



# INSTALLATION & OPERATION MANUAL



## CS & CS-GEN2

COMMERCIAL POOL HEAT PUMP SERIES



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## 1. Introduction

This manual contains information relating to the installation, troubleshooting, operation, and maintenance of this EvoHeat unit. Instructions in this manual must always be followed. Failure to comply with these recommendations will invalidate the warranty. Should you have any questions or require technical support, call the EvoHeat office on 1300 859 933 to speak to our team.



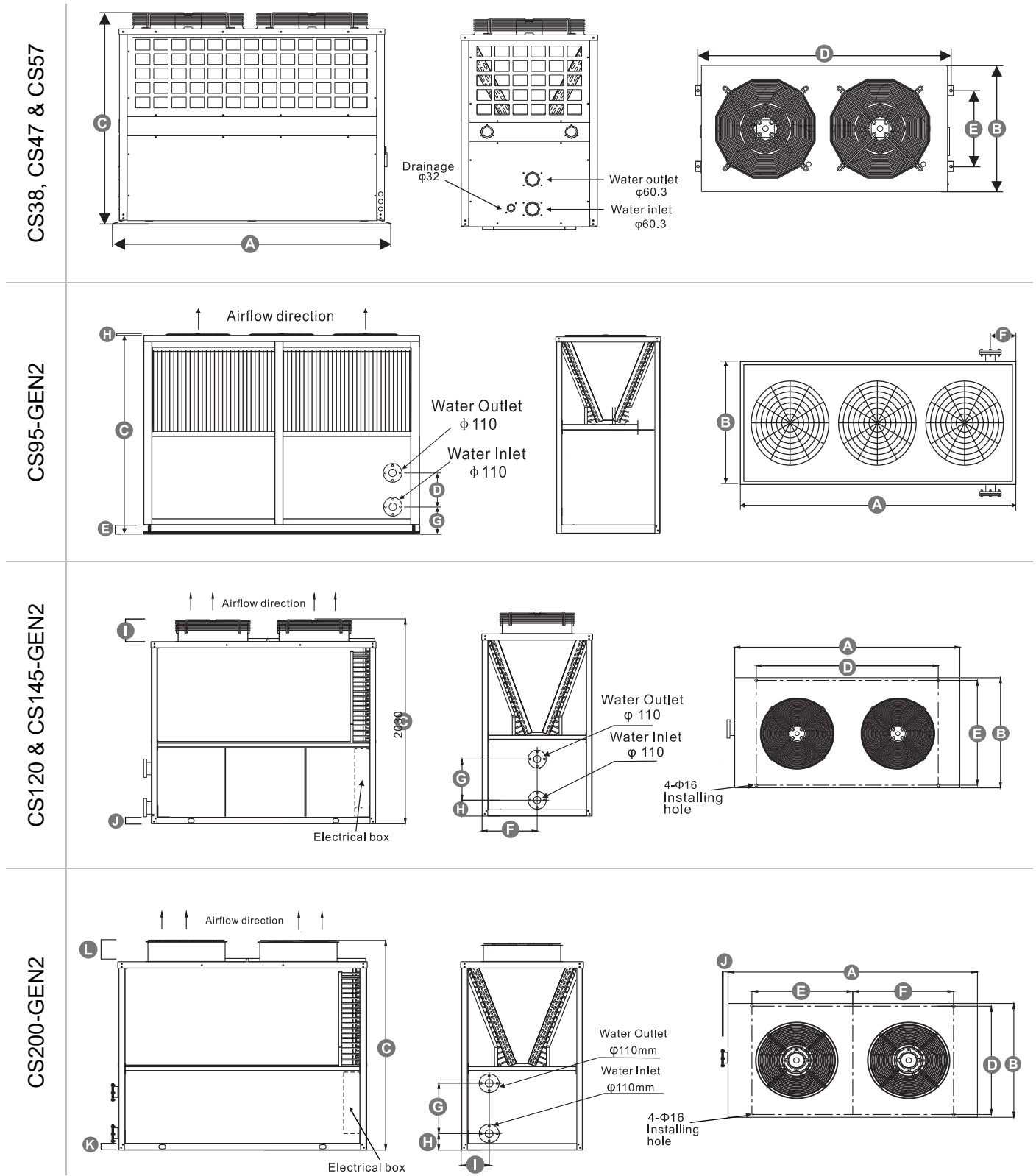
The EVO CS & CS-GEN2 commercial heat pump is the most efficient way to heat a commercial pool regardless of size or location. Our commercial heat pumps are ideal for sports and leisure centres, aquaculture, agriculture, water parks, hotels, resorts, apartments and office builds – there is no job in the field too big for the EVO CS Series!

| TECHNICAL DATA                        |              | CS38         | CS47        | CS57        | CS95-GEN2   | CS120-GEN2 | CS145-GEN2  | CS200-GEN2  |
|---------------------------------------|--------------|--------------|-------------|-------------|-------------|------------|-------------|-------------|
| Heat output at 24°C air/26°C water    | <b>kW</b>    | 38           | 47          | 57          | 95          | 120        | 145         | 190         |
| Heat output at 15°C air/26°C water    | <b>kW</b>    | 31.1         | 39.7        | 48.1        | 72.5        | 103        | 120         | 160         |
| Cooling output at 35°C air/30°C water | <b>kW</b>    | 21.6         | 28.2        | 36          | 64          | 80         | 97          | 119         |
| <b>C.O.P. at 24° C air</b>            |              | <b>5.3</b>   | <b>5.05</b> | <b>5.14</b> | <b>5.49</b> | <b>5.7</b> | <b>5.69</b> | <b>5.79</b> |
| Power input at 24 deg air             | <b>kW</b>    | 7.16         | 9.3         | 11.1        | 17.3        | 21         | 25.5        | 32.8        |
| Power supply                          |              | 380-415/3/50 |             |             |             |            |             |             |
| *Max running current AMPS per phase   | <b>A</b>     | 13.8         | 19.12       | 25.1        | 40          | 46         | 60          | 80.1        |
| Compressor type                       |              | Scroll       |             |             |             |            |             |             |
| Refrigerant                           |              | R410A        |             |             |             |            |             |             |
| PVC water connection                  | <b>mm</b>    | 50           | 50          | 50          | DN 110      | DN 110     | DN 110      | DN 110      |
| Water flow rate                       | <b>L/min</b> | 200          | 250         | 325         | 483         | 583        | 1033        | 1000        |
| Noise at 1M                           | <b>dB(A)</b> | 61           | 61          | 61          | 61          | 62         | 63          | 67          |
| Unit dimensions (mm)                  | <b>L</b>     | 1490         | 1490        | 1490        | 2170        | 2175       | 2175        | 2180        |
|                                       | <b>W</b>     | 735          | 735         | 735         | 1070        | 1070       | 1070        | 1070        |
|                                       | <b>H</b>     | 1200         | 1200        | 1200        | 1920        | 2030       | 2030        | 2060        |
| Weight packed                         | <b>kg</b>    | 270          | 300         | 300         | 679         | 694        | 709         | 940         |
| Weight unpacked                       | <b>kg</b>    | 252          | 254         | 260         | 632         | 648        | 664         | 908         |

\*Running current max: 43°C ambient heat /29°C in cooling mode.

The data above is based on the EVO heat pump only, it does not include auxiliary devices. Product specification information provided above is correct at the date of printing, this data may change without notice. Please speak with an EvoHeat Specialist for the most current product specifications.

## 2. Unit Dimensions



| Unit: mm                    | A (L) | B (W) | C (H) | D    | E    | F   | G   | H   | I   | J  | K  | L   |
|-----------------------------|-------|-------|-------|------|------|-----|-----|-----|-----|----|----|-----|
| <b>CS38, 47 &amp; 57</b>    | 1490  | 735   | 1200  | 1464 | 480  |     |     |     |     |    |    |     |
| <b>CS95-GEN2</b>            | 2170  | 1070  | 1920  | 240  | 183  | 174 | 160 | 9   |     |    |    |     |
| <b>CS120 &amp; 145-GEN2</b> | 2175  | 1070  | 2030  | 1800 | 1020 | 530 | 400 | 155 | 200 | 63 |    |     |
| <b>CS200-GEN2</b>           | 2180  | 1070  | 2060  | 1020 | 900  | 900 | 450 | 160 | 136 | 50 | 80 | 249 |

### 3. Safety Instructions



Installation, repair, or relocations must only be done by a fully qualified technician. If done incorrectly there is a number of hazards that can occur including fire, electric shock, water leakage and injury.

- A circuit breaker must be installed for the unit.
- Ensure the unit has a good power connection and earthing to avoid the risk of electrical shocks.
- Maintenance and operation must be carried out according to the recommended time and frequencies, as stated in this manual.
- The unit must be stored in a room without any continuously operating ignition sources (for example: open flames, an operating gas appliance)
- Do not pierce or burn the unit.
- If the supply cord is damaged, it must be replaced by a qualified service agent.
- This appliance must be installed in accordance with national wiring regulations.

**WARNING**

**THIS PRODUCT CONTAINS A BUTTON BATTERY**

If swallowed, a lithium button battery can cause severe or fatal injuries within 2 hours.

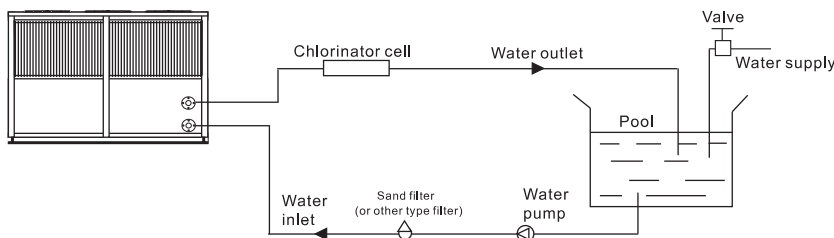
Keep batteries out of reach of children.

If you think batteries may have been swallowed or placed inside any part of the body, seek immediate medical attention.

- Before obtaining access to terminals all supply circuits must be disconnected.
- Use supply wires suitable for 75°C
- The unit is equipped with an over-load protection system. After a previous stoppage, the unit will not start for at least 3 minutes.
- For unit cleaning or maintenance, switch off and disconnect the power of the unit.
- Do not install the unit near flammable gas or spray flammable substances near it.
- Ensure the heat pump is installed on a strong and stable platform.
- If the supply cord is damaged, it must be replaced.
- Use genuine standard spare parts only.

