

Evo Max 64 Installation & Operation Manual



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1. Introduction

This manual contains all the necessary information in regard to the installation, troubleshooting, operation and maintenance of this unit. Ensure instructions in this manual are adhered to at all times. Failing to comply with these recommendations will invalidate the warranty. This manual and all others are available for download on our website.



The EVO Max is the best solution for commercial hot water that offers a higher C.O.P than traditional boilers. Using cutting edge technology, green refrigerants, high efficiency heat exchanger and a circulating heating method, the EVO Max can help end users SAVE MORE THAN 66% on their annual hot water operating costs - WHILE DELIVERING UP TO 80°C HOT WATER!

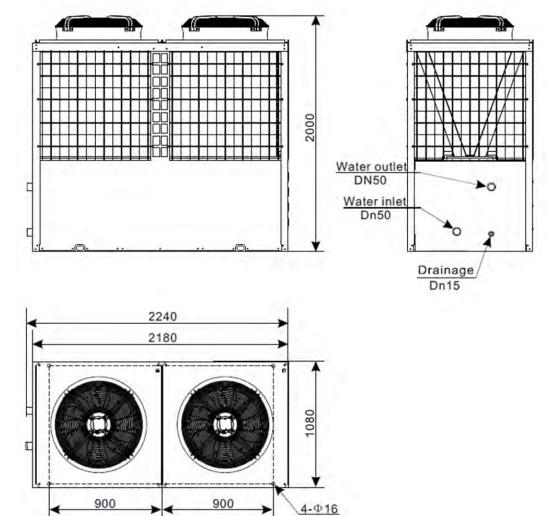
The Evo Max extracts heat from ambient air and transfers it to water. By circulating the water, the energy is used to warm the house efficiently. Compared with oil boilers, gas boilers, and electrical heaters, the heat pump is the best solution by providing high efficiency, safety, and environmental protection.

- SAVE UP TO 66% on your hot water operating costs
- 80 degrees hot water
- Air operation range from -7°C to 45°C
- Energy efficient replacement for inefficient coal, gas and electric boiler systems
- Fast, stable and bulk hot water supply
- Ideal for high temperature water applications
- 304 stainless steel chassis and cabinet

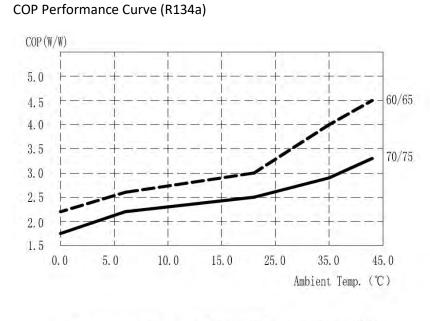


2. Unit Specifications

2.1 Dimensions



2.2 Performance Curve



outlet water 65°C, inlet water (return) 60°C.

outlet water 75°C, inlet water (return) 70°C.



2.3 Technical Data

EVO MAX		EVO MAX 64
Hot Water Condition A20°C/15°C, W15°C to 65°C	Heating Capacity kW	64
	Power Input kW	18.2
	C.O.P. WW	3.52
	Hot Water L/h	1100
*Hot Water Condition A35°C/-°C, W15°C to 75°C A35°C/-°C, W15°C to 70°C	Heating Capacity kW	80
	Power Input kW	21
	C.O.P. WW	3.8
Max. Power Input	kW	31.9
Max. Running Current	А	50.7
Power Supply	V/Ph/Hz	380~415V/3N~/50Hz
Compressor Type	/	Panasonic EVI Scroll
Compressor Quantity	/	2
Fan Quantity	/	2
Fan Motor Input	W	615x2
Circulation Pump		Grundfos
Water Flow Volume	m3/h	10
Water Pressure Drop	kPa	81
Suggested Water Temp Differential	°C	5
Water Connection	inch	2
Noise	dB(A)	71
Air Discharge Type	/	Vertical
Refrigerant	/	R134a
Operation Range	°C	-7°C~45°C
Condenser	/	Patented tube in shell heat exchanger
Suggested Water Temp Range	°C	55~75
Max. Water Temp	°C	80
Net Weight	kg	757
Gross Weight	kg	789
Net Dimensions (L/W/H)	mm	2180/1080/2000
Shipping Dimensions (L/W/H)	mm	2360/1180/2160

