# **ZX4000**



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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.



www.waterco.com



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# IMPORTANT SAFETY INSTRUCTIONS

When using this electrical equipment, basic safety precautions should always be followed, including the following:

# **READ AND FOLLOW ALL INSTRUCTIONS**

- **! WARNING:** Disconnect all AC power during installation.
- ! WARNING: In order to avoid the possibility of hyperthermia (heat stress) occurring it is
  recommended that the average temperature of the spa pool water does not exceed 400C.
- **! WARNING:** ZX4000 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 provided supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure they do not play with the appliance.
- In certain situations unexpected start up may occur when the appliance is in automatic mode. The installer should assess the risk associated with unexpected start up of any connected device which, in any circumstance should have no hazardous effect.
- ZX4000 is not meant to provide safety protection for connected devices. All connected devices should have their own protection for safe operation.
- ZX4000 should be deactivated if the pool or spa has been drained.
- ZX4000 products operate with 240 volts and must be installed by a suitably qualified person in accordance with current Australian Standards, the Australian Wiring Rules (AS3000) and local statutory authority regulations.
- Parts containing live parts, except parts supplied with safety extra-low voltage not exceeding 12V, must be inaccessible to a person in the spa pool.
- Parts incorporating electrical components, except remote control devices, must be located or fixed so that they cannot fall into the spa – pool.
- The appliance should be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30mA.

• The unit should be connected via the three pin plug to grounding means provided by a three pin outlet connected by a continuous copper wire as sized to comply with current Standards and local statutory authorities in relation to the circuit conductors supplying the equipment.

#### SAVE THESE INSTRUCTIONS.

# INTRODUCTION

Thank you for choosing ZX4000 which provides you with a full range of pool heating automation features. While you focus on fun, ZX4000 allows you to automate pool and spa heating and some other functions like:

- Filter
- Heater
- Lights

#### What's included in the Package?

- ZX4000 Controller Enclosure
- 2 x pool temperature sensors 3 metre
- 1 x air temperature sensor 3 metres
- 1 x roof temperature sensor 25 metres

#### **Essential Accessories**

- Flocheck valve
- Chlorinator link cable
- Heater wiring harness
- Valve actuator motor
- Transformer 24VAC 2amp valve actuator motor power supply

# **INSTALLING EQUIPMENT**

#### **ZX4000 Control Enclosure**

Install the ZX4000 control enclosure in a protected location out of direct sunlight. At top rear of the control panel locate two keyhole fixing points. Mount two pan head screws at 129mm centres using a spirit level on an adequately stable vertical surface.



#### **Temperature Sensors**



The ZX4000 has a number of sensors for pool, roof and air temperature monitoring.

#### Pool Sensor:

- a) The pool water temperature sensor should be installed prior to any heater or solar and will display either the pool or the spa temperature, depending on the current operation of the pool.
- b) Immediately after the filter drill a 9.5mm hole in the side of the line as shown in the image below. Insert the special plug into the hole and rotate home.
- c) Insert the sensor 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.
- d) Strap lead firmly to pipe to prevent any strain on the sensor holder or lead entry.
- e) The sensor should not be installed on top of any pipe work coming from the pump as it is exposed to sunlight and accidental physical damage may occur. It should be installed on an inside elbow of the pipe work (as shown). This will eliminate heating of the sensor by sunlight giving inaccurate readings, and also minimise the risk of damaging the sensor by pool users.

#### Roof Sensor (required if a solar heating system is installed):

- a) If the sensor lead is to be concealed, e.g. underground, make sure it is run through a conduit to ensure easy removal if service is required.
- b) To take cable to the roof it should be tied off neatly with electrician's black cable ties to one of the solar pipes.
- c) The roof sensor 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 solar absorber. This is to ensure that the sensor will measure the actual roof temperature and that the reading will be unaffected by the cooler pool water when the solar system turns on.
- d) The sensor must always be located so that it is in the sun at the same time as the solar absorber array; otherwise incorrect readings will be made. This can happen when parts of the absorber are in the shade, and the sensor is still receiving full sunlight.
- e) The sensor 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 solar 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 sensor holder.



The sensor 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 sensor in place, and giving erroneous readings. The roof sensor should also be positioned so that it points up the roof tiles (as shown above).



#### Air Sensor

Mount the air sensor outdoors and out of direct sunlight.

#### **Valve Actuators**

The ZX4000 can control up to two automatic valve actuators.

The ZX4000 is optimized to operate Waterco FPI valve actuators and should be installed in consultation with the product installation and operating instructions.

A separate 24VAC power supply is required and plugged into the "Actuator power in" port on the underside of the ZX4000.



#### Flocheck Valve (optional)

Waterco recommend the ZX4000 is fitted with the optional Waterco Flocheck valve and should be installed in consultation with the product installation and operating instructions.



#### FUNCTIONS

The Waterco Flocheck valve has a number of essential functions:

- 1. As a normal pre-loaded check valve to prevent pool water backwashing the filter on shutoff or drain down.
- 2. As a pump protection device for when there is no filter water flow. Power is switched off by the solar controller through integration with the Flocheck valve, stopping the pump immediately.
- 3. As a warning device to highlight the water flow below recommended levels for solar pool system operation.
- 4. As an adjustable flow switch which can be tailored to the customer's requirements.

#### FEATURES

- \* 'O' ring seals. \* Long life materials. \* Fully sealed sensing.
- \* Adjustable flow sensing. \* Factory pre-set flow rate.
- \* Simple, reliable switching concept. \* Solid, robust construction with reliability.
- \* Serviceable split construction with replaceable sealing element.

