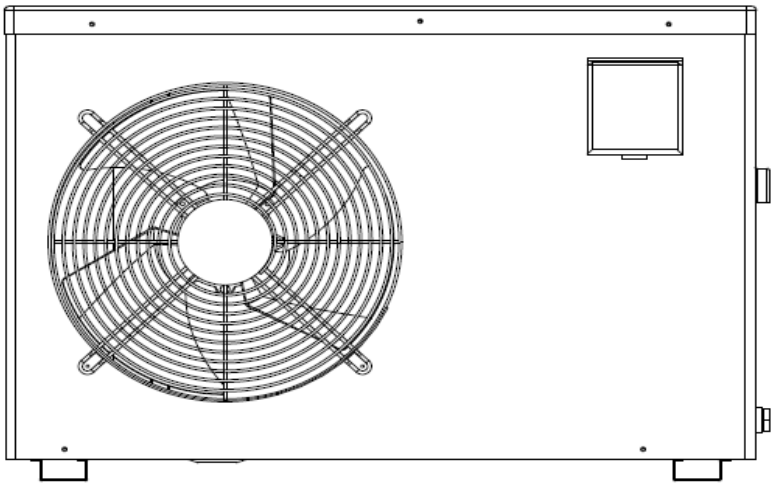
MIRACLE 341 FIXED SPEED

SWIMMING POOL HEAT PUMP

INSTALLATION MANUAL



READ THIS MANUAL CAREFULLY BEFORE OPERATING THE UNIT. DO NOT THROW IT AWAY.

RETAIN FOR FUTURE REFERENCE.

BEFORE OPERATING THE UNIT, ENSURE THE INSTALLATION HAS BEEN CARRIED OUT IN ACCORDANCE WITH THESE INSTRUCTIONS. IF IN DOUBT CONSULT YOUR LOCAL DEALER.

INTRODUCTION

This manual

This manual includes the necessary information to safely install and maintain your Heat Pump. Please read this manual carefully before you operate the unit.

The Heat Pump

The swimming pool heat pump is one of the most economical ways of heating your swimming pool efficiently. Using the free renewable energy from the air, it is over 4 to 5 times more efficient than traditional heating. The swimming pool heat pump extends your swimming season and gives you a truly comfortable pool for the designed swimming season.

- **ECO Friendly**
  The Heat Pump uses R32 Refrigerant which is ozone friendly, dramatically reducing Carbon Emissions.

- **Titanium heat exchanger**
  The advanced titanium heat exchanger guarantees a longer life span, free of corrosion. It can be used with all types of water treatment including chlorine, iodine, bromine and salt water.

- **Multiple functions**
  - Cooling and heating functions available
  - Auto operation, Auto-restart, Auto defrost
  - Auto timer on/off.
  - Wide ambient working range: 5°C to 43°C

- **Reliable operation**
  The Heat Pump has several built-in safety features, which include insufficient water flow protection, high/low pressure protection, overload protection and compressor protection.

- **Self-diagnosis**
  When there is malfunction, the swimming pool heat pump will make self-diagnosis by displaying error code on the control panel. To identify the problem, please refer to ERROR CODES pages in this manual.

SAFETY INSTRUCTIONS

To prevent injury to the user, other people or damage to property, the following instructions must be followed.

Install the unit only when it complies with local regulations, by-laws and standards. Check the main voltage and frequency. This unit must be earthed and have a supply voltage of 380V/3/50HZ

The following safety precautions should always be taken into account:

- Be sure to read the following WARNING before installing the unit.
- After reading these instructions retain for future reference.

⚠ WARNING

Installing the Unit.
Incorrect installation could cause injury due to fire, electric shock or water damage. If in doubt consult your local dealer or a qualified installer.

Securing the Unit.
The unit should be located on a solid, level, horizontal surface and securely fixed. Ensure free air-flow to all sides of the unit.

Electrical Connections.
Ensure the correct sized Circuit Breakers, isolators and cables are used. All terminals should be tightly secured and not prone to stress.

This unit must be earthed.

Materials.
To prevent fire, electric shock and other hazards all materials should be suitable for the specific use of this unit.

