

HEAT COMMAND 5 RT RP

Retro Fit Controller with Timer & Remote PV Roof Sensor
Instruction Manual



DESCRIPTION

The Heat Command 5 RT RP (PV) is a premium automatic solar controller for heating of a swimming pool with a solar collector, with temperature adjustment, manual, cooling and standby mode features. Two pumps are controlled, the filter and solar pumps and for retrofit/integrated plumbing the solar pump can be locked to the circulation pump if required otherwise it will switch both pumps on if there is solar gain.

INSTALLATION INSTRUCTIONS

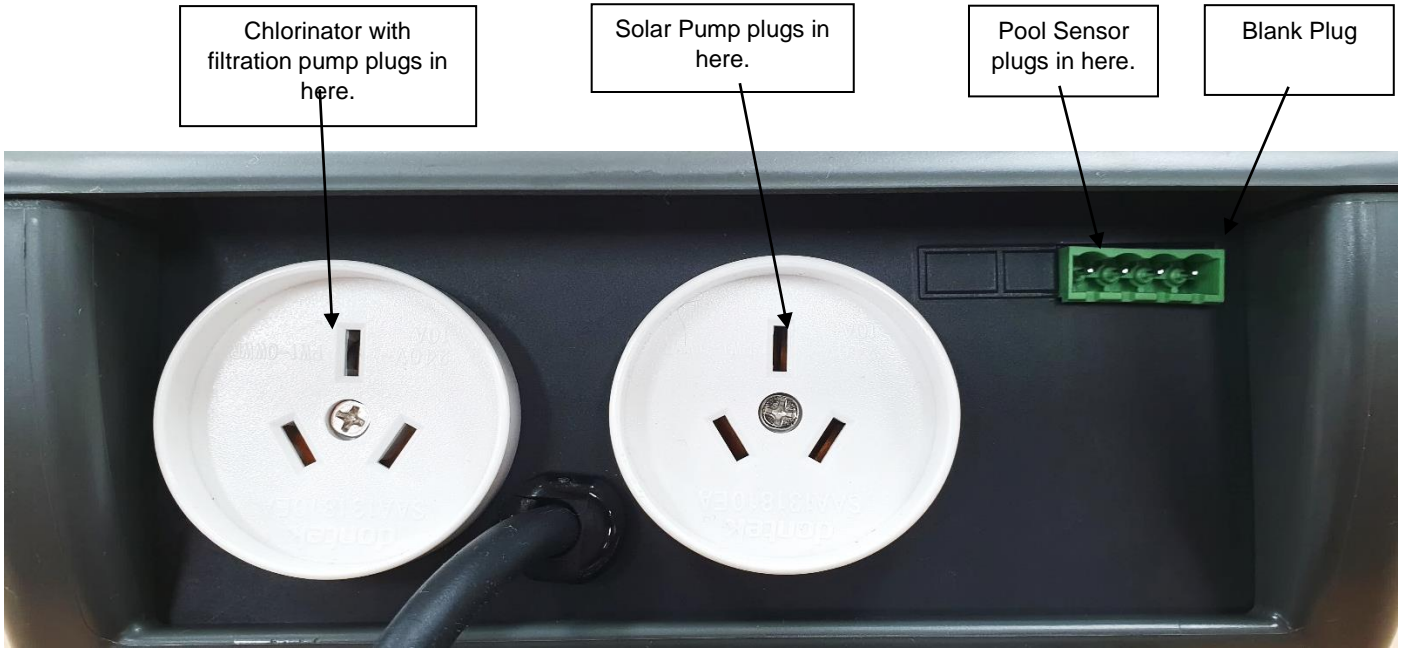
THIS APPLIANCE IS NOT INTENDED FOR USE BY YOUNG CHILDREN OR INFIRM PERSONS WITHOUT SUPERVISION. PLEASE ENSURE THAT YOUNG CHILDREN ARE SUPERVISED TO ENSURE THAT THEY DO NOT PLAY WITH THE APPLIANCE.

Ideally, as with all pool equipment, the controller should be installed out of direct weather.