Testing condition: Ambient temperature DB/WB 20C/15°C; Outlet water 65°C, inlet water (return) 60°C;



3. Safety Instructions

- Installation, repairs and maintenance of this unit must be performed by a qualified technician.
- Any wiring must comply with local electrical regulations.
- If any abnormal instances occur or a strange smells, the unit must be shut off by the power supply.
- Do not put fingers or objects into the fans or evaporator of the unit.
- The unit must be earthed to avoid any risk caused by insulation defects.
- No wiring must come into contact with the heat source or the rotating fan parts.
- The unit must be handled and lifted with appropriate equipment in correlation with the unit's size and weight.
- Electrical power must be switched off before any work is started on the unit.
- Do not expose the unit to or install near any flammable gases.
- Ensure there is a circuit breaker for this unit.
- Copper and iron can not be used as a fuse.
- The unit is equipped with an over-load protection system. After a previous stoppage, the unit will not start for at least 3 minutes.
- If the supply cord is damaged, it must be replaced by the manufacturer, our service agent or a similarly qualified person in order to avoid a hazard.
- USE SUPPLY WIRES SUITABLE FOR 75°C.
- Caution: Single wall heat exchanger, not suitable for potable water connection.

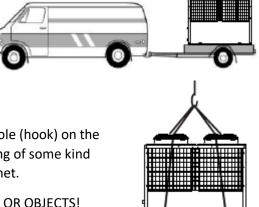
4. Installation

4.1 Transit

When the heat pump is to be transported, please keep the unit standing upright. The unit cannot be laid down, otherwise inner parts of the device may become damaged.

If the unit needs to be hung up during installation. Use the special lifting hole (hook) on the unit base), an 8 metre cable will be needed to do so. There must be padding of some kind between the cable and the unit to prevent damage to the heat pump cabinet.

DO NOT TOUCH THE RADIATING FINS BEHIND THE MACHINE WITH HANDS OR OBJECTS!



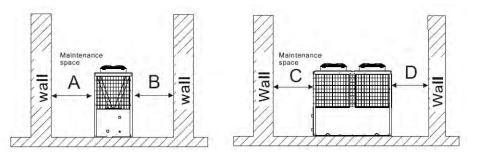


4.2 Location of Install & Minimum Clearances

The unit can be installed in any outdoor area which can carry heavy machinery, such as a terrace, rooftop, the ground etc.

- The location must have adequate ventilation and be free from strong winds.
- The installation location must be free from heat radiation and fire hazards.
- Ensure there are no obstacles near the air inlet and outlet of the heat pump.
- There must be a water channel around the heat pump to drain condensing water.
- Ensure that there is enough space around the unit for maintenance.

- The heat pump can be installed onto the concrete basement using expansion screws, or onto a steel frame with rubber feet which can be placed on the ground or rooftop. Ensure the unit is placed horizontally.



A> 1500mm B> 1500mm C> 1500mm D>1500mm

4.3 Plumbing Component

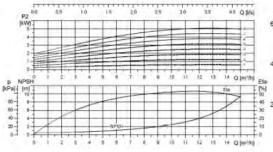
- Try to reduce the resistance to the water from the piping.
- The piping must be clear and free from dirt and blockage. A water leakage test must be carried out to ensure that there is no water leaking before the installation can be made.
- The pipe must be tested by pressure separately. DO NOT test it together with the unit.
- There must be an expansion tank on the top point of the water loop, and the water level inside the tank must be at least 0.5meters higher than the top point of the water loop.
- The flow switch is installed inside of the heat pump, check to ensure that the wiring and action of the switch is normal and controlled by the controller.
- The connection between the heat pump and the construction is best to be of a flexible type to avoid vibration transfer. The support to the water pipe must be separate, but not rely on the heat pump unit.
- Try to avoid any air from being trapped inside the water pipe, there must be an air vent on the top point of the water loop.
- There must be a thermometer and pressure meter at the water inlet and outlet for easy inspection during running.
- There must be drainage on the low points of the water system, and there is already drainage on the chassis of the heat pump. The water in the system must be drained out during winter if the heat pump is not to be used.