Never use an extension cable to connect the unit to the electric power supply.
If there is no suitable earthed supply available, have one installed by a qualified electrician.

Do not move/repair the unit yourself.
Before carrying out any maintenance, service or repair work, the product must be isolated from the mains electrical supply. To prevent possible injury, only qualified engineers should carry out these works.

⚠ CAUTION

Do not install the unit in a place where there is a chance of flammable gas leaks.
If there is a gas leak and gas accumulates in the area surrounding the unit, it could cause an explosion.

Water Connections.
All plumbing connections should be carried out as per the instructions in this manual. Failure to do so could result in water damage to property.

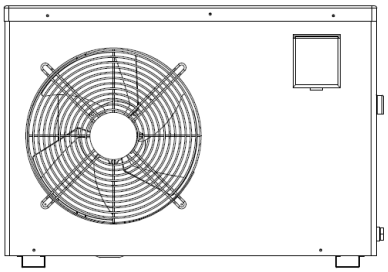
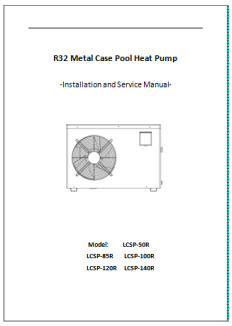
Cleaning the Unit.
To prevent injury always shut the power 'OFF' when cleaning or servicing the unit.

Error Codes.
If an error code occurs or you can smell burning, isolate the unit immediately and call your local installer.

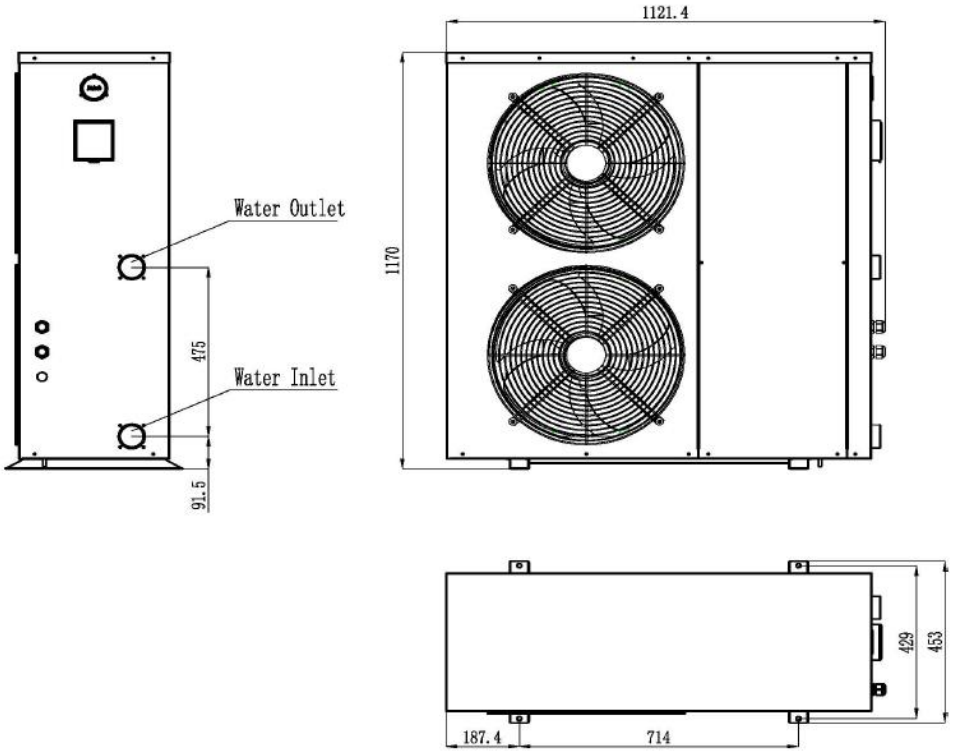
Avoid contact with the fan when running as this will cause serious injury.

