

CONTROLLER MOUNTING:

The controller enclosure must be firmly attached to a nearby solid fixture by either the two mounting lugs or direct attachment through the controller. If mounting through the controller ensure the power cord is disconnected from the mains supply then remove the enclosure front cover by turning the four corner locks so each arrow points to the 'O' marked on the front cover. Insert two mounting screws diagonally through the oval holes in the enclosure, refit front cover and turn the four corner locks to the 'I' position.

The power cable is 1.8m long and should be plugged directly into a general power outlet, not into an extension lead.

CIRCULATING PUMP(S):

The solar circulating pump plugs into the right hand 240Vac socket marked as SOLAR PUMP. The Filtration pump plugs into the left hand 240Vac socket marked as AUXILIARY.

The AUX ON. LED will be lit when the filtration pump is operating and the SOLAR ON LED will be lit if the solar pump is operating. *The maximum allowable combined current for both pumps is 10 AMPS @ 2400W.*

This controller can be configured for the solar pump to be independent (std) or in series with the filtration pump (retro-fit) for series retro-fit the solar pump is plumbed via a T-piece after the filter.

HEATER INTERLOCK:

The heater interlock cable connects to the green socket marked RELAY1 which switches on the NO/C contacts when the heater is to be turned on. The other end of the heater interlock cable connects in series to the heater's flow or pressure switch circuit. If the heater's flow/pressure switch circuit is 240Vac then a special switchbox is to be connected (Option SB02).

VALVE OPTION:

The valve option can only be added at time of manufacture and is connected to the green socket marked VALVE.

A valve can be used for selecting or bypassing the solar collector when heating with an auxiliary heater in the independent plumbing configuration. The valve can also be used for selecting or bypassing the solar collector instead of using a solar pump in the retro-fit plumbing configuration.

TEMPERATURE SENSORS:

For retro-fit systems the pool sensor must be fitted in the suction line before the take off Tee fitting for the solar boost pump. For independent (standard) systems the pool sensor must be fitted into the suction line of the solar boost pump, preferably in a position out of direct sunlight. It is recommended that a 14.5mm hole be drilled in the PVC pipe, this can be carried out using a Dontek PD01 grinding drill or a small pilot hole can be drilled and a 14.0mm drill-bit used spinning in a counter clockwise direction to minimize the chance of shattering pipe. Insert the grommet into the pipe and gently push in the black sensor barb. The green sensor plug is to be fitted to the plug socket marked POOL.

Roof sensor must be fitted into a small piece of rubber collector material away from the main collector but on the same aspect. Keep in mind that it is of the utmost importance to keep the roof sensor cable as short as possible as this will assist in the longevity of the sensor and controller in the event of electrical storm activity and power surges. Sensor cables *must not be run parallel to power cables* and run lengths should be less than 50m. Cable ties should be used to fasten the sensor cable to the cold water inlet pipe making sure that the ties are approximately 10mm from PVC fittings. Cable ties should be tightened only firm, over tightening can cause breaks in the outer PVC if not careful. If the cable is to be run under ground a conduit should be used to protect the wire and there is to be no cable joins within, conduit ends *must* be sealed to prevent water ingress. *Any excess cable should be removed and re-fitted ensuring that the wire ends are tinned with solder.* The sensor plug is to be fitted to the right hand socket marked ROOF.

DESCRIPTION:

The V7-RTA is a solar controller that heats using a solar collector and a heat pump or gas heater.

Solar, Filtration and heating via an auxiliary heater are all controlled by the time clock and their relevant settings, heating is performed to the temperature limit plus ½°C and once that temperature is achieved heating will no re-occur until the temperature drops below the desired limit by ½°C or until the sample period has elapsed and the temperature is at or below the limit. This controller is designed for standalone operation or for a retro-fit installation where separate plumbing for the solar pump is not available. In retro-fit the solar can be locked to filtration and heater timers to control the level of chlorination.

SETTINGS MENU:

All items on the LCD that flash are adjustable items, use the *Up* or *Down* buttons to modify the adjustable item. Press *Enter* to accept the adjustable value.

