Aquasun 3FRB

Instruction Manual

DESCRIPTION

The AquaSun 3FRB is a premium automatic solar controller with temperature adjustment, manual, winter and tropical mode features. Additional features;

- All configurable items are retained after a power outage for up to 14 days.

- A flow/pressure switch input; the solar pump can only start if flow is detected

- A Wireless Remote (Battery) Roof Sensor

INSTALLATION INSTRUCTIONS

CONTROLLER

Find a suitable location to mount the control box*radio note. The controller should be installed out of direct weather and no closer than 3 meters from the water's edge. Lift up the two mounting tabs and use two appropriate screws to mount the control box to the wall, keeping in mind that the power cable is 1.8m long and should be plugged directly into a general power outlet, not into an extension lead. Do not drill through the box.

SOLAR PUMP

The solar pump plugs into the left side 240Vac socket marked as PUMP. Note that the solar pump can only operate when the FLOW switch detects water flow.

FLOW SWITCH

The Flow switch is fitted in the PVC pipe after the filter and before the take-off T; it must be mounted at the top of the pipe with the arrow matching the direction of water flow. If a pressure switch is used it must be mounted before the filter.

TEMPERATURE SENSOR

The pool temperature sensor must be fitted into the suction line of the *filtration* pump, 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 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, in some cases there is some benefit to cable tie 30cm of wire from the pool temperature sensor to the pipe and insulate this section (some ambient differences can travel up the tinned copper wire and affect the sensor reading).

All temperature sensor cables must NOT be run parallel to power cables and should never be cable tied to power cables. All cable run lengths should be less than 50m if possible. 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 must 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.

REMOTE TEMPERATURE ROOF SENSOR

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 arms 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 battery powered transmitter that transmits the roof temperature. The roof sensor plugs into the radio remote temperature transmitter socket at the bottom of the unit (run the cable behind the box).

Fit the radio remote temperature transmitter with 4xAA alkaline batteries and mount it to a nearby solid fixture*radio note by either the two

mounting lugs or direct attachment though the controller. The transmitter must be installed out of direct weather and no closer than 3 meters from the water's edge. Mount the unit so battery replacement is possible without needing a ladder. [Antenna points UP].

RADIO NOTE: RADIO TRANSMITTER SPECIAL CONSIDERATIONS:

Do not permanently fix the radio transmitter until good reception is achievable [See site test]; do not mount the Aquasun 3 in a position where reception of radio signals may be difficult, avoid mounting near other electrical equipment [try a site test with a FM radio or Mobile phone].

The range is 100m with no obstructions and with no interference from other transmitters or sources of electrical noise. 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 Aquasun 3 is to be installed in a metal shed there may be reception issues and the controller may need to be optioned with a remote antenna or moved outside.

SITE TEST

Place the radio transmitter in the approximate location, open the unit and press the "TEST BUTTON" to place it in test mode for 10 minutes. The "TEST LED" globe will start flashing to confirm Test Mode is active. [In Test mode, radio signals will be transmitted every 2-3 seconds, rather than every 20 seconds when not in Test Mode]

The controller will enter into a RX TEST mode. Verify that every 8-9 seconds the LCD displays the temperature (e.g. TEST 32°) followed about 3 seconds later by the test mode transmission [TEST TST]. Check that this sequence is repeated for about half a minute and ensure no transmission is missed. If a transmission is missed it may be due to an echo or ghosted signal,

move the location of the radio transmitter or controller 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 controller and then turn off Test Mode on the radio transmitter by pressing the "TEST BUTTON" again. Return to the controller and ensure it receives the transmission.

If required, the controller can be forced into RX TEST mode by holding the DOWN button on power-up for 3 seconds, RX TEST is displayed once the DOWN button is released.

During normal operation the controller software allows for missed transmissions, but when more than 50 minutes elapses without a transmission then the temperature value will timeout and will be indicated by the "Waiting for roof transmission" message.

REPORTED TRANSMITTER FAULTS

If the following messages are displayed, then action is to be taken to rectify the fault(s)

"WAITING FOR ROOF TRANSMISSION"

The Aquasun 3 cannot receive a roof temperature from the radio transmitter or more than 50 minutes have elapsed since the last transmission, check installation is per instructions & check battery conditions.

"TRANSMITTER IS IN TEST MODE"

The radio transmitter has been left in test mode, the Aquasun 3 will not operate instead it will enter into a RX TEST loop, this is to aid installation only, rectify by removing the small plug from TEST and place it onto RUN.

"TRANSMITTER BATTERIES ARE FLAT"

The radio transmitter batteries have expired; this will prevent the controller from operating. Replace batteries and re-select any operating mode to clear the battery low message. Note: Batteries may begin to leak before they expire,

therefore it is recommended to replace the batteries once per year.

