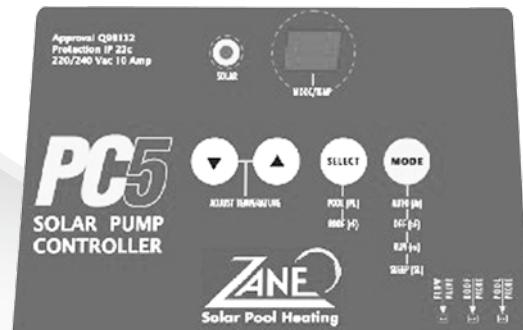


# PC5 SOLAR PUMP CONTROLLER

## Owners Manual



### OFFICES - AUSTRALIA

NSW - Sydney  
(HEAD OFFICE)  
Tel : +61 2 9898 8686  
VIC/ TAS - Melbourne  
Tel : +61 3 9764 1211  
WA - Perth  
Tel : +61 8 9273 1900  
QLD - Brisbane  
Tel : +61 7 3299 9900  
SA/ NT - Adelaide  
Tel : +61 8 8244 6000  
ACT Distributor  
Tel : +61 2 6280 6476

### OFFICES - OVERSEAS

Waterco USA  
Augusta, USA  
Tel : +1 706 793 7291  
Waterco Canada  
St-Hyacinthe, QC, Canada  
Tel : +1 450 796 1421  
Waterco (Europe) Limited  
Sittingbourne, Kent, UK  
Tel : +44(0) 1795 521 733  
Waterco (C) Limited  
Guangzhou, China  
Tel : +8620 3222 2180  
Waterco (Far East) Sdn. Bhd.  
Selangor, Malaysia  
Tel : +60 3 6145 6000  
PT Waterco Indonesia  
Jakarta, Indonesia  
Tel : +62 21 4585 1481  
Waterco (NZ) Limited  
Auckland, New Zealand  
Tel : +64 9 525 7570

### WARNING

This equipment must be installed and serviced by a qualified technician. Improper installation can create electrical hazards which could result in property damage, serious injury or death. Improper installation will void the warranty.



### Notice to Installer

This manual contains important information about the installation, operation and safe use of this product. Once the product has been installed **this manual must be given to the owner/ operator of this equipment.**

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## GENERAL SAFETY RULES

1. The equipment mentioned in this manual is specially designed to control the solar heating of water in swimming pools.
2. It is designed to allow the solar collectors to heat up water to a temperature not exceeding 40°C (104°F) in swimming pools.
3. The installation should be carried out in accordance to the safety instructions of swimming pools especially Standard HD 384.7.702 and the specific instructions for each facility. This appliance is intended to be installed in accordance with the wiring rules (AS/NS3000) and outside the pool zone.
4. This product must be mounted vertically, with the socket outlets facing down.
5. A means for disconnection shall be incorporated in the fixed wiring according to the wiring rules.
6. The rules enforced on accident prevention should be carefully followed.
7. During operation, some parts of the PC5 are subject to dangerous electric voltage. Ensure the PC5 is disconnected from the supply mains and attached equipment before performing work on any auxiliary equipment.
8. The user should make sure that assembly and maintenance tasks are carried out by qualified authorized persons and that these persons have first carefully read the Service and Installation Instructions.
9. The operating safety of the PC5 is only guaranteed if the Installation and Service instructions are correctly followed.
10. The limit values stated in the Technical Specifications should not be exceeded under any circumstance.
11. In the event of defective operation or fault, contact the manufacturer's Technical Support Department or its nearest Authorized Agent.
12. The solar controller is a complete appliance and should not be modified. If the product or supply cord is damaged, it must be repaired by the manufacturer, its service agent or similarly qualified persons, with original replacement parts and accessories authorized by the manufacturer in order to avoid a hazard. The manufacturer accepts no liability for the damage and injuries caused by unauthorized replacement parts and accessories.
13. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
14. Children should be supervised to ensure that they do not play with the appliance.

The PC5 Solar Controller is approved and conformed to AS3136 Swimming Pool Equipment, as a prescribed article under Australian Registration.

The PC5 conforms to the Australian Electromagnetic Compatibility Standard marked by the C-tick.

Solar Pump Controller – PC5

## INTRODUCTION

Congratulations on choosing the Zane PC5 Solar Pump Controller for your swimming pool. The PC5 Controller is designed to automatically control your solar heating pool system, and uses the latest microprocessor system for simple operation.

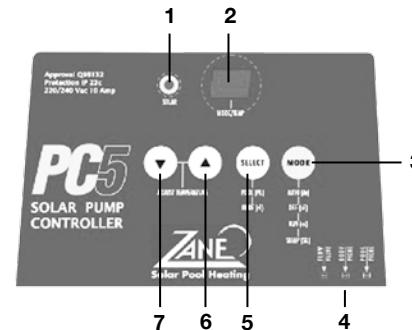
This manual contains information pertaining to the installation, operation and maintenance of your PC5 Solar Pump Controller. Please read the instructions in this manual carefully.