### 4. Installation

#### 4.1 System Installation



The schematic diagram is for reference only. Check the water inlet/outlet label on the heat pump while plumbing the unit.

EvoHeat only provide the main EvoHeat unit and EvoHeat accessories; other items in the illustration above should be provided by the user or the installer.

#### EVOHEAT ACCESSORIES – DO NOT THROW AWAY

All EvoHeat units are provided with rubber feet, controller and leads for the controller– do not throw them away as they are required as part of the installation.

#### CHECK HEATER CONDITION ON ARRIVAL

Check the heater packaging upon delivery for any obvious signs of damage. Inform your supplier IMMEDIATELY if there is any evidence of rough handling. When the heater has been removed from the packaging and is operational check the refrigerant gauge on the front panel of the unit. The gauge should be showing a pressure of approx 10-20 on the outside red band – any less than this figure means there may be a leak in the refrigerant system, and you should immediately contact your EvoHeat Dealer.

General installation information disclaimer: Install your EVOHEAT heat pump in accordance with the procedures in the product manual. Always check that your installation will comply with local building and council regulations.



**IMPORTANT:** EvoHeat heat pumps MUST be connected by a licensed electrician. Under no circumstances should an unlicensed person attempt to install or repair an EvoHeat heat pump themselves. Heater electrical installation undertaken by an unlicensed installer will void the warranty. Correct installation is required to ensure safe and efficient operation of your pool heater.

Before installation it is very important to ensure 5 variables are carefully checked to allow the unit to operate correctly:

- |          |                      |                                |  |
|----------|----------------------|--------------------------------|--|
| Location | Clearances & Airflow | Adequate Water Flow & Plumbing | Correct Electrical Connection & Supply |
|----------|----------------------|--------------------------------|--|

## 4.2 Location of Installation

Evo recommend the heat pump should ONLY be installed in an outdoor location with appropriate ventilation. Installing the heater indoors without adequate ventilation, or in a poorly ventilated enclosed space, will result in very poor performance and can, in extreme cases, damage the heater.

Ensure the heater is installed in a well-ventilated area with plenty of fresh air. Evo recommend the heat pump should ONLY be installed in a location with appropriate ventilation.

If installing the heater on an existing pump/filtration system, the heater must be installed AFTER the filter and BEFORE the chlorinator/sanitizer.

- |                                   |   |
|-----------------------------------|---|
| The Evo unit should be installed: | <ul style="list-style-type: none"> <li>- At least 3.5m away from the water's edge.</li> <li>- No greater than 7.5m from the water's edge (to avoid heat loss from the piping).</li> <li>- On a flat level surface as close as possible to the pool</li> </ul> |
|-----------------------------------|---|

A rough estimate of heat loss over a 30m pipe run can be as high as 600 Watts per hour per 5 degrees of temperature difference between the air/ground and the pool water. These losses need to be taken into account over long distances and piping may need to be insulated to reduce heat leakage.

Make sure the heat pump is not located where large amounts of water may run-off from a roof into the unit. Sharp sloping roofs without gutters will allow excessive amounts of rain water mixed with debris from the roof to be forced through the unit. A water deflector may be needed to protect the heat pump.

If a suitable outdoor location is unavailable please contact EvoHeat for specialist technical advice.

The casing of this unit is made from high quality durable stainless steel, however if it is intended to be installed in a coastal or corrosive saltwater environment; regular application of an anticorrosive surface protectant to all exposed metals and fixings is recommended.

## 4.3 Airflow Clearances

The heat pump unit needs continuous fresh air whilst running. The heater draws up to 47000 m<sup>3</sup>/h ambient air through the sides and discharges through the top fan cowl.

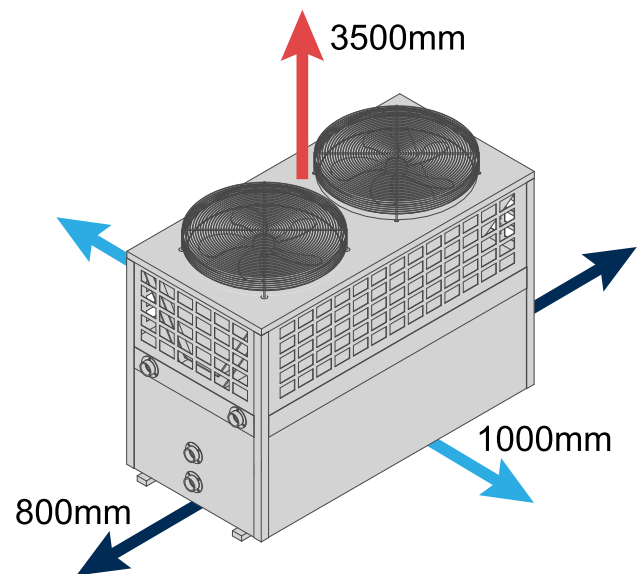
Installing the heater indoors or in an enclosed space will result in very poor performance and can in extreme cases damage the heater. Ensure the heater is installed in a well-ventilated area with plenty of fresh air, a minimum gap between walls/fences etc of:

- 1000mm on the sides
- 800mm on the ends
- and a 3500mm overhead clearance.

When units of a similar height are placed side by side, EvoHeat recommend a 1500mm clearance between units.

Leave sufficient space for unobstructed airflow into and out of the heater. Do not locate the heater in an enclosed area, or the discharged cold air will recirculate into the unit and consequently lower the heating efficiency as well as possible icing up.

If you do not have a location with these suggested clearances, please contact our EvoHeat Tech Support Specialist to discuss appropriate installation locations.



Fan discharge distance can be reduced by adding a Plenum to alter the air flow direction. Contact EvoHeat or a HVAC specialist for further advice. If you do not have a location with these suggested clearances, please contact our EvoHeat Tech Support Specialist to discuss appropriate installation locations.

#### 4.4 Adequate Water Flow

All EVOHEAT heat pumps have a factory preset internal water flow switch. If there is insufficient water flow the heater will not operate.

It is CRITICAL that there is sufficient water flow to the unit. Incorrect water flow can cause a loss of efficiency and possible damage to the unit. Optimal water flow rates are listed in the EvoHeat manual. It is imperative that water flow is kept as close as possible to these flow rates. Correct water flow not only offers optimal heater performance, but may also prevent possible damage to your heater.

Before connecting the heater to the plumbing, all piping must be thoroughly flushed to ensure no debris can enter the heater. Failure to remove pipe debris can jam or damage the flow switch and may cause damage to the heater. When cleaning the pool it is advisable to turn off your heater as restricted water flow may cause the heater to shut down and indicate low water flow fault (E03 error) or high pressure fault (E01 Error).



**IMPORTANT:** A Variable speed pump or bypass valve and plumbing MUST be fitted to allow water flow to be adjusted through the heater. Do not direct connect a water pump with higher flow than required to the heat pump.

#### 4.5 Rubber Feet

All EvoHeat units are provided with rubber feet which EvoHeat highly recommend being installed. The rubber feet help reduce vibration of the unit and help provide a space below the heat pump to install the drainage barbs.

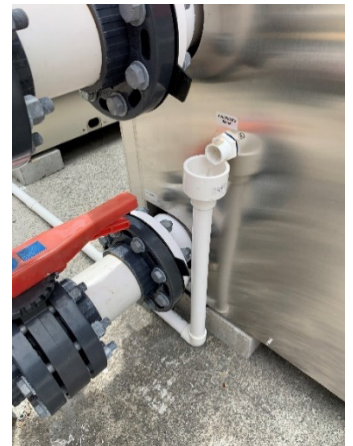
#### 4.6 Drainage & Condensation

Whilst the heater is operating, water in the air condenses on the fins of the evaporator. During times of high humidity, the condensate may be several litres per hour. This may give the impression that the heater is leaking, however this is a normal function of heat pumps. The heat pump can also automatically activate the reverse cycle defrost feature when required which increases condensation produced.

Ensure CS series heat pumps are installed level so condensate is not allowed to pool at one end of the condensate tray!

Ensure CS-GEN2 series units are installed level to evenly distribute condensate through the two drainage holes on the condensate pan, located at either end of the heat pump!

The condensate water captured will discharge from the heat pump through one end, typically where the heat pumps Inlet/Outlet connections are located. The condensate discharges from the heat pump through a 32mm female threaded connection. Ensure condensate is plumbed away from the heat pump to an appropriate location, ideally a drain. Note: A 32mm Male threaded adapter is NOT supplied with the heat pump.



#### 4.7 Plumbing

The heat pumps 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 max.

**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.


CS38, CS47 & CS57: These units come supplied with a barrel union that screws into the heat exchanger. The barrel union has a 50mm PVC plumbing connection.

Ensure pipework connecting to the inlet/outlet unions is appropriately supported, any movement in this pipework can caused the rubber O-ring to pinch and leak.

CS95, CS120, CS145 & CS200: These units have a 100mm flange connection.

For systems in extremely cold climates where winterizing is necessary, give serious consideration to adding a quick coupler fitting at the unit inlet and outlet connections to allow easy draining of unit.

## 4.8 Electrical Connection

 Always use a suitably qualified Electrician to perform any electrical work, they must read the manual before connecting.

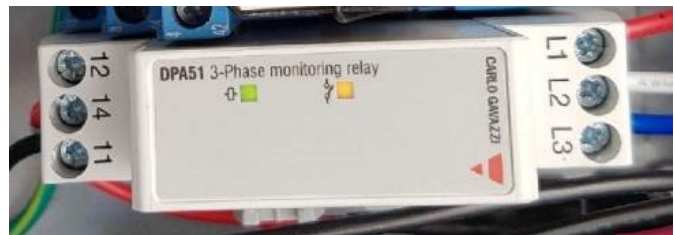
Ensure all cabling, circuit breakers, and protections are of a suitable size and specification in accordance with electrical wiring legislation for the heater being installed. Ensure to check that there is adequate voltage and current available at the heater connection to run the unit.

Voltage range should be 220-230 volts for single phase, and 380-400 volts for 3 phase units. Voltage ranges outside these parameters will cause heater damage and void your warranty.

1. Ensure power is disconnected during installation or service.
2. Always comply with the national and local electrical codes and standards.
3. Ensure electrical cable size is adequate for heater requirements at the installation location.
4. The heater must be equipped with a circuit breaker and isolation device.
5. Circuit breaker must be installed between the heater and the water circulation pump if the water pump is hard-wired into the heater. Please note recommended circuit breaker sizes make no allowance for a water pump hard wired into the heater.
6. The unit must be well earthed. Remove the front panel to access the electrical connection terminals of the heater. The electrical wiring diagram is affixed to the inside of the front panel.