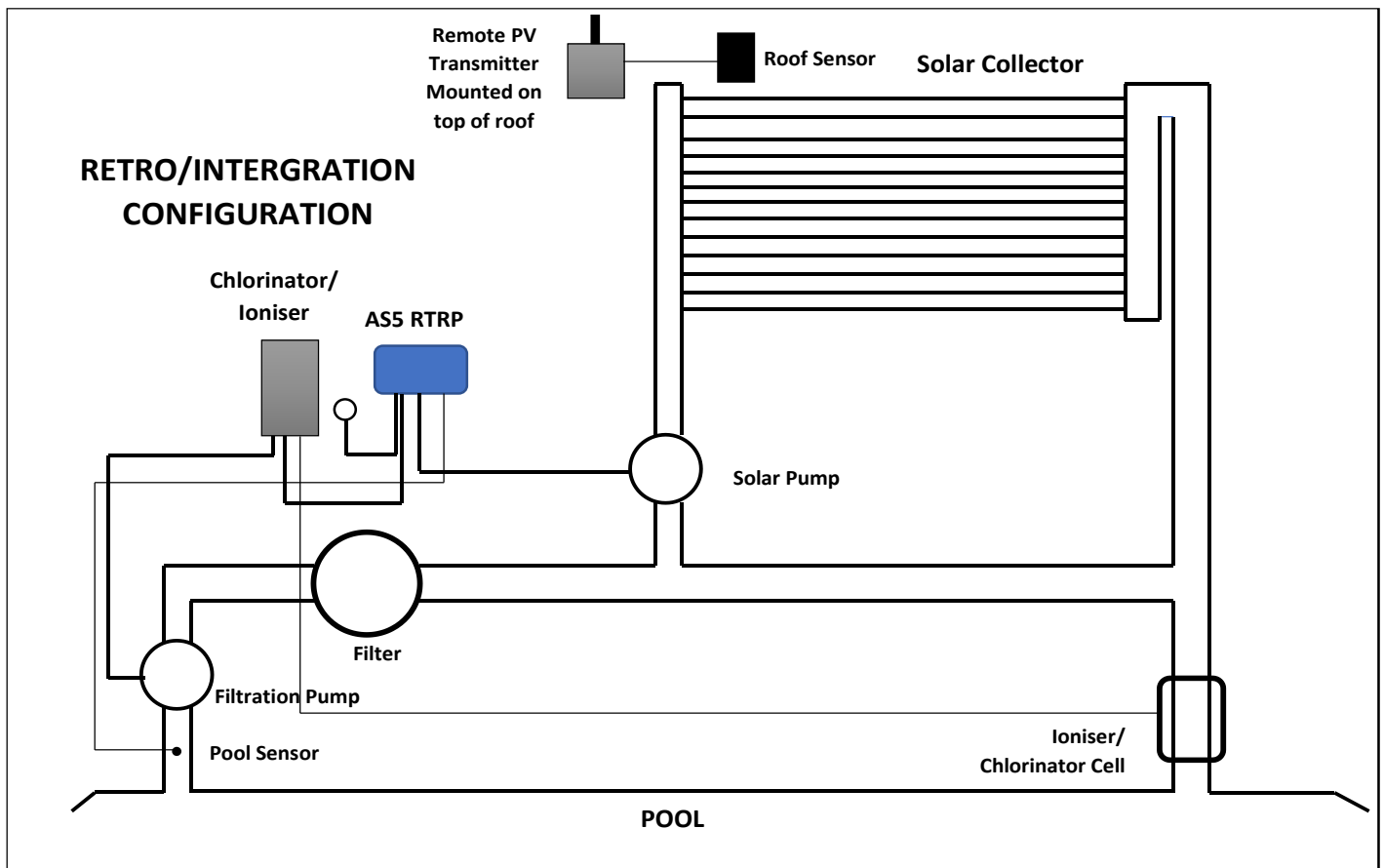
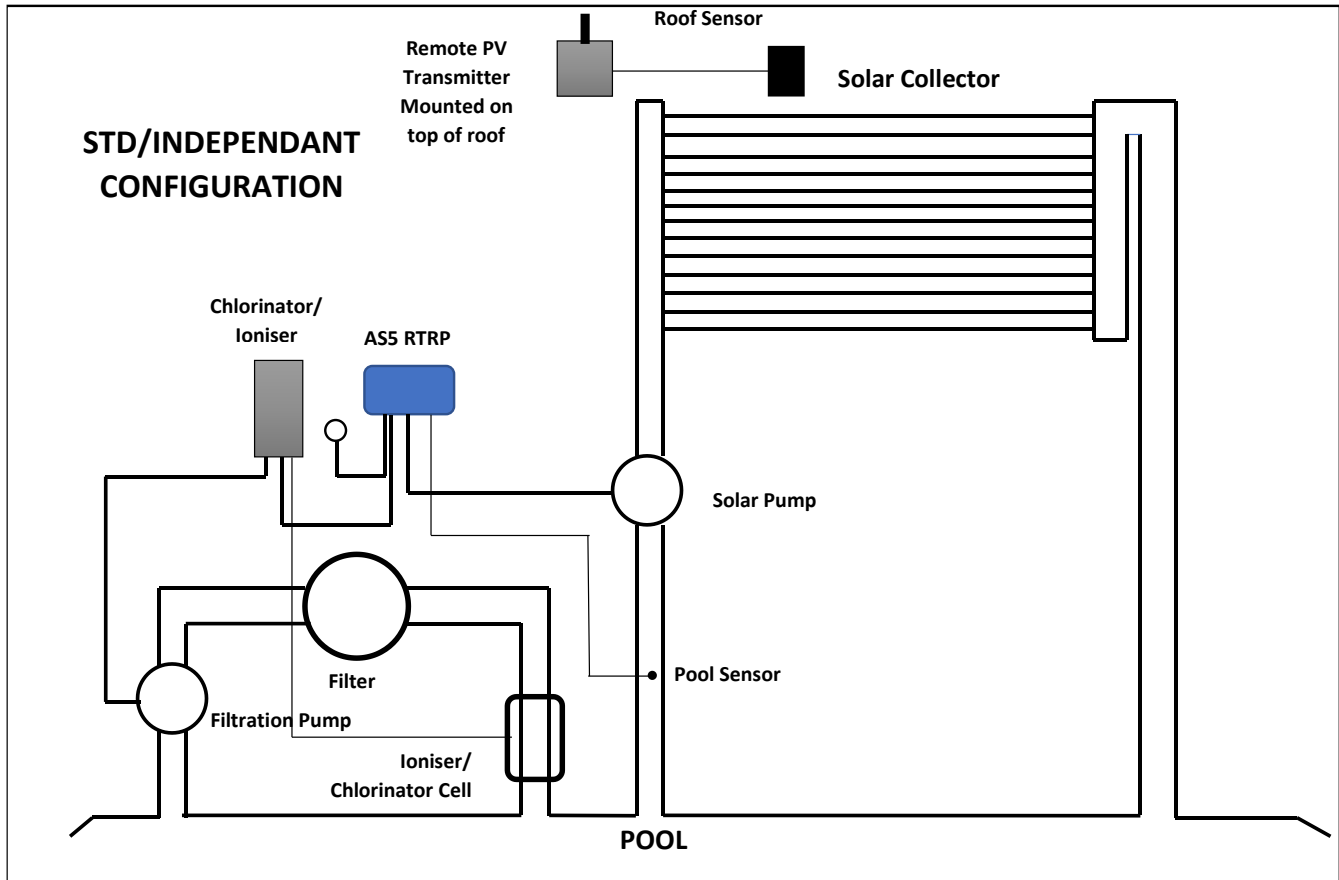
<p>CONTROLLER MOUNTING</p>	<p>Find a suitable location to mount the control box. The controller should be no closer than 3 metres from the water's edge and a minimum 600mm above ground. The power cable is 1.8m long and should be plugged directly into a general power outlet, not into an extension lead. Fix the mounting bracket to a solid structure with the screw and wall plug kit provided. Slide the controller on, locking it into place. Adjust the screws on the back of unit to ensure a snug fit. To remove unit, lift and gently pull away from structure.</p>
<p>SANITISER CONNECTION</p>	<p>The Sanitiser (Ioniser, Chlorinator, Ozoniser, etc) can be connected to the 240V socket on the Heat Command 5 RTRP labelled as FILTER. The plug of the pool circulation pump is then plugged into the bottom of the Sanitiser. The Sanitiser is then set to operate 24hrs per day as the Heat Command 5 RTRP controller will control the number of hours per day the system will operate. Refer to the Sanitiser instructions for 24hr timer setup and dosing requirements.</p>
<p>PUMP CONNECTION</p>	<p>The Circulation pump plugs into the 240V socket labelled FILTER. If a solar booster pump is to be used, plug into the 240V socket labelled SOLAR. The maximum load is 9.98 AMPS at 2395W.</p>
<p>POOL SENSOR</p>	<p>The pool sensor must be fitted into the filtration circuit, as close to the pool as practical, preferably in a position out of direct sunlight. It is recommended that a 14.5mm hole be drilled in the side of the PVC pipe, not the top of the pipe where water will collect. This