (regardless of the value for parameter 9) and when the water temperature lies between 2 and 4°C, and the air temperature is lower than 0°C, the filter pump will be automatically turned on to prevent the water from freezing in the piping. This protection is deactivated when the temperature rises again.

5.9 Second anti-frost protection

If the water temperature drops even more, that is, below 2°C (during long frost periods), the heat pump will also start running to heat the water until its temperature approximates 3°C. When this temperature is reached, the heat pump will stop, but anti-frost protection will remain active until conditions change.

6. Direction

6.1 Swimming pool water chemistry

Special attention should be paid to the chemical balance of the pool water. The pool water values should always stay within the following limits:

	Min	Max
pH	7.0	7.4
Free chlorine(mg/1)	0.5	1.2
TAC(mg/1)	80	120
Salt(g/1)		3

Important: failure to comply with these limits will invalidate the warranty.

Note: exceeding one or several limits can damage the heat pump beyond repair. Always install water treatment equipment past the heat pump's water outlet, especially if the chemicals are automatically added to the water.

A check-valve should also be installed between the outlet of the heat pump and this equipment in order to prevent products from flowing back into the heat pump if the filter pump stops.

6.2 Heat pump winterizing

Important: failure to take the necessary precautions for winterizing can damage the heat pump, which will invalidate the warranty.

The heat pump, filter pump, filter and conduits must be protected in areas where the temperature can drop below the freezing point, Evacuate all water from the heat pump as follows:

1. Interrupt the electrical power supply to the heat pump
2. Close the water supply to the heat pump: completely close valves 2 and 3 of the by-pass
3. Disconnect the water inlet and outlet coupler fittings of the heat pump and let the water drain out of the unit
4. Loosely reattach water inlet and outlet coupler fittings to the heat pump in order to prevent dirt from setting into the conduits.

Note: these precautions should not be taken if you choose to use the built-in anti-frost protection.

6.3 Restarting the pump after winter

If you purged your heat pump for winterizing, you should undertake the following steps to restart it in spring:

1. Check first if there is no dirt in the conduits and if there are no structural problems
2. Check if the water inlet and outlet coupler fittings are adequately fastened to the heat pump
3. Start the filter pump to start the water flow to the heat pump. Set the by-pass again.
4. Reconnect the electrical power supply to the heat pump and turn it ON.

6.4 Check-up

Our heat pumps have been developed and built to last, that is, if they have been installed correctly and can run under normal conditions. Regular check-ups are important if you want your heat pump to function safely and efficiently for years on end.

1. Make for easy access to the service panel.
2. Keep the area surrounding the heat pump free of contingent organic waste.
3. Prune the vegetation near the heat pump so that there is enough free space around the pump.
4. Remove contingent water sprinklers from the vicinity of the heat pump. They can damage the heat pump.
5. Prevent rain from directly running off a roof onto the heat pump. Install proper drainage.
6. Do not use the heat pump if it has been flooded. Immediately contact a qualified technician to inspect the heat pump and repair it if should prove necessary.

Condensation can occur when the heat pump is running. This condensation can flow away through an opening in the base pan of the unit. The amount of condensation water will increase when atmospheric humidity is high. Remove any dirt that could possibly hamper the evacuation of condensation.

10 to 20 litres of condensation water can be produced while the unit is running. If more condensation is produced, stop the heat pump and wait for one hour before checking for leaks in the conduits.

Note: a quick way to verify that the water running through the condensation drain is indeed condensation, is to shut off the unit and keep the pool pump running. If the water stops running out of the condensation drain, it is condensation. AN EVEN QUICKER WAY is to TEST THE DRAIN WATER FOR CHLORINE. If no chlorine is detected, the drain water is a result of condensation.

Also take care to leave air inlet and exhaust passages free. Prevent exhaust air from immediately re-entering the unit through the inlet.