**NOTE:** Correct phase connection is important with 3 phase heaters. If 2 lights are showing on the 3 PHASE relay monitor this means the EvoHeat heat pump has been wired correctly (one orange light and one green light). If only one light is showing, the phases are out of rotation and need to be rotated to get the correct phase rotation.



## 4.9 Initial Start-up

*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.*

After installation is completed, follow the steps below:

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 of wire controller, it should start after several seconds.
3. After running a few minutes make sure the air leaving the top 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. (Note: this may take up to several days depending on the initial water temperature and the size and location of the pool). When the water-in temperature reaches the set temperature the unit will shut off. The unit will now automatically restart (as long as your pool pump is running) when the pool temperature drops more than 1°C below the set temperature.

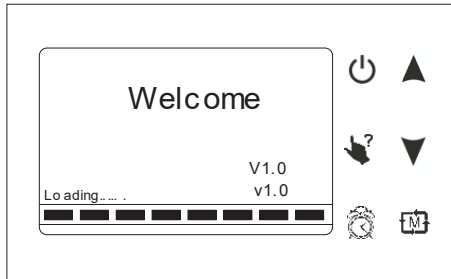
### TIME DELAY

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. Power interruptions during the delay period will have no effect on the 3-minute countdown.



## 5. Operation

### 5.1 The Controller



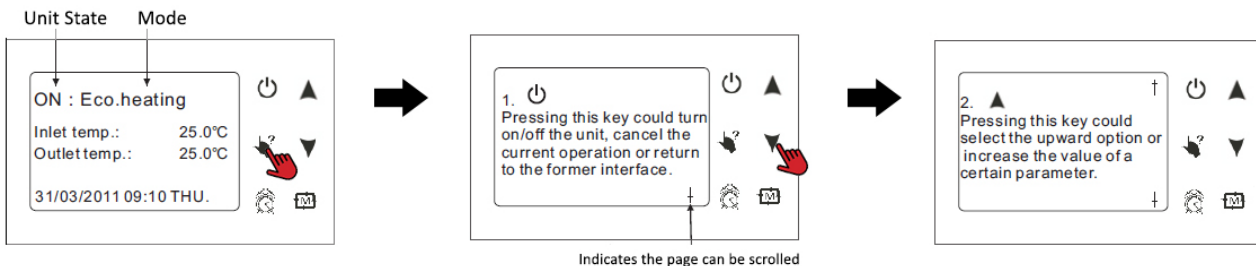
|  |               |   |
|--|---------------|---|
|  | <b>ON/OFF</b> | Press this button to start up/shut off the unit, cancel current operation or go back to previous interface. |
|  | <b>HELP</b>   | Press this button to check button function of system state.   |
|  | <b>MODE</b>   | Press this button to change the current mode, page up or confirm current operation.                         |
|  | <b>CLOCK</b>  | Press this button to set the clock or turn the timer on/off.  |
|  | <b>UP</b>     | Press this key to select the upwards option or increase the parameter value.                                |
|  | <b>DOWN</b>   | Press this key to select the downwards option or decrease the parameter value.                              |

### 5.2 Operating Functions

#### 5.2.1 Using the HELP Button

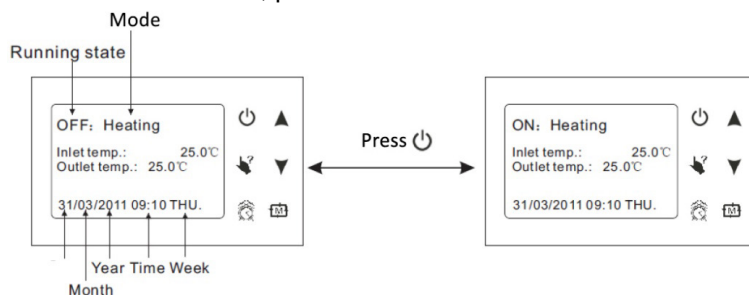
You can use at any interface and it will explain the buttons & functions of the current interface. To exit the help interface, simply press the **ON/OFF** button.

*EXAMPLE: Press **HELP** at the Main Interface*



#### 5.2.2 Starting & Shutting Down

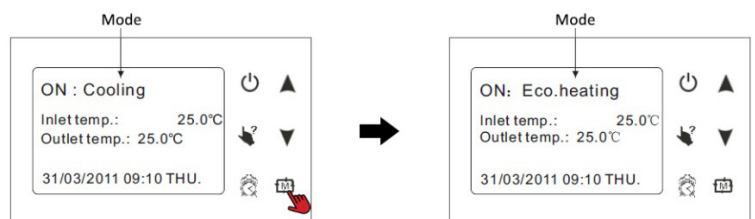
To turn on/off the unit, press the **ON/OFF** button for 1 second. The screen will display as following for each state:



#### 5.2.3 Switching Modes

At the main interface, you can switch between the modes of cooling, economic heating, heating & rapid heating by pressing .

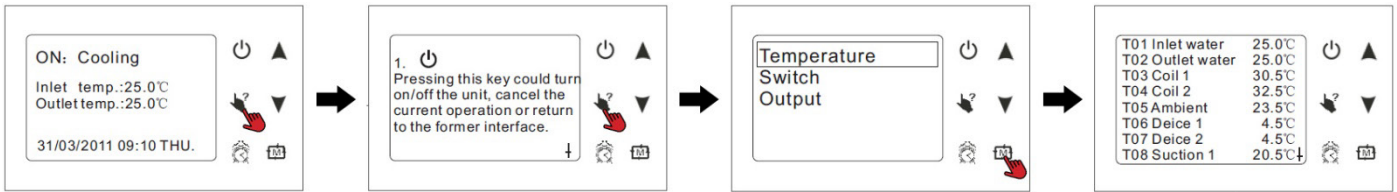
*Example: Switch from Cooling mode to Economic Heating*



*Note: The operation of mode is invalid if the unit you purchase is heating only or cooling only.*

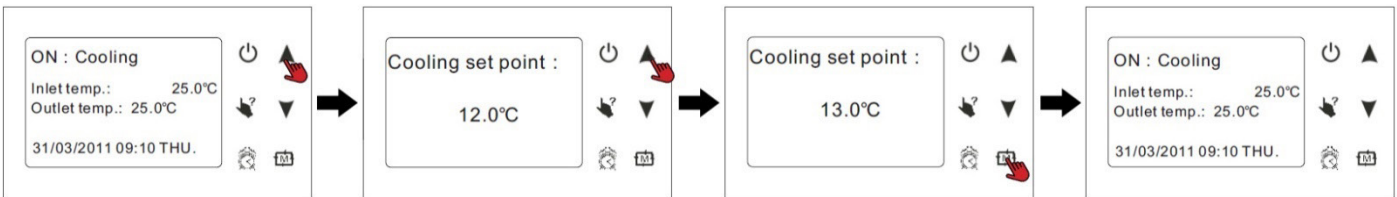
### 5.2.4 System State Checking

At any interface you can enter the system working state by pressing TWICE, then using the **UP** and **DOWN** arrow keys to highlight the required parameter, then press to enter. To exit, press the **ON/OFF** button



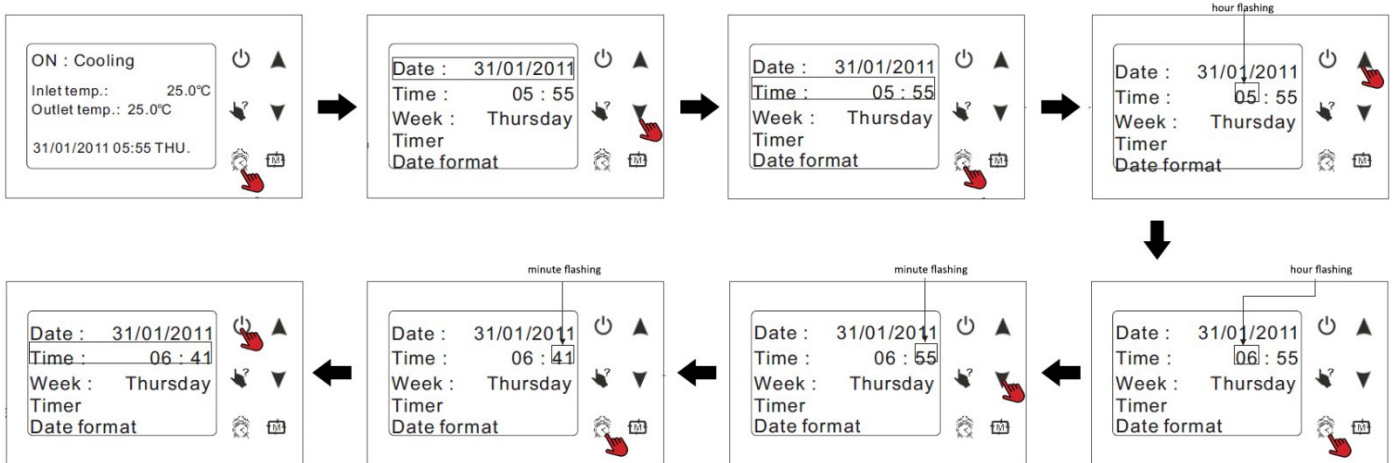
### 5.2.5 Changing Temperature

At the main interface, press the **UP** or **DOWN** key to adjust the temperature setting as desired. Once complete, press the button to save the settings and exit. Press the **ON/OFF** button to exit without saving settings. Refer to the Parameter Table to set relevant temperature.



### 5.2.6 Clock Setting

At the main interface press to enter the clock setting interface. Select the parameter you wish to change and press to make the parameter begin flashing which indicates it can be changed. Press the **UP** or **DOWN** keys to change the parameter value, then press to save. Press the **ON/OFF** button to return to the main menu.



Note: If there is no operation after 10 seconds, it will return to the main menu and changes will automatically be saved. To change the date, the same process is followed.

### 5.2.7 Timer Settings

Four timer periods can be set according to your needs.

From the main interface, press to enter the timer setting, press **DOWN** to select Timer, then press to enter the timer setting interface.

The process of setting a timer is much the same as adjusting the Clock settings.