To enter the SETTINGS MENU push either the up or down buttons and the following will be displayed;

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SETTINGS MENU
1) MANUAL MODE
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All menu items are shown below, use the *Up* or *Down* buttons to scroll to different items in the menu;

```
SETTINGS MENU
1) MANUAL MODE
2) FILTER TIMER
3) TEMPERATURES
4) AUX. HEATER
5) SOLAR MODE
6) SYSTEM SETUP
7) SAVE & EXIT
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1) MANUAL MODE

```
MANUAL PUMP 24HR
UP=ON  DOWN=OFF
```

MANUAL MODE allows you to manually set the aux pump (filtration) to 'on' by pressing the *Up* button or 'off' by pressing the *Down* button. In manual mode the heater and solar pump and valve are switched off. Pressing *Enter* will return you to the SETTINGS MENU. You can also keep pressing *Enter* to toggle the filter pump from 'on' to 'off' and vice versa. If any of the buttons are not pushed then the unit returns to automatic operation after 24 hours.

2) FILTER TIMER

When the FILTER TIMER is selected the following is displayed;

```
SINGLE CYCLE
DUAL CYCLE
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Select SINGLE CYCLE or DUAL CYCLE, Single Cycle runs the filtration once per day, Dual Cycle runs the filtration twice per day.

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Single & Dual cycle sub menu:      Dual cycle sub menu:
FILTER CYCLE      FILTER CYCLE      2nd FILTER CYCLE
START TIME  x'xx      END TIME  x'xx      START TIME  x'xx      2nd FILTER CYCLE
                                                                END TIME  x'xx
```

Adjust the start time and end time for filter cycle 1; if dual cycle was selected then also adjust the start and end time for the 2nd cycle.

Note1: that if dual cycle is selected, take care not to overlap the 2nd filter times with the first filter times as the result will be one cycle per day.

Note2: If a 24 hour filtration is required then set a single cycle with the start & end times the same (E.g. 12:00 - 12:00).

Note3: If the unit is configured as a retro-fit and solar is not locked to the filter pump (i.e. filter timer and/or aux. heating requirements) then any solar gain will force the filter pump to also turn on.

Note4: Aux heater requirements will also override the filtration timer.

Note5: In winter mode the 2nd filter cycle does not run.

****Factory Default is ON, SINGLE CYCLE from 09:00 to 17:00**

3) TEMPERATURE

```
TEMPERATURE
SOL LIMIT  xx.x°
```

When you enter the TEMPERATURE menu you may adjust the solar heater temperature limit setting (SOL LIMIT). If the AUX. HEATER is turned on then the following temperature setting is also displayed;

```
TEMPERATURE
AUX LIMIT  xx.x°
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AUX LIMIT allows you to adjust the temperature limit for the auxiliary heater. (heat on demand).

Note1: AUX LIMIT setting will only be shown if AUX. HEATER is turned ON.

Note2: For maximum efficiency it is advisable that the solar limit (SOL LIMIT) be set higher than the auxiliary limit (AUX LIMIT), this will be enforced by the software but can be overridden (but not recommended).

**** Factory default for AUX LIMIT is 25°C, for SOL LIMIT is 30°C**

4) AUX. HEATER

```
AUX. HEATER
ON/OFF
```

When you enter the AUX. HEATER menu you will need to select ON or OFF.

If OFF is selected you will return to the menu and the heater will never run automatically, If ON is selected you will be prompted for START and END time, the heater will only run between these times.

```
HEAT DEMAND TIME      HEAT DEMAND TIME
START TIME  xx'xx      END TIME  xx'xx
```

Next option is IF LIMIT ACTIVE SAMPLE AT hh:mm/0:30/1:00/1:30/2:00/2:30/3:00/3:30/4:00/LIVE

If the temperature limit is achieved the controller will turn off the pump until the sample wait time has elapsed. After the sample time has elapsed the pump (filtration pump for retro-fit, solar pump for independent) will run for 3 minutes to sample the water temperature. If after 3 minutes heating is required then the pumps will switch to run the appropriate heat source(s). Selecting LIVE disables all sampling and assumes PIPE temperature is the same as POOL temperature.

Note1: if a 24 hour continuous heating time is required then set the start time and end time to the same value. (E.g. Start 12:00, End 12:00)

Note2: when SOL GAIN = HIGH is shown then the heater will stop as priority is given to low cost solar heating.

Note3: High solar gain is defined as 15°C above the SOL LIMIT setting.

Note4: Sample wait may be cancelled if solar gain becomes available and the pool is below the solar limit setting.

Note5: If AUX. HEATER is set to OFF then sample time for solar is 3 hours.

****Factory default for HEAT DEMAND is OFF (06:00 to 22:00, sample @ 1 hour)**

5) SOLAR MODE

```

MODE
SUMMER MODE
MODE
AUTO WINTER MODE
MODE
TROPICAL MODE

```

SUMMER MODE is the normal operation of heating the swimming pool.

TROPICAL MODE is selected if you wish to cool the swimming pool, the solar pump will run if the roof temperature is colder than the pool until SOL LIMIT is obtained; note that this is most likely to occur at night. Selecting tropical mode also ignores solar lockout times and lock to filter settings.

