

MACON

SWIMMING POOL HEAT PUMP UNIT

Installation & Instruction Manual

**This manual refers to the model
MALCRW020ZA~MALCRW040ZA
MALCRW033ZB~MALCRW060ZB**



Welcome to **MACON**

Dear Owner:

Congratulations on your wise decision to make an MACON heat pump part of your home. MACON has maintained the worldwide lead in the manufacture of swimming pool & spa heat pumps. Your new heat pump is not only a great investment, but also the most cost effective method available for heating pools and spas. For example, your heat pump is up to 400% more efficient than gas, and, when compared to electric resistance heat, your heat pump is nearly 600% more effective. You can rest assured your new heat pump is of the highest quality and efficiency, and is designed and built to provide years of trouble-free operation.

Moreover, should you ever require help in using or maintaining your heat pump, you will find MACON customer and technical support staff to be the largest, most qualified, and—of utmost importance—*the most easily accessed* customer service team in the pool & spa heat pump industry.

“You can rest assured knowing your new heat pump is of the highest quality and efficiency, and is designed and built to provide years of trouble-free operation.”

Contents

I. Security and prevention	1
1. Notice	1
2. Warning	1
II. Advantage	1
1. Compressor	2
2. Digital controller	2
3. MACON heat exchanger	2
4. Corrosion-proof cabinet	2
III. Specification	2
1. Model Nomenclature	2
2. Performance	3
3. The dimension of the Unit	4
IV. Installation	4
1. Positioning your swimming pool heat pump	4
2. Unit installation position	5
3. Installation requirement	6
4. Connecting your swimming pool pipe work	6
5. Installation drawing	7
6. Electric wiring	8
7. Selection of electrical wire	8
V. Use	9
1. Functional illustration of the remote controller	9
2. Uses of the remote controller	9
3. The system parameter setting	11
VI. Maintenance	13
1. Note	13
2. Malfunction indicating table	13
3. Determine and solve malfunction by below table	14
VII. Wiring diagram	15
1. Mk3035 PCB input and output port definition	15
2. Wiring diagram	16
VIII. Appendix startup sheet and procedure	18

I. Security and prevention

1. Notice

1.1 In order to use this product better and safer, please read this instruction carefully before install and operate it. Please pay attention to all the notice in operation and maintenance. Save all manuals and documentation for future reference.

1.2 Swimming pool heat pump is a special appliance. Improper installation will cause damage and danger. It should be installed and maintained by the professionals. Please contact our authorized local service point for installation and maintenance. Please read and follow this instruction carefully before and during installation.

Remarks:

We will not bear the responsibility for any personal injury or unit damage caused by non-Compliance of the regulations and instruction in this manual.

1.3 Please check whether the distribution power capacity, switch and socket are compliance with the requirements of our unit power. Details please refer to the rating label or parameter table in this manual.

1.4 The power should be equipped with leakage protection separately. Power cable should be chosen in accordance with the operation requirements of the unit.

1.5 The unit must be grounded safely. Do not use the unit if grounded unsafely. Do not connect the ground line to the neutral and or tap water pipe.

1.6 The wire must be joined in compliance with the requirements of the wiring chart. Do not alternate and or repair the unit personally.

1.7 Do not install the unit closed to inflammable, explosive and naked light spot.

1.8 To ensure the unit operate properly, please equipped with a filter in the water input when installation.

1.9 Please contact us or our authorized service site if the unit failures. The unit can't be used again without technicians' checking.

1.10 The unit parameter has been set before leave of the factory. The parameter Can't be adjusted by the unprofessional.

2. Warning!

2.1 Do not carry devices alone.

2.2 Connect all the ground wires.

2.3 All the electrical connections should be made by a certified electrician .

2.4 When manipulating electrical equipment, make sure there is no voltage using a well calibrated voltmeter . To avoid damaging the equipment the equipment, do not use heating or cooling devices during the construction phase. Why? Because components can become obstructed with dirt and debris which man damage the device.

II. Advantage

1. Scroll Compressor

50% fewer moving parts than standard piston-type compressors. This equates to much improved reliability and improved efficiency. Scroll compressors are also much quieter in operation than their piston-type counterparts. And, while all heat pumps are known for the ir low operating noise levels.

2. Digital Controller

Digitally-based microprocessor controls water temperature to within 2 F of set point. Controller also permits user to predefine different pool and spa water temperatures, and to prevent tampering by locking out controls via a control key.

3. MACON Heat Exchanger

The heart of your heat pump is the patented **MACON** heat exchanger. One of the primary causes of premature heat pump demise is the failure of the heat exchanger. Ordinary heat exchangers are made from a cupronickel alloy and the shell is made by PVC. This cupronickel material is susceptible to attack from the sanitizers used in pools and spas and from other related water chemistry conditions. Once the heat exchanger fails, the heat pump is ruined.

And The PVC is can't bear too high pressure and temperature, and exit the risk of burst and leak. The **MACON** heat exchanger tube is made from titanium, and is virtually impervious to water chemistry damage, and the shell is made form a patent secret ingredients, it can stand more than 21kg water pressure and high temperature.

4. Heat&Cool Capability

Puts you in full control, year round... Warms your pool or spa with the reliability and efficiency of our other heat pumps, but, with the flip of a switch, can also cool your pool or spa to refreshing temperatures during hot summer months. For cooler climates, Heat & Cool heat pumps offer unique advantages over passive defrost models. Please read more below...

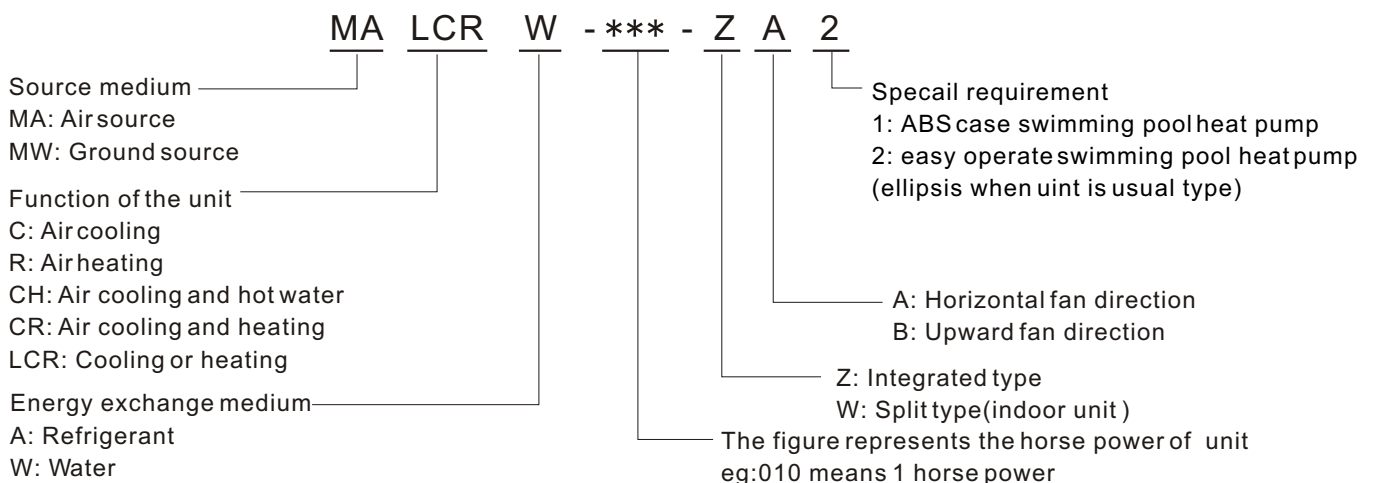
5. Hot Gas Defrost

Hot gas defrost heat pumps are uniquely equipped for an *active* defrost cycle. Active defrost involves directing hot refrigerant vapor to the heat collector, melting accumulated ice away in a matter of a few minutes... then right back to heating. Standard defrost heat pumps may remain “off in defrost” for extended periods during very cold weather. Because of their ability to continue to operate-even during freezing weather-hot gas defrost models extend the swimming season longer than *any* standard-defrost heat pump.