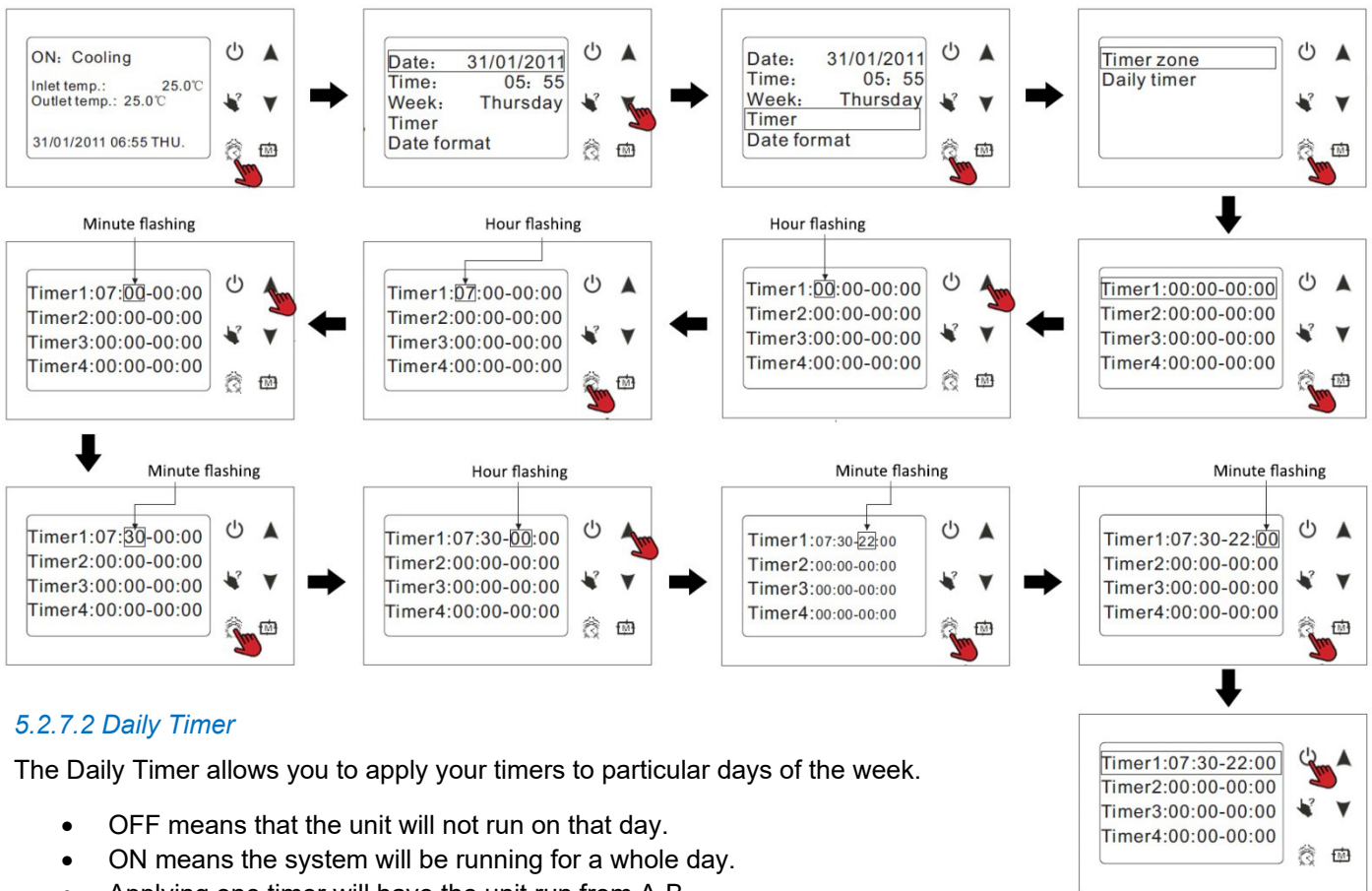
To cancel and return to the previous menu, press the **ON/OFF** button.

### 5.2.7.1 Timer

Each timer has an ON value when the unit will turn on an OFF value when the unit will turn off (00:00-00:00).

**These timers are required for the Daily Timers & Temperature Timers to work.**

*Example: TIMER1 Unit is on at 7:30am – and off at 10pm*



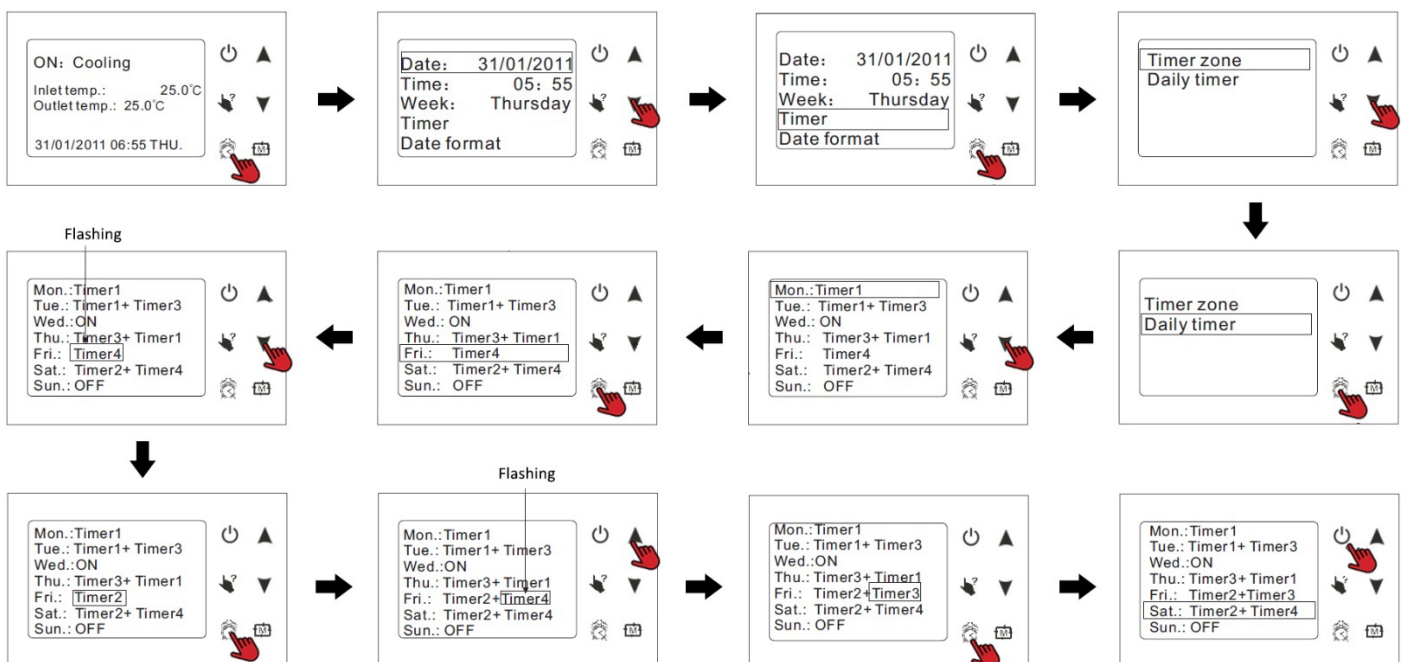
### 5.2.7.2 Daily Timer

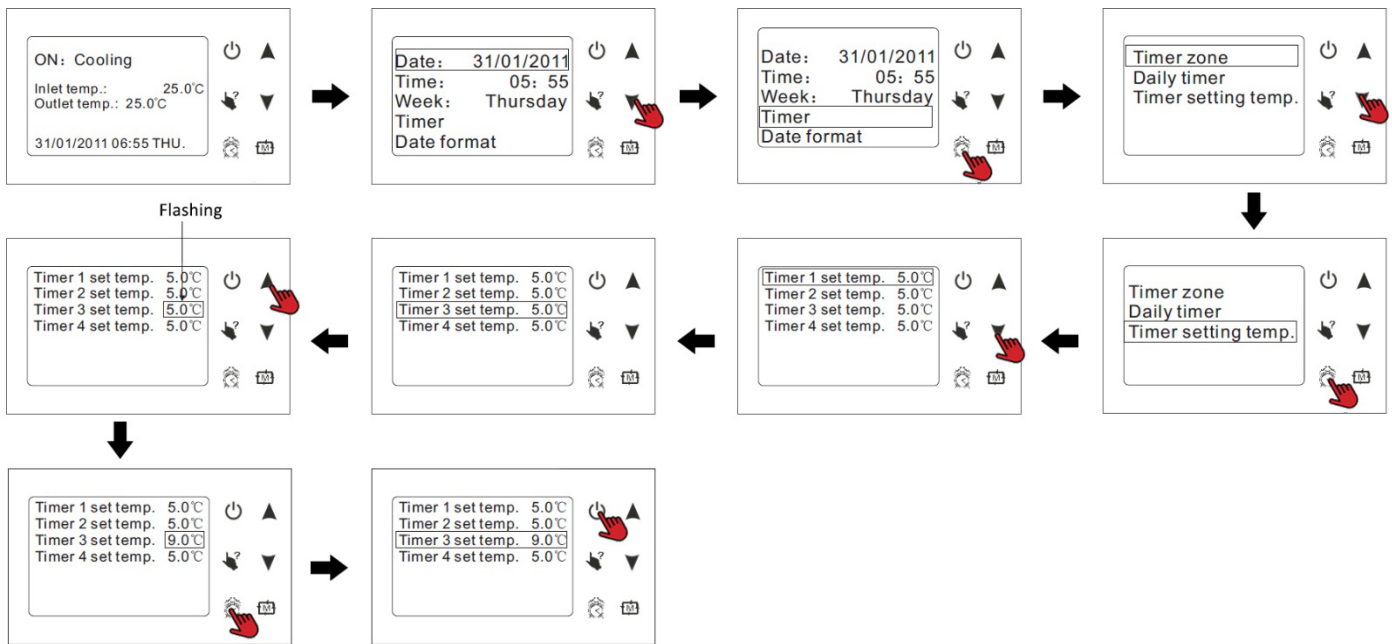
The Daily Timer allows you to apply your timers to particular days of the week.

- OFF means that the unit will not run on that day.
- ON means the system will be running for a whole day.
- Applying one timer will have the unit run from A-B.
- Applying two timers will mean the unit runs from A-B, then C-D.