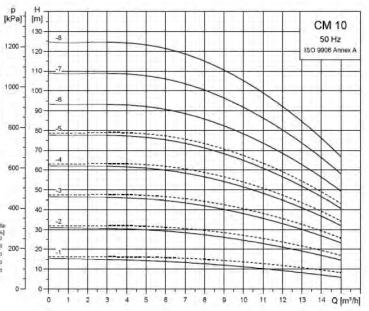


4.4 Water Pump

High pressure centrifugal pump

Pump data	
Make	Grundfos
Туре	CM10-2
Rated voltage	380V/3N~/50Hz
Min.fluid temperature	0°C
Max.fluid temperature	+90℃
Max.ambient temperature	+55℃







4.5 Electrical Component

- Open the panel and open the power line hole
- Thread the power line though the hole and connect it to the power line terminal. The three-core control line of the remote controller shall be plugged with the three-core signal line on the main board according to the wiring diagram.
- For an external water pump, thread the power line of the water pump through the hole and connect it to the water pump terminals.
- If an additional auxiliary heater is needed to be to be controlled by the heat pump controller, the relay (or power) of the aux-heather must be connected to the relevant output of the controller.

ATTN:

- The unit should use an independent power supply. Power supply voltage must be in line with the rated voltage.
- The power supply circuit must be equipped with an All-pole disconnect device and have at least 3mm contact opening distance.
- The wiring must be completed by a professional technician in accordance with the circuit diagram.
- Power supply circuit must have earth wire; the earth wire of power should be connected with an external earth wire safely. The external earth wire must be in order.
- The creepage protection device must be settled in accordance with the relevant national technical standards for electronic equipment.
- The power wire and signal wire should be neatly arranged. High voltage wires and low voltage wires must be separated and free from any interference. These wires must also be free from any pipes or valves on the unit.
- When all wiring is completed, the power should only be connected after a thorough double check.

Unit Model	Power Supply	Cable		Creepage Protector
Evo Max 64	380V/3N~/50Hz	4*10mm ²	4mm ²	30mA Less than 0.1 SET

4.6 Initial Start-up of the Unit

Prior to Trial Operation

Check the indoor unit, make sure that the pipe connection is done correctly and that the relevant valves are open.

Check the water loop to ensure that there is enough water inside of the expansion tank, that the water supply is good and that the water loop has no air in it and is full of water. Make sure there in good insulation for the water pipe.

Check the electrical wiring. Make sure that the power voltage is normal, the screws are fastened, the wiring is made in line with the diagram and the earthing is connected.

Check that the heat pump, including all the screws and different parts are in good order. When the power is on, review the indicator on the controller to see if there is any failure indications. The gas gauge can be connected to the check value to see the high pressure (or low pressure) of the system during trial running.

Trial Operation

Start the heat pump by pressing the " or a very on the controller. Check whether the water pump is running, if it is running normally there will be 0.2MPa on the water pressure meter.

When the water pump rungs for 1 minute, the compressor will start. Hear whether there is a strange sound coming from the compressor. If an abnormal sound occurs, please stop the unit and check the compressor. If the compressor runs well, look for the pressure meter of the refrigerant.

Check whether the power input and running current is in line with the manual. If not stop the unit and check for why this may be occurring.

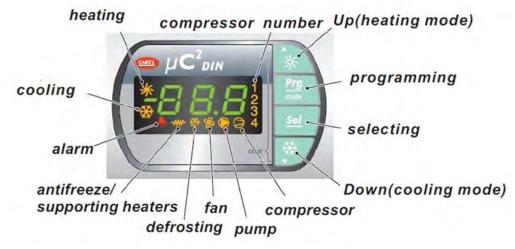
Adjust the valves on the water loop to make sure that the hot (cool) water supply to each door is good and meets the requirement of heating (or cooling).

Review whether the outlet water temperature is stable.



5. Operation

5.1 Main Interface



5.2 Controller Operation

5.2.1 Turn On/Off Hold or for 3 seconds to start the unit. Press either of these buttons again to stop the unit.

NOTE: If you start up the unit using the Heating button, the unit will turn on with heating mode. If you start the unit using the Cooling button, the unit will turn on with cooling mode.



5.2.2 Check the Data

Press bel to check the data.

