AQUASMART 5 AVC

Instruction Manual

For illustration purposes only, alternative model shown.

dontek
ELECTRONIC MANUFACTURING

DESCRIPTION

The Aquasmart5 AVC is a controller for heating of a swimming pool with a heat pump or gas heater with a divert valve option for solar heating. One pump is controlled for heating and filtration purposes and the auxiliary socket controls a sanitiser during filtration times. An optional 3-way automatic valve actuator is used to bypass or select the solar collector. An interlock cable controls the heat-pump or gas heater.
If solar heating is not required it can be disabled.

INSTALLATION INSTRUCTIONS

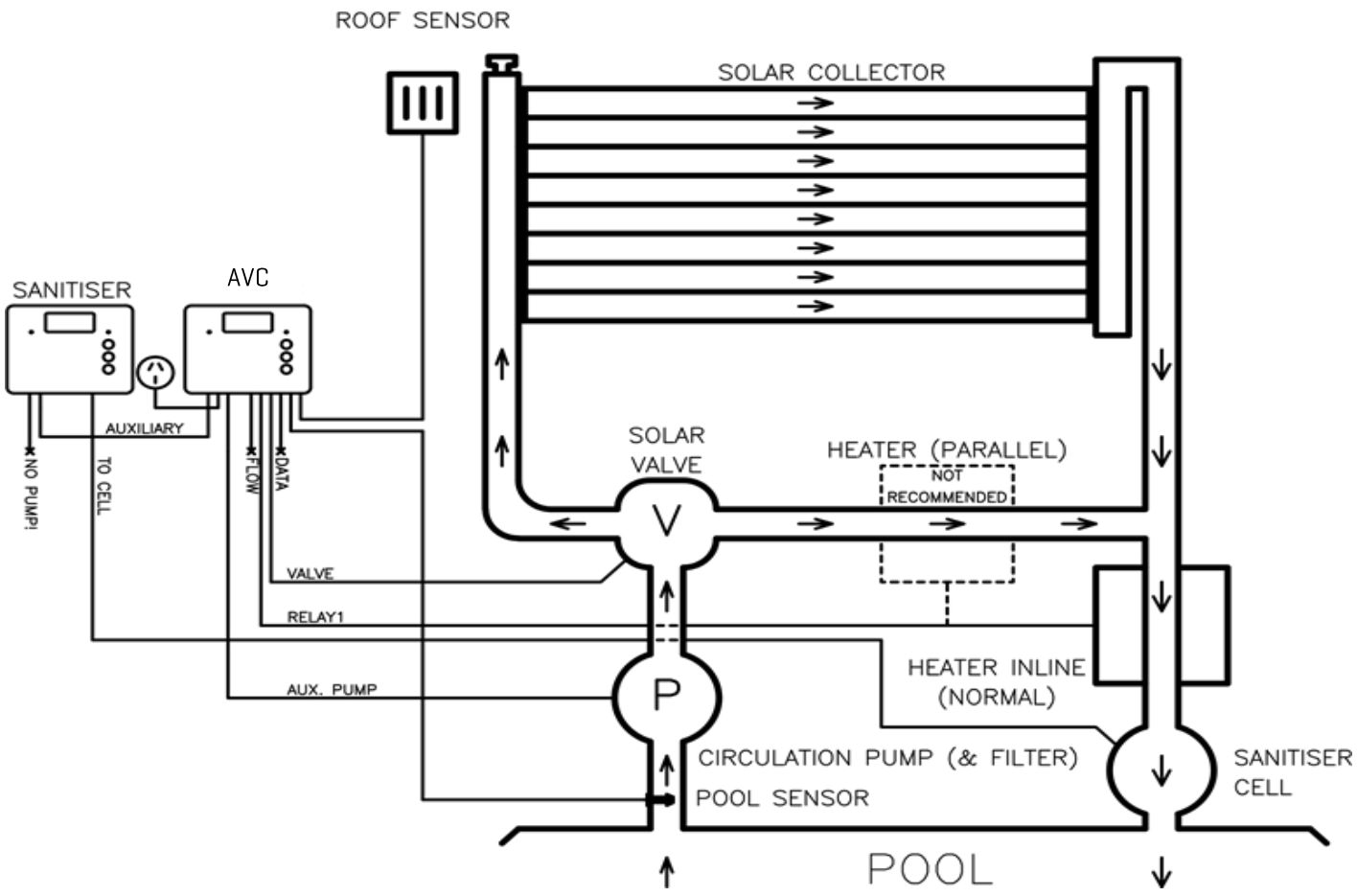
THIS APPLIANCE IS NOT INTENDED FOR USE BY YOUNG CHILDREN OR INFIRM PERSONS WITHOUT SUPERVISION. PLEASE ENSURE THAT YOUNG CHILDREN ARE SUPERVISED TO ENSURE THAT THEY DO NOT PLAY WITH THE APPLIANCE.