PLEASE READ FURTHER TO BECOME FAMILIAR WITH ALL THE FEATURES, THE SAFE OPERATION, AND THE CARE OF YOUR NEW HEAT PUMP.

III. Specification

1. Model Nomenclature



2. Performance of Swimming Pool Heat Pump

Model	MALCRW	020ZA	025ZA	030ZA	033ZA	040ZA
Rated heating capacity	W	11800	14700	16400	19000	21500
	BTU	40200	50200	56100	65000	72200
Input power(heating)	W	2270	2810	3160	3542	4970
Running current (heating)	A	10.9	13.2	14.5	14.9	23.9
COP	w/w	5.2	5.2	5.2	5.2	5.2
Power supply	V/PH/Hz	208V~230V/1PH/60Hz				
Quantity of compressor		1	1	1	1	1
Compressor		Rotary				Scroll
Quantity of fan		1	1	1	1	1
Input power of Fan(Side fan)	W	40	60	60	60	100
Fan rotate speed(Side fan)	RPM	800	800	800	800	800
Noise	dB(A)	50	52	52	52	54
Water connection	inch	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"
Water flow volume	m ³ /h	3-5	4-7	5-8	5-8	5-8
Water pressure drop	kpa	12	15	15	15	16
Refrigerant gas type		R410A				
Net Dimension	L/W/H(mm)	1005/360/620	1115/470/700	1115/470/700	1115/470/700	1115/470/945
Shipping Dimension	L/W/H(mm)	1095/405/650	1205/525/725	1205/525/725	1205/525/725	1205/525/975
Net weight	kg	63	81	91	105	108
Gross wight		67	86	98	113	120

Measurement conditions:

outdoor air temp.(D/W):24℃(75.2℉)/19℃(66.2℉), inlet water temp.:27℃(80.6℉)

Operating Temperature Range::5℃ ~ 40℃(41℉ ~ 104℉)

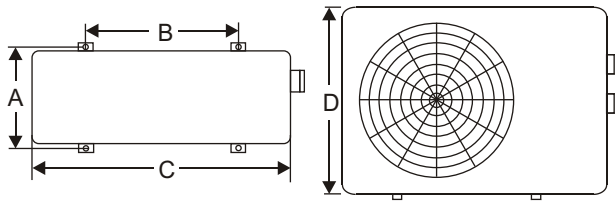
Model	MALCRW	033ZB	040ZB	045ZB	050ZB	060ZB
Rated heatingcapacity	W	19000	21500	24800	28600	31000
	BTU	65000	72200	84700	97700	105700
Input power (heating)	W	3542	4970	6020	6280	6400
Running current (heating)	A	14.9	23.9	27.4	29.4	30.9
COP	w/w	5.2	5.2	5.2	5.2	5.2
Power supply	V/PH/Hz	208V~230V/1PH /60Hz				
Quantity of compressor		1	1	1	1	1
Compressor		Rotary		Scroll		
Quantity of fan		1	1	1	1	1
Input power of Fan	W	120	120	120	120	120
Fan rotate speed	RPM	800	800	800	800	800
Noise	dB(A)	52	54	53	55	55
Water connection	inch	1-1/2"	1-1/2"	1-1/2"	1-1/2"	1-1/2"
Water flow volume	m ³ /h	5-8	5-8	7-10	8-12	8-12
Water pressure drop	kpa	15	16	16	16	16
Refrigerant gas type		R410A				
Net Dimension	L/W/H(mm)	660/660/860	660/660/860	660/660/960	660/660/960	660/660/960
Shipping Dimension	L/W/H(mm)	750/700/960	750/700/960	760/700/1060	760/700/1060	760/700/1060
Net weight	kg	86	98	108	110	110
Gross wight		96	108	119	121	121

Measurement conditions:

outdoor air temp.(D/W):24℃(75.2℉)/19℃(66.2℉), inlet water temp.:27℃(80.6℉)

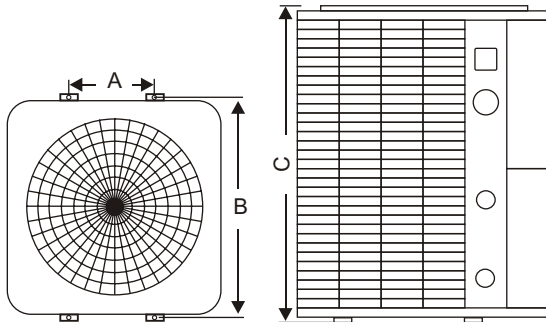
Operating Temperature Range::5℃ ~ 40℃(41℉ ~ 104℉)

3. The dimension of the unit



Units: mm

MALCRW Size	020ZA	025ZA 030ZA	033ZA 040ZA
A	340	470	470
B	645	750	750
C	1005	1115	1115
D	620	700	945



Units: mm

MALCRW Size	033ZB 040ZB	045ZB 050ZB 060ZB
A	300	300
B	685	685
C	860	960

IV. Installation

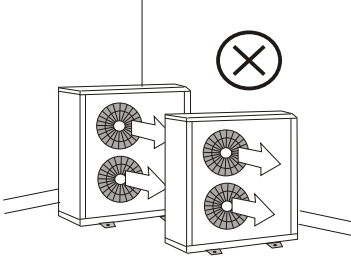
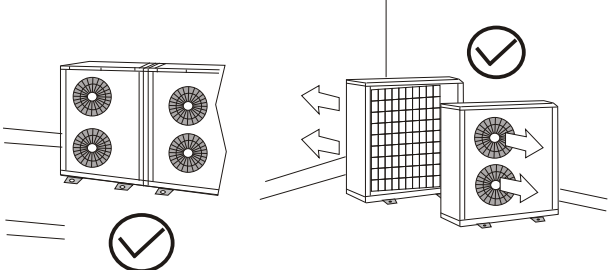
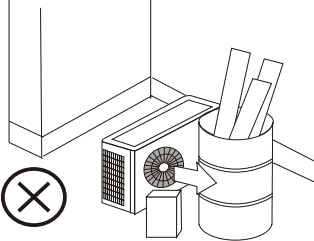
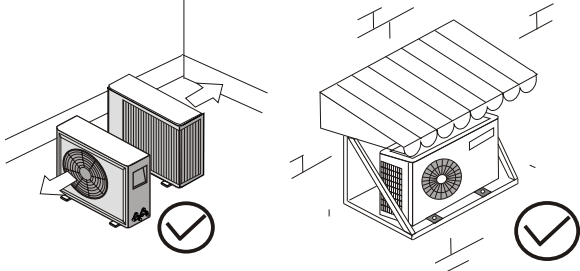
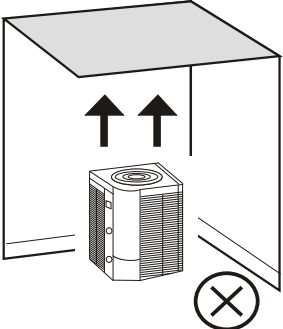
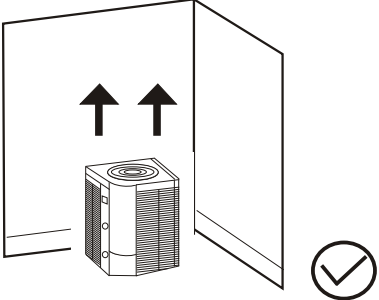
1. Positioning Your Swimming Pool Heat Pump

- 1.1 For correct operation air must be free to circulate around the heat pump. Do not place the unit in a shed, greenhouse or similar. This unit is designed to be placed outdoors only.
- 1.2 Refer to the drawing below for required clearance.
- 1.3 You should position the heat pump so that the control panel does not face directly towards the sun.
- 1.4 The heat pump must be upright.
- 1.5 The distance between the heat pump and the pool / plant room should be as short as practically possible to reduce pressure and heat loss in the pipe work.
- 1.6 Insulating the pipe work will assist with the prevention of heat losses.
- 1.7 An isolator switch should be installed (by a qualified electrician) near the heat pump.
- 1.8 The electrical supply to the heat pump must be protected by a 30mA RCD.
- 1.9 The air inlets and outlets must not be obstructed or blocked.
- 1.10 Even though the heat pump is low noise, it must be positioned so as to be considerate to neighbours.
- 1.11 Your heat pump must be placed on a solid base.
- 1.12 Avoid the condensation will drip from underneath the heat pump, the base must be able to tolerate this.

