

# AquaGen 5 PV

## Controller

## User Manual



Australian Made by **dontek**

The AquaGen 5 PV is a premium automatic solar controller with temperature adjustment, manual, cooling and standby mode features.

Wireless remote roof sensor powered by the sun (PV)



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# Installation Instructions



This appliance is not intended for use by young children or infirm persons without supervision. Please ensure that young children are supervised to ensure that they do not play with the appliance.

## Controller Mounting

Find a suitable location to mount the control box. Ideally as with all pool equipment it should be installed out of direct weather and no closer than 3 meters from the water's edge and a minimum 600mm above ground. Fix the mounting bracket to a solid structure and slide the controller on, keeping in mind that the power cable is 1.8m long and should be plugged directly into a general power outlet, not into an extension lead.

## Pump Connections

The solar pump plugs into the 240V socket labelled PUMP.  
The maximum load is 9.98 AMPS at 2395W.

## Pool Sensor

The pool sensor must be fitted into the heating circuit, as close to the pool as practical, preferably in a position out of direct sunlight. It is recommended that a 14.5mm hole be drilled in the side of the PVC pipe (not the top of the pipe where water will collect). This can be carried out using a Dontek PD01 grinding drill or a small pilot hole can be drilled with a 14.0mm drill-bit spinning in a counter clockwise direction to minimise the chance of shattering pipe. Insert the grommet into the pipe and gently push in the sensor barb. Ideally ~30cm of the cable from the sensor should be tied to the shaded side of the pipe to prevent extreme ambient conditions leeching into the sensor via the copper in the cable. The blue sensor plug is to be fitted to the plug socket marked POOL.

## Remote Roof Sensor

The roof sensor must be fitted into a small piece of collector material or equivalent and attached to the roof. The best location is within an arm's length of the gutters edge of the house or shed as long as the sensor end is not shaded and is on a roof of similar aspect of the main collector. It must not be fitted on top of the solar collector or fitted to high points on the roof like ridge capping as false readings will be detected.

This unit has been designed to eliminate the need to run a temperature sensor cable from the solar controller to the roof; this is replaced by a solar powered transmitter that transmits the roof temperature. The roof temperature sensor cable is connected on the inside of the radio remote temperature transmitter in a screw in socket. Test for site suitability <sup>\*radio note</sup> then mount the radio remote temperature transmitter on the gutter ensuring the solar panel (PV) faces north and the antenna points up (vertical). If the antenna faces down then water may enter the box through the power entry / sensor entry hole and void the warranty.

## \*Radio note: radio transmitter special considerations

Do not permanently fix the radio transmitter until good reception is achievable (See Site Test); do not mount the AquaGen 5PV in a position where reception of radio signals may be difficult, avoid mounting near other electrical equipment (try a site test with a FM radio or mobile phone). The range is 100m with no obstructions and with no interference from other transmitters or sources of electrical noise. Also be aware that equipment installed afterwards may also interfere with radio reception. Transmission may not occur through objects such as steel, aluminium, re-enforced concrete and large bodies of water (e.g. pump room under a pool). Line of sight is the ideal situation but not always possible, the antennas should always remain vertical. Echo cancellation or ghosting may occur, which will prevent the signal being received reliably. If the AquaGen 5PV is to be installed in a metal shed there may be reception issues and the controller may need to be optioned with an antenna extension or moved outside.

Other Notes: Both the transmitter and receiver are tested as a set to 100 metres; do not mix different transmitters with different receivers. Read and understand this manual before going on site. Ensure the customer also understands the workings of the controller before leaving the site.

## Site Test

Place the radio transmitter in the approximate location. Select test mode on the AquaGen 5PV by holding the DOWN button for 3 seconds while you apply power, this activates a mode where only roof temperature transmissions are shown. Once you release the down button the AquaGen 5PV screen indicates RX TEST. Verify that every 5 seconds the LCD displays the temperature (e.g. TEST 32°C). Check that this sequence is repeated for about half a minute and ensure no transmission is missed. If a transmission is missed it may be due to an echo or ghosted signal, move the location of the radio transmitter or the location of the AquaGen 5PV and retest. If no transmission is missed mount the transmitter and repeat the test, check that no transmission is missed for 2 minutes. Turn OFF power to the AquaGen 5PV and then permanently mount the radio transmitter to the fascia board. Return to the AquaGen 5PV restart the RX TEST and ensure it continues to receive the transmission, move the location of the AquaGen 5PV if required. Permanently mount the AquaGen 5PV when satisfied that the AquaGen 5PV is receiving the transmissions consistently.