Fix the mounting bracket to a solid structure via screws and wall plugs kit provided, and slide the controller on, locking into place. Adjusting screws on the back of unit to ensure snug fit.
To remove unit, lift and gently pull away from structure.

CONTROLLER MOUNTING.	Find a suitable location to mount the control box. Ideally, as with all pool equipment, it should be installed out of direct weather, 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.
PUMP CONNECTION.	The Filtration pump plugs into the 240V socket labelled PUMP. The maximum load is 9.98 AMPS at 2395W.
SANITISER CONNECTION.	The sanitiser (Ioniser or Chlorinator) is to be connected to the 240V socket on the controller labelled as FILTER. The plug of the pool filtration pump is then plugged into the socket labelled Pump. The sanitiser is then set to operate 24hrs per day as the Aquasmart5 AVC controller will control the number of hrs per day the system will operate. Refer to the sanitiser instructions for 24hr timer setup and dosing requirements.
HEATER CONTROL.	Set the heaters temperature limit to maximum (40°C). The heaters internal control will be interrupted, to turn off heating. The heater interlock cable connects to the green socket marked INT which switches on (closes) the voltage free NO/C relay contacts when the heater is to be turned on. The heater end of the interlock cable connects in series with the heater's pressure/flow or fireman's switch. Contact the heater manufacturer for the best location to connect to. The heater interlock is for extra low-voltage (MAX 30V at 2Amps) switching only. If the heater's control circuit is 240Vac, an external relay (KIT06) can be purchased separately and is to be connected by a licensed electrician.
VALVE.	A valve actuator is used to divert water flow to the solar collector in the retro-fit plumbing configuration. Connect the valve actuator to the green socket marked VALVE. If wiring your own supplied valve then wire as per the label on the bottom of the controller (Red, Black then White). Red and white are for direction control and black is the common. Ensure the switch on the valve actuator is in an ON position. Refer to the valve actuator instructions for mounting requirements, cam adjustments etc. Maximum power for the VALVE output is 24VA.

POOL SENSOR.	The pool sensor must be fitted into the heating 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 Dontek 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.
ROOF SENSOR.	The roof sensor must be fitted into a small piece of collector material away from the main collector but on the same aspect, preferably no more than 50cm from the roof gutter (for ease of sensor replacement). If required, the roof sensor can be on a different roof as the solar collector as long as the alignment to the sun is similar to the solar collector. For encapsulated collector panels, use the manufacturer's instructions for roof sensor placement. The red sensor plug is to be fitted to the plug socket marked ROOF.
SENSOR NOTES.	All excess cable must be removed; coils of cable are not permitted under any circumstances and must not be tied to 240V wiring. If the cable is to be extended with non-genuine cable a size of 14/020 should be used. Any cable joins should be soldered. Heat shrink is to be used over soldered joints to eliminate moisture ingress, and the cable end is to be refitted to the plug sockets. Once cables have been correctly fitted the unit can be then turned on.