CONTENTS

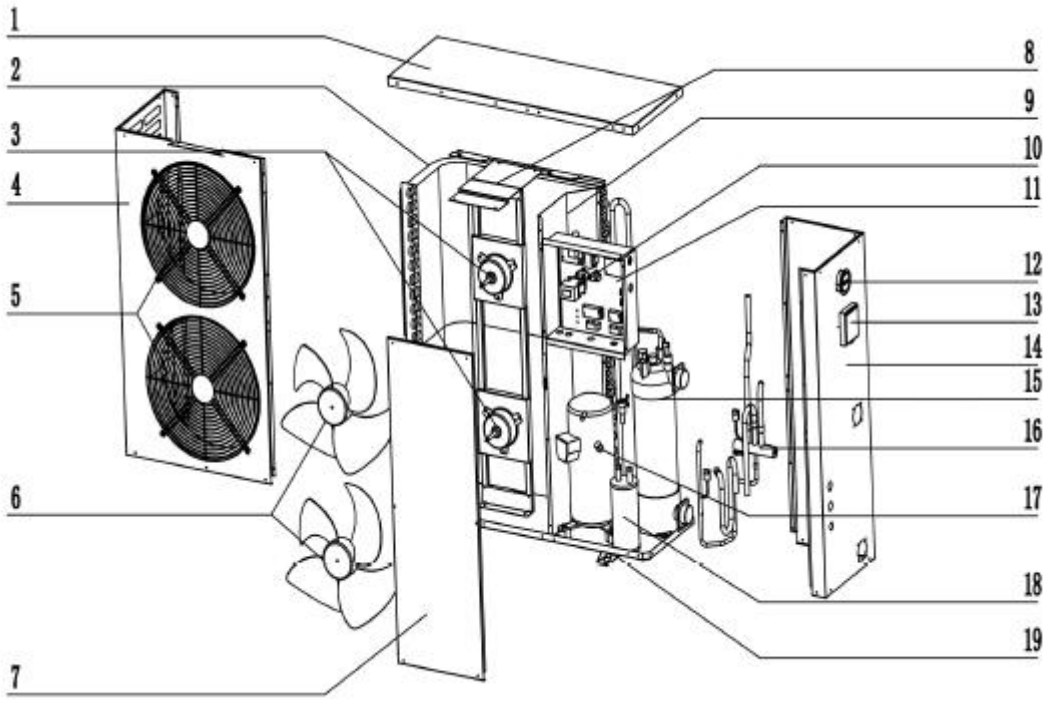
Before starting the installation, please make sure that all items are found inside the box.

The Unit Box		
Item	**Image**	**Quantity**
Swimming pool heat pump		1
Operation and Installation Manual		1
Accessories		1(Set)

OVERVIEW OF THE UNIT



EXPLODED VIEW



1 Top cover	11 Control box
2 Evaporator	12 Pressure gauge
3 Fan motor	13 Wire controller
4 Left-Front panel	14 Right panel
5 Guide ring	15 Tatinium heat exchanger
6 Fan blade	16 Four way valve
7 Front panel	17 compressor
8 Fan motor bracket	18 Liquid separator
9 Middle panel	19 Chassis
10 AC contactor	

INSTALLATION

Installation guidelines

The following information is for guidance only.

Locating the Unit

The unit should be located on a solid and level surface. Ensure the heat pump has sufficient air flow and free air space around it, contact Solarwise if unsure (07) 3209 5466.
Ensure adequate access to the controller and for maintenance purposes.