Zane equipment is designed and manufactured to give many years of safe and reliable operation. We hope that you obtain maximum pleasure and benefit from your solar heated pool.

## FEATURES AND BENEFITS

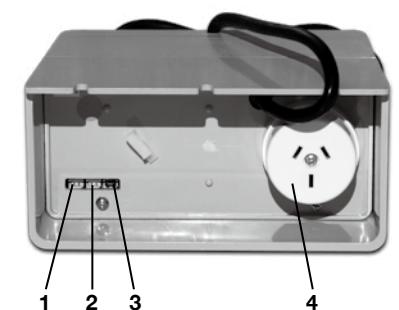
- Fully automatic operation.
- Intelligent pool temperature monitoring prevents unwanted operation, and reduces power consumption.
- Adjustable top out temperature control, with temperature display.
- Displays pool or roof temperature by pressing the "SELECT" button on the keypad.
- International standard weather protection IP23.
- True differential sensing for maximum heating of pool.
- "Winter" (Sleep) mode operation.
- 50 or 60 Hz frequency operation.

## CONTROLLER FRONT PANEL



1. Solar Gain LED
2. Display (Mode /Temp)
3. Mode Button
4. Sensor Connection
5. Select Button
6. Temperature Up Button
7. Temperature Down Button

## CONTROL CONNECTIONS



1. Pool Probe Connection
2. Roof Probe Connection
3. Flowcheck Valve Connection
4. Solar Pump socket

## BASIC OPERATION

Individual temperature probes are used to measure the pool and roof temperatures.

With the controller powered and switched to "AUTO" the solar turns on the solar pump when:

- i) The roof temperature is higher than the pool temperature
- ii) The top-out temperature is higher than the pool temperature.

The display showing the temperature of the pool probe, (which until water flows in the system may be different from the pool water temperature), has a special inbuilt monitoring and intelligence feature which helps to eliminate this situation.

If using water via the pools filtration system, the separate Solar Booster Pump can be protected from running dry with the use of a Flowcheck Valve (sold separately).

The Zane PC5 controller has a connection point for the Flowcheck valves which prevent the pump from being turned on.

## MODES

### AUTO

Selection of "AUTO" allows the solar system to operate automatically. It turns the pump on to gather free energy from the sun until it reaches your top-out temperature setting whenever the roof probe temperature is 5 C above the pool water temperature. Once the pool has reached your predetermined temperature the pump is automatically switched off and again will restart when required to heat the pool.

### OFF

Select "OFF" to turn the solar system off. Mains power supplying the power module will still be on.

### RUN

Selection of the "RUN" mode overrides the automatic solar function to operate solar unless inhibited by a flow switch. It may be used for manually cooling the pool or checking and servicing solar systems. Prolonged operation in "RUN" mode will cool the pool if the roof temperature is 2°C or more lower than the pool temperature.

### SLEEP

When "Sleep" is selected the controller will be in winter mode where it will start up for 4 to 5 minutes every 7 days to flush the system. It can also be selected when you are absent from home on long holidays.

## OPERATION GUIDE

### SETTING TOP OUT TEMPERATURE

Set Top-out temperature by pressing "UP" or "DOWN" buttons on the control panel. When the required temperature is reached release the button wait 5 seconds and it will blink twice and revert to display of the pool or roof temperature.

Maximum setting is 40°C

Minimum setting is 15°C.

### SELECTING MODE (AUTO/ OFF/ RUN/ SLEEP)

1. To change mode press the "MODE" button and release.
2. Repeat above till you have the required mode. The mode you are in is shown by the following symbols which are displayed on the screen for 5 seconds before reverting back to the temperature display

AUTO	= At
OFF	= oF
RUN	= r n
SLEEP	= SL

### SELECTING DISPLAYED TEMPERATURE(POOL/ROOF)

Press SELECT button to display either roof or pool temperature. One press will show last selected temperature in "rF" or "PL" before reverting to show the selected temperature. It will toggle between roof or pool temperature with each second press.

## INSTALLATION

### PC5 CONTROLLER

This should be mounted on a vertical surface in a sheltered position where it is protected from direct exposure of sunlight or entry of water from rain, garden hoses, etc., e.g.: on a wall protected by the house eaves.

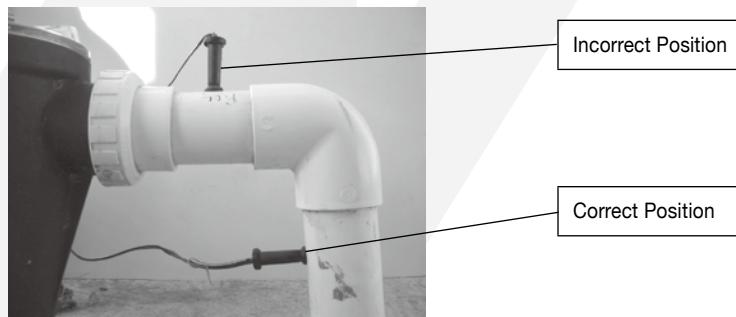
Secure to vertical surfaces by screws; through the mounting holes so the open side is facing down to prevent water entry.

