ZX3000 CONTROLLER

Owners Manual

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⚠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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SECTION 1 - User Instructions

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 ZX3000 are subject to dangerous electric voltage. Ensure the ZX3000 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 ZX3000 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 it's 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 ZX3000 Solar Controller is approved and conformed to AS3136 Swimming Pool Equipment, as a prescribed article under Australian Registration.

ZX3000 conform to the Australian Electromagnetic Compatibility Standard marked by the C-tick.

INTRODUCTION

Congratulations on choosing the Zane ZX3000, one of the most advanced Solar Controllers for your Zane solar system.

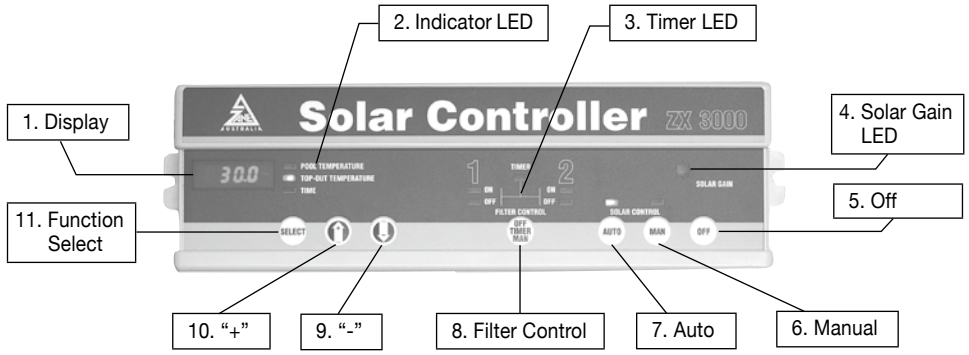
This manual contains information pertaining to the installation, operation and maintenance of your ZX3000 Solar Controller. Please read the instructions in this manual carefully.

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

FEATURES AND BENEFITS

- Combined filter and solar control unit.
- Solar gain automatically starts filter (SOF).
- Safe, low voltage control panel separate from high voltage power module.
- Choice of operating program.
- Solar pump protection.
- Ability to set filter on a timer.
- Digital temperature display.
- System status, operation and fault display.
- Raised buttons to allow easier operation.
- Rotoflow option available at your fingertips.
- Long life backup battery to keep time and set program.
- Probes, flow and gas with connector for easy and secure installation.
- Built in Gas control link for connection of Gas heater or Heat pump with 24V control circuits.

CONTROLLER



FUNCTIONS OF CONTROLLER

Functions

Filter/ Solar Operation:
Choice of 2 programs – set by installer at installation:-

a) SOF [Solar Operate Filter] When there is solar gain available, the filter pump will be turned on before the solar pump to override the normal filter timing.

b) INS [Independent Solar] The Solar pump will run independent of the filter pump with the filter pump set at timer mode.

Automatic Operation of Solar:
"AUTO" selection will allow solar heat to be collected and transfer to the pool water whenever the roof probe is 5 C above pool water temperature to start the solar pump until set Top Out temperature is reached or there is no more solar gain available.

Manual Operation:
Selection of "MAN" operation overrides the automatic solar function to operate solar (and filter in SOF program) unless inhibited by the flow switch. It may be used for manually cooling the pool or checking and servicing solar systems. Prolonged operation in "MAN" mode will cool the pool if the roof temperature is 2˚C or more lower than the pool temperature.

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

Top-Out Temperature Control:
Your controller can be set to stop the solar system when the pool water reaches your pre-set comfort level. We call this the "TOP-OUT" temperature. Select top-out temperature and alter with "+" or "-" button until the desired top-out temperature is displayed. After 10 seconds, the display will revert to display the pool temperature. Maximum temperature under normal conditions is limited to 40°C in accordance with Australian Standards. If the pool temperature exceeds the top-out temperature, the controller will cool the pool automatically.

