

# TRUE ™ BLUE

## ELEMENT

### SWIMMING POOL HEAT PUMP UNIT Installation & Instruction Manual



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CAUTION



READ  
MANUAL



The precautions listed here are divided into the following types. They are quite important, so be sure to follow them carefully. Meanings of DANGER, WARNING, CAUTION and NOTE symbols.




**FLAMMABLE WARNING**

1. The appliance shall be stored in a room without continuously operating ignition sources.
2. Do not pierce or burn.
3. Appliance filled with flammable gas R32. For repairs, strictly follow manufacturer's instructions only. Or contact your nearest authorized Service Centre. Any repairs carried out by unqualified personnel may be dangerous.
4. Be aware that refrigerants not contain odour.
5. Read specialist's manual.




**WARNING**

1. The installation of unit must be flat and firm.
2. Do not install the unit in a location where there may be flammable gas.
3. Make sure the power supply to be consistent with the nameplate's remark.
4. The outlet of condensed water must be kept unblocked.
5. Do not clean the unit while power is on. Turn off power before cleaning the unit.
6. Stop operating the unit once there is a problem or fault code.
7. Don't put your fingers into fan and evaporator.



**WINTER ANTIFREEZE WARNING**

To prevent the freezing of heat exchanger or water pipes, the power of unit can not be shutoff in winter when the temperature is lower than 2 °C. All the water in the unit and plumbing system must be drained out if the unit will be turned off for a long time.



**HAZARDOUS VOLTAGE!**

Turn off power supply before connecting the power cord or maintaining the heat pump. If not, it may result in injuries from electric shock.

## After Sales Service



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**The unit can only be repaired by a qualified electrician or installer.**

# 1. PREFACE

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- In order to provide our customers with quality, reliability and versatility, this product has been made to strict production standards. This manual includes all the necessary information about installation, diagnosis, discharging and maintenance. Please read this manual carefully before you open or maintain the unit. In no event will the manufacturer/ distributor be liable to the original or subsequent owners either directly or as an indemnitor or any direct, incidental or consequential loss, damage or economic loss, damage or injury to any person or property arising out of or relating to the equipment or any parts supplied in the equipment, except as expressly stated herein. It is vital that the instructions within this manual are adhered to at all times. The unit must be installed by a qualified personnel.
- The unit can only be repaired by a qualified electrician or installer. Maintenance and operation must be carried out according to the recommended time and frequency, as stated in this manual.
- Use genuine standard spare parts only. Failure to comply with these recommendations will void the warranty.
- Swimming Pool Heat Pump Unit heats the swimming pool water and keeps the temperature constant.

Element heat pumps have the following characteristics:

## 1 Durable

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

## 2 Installation flexibility

The unit can be installed outdoors.

## 3 Quiet operation

The unit comprises an efficient rotary/ scroll compressor and a low-noise fan motor, which guarantees its quiet operation.

## 4 Advanced controlling

The unit includes micro-computer controlling, allowing all operation parameters to be set. Operation status can be displayed on the LCD wire controller.

## ● WARNING

Do not use means to accelerate the defrosting process or to clean, Other than those recommended by the manufacturer.

The appliance shall not be installed near continuously operating ignition sources (for example: open flames, an Operating gas appliance or an operating electric heater.)

Do not pierce or burn.

Be aware that refrigerants may not contain an odour,

Appliance should be installed by a professional outside in an area that allows appropriate ventilation

If unsure of installation position you should contact place of purchase.



# 1. PREFACE

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The appliance must be installed by licensed and qualified personnel

The appliance shall be installed in accordance with national wiring regulations

1. The unit can only be repaired by an electrician or qualified installer.
2. This appliance is not intended for use by persons (including children) with reduced physical sensory or mental capabilities, or lack of experience and knowledge.  
Children should be supervised to ensure that they do not play with the appliance.
3. Please make sure that the unit and power connection have good earthing, otherwise may cause electrical shock.
4. If the supply cord is damaged, it must be replaced by the manufacturer or our service agent or similarly qualified person in order to avoid a hazard.
5. Directive 2002/96/EC (WEEE):  
The symbol depicting a crossed-out waste bin that is underneath the appliance indicates that this product, at the end of its useful life, must be handled separately from domestic waste, must be taken to a recycling centre for electric and electronic devices.
6. Directive 2002/95/EC (RoHs): This product is compliant with directive 2002/95/EC (RoHs) concerning restrictions for the use of harmful substances in electric and electronic devices.
7. The unit CANNOT be installed near the flammable gas. Once there is any leakage of the gas, fire can occur.
8. Make sure that there is circuit breaker installed by an electrician for the unit, lack of circuit breaker can lead to electrical shock or fire. The circuit breaker must correspond with the size of heat pump purchased. Some models require a separate circuit, power point and Residual Current Device (RCD) with a rated residual operating current not exceeding 30mA. **ALL ELECTRICAL WORK MUST BE CARRIED OUT BY A QUALIFIED ELECTRICIAN**
9. The heat pump located inside the unit is equipped with an over-load protection system. It does not allow for the unit to start for at least 3 minutes from a previous stoppage.
10. Installation must be performed in accordance by an authorised person only.
11. USE SUPPLY WIRES SUITABLE FOR 75 .
12. Caution: Single wall heat exchanger, not suitable for potable water connection.

## 2.SPECIFICATION

### 2.1 Performance data for Element Swimming Pool Heat Pump Unit

\*\*\* REFRIGERANT : R32 Flammability class is A2L according to ISO817

UNIT		Element 11.5kw	Element 15.3kW
Heating capacity (27/26℃)	kW	2.3-11.5	6.281-15.3
	Btu/h	7820-39100	21355-52020
Heating Power Input	kW	0.21-1.95	0.732-2.689
COP		10.9-5.9	8.6-5.6
Heating capacity (15/26℃)	kW	1.8-8.6	3.701-10.491
	Btu/h	6120-29240	12583-35669
Heating Power Input	kW	0.28-1.91	0.806-2.577
COP		6.4-4.5	4.6-4.1
Power Supply		220-240V~/50Hz	220-240V~/50Hz
Compressor Quantity		1	1
Compressor		Rotary	Rotary
Fan Number		1	1
Noise	dB(A)	41-50	46-54
Water Connection	mm	50	50
Water Flow Volume	m <sup>3</sup> /h	3.3	6.0
Water Pressure Drop(max)	kPa	3.8	4.8
Unit Net Dimensions(L/W/H)	mm	See the drawing of the units	
Unit Ship Dimensions(L/W/H)	mm	See package label	
Net Weight	kg	see nameplate	
Shipping Weight	kg	see package label	