#### **FLOW SENSING**

#### PRE-SET THRESHOLD FLOW

The valve has a 'switch-on' threshold water flow of 60 litre/min and 'switch-off' (30 l/min) threshold point is easily and quickly performed.

- (a) Holding the sensing stem to prevent movement, slightly loosen the knurled lockseal nut.
- (b) Slide the sensing stem to the new position required to accept the water flow characteristics of that particular filter system.
  - The threshold flow is increased by pulling the sensing stem further out from the body and conversely decreased by pushing the stem into the body.
- (c) Lock the stem into position with the knurled lock seal nut.
- (d) Check correct operation of the flow switch. With solar system operating, stop and start filter system several times.
- The solar system pump should also stop and start in accordance with filter water flow.

If the solar system pump continues to operate, check that the sensor in the stem has not been pulled away from the bottom of the sensing tube. This can occur if weight is put on the wire, so it is pulled out of the gland seal.

To effect cure, unlock cable gland seal to loosen wire. Gently pull and push wire to ensure sensor switch is located at the bottom of the sensor tube. Tighten seal to clamp wire (early models).

#### INSTALLATION

The 'Flocheck' valve should be placed at the end of a straight length of pipe at least 0.5cm long and before the solar take-off point. Mounting the valve in this position assumes that the water flow is not turbulent at the point of sensing. This is important in order to avoid multiple starts of the boost pump (shunting). The valve can be installed in horizontal or vertical pipe. The probe stem should be upright if installation is in the horizontal position for correct action.

**WARNING:** when gluing into the line, use cement sparingly so that flap is not inadvertently glued in the closed or open position.

Remove small bridging plug from the FLOW socket of the controller (if present).

Push in the plug of the 'Flocheck' valve to the controller.

**WARNING:** the switch in the unit is only rated in milliamps NOT AMPS and will not directly switch to 240 VAC power. Unit is to be connected to the terminal provided in the ZX4000.

### **HYDRAULICS**

#### **Hydraulics Layout**

#### Pool/Spa configuration

These systems use a single filter pump and filter. Pool or spa operation is controlled by two 3-way valves (suction and return). In Pool/Spa Configuration, select: Pool/Spa Setup

#### Pool and Spa

- i. The ZX4000 can be programmed to accommodate spa spillover, if desired.
- ii. Conventional heaters (gas and heat pump) and solar can be used to heat both the pool and the spa.
- iii. If a chlorinator cell is plumbed prior to the pool/spa return valve, then both the pool and the spa may be chlorinated.
- iv. The pool water temperature sensor should be installed prior to any heater or solar and will display either the pool or the spa temperature, depending on the current operation of the pool.
- v. Note:- The temperature will only be displayed when the filter pump is running.
- vi. If any water feature or pressure side cleaner boost pumps are used, be sure to enable the "interlock" feature to ensure that the pumps operate only when the filter pump is on and the system is in the "pool only" operating mode. The interlock feature ensures the filtration pump is operating prior to allowing another system component to operate.
- vii. The plumbing diagram below is intended to be used as a general guideline and is not a complete plumbing schematic for the pool.
- viii. We recommend the air sensor be installed for user convenience and for the freeze protection feature for the filter, valves or aux outputs.



# **Electrical**

Ensure power is disconnected prior to wiring ZX4000.

• Follow all statutory and local wiring and installation regulations

The ZX4000 requires a 10amp plug socket connection. All auxiliary connections should be made to the underside of the control box. These connections include hard wired inputs and outputs, actuators, sensors and dry contacts for heater control.

The motor speed control cable is required to be fed from the underside of the control box inside and connected to the motor speed control cable socket on the main printed circuit board.



The sensor and heater connections should be inserted into the sockets on the underside of the unit. The sensor connections should be looped through the provided fixing loop to ensure cable weight is not likely to disconnect the plug from the socket.

#### **Connection of Communication Cable to Waterco ECO Pumps**

Waterco ECO pumps may be purchased with the communication cable fitted. Consult your local Waterco sales office for order details.

Step 1 - Unscrew the 3 x Philips head screws holding the control housing to the motor.



Step 2 - Lift the control housing off the pump to reveal the motor control box.

Step 3 – At the rear of the motor control box drill a 12mm hole at the position indicated in the drawing below. Use stepped drill bit sizes starting at 4mm and working up to 12mm, otherwise there is a high risk of damaging (splitting) motor control box.



Step 4 – When the hole is drilled remove the locking nut from the cable gland and thread the cable through the hole so that the plug is now located within the motor control box. Thread the lock nut over the cable and screw onto the cable gland and tighten.

Step 5 - Locate the motor control socket on the underside of the control housing and insert the control cable plug and then reattach control housing to the motor control housing.



#### Installation of ECO Pump communication cable



Thread the cable through the provided port on the underside of the unit.

Locate the five pin connector on the PCB labeled VSD Pump and gently insert the plug into the socket.



#### **Electrical Specification**

Input Rating	: 240VAC, 50Hz, 10amp plug & lead
Output Ratings	:
Relays	: 2 x 10A $@$ 240VAC max sockets with max combined total output of 10amps
Valves	: 24VAC, 1A max with max total loading of 2.5amps
Heater	: 24VAC, 1A max dry contacts
Spa	: 24VAC, 1A max dry contact
Enclosure Rating	: IP23
Approval No.	: SGSEA/NSW***

#### Flow Switch

The Flow switch must be inserted into the socket marked FLOW on the underside of the ZX4000 Control Box plug.

If a flow switch is installed, locate the socket marked FLOW and remove the small black jumper.

#### **Temperature Sensors**

The solar roof sensor (ROOF), pool water sensor (POOL 1 & POOL 2) and ambient air sensor (AMBIENT) must be inserted into the relevant socket on the underside of the ZX4000 Control Box for the ZX4000 to operate correctly.