1. Hold for 5 seconds to go to the next parameter.



2. Press or to choose the data you want to check.





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5.2.3 Check the Setting Data and Change the Settings



2. Press or to input the password "22"



4. Press to go into data settings, then press or to choose the data you wish to change.

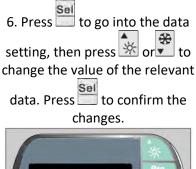


5. Press to go into the data setting, then press or to choose the relevant number of data to be changed.



3. Press to confirm and then go into the data setting interface.







5.2.4 Exit Data Settings

1. Press to exit the selected number data



2. Press again to exit the type of data



3. Hold for a few seconds to exit the data settings.



5.3 Parameter Table

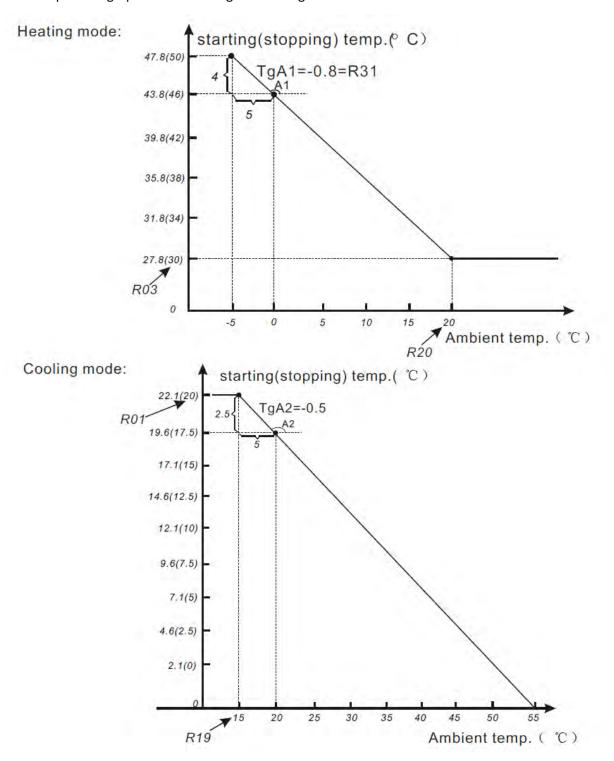
Par	Description	Limits	Unit
R01	Cooling set-point	12	°C
R02	Cooling differential	2	°C
R03	Heating set-point	60	°C
R04	Heating differential	2	°C



5.4 Compensate Temperature Chart

When the parameter set:

R01= 20	R02= 2	R03= 30	R04= 2	
R17= 0.5	R18=20	R19=15	R20= 20	R31= 0.8
The compensat	e graphs in the h	neating and cool	ing modes are a	s shown:





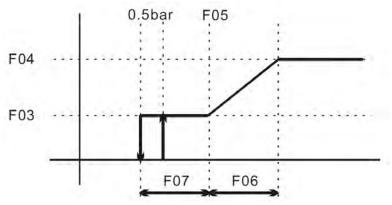
6. Troubleshooting

6.1 Ordinary Malfunctions: Causes & Solutions

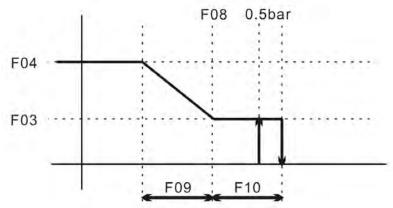
Malfunction	Display	Reason	Resolution
Normal Working			
Water inlet temp. sensor failure	E1	The sensor is open or short circuit	Check or change sensor
Water outlet temp. sensor failure	E2	The sensor is open or short circuit	Check or change sensor
Evaporator sensor failure	E3	The sensor is open or short circuit	Check or change sensor
Ambient sensor failure	E4	The sensor is open or short circuit	Check or change sensor
Anti freezing under cooling mode	A1	Water flow rate not enough	Check the water flow volume or water system for jam
Flow switch failure	FL	No water/little water in water system	Check the water flow volume & water pump for failure
High pressure protect	HP1	High pressure switch action	Check through each pressure switch and return circuit
Low pressure protect	LP1	Low pressure switch action	Check through each pressure switch and return circuit
Exhaust temperature or current protect	tC1	Exhaust temperature or current is too high	Check through exhaust temp. switch and current

6.2 Fan Speed Control

• Cooling with Speed Control



• Heating with Speed Control



With fan speed control modular MCHRTF04C0, the fan motor control curve is as the chart above, and the related parameters are set as the following (R134a design).