can be carried out using a Sunlover PD01 grinding drill or a pilot hole drilled, then a 14.0mm drill-bit spinning in a counter clockwise direction to minimize the chance of shattering pipe. Insert the grommet into the pipe and gently push in the sensor barb. Ideally ~30cm of the cable from the sensor should be tied to the shaded side of the pipe to prevent extreme ambient conditions leeching into the sensor via the copper in the cable. The blue sensor plug is to be fitted to the plug socket marked POOL.</p>
<p>REMOTE ROOF TEMPERATURE SENSOR</p>	<p>The roof temperature sensor must be fitted into a small piece of solar collector or equivalent and attached to the roof. The best location is within an arm's length of the gutters edge of the house or shed as long as the sensor end is not shaded and is on a roof of similar aspect of the main collector. It must not be fitted on top of the solar collector or fitted to high points on the roof like Ridge Capping as false readings will be detected. This unit has been designed to eliminate the need to run a temperature sensor cable from the solar controller to the roof; this is replaced by a solar powered transmitter that transmits the roof temperature. The roof temperature sensor cable is connected on the inside of the radio remote temperature transmitter in a screw in socket. Test for site suitability (*radio note) then mount the radio remote temperature transmitter on the gutter ensuring the solar panel (PV) faces north and the antenna points up (Vertical), if the antenna faces down then water may enter the box through the power entry / sensor entry hole and void the warranty.</p>