Heating: Outdoor air temp: 27℃/26℃, Inlet water temp:26℃

Outdoor air temp: 15℃/26℃, Inlet water temp:26℃

Operating range: Ambient temperature:0-43 ℃

Water temperature:9-40 ℃

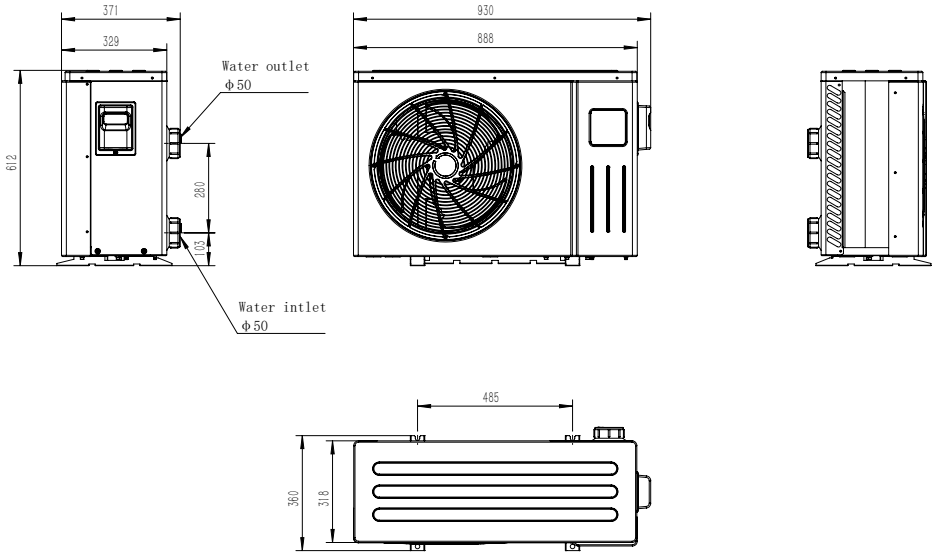
Maximum operating water pressure 0.5Ma

Maximum Air Flow 2000m3 per hour

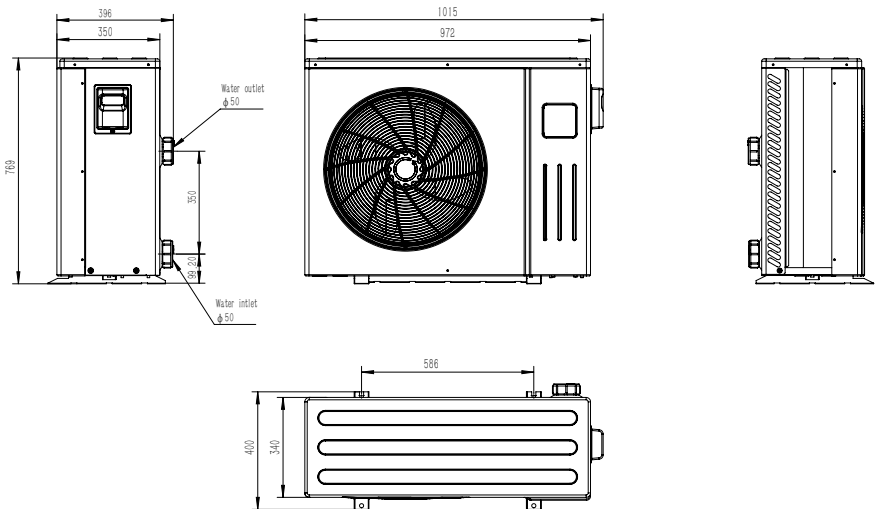
# 2.SPECIFICATION

## 2.2 The dimensions for Swimming Pool Heat Pump Unit UNIT:Element 11.5kw

unit: mm



## UNIT:Element15.3kW



# 3. INSTALLATION AND CONNECTION

**The heat pump must be installed by a licensed and qualified personnel**

## 3.1 Element Swimming Pool Heat Pump Location

The unit will perform well in any outdoor location provided that the following three factors are presented:

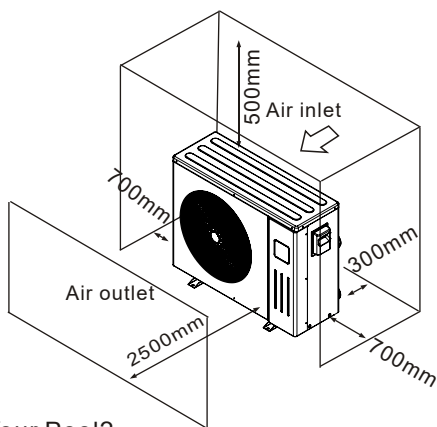
1. Fresh Air -
2. Electricity -
3. Pool filter piping

The unit may be installed virtually anywhere outdoors. For indoor pools please consult the supplier.

DO NOT place the unit in an enclosed area with a limited air volume, where the units discharge air will be re-circulated.

DO NOT place the unit to shrubs which can block air inlet. These locations deny the unit of a continuous source of fresh air which reduces its efficiency and may prevent adequate heat delivery.

- The installation of gas pipe-work shall be kept to a minimum. Pipe-work shall be protected from physical damage and shall not be installed in an unventilated space. Compliance with national gas regulations shall be observed. Mechanical connections shall be accessible for maintenance purposes. The maximum refrigerant charge amount: 11.5kw is 1500g, 15.3kw is 2100g. This data is the maximum charge of the compressor, but not recommended. Appliance should be charged according to our standard charge for the best performance out of the unit. The appliance shall be stored in a well-ventilated area. The appliance shall be stored in a room without continuously operating open flame (for example an operating gas appliance) and ignition sources (for example an operating electric heater).



## 3.2 How Close To Your Pool?

Normally, the pool heat pump is installed within 7.5 metres of the pool. The longer the distance from the pool, the greater the heat loss from the piping. For the most part, the piping is buried. Therefore, the heat loss is minimal for runs of up to 15 metres (15 metres to and from the pump = 30 metres total), unless the ground is wet or the water table is high. A very rough estimate of heat loss per 30 metres is 0.6kW-hour, (2000BTU) for every 5 degrees difference in temperature between the pool water and the ground surrounding the pipe, which translates to about 3% to 5% increase in run time.



# 3. INSTALLATION AND CONNECTION

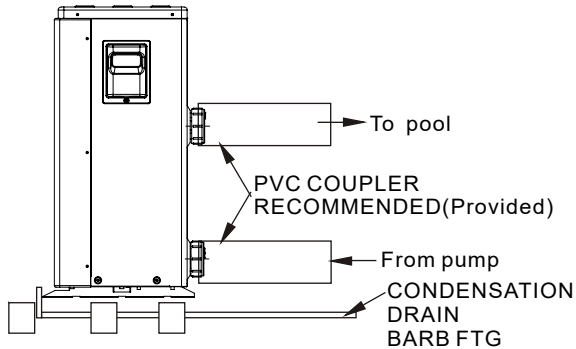
## 3.3 Element Swimming Pool Heat Pump Plumbing

The Swimming Pool Heat Pump's exclusive rated flow titanium heat exchanger requires no special plumbing arrangements except bypass (please set the flow rate according to the nameplate). The water pressure drop is less than 10kPa at maximum flow rate. Since there is no residual heat or flame temperatures, the unit does not need copper heat sink piping. PVC pipe can be run straight into the unit.

Location: Connect the unit in the pool pump discharge (return) line downstream of all filter and pool pumps, and upstream of any chlorinators, ozonators or chemical pumps.

Standard models have slip glue fittings which accept 32mm or 50 mm PVC pipe for connection to the pool or spa filtration piping. By using a 50NB to 40NB you can plumb 40NB

Give serious consideration to adding a quick coupler fitting at the unit inlet and outlet to allow easy draining of unit for winterizing and to provide easier access should servicing be required.



Condensation: Since the Heat pump cools down the air about 4 -5°C, water may condense on the fins of the horseshoe shaped evaporator. If the relative humidity is very high, this could be as much as several litres an hour. The water will run down the fins into the basepan and drain out through the barbed plastic condensation drain fitting on the side of the basepan. This fitting is designed to accept 20mm clear vinyl tubing which can be pushed on by hand and run to a suitable drain. It is easy to mistake the condensation for a water leak inside the unit.