#### Spa Mode Output

The Spa Mode Output is a 24V dry contact which is activated when spa mode is enabled. This socket may be used on compatible equipment e.g. reducing the chlorination level to the spa whilst in spa mode. This feature is available on some brands of chlorinators and requires a cable purchased separately.

#### **Valve Actuators**

The ZX4000 can control up to two automatic valve actuators. Two of the valve outputs are dedicated to the pool/spa suction (Valve1) and return (Valve2) valves if pool/spa mode is selected during setup.



Spa Mode



Spillover Pool / Spa Return = Partial Pool / Spa Return + Pool Suction



No Spillover Pool / Spa = Partial Pool / Spa Return + Partial Pool / Spa Suction

#### **Heater Control**

#### **Turbotemp Gas Heater Remote Control Connections**

- 1. Switch off power to heater at main circuit breaker panel.
- 2. Unbolt and remove the access door panels.
- 3. Open control box cover (see Figure 23).
- 4. To connect a 2-Wire Control (such as Waterco ZX4000) or a timer:
  - Remove the factory installed jumper from the Fireman's Switch terminals.
  - Connect wires between the Fireman's Switch terminals on the heater and the relay. Connect wires from the controller or timer to the Fireman's Switch. Controller, timer or relay should be sized to handle 24VAC at 0.5 Amp (because it will be completing the 24VAC control board circuit on the heater as shown in Figure 24). DO NOT apply line voltage to the Fireman's Switch terminals. Use 1mm2 minimum cable with a minimum 1.2 mm thick insulation rated for a temperature rise of at least 105°C.
  - Knock-outs are provided to route the wires through the bottom of the control box and past the junction box.
- 5. Close control box cover.
- 6. Re-install the access door panels. To control heaters that are operated in parallel, connect wiring at same locations on heater Control. It is imperative that each control circuit is isolated from the other control circuits, to avoid that current will flow from one heater to another through the control circuits.

**NOTICE:** The fuse for the Fireman's Switch is a 1.25 Amp 31.75 mm x 6.35 mm fast blow fuse, which is commonly available.





#### Waterco Heat Pump Remote Control Connections

- 1. Switch off power to heat pump at main circuit breaker panel.
- 2. Unbolt and remove the front access panel.
- 3. Open control box cover.
- 4. To connect a 2-Wire Control (such as Waterco ZX4000<sup>™</sup>) or a timer:
  - Locate the water pressure switch or water flow switch on the bottom plate of the electrical enclosure.
  - Cut one of the cables connected to the pressure switch. Connect the two wires from the Controller Normally Open Contact to the two ends of the cut cable and make electrically safe. Controller, timer or relay should be sized to handle 24VAC at 0.5 Amp (because it will be completing the 24VAC control board circuit on the heater as shown in Figure 24). Use 1mm2 minimum cable with a minimum 1.2 mm thick insulation rated for a temperature rise of at least 105°C.
- 5. Close control box cover.
- 6. Re-install the access panel. To control heaters that are operated in parallel, connect wiring at same locations on heater Control. It is imperative that each control circuit is isolated from the other control circuits; to avoid that current will flow from one heater to another through the control circuits.



# **PROGRAMING THE ZX4000**

The Wheel (rotary Index Switch (rIS)) located on the right side of the display is used to control the instrument. The wheel can be rotated in both directions to scroll over the menus and/or pressed to confirm a highlighted selection/value.



Scrolling through menus/options

# CONFIGURATION

#### Initial Start-up and programming

Accessing Timer menu: rotate or push the wheel to access menu. locate the Time menu, then press the wheel to access it.



ZX4000 has a digital clock and 4 independent timers.



Programming the digital clock. In the TIME menu rotate the wheel until the CIOCK menu is located, then press the wheel to access it.



#### Setting the time:

• Select hours or minutes, rotate the wheel to the desired value. Then press to confirm. To confirm the time and exit rotate the wheel to the check mark (II) and press to save.

• To exit without saving select X and press the wheel.



Making/confirming a selection

**NOTE:** Once changes are made press " $\checkmark$ " or "OK" to save and exit from submenu. Select "x" or "exit" to exit without saving.



#### Setting the Date



Select day / month / year, rotate the wheel to the desired value. Then press to confirm.To confirm the date and exit rotate the wheel to the check mark (II) and press to save.To exit without saving select X and press the wheel.



#### FAST SETUP - PRESET SELECTION TABLE

SETTINGS  $\Theta \Theta \Theta \otimes$ Load Preset: -- SELECT A PRESET --\* Overwrites settin9s \*

Step 1 - Navigate to settings

Step 2 - use the preset table and select your heating configuration corresponding to your pool equipment and heating methods

Step 3 – Once your preset has been selected work through the settings screens to customise and finalise the configuration