7. Maintenance and inspection

7.1 Maintenance

- ⦿ Check the water inlet and drainage often. The water and air inflow into the system should be sufficient so that its performance and reliability does not get compromised. You should clean the pool filter regularly to avoid damage to the unit caused by clogging of the filter.
- ⦿ The area around the unit should be spacious and well ventilated. Clean the sides of the heat pump regularly to maintain good heat exchange and to save energy.
- ⦿ Check if all processes in the unit are operational and pay special attention to the operation pressure of the refrigerant system.
- ⦿ Check the power supply and cable connections regularly. Should the unit begin to function abnormally or should you notice a smell from an electrical component, arrange for timely repair or replacement.
- ⦿ You should also purge the water if the unit will not work for an extended period of time. You should check all parts of the unit thoroughly and completely fill the system with water before turning it on again afterwards.

7.2 Trouble shooting guide

Improper installation may result in an electrical discharge that could lead to death of-or serious injury to-pool users, installers or others due to electrical shock and may also cause damage to property.

DO NOT attempt to modify the internal configuration of the heat pump.

1. Keep your hands and hair clear of the fan blades to avoid injury.
2. If you are not familiar with your pool filtering systems and heat pump:
 - a. **Do not** attempt to adjust or service without consulting your dealer or your professional pool or air conditioning contractor.
 - b. Read the entire installation and user manual before attempting to use, service or adjust the unit.
 - c. Start the heat pump at least 24 hours after its installation in order to prevent damage to the compressor.

Note: Switch off the power prior to maintenance or repairs.

IMPORTANT REMARK: if a malfunction can not be resolved immediately, in order to analyse the problem itself, we will need to know the message(error code)that is displayed on the controller, as well as the values for the settings (parameter 00-10 for LCD display while parameter 0-A for LED display) and for status of the heat pump (ambient temperature, water inlet/outlet temperature and system coil temperature) just before the failure or, if this is impossible, just after it.

Please keep this information at hand when calling customer service.

On the following pages, you will find an overview of the different types of failure problems that can occur, along with directions to solve them.

Problem	the heat pump doesn't work	
Observation:	the screen does not light up and the fan/compressor doesn't make a sound	
	Possible cause	Solution
	No electrical power supply	Check power supply (wiring, fuses,.....)

Problem	the heat pump works normally but there is no or insufficient heating	
Observation:	The screen displays the temperature but no error codes	
	Possible cause	Solution
	1. In sufficient capacity of the heat pump in proportion to the size of the swimming pool	1. Install a larger sized model or an extra heat pump. Cover the pool to limit heat loss
	2. The compressor works but the fan doesn't	2. Check the electrical wiring of the fan. Replace the condenser or the fan motor if necessary.
	3. The fan works but the compressor doesn't	3. Check the electrical wiring of the compressor. Replace the condenser or the compressor if necessary.
	4. The heat pump has not been placed on an optimal location	4. Make for sufficient air circulation(see manual for details)
	5. Faulty temperature setting	5. Set the correct temperature
	6. By-pass not adjusted	6. Have the by-pass readjusted by the installer
	7. Massive ice formation on the evaporator	7. Have the settings for automatic defrost control checked by the installer
	8. Not enough refrigerant	8. Have the heat pump checked by a refrigeration technician

SWIMMING POOL HEAT PUMP

Problem	The heat pump works normally but the water is cooling down instead of heating up	
Observation:	The screen displays the temperature but no error codes	
	Possible cause	Solution
	1.The wrong mode has been selected	1.Verify the parameters, select the correct mode
	2. The controller is out of order	2. Check the voltage in the electrical wiring to the 4-way valve. If no electric potential is measured, replace the controller
	3. The 4-way valve is out of order	3. Check the voltage in the electrical wiring to the 4-way valve. If electric potential is measured, replace the coil. If the problem persists, have the heat pump checked by a refrigeration technician

Problem	the heat pump doesn't work	
Observation:	the screen does not light up and the fan/compressor doesn't make a sound	
	Possible cause	Solution
	1.Wrong setting of parameters	1.Check the set parameters and adjust them if necessary (settings just above the capacity of the heat pump)
	2. Pressure switch out of order	2. Check operation of the pressure switch by turning off the filter pump and restarting it. If the heat pump doesn't react to this, the pressure switch must be adjusted or replaced.
	3. Electrical failure	3. Contact your installer

Problem	water leak	
Observation:	there's an amount of water under the heat pump	
	Possible cause	Solution
	1.Condensation due to atmospheric humidity	1.No action required
	2.Water leak	2.Try to localize the leak and check for the presence of chlorine in the water. If that is the case, the heat pump must be temporarily replaced during repair.