NB: A quick way to verify that the water is condensation is to shut off the unit and keep the pool pump running. If the water stops running out of the basepan, it is condensation. AN EVEN QUICKER WAY IS to TEST THE DRAIN WATER FOR CHLORINE - if there is no chlorine present, then it's condensation.

## 3. INSTALLATION AND CONNECTION

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### 3.4 Element Swimming Pool Heat Pump Electrical Wiring by Electrician

NOTE: Although the unit heat exchanger is electrically isolated from the rest of the unit, it simply prevents the flow of electricity to or from the pool water. Grounding the unit is still required to protect you against short circuits inside the unit. Bonding is also required.

The unit has a separate molded-in junction box with a standard electrical conduit nipple already in place. Just remove the screws and the front panel, feed your supply lines in through the conduit nipple and wire-nut the electric supply wires to the three connections already in the junction box (four connections if three phase). To complete electrical hookup, connect Heat Pump by electrical conduit, UF cable or other suitable means as specified (as permitted by local electrical authorities) to a dedicated AC power supply branch circuit equipped with the proper circuit breaker, disconnect or time delay fuse protection.

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

### 3.5 Initial startup of the Unit

NOTE- In order for the unit to heat the pool or spa, the filter pump must be running to circulate water through the heat exchanger.

Start up Procedure - After installation is completed, you should follow these steps:

1. Turn on your filter pump. Check for water leaks and verify flow to and from the pool.
2. Turn on the electrical power supply to the unit, then press the key ON/OFF controller. It should start in several seconds.
3. After running a few minutes make sure the air leaving the top(side) of the unit is cooler (Between 5-10 °C)
4. With the unit operating turn the filter pump off. The unit should also turn off automatically.
5. Allow the unit and pool pump to run 24 hours per day until desired pool water temperature is reached. When the water-in temperature reaches this setting, the unit will slow down for a period of time, if the temperature is maintained for 45 minutes the unit will turn off. The unit will now automatically restart (as long as your pool pump is running) when the pool temperature drops more than 0.2 below set temperature.

Time Delay- The unit is equipped with a 3 minute built-in solid state restart delay included to protect control circuit components and to eliminate restart cycling and contactor chatter. This time delay will automatically restart the unit approximately 3 minutes after each control circuit interruption. Even a brief power interruption will activate the solid state 3 minute restart delay and prevent the unit from starting until the 5 minute countdown is completed.







## 4. Use and Operation Instructions

### 1. Main Interface display












### 2. Key and icon function instructions

#### 2.1 Key function instructions

Key symbols	Designation	Function
	Mode key	Press to switch the unit mode and timing setting.
	On-off key	Press to carry out startup, shutdown, cancel current operation and return to the last level of operation.
	Up key	Press to page up and increase variable value.
	Down key	Press to page down and decrease variable value.
	Setting key	Press to enter the setting interface and confirm saving.
	Scenario mode	Press to enter the scenario mode selection interface.

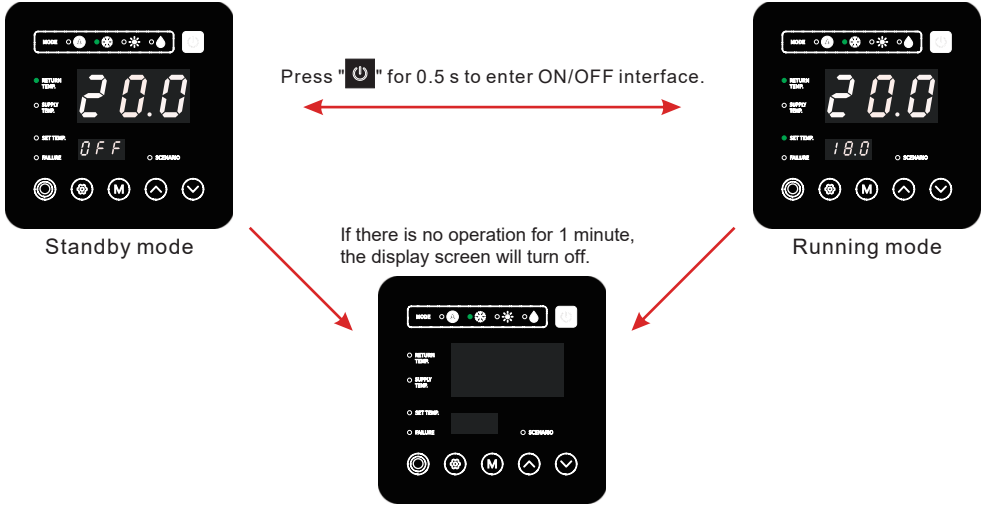
## 4. Use and Operation Instructions

### 2.2 Icon function instruction

Icon symbols	Designation	Function
	Cooling symbol	Displays during cooling (there is no limit to startup and shutdown, and it is optional when the unit is cooling-only unit or heating-and-cooling unit).
	Heating symbol	Displays during heating (there is no limit to startup and shutdown, and it is optional when the unit is a heating-only unit or heating-and-cooling unit ).
	Automatic symbol	Displays under the automatic mode (there is no limit to startup and shutdown, and it is optional when the unit is a heating-and-cooling unit ).
	Defrosting symbol	Displays during the defrosting process of the unit.
	Water outlet symbol	Illuminates when the auxiliary display area displays the water outlet temperature.
	Water inlet symbol	Illuminates when the main display area displays the water inlet temperature.
	Setting symbol	Illuminates when the parameter is adjustable.
	Fault symbol	Flashes in event of unit fault.
	Scenario symbol	Flashes in frequency with modulation mode selection interface and turns off when you return to the home screen.

# 4. Use and Operation Instructions

## 3. Startup and shutdown

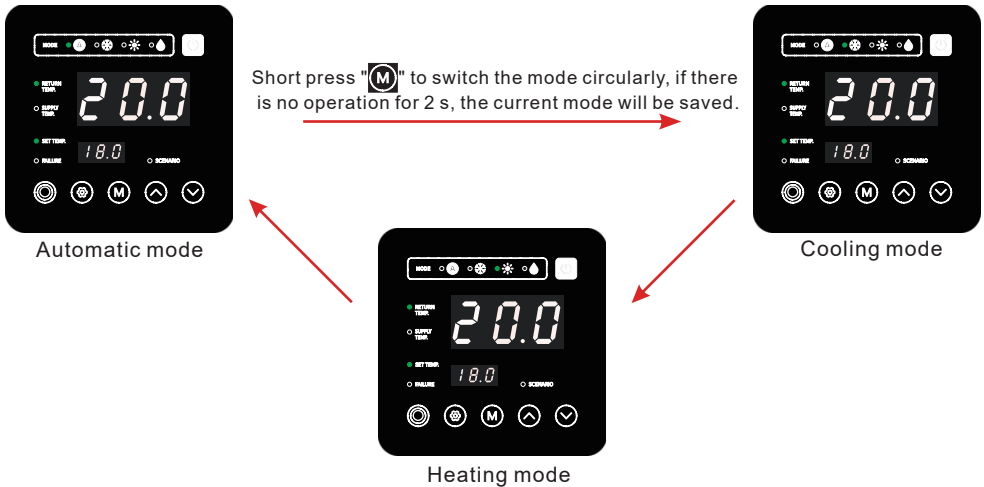


### Notes:

Startup and shutdown operation can only be conducted in the main interface.  
When it displays full screen off, click any key for returning to ON/OFF main interface.