*Example: Setting the operation on Friday to run two different timers.*

*If the Timer2 were 8am-10am & Timer 3 were 1pm-5pm, the unit would operate or stop accordingly.*



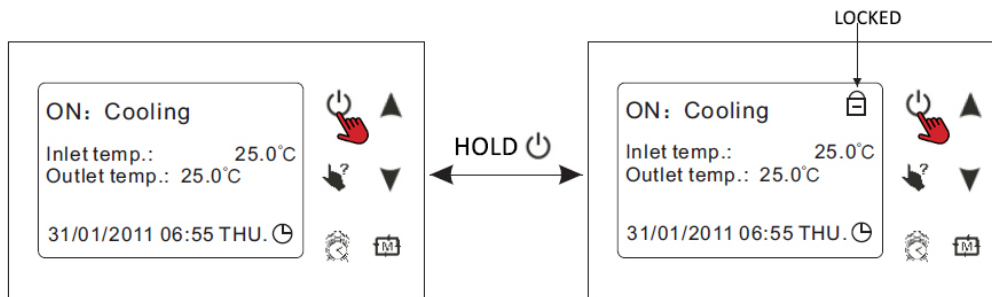


### 5.2.8 Keyboard Lock

You may wish to lock the keyboard to prevent unauthorised users from adjusting settings. When the keyboard is locked, a small lock symbol will be displayed on the screen.

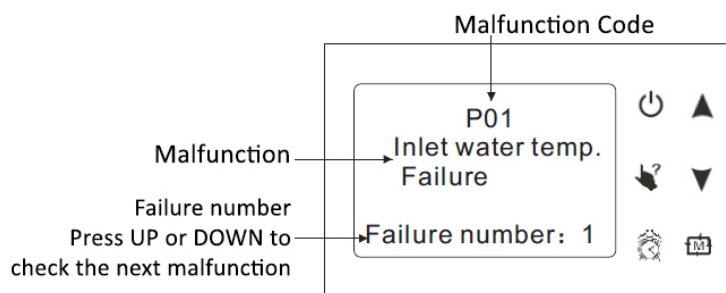
- To lock: from the main menu, hold the **ON/OFF** button for 5 seconds.
- To unlock: from the main menu, hold the **ON/OFF** button for 5 seconds.

. Note: If the unit is in alarm state, the keyboard lock is automatically removed.



### 5.2.9 Malfunction Display

If a fault occurs, there will be a malfunction code showing on the controller screen. Refer to the Malfunction Table (9.9) to find out the failure cause and solutions.



## 6. Troubleshooting

### HEAT PUMP NOT WORKING? CHECK THE FOLLOWING:

#### IS THE SCREEN OF CONTROL PANEL LIT?

If not, make sure the electrical wires and cables are correctly connected and the power is on. Ensure any circuit breaker devices are set to the ON position and press the ON button on your controller. Check your controller cable is plugged in and is not damaged. If the unit has been shut off or the power has been interrupted the heater will not restart for a 5-minute period to protect the compressor. Wait 5 minutes before attempting a restart.

#### IS THERE ENOUGH WATER FLOW?

If the screen displays a water flow related error check the water flow. Is the water pump in operation and the system free of debris that may cause a blockage? Disconnect pool cleaners to ensure proper water flow.

#### DOES YOUR HEAT PUMP HAVE AN ERROR MESSAGE ON THE SCREEN?

If yes, refer to the error code table 19.

#### IS THE HEAT PUMP SET TO RUN AT THE CORRECT TIME & DATE?

Please check your current timing or temperature modes on your controller – you may have programmed the unit to turn on at a different time.

#### IS THE CURRENT POOL/SPA WATER TEMP HIGHER THAN THE SET TEMP ON THE CONTROLLER?

If so the unit will not operate until the pool/spa water temperature falls below the set temperature on the controller.

### HEAT PUMP IS RUNNING BUT NOT HEATING, CHECK THE FOLLOWING:

#### IS THE AIR DISCHARGED FROM THE TOP OF THE FAN NOTICEABLY COOLER THAN THE AMBIENT TEMPERATURE?

If not, check the refrigerant gauge on the bottom panel of the heater. Another way to determine if the heater is working correctly is to look at the controller's screen and check to see if the WATER OUT temp is higher than the WATER IN temp. Check also the INLET WATER TEMP is lower than the HEAT TEMP set point.

If the gauge shows less than 0.8MPA contact EvoHeat tech support to check the refrigerant system.

#### IS THE FAN FUNCTIONING?

If not contact EvoHeat tech support on 1300 859 933



Example of empty (loss of refrigerant)



Example of normal (Note: can vary based on ambient temperature)

Ensure sufficient fresh airflow around the unit as per installation instructions. Make sure cold air discharged does not recycle back through the heater. Check the condenser fins. If they are dirty or blocked use a low flow garden hose only (Pressurised water may cause damage to the heater).

- The unit will periodically defrost when the ambient air temperature is lower than 8 degrees.

### IF THE HEAT PUMP IS RUNNING CONTINUOUSLY, CHECK THE FOLLOWING:

- Check the set temperature is at your desired level and that the pool water temperature is at or below this set point.
- Alternatively, this could be a possible electrical component failure – contact EvoHeat tech support.

### WATER APPEARING AROUND THE BASE OF THE UNIT, CHECK THE FOLLOWING:

The water appearing around the base of your heat pump could be condensation or a possible water leak. To determine, check the following:

- Check the discharge for the presence of chlorine.

If the water has no chlorine then it is condensation and is it normal – see drainage and condensation for more information. If the water has chlorine, it is a water leak and you need to contact EvoHeat tech support.

- Turn the heater off & run the water pump continuously for a period of 2-4 hours.

If the water dries out, then it was condensation – see drainage and condensation for more information. If there is a continuous leak contact EvoHeat tech support.

## 6.1 Error Codes

| CODE | FAILURE  | REASON   | SOLUTION  |
|------|--|--|---|
|      | Power on   |  |   |
|      | Normal working   |  |   |
| P01  | Inlet temp. sensor failure                             | The temp sensor is broken or short circuit                   | Check or change the temp. sensor  |
| P02  | Outlet temp. sensor failure                            | The temp sensor is broken or short circuit                   | Check or change the temp. sensor  |
| P04  | Ambient temp. sensor failure                           | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P15  | System 1 coil temp. sensor failure                     | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P25  | System 2 coil temp. sensor failure                     | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P35  | System 3 coil temp. sensor failure                     | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P45  | System 4 coil temp. sensor failure                     | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P17  | System 1 absorb temp. sensor failure                   | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P27  | System 2 absorb temp sensor failure                    | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P37  | System 3 absorb temp sensor failure                    | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P47  | System 4 absorb temp sensor failure                    | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P19  | System 1 anti-freezing temp sensor failure             | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P29  | System 2 anti-freezing temp. sensor failure            | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P39  | System 3 anti-freezing temp. sensor failure            | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P49  | System 4 anti-freezing temp. sensor failure            | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P191 | Using side system 1 anti-freeze temp failure           | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P291 | Using side system 2 anti-freeze temp failure           | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P391 | Using side system 3 anti-freeze temp failure           | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P491 | Using side system 4 anti-freeze temp failure           | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P151 | System 1 coil inlet temp failure                       | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P251 | System 2 coil inlet temp failure                       | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P351 | System 3 coil inlet temp failure                       | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| P451 | System 4 coil inlet temp failure                       | The temp sensor is broken or short circuit                   | Check or change the temp sensor   |
| E05  | System protection                                      | The protection system has failed                             | Check each protection point of the system                               |
| E08  | Communication Failure                                  | Communication failure between wire controller and main board | Check the wire connection between remote wire controller and main board |
| E11  | High pressure 1 protection                             | The high-pressure switch is broken                           | Check the pressure switch and cold circuit                              |
| E21  | High pressure 2 protection                             | The high-pressure switch is broken                           | Check the pressure switch and cold circuit                              |
| E31  | High pressure 3 protection                             | The high-pressure switch is broken                           | Check the pressure switch and cold circuit                              |
| E41  | High pressure 4 protection                             | The high-pressure switch is broken                           | Check the pressure switch and cold circuit                              |
| E12  | Low pressure 1 protection                              | The high-pressure switch is broken                           | Check the pressure switch and cold circuit                              |
| E22  | Low pressure 2 protection                              | The high-pressure switch is broken                           | Check the pressure switch and cold circuit                              |
| E32  | Low pressure 3 Protection                              | The high-pressure switch is broken                           | Check the pressure switch and cold circuit                              |
| E42  | Low pressure 4 protection                              | The high-pressure switch is broken                           | Check the pressure switch and cold circuit                              |
| E03  | Water flow failure                                     | No water/little water in water system                        | Check the pip water flow and water pump                                 |
| E04  | Electrical-heat over heat failure                      | Electrical-heat is over heat                                 | Check or change electrical-heat   |
| E06  | Water-inlet and outlet temp. difference                | Water flow is not enough and low differential pressure       | Check the pipe water flow and whether the water system is jammed or not |
| E06  | System 1/2/3/4 anti-freeze protection                  | Water flow is not enough and low differential pressure       | Check the pipe water flow and whether water system is jammed or not     |
| E171 | The system 1 use side anti-freezing protection         | Water flow is not enough                                     | Check the pipe water flow and whether the water system is jammed or not |
| E271 | The system 2 use side anti-freezing protection         | Water flow is not enough                                     | Check the pipe water flow and whether the water system is jammed or not |
| E371 | The system 3 heat source side anti-freezing protection | Water flow is not enough                                     | Check the pipe water flow and whether the water system is jammed or not |
| E471 | The system 4 heat source side anti-freezing protection | Water flow is not enough                                     | Check the pipe water flow and whether the water system is jammed or not |
| E19  | The primary anti-freezing protection                   | The ambient temp is low                                      | /   |
| E29  | The secondary anti-freezing protection                 | The ambient temp is low                                      | /   |