Problem	abnormal amount of ice formed on the evaporator	
Observation:	the evaporator is for the most part covered in ice	
	Possible cause	Solution
	1.Insufficient air inflow	1.Check the location of the heat pump and remove any dirt that could be present on the evaporator
	2.High water temperature	2.If the pool water is already quite hot (warmer than 29 °C, the probability of ice formation increases. Lowering the set temperature is a possible option
	3.Incorrect setting of automatic defrost control	3.Check the setting of the defrosting function together with your installer.
	4.The 4-way valve is out of order	4.Check the voltage in the electrical wiring to the 4-way valve. If electric potential is measured, replace the coil. If the problem persists, have the heat pump checked by a refrigeration technician.
	5.Not enough refrigerant	5.Have the heat pump checked by a refrigeration technician.

7.3 Overview of failure code on display (LCD CONTROLLER)

Protection/Failure	Wire controller	Running/Failure indicator	Check	Solution
Standby status		Off		
Running status		On		
Inlet water temp. sensor failure	PP01	☆ ● (flashes once & stops)	1. Check the connection of inlet water sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
Outlet water temp. sensor failure	PP02	☆☆ ● (flashes twice & stops)	1. Check the connection of inlet water sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
Coil 1 temp. sensor failure	PP03	☆☆☆ ● (flashes 3 times & stops)	1. Check the connection of inlet water sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
Coil 2 temp. sensor failure	PP04	☆☆☆☆ ● (flashes 4 times & stops)	1. Check the connection of inlet water sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
Ambient temp. sensor failure	PP05	☆☆☆☆☆ ● (flashes 5 times & stops)	1. Check the connection of inlet water sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
Protection for over-big temp. difference between water inlet & outlet	PP06	On	1. Check if there is any jam in the water circuit. 2. Check if the water flow volume is enough. 3. Check if the water pump has failed to work.	1. Remove the jam. 2. Increase the water flow volume. 3. Repair or replace the water pump.
Anti-freeze protection for cooling	PP07	On	Refer to PP06.	Refer to PP06.
Winter anti-freeze protection I	PP07	Off	No action required	
Winter anti-freeze protection II	PP07	Off	No action required	
Water flow switch failure	EE03	☆☆☆☆☆☆☆☆ ● (flashes 8 times & stops)	1. Check if wiring connection of flow switch is in position. 2. Check if enough water flow. 3. Check if flow switch is broken. 4. Check if water pump failure.	1. Reconnect the wiring. 2. Increase enough water flow. 3. Replace flow switch. 4. Repair or replace water pump.
High / Low pressure protection	EE04	☆☆☆☆☆☆☆☆ ● (flashes 9 times & stops)	1. Check if high or low pressure switch is broken. 2. Check if lack of refrigerant. (For low pressure) 3. Ambient temp. and water inlet temp. is too low. (For low pressure) 4. Check if there's jam in water circuit or water flow not enough. (For high pressure) 5. Check if refrigerant circuit jam. (For high pressure)	1. Replace new pressure switch. 2. Charge enough refrigerant. 3. Adjust less water flow. 4. Remove jam or adjust bigger water flow. 5. Send heat pump to dealer for detailed check.
Failure of over-big temp. difference between water inlet & outlet	EE05	☆☆☆☆☆☆☆☆ ● (flashes 10 times & stops)	1. Check if there is enough water flow volume. 2. Check if inlet / outlet water temp. sensor failure.	1. Adjust bigger water flow. 2. Replace related sensor.
Defrosting	No display	☆☆☆☆☆☆☆☆ (flashing continuously)		
Communication failure	EE08	(available in wire controller)	Check the connection	Reconnect the connection wire.

Notes:

After water pump starts for one minute, it starts to sense water inlet & outlet temperature.

When temp. difference is over 13 degree for continuous 10 seconds, PCB will stop heat pump and controller displays PP06; after 3 minutes, heat pump restarts, if in 30 minutes the heat pump stops 3 times for PP06, controller displays EE05, and heat pump would only restart unless is disconnected to electricity and connect again. When water pump is not working or in heating mode, system will not inspect protection for over-big temp. difference between water inlet and outlet (PP06).