Preset	Scenario	Pump	Mode	Set Temp Pool	Set temp spa	Heater	Heater Circuit	Temperature	Temp Sensor Solar	Temp Sensor HP	Temp Sensor Gas	Solar Output	Temp Check (min)	Solar Roof Min (C)	Rotaflow	Solar Preference	HP Temp Check (min)	HP Min ambient (C)	Gas Temp Check (min)	Gas Cool down (min)
P1 POOL INT SOL	Pool Only Integrated solar	single speed	Pool	28	-	Solar only	Integrated	Independent	1	-	-	pump	60	30	OFF	-	-	-	-	-
P2 POOL INT SOL RFLOW	Pool Only Integrated solar rotaflow	single speed	Pool	28	-	Solar only	Integrated	ROTAFLOW	1&2	-	-	pump	60	30	ON	-	-	-	-	-
P3 POOL INT SOL+HP	Pool Only Integrated solar & heat pump	single speed	Pool	28	-	Solar + HP	Integrated	Differential	1&2	1&2	-	pump	60	30	OFF	YES	60	10	-	-
P4 POOL INT SOL+GAS	Pool Only Integrated solar & gas heater	single speed	Pool	28	-	Solar + Gas	Integrated	Differential	1&2	-	1&2	pump	60	30	OFF	YES	-	-	60	6
P5 POOL INT SOL+HP+GAS	Pool Only Integrated solar, heat pump & gas heater	single speed	Pool	28	-	Solar + HP + Gas	Integrated	Differential	1&2	1&2	1&2	pump	60	30	OFF	YES	60	10	60	6
P6 POOL INT HP	Pool Only Integrated heat pump	single speed	Pool	28	-	HP only	independent	Independent	-	1	-	-	-	-	-	-	60	10	-	-
P7 POOL INT HP+GAS	Pool Only Integrated heat pump & gas heater	single speed	Pool	28	-	HP + Gas only	Integrated	Differential	-	1&2	1&2	-	-	-	-	-	60	10	60	6
P8 POOL INT GAS	Pool Only Integrated gas heater	single speed	Pool	28	-	Gas only	Integrated	Independent	-	-	1	-	-	-	-	-	-	-	60	6
P9 POOL IND SOL	Pool Only Independent solar	single speed	Pool	28	-	Solar only	independent	Independent	1	-	-	pump	60	30	OFF	-	-	-	-	-
P10 POOL IND SOL RFLOW	Pool Only Independent solar rotaflow	single speed	Pool	28	-	Solar only	independent	ROTAFLOW	1&2	-	-	pump	60	30	ON	-	-	-	-	-
P11 POOL IND SOL INT HP	Pool Only Independent solar & integrated heat pump	single speed	Pool	28	-	Solar + HP	independent	Independent	2	1	-	pump	60	30	OFF	YES	60	10	-	-
P12 POOL IND SOL INT GAS	Pool Only Independent solar & integrated gas heater	single speed	Pool	28	-	Solar + Gas	independent	Independent	2	-	1	pump	60	30	OFF	YES	-	-	60	6
P13 POOL IND HP	Pool Only Independent heat pump	single speed	Pool	28	-	HP only	independent	Independent	-	1	-	-	-	-	-	-	60	10	-	-
P14 POOL IND GAS	Pool Only Independent gas heater	single speed	Pool	28	-	Gas only	independent	Independent	-	-	1	-	-	-	-	-	-	-	60	6
P15 POOL IND HP+GAS	Pool Only Independent heat pump & gas heater	single speed	Pool	28	-	HP + Gas only	independent	Independent	-	1	1	-	-	-	-	-	60	10	60	6
P16 P/SPA INT HP	Pool / Spa Integrated heat pump	single speed	Pool/Spa	28	35	HP only	Integrated	Independent	-	1	-	-	-	-	-	-	5	10	-	-
P17 P/SPA INT GAS	Pool / Spa Integrated gas heater	single speed	Pool/Spa	28	35	Gas only	Integrated	Independent	1	-	-	-	-	-	-	-	-	-	5	6
P18 P/SPA INT HP+GAS	Pool / Spa Integrated heat pump & gas heater	single speed	Pool/Spa	28	35	HP + Gas only	Integrated	Independent	1	1	-	-	-	-	-	-	5	10	5	6
P19 P/SPA IND SOL INT HP	Pool / Spa Independent solar & integrated heat pump	single speed	Pool/Spa	28	35	Solar + HP	Integrated	Independent	2	1	-	pump	60	30	OFF	YES	5	10	-	-
P20 P/SPA IND SOL INT GAS	Pool / Spa Independent solar & integrated gas heater	single speed	Pool/Spa	28	35	Solar + Gas	Integrated	Independent	2	-	1	pump	60	30	OFF	YES	-	-	5	6
P21 P/SPA INT SOL+HP+GAS	Pool / Spa Integrated solar, heat pump & gas heater	single speed	Pool/Spa	28	35	Solar + HP + Gas	Integrated	Differential	1&2	1&2	1&2	pump	60	30	OFF	YES	5	10	10	6

#### **Quick Setup Configurations Integrated Solar**





Step 1 - Navigate to settings

SETTINGS ⊕⊕⊘⊗ Load Preset: 1 POOL INT SOL \* Overwrites settings \*

Step 2 - Select preset 1 Pool Integrated Solar

SETTINGS.  $\Theta \Theta \otimes \Theta \Theta$ Step 3 - Select the pump type Pump Type: Single Speed. SETTINGS ⊕⊡⊘⊗ Step 4 - Check the types of heating installed on the Solar Only Heater: pool, solar only and the heating circuit as integrated Heat Circuit: Integrated and temperature as integrated Step 5 - Check the temperature sensor installed on Pool 1 the integrated solar line (pool 1) NZA. NZ8 SETTINGS  $\Theta \Theta \Theta \otimes$ Pump. Step 6 - Select the solar temp check period SETTINGS ⊕⊡⊘⊗ Step 7 - Set the roof minimum temperature threshold you want the solar pool heating to operate. Adjusting the control differential will allow the solar system to OFF. heat the pool water to a higher temperature than the pool or spa set temperature ontrol Diff: 0.5



Pump Type: ECO Pump

Step 3 - Select the pump type





Step 5 - Adjusting the control differential will allow the solar system to heat the pool water to a higher temperature than the pool or spa set temperature

Select preference on if solar pool heating should have priority over an installed conventional heater