2. Unit installation position

To avoid ventilation short, the r unit discharged air should not return when installation.

Please keep enough space around the unit for repair. Right and wrong means as below:

Wrong	Right
	
	
	



NOTICE:

1. To get enough air for ventilation of the unit, the installation position should be with good ventilation.
2. The installation position can hold the outdoor unit without noise and shake.
3. No sunlight to the unit. Set an awning if necessary.
4. The water from rain and defrosting can be discharged in the installation position.
5. The unit will not be covered by snow in the installation position.
6. The discharged air will not face strong air in the installation position.
7. Assure the noise caused by the unit ventilation and operation will not affect the neighbour.
8. The installation position will not be affected by garbage, oil and mist.
9. The unit will be damaged under the condition with oil(engine oil), salt(sea area) and sulfide air(near thermal spring and refining factory).

3. Installation requirement

3.1 The unit can be installed in the balcony, roof, floor or any other convenient place and reliable load-bearing.

3.2 Airiness place.

3.3 No heat radiation or other heat source place

3.4 Should be set up shed against the snow in winter.

3.5 Barrier-free at the air inlet or outlet place.

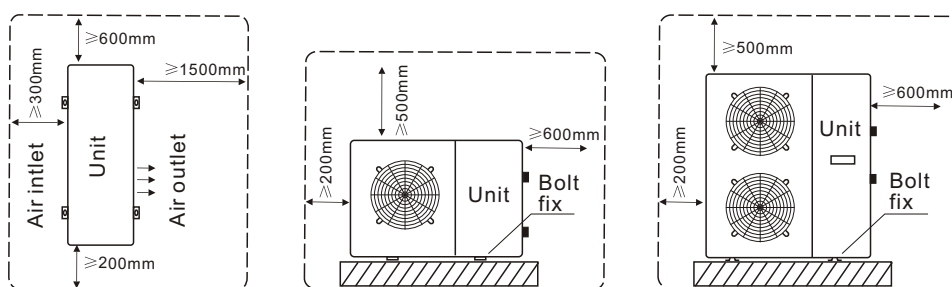
3.6 Outlet against strong winds blowing place.

3.7 There should be drainage channels around the machine in order to rule out the condensate.

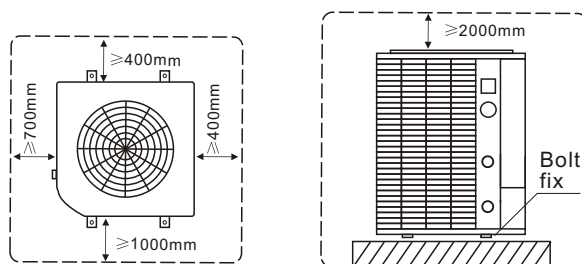
3.8 Control Panel, do not install in the bathroom, so as not to affect the unit work by wet.

3.9 Should leave enough space around the machine. As shown below.

A: Side fan type installation space requirements:



B: Top fan type installation space requirements:



4. Connecting Your Swimming Pool Pipe Work

4.1 The pool water is fed through the heat pump by a swimming pool pump.

4.2 The heat pump must be installed after (down stream) the swimming pool filter so clean, filtered water passes through it.

4.3 Double union ball valves must be fitted just before the heat pump inlet and just after the outlet to aid servicing and winterising.

4.4 Each heat pump has a maximum water flow rate. If the flow via the pool pump is higher than this then a by-pass should be installed. Consult your supplying dealer.

4.5 Each heat pump also has a minimum flow rate, below this the heat pump will not operate. Consult your supplying dealer.

4.6 Pipe work of less than 1-1/2" diameter should not be used.

4.7 Fit a union nut onto each pipe.

4.8 Push the gasket over the pipe until the gasket is about 5 -10mm from the edge of the pipe. You may need to lubricate the gasket.

4.9 Insert the pipe into the heat pump and tighten the union nut.

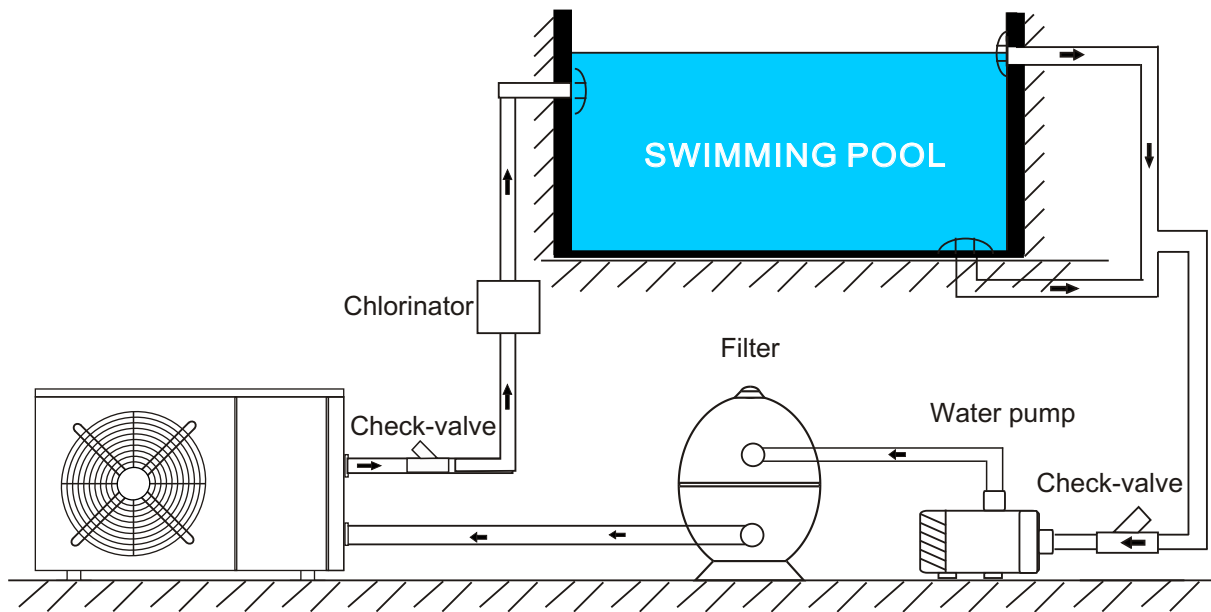
4.10 The union must only be hand tightened.

4.11 If the swimming pool is equipped with a chlorinator, brominator, or possibly chemical control with acid and chlorine pumps, these must be in the return pipe work after the heat pump and a non-return valve used. Any dosing system must be the final equipment before the water returns to the swimming pool. Damage caused to the heat pump by chemical dosing units is not covered by warranty.