## PROBES AND LEADS

### POOL PROBE

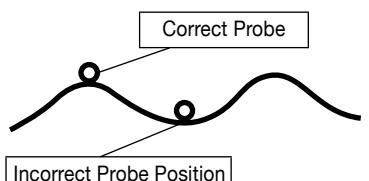
The "POOL PROBE" must be installed in the pool filter return before the solar take off so that it can sense the pool water temperature at all times.

- i) Immediately after the solar check valve drill a 9.5mm hole in the side of the line as shown in the image below. A special Zane drill used for PVC pipe is available, if required, from your Zane dealer to give a cleaner correct hole.
- ii) Insert the special plug into the hole and rotate home.
- iii) Insert the probe holder by pushing into the plug fully up to the head. This is a tight fit to ensure sealing. Lubricate with soap if necessary but do not use mineral oil or grease.
- iv) Strap lead firmly to pipe to prevent any strain on the probe holder or lead entry.
- v) The probe should not be installed on top of any pipe work coming from the pump as it is exposed to sunlight and accidental physical damage. It should be installed on an inside elbow of the pipe work (as shown below). This will eliminate heating of the probe by sunlight – giving inaccurate readings, and also minimise the risk of damaging the probe by pool users.

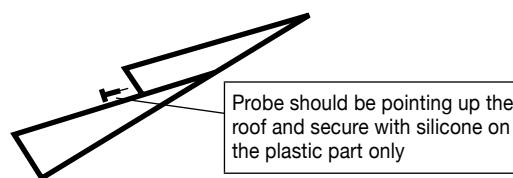


## ROOF PROBE

- i) If the probe lead is to be concealed, e.g. underground, make sure it is run through a conduit to ensure easy removal if service is required.
- ii) To take cable to the roof it should be tied off neatly with electrician's cable ties to one of the solar pipes.
- iii) The roof probe is supplied housed in a probe holder. This holder should be fixed to the roof in a small pad of adhesive the same angle as the absorbers. This is to ensure that the probe will measure the actual roof temperature and that the reading will be unaffected by the cooler pool water when the solar system turns on. The probe must always be located so that it is in the sun at the same time as the absorber array; otherwise incorrect readings will be made. This can happen when parts of the absorber are in the shade, and the probe is still receiving full sunlight.
- iv) The probe should be located at least 600mm from the top of the roof to eliminate any wind chill factor, 1m from the sides of the roof, and at least 500mm from the absorber array to read a constant accurate roof temperature.
- v) The probe should be orientated such that it lies on the crest of the roof tiles and not in the troughs. This eliminates water being trapped in the silicon glue that holds the probe in place, and giving erroneous readings. The roof probe should also be positioned so that it points up the roof tiles (as shown below).



**Probe orientation on curved tiles  
(front view)**



**Probe orientation  
(side view)**

## OPTIONAL FLOWCHECK CONNECTION

(Note: Flowcheck Valve is not part of the PC5 Controller)

When a Flowcheck Valve is required to be used ( ie where a "Solar Booster" pump is used in conjunction with the filtration pump) it is necessary to use a Flowcheck valve to prevent the Solar Booster pump from running whilst the filtration pump is switched off. This is to prevent the pump running dry and damaging the seals

The two wires from the Flowcheck valve are connected to the terminals marked "Flow Valve" on the underside of the PC5.

## SPECIFICATIONS

<b>Power Supply</b>	220 – 240 volt 50/ 60Hz
<b>Power lead length</b>	1.5 metres
<b>Probe length</b>	Factory fitted pool 3 metre and 25 metres
<b>Display</b>	2 digits display window.
<b>Indicator</b>	Solar ON LED
<b>Pump outlet</b>	3 pin standard 10 amp. maximum total
<b>Dimensions</b>	176 x 135 x 85 mm
<b>Top-out adjustment</b>	External control range 15 to 40 °C
<b>Top-out setting</b>	1.5 °C about elected temperature
<b>Installation</b>	In a sheltered position out of direct sunlight on vertical surface
<b>Operation ON</b>	+5 °C nominal differential
<b>Operation OFF</b>	+1 °C nominal differential
<b>Winter mode</b>	Operation once every 6 to 7 day for 4 – 5 minutes. SL is displayed.

## WARRANTY AND SERVICE

The controller is warranted for 24 months(2 years) except for the probes and probe leads which are for 12 months(1 year)from date of installation against faulty materials and workmanship.

Should damage occur arising from water, insect or other foreign entry, overheating from sunlight or other means, unauthorised tampering or repairs, fusion caused by storm and tempest, violent power fluctuations or overloading due to pump malfunctions. A repair service is provided, but such repairs are not covered under the unit warranty. Service should be carried out by an authorised Zane Dealer.

## DISCLAIMER

This information is accurate to the best of our knowledge at the time of printing. Waterco reserve the right to alter the product in any manner at any time in the future without prior warning. Any recommendations or suggestions are made without warranty and without prejudice, since the use of our products is beyond our control.