#### SETTINGS $\Theta \Theta \Theta \Theta$ Load Preset: 2 POOL INT SOL RFLOW \* Overwrites settin9s \*

Step 1 - navigate to settings

Step 2 - Select preset 2 Pool Integrated Solar Rotofl

**Differential Heating** 





Step 1 - navigate to settings

Pump & Gas

SETTINGS	$\Theta \odot \odot \otimes$
Load Preset:	
5 POOL INT S	SOL+HP+GAS
* Overwrite	s settin9s *



Pump Type: ECO Pump

Step 3 - Select the pump type

Step 2 - Select preset 5 Pool Integrated Solar Heat

ETTINGS Definition Solar+HP+Gas eater: Solar+HP+Gas eat Circuit: Integrated emperature: Differential	Step pool read
ETTINGS Demp blar: lutput: Pump 'ump Speed: Med Femp Check: 2.0 Hrs	Step outp enou perio
ETTINGS Diar:	Step
plar:	the s
Roof Min: 26 'C	Incre
Rotaflow: OFF	will
Preference: OFF	to a
Control Diff: 0.5 'C	temp
ETTINGS ODDOOD	Step
eatpump: ODDOOD	to th
'ump Speed: Med	throu
femp Check: 1.0 Hrs	requ
fin Ambient: 8 'C	will d

SETTINGS Gas:	ΘÐ	008
Pump Speed: Temp Check:	Hi9h 1.0	Hrs
Cool Down: Control Diff:		

Step 4 – Check the types of heating installed on the bool, integrated with filtration and the temperature eadings to differential

Step 5 – If the solar is run by a solar pump select the putput as pump, the required pump speed to ensure enough water is in the system and the temp check period

Step 6 - Set the roof minimum temperature you want he solar pool heating to operate

ncreasing the control differential temperature vill allow the solar system to heat the pool water o a higher temperature than the pool or spa set emperature

Step 7 - If there is a heat pump installed set the pump to the required speed to ensure enough water flow through the heater, the temperature checking period required and minimum ambient temperature the unit will operate in effectively

Adjusting the control differential temperature will allow the heater to heat the pool water to a higher temperature than the pool or spa set temperature

Step 8 - If there is a gas heater installed set the pump to the required speed to ensure enough water flow through the heater, the temperature checking period required and the manufacturers recommended heater cool down time

Adjusting the control differential temperature will allow the heater to heat the pool water to a higher or lower temperature than the pool or spa set temperature





Step 4 - Check the heater installed on the pool, integrated with filtration and the temperature readings to independent

SETTINGS Temp Sensor:	$\textcircled{\textbf{OD}} \otimes \textcircled{\textbf{O}}$
	N/A
Heatpump:	Pool 1
	N/A

Step 5 - Check the temperature sensor installed on the filtration line (pool 1)



Step 1 - navigate to settings

SETTINGS 🕞	$\Theta \otimes \Theta$
Load Preset:	
6 POOL INT HP	H
* Overwrites set	tin9s <b>*</b>

Step 2 - Select preset 6 Integrated Heat Pump / Gas Heater

SETTINGS Heatpump: Pump Speed: Temp Check: Min Ambient: Control Diff:	Hed 1.0 8 0.5	X⊘⊗ Hrs °C °C
--	------------------------	------------------------

Step 6 - If there is a heat pump installed set the pump to the required speed to ensure enough water flow through the heater, the temperature check period and minimum ambient temperature required. If a gas heater is installed set the pump to the required speed to ensure enough water flow through the heater and the cooldown period required

Adjusting the control differential temperature will allow the heater to heat the pool water to a higher temperature than the pool or spa set temperature

 $\Theta \Theta \Theta \otimes$ PUMP Type: ECO PUMP

SETTINGS

Step 3 - Select the pump type





Step 4 – Check the heater is installed on the independent hydraulic circuit and set Heat Circuit to independent, the temperature readings will default to independent

SETTINGS Temp Sensor:	⊕⊕⊘⊗
	N/A
Heatpump:	Pool 1
	N/A

Step 5 - Check the temperature sensor installed on the independant line (pool 1)



Step 1 - navigate to settings

Step 3 - Select the pump type

SETTINGS OOOS
Load Preset:
13 POOL IND HP
* Overwrites settin9s *



Step 2 - Select preset 13 Independent Heat Pump

SETTINGS Heatpump: Pump Speed: Med Temp Check: 1.0 Hrs Min Ambient: 8 'C Control Diff: 0.5 'C Step 6 - If there is a heat pump installed set the pump to the required speed to ensure enough water flow through the heater, the temperature check period and minimum ambient temperature required. If a gas heater is installed set the pump to the required speed to ensure enough water flow through the heater and the cooldown period required

Adjusting the control differential temperature will allow the heater to heat the pool water to a higher temperature than the pool or spa set temperature

#### **Manual Configuration Settings**



Step 1 - navigate to settings



SETTINGS DOC Heater: No Heating Heat Circuit: N/A Temperature: N/A



Step 2 -	Select t	he pump	type
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Pump Type: Single Speed ECO Pump HSTORM ECO-V (Future) HSTORM ECO-VS

Step 3 - Select installed heater types

No Heating Solar Only HP Only Solar + HP Gas Only Solar + Gas HP + Gas Only Solar + HP + Gas

Heat Circuit: N/A Integrated Independent

Temperature: Differential Independent

SETTINGS Solar:	Ð	۩	8
Roof Min:	26	'C	
Rotaflow:	0FF		
Preference:	0FF		
Control Diff:	0.5	'C	

Step 4 - Roof Min: If solar is selected set the minimum roof temperature for it to switch on. Suggested between 30 - 35  $^\circ\text{C}$ 

Rotaflow: Is used if there is no roof sensor installed Control Diff: Calibration adjustment between 0.5 and 4 degrees Celsius

#### Preference

The solar heating function may be given priority over other forms of heating by selecting the "Solar Preference" icon. The "Solar Preference" feature should be selected if solar heating is to have operational priority over a conventional heater.