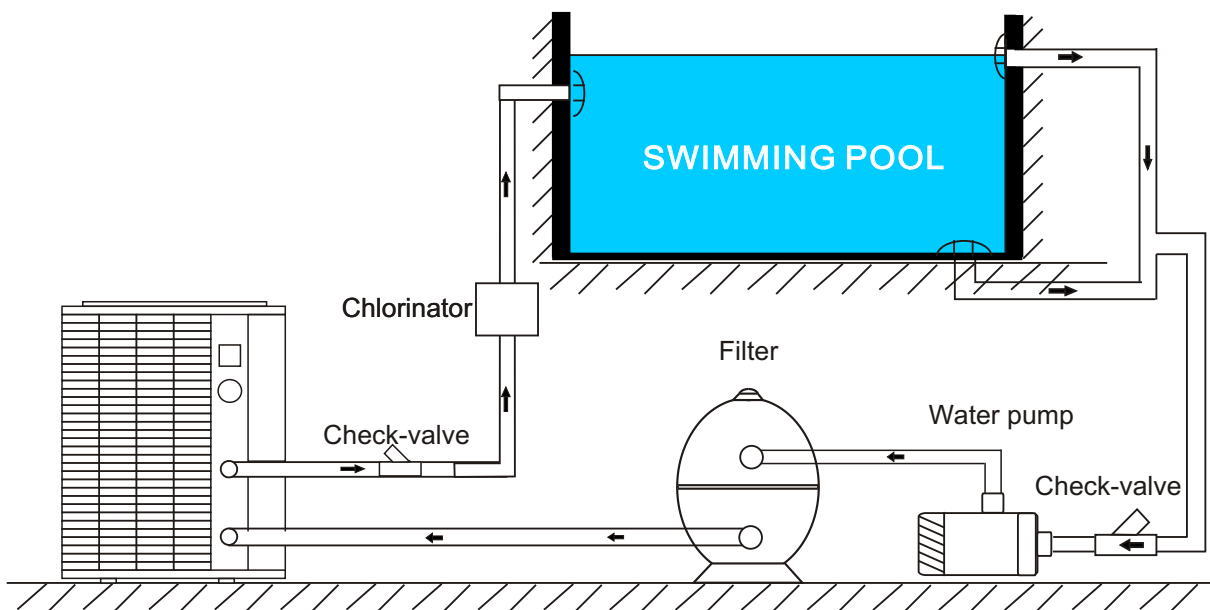
4.12 Any heat exchanger or electric heater fitted as auxiliary heating must be installed after (down stream from) the heat pump so as to avoid pre-heating the pool water before it enters the heat pump.

5. Installation Drawing

A: Horizontal fan direction Type



B: Upward fan direction Type



6. Electric wiring

6.1 Unit supply cable must be used copper. Power supply voltage should be in line with the rated voltage and the rated current.

6.2 The unit, power supply circuit must have a grounding wire, and the power supply ground wire must connect to with the external grounding wire, and an external grounding wire to be effective.

6.3 Wiring installation must be installed by professional technicians carried out in accordance with circuit.

6.4 Setting up a good leakage protection devices and in accordance with the relevant national technical standards.

6.5 Power line and signal line layout should be neat, rational, strong and weak lines separating cable and Can not interfere with each other, without contact with the connecting pipe and valve.

6.6 After the construction of all wiring is completed, carefully check the correct order to connect the power.

6.7 Unit electric wire connection: connect to the appropriate terminals according to wiring diagram, and fix it by the pressure line of board in the electrical box.

6.8 All the wiring construction is completed, can be plugged in only after careful examination correctly.

6.9 Unit control board fuse parameters: 5A.

7. Selection of Electrical Wire

7.1 Voltage drop may occur due to the large current draw during compressor starting, and may be result in the compressor is difficult to stat. So we recommend selecting the wire specification from the table below.

7.2 Specification Table of Electrical Wire

Model: MALCRW	Wire specification	Circuit breaker	Voltage
020ZA~030ZA	12 AWG 3wire+gnd	20 AMP	208-240/1ph
033ZA~040ZA	10 AWG 3wire+gnd	30 AMP	208-240/1ph
045ZB~060ZB	10 AWG 3wire+gnd	50 AMP	208-240/1ph

7.3 Caution of Ground The internal motor protector does not protect the compressor against all possible conditions Please be sure that the system utilizes the ground connection when installed in the field.

7.4 Warning: To avoid fire, electric shock and other accidents, keep in mind about these tips:

A: Only use power supply voltage indicated on the label, if you do not know the family of voltage, contact the dealer or local power company.

B: When you use the unit by the maximum current please view the specifications, so make sure our home's power supply (current, voltage and cable) to meet the machine's normal load requirements.

C: To protect the power lines. Power lines should be fixed, so that people will not be trip over or the lines damaged by other things. Paying particular attention to plugs, which should be easily plug into the socket, careful the plug position.

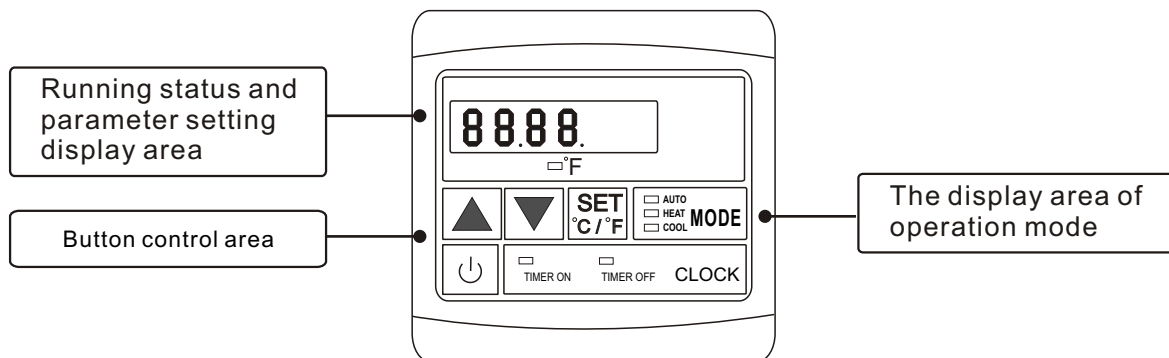
D: Do not overload wall plugs or extension the cable. Line overload can cause fire or electric shock.

E: To ensure your safety, you must plug the power lines into the socket with a grounded three-phase, and check to ensure your socket is accurate and reliable grounding.


V. Use

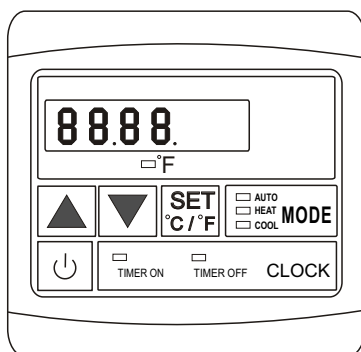
1. Functional illustration of the remote controller

The electrical base box of the remote controller is of standard dimension(86 × 86mm),and the fixed hole distance is 60mm. Before the interior decoration, if embedded the box and three-core cable(3 × 0.5mm²) in the wall ,it will make the overall decoration more beautiful. The user interface and use functions are shown in the figure below :

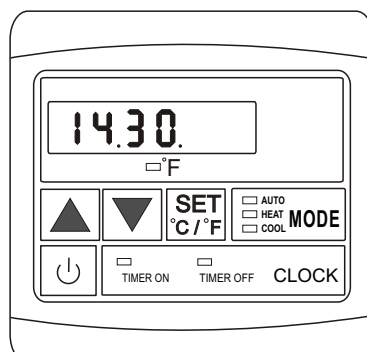


2. Uses of the wire controller

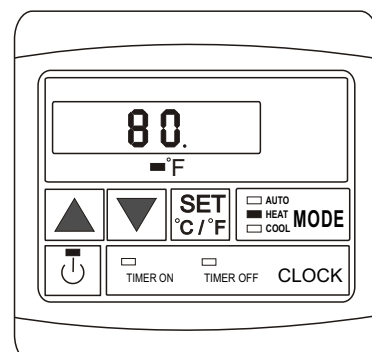
2.1 Status display. Switch on the main power supply to the heat pump. after the 10 seconds the screen of remote controller display full information , the main unit will enter the standby status that display the time at the moment. Press the turn on button “  ” enter the running status. The remote controller display the water inlet temperature and the running mode.