Diagram of a typical setup



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	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. • ***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, prolonging solar pump bearing and mechanical seal life. Pump will run for 3 minutes a day before 1pm. ***Note – Full filtration times are maintained, Solar and Auxiliary Heating are disabled.* • ***Night Cool mode*** is for situations where the pool water overheats *beyond* 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. ***NOTE – Heating & cooling is only allowed during the allowable time if solar run hours have been selected.* • ***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. ***The ENTER button will toggle the pump on or off during this mode**.* After manual mode times-out, the unit will return to the previous mode. • ***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. • ***Heat To Limit*** will ignore the run timer (Heater Cycles) to run the pump until the desired temperature limit is achieved. Once the temperature limit is reached the controller revert to Heating mode and run the heating during the set run times. ***The factory default MODE is HEATING MODE*
↑ AND ↓ BUTTONS (TEMPERATURE SETTING)	Adjusting the temperature limit will allow the controller to heat the pool until the temperature limit +½°C is achieved. Heating will then remain off until the sample wait period expires. If no sample wait period is active, the heating will remain off until the pool temperature drops ½°C below the temperature limit setting. Due to rounding the actual heating hysteresis is ±½°C. ****TEMP RANGE: OFF, 20° – 40° **** *The ability to solar heat the pool will depend on weather conditions and other factors.* Pressing the ↑ Button will display SOLAR LIMIT Select this option and the following will display SET TEMPERATURE; SOL. LIMIT XX.X° Press the ENTER Button to save the temperature, then the following will be displayed SET TEMPERATURE; AUX. LIMIT XX.X° Press the ENTER Button to save the temperature settings. Pressing the ↓ button will display HEATER LIMIT Select this will bypass the setting of the solar limit going straight to AUX. LIMIT. *** The factory default for SOL. LIMIT is 30°C.* *** The factory default for AUX. LIMIT is ON and 27°C.*
If the controller is manually put into STANDBY MODE using the Mode button, you will need to reset your AUX Heating settings to be ON and set the required temperature when the controller put back into HEATING MODE. This does not apply when using Auto Standby Mode.	

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) TIMERS
3) SYSTEM

1) EXIT	Will save changes and return to automatic operation.
2) TIMERS	• *FILTER RUN TIMES* – When the FILTER RUN TIMES is selected the following is displayed: No. OF TIMES PER DAY TO RUN: x 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: One time per day menu: FILTER CYCLE menu: FILTER CYCLE xx:xx TO xx:xx Twice per day FILTER CYCLE 2 menu: FILTER CYCLE 1 FILTER CYCLE 2 xx:xx TO xx:xx xx:xx TO xx:xx Adjust the start time and end time for the required filter cycle(s). The circulation pump will run between these times for filtration purposes. • *HEATER RUN TIMES* – When the HEATER RUN TIMES is selected the following is displayed: No. OF TIMES PER DAY TO RUN: x Select the number of times per day you wish the AUX Heating to operate. If OFF is selected then the pump will only operate for Solar Heating purposes, otherwise the following is displayed: One time per day menu: HEATER CYCLE 1 menu: HEATER CYCLE xx:xx TO xx:xx Twice per day HEATER CYCLE 2 menu: HEATER CYCLE 1 HEATER CYCLE 2 xx:xx TO xx:xx xx:xx TO xx:xx Adjust the start time and end time for the required heater cycle(s). The circulation pump will run between these times for AUX heating purposes. **Factory Default is ON, ONE TIME PER DAY FROM 06:00 to 22:00.

2) TIMERS (CONTINUED)	*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. *Note 2*: For 24 hour filtration, set the filtration to run 1 time per day with the start & end times the same (E.g. 12:00 – 12:00). *Note 3*: If the unit is configured to 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. *Note 4:* When the roof temp probe exceeds the AUX LIMIT + 15°C, there is enough solar energy to heat the pool. The auxiliary heating is switched off to save energy. The auxiliary heater remains switched off until the roof temperature drops below AUX LIMIT + 10°C.
3) SYSTEM	*EXIT* - Press ENTER on this menu to return to automatic operation. *SET CLOCK* – Allows you to adjust calendar date and time of day. *LCD BACKLIGHT* – Adjust the number of seconds the backlight remains on after the time a button was pressed. (Select NONE for always on.)

