

HWC-3 Customer Information

INPUT 240 VAC 50Hz 10A 2400W – OUTPUT MAX LOAD 10A 2400W – IP33
Approval Certificate No. Q060411

The HWC-3 is a microcontroller driven Differential Controller that utilises a highly accurate digital sensor to control tank temperature and a platinum collector sensor for high temperature endurance.

When the roof top collector reaches a predetermined temperature above the storage tank temperature power is supplied to a small low power circulating pump which in-turn circulates the cooler tank water to the hotter roof and the hot roof water back to the storage tank.

If the roof top collector temperature is approaching freezing the circulator pump will be switched on momentarily to circulate warmer water to the roof top collector protecting it from freezing.

Each Controller has a full range of built in self diagnosis and if an error occurs an alarm will sound on and off. Under normal operation L1 and L4 Red indicators will flash alternatively & if the circulating pump is on L1 and L4 will double flash alternatively.

If the alarm is heard, then check all wiring as per the installer instructions, if the alarm continues to sound then switch the unit off and call the Authorised Installer for service.

Anti-freeze – if the collector temperature sensor probe drops to 6°C then the circulating pump will operate to pump tank water back into the panel; the circulating pump will not stop until the collector temperature probe reaches 8°C. For Anti-freeze to operate the roof temperature probe sensor and the pump need to be in working order.

This unit has a 3 year return to base warranty, return to supplier for repair.

HWC-3 Installer Instructions

The controller enclosure must be firmly attached to the storage tank or nearby solid fixture by either the two mounting lugs or direct attachment through the controller. If mounting through the controller ensure the power cord is disconnected from the mains supply then remove the enclosure front cover by turning the four corner locks so each arrow points to the 'O' marked on the front cover. Insert two mounting screws diagonally through the oval holes in the enclosure, refit front cover and turn the four corner locks to the 'I' position.

The circulating pump plugs into the socket outlet at the bottom of the controller, the pump is to be plumbed so that it circulates from the bottom of the tank through the collector(s) and returns to the middle of the tank. The collector and tank sensors are to be fitted into their receptacles.

All sensor wires should be fixed in a manner that they are not under tension or attached to the hot water return pipe. Conduit should be used if wire can not be easily pulled or if under ground. *Do not* run sensor cables parallel to mains power cable. Any additional cable should not be coiled; it should be shortened ensuring lead ends are tinned (soldered) and refitted to terminal plugs.



Example of sensor installation.

HWC-3 Diagnostics

The controller starts with a power-up delay of 5 seconds to allow the sensors and components to stabilise. This sequence is indicated by the LED's turning on in the following sequence, L1, L2, L3, L4, then the LED's turn off from L3 to L4, L2, L1.

Each Controller has a full range of built-in self diagnosis an alarm will sound on and off every 30 seconds if a fault is detected. The number of beeps in a row determines the fault which is also displayed inside the enclosure by the corresponding fault light.

- L4 blinking & 4 Beeps indicate wrong polarity Tank connection or short-circuited cable or sensor.
- L3 blinking & 3 Beeps indicate short circuit Collector connection or sensor.
- L2 blinking & 2 Beeps indicate a broken or disconnected Tank sensor cable or open circuit sensor.
- L1 blinking & 1 Beep indicates a broken or disconnected Collector sensor cable or open circuit sensor.

If the LED indication is for an open circuit sensor (either tank or collector), check that secure connection has been made into the terminal plug by gently pulling on each lead. If the connections are secure then check for any breaks, untinned wire ends or bad joins in the cable for whichever sensor was indicated, plugging in a spare sensor can help confirm that a sensor is at fault. If a roof sensor requires replacement due to actual sensor failure the sensor end only need be replaced by soldering on a replacement end and ensuring a water tight joint by using the appropriate heat shrink.

If a short circuit or reverse sensor is indicated follow the above instructions, and check for a reverse connection for whichever sensor and if the fault indication still remains check for any damage or bad joins in the cable. If no obvious fault is found then replace the sensor.

Most sensor error indications are caused by damage to cables, incorrect polarity or poor connections. **Any cable joins must be soldered and this includes where the cable enters the terminal plug which is inserted into the sensor socket.** If the sensor cable has a black and white lead, the white lead is positive and the black is negative and if each wire is the same colour, the one with the thin trace is the positive and the solid colour the negative. The collector sensor does not have a polarity.

If the cable is to be extended with non genuine cable then a size of 14/020 should be used.

If the sensors have been fitted correctly and no beeps are heard and LED's L1 & L4 alternate then the controller is functioning properly.

TEST Button: This button is internal to the unit and when pushed will start the circulating pump, briefly sound a beep and turns the 4 LED's on, The LED's then turn off and will indicate roof and tank temperatures. The Number of times LED L1 flashes indicates tens of degrees at the collector, followed by the number of time L2 flashes for single degrees at the collector. L3 is for tank tens of degrees, and L4 is for tank single degrees, (e.g. L1= 5 flashes, L2=no flash, L3=4 flashes, L4= 1 flash means the collector is 50°C and the tank is 41°C)

Please note # Large power surges and Lightning can cause damage to sensors and microcontrollers. If by changing sensors the symptom continues there is likely damage to the main controller which will require replacement at the customer's expense, household insurance may cover this.