## 7. Appendix

### 7.1 Cable Specifications

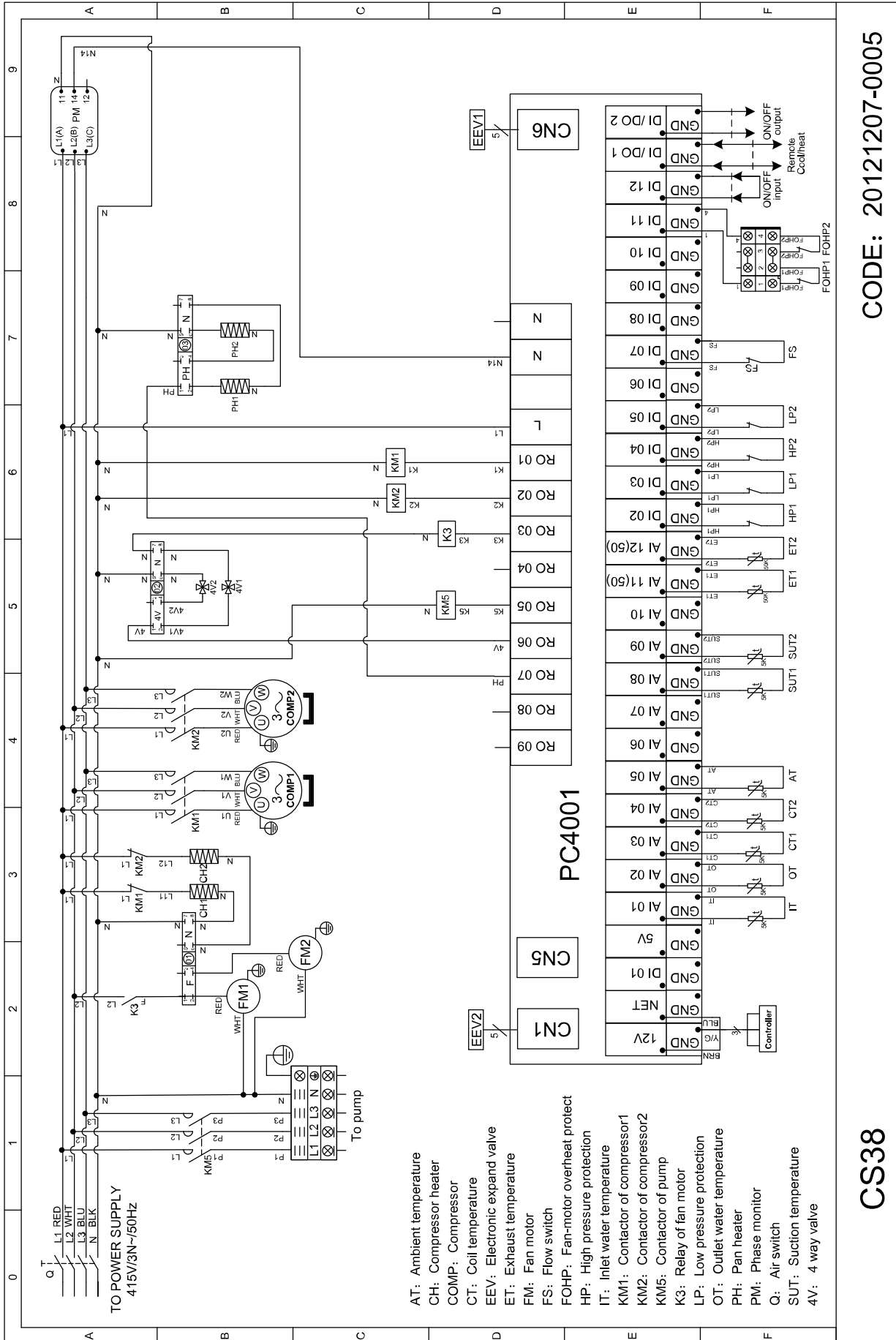
| Single Phase Unit         |                        |                    |      |                        |                        |
|---------------------------|------------------------|--------------------|------|------------------------|------------------------|
| Nameplate maximum current | Phase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

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

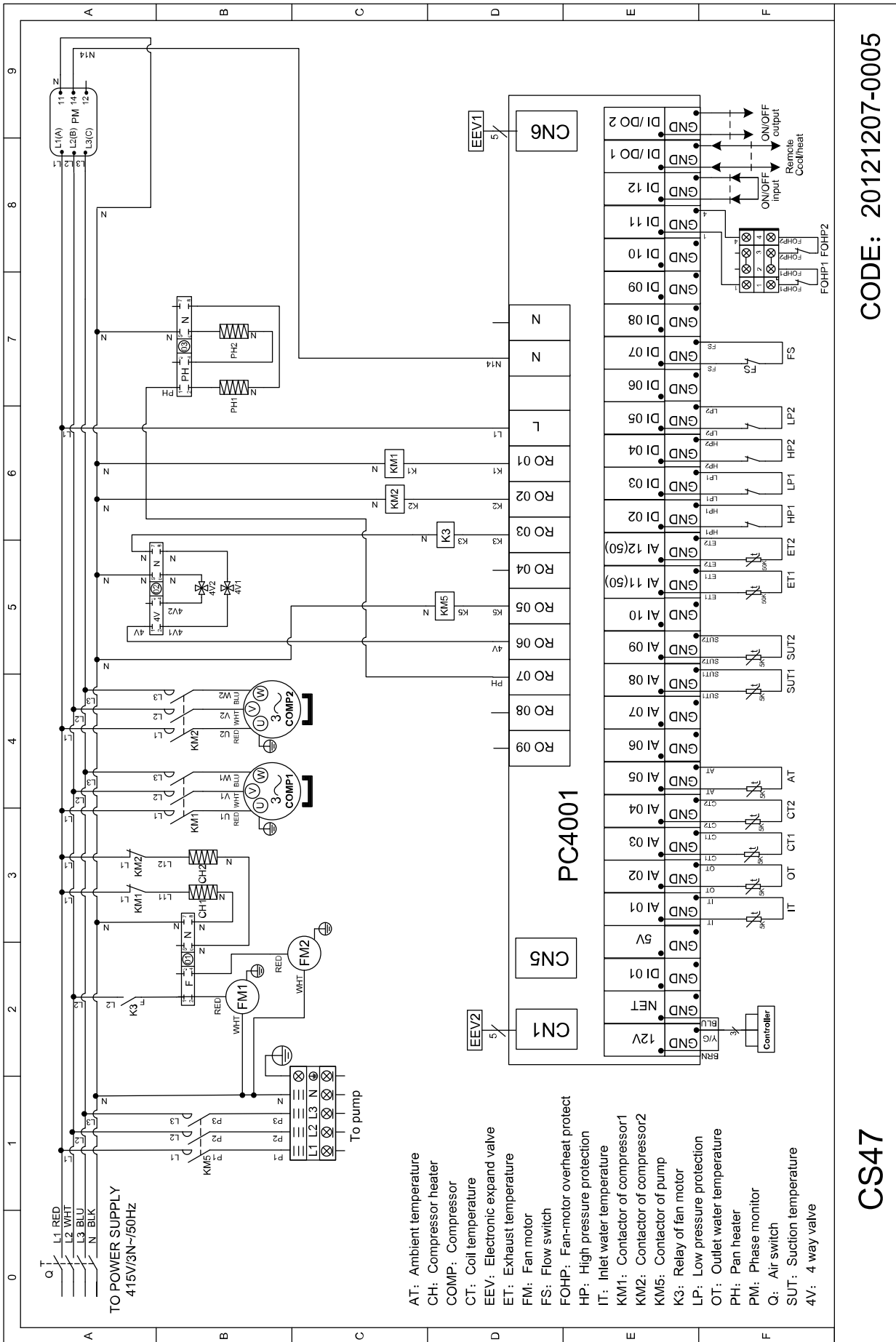
### 7.2 Parameter Table

| Meaning                                   | Default | Remarks    |
|---|---------|------------|
| Set-point of cooling target temperature   | 27°C    | Adjustable |
| Set-point of heating target temperature   | 27°C    | Adjustable |
| Set-point of auto mode target temperature | 27°C    | Adjustable |