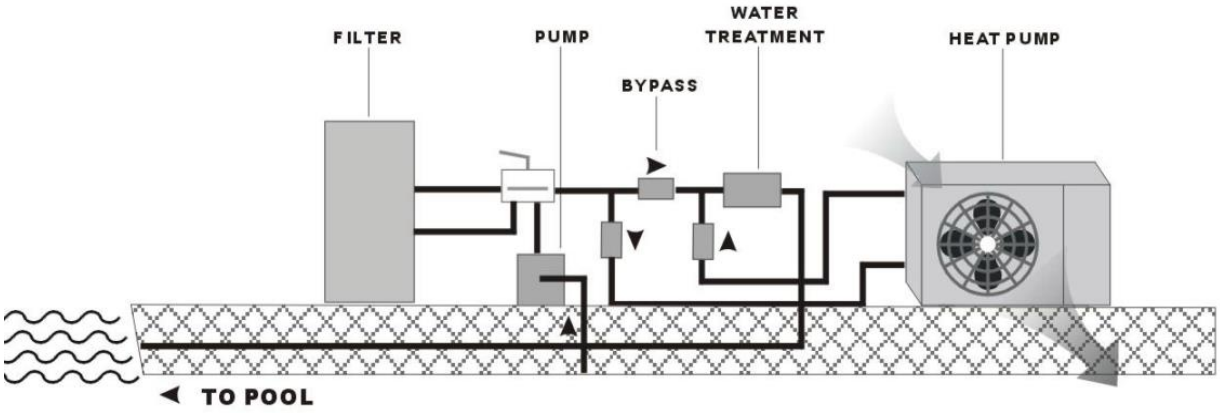
Precautions

--Avoid locating the unit close to bedrooms or other noise sensitive areas.
--Avoid a location which could create vibration i.e. secured to a solid wall.
--Try to avoid placing the unit under a tree or exposed to extreme conditions.

Water connection

The heat pump is connected to a filtration circuit or separate provisions with a by-pass fitted to the inlet and outlet pipe work of the heat pump.
The by-pass generally consists of 2way and/or 3way valves which makes it possible to balance the water flow which passes through the heat pump and to isolate the heat pump completely for any maintenance work, without cutting the flow of filtered water.

The diagram below is an example of a retro-fit system



If your installation is equipped with a water treatment system such as a cell or injection port, the by-pass must be installed before the water treatment, with a non-return valve between the by-pass and water treatment system if required, refer Solarwise.

Electrical connection

The electrical supply must correspond to that indicated on the appliance.
All supply cables have to be sized according to the appliance power and installation requirements.

Please refer to below table:

Heat Pump Model	**Cable Size**
Miracle 341	5x6mm^2

The above are an indication only. Please refer to a qualified Electrician if in doubt.

Use the cable glands and grommets provided inside the heat pump to secure and route the supply cables.

Trial Running

After connecting the unit to the pool system, ensure your installation is complete, with a suitable by-pass and electrical connections by a qualified engineer.

Be sure that:

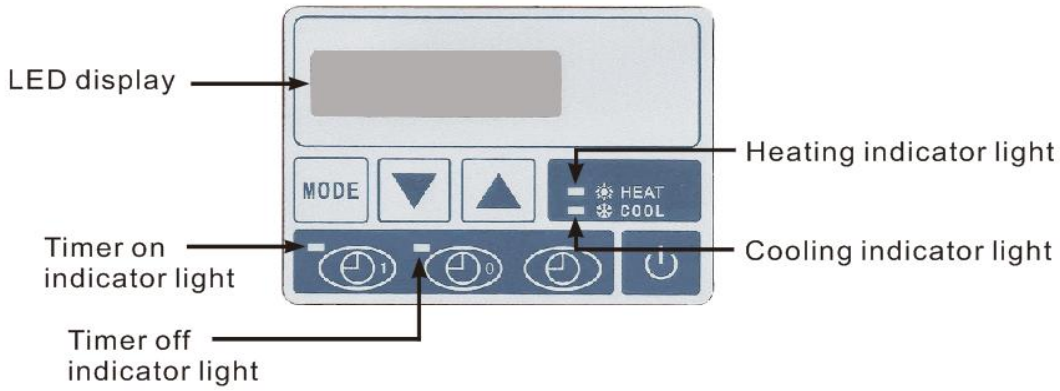
1) Appliance is horizontal and on a firm base.
2) Water system has no leaks.
3) Electrical Installation is compliant with all local regulations and standards.
4) The installation requirements described previously have been strictly adhered to.

ATTENTION: THE HEAT PUMP ONLY OPERATES WHEN WATER FLOW IS PRESENT.