SETTINGS Heatpump:	ΘÐ	) 2000
Pump Speed:	N/A	
Temp Check:	1.0	Hrs
Min Ambient:		.C
Control Diff:	0.5	'C

#### Step 5 - Heat Pump

Pump Speed: if a ECO pump is fitted select the speed when the heat pump is operating. Low - Med - High Temp Check: Select the period between one and four hours for the unit to check the water temperature. Min Ambient: Select the minimum ambient temperature the heat pump will operate down to between one and twenty degrees Celsius. Suggested minimum  $10^{\circ}$ C

Control Diff: Calibration adjustment between 0.5 and 4 degrees Celsius

TTINGS	ΘÐ	208	
imp Speed:	N/A		
emp Check:	1.0	Hrs	
ol Down:	6	min	
ontrol Diff:	0.5	'C	

#### Step 6 - Gas Heater

Pump Speed: if a ECO pump is fitted select the speed when the heat pump is operating. Low - Med - High Temp Check: Select the period between one and four hours for the unit to check the water temperature. Cool Down: Select the cool down period required after the heater is switched off between one and twenty minutes. Suggested minimum 5 minutes Control Diff: Calibration adjustment between 0.5 and 4 degrees Celsius

#### **Lighting Setup**

If the installation is fitted with a pool light the type may be selected by toggling between "Basic Light" or "Multicolour". If a Multicolour led light is paired with ZX4000 the colour selection programming feature is enabled through the next setting screen.



SETTINGS Light Type: WaterCo RGB Light Colour: Fast Change Output 2: If outlet 2 is spare the unit is able to control other appliances or lighting.

Select between: Basic light for on/ off switching Multicolour Light to control LED RGB Auxiliary to control another appliance.

- If Multicolour is selected the following light brands may be controlled
- > Waterco RGB
- > Aquaquip RGB
- > Spa Electric RETRO
- > Spa Electric MULTI



Pool / Spa selections Pool Only Spa Only No Spillover Spill return spa Spill Both

Spa Timeout: 15 minutes to 12 hours

SETTINGS	ØØ
Differential Mode: Au	to

CALIBRATION	$\Theta \Theta \otimes \Theta \otimes$
Pool 1:	24.3°C
Pool 2:	25.5°C
Roof:	51.1°C
Ambient:	23.1°C



Differential Mode: (See parameter table page 39) ECO AUTO TURBO

Sensor Calibration +-5C

Flow switch input Normal input - normally open contact Invert input - normally closed contact

# Operation

Once all the settings have been entered, AUTO mode should be selected for the ZX4000 to operate the programmed functions and timers.









Mode	ECO	AUTO	BOOST
Heat Increase	slow heating	standard heating	fast heating
Туре	solar or heat pump solar / all fitt heat pump / gas		all fitted
Solar Min Temp Rise	0.1 0.3 0.5		0.5
Heat Pump Min Temp Rise	<b>Rise</b> 0.2 0.5		0.7
Gas Min Temp Rise	to set temp	to set temp	to set temp





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Select the SOLAR icon to toggle the solar pool heating system on or off

Select the SUPERHEAT to switch on all fitted pool

heating systems to override all other heating settings





Select the LIGHT icon to toggle the pool lighting on or off

Select the VALVE icon to open and close the motorised valve

Enter the pool or spa set point screens to change the

water temperature set points



SOLAR ON

Select the icon HP HEAT to toggle the pool heat pump on or off

U 🕲 🖄 WINTER

Select winter mode to enable the winter timer settings. These timers are different to the standard timers to allow for different seasonal settings without the need to change all the timers

GASHEAT OFF

HPHEAT ON



Select the GASHEAT icon to toggle the gas heating on or off



Enter the settings menu to check or change the configuration settings







timer set will override the previous set timers if controlling the same product or function. Timers controlling the same function should not overlap. Timers not being used should have all

days unchecked, the times set to 0:00 and the functions unchecked.

The controlled function may be changed by turning the selector knob to highlight "HEAT SOLAR" press and then scroll through the options listed. Once found, select the function by pressing the selector knob, then select the tick to save.

If multiple heating functions are to be operating together then they should be on the same timer.

SET TIMER 1 Days: ------Time: 0:00 to 0:00 Pump Med Heat Solar



If an independent heat pump is fitted and the pump is only required to run when there is heat required, then uncheck the pump.

SET TIMER 1		$\bigcirc$
Select All Day	IS	00
⊠Sun	🖾 Thu	
⊠Mon	⊠Fri	
Tue	⊠Sat	
⊠Wed		



SET TIMER 1 Days: SMTWTFS Time: 9:00 to 16:00 ØPump Med Ø Heat Solar+HP+Gas Select the days the product or function is to operate Select None All Days Weekend Weekday Custom (select by ticking the desired day)

Select hours or minutes, rotate the wheel to the desired value for both start time and end time. Then press to confirm.