## 4. Mode switch

Under the main interface, short press "M" to switch the unit among automatic, cooling and heating mode.



### Operation descriptions:

- 1). Mode switch operation can only be conducted in the main interface.
- 2). When the unit is in the defrosting state, the defrosting symbol is on, with the display interface as follows:

## 4. Use and Operation Instructions



After completing defrosting, the unit will be automatically switched to the heating / automatic mode (Keeping consistent with the mode before defrosting).



Notes:

During defrosting, mode switch is available. And when switching the mode, the unit will not work under a new mode until defrosting is completed.

## 5. Temperature setting




Short press " " or " " to enter temperature setting interface.




Short press " " or " " to increase or decrease target temperature.




Short press " " to return and save the setting.



Notes:

Under the temperature setting interface, if short press " ", the system will return to the main interface without any changes saved; If there is no operation for 5 seconds, the system will automatically memorise user's setting, and return to the main interface.

Remark:

Operation	Short press, long press "  " or "  " to change each time within 2s	Long press "  " or "  " for more than 2s to change each time
Range of temp. variation	0.5°C / 1°F	1°C / 1°F

# 4. Use and Operation Instructions

## 6. Timer Setting - ON/OFF



Keep long press "M" for 5 s.

Short press "▲" or "▼" to circularly display among parameter V03-V08.



Short press "⊗" to set hour digit.



Short press "⊗" to set minute digit.



Short press "⊗" to set whether to enable timed shutdown.



Short press "▲" or "▼" to adjust hour digit.



Short press "▲" or "▼" to adjust minute digit.



Short press "▲" or "▼" to adjust whether to enable timed shutdown.

Click "⊗" to save the settings, click "⏻" to exit without saving and return to the main interface.


Parameter number	Parameter meaning	Parameter range
V03	Hour selection of timing boot 1	0-23
V04	Minute selection of timing boot 1	0/10/20/30/40/50
V05	Hour selection of timed shutdown 1	0-23
V06	Minute selection of timed shutdown 1	0/10/20/30/40/50
V07	Whether to enable timed boot 1	0-unabled, 1-enabled
V08	Whether to enable timed shutdown 1	0-unabled, 1-enabled

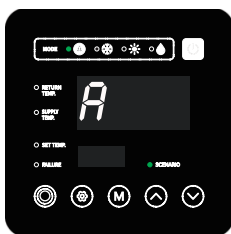
## 4. Use and Operation Instructions



### 7. Scenario mode

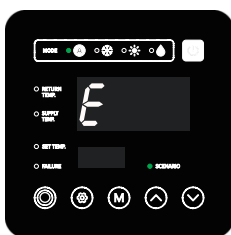
Under the main interface, press "" enter the scenario mode selection.  
The current mode flashes and the indicator light flashes.





Press "" to enter the scenario mode.



After entering the scenario mode selection, short press "" or "" to switch four modes: AUTO, BOOST, SMART and ECO.



After selecting the scenario mode, press "" or no operation for 5s to save and return to the main interface (The indicator light will be off).

Under any mode selection, click "" to exit without saving and return to the main interface.



# 4. Use and Operation Instructions

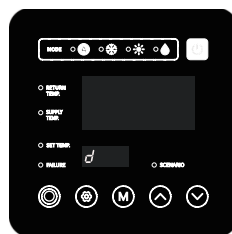
## 8. Clock setting



Press "⊗" to enter password setting interface.



Press "▲" or "▼" to choose password "025", press "⊗" to enter user setting interface.



Press "▲" or "▼" to select parameter groups "v".



Press "⊗" to set minute.



Press "⊗" to set hour.



Press "⊗" to enter clock setting interface.



Press "▲" or "▼" to adjust minute.



Press "▲" or "▼" to adjust hour.

In the main interface, short press "⊗" to enter password setting interface, press "▲" or "▼" to change the password, choose password "025". (Password:025, unchangeable)

Short press "⊗", it will enter user setting interface.

In the user setting interface, short press "▲" or "▼" can select parameter groups "V", short press "⊗" to enter clock setting interface.

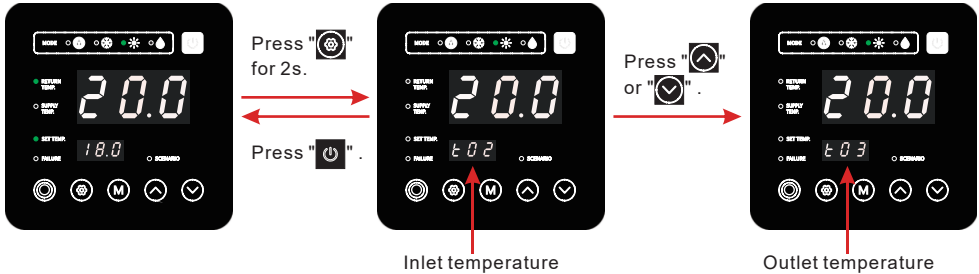
## 4. Use and Operation Instructions

### 9. Check the unit status

In the main interface, press "⊗" for 2s to enter the temperature display interface. Then press "▲" or "▼" to view the inlet temperature T02, outlet temperature T03, coil temperature T04, ambient temperature T05 and exhaust temperature T06 in sequence. The main display shows the corresponding temperature and the secondary display shows the current status code.

Press "⏻" to return to the main interface.

If there is no operation for 10s, it will exit automatically.



### 10. Keyboard lock

To avoid misoperation by others, please lock the controller after completing the settings.



Notes:

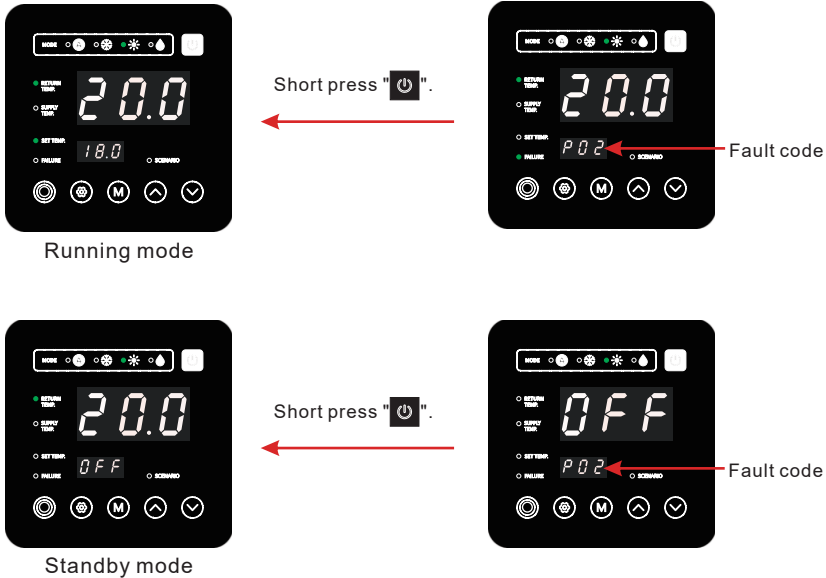
- 1). The screen lock function is available only when no fault occurs.
- 2). If a fault occurs when screen is locked, unlock the device immediately and return to the fault interface.
- 3). Under the locked screen interface, only press "▲" or "▼" to switch the temperature and time display interface, and under the temperature display interface, press "M" for 2 s to switch to the display of inlet /outlet temperature, other operations are unavailable and will light up the screen.
- 4). Under the locked screen interface, the time display interface is generally displayed. When the screen is switched to the temperature display interface, the time display interface will be returned after no operation within 5s.
- 5). Under the OFF interface, locking operation is available, and the operation method is the same as locking screen under the ON interface.