You can start up the heat pump following the procedure below:

- Open by-pass valves
- Start pool system pump
- Turn on pool heat pump
- Set controller

Operation of wire controller



Button	Button name	Button Function
	ON/OFF	Press this button to turn ON/OFF the unit or In other settings, press this key to return to the main interface
	MODE	Press this button to check unit status, press five seconds to check the parameter value.
	UP	Press this button to select the upward option or increase the parameter value.
	DOWN	Press this button to select the downward option or decrease the parameter value.
	TIMER ON	Press 5 seconds this button to set timer-on.
	TIMER OFF	Press 5 seconds this button to set timer-off.
	CLOCK	Press 5 seconds this button to set clock or system time, In the clock key setting interface, press this key to cancel the timing setting

1. Main interface display instructions:

☐ <When shutting down: the main interface displays the clock;

☐ <When starting up: the main interface displays the water temperature;

☐ < In heating mode:  the indicator is on;

☐ <In cooling mode:  the indicator light is on;

☐<When in automatic mode:  and  indicator lights at the same time;

2. Parameter checking and adjustment

User parameter query and setting (Can be set when unit on or off)

In the main interface, press and hold the “MODE” key for 5 seconds to enter the user parameter query interface, and only the parameter number is displayed; press the “MODE”” key to enter the current user parameter viewing / setting interface;

In the parameter view / setting interface, press the "▲" key or "▼" key to modify the current user parameter value, and then press the "MODE" key again to return to the query status;

In the user parameter query or user parameter setting interface, if there is no key operation for 20 seconds, it will automatically exit the user parameter query interface or user parameter setting interface and return to the main interface; press the power button to return to the main interface.

3. MODE selection

Press and hold “▲” key for 5 seconds to select mode (Heating or cooling).
Automatic mode is not recommended.

4. ℉/℃ selection

Press “CLOCK” KEY + “ON/OFF” key together for 5s to select Fahrenheit or Celsius

5. Forced defrost

In the heating state, press and hold the "▼" key simultaneously for 5 seconds to enter the forced defrost; (any coil temperature must be lower than the exit defrost temperature to enter)

Press and hold the "ON/OFF" key for a long time to exit the forced defrosting completely after turning off the power;

6. Timer setting

On the main interface, press the “Timer On” key for 5 seconds to enter the timer on setting interface;

After entering the time setting interface, the digits of the hour portion of the time setting will flash. At this time, press the “▲” or “▼” key to set the time of the time setting.

After setting the hourly part of the scheduled power-on, press the “Timer On” key again, the number representing the minute part of the scheduled power-on time flashes. At this time, press the “▲” key or “▼” key to start the timer Minutes to set;

After setting the minutes for the timer to be turned on, press the “Timer On” button again to confirm the currently set time for turning on and off the machine and return to the main interface;

On the main interface, press the “Timer Off” key for 5 seconds to enter the timed off time setting interface. The setting method is the same as the timed on time setting method;

When the timing on and off time is set, the indicator on the top left corner of the timing on and key lights up;

In the timer setting interface, press the “Clock” key once to cancel the on / off timing of the segment;

In the timing interface, if there is no key operation for 20 seconds in a row, confirm the currently set timing time and return to the main interface; (memory after power failure after timing)

In the timing interface, press the "ON/OFF" key once to confirm the currently set timing time and return to the main interface;

Parameter list

Press and hold Mode key for 5s, enter into parameter interface

Parameter	Parameter meaning	Setting range	Default
L0	Differential setting	1℃ ~ 18℃	5℃
L1	Heating temperature setting	20℃ ~ Parameter F0	40℃
L2	Cooling temperature setting	8℃ ~ 30℃	12℃
L3	Automatic mode temperature setting	8℃ ~ 参数 F0	40℃
L26	Defrosting cycle setting	20min ~ 90min	45min
L27	Enter defrosting coil temperature setting	-15℃ ~ -1℃	-7℃
L28	Longest defrosting setting	5min ~ 20min	8min
L29	Exit defrosting temperature setting	1℃ ~ 40℃	13℃
L30	Temperature difference of Enter defrosting ambient temp and coil temp	0℃ ~ 30℃	10℃
L32	Water pump mode(0 mean reach temperature water pump stop/ reach temperature water pump keep running)	0/1	1