No Flow:
"FLO" will be displayed whenever there is insufficient filtered water flow for the solar system to operate. This is a unique feature of Zane controllers, which, when used in conjunction with a special Zane "FLOCHECK" valve, protects solar boost pumps against expensive seal or other damage, due to running dry. If the FLOCHECK valve is not connected, the link wire must be, or FO4 will be displayed. (Refer to Fault Diagnostic section)

Rotoflow:
Rotoflow is an option available on the controller where the "roof" probe can be located on the return pipe to the pool instead of the roof. The controller will run the solar pump for 2 minutes to compare the temperature difference between the pool probe which senses the water coming from the pool and the roof probe that senses water returning to the pool after going through the absorber on the roof. If the temperature of the "roof" probe is 0.3°C greater than the pool probe, the solar pump will continue running. Otherwise it will stop and wait for 30 minutes before the next verification cycle. If the second cycle is still negative it will wait for 60 minutes to try again and every 60 minutes thereafter. If positive, the solar pump will remain on for solar gain to increase pool temperature until Top-Out temperature is reached. It will stop when the temperature difference drops below 0.2°C. The operating time for the solar controller will default to 8am to 6pm by setting Dip Switch L3 to OFF and solar control set to AUTO. You can also change the start up time and stop time as desired.

Advantage:
Roof probe can be located on the return pipe to the pool, providing more protection and ease of installation.

Disadvantage:
Solar pump will be starting and stopping more often, resulting in higher overall maintenance costs.

Selection:
Holding the "OFF" button on the Solar Control panel and pressing "SELECT" will scroll through the following options:-

1. Setting the bias of the pool and roof probe between +/- 5°C by 0.1°C increments.

   a. This is to allow for any variances between displayed temperature and on-site temperature measurements. If the pool and roof temperatures are not the same, when the probes are side by side. Go to 2.

2. Setting the bias of roof probe only between +/- 5°C by 0.1°C increments.

   a. This is only intended to allow for the tolerances in the temperature sensors themselves and the differences in heat transfer to/from them and should not normally be adjusted.

   b. Both probes can be left in open air or in a jar of water to check readings different and set bias to achieve same temperature displays. e.g. If the pool temp is 23˚C while roof is 22˚C and the temperature measured in water is 23.5˚C then 1. will be 0.5 and 2 will be 1.0

3. Setting the Solar pump to stop when roof probe temperature is 0.5, 1.0, 1.5 or 2°C above pool temperature. When Rotoflow is selected it defaults to 0.2°C, and this setting is ignored.

4. Display selected operating option. SOF or INS depending on the selection of Dip switch L4 ON for SOF and OFF for INS.

   a. 'SOF' is displayed if solar operation also operates the filter, i.e. 'Solar Operates Filter'.

   b. 'INS' – filter operation becomes totally independent of solar operation.

      i. Normal operation for both models assumes that a flow switch is installed. If a flow switch is not to be used, the flow link must be connected.

      ii. POWER SHOULD ALWAYS BE OFF WHEN CHANGING DIP SWITCH SETTINGS!

5. Display either "norF" for Standard or "rFLO" for Rotoflow selection.

   a. Both the "+" and "-" buttons can be used to toggle mode selection.

OPERATION GUIDE

General Description

The Control unit has a number of controls operated by button presses as follows:-
"SELECT" The display can be scrolled through the following selections by pressing the "SELECT" key.

The appropriate LED will light to indicate the current selection.

POOL TEMPERATURE	TIMER 1 ON	TIMER 2 ON
TOPOUT TEMPERATURE	TIMER 1 OFF	TIMER 2 OFF
TIME (24 HOUR CLOCK)		

All displays other than Pool Temperature or Time will revert to Pool Temperature or Time depending on whether the last display was Pool Temperature or Time before activating of other display, after 10 seconds with no button presses.

H or C flashing beside temperature indicates solar system heating or cooling. F with number indicates a fault condition exists. (Report to Zane Dealer)
Other keys are provided to select or alter functions.
"+" or "-" are used to alter the value of any selected display except pool temperature.

"**TIMER**" is used to cycle filter through three states of operation:

1. **TIMER** - To automatically access the two set timer periods indicated by **LED**.
2. **MANUAL** - To override set time period and switch the filter on.
3. **OFF** - To switch off the filter pump as indicated by displayed "**OFF**".

Solar Controller Keys

1. **AUTO** - Automatic operation of solar pump.
2. **MAN** - Manual override, solar pump **ON**.
3. **OFF** - Solar pump **OFF**.

"**Solar Gain**" Sun symbol is lit whenever heat is available, i.e. Roof temperature is 5°C above pool temperature at start up.

Start Up

SELECT and alter to the desired value of the top-out temperature, time and timer periods using the "+" and "-" keys; the figure will be locked if not altered for 7 seconds. Select TIMER so LED glows. Timer periods will operate once time passes through the "TIMER ON" setting and stop through "TIMER OFF".