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Display Indicator	Parameter and Description	U.O.M	Def.
/07	0= not present	Int	0
	1= NTC Cond. Probe		
	2= NTC Out. Probe		
	3= Differential Control Probe		
D03	Start Defrosting Temperature	°C	-2
D04	End Defrost Pressure	°C	13
F02	Fan Operating Mode	Int	2
	0= Always ON		
	1=		
	2=		
	3=		
F05	Speed temp. set point in Cooling Mode	°C	18
F06	Differential value for max. speed Cooling	°C	5
F08	Speed temp. set point in Heating mode	°C	45
F09	Max. speed diff. in Heating mode	°C	5
F13	Fan management in Defrost mode	Int	2
	0= Fans deactivated		
	1= Fans in chiller mode		
	2= Maximum speed after defrost		

6.3 BHB10 Malfunction Table

Malfunction	Digital Display	Detector Display	Cause	Solution
System 1 exhaust temp. failure	81	P181	The sensor is open or short circuit	Check or change the sensor
System 2 exhaust temp. failure	81	P281	The sensor is open or short circuit	Check or change the sensor
Ambient temp. sensor failure	4	P04	The sensor is open or short circuit	Check or change the sensor
System 1 anti-freeze temp. failure	9	E171	The sensor is open or short circuit	Check or change the sensor
System 2 anti-freeze temp. failure	9	E271	The sensor is open or short circuit	Check or change the sensor
System 1 economizer inlet temp. failure	01	P101	The sensor is open or short circuit	Check or change the sensor
System 2 economizer inlet temp. failure	01	P201	The sensor is open or short circuit	Check or change the sensor
System 1 economizer outlet temp. failure	02	P102	The sensor is open or short circuit	Check or change the sensor
System 2 economizer outlet temp. failure	02	P202	The sensor is open or short circuit	Check or change the sensor
System 1 anti-freeze protection	71	P19	Water flow volume is not enough	Check the flow volume, water system is jammed or not
System 2 anti-freeze protection	71	P29	Water flow volume is not enough	Check the flow volume, water system is jammed or not
Communication Failure	\	E08	Communication failure between remote wire controller and main board	Check the wire connection between remote wire controller and main board
System 1 current protection	51	E151	Current through compressor too heavy	Check through the power supply for compressor or short circuit
System 2 current protection	51	E251	Current through compressor too heavy	Check through the power supply for compressor or short circuit
System 1 exhaust high temp. protection	82	P182	Compressor exhaust temp. too high	Check through the refrigerant system
System 2 exhaust high temp. protection	82	P282	Compressor exhaust temp. too high	Check through the refrigerant system



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6.3.1 Common Failures & Solutions

FAILURE	POSSIBLE CAUSES	SOLUTIONS
Heat pump cannot be	Wrong power supply	Shut off the power and check power supply
started	Power supply cable loose	Check power cable and correct the connection
	Circuit breaker open	Check for the cause and replace the fuse or circuit breaker
Water pump is running	Lack of water in the piping	Check the water supply and charge water to the piping
with high	Too much air in the water loop	Discharge the air in the water loop
Noise or without water	Water valves closed	Open the valves in water loop
	Dirt and block on the water filter	Clean the water filter
Heat pump capacity is low, compressor does not	Lack of refrigerant	Check for the gas leakage and Recharge the Refrigerant
stop	Bad insulation on water pipe	Make good insulation on water pipe
	Low heat exchange rate on air Side exchanger	Clean the air side heat exchanger
	Lack of water flow	Clean the water filter
High compressor exhaust	Too much refrigerant	Discharge the redundant gas
	Low heat exchange rate on air side exchanger	Clean the air side heat exchanger
Low pressure problem of	Lack of gas	Check the gas leakage and recharge freon
the system	Block on filter or capillary	Replace filter or capillary
	Lack of water flow	Clean the water filter and discharge the air in water loop
Compressor does not run	Power supply failure	Check off the power supply
	Compressor contactor broken	Replace compressor contactor
	Power cable loose	Tighten the power cable
	Protection on compressor	Check the compressor exhaust temp.
	Wrong setting on return water Temp.	Reset the return water temp
	Lack of water flow	Clean the water filter and discharge the air in water loop
High noise of compressor	Liquid refrigerant goes into Compressor	Bad evaporation check the cause for bad evaporation and get rid of it
	Compressor failure	Use new compressor
Fan does not run	Failure on fan relay	Replace the fan relay
	Fan motor broken	Replace fan motor
The compressor runs but heat	No gas in the heat pump	Check system leakage and recharge refrigerant
Pump has no heating or	Heat exchanger broken	Find out the cause and replace the heat exchanger
cooling capacity	Compressor failure.	Replace compressor
Low outlet water temperature	Low water flow rate	Clean the water filter and discharge the air in water loop
	Low setting for the desired water temp	Reset the desired water temperature
		Clean the water filter and discharge the air in water loop
Low water flow protection	Lack of water in the system	clean the water inter and discharge the air in water loop