Error code list

Code	Failure	Possible reasons	Remedy
E01	Exhaust temperature failure	1、Exhaust sensor is damaged, disconnected or poorly inserted；2、PCB failure	1、Replace the exhaust sensor or plug in the sensor again 2、change PCB
E05	Coil temperature failure	1、Coil sensor damaged, disconnected or poorly plugged；2、PCB failure	1.Replace coil sensor and plug in sensor again 2.change PCB
E09	Suction temperature failure	1.The suction sensor is damaged, disconnected or poorly inserted；2.PCB failure	1、Replace the suction sensor and plug in the sensor again ; 2.change PCB
E18	Water outlet temperature failure	1.The water outlet sensor is damaged, disconnected or poorly connected；2.PCB failure	1.Plug in the sensor again and replace the water outlet sensor；2.change PCB
E19	Water inlet temperature failure	1.Water inlet sensor is damaged, disconnected or poorly inserted；2.PCB failure	1.Plug in the sensor again, replace the water inlet sensor; 2.change PCB
E21	Communication failure	1.Communication line disconnected ;2.wire controller or PCB failure	1 Replace the communication line; 2.Replace PCB or wire controller
E22	Ambient temperature failure	1.The Ambient temperature sensor is damaged, disconnected or poorly inserted；2.PCB failure	1.Reconnect the sensor and replace the ambient temperature sensor 2.change PCB
P01	Flow protection	1.water flow rate is not enough 2.flow switch failure 3.PCB failure	1.check water flow, make sure enough water flow;2change water flow switch 3、change PCB
P02	High pressure protection	1 High voltage switch damaged; 2.Too much refrigerant; 3.Wrong wire connection;4、PCB failure	1、Replace the high pressure switch 2、Discharge proper amount of refrigerant 3、Rewiring .4、change PCB
P06	Low pressure protection	1.Low voltage switch damaged; 2. Refrigerant not enough; 3. Wrong wire connection; 4.PCB failure	1.Replace the low-pressure switch 2. Charge appropriate amount of refrigerant 3、Rewiring ; 4、change PCB

P10	Phase sequence protection	IN7 Not short circuited	Short IN7 to Public port
P11	Exhaust over temperature protection	1. Excessive refrigerant; 2. Exhaust sensor damaged	1. Discharge proper amount of refrigerant; 2.replace Exhaust sensor
P15	Protection against excessive water temperature difference between inlet and outlet	1. The inlet and outlet water sensors are damaged and fail. 2. The temperature sensing head of the inlet and outlet water sensors is not inserted into the blind tube of the titanium gun	1.change new water inlet/outlet sensor 2、The sensor temperature sensing head is inserted into the corresponding inlet and outlet water temperature sensing blind pipe
P16	Refrigeration subcooling protection	Water outlet sensor failure	Change new water outlet sensor
P17	Standby anti freezing protection	1.Heat pump anti freezing protection 2.Water outlet and ambient temperature sensor failure	1.Heat pump normal function; 2.change new water outlet and ambient temperature sensor
P23	Low water temperature protection during defrosting	Heat pump defrost function	No need to exclude

Temperature parameter table

In the main interface, click “MODE” key to enter the user parameter query interface, press the "▲" key or "▼" key to check the parameter value, press “ON/OFF” back to main interface.

Code	Name	Range
o 1	Tank temperature	-31℃～99℃
o 2	Water inlet temperature	-31℃～99℃
o 3	Water outlet temperature	-31℃～99℃
o 4	Ambient temperature	-31℃～99℃
o 5	ignore	-31℃～99℃
A 1	Exhaust gas temperature	0℃～150℃
A 2	Coil temperature	-31℃～99℃
A 3	Return air temperature	-31℃～99℃
A 4 and A5	Ignore	

MAINTENANCE

To protect the paintwork, avoid leaning or putting objects on the shell. External Heat Pump parts can be wiped with a damp cloth and domestic cleaner. (Warning: Never use cleaning agents containing sand, soda, acid or chloride as these can damage the surfaces.)

To prevent blockages in the titanium heat exchanger, ensure that the system incorporates a water and filter treatment facility. In the event of a problem occurring due to contamination, the system should be cleaned as described below. (Warning: the fins on the finned tube heat exchanger are sharp!).