For Solar; Select "AUTO" mode. Once set, the controller will operate to optimise solar heat input. If the filter pump is powered from the controller, it will be automatically started regardless of the set timer periods in SOF program by the solar system. Water flow protection of solar pump operates continuously with flow check valve.

Memory

The controller has long life battery to retain all settings and time of day when powered down. A formula has been built into the program to prevent the frequent starting and stopping of the solar pump due to pool sensor location.

ADDITIONAL SETTINGS/ DETAILS

The roof temperature can be displayed at any time by pressing the '+' and '-' keys simultaneously. An 'r' is displayed to its left.

Any of the displays other than the pool and roof temperatures and the types can be adjusted using the '+' or '-' keys providing the keyboard is unlocked. The keyboard can be unlocked by using the 'SELECT' key. Once a display is selected the keyboard will remain unlocked until 7 seconds have passed without pressing any keys. Note that if roof temperature is selected by pressing the '+' and '-' keys during this 7 second period then the current display value may be adjusted if the '+' and '-' keys are not pressed simultaneously. Caution should be used to avoid inadvertently altering any set values this way - i.e. avoid checking roof temperature while the keyboard is unlocked. If Pool Temperature is displayed first, then the '+' and '-' keys will have no effect anyway.

The control is fitted with a relay for a solar pump or valve. This relay is responsible for both heating and cooling. The idea is that the solar collector will follow ambient conditions much faster than the large mass of water in the pool. The solar collector is also a black colour, flat and thin in cross section to absorb as much energy from the sun as is possible. Under the sun's influence, the temperature of the water will become much greater than the temperature of the pool and it is possible to heat the pool by circulating the water. If the solar collector is cooler than the pool (e.g. at night) then circulation should be stopped or else the pool will actually be cooled. This condition can be useful if it is necessary to cool the pool. If for some reason the set (top out) temperature is lower than the pool temperature in which case the same relay will turn on to circulate the water and therefore cool the pool.

A second relay is also fitted which will be activated whenever. This relay is intended to drive the pool so the timers can be used to filter the pool up to twice a day automatically. Indication for these conditions is given by the red LED above the '**TIMER**' key. When the timer is off, the LED will be off. This is equivalent to manual selection for the filter. When the timer is on, the LED will be on outside the time zones and will flash inside the zones. This indicates that the timer is enabled. A third selection turns the filter off and results in the '**TIMER**' LED turning off, as in filter manual selection. The 4 digit display will display 'OFF'. 'OFF' selection will have no effect on solar operation with the 'In S' mode. 'SOF' mode will override Filter 'OFF' to start filter pump for solar operation when solar gain is available.

The three modes above can be selected by consecutive presses of the '**TIMER**' key.
Indication is also given of which zone it is in at any particular time. The '**TIMER 1 ON**' LED will light when the time falls within zone 1 and the '**TIMER 2 ON**' LED will light when it falls within zone 2. Both the zones are functionally identical. When 'TIMER' is selected the 'TIMER' LED will flash whenever either of the above two LEDs is on.

The filter will also be activated outside the time zones if the pump needs to turn on. The purpose of this is not for filtration but to circulate water through the solar collectors. This is applicable to the 'SOF' model only. Top-out indication has also been added. The 'TOPOUT' LED will light whenever the pool temperature is 0.1°C or more above the top-out temperature and will turn off if it drops to 1.0°C or more below the set temperature.
The zone and top-out indications are blanked when the 'SELECT' key is pressed to ensure there is no confusion as to what is being displayed on the 4 digit display. After 10 seconds have passed without any buttons being pressed the indicators will resume their functions.

The Solar Pump can be activated at any time subject to some conditions:-

Flow:
If there is a no flow condition the pump will not operate. Flow is detected by means of a switch closure. The Flocheck Valve flow switch has a 68,000 ohm resistor across an open flow switch for detection, and 'FLO' is displayed. An open circuit here will be recognised as a fault, and F04 is displayed and solar pump will not work.

'SOF' model only:
The filter must be activated. If Solar operation is called for, the filter will be activated first if it is not already on, and the Solar Pump will turn on 5 seconds later.

Manual/ Off/ Auto Selection:

Manual:
If the above two conditions are met and 'MANUAL' is selected, the pump will turn on. The exception to this is if the pool temperature rises to 40°C or more in the case of a POOL/SPA model or 70°C or more in the case of a HOT WATER model. Both of these conditions will inhibit the pump regardless of setting.