<p style="text-align: center;">NOTE: RADIO TRANSMITTER SPECIAL CONSIDERATIONS</p>	<p>Do not permanently fix the radio transmitter until good reception is achievable (See site test); do not mount the HEAT COMMAND 5 in a position where reception of radio signals may be difficult, avoid mounting near other electrical equipment. The range is 100m with no obstructions and with no interference from other transmitters or sources of electrical noise. Also be aware that equipment installed afterwards may also interfere with radio reception. Transmission may not occur through objects such as steel, aluminium, re-enforced concrete and large bodies of water (e.g. pump room under a pool). Line of sight is the ideal situation but not always possible, the antennas should always remain vertical. Echo cancellation or ghosting may occur, which will prevent the signal being received reliably. If the HEAT COMMAND 5 is to be installed in a metal shed there may be reception issues. The controller may need to be optioned with either a 1M or 3M antenna extension kit (available separately), or moved outside.</p> <p>Other Notes: Read and understand this manual before installing.</p> <p>Both the transmitter and receiver are tested as a set, to 100 metres. Do not mix different transmitters with different receivers.</p> <p>Ensure the customer understands the workings of the controller before leaving the site.</p>
<p style="text-align: center;">SITE TEST</p>	<p>Place the radio transmitter in the approximate location. Select test mode on the HEAT COMMAND 5 by holding the DOWN button for 3 seconds while you apply power, this activates a mode where only roof temperature transmissions are shown. Once you release the down button the HEAT COMMAND 5 screen indicates RX TEST. Verify that every 5 seconds the LCD displays the temperature (e.g. TEST 32°). Check that this sequence is repeated for about half a minute and ensure no transmission is missed.</p> <p>If a transmission is missed it may be due to an echo or ghosted signal, move the location of the radio transmitter or the location of the Heat Command 5 and retest. If no transmission is missed mount the transmitter and repeat the test, check that no transmission is missed for 2 minutes. Turn OFF power to the HEAT COMMAND 5 and then permanently mount the radio transmitter to the fascia board. Return to the HEAT COMMAND 5, restart the RX TEST and ensure it continues to receive the transmission, move the location of the HEAT COMMAND 5 if required. Permanently mount the HEAT COMMAND 5 when satisfied that the HEAT COMMAND 5 is receiving the transmissions consistently.</p> <p>During normal operation the software allows for missed transmissions, but when more than 50 minutes elapse without a transmission then the temperature value will timeout and will be indicated by the "Waiting for roof transmission" message.</p>
<p style="text-align: center;">REPORTED TRANSMITTER FAULTS</p>	<p>If the following messages are displayed, then action is to be taken to rectify the fault(s).</p> <p>"WAITING FOR ROOF TRANSMISSION"</p> <p>The HEAT COMMAND 5 cannot receive a roof temperature from the radio transmitter or more than 50 minutes have elapsed since the last transmission, check installation as per instructions.</p> <p>"ROOF SENSOR DISCONNECTED"</p> <p>Check that the temperature sensor is firmly connected to the terminals. Cable joints must also be soldered and sealed (preferably with heat shrink). An unbroken but damaged cable can also cause this fault.</p>