7.4 Overview of failure code on display (LED CONTROLLER)

Protection/Failure	Wire controller	Running/Failure indicator	Check	Solution
Standby status		Off		
Running status		On		
Inlet water temp. sensor failure	PP1	☆ ● (flashes once & stops)	1. Check the connection of inlet water sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
Outlet water temp. sensor failure	PP2	☆☆ ● (flashes twice & stops)	1. Check the connection of inlet water sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
Coil 1 temp. sensor failure	PP3	☆☆☆ ● (flashes 3 times & stops)	1. Check the connection of inlet water sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
Coil 2 temp. sensor failure	PP4	☆☆☆☆ ● (flashes 4 times & stops)	1. Check the connection of inlet water sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
Ambient temp. sensor failure	PP5	☆☆☆☆☆ ● (flashes 5 times & stops)	1. Check the connection of inlet water sensor. 2. Check if the sensor is broken.	1. Reconnect the sensor. 2. Replace the sensor.
Protection for over-big temp. difference between water inlet & outlet	PP6	On	1. Check if there is any jam in the water circuit. 2. Check if the water flow volume is enough. 3. Check if the water pump has failed to work.	1. Remove the jam. 2. Increase the water flow volume. 3. Repair or replace the water pump.
Anti-freeze protection for cooling	PP7	On	Refer to PP 6.	Refer to PP 6.
Winter anti-freeze protection I	PP7	Off	No action required	
Winter anti-freeze protection II	PP7	Off	No action required	
Water flow switch failure	EE3	☆☆☆☆☆☆☆☆ ● (flashes 8 times & stops)	1. Check if wiring connection of flow switch is in position. 2. Check if enough water flow. 3. Check if flow switch is broken. 4. Check if water pump failure.	1. Reconnect the wiring. 2. Increase enough water flow. 3. Replace flow switch. 4. Repair or replace water pump.
High / Low pressure protection	EE4	☆☆☆☆☆☆☆☆ ● (flashes 9 times & stops)	1. Check if high or low pressure switch is broken 2. Check if lack of refrigerant. (For low pressure) 3. Ambient temp. and water inlet temp. is too low. (For low pressure) 4. Check if there's jam in water circuit or water flow not enough. (For high pressure) 5. Check if refrigerant circuit jam. (For high pressure)	1. Replace new pressure switch. 2. Charge enough refrigerant. 3. Adjust less water flow. 4. Remove jam or adjust bigger water flow. 5. Send heat pump to dealer for detailed check.
Failure of over-big temp. difference between water inlet & outlet	EE5	☆☆☆☆☆☆☆☆ ● (flashes 10 times & stops)	1. Check if there is enough water flow volume. 2. Check if inlet / outlet water temp. sensor failure.	1. Adjust bigger water flow. 2. Replace related sensor.
Defrosting	No display	☆☆☆☆☆☆☆☆ (flashing continuously)		
Communication failure	EE8	(Available in wire controller)	Check the connection	Reconnect the connection wire.

Notes:

After water pump starts for one minute, it starts to sense water inlet & outlet temperature.

When temp. difference is over 13 degree for continuous 10 seconds, PCB will stop heat pump and controller displays PP6; after 3 minutes, heat pump restarts, if in 30 minutes the heat pump stops 3 times for PP6, controller displays EE5, and heat pump would only restart unless is disconnected to electricity and connect again. When water pump is not working or in heating mode, system will not inspect protection for over-big temp. difference between water inlet and outlet (PP6).