Off:
Solar Pump will turn off.

Auto:
If the above two conditions are met and 'AUTO' is selected the pump will open/shut subject to temperatures and set up values – Top-out, offsets etc, and time when set to Rotoflow. The pump will not operate in AUTO if a fault is found when reading the pool or roof sensor.

The conditions required to enable the pump in Auto are as follows:-

HEATING - the pool temperature must be less than the Top-out temperature. If this condition is met then heating will be enabled if the roof temperature is 5°C (0.3°C if Rotoflow) or more above the pool temperature i.e. Solar Gain. Heating will be disabled if the roof temperature is 0.5, 1.0, 1.5, or 2.0°C (0.2°C if Rotoflow) or less above the pool temperature. This value is selectable as described earlier.

COOLING - The pool temperature must be greater than the Top-out temperature. If this condition is met, then cooling will be enabled if the roof temperature is 2°C or more below the pool temperature. Cooling will be disabled if the roof temperature rises to within 0.5°C of the pool temperature. Setting DIP switch L1 or L2 OFF will disable the cooling function.

Whether the pump is set to Auto or set to Manual, heating and cooling conditions as described above will be indicated by a flashing 'H' or 'C' to the left of the pool temperature. If neither of these conditions is met then the space to the left of the pool temperature display will remain blank. By this method the pool temperature and heating/cooling status can be displayed simultaneously.

The conditions above apply all the time when Rotoflow is disabled except in the SOF model when 'OFF' is displayed. In the case of Rotoflow, these conditions apply once the Solar Pump has been running for more than 2 minutes and while it continues running.
Any time flow is not detected 'FLO' will be displayed. In addition 'nSlr' will be displayed in the 'SOF' model regardless of the flow switch I/P whenever the filter is not operating and the display would otherwise have indicated pool temperature. Solar not operating with the flow switch reading OK will result in 'nSlr' being displayed in the 'In S' model as well.

A 5 second hold off timer has been added to the pump. The pump (or valve) will switch off whenever required but will only ever turn back on if the necessary conditions exist for a continuous 5 second period.
To change the temperature bias, stopping differential and Rotoflow selection: use "+" or "-" buttons with "OFF" and "SELECT" keys.

Figure 1: Solar Controller

Figure 2: Power Module

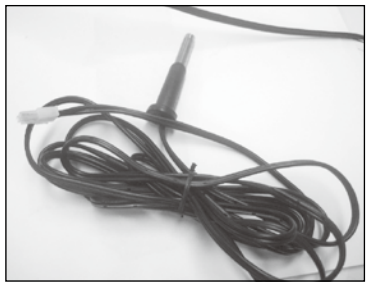


Figure 3: Pool Probe

Figure 4: Roof Probe

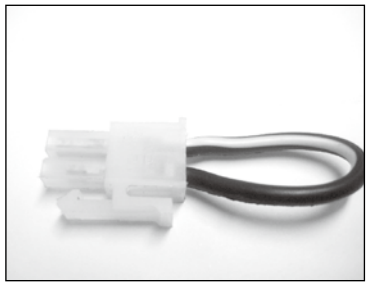


Figure 5: Flow Link

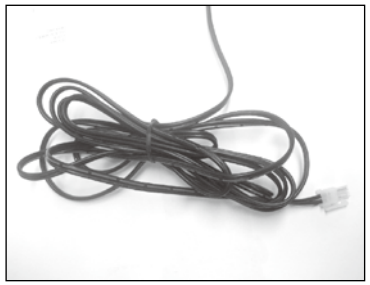


Figure 6: Aux Heater Link

SPECIFICATIONS

Power Supply	240 VAC 50/60Hz, 1.5m lead length
Probe Lengths	Factory fitted 3m Pool, 25m Roof
Outlet GPOs	3 pins standard 10 amp maximum load
Dimensions	254 X 81 X 25 mm Control Panel 175 X 135 X 85 mm Power Module
Top-Out Adjustment	Digital control to 40˚C (conforms to AUST STD)
Installation	Sheltered position out of direct sunlight On vertical surface
Indicator LED	Solar heating on and all functions except “OFF”
Top-Out setting	0.5˚C about set Top-out temperature
Operation ON/ OFF	+5˚C / +1˚C nominal differential
Flow Protection	Optional with special Zane Flow check Valve protection
Probe Sensors & Harnesses	Pool and roof probes, flow and gas link wire for positive quick connection and easy installation.