BASE PLATE



PLUMBING CONFIGURATION



OPERATING INSTRUCTIONS

LCD SCREEN	The LCD screen displays the pool and roof temperatures, solar temperature limit, pump on status, on/off/locked-out status and the time of day & date (clock).
LCD INDICATORS	There are arrow icons on the LCD screen that point to current mode text on the label.
MODE BUTTON	<p>Pressing this button changes to the next mode of operation. Once the mode button is no longer being pressed then the selected mode of operation is automatically saved.</p> <ul style="list-style-type: none"> • Heating Mode (Auto) is the normal operating mode for heating the pool. • Standby Mode of operation is for off-season/holiday maintenance or if pool heating is not required. This is a better option than turning the controller off, as it will flush treated pool water through the solar system, and prolong solar pump bearing and mechanical seal life. Pump will run for 3 minutes a day before 1pm. <p>**NOTE - If the controller is put into Standby mode at a time outside of the set filtration time, the controller will perform the 3 minute standby flush at the start of the next filtration cycle, after completing the 3 minute pump priming function.</p> <ul style="list-style-type: none"> • Night Cool Mode is for situations where the pool water overheats <i>beyond</i> the set temperature limit due to direct heating from the sun. The controller will start the solar pump when the roof temp drops below the pool temp to cool the pool. <p>**NOTE - Note for the cooling function to work properly, it is best if the solar run hours have been left at the factory default (See Installer Setup). This allows the controller to take the best advantage of evening and early morning hours to cool the pool.</p> <ul style="list-style-type: none"> • Filter Manual is for switching the filter pump on or off for 3min (Backwash) up to 24hrs. Once Filter manual is selected the filter pump will start. <p>**NOTE: Once Manual is selected the filter pump will start. Once the pump has started you can use the ↑ or the ↓ buttons to increase or decrease the length of time for Filter Manual to run. <u>**The ENTER button will toggle the pump on or off during this mode**</u>. After Manual Mode times-out, the unit will return to the previous mode, or you can press the Mode button to return to normal operating Mode.</p> <ul style="list-style-type: none"> • Solar Manual is for testing the solar pump installation on a cold or cloudy day. Once manual mode is selected the pump will start. After manual mode time-outs, unit will return to the previous mode. <p>**THE FACTORY DEFAULT MODE IS HEATING MODE</p>
↑ AND ↓ BUTTONS (TEMPERATURE setting)	<p>Adjusting the temperature limit will allow the controller to heat the pool until the temperature limit +½°C is achieved.</p> <p>***TEMP RANGE: OFF, 20° – 40° ***</p> <p><u>The ability to solar heat the pool will depend on weather conditions and other factors.</u></p> <p>Pressing the ↑ or the ↓ Button will display: SOLAR LIMIT Using the ↓ and ↓ will allow you to set the desired solar heating limit. SET TEMPERATURE; SOL. LIMIT XX.X°</p> <p>Press the ENTER Button to save the temperature, then the controller will return itself to normal operation.</p> <p>** THE FACTORY DEFAULT FOR SOL. LIMIT IS 30°C.</p>

ENTER BUTTON

Pressing the ENTER button will turn on the LCD backlight. Pressing the ENTER button while the backlight is lit will enter the SETTINGS MENU. The following will be displayed:

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

All menu items are shown below:

- 1) EXIT
- 2) FILTER TIMER
- 3) SYSTEM

1) EXIT	Will save changes and return to automatic operation.
2) FILTER TIMERS	<p>When FILTER TIMERS is selected the following is displayed:</p> <p>No. OF TIMES PER DAY TO RUN: x</p> <p>Select the number of times per day you wish the circulation pump to operate for filtration purposes. If OFF is selected then the pump will only operate for heating purposes, otherwise the following is displayed:</p> <p>One time per day menu:</p> <p>FILTER CYCLE menu:</p> <p>FILTER CYCLE</p> <p>xx:xx TO xx:xx</p> <p>Twice per day FILTER CYCLE 2 menu:</p> <p>FILTER CYCLE 1 FILTER CYCLE 2</p> <p>xx:xx TO xx:xx xx:xx TO xx:xx</p> <p>Adjust the start time and end time for the required filter cycle(s). The circulation pump will run between these times for filtration purposes.</p> <p>Note 1: Take care not to overlap filter cycle 2 times with the filter cycle 1 times as the result will be one cycle per day.</p> <p>Note 2: For 24 hour filtration set to run 1 time per day with the start & end times the same (E.g. 12:00 – 12:00).</p> <p>Note 3: If the unit is configured as a series retro-fit and solar is not locked to the filter timer, any solar gain will over-ride the filter timer to operate circulating pump for solar heating.</p>
3) SYSTEM	<p>EXIT - Press ENTER on this menu to return to automatic operation.</p> <p>SET CLOCK – Allows you to adjust calendar date and time of day.</p> <p>LCD BACKLIGHT – Adjust the number of seconds the backlight remains on after the time a button was pressed. (Select NONE for always on.)</p>