### 7.3 Wiring Diagrams

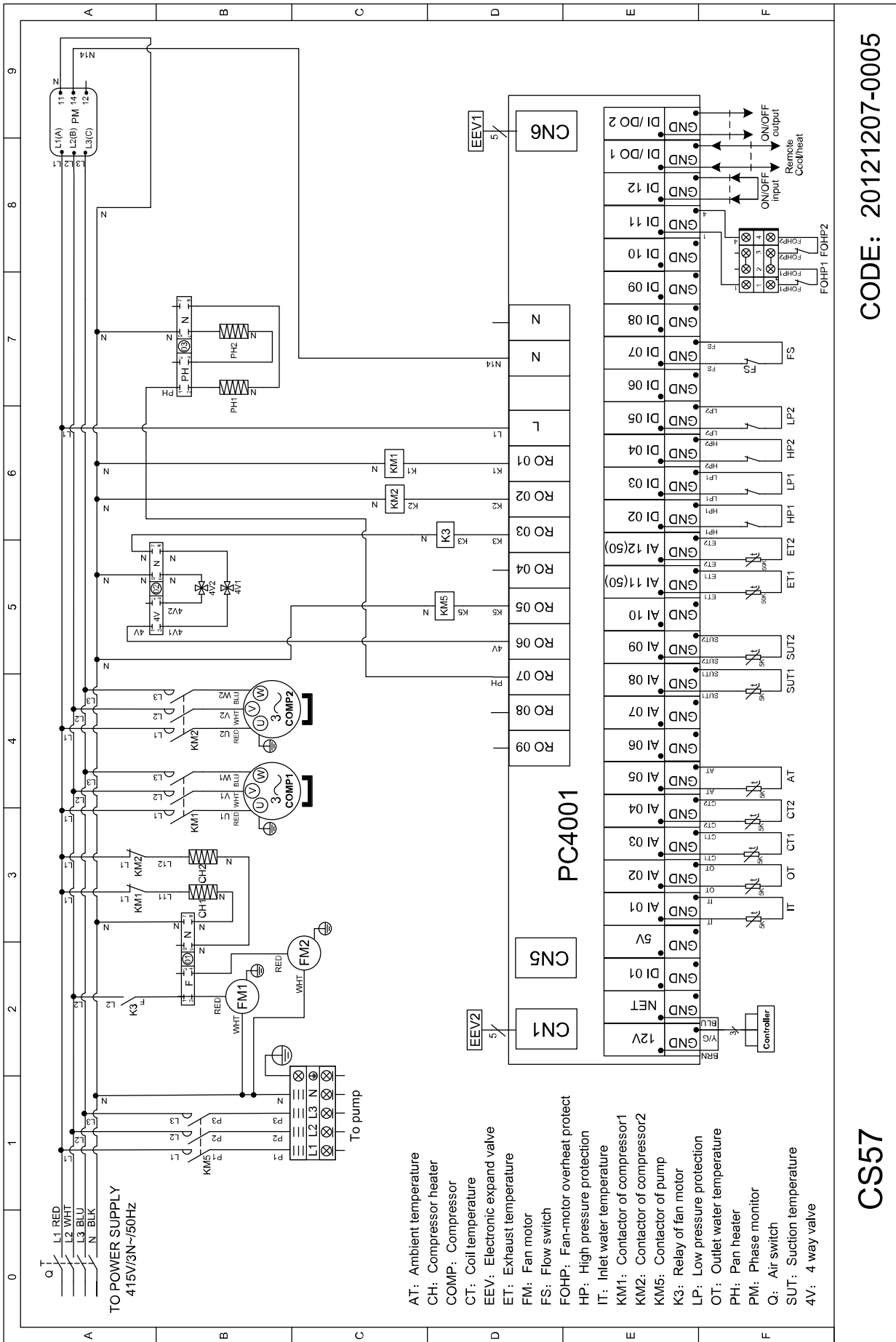






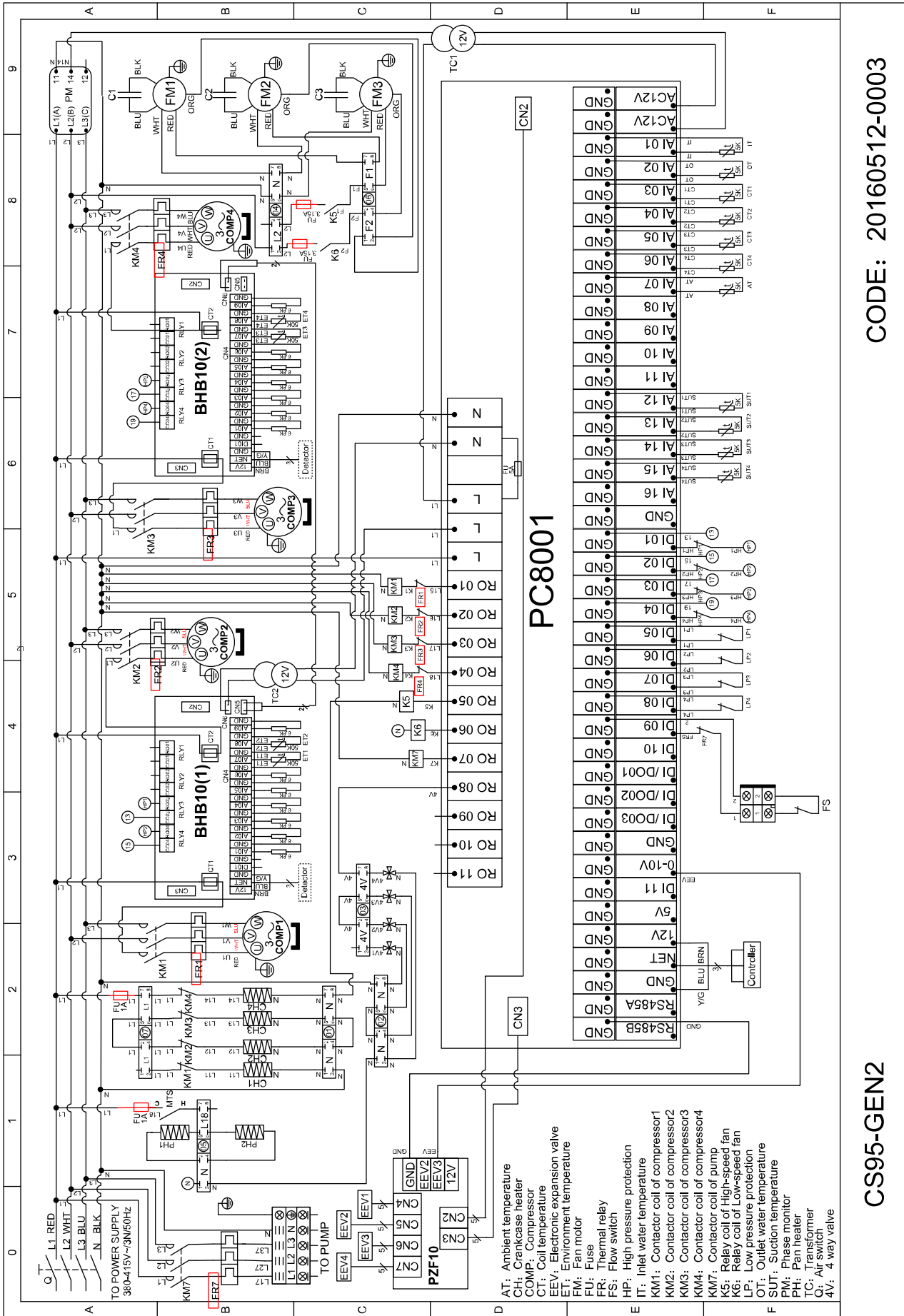
CODE: 20121207-0005

CS47



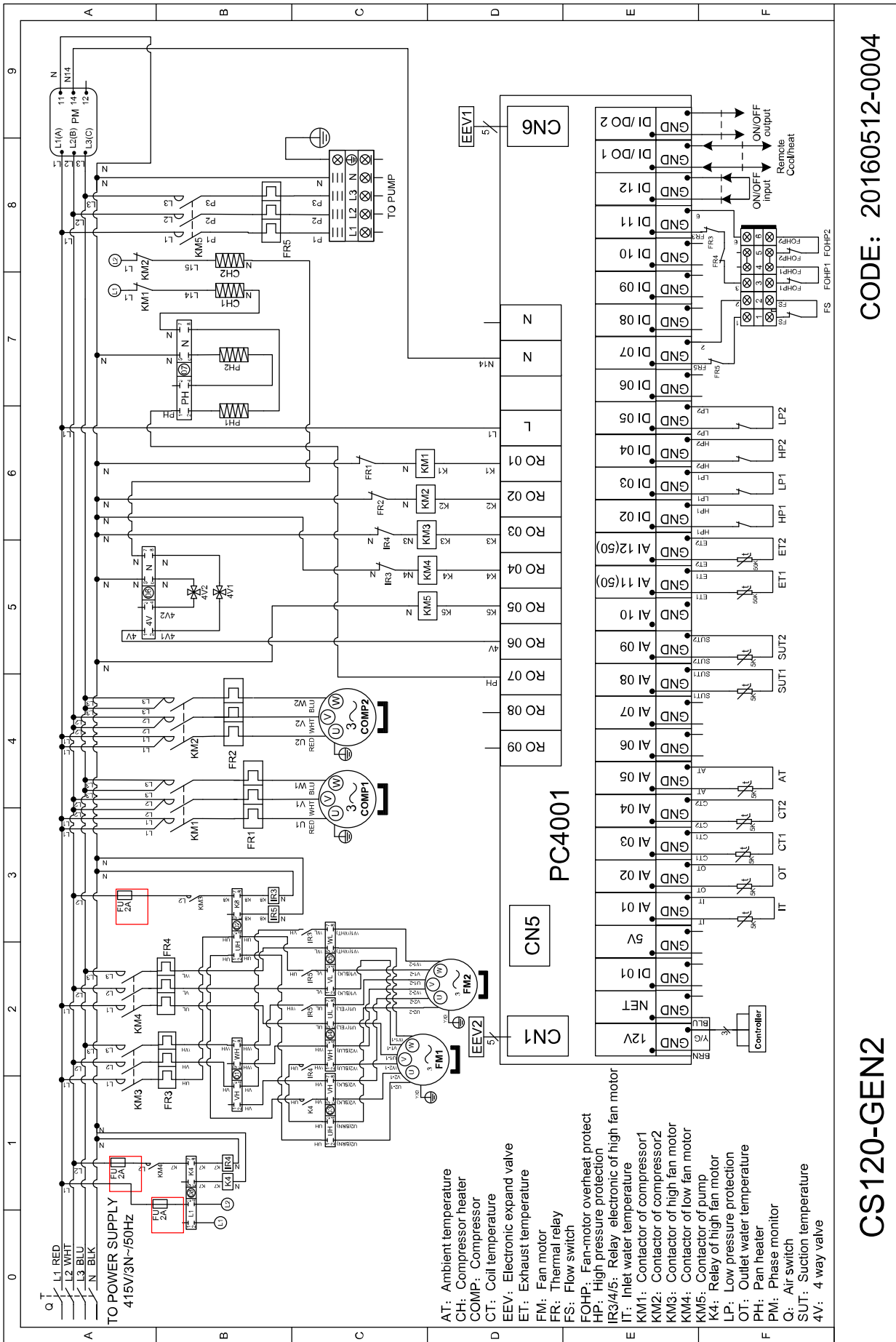
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**CODE: 20121207-0005**