Initialization status





Standby status

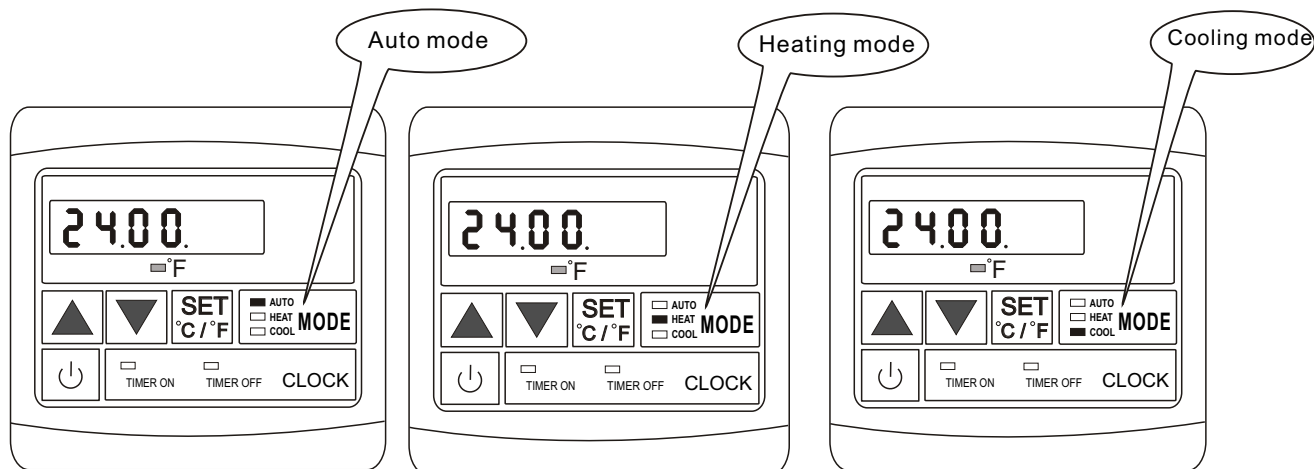




Running status



2.2 Switch to display “Fahrenheit” and “Celsius” .





Either in the boot or standby state, simply click “  ” that you can switch to “ Fahrenheit ” or “ Celsius ” .





2.3 Mode select . Press “  ” button to choose “AUTO” “HEAT” or “COOL” mode.







2.4 Power on/off. Press “  ” button to power on, the remote controller displays the water input Temperature ,water output Temperature ,clock and operation mode; press “  ” button again to enter the standby mode.

2.5 Water input Temperature Setting. On standby or power on status, press “  ” or “  ” button to adjust the setting of water input temperature of the corresponding model.

2.6 Clock setting. Press the “**CLOCK**” button , the place of hour will be flicking, press “   ” button to adjust the setting of hour. Then press the “**CLOCK**” button again the place of minute will keep flicking . Press the button “   ” to adjust the setting of minute. Press the “**CLOCK**” button again to complete and exit the time setting mode.

2.7 Timer ON setting. Press the “**TIMER ON**” button,the place of hour, minute ,Time ON symbol keep flicking . Press the “**TIMER ON**” button again the place of hour flicking. Press the “   ” buttons to adjust the setting of the hour. Press the “**TIMER ON**” button again,and the place of minute flicking. Press the “   ” button to adjust the setting of minute; Press the “**TIMER ON**” button again complete and exit the timer on setting Press the “**TIMER ON**” button then and press the “**CLOCK**” button to cancel the timing..




NOTE 1: When parameter of G set be '1' ,it is means the unit with the timer function.

2.8 Timer OFF setting. Press the “**TIMER OFF**” button,the place of hour, minute ,Time OFF symbol keep flicking . Press the “**TIMER OFF**” button again the place of hour flicking. Press the “   ” buttons to adjust the setting of the hour. Press the “**TIMER OFF**” button again,and the place of minute flicking. Press the “   ” button to adjust the setting of minute; Press the “**TIMER ON**” button again complete and exit the timer on setting Press the “**TIMER OFF**” button then and press the “**CLOCK**” button to cancel the timing..

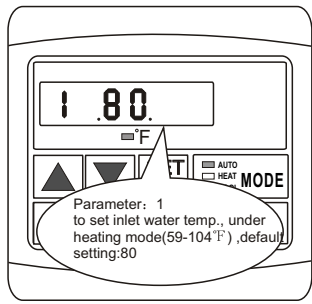
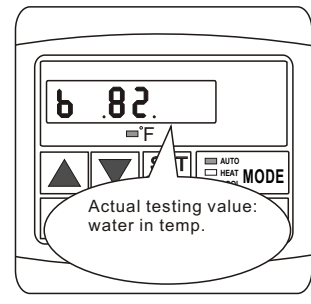
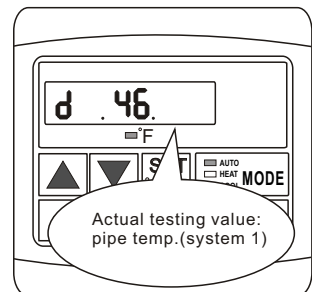
2.9 Display Lock. Press “▲” and “▼” at the same time for 5s, when hear a sound of “B”, it means all buttons are locked, but it can be unlocked after pressing both “▲” and “▼” at the same time for 5s and hear a sound of “B” again.

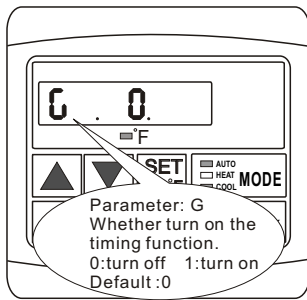
3. The system parameter setting

Warning! These settings are for professional Engineers only, please call them if you require to change any of the system Parameters.

3.1 Parameters Setting. When the unit is under standby, press the button “” for 10 seconds, you can enter parameters to browsing and setting interface, then press button “▲” or “▼” to choose the parameters you want to modify, and press “” again, so then you can set the specified parameter by the “▲” or “▼”, press the “” again to confirm the modification.

Note: if enter into the parameter interface under the power on state, it can only view the parameter(0-9/A/b/C/d/E/F/G).

 <p>Parameter: 0 to set inlet watertemp. Under cooling mode(46-82°F)default setting:80°F</p>	 <p>Parameter: 1 to set inlet water temp., under heating mode(59-104°F), default setting:80</p>	 <p>Parameter: 2 Total working time of compressor after defrosting (you had better do not set)</p>	 <p>Parameter: 3 Setting initial temp. for defrosting “32°F” (“-”not display)range(32-86°F)</p>
 <p>Parameter: 4 Temp. of exit defrosting (35-55°F) default setting:55°F</p>	 <p>Parameter: 5 Max:Time of defrosting (1-12min) default setting:12min</p>	 <p>Parameter: 6 Setting system quantity Setting :1 ,single system Setting :2 ,double system Default setting:1 (Do not set)</p>	 <p>Parameter: 7 Save setting after power failure Default setting:1(memory) setting :0(no memory)</p>
 <p>Parameter: 08 Mode function setting: 0:cooling 1:cooling&heating 2:auxiliary electrical heating&cooling(Auto mode can be selected) 3:heating only Default :3</p>	 <p>Parameter: 9 “0” long time working for water pump “1” water pump turns off after the whole unit power off for 30s initialization “0”</p>	 <p>Auto mode set inlet water temp. Ranger:46-104°F Default :80°F</p>	 <p>Actual testing value: water in temp.</p>
 <p>Actual testing value: water out temp.</p>	 <p>Actual testing value: pipe temp.(system 1)</p>	 <p>Actual testing value: pipe temp.(system 2)</p>	 <p>Actual testing value: Ambient temp.</p>