INSTALLER SETUP

To access menu press enter and scroll down to system and press the mode Button

Warning professional only settings!!

FACTORY DEFAULT? NO/YES	Restore back to factory defaults.
USE AUTO STANDBY? YES/NO	When selected you will be prompted to select the start month of Standby and the start month of Heating. Standby Mode assists in the solar systems off-season maintenance and saves energy as solar gain may be available but swimming temperature cannot be achieved, or solar heating is not desired. A 3min flush of the solar collector occurs between the solar start time and the end time, providing the roof temperature is equal to or greater than the pool, but if that condition does not occur before 1pm (13:00) a solar system flush will be forced to occur. A start month of 'always' can be selected which permanently sets the unit into Standby mode. <i>Note: In Auto Standby mode the 2nd filter cycle does not run or the Single Filter Cycle is halved.</i>
PLUMBING CONFIGURATION?	PLUMBING CONFIG: INDEPENDENT/STD PLUMBING CONFIG: SERIES RETRO-FIT Select Series Retro-fit (integrated) if the solar pump requires feed from the circulating pump. Select independent/std if the solar system and heater are plumbed separate from the filtration line. See page 4 for typical set-ups.
USE SOLAR DRAIN? NO/YES	If NO is selected then the solar pump will stop if solar heating is no longer required. IF YES is selected the following menu is presented;
DRAIN IS TO STOP PUMP FOR XX MINS?	DRAIN IS TO STOP PUMP FOR xx MINS (RANGE = 03-15 MINUTES) The controller stops all pumps for the selected number of minutes. This allows for the water to drain out of the solar collectors before the pool pump is restarted. If the pool is not at solar limit during the drain process and solar heating becomes available the system will resume heating. The system may delay the drain process if the pool is below limit and if the roof temperature is above the pool temperature.
LOCK TO FILTER? NO/YES	(Only shown when SERIES RETRO-FIT is selected in Plumbing Configuration) Selecting NO allows the solar to override the filter timer to run the circulation pump for solar heating during the allowed solar times. Selecting YES will only allow the solar to run while the filter timer is active.
ALLOW SOLAR FROM?	xx:xx TO xx:xx (RANGES = 06:00-12:00 AND 12:00-21:00) This setting will not allow the solar system to run outside of the times set. (select 12:00-12:00 to always allow solar).
USE LIVE SENSOR? NO/YES	You can option to select a 'LIVE' sensor. Select YES for a commercial system where the pool sensor is in constant water flow. Select NO (recommended) to enable the sampling feature. The controller assumes that pipe temperature is not always pool temperature.
ROOF TEMPERATURE?	ROOF TEMPERATURE START DIFF x.x° (4.0°-40.0°C) ROOF TEMPERATURE STOP DIFF x.x° (1.0°-(START -2°C)) ROOF TEMPERATURE MIN. ROOF xx.x° (OFF,10.0°-60.0°C) You can modify the differentials. The Start differential is the temperature the roof needs to rise above the pool to start the pump. The Stop differential stops the pump when the roof drops below the pool temp plus the stop differential. Minimum roof is the roof temperature required for the solar to start heating (Off = feature disabled).