# 4. Use and Operation Instructions

## 11. Fault interface

When the unit fails, the fault code will be displayed on the secondary display interface, and the wire controller can display the corresponding code according to the fault reason. Refer to the fault table for the specific definition of the fault codes.

For example:



Notes:

- 1). When the fault is displayed in the secondary display area, press " [power icon] " to return to the main interface.
- 2). When the fault is displayed in the secondary display area, press " [up arrow icon] " or " [down arrow icon] " can make multiple faults cycle through the display.
- 3). In the main interface, if a fault is occurring and no operation is performed for 10 consecutive seconds, the system returns to the fault interface.

## 4.Fault Summary

### 12.Parameter list and breakdown table

#### 12.1 Electronic control fault table

Can be referenced according to the remote controller failure code and troubleshooting

**REPAIRS MUST BE DONE BY QUALIFIED PERSON. ELECTRICAL REPAIRS MUST BE DONE BY AN ELECTRICIAN**

Protect/Fault	Fault display	Reason	Elimination methods
Inlet Temp. Sensor Fault	P01	The temperature sensor is broken or short circuit	Check or change the temperature sensor
Outlet Temp. Sensor Fault	P02	The temperature sensor is broken or short circuit	Check or change the temperature sensor
Amibent Temp. Sensor Fault	P04	The temperature sensor is broken or short circuit	Check or change the temperature sensor
Coil 1 Temp. Sensor Fault	P05	The temperature sensor is broken or short circuit	Check or change the temperature sensor
Coil 2 Temp. Sensor Fault	P15	The temperature sensor is broken or short circuit	Check or change the temperature sensor
Suction Temp. Sensor Fault	P07	The temperature sensor is broken or short circuit	Check or change the temperature sensor
Exhaust Temp. Sensor Fault	P81	The temperature sensor is broken or short circuit	Check or change the temperature sensor
Exhaust Air over Temp Prot.	P82	The compressor is overload	Check whether the compressor is running normally
Antifreeze Temp. Sensor Fault	P09	Antifreeze temperature sensor is broken or short circuited	Check and replace this temperature sensor
Pressure Sensor Fault	PP	The pressure sensor is broken	Check or change the pressure sensor or pressure
High Pressure Prot.	E01	The high-presssure switch is broken	Check the pressure switch and cold circuit
Low Pressure Prot.	E02	Low pressure1 protection	Check the pressure switch and cold circuit
Flow Switch Prot.	E03	No water/little water in water system	Check the pipe water flow and water pump
Waterway Anti-freezing Prot.	E05	Water temperature or ambient temperature is too low	Check whether water temperature or ambient temperature is too low
Inlet and Outlet Temp. too big	E06	Water flow is not enough and low differential pressure	Check the pipe water flow and whether water system is jammed
Anti-freezing Prot.	E07	Water flow is not enough	Check the pipe water flow and whether water system is jammed
Primary Anti-freezing Prot.	E19	The ambient temperature is low	Check ambient temperature
Secondary Anti-freezing Prot	E29	The ambient temperature is low	Check ambient temperature
Comp. Overcurrent Prot.	E51	The compressor is overload	Check whether the compressor is running normally
Communication Fault	E08	Communication failure between wire controller and main board	Check the wire connection between remote wire controller and main board
Communication Fault (speed control module)	E81	Speed control module and main board communication fail	Check the communication connection
LowAT Protection	TP	Ambient temperature is too low	Check ambient temp. is low or not
EC fan feedback Fault	F51	There is something wrong with fan motor and fan motor stops running	Check whether fan motor is broken or locked or not
Fan Motor1 Fault	F31	1. Motor is in locked-rotor state 2.The wire connection between DC-fan motor module and fan motor is in bad contact	1.Change a new fan motor 2.Check the wire connection and make sure they are in good contact

## 4. Fault Summary

Fan Motor2 Fault	F32	1. Motor is in locked-rotor state 2. The wire connection between DC-fan motor module and fan motor is in poor contact	1. Change a new fan motor 2. Check the wire connection and make sure they are in good contact
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### Frequency conversion board fault table:

Protection/fault	Fault display	Reason	Elimination methods
Drv1 MOP Alarm	F01	MOP drive alarm	Recovery after 150s
Inverter Offline	F02	Frequency conversion board and main board communication failure	Check the communication connection
IPM Protection	F03	IPM modular protection	Recovery after 150s
Comp. Driver Failure	F04	Lack of phase, step or drive hardware damage	Check the measuring voltage, check frequency conversion board hardware
DC Fan Fault	F05	Motor current feedback open circuit or short circuit	Check whether current return wires connect to motor
IPM Overcurrent	F06	IPM Input current is large	Check and adjust the current measurement
Inv. DC Overvoltage	F07	DC bus voltage > Dc bus over-voltage protection value	Check the input voltage measurement
Inv. DC Lessvoltage	F08	DC bus voltage < Dc bus under-voltage protection value	Check the input voltage measurement
Inv. Input Lessvolt.	F09	The input voltage is low, causing the input current is high	Check the input voltage measurement
Inv. Input Overvolt.	F10	The input voltage is too high, more than outage protection current RMS	Check the input voltage measurement
Inv. Sampling Volt.	F11	The input voltage sampling fault	Check and adjust the current measurement
Comm. Err DSP-PFC	F12	DSP and PFC connect fault	Check the communication connection
Input Over Cur.	F26	The equipment load is too large	Check whether the unit is overloaded
PFC fault	F27	The PFC circuit protection	Check the PFC switch tube short circuit or not
IPM Overheating	F15	The IPM module is overheating	Check and adjust the current measurement
Weak Magnetic Warn	F16	Compressor magnetic force is not enough	Restart the unit after multiple power failures, if the fault still exists, replace the compressor
Inv. Input Out Phase	F17	The input voltage lost phase	Check and measure the voltage adjustment
IPM Sampling Cur.	F18	IPM sampling electricity is fault	Check and adjust the current measurement
Inv. Temp. Probe Fail	F19	Sensor is short circuit or open circuit	Inspect and replace the sensor
Inverter Overheating	F20	The transducer is overheating	Check and adjust the current measurement
Inv. Overheating Warn	F22	Transducer temperature is too high	Check and adjust the current measurement
Comp. Over Cur. Warn	F23	Compressor electricity is large	The compressor over-current protection
Input Over Cur. Warn	F24	Input current is too large	Check and adjust the current measurement
EEPROM Error Warn	F25	MCU error	Check whether the chip is damaged Replace the chip
V15V over/undervoltage fault	F28	The V15V is overload or undervoltage	Check the V15V input voltage in range 13.5v~16.5v or not