During normal operation the software allows for missed transmissions, but when more than 50 minutes elapse without a transmission then the temperature value will timeout and will be indicated by the "Waiting for roof transmission" message.

**It is recommended that you don't leave the unit in test mode any longer than necessary.**

## LCD Indicators

There are arrow icons on the LCD screen that point to current mode text on the label.

## LCD Screen

The LCD screen displays the pool and roof temperatures, solar temperature limit, pump on status, on/off/locked-out status and the time of day & date (clock).

# Operating Instructions

## Mode Button

Pressing this button changes to the next mode of operation in the following order;  
Heating / Manual / Standby.

Once the mode button is no longer being pushed then the selected mode of operation is automatically saved.

**Heating mode (Auto)** is the normal operating mode for heating the pool.

**Manual mode** is for testing the pump installation on a cold or cloudy day. Once manual mode is selected the pump will start. After manual mode times out, unit will return to the previous mode.

**Standby mode** of operation is for off-season, maintenance or if pool heating is not required. This is a better option than turning off the controller as it will flush treated pool water through the solar system as well as prolong pump bearing and mechanical seal life. The pump will run for 3 minutes each day from when the Standby mode was selected or at 10am if the time-clock mode was selected.



The factory default for SOLAR MODE is Heating MODE

## Temperature Setting (Up and Down Buttons)

Adjusting the temperature limit will allow the controller to heat the pool until the temperature limit  $\pm 1/2^{\circ}\text{C}$  is achieved. Heating will then remain off until the sample wait period expires, if no sample wait period is active the heating will remain off until the pool temperature drops  $1/2^{\circ}\text{C}$  below the temperature limit setting. Due to rounding the actual heat may vary by up to  $\pm 1/2^{\circ}\text{C}$ .

The ability to solar heat the pool will depend on weather conditions.






The factory default for SOL. LIMIT is  $30^{\circ}\text{C}$

## Enter Button

Pressing the  (ENTER) button will turn on the LCD backlight, pressing the  (ENTER) button while the backlight is lit will enter the SETTINGS MENU;


The following will be displayed; 1) EXIT

The menu system can be navigated using the  or  buttons, all selectable and changeable values will flash on the LCD screen. Press the  (ENTER) button to accept the currently displayed (flashing) item.

All menu items are shown below;

- 1) EXIT
- 2) CLOCK
- 3) SYSTEM

### 1) EXIT

Press  (ENTER) on this menu to return to automatic operation.


### 2) CLOCK

When selecting the clock you will have to set the time of day.

### 3) SYSTEM

System sub-menu;

EXIT  
COOLING  
LCD TIME  
HOURS

SYSTEM SUB-MENU	
EXIT	Press  (ENTER) on this menu to return to automatic operation.
LCD TIME	Adjust the number of seconds the backlight remains on after the time a button was pressed. (Select NONE for always on.)
HOURS	For hours of solar operation (24hr) first selecting the start time in hour intervals (6:00 – 12:00) Then the end time (12:00 – 21:00). Factory default for installer setup is run from 12:00-12:00 (24hrs).

## Controller Troubleshooting

### No Power To The Display

FAULT	REASONS/SOLUTIONS
NO POWER TO THE DISPLAY	Power point is faulty; test power point with known working appliance. If the power point is operational, check the controller with another power point and if there is still no display, then send the controller for repair.

### Reported Transmitter Faults

If the following messages are displayed, then action is to be taken to rectify the fault(s).

FAULT	REASONS/SOLUTIONS
WAITING FOR ROOF TRANSMISSION	The AquaGen 5PV cannot receive a roof temperature from the radio transmitter or more than 50 minutes have elapsed since the last transmission, check installation as per instructions.
ROOF SENSOR DISCONNECTED OR OPEN CIRCUIT	Check that the temperature sensor is firmly connected to the terminals. If the cable has been trimmed ensure the ends have been tinned with solder. Cable joints must also be soldered and sealed (preferably with heat shrink). An unbroken but damaged cable can also cause this fault.