3.3 Operation Data Setting

Digit	meaning	range	default	adjust(yes/no)
00	Water inlet temperature setting (cooling mode)	46 ~ 82°F	80°F	yes
01	Water inlet temperature setting (heating mode)	59 ~ 104°F	80°F	yes
02	Heating defrost cycle setting	30 ~ 90MIN	45MIN	Adjusted by technicians
03	The coil temperature setting for enter the defrost status.	-22 ~ 32°F	32°F	Adjusted by technicians
04	The coil temperature setting for exit the defrost status.	35 ~ 86°F	55°F	Adjusted by technicians
05	The maximum time of the defrost status	1 ~ 12MIN	12MIN	Adjusted by technicians
06	system quantity	1 ~ 2	1	Adjusted by technicians
07	automatic restarting	0 ~ 1	1	Adjusted by technicians
08	Mode(0:cooling 1:cooling&heating 2:auxiliary electrical heating&cooling (Auto mode can be selected) 3:heating only)	0/1/2/3	3	Adjusted by technicians
09	working mode of water pump	0 ~ 1	0	Adjusted by technicians
A	auto mode(return water temp.)	46 ~ 104°C	80°F	Adjusted by technicians
b	water in temp.	16 ~ 194°F		Actual testing value
C	water out temp.	16 ~ 194°F		Actual testing value
d	Pipe temp.1	16 ~ 194°F		Actual testing value
E	Pipe temp.2	16 ~ 194°F		Actual testing value
F	Ambient temp.	16 ~ 194°F		Actual testing value
G	Whether turn on the timing function.	0:(turn off) 1:(turn on)	0	Actual testing value

Notice: above data setting 00 is relevant to cooling only.all other data(01-05)is relevant to heating mode.
remarks:

parameter09

0:always open

1:starts 10 seconds before compressor

stops 30 seconds after compressor

VI. Maintenance

1.Note

1.1 Check whether the exhaust equipment is normal. Avoid cutting of the water supply and or air entering into the system, or it will influence the performance and reliability of the unit. The water filter should be cleaned regularly. Keep the water clean in case of any damage to the unit due to filter's dirty and jam.

1.2 Keep the unit environment dry, clean and well ventilation. Clean the side air exchanger regularly(once per1-2 months) in order to maintain high exchange efficiency and save energy.

1.3 Often check the performance of all the parts in the unit. Check whether the working pressure of the refrigerant system is normal. Repair and change the parts timely if there's any abnormality .

1.4 Often check whether the wiring of the power and electric system is tightened and or electric parts perform abnormally or smells. Repair and change the parts timely if there's any abnormality.

1.5 To check the operation of every process in the unit, the operation pressure of the refrigerant system.You should maintain or change it in time.

1.6 Care the unit if the unit stops for a long time. Discharge all the water in the pump and throughout the pipe route in case breakdown to the water pump and pipe caused by frost and freeze. Discharge the water from the water pump and tube exchange Button drain. Check the unit thoroughly and flood water into the system before the unit power on again.

It, the operation pressure of the refrigerant system.

1.7 To check the power supply and cable connection often, there is abnormal action or bad smell about the electrical component. If there is, please maintain or change it in time.

2.Malfunction indicating table

Malfunction	Wire Controller	Reason	Resolution
Sensor failure for inlet water	PP 01	The sensor is open or short circuit	Check or change the sensor
Sensor failure for outlet water	PP 02	The sensor is open or short circuit	Check or change the sensor
System 1coil sensor failure	PP 03	The sensor is open or short circuit	Check or change the sensor
System 2coil sensor failure	PP 04	The sensor is open or short circuit	Check or change the sensor
Ambient temp. sensor failure	PP 05	The sensor is open or short circuit	Check or change the sensor
Temp is too much different between water-in and water-out	PP 06	Not enough water flow volume & water pressure difference is too low	Check the water flow volume, or water system is jammed or not
Anti freezing under cooling mode	PP 07	Water flow volume is not enough	Check the water flow volume, or water system is jammed or not
The first time freezing protection in winter	PP 07	Out side environment temperature is below 0°C under stand by status.	the system recover automatically after running antifreeze process.
The second time freezing protection in winter	PP 07	Out side environment temperature is below 0°C under stand by status.	the system recover automatically after running antifreeze process.
Malfunction of system	EE0 1	High pressure switch protection	Check whether the pressure switch and water cycle system.
Malfunction of system	EE0 2	Low pressure switch protection	Check whether the pressure switch and Refrigeration cycle Freon leak .

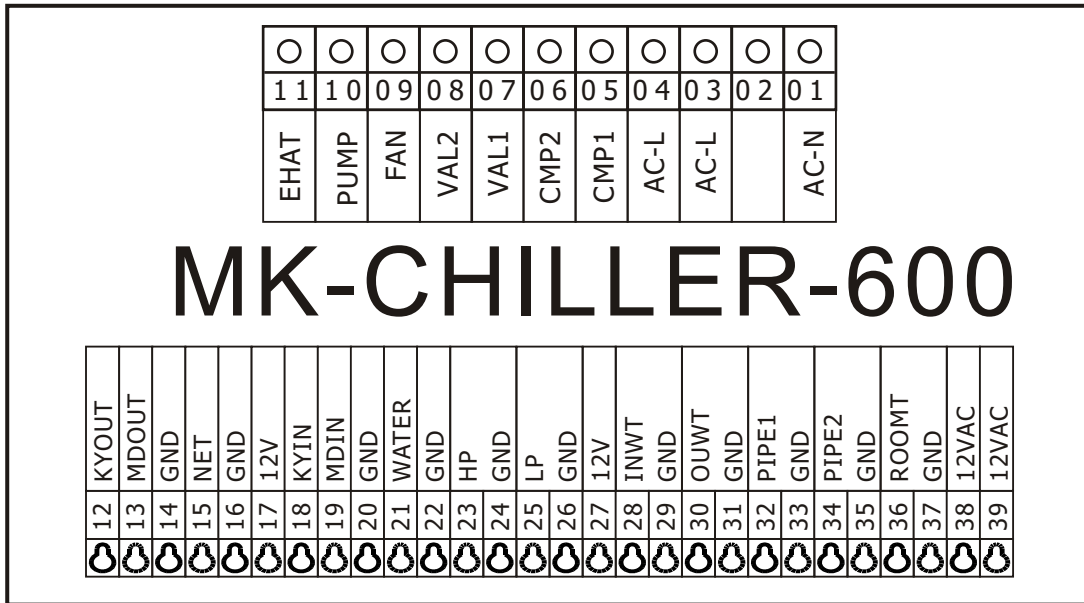
Flow switch failure	EE 03	No water/the water flow volume too small in water system.	Check the water flow volume, water pump is failure or not.
Phase lack or phase error of power supply	EE0 4	Turn on /off switch is opened	Short circuit the turn on /off switch
3 times of excessive temp. differentials of inlet water and outlet water in 30minutes	EE0 5	Water flow volume not enough, water pressure difference is too low	Check the water flow volume, or water system is blocked or not.
defrosting	Defrost code display		
Communication failure	EE 08	Wire controller and The PCB connection failure.	Check the wire connection

3.Determine and solve malfunction by below table:

Malfunction	Reason	Solution
The unit can't run	<ol style="list-style-type: none"> 1. Power failures 2. The unit wire loses 3. The unit power fuse burns out. 	<ol style="list-style-type: none"> 1. Shut down and check the power 2.Check the reason and repair 3.Check and change the power fuse
The water pump can run but can't circulate and is noisy	<ol style="list-style-type: none"> 1. The water system is lack of water 2. There's air in the system. 3. The water system valve doesn't open entirely 4. The water filter is dirty and jam 	<ol style="list-style-type: none"> 1.Check the water supplement equipment and supply water into the system. 2.Discharge the air from the water system 3.Clean the water filter or exhaust the air from system
The heating capacity is too low and the compressor works continuously without pause.	<ol style="list-style-type: none"> 1. Refrigerant is insufficient. 2. Thermal insulation of the water system is poor. 3. Thermal discharge of the exchange is poor. 4. Water flow volume is insufficient. 	<ol style="list-style-type: none"> 1.Check the leakage and add refrigerant. 2.Enhance the thermal insulation of the pipe route. 3.Clean the exchanger and improve the condensation condition. 4. Clean the water filter.
The compressor exhausted pressure is too high	<ol style="list-style-type: none"> 1.Too much refrigerant 2.Thermal discharge of the exchange is poor 	<ol style="list-style-type: none"> 1. Discharge surplus refrigerant 2. Clean the exchanger and improve the condensation condition
The compressor suction pressure is too low.	<ol style="list-style-type: none"> 1. Refrigerant is insufficient. 2. The filter and or capillary tube jam. 3. Water flow volume is insufficient. 4. Capillary tube of expansion valve sensor bulb breakdown. 	<ol style="list-style-type: none"> 1.Check the leakage and add refrigerant. 2.Change the capillary tube or filter. 3.Clean the exchanger and improve the condensation condition. 4.Change the expansion valve.
Compressor noisy.	<ol style="list-style-type: none"> 1.Refrigerant enter into the compressor. 2.Compressor damaged. 	<ol style="list-style-type: none"> 1.Check the reason and solve the malfunction. 2.Change the compressor.
Compressor can't work	<ol style="list-style-type: none"> 1. Power failure. 2.The compressor capacitance is damaged. 3. Compressor Control damaged. 4. Wire loses. 5. Compressor overload protection. 6. Return water temperature setting incorrect. 7. Water flow volume is insufficient. 	<ol style="list-style-type: none"> 1.Check the power and solve the malfunction. 2.Change the compressor capacitance. 3.Change Control. 4.Check loose reason and repair. 5. Compressor overload protection. 6. Reset the return water temperature. 7. Clean the water filer and exhaust the air from the system.
Fan can't work	<ol style="list-style-type: none"> 1. Fan relay damaged. 2. Fan capacitance damaged. 3. Motor is burnt out. 	<ol style="list-style-type: none"> 1. Change the fan relay. 2. Change the fan capacitance. 3. Change the fan motor.
The compressor run but no refrigeration.	<ol style="list-style-type: none"> 1. The refrigerant leak out 2. Plate exchanger freezes 3. Compressor failure 	<ol style="list-style-type: none"> 1.Check the leakage and add refrigerant 2.Check the reason and change the plate exchanger. 3.Change the compressor.
Few water flow volume protection to the unit.	<ol style="list-style-type: none"> 1.Water flow volume is insufficient. 2.Flow switch. 	<ol style="list-style-type: none"> 1.Clean the water filter and exhaust the air from the system. 2.Change the flow switch.

VII. Wiring diagram

1. Mk3035 PCB input and output port definition



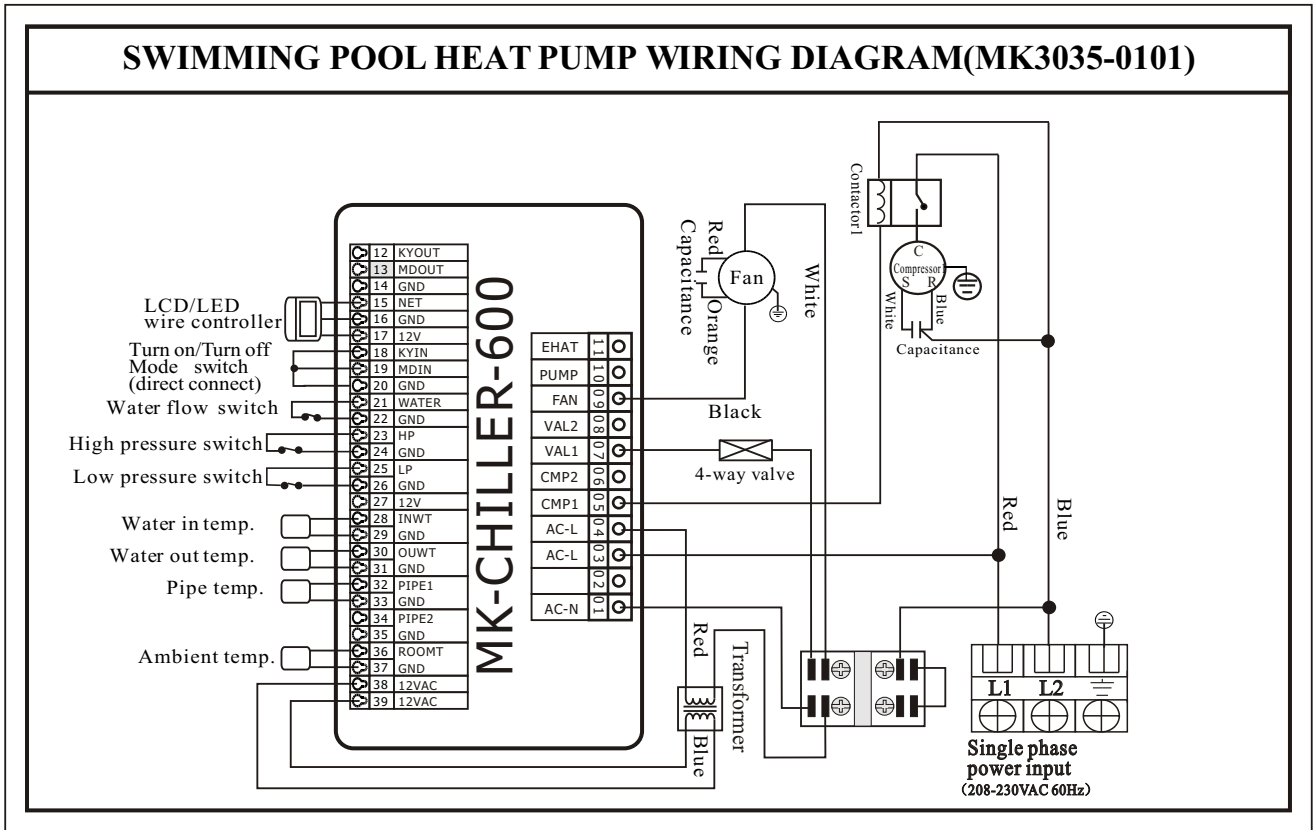
NO .	Symbol	Meaning	NO .	Symbol	Meaning
01	AC-N	Power AC-N input	21	WATER	Water flow switch
02		Reservation	22	GND	
03	AC-L	Power AC-L input	23	HP	High-pressure switch
04	AC-L	Power AC-L input	24	GND	
05	CMP1	Compressor of system1 power output	25	LP	Low-pressure switch
06	CMP2	Compressor of system2 power output	26	GND	
07	VAL1	4way valve of system1 power output	27	12V	System protection(Reservation)
08	VAL2	Spray valve power output	28	INWT	Water inlet temperature
09	FAN	Fan motor power output	29	GND	
10	PUMP	Water pump power output	30	OUWT	Water outlet temperature
11	EHAT	Auxiliary electrical heating power output	31	GND	
12	KYOUT	Reservation	32	PIPE1	System 1 coil temperature
13	MDOUT	Reservation	33	GND	
14	GND	GND	34	PIPE2	System 2 coil temperature
15	NET	LCD/LED Wire controller	35	GND	
16	GND				
17	12V				
18	KYIN	Unit turn on/off switch ①	36	ROOMT	Ambient temperature
19	MDIN	Mode select switch ②	37	GND	
20	GND	GND	38	12VAC	Transformer(input)
			39	12VAC	

NOTE ①: Useful when use dual energy for stopping compressor
 Closed circuit: turn on
 Open circuit: turn off