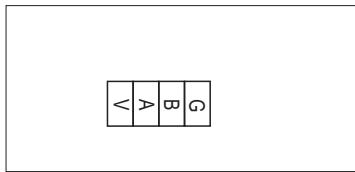
# 4. Electrical Diagrams

## 12.2 Parameter list

Meaning	Default	Remarks
Refrigeration target temperature set point	27°C	Adjustable
Heating the target temperature set point	27°C	Adjustable
Automatic target temperature set point	27°C	Adjustable

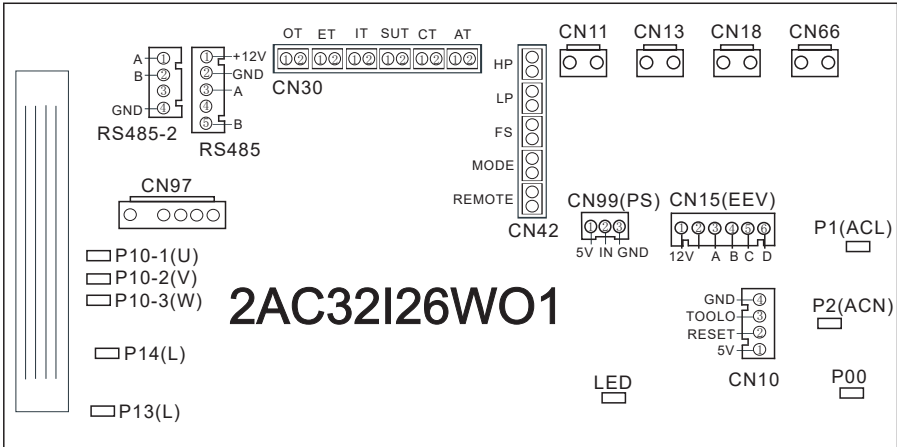
## 13. Interface drawing

### 13.1 Wire control interface diagram and definition

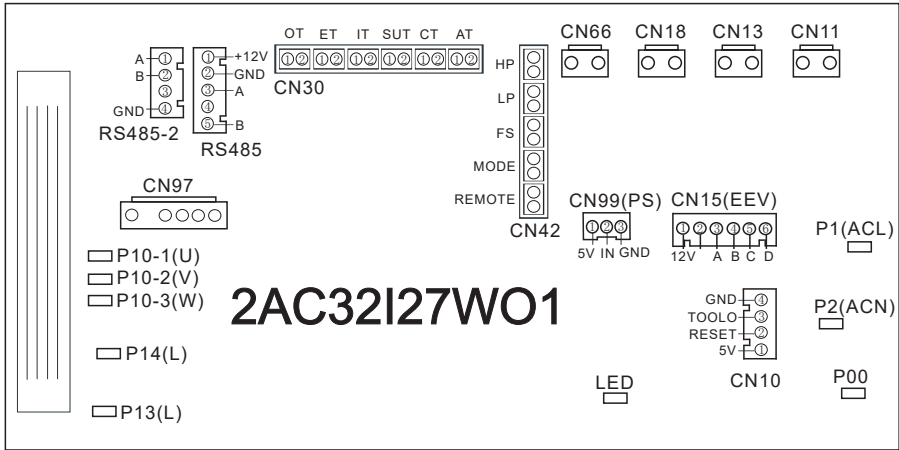


Sign	Meaning
V	12V (power +)
A	485A
B	485B
G	GND ( power - )

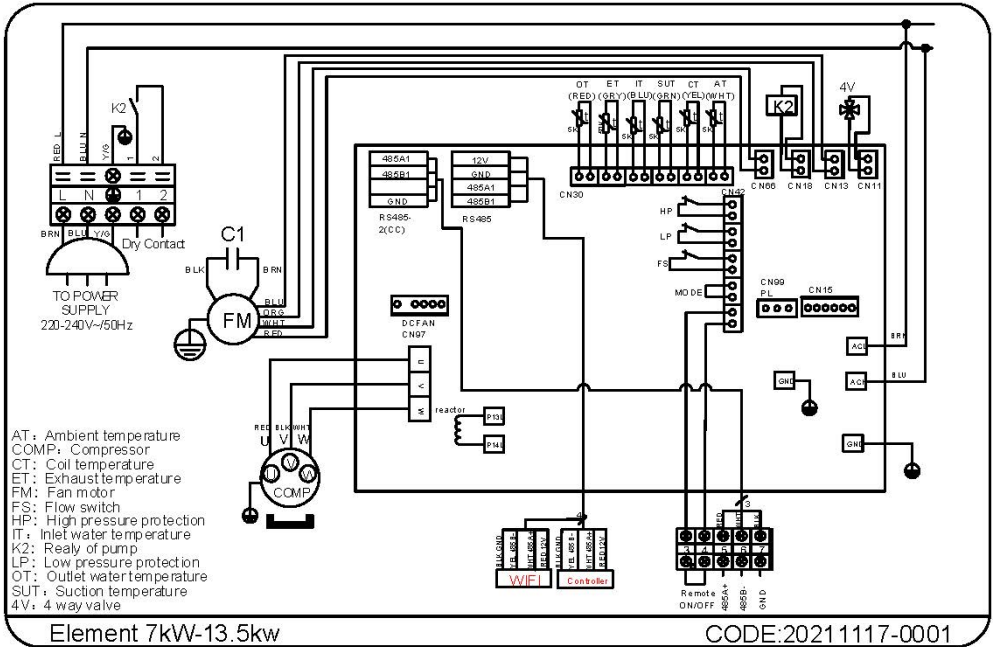
### 13.2 Controller interface diagram and definition