Coloct the numb speed required for an adequate

supply of water to the equipment if required. ECO - low speed MED - medium speed HIGH - high speed			
Select the proc	luct or function to be controlled by		
Cool only	<ul> <li>operates the solar pool heating system to run at night to cool the pool</li> </ul>		
Heat solar	<ul> <li>operates the solar pool heating system to heat the pool</li> </ul>		
Heat HP	<ul> <li>operates the pool heat pump</li> </ul>		
Heat solar + HP	<ul> <li>operates the solar pool heating and pool heat pump</li> </ul>		
Heat gas	<ul> <li>operates the gas pool heater</li> </ul>		
Heat solar + gas	s – operates the solar pool		
Heat HP + gas	<ul> <li>operates the pool heat pump and gas pool heater</li> </ul>		
Heat solar + HP			
+ gas	<ul> <li>operates the solar pool heating, pool heat pump and gas pool heater</li> </ul>		
Valve A	<ul> <li>Operates valve A if not used for pool / spa mode</li> </ul>		
Valve B	<ul> <li>Operates valve B if not used for pool / spa mode</li> </ul>		
Aux 1	<ul> <li>Operates a normally closed low voltage contact</li> </ul>		
Aux 2	<ul> <li>Operates a normally closed low voltage contact</li> </ul>		

#### **Filter Pump Speed Selection**

Filter Pump Icon on Home screen

- a) If a single speed filter pump is connected the filter pump icon will be a simple On Off function.
- b) If a Waterco three speed pump is connected the controller will allow the user to scroll through and select the desired pump speed. The Waterco three speed pump has an inbuilt priming function which does not allow speed changes during priming.
- c) When the pump is not operating and is activated the pump will default to the preset pump speed.
- d) If the pump is running and the flow switch does not close after two minutes the system will request the pump to turn off. Heating cool down must be complete if operating integrated gas heating.
- e) When a new item is activated which is interlocked to a Waterco 3 speed filter pump the pump speed may need to increase to provide adequate water flow.
- f) When the filter pump is deactivated, it will also deactivate all interlocked outputs.
- g) When any interlocked function is deactivated the control will check if other interlocked outputs are running and lower the filter pump speed to either the minimum required by any running function or to the filter pump default speed from the pool/spa configuration menu if within a filtration time.
- h) If an interlocked function is deactivated, no other interlocked functions are operating and not within a filtration time zone filter pump will be deactivated.

**Note:** The control of the variable speed pump is executed via communication cable. When the pump is controlled via the communication cable the pump can be connected to an independent power output. This enables the pump GPO to be used as an independent output to control a secondary pump (booster pump) or any other equipment that needs to be operated at the same time the pool pump. This also can be used to interlock functions. Please refer to the Interlock section below for more information.

#### Troubleshooting

#### Diagnostics Menu:

The diagnostic menu allows the user to quickly evaluate the current state of the ZX4000. It provides a picture of all the functions that are active at any given the moment. To access the diagnostic menu, rotate the wheel until you find the diagnostic menu and press to select. See below figure.



# **ICONS LIST**

U U	Auto/Manual Mode	
	Winter Mode	
*	Service Mode	
Ŀ	Time Menu, Set Clock, Set Timer 1-4	
\$	Settings Menu	
	Pump On/Off	
− cg	Diagnostic	
Č	Light On	
Ŷ	Light Off	
	Exit	
Ø	Auxiliary 1/ Auxiliary 2 Off	
۲	Auxiliary 1/ Auxiliary 2 On	
÷	Valve Close	
$(\exists$	Valve Open	
ى ک	Auto Mode Active, number indicates active timer	

# WARRANTY - PLEASE READ

# [Important note: The benefits under this warranty are in addition to other legal rights and remedies you may have in relation to Waterco products]

- 1. These terms and conditions carefully, as failure to comply may affect your legal rights under this warranty; and
- 2. Any operation instructions carefully before commencing use of any product manufactured by Waterco Limited ("Waterco").
- 3. Waterco manufactures quality pool and spa products to the highest standards using the most advanced technology and production procedures available.

#### WARRANTY COVER

If a defect occurs in any Waterco product during the warranty period, Waterco will at its discretion, repair the product or replace and install the defective part, free of charge provided that the defect results solely from poor workmanship or materials and subject to these terms and conditions.

Labour is covered by this warranty for a period of twelve months from the date of purchase or installation, within a 25 km (15 miles) radius of an authorized Waterco Service Agent.

The purchaser is responsible for any freight incurred.

Warranties are valid only within the original country of purchase. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law [applicable only to Australian States and Territories]. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if goods fail to be of acceptable quality and the failure does not amount to a major failure.

#### WARRANTY PERIOD

All products sold by Waterco are covered by a one year warranty. The exceptions to this are the products listed in the schedule (which also specifies relevant warranty periods). All warranty periods commence on the date of purchase by the end user.

The provisions of this warranty are not transferable and are in addition to and not in modification of or subtraction from any applicable statutory warranties, rights or remedies.

#### **CONDITIONS OF WARRANTY**

This warranty only applies where:

- 1. The products requiring installation have been sold with installation included and have been installed by a licensed plumber, electrician or person who has completed an accredited course in swimming pool care and maintenance or a person with more than 12 months on the job learning or a person supervised by one of these people, in accordance with any written installation instructions provided.
- 2. The products have been installed and operated in accordance with written instructions supplied by Waterco;
- 3. The purchaser is able to provide proof of purchase that specifies the date of purchase;
- 4. The product has been serviced or maintained regularly. (at least once a month).
- 5. Installed in an area that is free from flooding or excessive outside contact with water;
- 6. Any pool and spa equipment has been used in water:
  - a. With a temperature not exceeding 40 degrees Celsius;
  - b. With a pH range maintained between 7.2 7.6;
  - c. That has been chemically balanced in accordance with the Langelier saturation index within a range of -0.2 to + 0.2 to ensure that it is not corrosive or scale forming;
  - d. That is not salt water (other than mild saline water conditions which are compatible with swimming pool salt water chlorination systems) unless otherwise stated by Waterco in both the respective product labels and brochures that it is suitable for seawater applications; and
  - e. That has been regularly treated with a sanitizing system using bromine, chlorine in one of its compound forms, or generated in-situ, in concentrations (doses) recommended by the relative state or territory health departments. (In areas outside of Australia please refer to the local health department recommendations before use);
- 7. Electrical equipment has been adequately protected from salt air environments and from salt water; and All repairs and replacements shall be carried out by Waterco or its authorized service dealer, unless otherwise authorized in writing by Waterco.
- If an authorized service dealer is not available within 25 km (15 miles) of the purchaser's area:
- The purchaser must contact the place of purchase or Waterco for further instructions and;
- The purchaser is responsible for any freight or infield labour costs.