SECTION 2 - Installation Instructions

POWER MODULE

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 two top mounting holes (190mm apart) so the open side is facing down to prevent water entry.

CONTROL PANEL

Measure out and drill two holes into the vertical mounting surface so they are in line with the Controller mounting brackets. Mount by driving two #5 pan head screws onto the mounting bracket of the Controller into the vertical mounting surface.

PROBE SENSORS & HARNESSES

Consist of the pool and roof probes and flow link. The optional Heater Link (851722) is available when auxiliary heater is required to be connected with ZX3000.

Pool Probe:
This 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.

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.

Insert the special plug into the hole and rotate home.

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.

Strap lead firmly to pipe to prevent any strain on the probe holder or lead entry.
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). This will eliminate heating of the probe by sunlight – giving inaccurate readings, and also minimise the risk of damaging the probe by pool users.

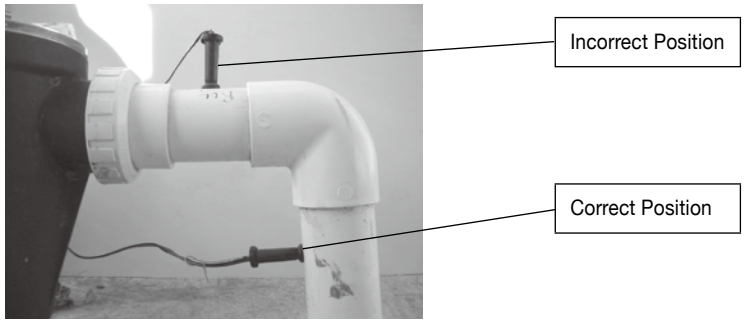


Figure 7: Pool Probe Installation

Roof Probe:
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.

To take cable to the roof it should be tied off neatly with electrician's cable ties to one of the solar pipes. 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.

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.

Keep the adhesive clear of the cable and also from the top of the holder to facilitate the removal of the probe holder if it should require future service. Suitably clip the lead along its run, to prevent any strain to the probe holder.

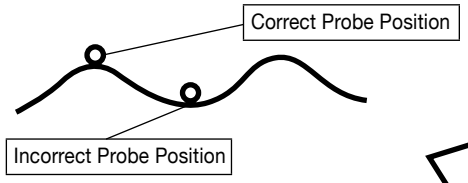


Figure 8: Probe orientation on curved tiles

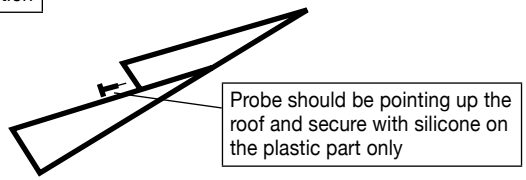


Figure 9: Probe orientation (side view) (front view)

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 above).

Flow Connector:

Rotoflow:
With the Rotoflow installation, the probe is installed on the downpipe from the roof. For this installation, the probe should be installed so that it is positioned in parallel with the building wall, and not protruding out from the wall. This will minimise accidental damage by accidental striking by the pool users.

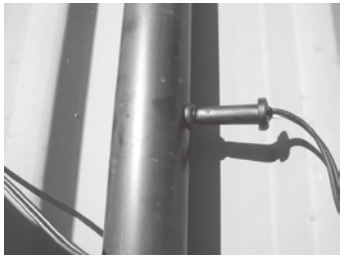


Figure 11: Rotoflow Probe Installation

NEW CONTROLLER

Connecting the Controller

- The solar boost pump or motorised diverter is to be plugged into the solar GPO.
- Plug in power lead to standard 3 pin 240 VAC 10-amp power supply outlet and switch on.
- Solar will now operate in accordance with prescribed conditions.

DIP SWITCH SETTINGS

Four link options (DIP switches) are provided on the board: –

	SWITCH ON	SWITCH OFF
L1	Auto Heat/ Cool	Heat Only
L2	Pool/ Spa Model	Hot Water Model
L3	Heating 24Hrs. S/C sensor test	Disable Heating between 9pm and 7am. No S/ C test
L4	SOF' Model	'In S' Model

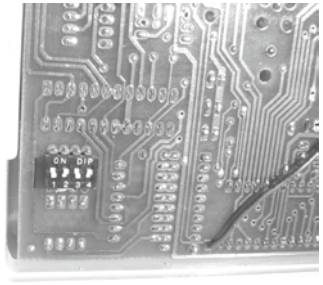


Figure 6: Dip Switch Layout

Normally the set temperature can be set from 15.0 - 40.0°C in 1°C steps. When the Hot Water option is selected this range is extended up to 70.0°C. The cooling function is disabled in the Hot Water unit. Accuracy of the temperature readings is reduced slightly at temperatures above 50°C although it will still be within a few degrees up to at least 85°C.