Cleaning the Heat Exchanger and Pipework
Contamination in the pipes and heat exchanger can reduce the performance of the heat pumps' titanium heat exchanger. If this is the case, the pipe system and heat exchanger must be cleaned by a technician.
Use only pressurized drinking water for cleaning.

Cleaning the air system
The finned heat exchanger, fan and condensate outflow should be clear of all obstructions (leaves, twigs, etc.) before each new heating season. These can be manually removed using compressed air or by flushing with clean water.
It may be necessary to remove the unit cover and air inlet grid first.

Attention: Before opening the unit, ensure that all electrical supplies are isolated.

To prevent the evaporator and the condensate tray from being damaged, do not use hard or sharp objects for cleaning.
Under extreme weather conditions (e.g. snow drifts), ice may form on the air intake and exhaust air outlet grids. If this happens, the ice must be removed in the vicinity of the air intake and exhaust air outlet grids to ensure that the minimum air flow rate is maintained.

Winter Shutdown.
To prevent frost damage to the unit when not in use the Heat Pump should be drained of all water. Failing this another form of frost protection should be considered and actioned.

Attention: The warranty does not cover damage caused by inadequate frost protection measures during the winter.

TROUBLESHOOTING

This section provides useful information for diagnosing and correcting certain problems which may occur. Before starting the troubleshooting procedure, carry out a thorough visual inspection of the unit and look for obvious defects such as loose connections or defective wiring.
Before contacting your local dealer, read this chapter carefully. It could save you time and money.

WHEN CARRYING OUT ANY MAINTENANCE ENSURE ADEQUATE PRECAUTIONS ARE TAKEN TO PREVENT AN ELECTRIC SHOCK.

The hints below are for guidance only. If you cannot solve the problem, consult your installer/local dealer.

The Heat pump will not run.
Please check:

- There is a supply voltage (tripped fuse, power failure).
- The switch on the wired controller is switched on, and whether the correct set point temperature has been set.

The set temperature level cannot be reached.
Please check whether:

- The permissible operating conditions for the heat pump have been adhered to (air temperatures too high or too low).
- The air inlet or outlet area is blocked, restricted or very dirty.
- There are closed valves or stop-cocks in the water pipes.

The timer works but the programmed actions are executed at the wrong time (e.g. 1 hour too late or too early).
Please check whether:

- The clock and the day of the week are set correctly, adjust if necessary.

If you cannot correct the fault yourself, please contact your after-sales service technician. Work on the heat pump may only be carried out by authorized and qualified after-sales service technicians.

ENVIRONMENTAL INFORMATION

This equipment contains fluorinated greenhouse gases covered by the Kyoto Protocol. It should only be serviced or dismantled by professional trained engineers.

This equipment contains R32 refrigerant in the amount as stated in the specification. Do not vent R32 into the atmosphere: R32, is a fluorinated greenhouse gas with a Global Warming Potential (GWP) = 675.

DISPOSAL REQUIREMENTS

Dismantling of the unit, treatment of the refrigerant, of oil and of other parts must be carried out in accordance with relevant local and national legislation.

Your product is marked with this symbol. This means that electrical and electronic products should not be mixed with unsorted household waste.