"ROOF SENSOR DISCONNECTED OR OPEN CIRCUIT"

Check that the temperature sensor is firmly connected to the terminals. If the cable has been trimmed ensure the ends have been tinned with solder. Cable joints must also be soldered and sealed (preferably with heat-shrink). An unbroken but damaged cable can also cause this fault.

"ROOF SENSOR SHORT CIRCUIT OR REVERSED"

If the cable has been joined or shortened be aware that the white side of the cable is positive, inside the transmitter there is a white + on the green board indicating where positive is to be connected.

OPERATING INSTRUCTIONS

TEMPERATURE LIMIT

To adjust the pool limit simply press the UP button to increase or the DOWN button to decrease the desired temperature.

The controller will automatically choose to run the pump based on solar gain (i.e. sun shining & roof is hot), once the pools desired temperature is exceeded by ½°C the pump is stopped until the pool temperature drops ½°C below the temperature limit setting.

MODE OF OPERATION

Pressing the SELECT button once will display the current mode of operation, pressing it again or holding it will select the next available mode of operation.

The available modes are SUMMER, MANUAL, WINTER, TROPICAL and SETTINGS.

SUMMER MODE

Summer mode is the normal operating mode for heating the pool.

MANUAL MODE

Manual mode is for testing the pump installation on a cold or cloudy day. Once manual mode is selected the pump will start if it has been off, or stop if it has been on (running). After 30 minutes manual mode will time-out and return to Summer Mode with a default temperature limit of 30°C.

WINTER MODE

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. The pump will run for 3 minutes each day from when the winter mode was selected or at 10 a.m. if the time-clock mode was selected.

TROPICAL MODE

Tropical mode is for situations where the pool water overheats due to direct heating from the sun, beyond the set limit. When the roof is 4°C cooler than the pool temperature, the pump is started (this will most likely occur at night) and will attempt to cool the pool to 1°C above the temperature limit. Normal heating will occur the next day if the pool drops below the temperature limit by 1°C.

SETTINGS MODE

Settings mode is for setting the unit into time-clock operation.

When you select this option you will be asked if you wish to use the clock feature (CLK? ON/OFF).

If you select OFF then the controller will not work as a time-clock model and will allow the solar pump to run whenever there is solar heating available. If you select ON you will be prompted to set the time of day, the controller will work in time-clock mode and the solar pump is prevented from starting outside of the set hours. (Unless tropical mode is selected). Set the time of day in 24 hour format, note there is an AM/PM indication to avoid incorrect settings. Seconds are automatically set to zero.

Once the time is set select the START hour from 6am till noon, default is 9am which means the solar pump cannot start before 9am.

Now select the END hour from 15 (3pm) till 21 (9pm), default is 19 (7pm) which means the solar pump will stop at 7pm.

INSTALLER SETTINGS - To select these features, hold the DOWN button then press SELECT.

Adjustable differential: Special note: Adjusting these values to any setting other than the defaults may adversely affect the performance of this controller.

The first item prompted is to set the solar gain start temperature (RUN° x) this setting allows the pump to start if the roof temperature exceeds the pool temperature by this value, adjust with the UP/DOWN button, press SELECT to accept. Next you will be prompted to set the differential hysteresis (END° x) which turns the pump off when roof temperature is less than the pipe temperature plus this value, adjust with the UP/DOWN button, press SELECT to accept. Default values are 8° for RUN and 4° for END, these are the optimal values for maximum efficiency, some coastal locations may benefit from a reduced run value of 6°C for RUN and 4°C for END.

Once the Advanced settings have been adjusted all the above settings will be saved and the unit will restart. Re-adjust the temperature limit if required.

FACTORY TEST

To run the factory test, hold the SELECT button when first applying power, the unit will perform a series of self-diagnostic functions with the pump running.

If there are any faults they will be reported on the display before the unit restarts into normal operation.

Note: that this will force all settings to a factory default state. Re-enable time-clock if required also reset the Load start value, temperature limit and operating mode to their required settings.

NOTES:

1. If a sensor fault is detected the controller will display which sensor failed (POOL and/or ROOF) and the type of failure.

2. After a power outage all configurable items are retained & the clock (if used) will keep time for up to 14 days.

3. Temperature sensors used with this unit is digital and is accurate to 0.5°Celcius, no calibration is required.

4. The sensor cable with the thin trace is the positive and is fitted to the right hand side of the green plug when looking at the plug screws, incorrect polarity will be displayed as a short circuit or reversed fault.

5. When the FLOW switch detects the filtration pump starting it will perform a 3 minute checking sequence that ensures there is suitable temperature & water flow before the solar pump will start. When the filtration pump is stopped the solar pump is also stopped.

6. Maximum total rated output load is 10 Amps 2400 Watt.

WARRANTY – AQUASUN 3 FRB

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

A faulty unit 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.

Warranty does not cover 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 phone 1300 130 693

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