Winter mode can be set by setting the Top-out temperature to below 15°C. During Winter mode, the display will read 'SL33' and the pump will operate for 5 minutes between 12:00 & 12:05pm once/week. Winter mode overrides Rotoflow and Standard operation.

All of the set up parameters including the time of day will be stored in battery-backed programmable memory to avoid having to re-set them after power failures. If the time is lost either due to a flat battery or problems reading from the battery backed device, indication will be given by the display flashing '12:00' until it is set.

The 'SUN' LED (Solar Gain) turns on whenever the pool temperature is less than roof temperature by 5°C or 0.3°C when Rotoflow enabled. It turns off if the pool temperature is greater than the roof temperature (0.5, 1.0, 1.5, 2.0°C) or 0.2°C when Rotoflow enabled, depending on the option selected. When Rotoflow is enabled, the Solar Gain LED will only ever turn on if the Solar Pump is on as described under 'Rotoflow' above.

SECTION 3 - Service Instructions

FAULT DIAGNOSTICS

Various faults can be self diagnosed by the controller. These include:-

A. Roof sensor Open circuit
B. Roof sensor Short Circuit
C. Pool Sensor Open Circuit
D. Pool Sensor Short Circuit
E. Flow Switch Open Circuit or missing
F. Flow Switch Read Error
(E & F - Flow switch models only)

These will be displayed as an 'F' followed by a number which is a code for the fault or combination of faults. This display will flash until the faults are rectified. The select key can be used to display time or temperature while a fault exists but the display will revert to the fault after 10 seconds has expired without having pressed a key.

The various fault codes have the following meanings:-

Fault Code	Meaning (using A-F - as described above)	Pump Disabled?
01	A	IN AUTO ONLY
02	B	IN AUTO ONLY
04	F	YES
05	A & F	YES
06	C & F	YES
10	C	IN AUTO ONLY
11	A & C	IN AUTO ONLY
12	B & C	IN AUTO ONLY
14	C & F	YES
15	A & C & F	YES
16	B & C & F	YES
20	D	IN AUTO ONLY
21	A & D	IN AUTO ONLY
22	B & D	IN AUTO ONLY
24	D & F	YES
25	A & D & F	YES
26	B & D & F	YES
40	E	YES
41	A & E	YES
42	B & E	YES
50	C & E	YES
51	A & C & E	YES
52	B & C & E	YES
60	D & E	YES
61	A & D & E	YES
62	B & D & E	YES

The flow switch read error would only occur if there was a hardware error on the PCB itself. This particular fault is not likely to occur and any boards exhibiting this fault should be returned.

If the control powers up without reading the EEPROM correctly then default values are loaded for various settings. This will occur the first time the unit is powered up due to no data being stored in the EEPROM, after the test routine is run and any time the EEPROM doesn't read correctly on power up which may be due to high voltage transients on the mains corrupting the EEPROM.

The default settings are:-

TOPOUT TEMP	- 30.0°C
TIMER 1 START	- 12:00
TIMER 1 STOP	- 12:00
TIMER 2 START	- 12:00
TIMER 2 STOP	- 12:00
P/R OFFSET	- 0.0°C
RF ONLY OFFSET	- 0.0°C
P/R DIFFERENCE	- 1.0°C (Ignored in Rotoflow)
TIMER	- DISABLED i.e. FILTER ON
SOLAR CONTROL	- AUTO

SECTION 4 - Warranty and Service

WARRANTY AND SERVICE

This unit comes with a one year warranty against faulty materials and workmanship from the date of purchase. Should damage occur arising from water entry, overheating from direct sunlight or other means, unauthorised tampering or repair, fusion caused by storm and tempest or violent power fluctuations, or overloading due to pump malfunctions, a repair service is provided. Such repairs are not covered by the unit's warranty. The unit has been factory sealed for your protection and must be serviced only by an Authorised Zane Dealer.