# 4. Electrical Diagrams

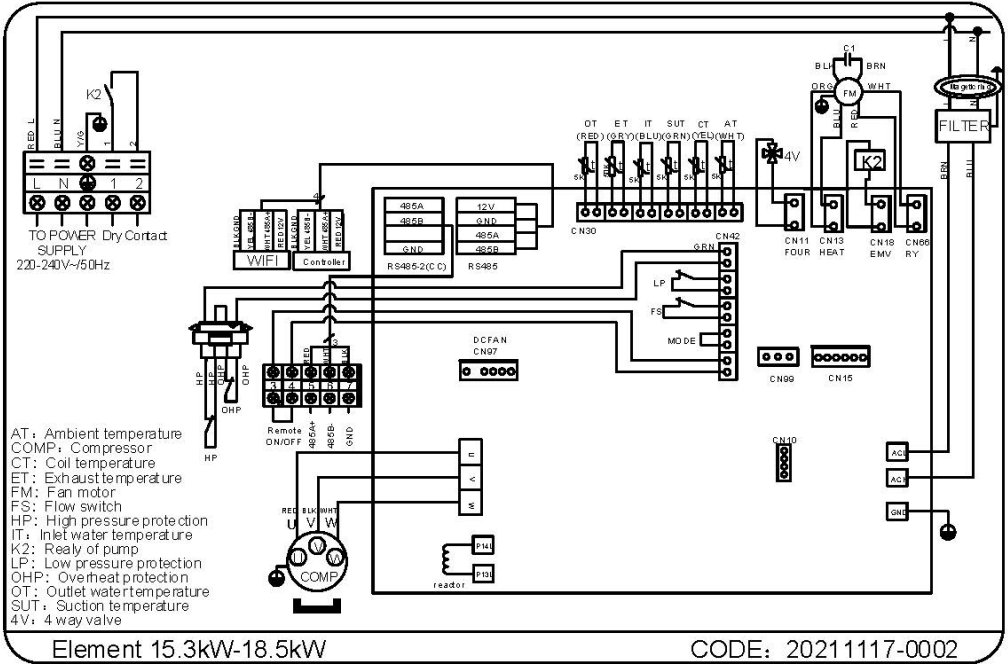


Wiring Diagram 7kw-13.5kw



# 4. Electrical Diagrams

## Wiring Diagram 15.3kw-18.5kw



## Parameters

True Blue Element Heat Pumps	Element 7.0kW	Element 9.3kW	Element 11.5kW	Element 13.5kW	Element 15.4kW	Element 18.5kW
Advised pool volume(m³)	20-30	25-45	30-60	35-70	40-70	55-85
Function	Heating & Cooling					
Operating air temperature (°C)	(-7~43)					
Performance Condition (Air 27°C/Water 25°C/Humid. 80%)						
Heating Capacity(kW)	1.5~7.0	1.8~9.3	2.3~11.5	2.6~13.5	2.9~15.4	3.2~18.5
Heating Capacity(Btu)	5100~23800	6120~31620	7820~39100	8840~45900	9860~52360	10880~62900
Consumed power (kW)	0.11~1.08	0.13~1.45	0.14~1.77	0.18~2.14	0.20~2.41	0.22~2.89
COP	13.6~6.5	14.0~6.4	16.2~6.5	14.4~6.3	14.5~6.4	14.5~6.4
Performance Condition (Air 15°C/Water 25°C/Humid. 70%)						
Heating Capacity(kW)	1.1~5.4	1.3~6.6	1.8~8.6	1.9~10.0	2.1~11.5	2.4~13.8
Heating Capacity(Btu)	3740~18360	4420~22440	6120~29240	6460~34000	7140~39100	8160~46920
Consumed power (kW)	0.17~1.15	0.20~1.46	0.23~1.83	0.29~2.22	0.32~2.50	0.37~3.00
COP	6.4~4.7	6.4~4.5	7.7~4.7	6.5~4.5	6.5~4.6	6.5~4.6
Technical Specifications						
Power Supply	230V~/1Ph/50Hz					
Casing type	ABS					
Compressor	GREE Rotary					
Water Connection (mm)	50					
Fan Quantity	1	1	1	1	1	1
Fan motor	Dual-speed					
Compressor quantity	1	1	1	1	1	1
Sound Pressure 1m dB(A)	37~49	37~50	38~51	39~52	40~53	41~54
Advised Water Flow Volume (m³/h)	2.2	2.7	3.3	4.0	4.4	5.5
Water Pressure Drop (max) kPa	1.8	2.8	3.8	4.4	4.8	4.8
Package Data						
Unit net size(mm)	888*319*608				960*410*860	



## 4. Codes

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Main board of the input and output interface instructions below

Number	Sign	Meaning
01	P10-1/2/3(U/V/W)	Compressor
02	CN66	High fan
03	CN97	DC motor
04	CN11	4-way valve
05	CN18	Water pump
06	CN13	Low fan
07	P1 P2	Live wire Neutral wire
08	CN10	Program download interface
09	RS485	Color line controller communication/WiFi
10	RS485-2	The port for centralised control
11	CN15	Electronic expansion valve
12	P13(L)	Resistance
13	P14(L)	Resistance
14	HP	System high pressure
15	LP	System low pressure
16	FS	Water flow switch
17	MODE	Mode switch
18	REMOTE	Emergency switch
19	IT	Water input temperature
20	SUT	System suction temperature
21	CT	System fan coil temperature
22	OT	Water output temperature
23	ET	System exhaust temperature
24	AT	Ambient temperature
25	CN99	Low pressure sensor
26	P00	Grounding

## 5. MAINTENANCE AND INSPECTION - REFRIGERANT

### **REFRIGERANT MAINTENANCE CAN ONLY BE CARRIED OUT BY A QUALIFIED TECHNICIAN**

- Check the water supply to and from device often. You should avoid the condition of no water entering into system, as this will influence unit's performance and reliability. You should clear the pool/spa filter regularly to avoid damage to the unit as a result of the dirty or clogged filter.
- The area around the unit should be dry, clean and well ventilated. Clean the side heating exchanger regularly to maintain good heat exchange and to conserve energy .
- The operation pressure for the refrigerant system should only be serviced by a certified technician .
- Check the power supply and cable connection often .Should the unit begin to operate abnormally, switch it off and contact a qualified technician.
- Discharge all water in the water pump and water system, so that freezing of the water in the pump or water system does not occur. You should discharge the water at the bottom of water pump if the unit will not be used for an extended period of time. You should check the unit thoroughly and fill the system with water fully before using it for the first time after.
- Checks to the surrounding area  
Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised. For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.
- Refrigerant Work procedure  
Work shall be undertaken in a controlled environment to minimise the risk of a flammable gas or vapour being present while the work is being performed.
- General work area  
All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided. The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.
- Checking for presence of refrigerant  
The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.
- Presence of fire extinguisher  
If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging

## 5. MAINTENANCE AND INSPECTION

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### ● No ignition sources

No person carrying out work in relation to a refrigeration system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which flammable refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

### ● Ventilated area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out.

### ● Checks to the area

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised. For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system. prolonged period of no usage.

### ● Checks to the refrigeration equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using flammable refrigerants:

The charge size is in accordance with the room size within which the refrigerant containing parts are installed;

The ventilation machinery and outlets are operating adequately and are not obstructed; If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;

Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;

Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

### ● Checks to electrical devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include:

. That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;

. That there no live electrical components and wiring are exposed while charging, recovering or purging the system;

. That there is continuity of earth bonding.

## 5. MAINTENANCE AND INSPECTION

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### ● Repairs to sealed components

1) During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. A form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

2) Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.

Ensure that apparatus is mounted securely.

Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer's specifications.

NOTE: The use of silicon sealant may inhibit the effectiveness of some types of leak detection equipment.

### ● Repair to intrinsically safe components

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.

Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.

Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

### ● Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

### ● Detection of flammable refrigerants

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

### ● Leak detection methods

The following leak detection methods are deemed acceptable for systems containing flammable refrigerants.

Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25 % maximum) is confirmed.

Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

If a leak is suspected, all naked flames shall be removed/ extinguished.

If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

## 5. MAINTENANCE AND INSPECTION

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### ● Removal and evacuation

When breaking into the refrigerant circuit to make repairs or for any other purpose conventional procedures shall be used. However, it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:

- . Remove refrigerant;
- . Purge the circuit with inert gas;
- . Evacuate;
- . Purge again with inert gas;
- . Open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders. The system shall be "flushed" with OFN to render the unit safe. This process may need to be repeated several times. Compressed air or oxygen shall not be used for this task.

Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipe-work are to take place.

Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

### ● Labelling

Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

### ● Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

## 5. MAINTENANCE AND INSPECTION

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### ● Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.

- a) Become familiar with the equipment and its operation.
- b) Isolate system electrically.
- c) Before attempting the procedure ensure that:
  - . Mechanical handling equipment is available, if required, for handling refrigerant cylinders;
  - . All personal protective equipment is available and being used correctly;
  - . The recovery process is supervised at all times by a competent person;
  - . Recovery equipment and cylinders conform to the appropriate standards.
- d) Pump down refrigerant system, if possible.
- e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- f) Make sure that cylinder is situated on the scales before recovery takes place.
- g) Start the recovery machine and operate in accordance with manufacturer's instructions.
- h) Do not overfill cylinders. (No more than 80 % volume liquid charge).
- i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
- j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
- k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

### ● Charging procedures

In addition to conventional charging procedures, the following requirements shall be followed.