7. Appendix

7.1 Cable Specifications

Single Phase Unit

Nameplate max. current	Phase Line	Earth Line	MCB	Creepage Protector	Signal Line
No More than 10A	2 x 1.5mm	1.5mm	20A	30mA less than 0.1 sec	
10~16A	2 x 2.5mm	2.5mm	32A	30mA less than 0.1 sec	
16~25A	2 x 4mm	4mm	40A	30mA less than 0.1 sec	
25~32A	2 x 6mm	6mm	40A	30mA less than 0.1 sec	
32~40A	2 x 10mm	10mm	63A	30mA less than 0.1 sec	
40~63A	2 x 16mm	16mm	80A	30mA less than 0.1 sec	n x 0.5mm²
63~75A	2 x 25mm	25mm	100A	30mA less than 0.1 sec	
75~101A	2 x 25mm	25mm	125A	30mA less than 0.1 sec	
101~123A	2 x 35mm	35mm	160A	30mA less than 0.1 sec	
123~148A	2 x 50mm	50mm	225A	30mA less than 0.1 sec	
148~186A	2 x 70mm	70mm	250A	30mA less than 0.1 sec	
186~224A	2 x 95mm	95mm	180A	30mA less than 0.1 sec	

Three Phase Unit

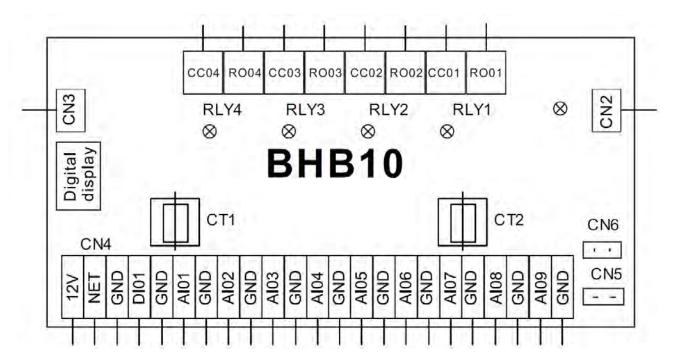
Nameplate max.	Phase Line	Earth Line	MCB	Creepage Protector	Signal Line
current					
No More than 10A	3 x 1.5mm	1.5mm	20A	30mA less than 0.1 sec	
10~16A	3 x 2.5mm	2.5mm	32A	30mA less than 0.1 sec	
16~25A	3 x 4mm	4mm	40A	30mA less than 0.1 sec	
25~32A	3 x 6mm	6mm	40A	30mA less than 0.1 sec	
32~40A	3 x 10mm	10mm	63A	30mA less than 0.1 sec	
40~63A	3 x 16mm	16mm	80A	30mA less than 0.1 sec	n x 0.5mm ²
63~75A	3 x 25mm	25mm	100A	30mA less than 0.1 sec	
75~101A	3 x 25mm	25mm	125A	30mA less than 0.1 sec	
101~123A	3 x 35mm	35mm	160A	30mA less than 0.1 sec	
123~148A	3 x 50mm	50mm	225A	30mA less than 0.1 sec	
148~186A	3 x 70mm	70mm	250A	30mA less than 0.1 sec	
186~224A	3 x 95mm	95mm	180A	30mA less than 0.1 sec	

When the unit is to be installed outdoors, use a UV resistant cable.