WINTER MODE, when selected you will be prompted to select the start month of winter and the start month of summer, the purpose of the winter mode of operation is for off-season maintenance or if pool heating is not required (*AWAY MODE*). This is a better option than turning off the controller as it will flush treated pool water through the solar system as well as prolong pump bearing and mechanical seal life. If AUX. HEATER is set to OFF a 3 minute flush of the solar matting occurs between 10:00 and 16:00 providing the roof temperature is equal or greater than the pool, but if that condition does not occur a solar system flush will be forced to occur at 16:00. If AUX. HEATER is set to ON then the system operates similar to summer mode but solar pump activity is monitored and will force a 3 minute flush if solar has not been active for seven days, note the unit may flush if winter mode is selected on the day of install.

****Factory default for solar mode is SUMMER MODE**

6) SYSTEM SETUP

4 options are available under system setup, SET SYSTEM CLOCK, FACTORY SETTINGS, INSTALLER SETUP, TEMPERATURE LOG and EXIT.

EXIT - will return you to 6) SYSTEM SETUP with no changes.

SET SYSTEM CLOCK - allows you to adjust calendar and time of day.

FACTORY SETTINGS - restores ALL the settings to the factory default state.

TEMPERATURE LOG - Logs min/max temperatures & time, NO support is offered for this feature.

INSTALLER SETUP

This sub-menu is for installers ONLY, plumbing configuration, valve use, lock solar to filter pump, solar start and end time, start and end temperature differentials can all be adjusted.

PLUMBING CONFIG: - Two options are available;

Independent - Solar pump has its own suction & return lines and operates without overriding the filtration pump, when this plumbing configuration is selected you can then choose when the hour the solar pump is allowed to start and the hour at which it is forced to stop, you can also choose to modify the differentials, the start differential is the temperature rise the roof needs above the pool temperature to start the pump, the end differential stops the pump when the roof drops below the pool temperature plus the end differential.

Series Retro - this is where the solar pump is in series with the filtration pump, when this plumbing configuration is selected you can then select if a solar divert valve is used instead of a solar pump, and weather to lock the solar operation to the filter pump (locks to the filter timer and/or the AUX. HEATER timer) or if not you can choose the start and end hour of the solar, you can then choose to modify the differentials (as described for Independent systems)

SETTING THE PLUMBING CONFIGURATION TO THE WRONG SETTINGS MAY DAMAGE PUMPS AND/OR PLUMBING!

****Factory default for installer setup is series retro-fit locked to filter, no valve, solar allowed to start at 09:00, forced to end at 17:00, Start Differential of 8°C End differential of 4°C**

7) SAVE & EXIT

When this menu is selected, push *Enter* to save ALL settings, the unit will return to normal automatic operation.

Note: If any of the menu items are left unattended for 3-4 mins the menu will time out and automatically save all settings and return to operation.

The ENTER/MANUAL button (Manual heating mode)

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FOR MANUAL MODE
PRESS ENTER NOW

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Pressing the *Enter* button once will display the above message for ~3 seconds, to prevent accidental manual mode if ENTER is not pressed again within the 3 second period then the controller will revert to automatic operation (and it will cancel any pump lockout delays).

If ENTER is pressed again within 3 seconds then manual mode is activated, the solar pump is stopped (if operating) and the aux pump (filtration) is switched on, the following is displayed;

```

MANUAL MODE 4HR
23.5° SET=30.0°

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The displayed temperature on the left hand side is the water temperature; the SET temperature displayed on the right hand side is what manual mode will heat the water to before the aux. heater is switched off.

Use *Up* button or *Down* button to change the SET temperature to the required comfort level.

Press & hold *ENTER/MANUAL* to exit manual heating mode and revert back to automatic mode.

Manual heating mode will automatically revert to automatic operation 4 hours after the last temperature adjustment.

NOTES.

1. If a sensor fault is detected the V7 will display which sensor and what the fault is.
2. Should power be interrupted for any reason, the V7 will resume normal operation when power is restored, all information will have been kept.
3. Temperature sensors used with this unit are Digital and are accurate to 0.5 Deg. C, no calibration is required.
4. The sensor cable with the thin trace is the positive and is usually fitted to the right hand side of the green plug, incorrect polarity will be displayed.
5. The heater interlock switching is used the maximum load is 5A at 32Vac max.

Return to Supplier for repair.

WARRANTY

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

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

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

Valves and actuators are covered by a twelve month warranty at the discretion of their manufacturer.

Warranty does not cover travel costs to or from installation site.

Return to supplier for repair

Customer Record. (To be retained by the customer)

Dealer/Installer Name _____

Model Number V7_RTA_____

Serial Number _____

Date Installed _____

For service assistance phone 1300 130 693

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