<p>PRIME PROTECT? YES/NO</p>	<p>Ensure that the filtration pump is plugged into the Sanitiser and the Sanitiser is plugged into the FILTER power outlet of the controller.</p> <p>The controller will ask you if you would like the current detection to be ON or OFF. Use the ↑ or ↓ buttons to select the required option and press the Enter button.</p> <p>If OFF is selected the unit will operate as a standalone solar controller.</p> <p><u>NOTE - The solar pump could be damaged if OFF is selected and the solar pump is in a Boosted/Retro fit setup.</u></p> <p>If ON is selected then the filtration pump will start.</p> <p><u>Ensure the filtration pump is operating (and at the required speed for variable speed pumps) via the controller's AUX socket and is primed, then use the ↑ or ↓ buttons to select either SET AUTO or SET MAN and press the Enter button.</u></p> <p>If you select SET AUTO - the unit will display the pump's load value for 5 seconds then automatically sets the threshold levels and returns to automatic operation. If the current draw of the filtration pump drops below the selected threshold levels then the solar pump is forced to switch off.</p> <p>If you select SET MAN. - the unit will display the pump's load value for 5 seconds, take note of this value. When the LCD screen displays RUN=>xxx it indicates the minimum load required to allow solar to run, set this value 15% lower than the displayed LOAD value.</p> <p>NOTE – SET MAN IS USUALLY THE BEST OPTION WHEN SETTING THE PUMP LOAD SETTINGS FOR A VARIABLE SPEED PUMP AS THE LOAD VALUE CAN FLUCTUATE MORE.</p>
<p>FREEZE PROTECT? NO/YES (RANGE 1.0°C-6.0°C)</p>	<p>Anti-freeze function, when switched to ON will start the pump when the roof temperature drops to the selected temperature.</p> <p>It will operate for 3 minutes every 30 minutes until the roof temperature rises above the selected temperature.</p> <p>Default setting is NO.</p>
<p>BOIL PROTECT? NO/YES (Range 55°C - 99°C) (Range 3 - 59mins)</p>	<p>Anti-boil function.</p> <p>If you select NO, the next option will be offered.</p> <p>If you select YES, the pump will start when the roof temperature rises to the selected temperature. It will operate for the selected number of minutes, where the controller will then take a roof temperature reading and either start the solar pump again (if roof temp is still above selected temperature) or stop running the pump if the temperature has dropped below the selected temperature.</p> <p>Default is NO. If you select Boil Protect to be YES, the controller will display 99°C for 3mins. Adjust to required temperature and time.</p>
<p>PIPE PROTECTION? NO/YES Range 50°C - 95°C</p>	<p>For use when solar collectors are flooded, flat and may require a wetted roof sensor for this mode.</p> <p>The controller will allow the pool to heat to the selected pool temperature, where it will then force the controller to stop any further solar heating of the system by not allowing the solar pump to run once the roof temperature reads above the selected Pipe Protection setting.</p> <p>The solar pump will be allowed to run once the roof temp drops below the selected Pipe Protection temperature.</p> <p>Default is NO. If you select Pipe Protect to be YES, the controller will display 80°C. Adjust to required temperature.</p> <p><i>Note – Pipe Protection will not be offered if Boil Protection has been turned ON.</i></p>
<p>CALIBRATE POOL SENSOR BY:</p>	<p>X.X (RANGE -5.0 TO +5.0°C) This is for the + series sensor only (TS02P).</p>
<p>USE WIRED ROOF SENSOR - NO/YES</p>	<p>Allows the use of a wired roof sensor cable temporarily, if the PV Unit has been damaged</p>

NOTES

- If any of the menu items are left unattended for 3 minutes the menu will time out and automatically save all settings and return to automatic operation.
- If a sensor fault is detected, the controller displays which sensor and what the fault is.
- Should power be interrupted for any reason, the controller will resume normal operation when power is restored. All information will have been kept for up to 10 days.
- If the controller has stopped the pump and is displaying a higher temperature than expected it may be caused by a pump which is failing to prime. Check the pump and if necessary, prime the pump as per the pump manufacturers' instructions. Then reset the controller by turning it off/on.
- MAX combined rated output load for the 240V socket(s) is 9.98 Amps / 2395 Watts.
- Degree of protection against moisture: IP33.
- Store pool chemicals safely, at least 3 metres away from all pool equipment.
- If the master controller is installed in a bunker or a shed, an antennae extension kit (available for purchase separately in 1M or 3M lengths) can be installed on the master controller to ensure that it receives reliable transmissions.

TROUBLE SHOOTING

NO POWER TO THE DISPLAY:

Power point is faulty. Test power point with a known working appliance. If the power point is operational, check the controller in another power point and if there is still no display then send the controller for repair.

RTC-FAIL – This can occur if the unit has been turned off for a prolonged period of time, leave the unit on for ~30 seconds, then turn it off for ~30 seconds before turning it back on.