7.2 PCB Connection

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Connections Explanation:

No.	Symbol	Meaning
1	RO01	System 1 magnetic valve outlet (220-230VAC)
2	RO02	System 2 magnetic valve outlet (220-230VAC)
3	RO03	System 1 alert outlet (220-230VAC)
4	RO04	System 2 alert outlet (220-230VAC)
5	CC01	System 1 magnetic valve inlet (220-230VAC)
6	CC02	System 2 magnetic valve inlet (220-230VAC)
7	CC03	System 1 alert inlet (220-230VAC)
8	CC04	System 2 alert inlet (220-230VAC)
9	NET GND 12V	Wire Controller
10	DI01 GND	Mode/Communication
11	AI01 GND	System 1 anti-freeze temp. (input)
12	AI02 GND	System 2 anti-freeze temp. (input)
13	AI03 GND	System 1 economizer inlet Temp failure(input)
14	AI04 GND	System 1 economizer outlet Temp failure (input)
15	AI05 GND	System 2 economizer inlet Temp failure (input)
16	AI06 GND	System 2 economizer outlet Temp failure (input)
17	AI07 GND	System 1 exhaust temp. (input)
18	AI08 GND	System 2 exhaust temp. (input)
19	AI09 GND	Ambient temp. (input)



8. Maintenance

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Check the water supply and the air vent frequently to avoid lack of water or air in the water loop.

Clean the water filter periodically to keep the water good quality. Lack of water and dirty water can damage the unit. The heat pump will start the water every 72 hours when it is not running to avoid freezing.

Keep the unit in a clean, dry place with good ventilation. Clean the heat exchanger every few months to keep a good heat exchange rate and save energy.

Check each part of the unit and the pressure of the system. Replace any failing parts and recharge the refrigerant if needed.

Check the power supply and the electrical system, make sure all electrical components are wired well and working.

If the heat pump is not to be used for an extended period of time, please drain all the water out. Drain the water out from the lowest point of the heat exchanger to avoid freezing in winter. Water recharge and full inspection on the heat pump is needed before being restarted.

The water loop of the heat pump MUST be protected from freezing in winter. Do not shut off the power supply to the heat pump in winter. When the air temperature is below 0°C, if the inlet water temperature is above 2°C and below 4°C the water pump will begin freezing protection. If the inlet water is lower than 2°C, the heat pump will begin heating.



9. Warranty



Please refer to the EvoHeat website for warranty details

- Australia: <u>www.evoheat.com.au</u>
- South East Asia: <u>www.evoheat.com.sg</u>
- 1. Warranty terms are from date of purchase.
- 2. This warranty excludes any defect or injury caused by or resulting from misuse, abuse, neglect, accidental damage, improper voltage, vermin infestation, incompetent installation, any fault not attributable to faulty manufacture or parts, any modifications which affect the reliability or performance of the unit.
- 3. This warranty does not cover the following:
 - a. Natural Disasters (hail, lightening, flood, fire etc.)
 - b. Rust or damage to paintwork caused by a corrosive atmosphere
 - c. When serviced by an unauthorized person without the permission of Evo Industries
 - d. When a unit is installed by an unqualified person
 - e. Where a unit is incorrectly installed
 - f. When failure occurs due to improper or faulty installation
 - g. Failure due to improper maintenance (refer Operating Instructions)
 - h. 'No Fault Found' service calls where the perceived problem is explained within the
 - i. Costs associated with delivery, handling, freighting, or damage to the product in transit.
- 4. If warranty service is required you should:
 - a. contact Evo Industries Australia on 1300 859 933 or via our Contact page on our web site
 - b. provide a copy of your receipt as proof of purchase
 - c. have completed the online warranty registration or provide a completed warranty card.
- 5. Onsite technical service is available within the normal operating area of your Evo Industries authorized Service Centre. Service outside this area will incur a traveling fee.
- 6. Unless otherwise specified to the purchaser, the benefits conferred by this express warranty and additional to all other conditions, warranties, rights and remedies expressed or implied by the Trade Practices Act 1974 and similar consumer protection provisions contained in legislation of the States and Territories and all other obligations and liabilities on the part of the manufacturer or supplier and nothing contained herein shall restrict or modify such rights, remedies, obligations or liabilities.

Warranty Registration

EvoHeat highly recommend customers to complete their warranty details online to ensure efficient warranty claim processing.

To register your warranty, scan our QR Code or head to our website and fill in the Warranty Registration Form: <u>https://evoheat.com.au/warranty-registration/</u>