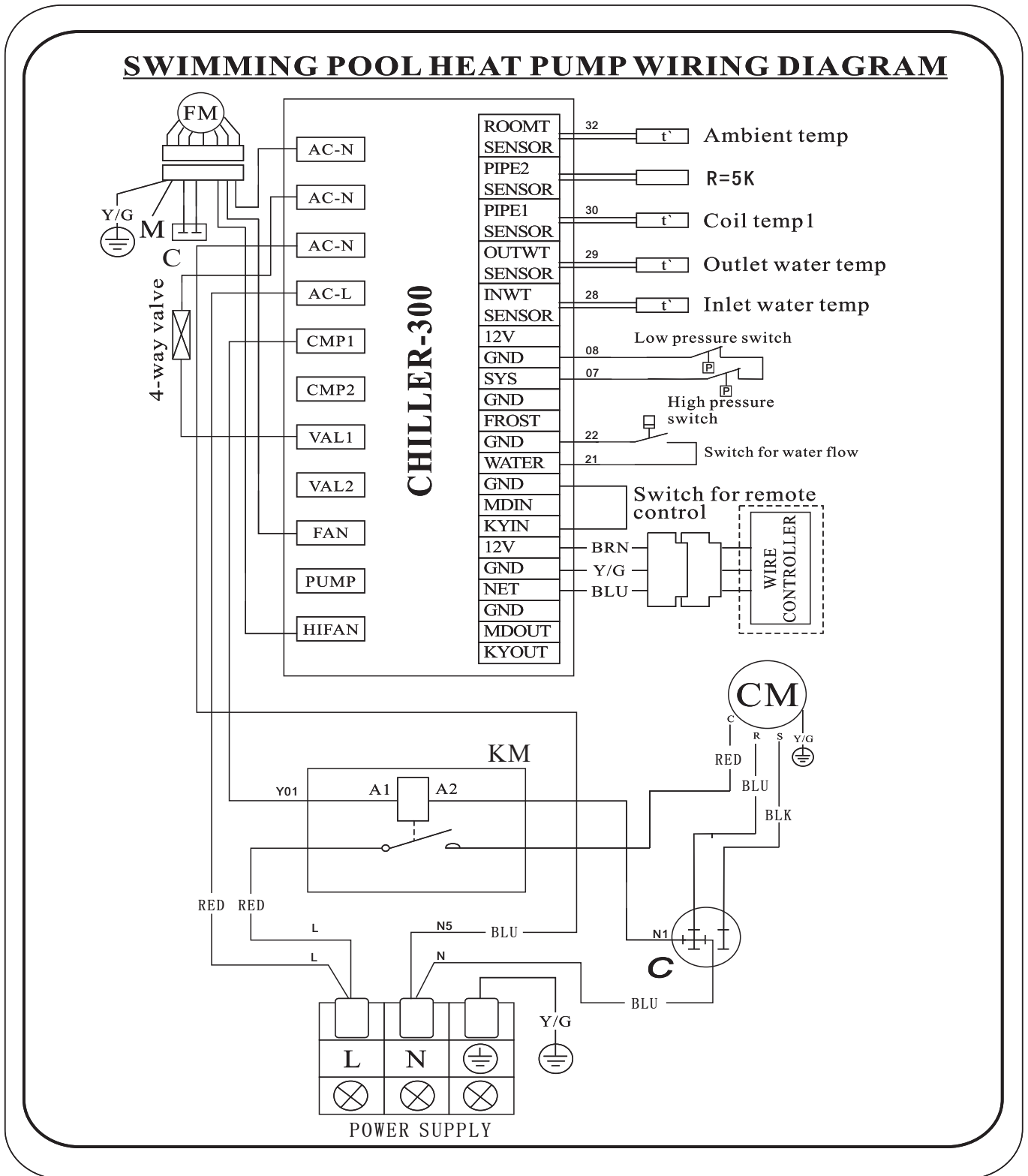
7.5 Overview of protect-300 failure code (3 phase unit)

Protect/Failure	Wire Controller	Protect-300 LED Code
System 1 Low pressure protection	EE01	38
System 1 High pressure protection	EE01	68
System 1 Over current protection	EE01	58
System 1 Refrigerant anti-freeze protection	EE01	18
System 1 Exhaust gas over-high temp. protection	EE01	48
System 1 Refrigerant leakage protection	EE01	28
System 1 Refrigerant in temp. sensor failure	EE01	78
System 1 Refrigerant out temp. sensor failure	EE01	88
System 1 Exhaust gas temp. sensor failure	EE01	98
System 2 Low pressure protection	EE02	83
System 2 High pressure protection	EE02	86
System 2 Over current protection	EE02	85
System 2 Refrigerant anti-freeze protection	EE02	81
System 2 Exhaust gas over-high temp. protection	EE02	84
System 2 Refrigerant leakage protection	EE02	82
System 2 Refrigerant in temp. sensor failure	EE02	87
System 2 Refrigerant out temp. sensor failure	EE02	88
System 2 Exhaust gas temp. sensor failure	EE02	89
Wrong phase or lack of phase	EE04	EE