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
- Cylinders shall be kept upright.
- Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigeration system.

### ● Prior to recharging the system it shall be pressure tested with OFN. The system shall be leak tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

The safety wire model is 5\*20\_5A/250VAC, And must meet the explosion-proof requirements

## 6. APPENDIX

### 6.1 Cable specification

#### (1) Single phase unit

Nameplate maximum current	Phase line	Earth line	MCB	Creepage protector	Signal line
No more than 10A	2×1.5mm <sup>2</sup>	1.5mm <sup>2</sup>	20A	30mA less than 0.1 sec	n×0.5mm <sup>2</sup>
10~16A	2×2.5mm <sup>2</sup>	2.5mm <sup>2</sup>	32A	30mA less than 0.1 sec	
16~25A	2×4mm <sup>2</sup>	4mm <sup>2</sup>	40A	30mA less than 0.1 sec	
25~32A	2×6mm <sup>2</sup>	6mm <sup>2</sup>	40A	30mA less than 0.1 sec	
32~40A	2×10mm <sup>2</sup>	10mm <sup>2</sup>	63A	30mA less than 0.1 sec	
40~63A	2×16mm <sup>2</sup>	16mm <sup>2</sup>	80A	30mA less than 0.1 sec	
63~75A	2×25mm <sup>2</sup>	25mm <sup>2</sup>	100A	30mA less than 0.1 sec	
75~101A	2×25mm <sup>2</sup>	25mm <sup>2</sup>	125A	30mA less than 0.1 sec	
101~123A	2×35mm <sup>2</sup>	35mm <sup>2</sup>	160A	30mA less than 0.1 sec	
123~148A	2×50mm <sup>2</sup>	50mm <sup>2</sup>	225A	30mA less than 0.1 sec	
148~186A	2×70mm <sup>2</sup>	70mm <sup>2</sup>	250A	30mA less than 0.1 sec	
186~224A	2×95mm <sup>2</sup>	95mm <sup>2</sup>	280A	30mA less than 0.1 sec	

#### (2) Three phase unit

Nameplate maximum current	Phase line	Earth line	MCB	Creepage protector	Signal line
No more than 10A	3×1.5mm <sup>2</sup>	1.5mm <sup>2</sup>	20A	30mA less than 0.1 sec	n×0.5mm <sup>2</sup>
10~16A	3×2.5mm <sup>2</sup>	2.5mm <sup>2</sup>	32A	30mA less than 0.1 sec	
16~25A	3×4mm <sup>2</sup>	4mm <sup>2</sup>	40A	30mA less than 0.1 sec	
25~32A	3×6mm <sup>2</sup>	6mm <sup>2</sup>	40A	30mA less than 0.1 sec	
32~40A	3×10mm <sup>2</sup>	10mm <sup>2</sup>	63A	30mA less than 0.1 sec	
40~63A	3×16mm <sup>2</sup>	16mm <sup>2</sup>	80A	30mA less than 0.1 sec	
63~75A	3×25mm <sup>2</sup>	25mm <sup>2</sup>	100A	30mA less than 0.1 sec	
75~101A	3×25mm <sup>2</sup>	25mm <sup>2</sup>	125A	30mA less than 0.1 sec	
101~123A	3×35mm <sup>2</sup>	35mm <sup>2</sup>	160A	30mA less than 0.1 sec	
123~148A	3×50mm <sup>2</sup>	50mm <sup>2</sup>	225A	30mA less than 0.1 sec	
148~186A	3×70mm <sup>2</sup>	70mm <sup>2</sup>	250A	30mA less than 0.1 sec	
186~224A	3×95mm <sup>2</sup>	95mm <sup>2</sup>	280A	30mA less than 0.1 sec	

When the unit will be installed outdoors, please use the correct cable which can resist UV exposure.

# 6.APPENDIX

## 6.2 Comparison table of refrigerant saturation temperature

Pressure (MPa )	0	0.3	0.5	0.8	1	1.3	1.5	1.8	2	2.3
Temperature (R410A)(°C)	-51.3	-20	-9	4	11	19	24	31	35	39
Temperature (R32)(°C)	-52.5	-20	-9	3.5	10	18	23	29.5	33.3	38.7
Pressure (MPa )	2.5	2.8	3	3.3	3.5	3.8	4	4.5	5	5.5
Temperature (R410A)(°C)	43	47	51	55	57	61	64	70	74	80
Temperature (R32)(°C)	42	46.5	49.5	53.5	56	60	62	67.5	72.5	77.4

### Warranty

The Element Inverter heat pumps come with the following warranty from date of purchase

- 3-year parts warranty on all components in Australia
- 5 year Heat exchanger warranty
- 5 year Compressor warranty
- Warranty subject to the unit being installed in accordance with manufacturer's instructions.

During the period of the warranty, the supplier will repair any defective products, subject to the "General Exclusions". All equipment warranties are back-to-base. If a site callout is required, there will be a callout fee assessed in accordance with the current service prices. The supplier retains complete discretion over whether to repair or replace a damaged component.

Any warranty periods begin after sale of the heat pump. The remaining time left on the initial warranty period will be valid in cases where a failed component is replaced as part of this warranty. A new warranty is not applicable to the replacement part.

### PRODUCT MAINTENANCE AND CARE

Your pool and the heating system needs to be properly maintained. This includes routine inspections to catch any leaks early enough to prevent additional damage. The supplier is not in charge of paying for or providing maintenance. To make sure the system is running well, it is advised that an annual service be performed by a certified and qualified person.

### GENERAL EXCLUSIONS

•The supplier is not responsible for the cost of replacement or repair, as well as any indirect loss or damage brought on by the following:

- Acts of nature/natural disasters.
- Unusual work-related occurrences, such as fire and severe weather.
- Faulty electrical or plumbing systems.
- Deterioration brought on by unqualified contractors. **WARNING:** Specific steps must be followed when installing the system. To prevent damage, specific measures must be taken if the system (including the pump) is subsequently moved, subject to significant repairs, or stored.
- The chemical balance of the pool water is not kept in compliance with the applicable Australian Standards for pool water quality. **WARNING:** High chlorine concentrations can harm system parts.
- If a failure results from hydraulic damage, such as excessive pressure, the warranty is not valid.
- Any misuse, negligence, accident, or other circumstance beyond the supplier's control are not covered by this warranty, nor is the replacement or replenishment of the refrigerant inside the unit.

In no event shall the supplier be liable for any further loss, damage, or corrosion to other components or property resulting from leaking from the installation's pipe-work, heat damage brought on by the water temperature, or other causes of failure.

All other warranties, whether explicit or implied and whether originating by virtue of statute or otherwise, are hereby excluded, with the exception of those warranties specified herein or those implied by statute and not subject to exclusion.

The customer and supplier, as well as any of their successors or assignee, are parties to this guarantee. This Warranty's advantages cannot be transferred to the customer's assigns.

**CLAIMS** Any warranty claim should be made in writing to your place of purchase, with a clear photograph of the unit serial number and the original purchase invoice attached. If the product has failed for a reason listed in the General Exclusions, the customer will be charged the reasonable costs incurred in testing and establishing product failure.









Caution: risk of fire



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