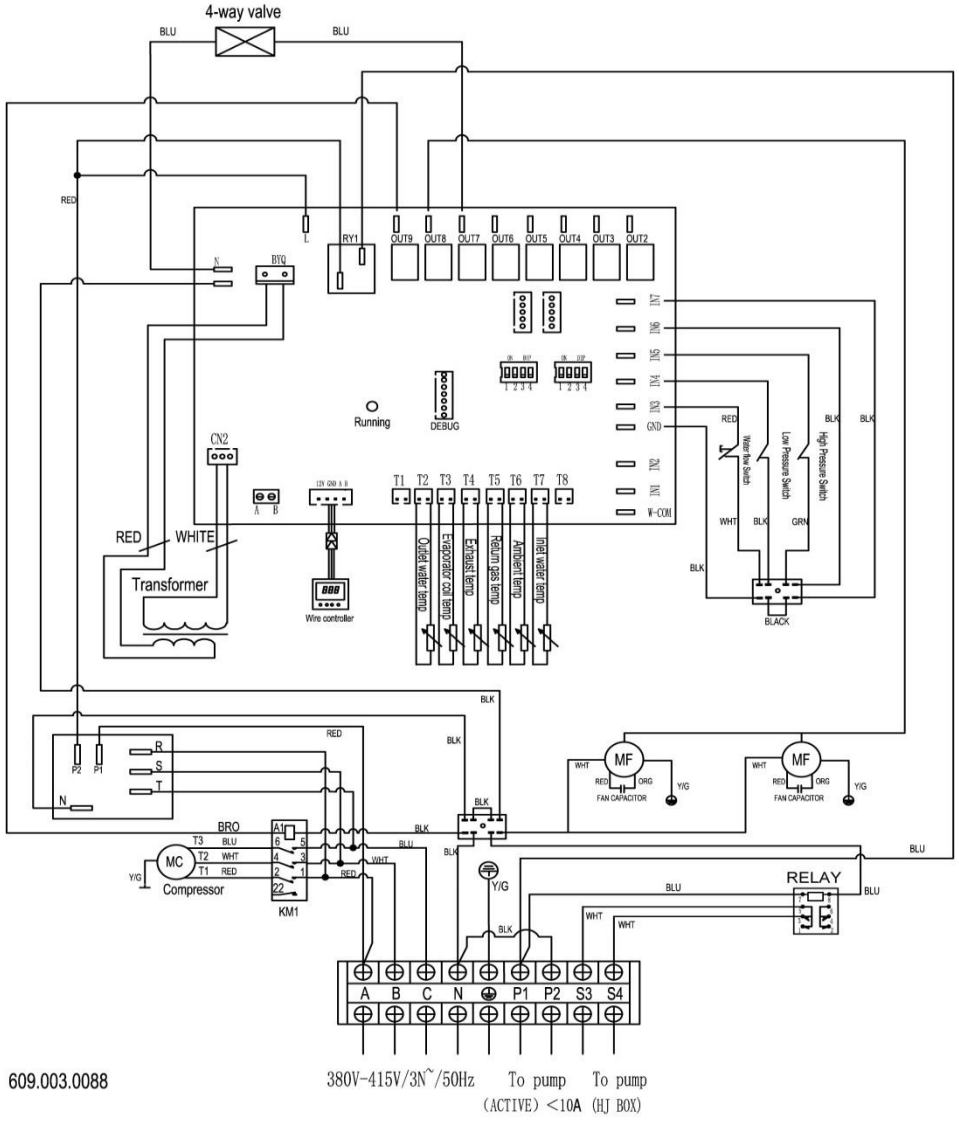
Do not try to dismantle the system yourself: the dismantling of the system, treatment of the refrigerant, of oil and other parts must be done by a qualified installer in accordance with relevant local and national legislation.

Units must be treated at a specialized treatment facility for re-use, recycling and recovery. By ensuring that this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health. Please contact the installer or local authority for more information.

WIRING DIAGRAM

Please refer to the wiring diagram on the electric box.

Models: Miracle 341



TECHNICAL SPECIFICATIONS

Model		**Miracle 341**
Ambient 24℃ Water 26℃ in, 28℃ out	capacity（kW)	25
	power input(kW)	4.16
	COP	6.01
Suggested Working Ambient Temperature	℃	+5~43℃
Power Supply		380V/3/50Hz
Max Power Input	kW	5.42
Running Current	A	7.08
Compressor type		Scroll
Compressor QTY		1
Fan Q'ty		2
Fan direction		Horizontal
Water flow	m3/h	9.81
Water pressure drop(Mpa)	Mpa	19
Refrigerant Type		R410a
Min Pressure/Max Pressure	Mpa	1.5/4.15Mpa
Unit Net Dimensions(L*W*H)	mm	1087*453*1170
Net Weight	kg	45
Sound Pressure 1m	dB(A)	<52
Sound Pressure 4m	dB(A)	<48
Sound Pressure 10m	dB(A)	<34
Water proof level		IPX 4