SWIMMING POOL HEAT PUMP

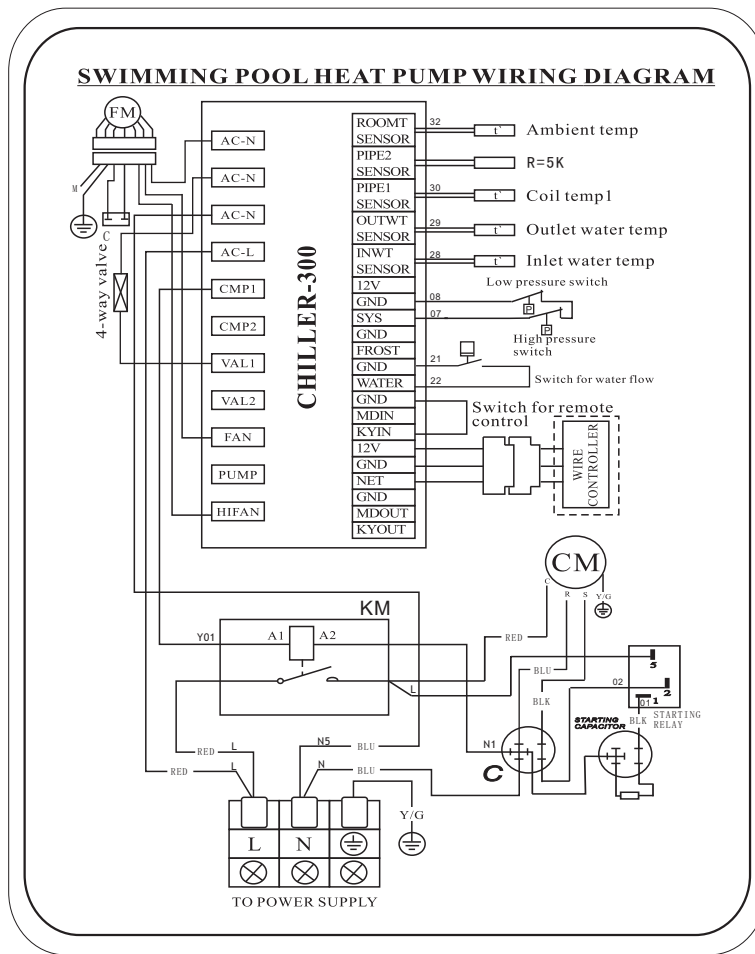
8. Wiring diagram

WBR-9.5H-B1、WBR-12.5H-B1、WBR-14.0H-B1、WBR-9.5H-A WBR-12.5H-A
WBR-14.0H-A Wiring diagram