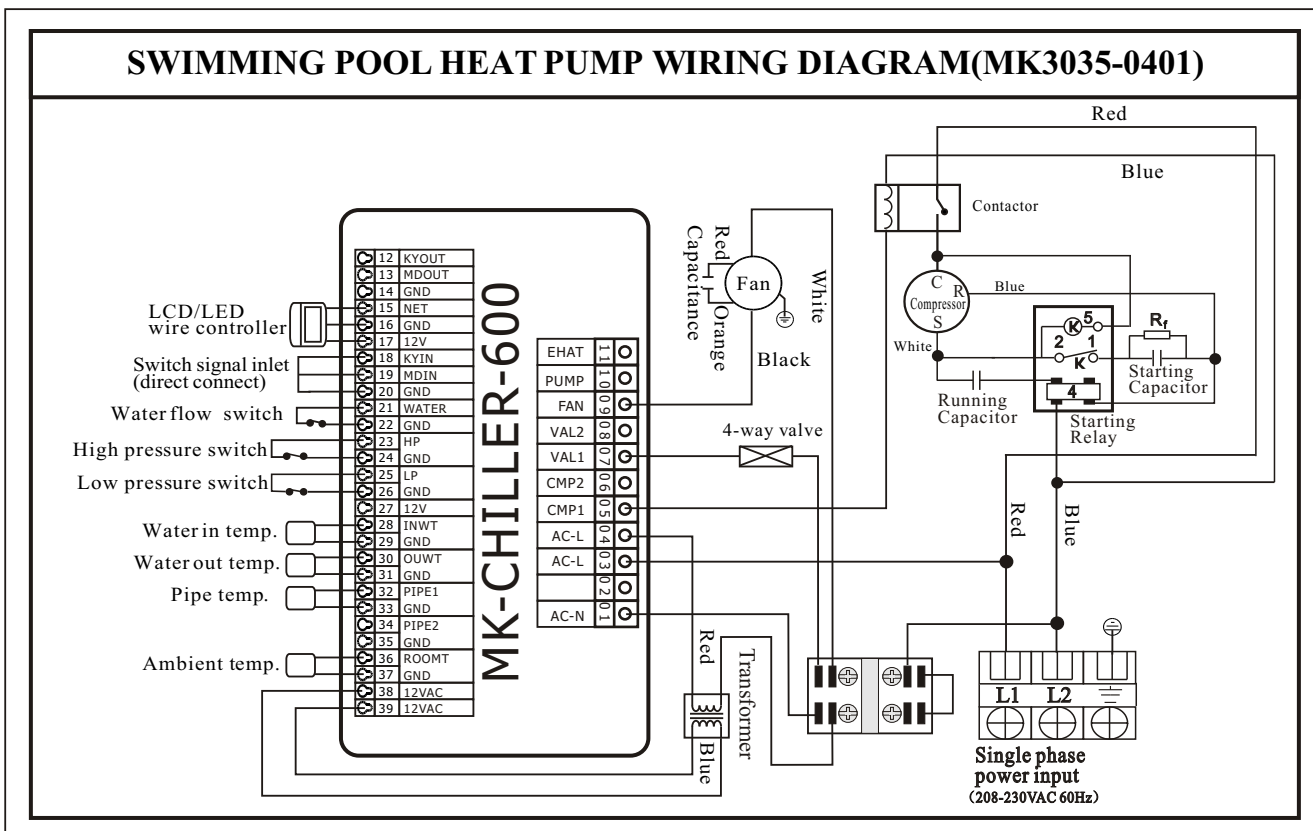
NOTE ②: Only effective when have not connected to the wire controller
 Closed circuit: heating mode.
 Open circuit: cooling mode

2. Wiring diagram

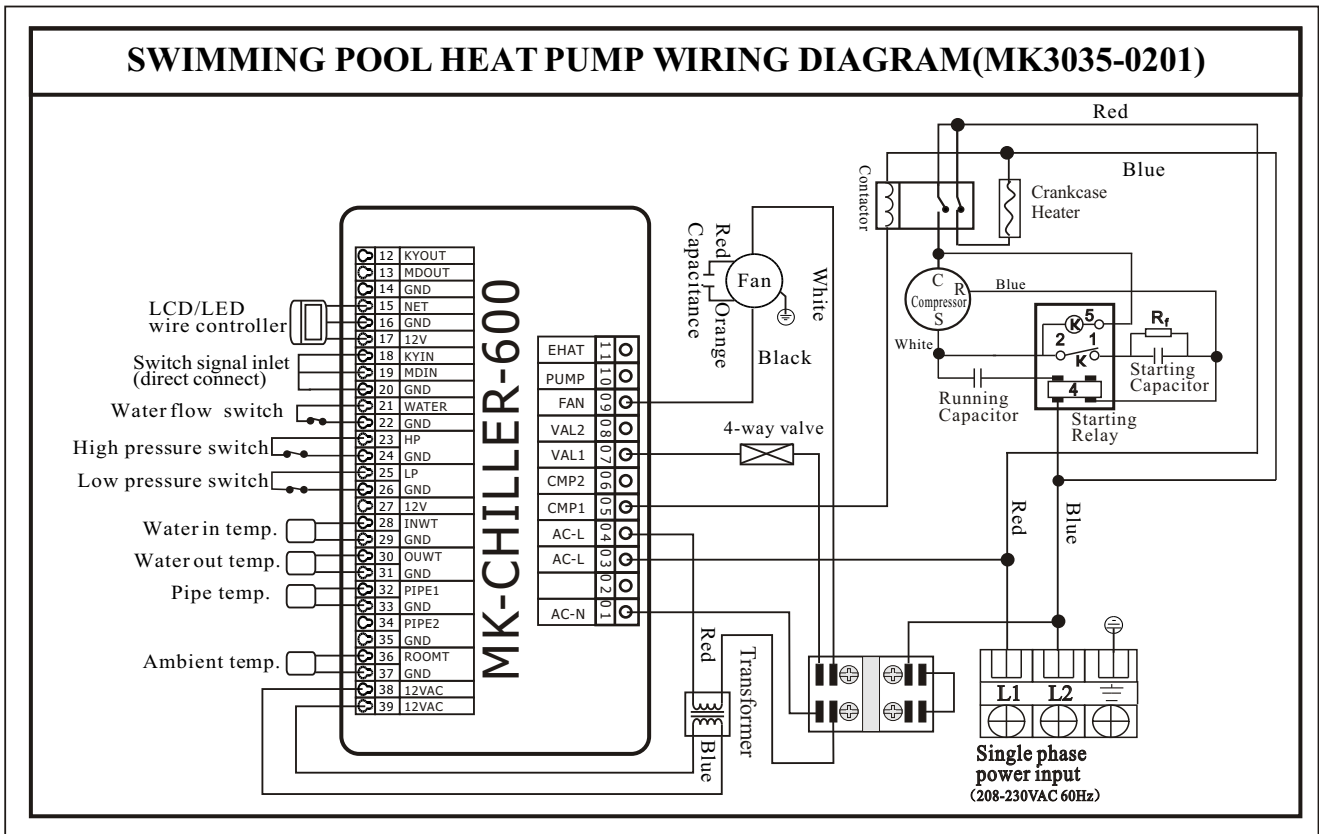
2.1 Wiring diagram MK3035-0101 effective for the mode of MALCRW020ZA~MALCRW030ZA.



2.2 Wiring diagram MK3035-0401 effective for the mode of MALCRW033ZB.



2.3 Wiring diagram MK3035-0201 effective for the mode of MALCRW040ZA.
MALCRW040ZB~MALCRW060ZB.



VIII. Appendix

startup sheet and procedure

Startup report

Customer informations	
Full name	
Address	
End date installation	
Customer informations	
Company's name	
Name of the technician (made the installation)	
Telephone	
Startup procedure after 3 minutes power on	
Model and serial number of the unit	
Real condition when making the startup procedure	
Outdoor temperature	
Indoor temperature	
Ajustment of flow switch	
Heating mode	
High pressure	
Low pressure	
Inlet temperature	
Outlet temperature	
Coil temperature	
Ampérage du compresseur	
Description of the installation	

Technician signature: _____ Date: _____

CODE:MK3035-01

SWIMMING POOL HEAT PUMP

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HCW system Warehouse
745 Rue Longpré, Sherbrooke, Quebec, J1G3H4
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