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. *Note*: In Auto Standby mode the 2nd filter cycle does not run or the Single Filter Cycle is halved. Auxiliary Heating parameters are kept.
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?	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.
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.
USE A HEATER? YES/NO	Selecting NO will disable the AUX heating function, and Heater Run Times will not be displayed or selectable under 2. TIMERS. When YES is Selected, the following menu is presented:

SAMPLE TIME:	xx:xx (hh:mm) This stops the pump for the selected time period once the temperature limit has been achieved Heating will then remain off until the sample wait period expires, if no sample wait period is active the heating will remain off until the pool temperature drops ½°C below the temperature limit setting. Due to rounding the actual heating hysteresis is ±½°C.
HEATER TYPE?	GAS HEATER / ELECTRIC HEATER This setting allows you to select the type of Auxiliary Heater used. Electric heaters/ Heat pumps require no cool down. If GAS HEATER is selected the following will be displayed:
HEATER COOL DOWN?	OFF MINUTE(S) (RANGE = OFF-20 MINUTES) Once the heater achieves temperature or if the heating time period ends then the heater is switched off. The cool down timer ensures that the circulation pump continues to operate to cool the heater before the pump switches off. If the 'use solar valve' option is selected then a reduced cool-down (one minute) is used before a valve turn (a full cool-down will still occur before the circulation pump is switched off).
HEATER CONFIG?	INLINE WITH SOLAR/PARALLEL WITH SOL Heater configuration tells the controller where the heater is located in the return water path (see diagram under INSTALLER SETUP). The normal path is for the solar to return through the heater back into the pool (heater is located in the return line after the solar collector 'T' junction). This is called INLINE WITH SOLAR. If water from the solar collectors returns to the pool without going through the heater, select PARALLEL WITH SOLAR. Note This will alter how the controller operates. The heater will not operate in conjunction with solar.
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 choose to modify the differentials. The start differential is the temperature the roof needs to rise 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. Minimum roof is the roof temperature required for the solar to start heating (Off = feature disabled).
PRIME PROTECT? YES/NO	*Ensure the filtration pump is operating (and at the required speed for variable speed pumps) via the controller's filter socket and is primed, press enter and then select AUTOMATIC or MANUAL.* AUTOMATIC - the unit will automatically set the threshold levels and returns to automatic operation. If the current draw of the filtration pump drops below the selected threshold levels then the pump is forced to switch off. MANUAL. - The unit will display the pump's load value and ALLOW RUN=>xxx, it indicates the minimum load required to allow filter to run. Set this value 25% lower than the displayed LOAD value. Then set OVERLOAD=>xxx(use this if pressure will be an issue on the solar). If NO is selected the unit will operate without PRIME PROTECTION.
CALIBRATE POOL SENSOR BY:	X.X (RANGE -5.0 TO +5.0°C) This is for the + series sensor only (TS02P).

NOTES:

1. 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.
2. If a sensor fault is detected the controller will display which sensor and what the fault is.
3. 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.
4. 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.
5. Maximum combined rated output load for the 240V socket(s) is 9.98 Amps / 2395 Watts.
6. Degree of protection against moisture: IP33.
7. Store pool chemicals at least 3 metres safely away from all pool equipment.

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. (Return to Base)
- Damage to the unit due to misuse, power surges, corrosion from pool chemical fumes, lightning strikes and or installation that is not in accordance with the manufacturer's instruction may void the warranty.
- Warranty does not include on-site labour or travel costs to or from installation site.

If the power cord is damaged, do not use the controller; return the unit to the supplier for repair.

CUSTOMER RECORD (To be retained by the customer)

DEALER/INSTALLER NAME

SERIAL NUMBER

DATE INSTALLED

For service assistance visit *www.dontek.com.au*

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