#### **EXCLUSIONS**

This warranty does not cover, and Waterco will not be responsible for, any defect or damage caused or contributed to by:

- a. installation or use of the product other than in accordance with Waterco's written instructions,
- b. any statutory requirements and these terms and conditions;
- c. use of the product for a purpose other than for which it was designed or sold;
- d. abuse, misuse, corrosion, internal and external, or normal wear and tear;
- e. any repairs or modifications whatsoever carried out by any person, other than a Waterco authorized service dealer;
- f. exposure to water not caused by a defect in the product; and
- g. transit of the product over which Waterco has no control.
- h. inadequate ventilation
- i. cement, pebbles, render or other pool surface finishes blocking the pump's impeller
- j. insect and/or vermin infestation

Some three phase pumps are not supplied with thermal overload protection. It is the purchaser's responsibility to have this provision installed by appropriately licensed electricians prior to the initial installation of the pump. All electrical work must comply with any appropriate statutory requirements.

Warranty for installation of thermal overload protection is the sole responsibility of the licensed electrical contractor and not Waterco.

#### LIMITATIONS OF LIABILITY

To the extent permitted by law Waterco excludes all liability it may have to the purchaser for indirect, special or consequential loss arising from or related to any defect in any Waterco product, or any act or omission, including negligence of Waterco, including, but not limited to, loss of business, loss of profit, loss of revenue, lost opportunity, inconvenience, and damage to any property other than the Waterco product.

To the extent permitted by law, Waterco excludes all other conditions, guarantees, liabilities or representations that are not expressly set out in this agreement. These terms and conditions do not attempt to exclude, restrict or modify any applicable statutory rights, or any exercise of any statutory rights, or any liability imposed on Waterco by any law (including the Competition and Consumer Act 2010), if to do so would contravene that law or make any part of these terms and conditions void.

To the extent permitted by law, Waterco excludes all conditions and warranties implied into these terms and conditions and limits its liability for breach of any such condition or warranty that it cannot exclude to the greater of (at Waterco's option);

(a) for goods:

- Repairing or replacing those goods; or
- Paying the cost of having those goods repaired or replaced; and

(b) for services:

- Resupplying the services; or
- Paying the cost of having those services resupplied.

#### **TEST YOUR WATER REGULARLY**

The chemical balance of the water is a relationship between total alkalinity, pH, Calcium hardness and temperature. Waterco recommends that you have your water tested regularly by your local pool professional. A record of testing should always be kept for reference.

Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so any such limitation may not apply.

This warranty gives specific legal rights. The purchaser may have other rights depending on the jurisdiction in which the Waterco product was purchased or the purchaser is located.

#### SCHEDULE OF WARRANTY PERIODS

All products sold by Waterco are covered by a one year warranty with the exception of the products listed below.

- ZX4000 Domestic use 2 years
- ZX4000 Commercial use 1 year

#### **Glossary of Terms**

#### Interlock

The interlock feature ensures the filtration pump is operating prior to allowing another system component to operate.

#### Interlink

The interlink feature allows the user to operate two or more functions together. Select the "Interlink" button and then select the function required to operate with the relevant output.

#### **Integrated Conventional Heater**

"Integrated" should be selected for a conventional heater operating within the filtration circuit.

#### Independent Conventional Heater

"Independent" should be selected for a conventional heater operating separately to the filtration circuit.

#### **Heater Timer**

The "Heater Timer" button allows timer control parameters to be set for the conventional heater.

#### **Heating Demand Option**

If "Heating Demand Opt" is selected the conventional heater will continue to operate until the set temperature is reached overriding any filtration timers.

#### Set Demand Mode Timer

The "Set Demand Mode Timer" button allows timer control parameters to be set if the "Heating Demand Opt" is selected.

#### **Integrated Solar**

"Integrated" should be selected for a solar system operating within the filtration circuit.

#### Independent Solar

"Independent" should be selected for a solar system operating separately to the filtration circuit.

#### Solar Temp Check Period

The Solar Temperature check period for systems with solar heater demand enabled can be adjusted; otherwise the check delay is set for 2 Hours.

#### Solar Preference

The "Solar Preference" feature should be selected if the solar heating is to have operational priority over a conventional heater.

#### **Solar Demand Option**

The "Solar Demand Opt" feature should be selected if the solar heating is to continue to operate while there is solar gain overriding any filtration timers.

#### Select Solar Output

The "Select Solar Output" feature allows water control selection to the solar system via either a Solar Pump or Solar Valve.

#### **Freeze Protection**

Freeze protection is used to protect the pool hydraulics and plumbed equipment against freeze damage. If freeze protection is enabled and the AIR temperature falls below 3°C, ZX4000 will turn on the filter pump to circulate the water. If in "Pool and Spa" mode the valves will also alternate between the pool and spa every 30 minutes.

#### **Control Differential**

Adjusting the control differential temperature will allow the heating system to heat the pool water to a higher or lower temperature than the pool or spa set temperature.

For service enquiries please contact your installer or:

Waterco Limited. 36 South Street Rydalmere, NSW 2116 P: 02 9898 8600 F: 02 9898 1877 E: administration@waterco.com