### Pipe/Roof Sensor Faults

The following are error messages caused by pool or roof sensor faults;

FAULT	REASONS/SOLUTIONS
SENSOR DISCONNECTED	Sensor cable unplugged from controller, cable damaged, bad cable join.
SENSOR SHORT CIRCUIT	Sensor cable damaged, bad cable join.

## Pump Faults

Ensure the controller has working sensors; otherwise the pump will not operate.

FAULT	REASONS/SOLUTIONS
PUMP WILL NOT START	The pump will only ever run for the purpose of automatic heating if the pool is below the temperature limit and solar conditions can provide heating. The pump may also run for a flush in standby mode or for manual mode operation. If the controller reports that the pump is off, then press select to enable manual mode. The relay inside should click and the pump should operate. If the pump does not operate, then plug the pump into a power point and test operation. If the pump is okay, then the controller requires repair.
PUMP WILL NOT STOP	Turn off power to the controller and ensure the pump stops. If the pump continues to operate, then unplug it from the power point and connect it to the 240V socket marked PUMP at the bottom of the controller.  Apply power to the controller and if the pump starts instantaneously before temperatures are displayed, then there may be a fault with the controller. Since the controller shouldn't run when there is a sensor fault, disconnect the roof sensor and wait for approximately 30 seconds. If the pump continues to run, then the controller requires repair.
POOL NOT HEATING	If the controller has stopped pumping and is displaying a higher temperature than expected, it may be caused by a pump which is failing to prime. Check the pump and if necessary prime the pump as per the pump manufacturers' instructions then reset the controller by turning it off/on.
RTC-FAIL	This can occur if the unit has been turned off for a prolonged period of time. Leave the unit on for 30 seconds and this will allow charging of the supercapacitor. Next, turn it off for 30 seconds before turning it back on.

## Installer Setup

TO ACCESS MENU PRESS ENTER AND SCROLL DOWN TO SYSTEM AND PRESS THE MODE BUTTON  
**WARNING PROFESSIONAL ONLY SETTINGS!**

SYSTEM SUB-MENU	
RESTORE DEFAULTS	Restore back to factory defaults.
RUN	When the roof temperature rises to pool + run then the solar will start.
END	When the roof drops below pool + end then the solar will stop
BOIL?	Anti boil function when switched to ON will start the pump when the roof temperature rises to the selected temperature and operates for 5 minutes every 15 minutes until the roof temperature rises above the selected temperature.
PIPE PROTECTION	For use when Heatseeker UniPanels® cannot drain down and will require a wetted roof sensor for this mode.
CAL	Calibrate the pool sensor.
ROOF SENSOR	Allows the use of a wired roof sensor cable temporarily, if the PV unit has been damaged.

## Notes

1. If any of the menu items are left unattended for 3 minutes the menu will time out and automatically save all settings and return to automatic operation.
2. If a sensor fault is detected the controller will display which sensor and what the fault is.
3. Should power be interrupted for any reason, the controller will resume normal operation when power is restored, all information will have been kept for up to 10 days.
4. If the controller has stopped pumping and is displaying a higher temperature than expected it may be caused by a pump which is failing to prime, check the pump and if necessary prime the pump as per the pump manufacturers' instructions then reset the controller by turning it off/on.
5. Maximum combined rated output load for the 240V socket(s) is 9.98 Amps / 2395 Watts.
6. Degree of protection against moisture: IP33.

## Warranty

This range of product is covered by a limited 3 year warranty against component failure or faulty workmanship from the date of installation.

Faulty units should be returned in the first instance to the dealer from which the unit was purchased.

Damage to the unit due to misuse, power surges, and corrosion from pool chemical fumes, lightning strikes or installation that is not in accordance with the manufacturer's instruction may void the warranty.

Warranty does not include on-site labour or travel costs to or from installation site.

If the power cord is damaged, do not use the controller; return the unit to the supplier for repair.

## Customer Record (To be retained by the customer)

Dealer/Installer Name \_\_\_\_\_

Serial Number \_\_\_\_\_

Date Installed \_\_\_\_\_



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