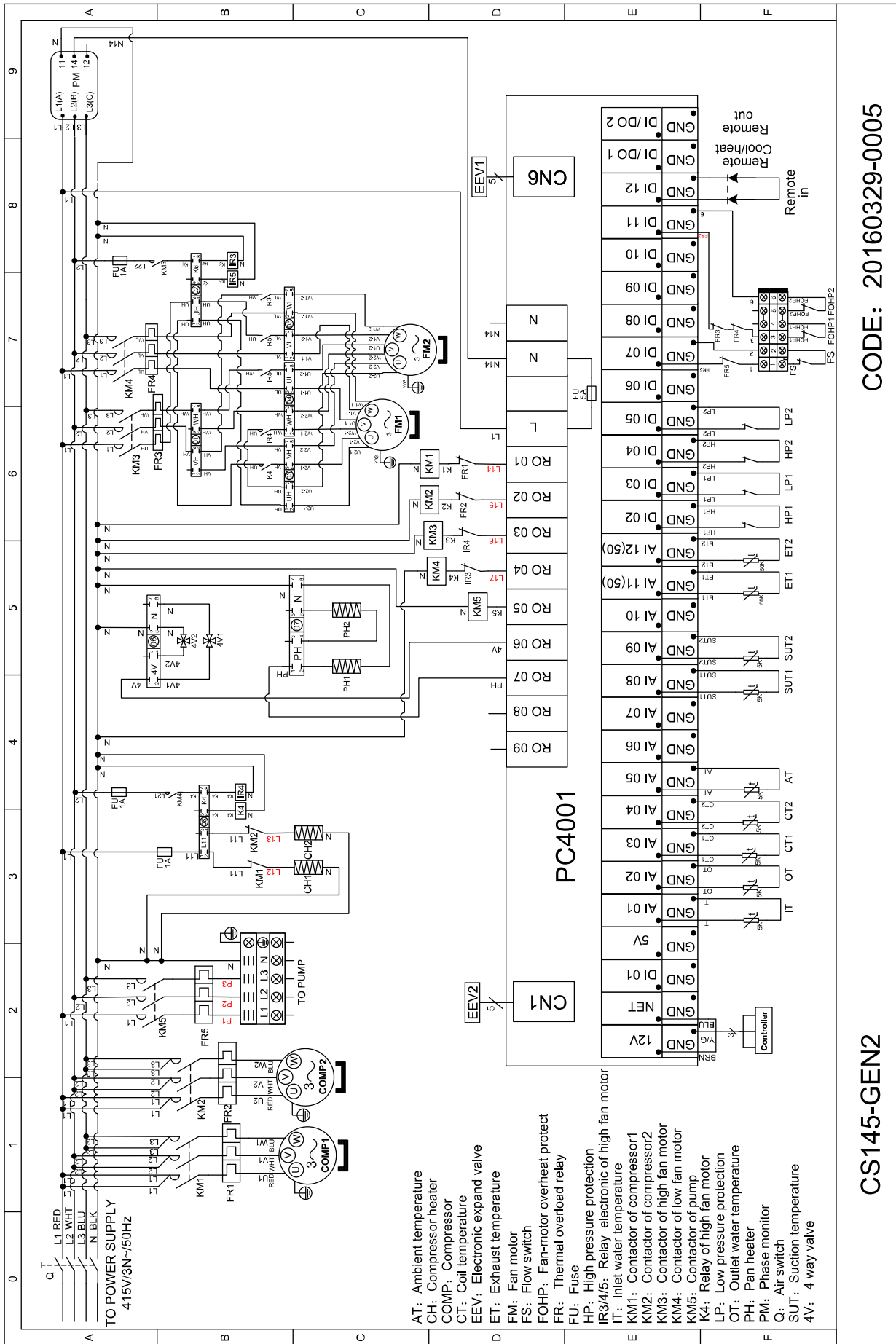
CODE: 20160512-0003

CS95-GEN2



CODE: 20160512-0004

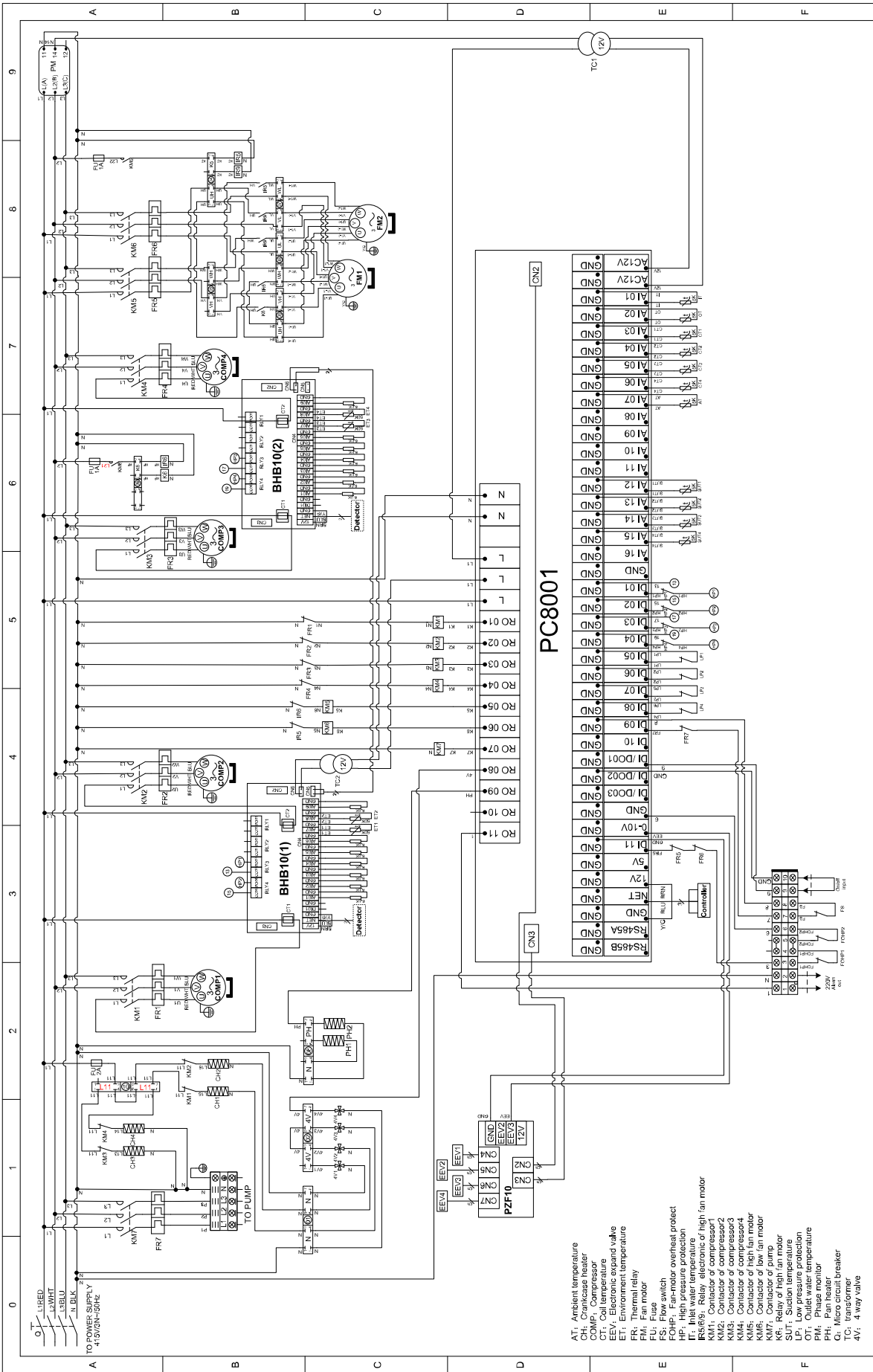
CS120-GEN2



CODE: 20160329-0005

CS145-GEN2

- AT: Ambient temperature
- CH: Compressor heater
- COMP: Compressor
- CT: Coil temperature
- EEV: Electronic expand valve
- ET: Exhaust temperature
- FM: Fan motor
- FS: Flow switch
- FOHP: Fan-motor overheating protect
- FR: Thermal overload relay
- FU: Fuse
- HP: High pressure protection
- IR3/4/5: Relay electronic of high fan motor
- IT: Inlet water temperature
- KM1: Contactor of compressor1
- KM2: Contactor of compressor2
- KM3: Contactor of high fan motor
- KM4: Contactor of low fan motor
- KM5: Contactor of pump
- K4: Relay of high fan motor
- LP: Low pressure protection
- OT: Outlet water temperature
- PH: Phase heater
- PM: Phase monitor
- Q: Air switch
- SUT: Suction temperature
- 4V: 4 way valve



CODE: 20161112-0006

CS200-GEN2

- AT: Ambient temperature
- CH: Crankcase heater
- COMP: Compressor
- CT: Current transformer
- EV: Evaporator
- EVV: Evaporator valve
- ET: Environment temperature
- FR: Thermal relay
- FM: Fan motor
- FU: Fuse
- FS: Flow switch
- FSO: Flow switch overheat protect
- HP: High pressure protection
- IT: Inlet water temperature
- IRE/IB: Relay electronic of high fan motor
- KM1: Contactor of compressor1
- KM2: Contactor of compressor2
- KM3: Contactor of compressor3
- KM4: Contactor of compressor4
- KM5: Contactor of high fan motor
- KM6: Contactor of low fan motor
- KM7: Contactor of pump
- LP: Low pressure protection
- LP: Low pressure protection
- LP: Low pressure protection
- OT: Outlet water temperature
- PM: Phase monitor
- PH: Fan heater
- PH: Fan heater
- PH: Fan heater
- TC: Transformer
- 4V: 4 way valve

## 8. Maintenance



### DO I NEED TO GET MY UNIT SERVICED?

It is recommended that you get your EvoHeat unit serviced once a year by your local certified air conditioning or refrigeration technician. If your unit is located in a coastal area, more frequent maintenance may be necessary. During the service, they will check the operational pressures of the refrigeration system and give the unit and fins a good clean to ensure maximum performance.



### DO WE HAVE RECOMMENDED SERVICE AGENTS?

EvoHeat have a large database of recommended service agents. Please contact EvoHeat tech support on 1300 859 933 for your local service agent details.



### SHOULD I CHECK MY UNIT REGULARLY?

We recommend you check your unit regularly to avoid potential issues and damage to your heat pump.

Check the water inlet/outlets often for leaks. You should avoid the condition of no water or air entering into the 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.



### WHAT SHOULD I BE CHECKING REGULARLY?

The area around the unit should be dry, clean and well ventilated. Make sure there is nothing blocking the airflow of the heater e.g. Leaf litter.

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. You should check the unit thoroughly and fill the system with water fully before using it for the first time after a period of time.

Check the power supply and cable connection often, should the unit begin to operate abnormally, switch it off and contact the qualified technician

### 8.1 Energy Saving Tips

If pool water is allowed to cool significantly, it may take several days to return to the desired swimming temperature.

If you do not plan to use your pool for a prolonged period, then you might choose to turn the heat pump completely off or decrease the temperature setting of the control several degrees to minimize energy consumption.

- Use an accurate pool thermometer. A difference of 2°C, between 26°C and 28°C, will significantly increase energy consumption.
- Carefully monitor the water temperature of your pool in the summertime. You can reduce heat pump usage due to warmer air temperatures.
- When the pool is not used for long periods, turn off the heat pump.
- Where possible, shelter the pool from prevailing winds with well-trimmed hedges or other landscaping, cabanas, or fencing.
- Always use a high-quality pool cover when practical. Besides providing a valuable water saving feature, a pool cover will dramatically reduce heat loss and reduce your pool heating running costs by up to 70%!

## 9. Warranty



### Refer to the EvoHeat website for warranty details

- Australia: <https://evoheat.com.au/warranty-terms/>
- South East Asia: <http://evoheat.com.sg/warranty/>

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, lightning, 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 Form*
5. Onsite technical service is available within the normal operating area of your Evo Authorised Service Agents. 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.

## REGISTER YOUR WARRANTY

EvoHeat highly recommend customers 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: <https://evoheat.com.au/warranty-registration/>