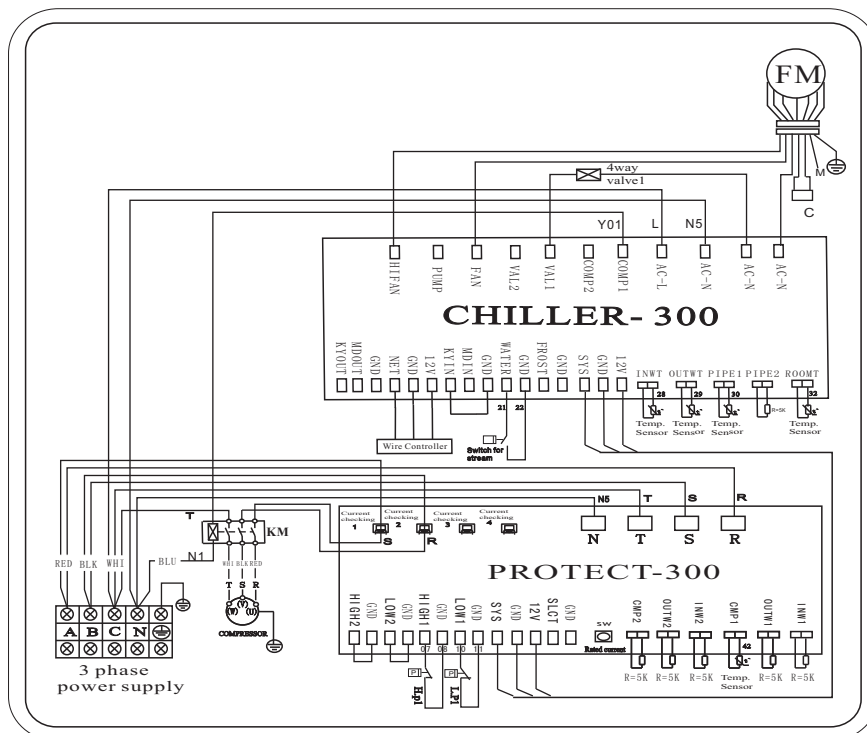


SWIMMING POOL HEAT PUMP

WBR-14.0H-B1、WBR-17.0H-B1、WBR-14.0H-A WBR-17.0H-A Wiring diagram

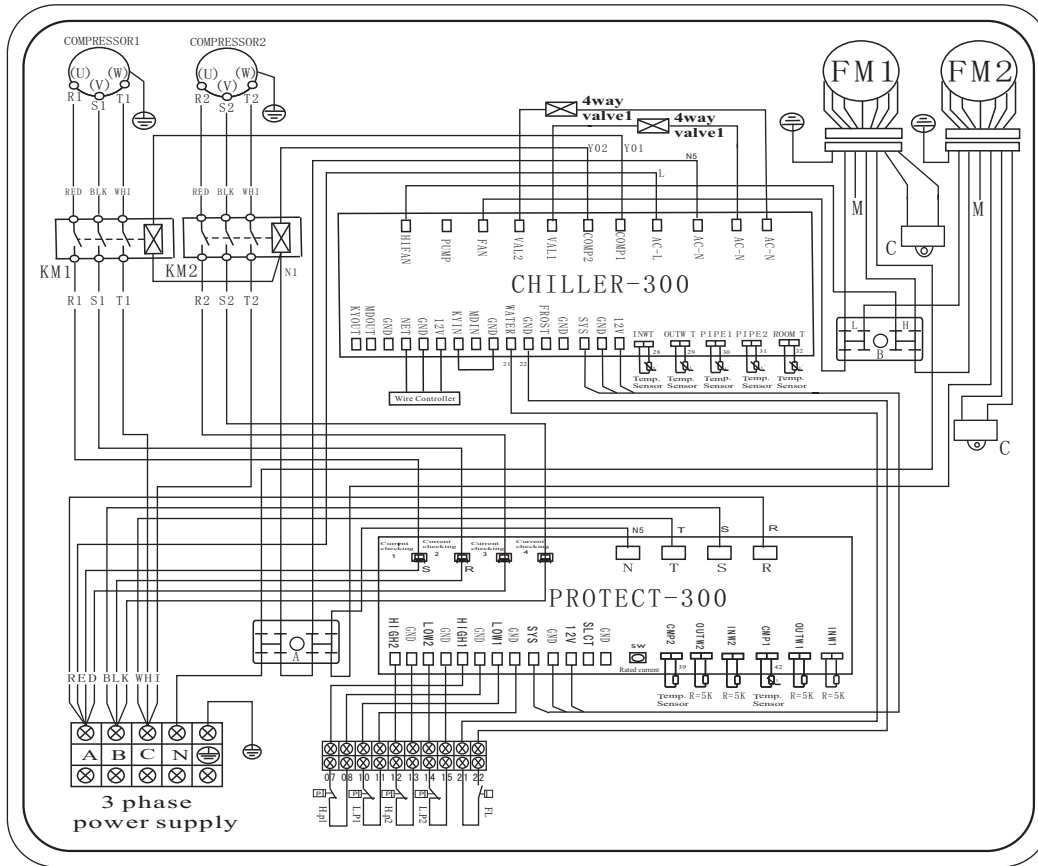


WBR-17.0H-B1-S, WBR-17.0H-A-S, WBR-21.0H-B1-S, WBR-26.0H-B1-S WBR-21.0H-A-S WBR-26.0H-A-S Wiring diagram



SWIMMING POOL HEAT PUMP

WBR-35.0H-A-S, WBR-45.0H-A-S, WBR-50.0H-A-S Wiring diagram



WBR-90.0H-A-S, WBR-135.0H-A-S, WBR-158.0H-A-S Wiring diagram