PIPE/ROOF SENSOR FAULTS:

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

SENSOR DISCONNECTED OR OPEN CIRCUIT

Sensor cable unplugged from controller, cable damaged, bad cable join or sensor is damaged.

SENSOR SHORT CIRCUIT OR REVERSED

Sensor cable or cable join polarity is incorrect, or sensor is damaged. The positive side of the cable (grey coloured wire) should be wired to the righthand side of the plug, with the screws facing towards you and the sensor cable entry at the bottom of the plug. If the cable has been joined ensure no polarity reversal occurs.

SENSOR READ ERROR (INTERFERENCE)

Electrical/magnetic interference from other equipment is causing errors when trying to read temperature values. **Ensure sensor wires are located away from mains wiring, never cable tie sensors to mains power cables.**

SENSOR WRITE ERROR (CABLE DAMAGED)

Damaged or kinked cable. The sensor at the end of the cable can't get the power required to perform a temperature reading. Replace cable and or sensor.

ISOLATING SENSOR FAULTS:

Swap the sensor locations. Put the pipe sensor in the roof socket and the roof sensor in the pipe socket.

If the fault moves from pipe to roof or vice versa then it is likely that there is a sensor fault.

If the fault remains the same then the controller may need to be repaired.

PUMP FAULTS:

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

SOLAR PUMP WILL NOT START:

The pump will only ever run for the purpose of automatic heating if the pool is below the temperature limit and solar conditions can provide heating.

The pump may also run for a flush in winter-mode or for manual mode operation. If the pump does not operate then plug the pump into a power point and test operation, if the pump is OK then the controller requires repair.

Check and make sure that the master controller is receiving a transmission from the remote transmitter. Check for a roof sensor fault. If needs be, remount the transmitter to ensure the master controller receives transmissions or install an antennae extension kit (available for purchase separately) to the master controller.

If the controller is showing a “No Flow” error message, check to ensure chlorinator and filtration pump are plugged into the Filter socket and that the filtration pump is running. If a “No flow” error message is displayed and the filtration pump is running, reset the Pump Load Settings as described in INSTALLER SETUP.

PUMP WILL NOT STOP:

Turn off power to the controller and ensure the pump stops. If the pump continues to operate then unplug it from the power point and connect it to the 240Vac socket marked PUMP at the bottom of the controller.

If the pump is plugged into the controller and won't stop, check to see what is displayed on the controller screen. The controller may be running for heating purposes.

If the pump is still running, and the controller states that nothing should be running, your controller requires repair.

FILTRATION PUMP WILL NOT START:

Ensure that the filtration pump is plugged into the Chlorinator properly and the Chlorinator is plugged into the Heat Command 5 RTRP FILTER power socket properly. Check the filtration times set in the Heat Command 5 RTRP controller, adjust if required.

Check the power to the FILTER socket by pressing the Mode button until Filter Manual appears. The controller should turn the Chlorinator and Filter pump on for a 3min backwash.

If it still won't start plug the filtration pump straight into a power point and turn on. IF the pump doesn't start then you have an issue with your pump. If the pump is ok, your controller requires repair.

POOL NOT HEATING:

If the controller has stopped pumping and is displaying a higher temperature than expected it may be caused by a pump which is failing to prime. Check the pump and if necessary, prime the pump as per the pump manufacturers' instructions then reset the controller by turning it off/on.

Check the controller LCD screen to see if any sensor faults are present and fix as required.

If the controller is in Standby Mode, it will not heat the pool no matter what the roof temperature is. If it is consistently warm enough, switch the controller back into Heating Mode to start heating your pool.

FACTORY RESET:

Hold down ENTER when power is off, hold down after powering up, releasing after 5 seconds.

WARRANTY

- This product is covered by a limited **3 year** warranty against component failure or faulty workmanship from the date of installation.
- Temperature sensors, Valves and Actuators are covered by a limited **12 month** warranty.
- A faulty unit should be returned in the first instance to the dealer from which the unit was purchased. (Return to Base)
- Damage to the unit due to misuse, power surges, lightning strikes or installation that is not in accordance with the manufacturer's instruction may void the warranty.
- If the power cord is damaged, do not use the controller; return the unit to the supplier for repair
- Warranty does not include on-site labour, travel or freight / postage costs to or from installation site.

Return to supplier for repair

Customer Record. (To be retained by the customer)

Dealer / Installer Name.....

Serial Number.....

Date Installed.....

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