



## Operating Warnings

Adjust your flow settings carefully. Repeated false dead-end detection indicates that the Cal value should be increased (less sensitive).

For absolute safety always wire through the pump pressure switch. (The pressure switch can be bypassed if absolutely necessary - the unit will protect itself under normal conditions.)

This is a WATER PUMP controller: it will not work with air in the system. Always prime your system before starting work. If air in the system causes false dead-end detection, increase Cal value (less sensitive).

Do not set the Cal value too high. Setting it higher than necessary places extra strain on both the pump and the controller in a dead end situation. This can result in damage to both the pump and your controller.

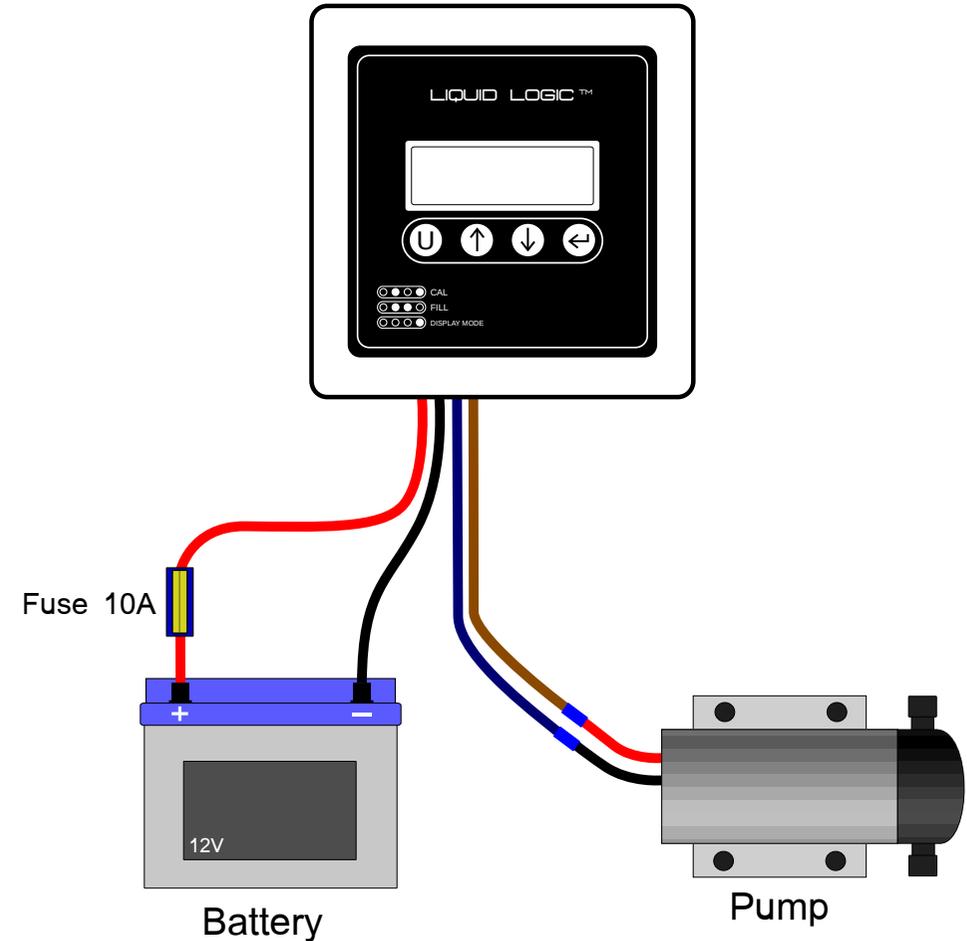
| Specification         | Value              |
|-----------------------|--------------------|
| Supply Voltage        | 11 - 15 VDC        |
| Maximum Current       | 10A                |
| Typical Drive Current | 4-5A               |
| Voltmeter Accuracy*   | +/- 200mV          |
| Enclosure Material    | ABS                |
| Water Resistance      | IP65               |
| Dimensions            | 120 x 120 x 55(mm) |
| Working Temperature   | 0 to 40 C          |

\* Accuracy of voltmeter depends on length of cable from battery and drive current. A high drive current and long length of cable will decrease the accuracy.

DISCLAIMER  
THE MANUFACTURER RESERVES THE RIGHT TO MAKE CHANGES TO ANY PRODUCT HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. THE MANUFACTURER DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN.

### Step 1. Wiring

Connect the pump controller following this diagram.  
NOTE only fit the fuse once all connections are made.



Make sure correct fuse is fitted inline. Failure to do so will result in damage to the unit.  
Observe correct battery polarity. Failure to do so will result in damage to the unit.

## Step 2. Set Up - AutoCal

Connect your hose and brush to the pump.

Turn on the controller by pressing the user, up or down button. Keep the button held until the display lights up.

Press up until the display shows 30.



Press and hold up and enter to go into calibration.



Press down to select AutoCal, then enter to start.



After several moments the calculated Cal value will be displayed and the controller is ready to use.

Press enter to exit calibration.



The Cal value can be adjusted manually by following these steps and adjusting the Cal value using up and down, instead of using AutoCal.

## Step 3. Use

Press up or down to set a suitable flow of water.



Press enter to display the current battery voltage.



Press enter repeatedly to scroll through other options and return to the current flow rate.



To turn the controller off, press and hold enter.

| Message | Description  |
|---------|--|
| 0E00    | An error has occurred while using AutoCal. This will happen when the motor is not connected or the enter button has been pressed to cancel it.                       |
| 00E5    | Pressure switch activated or motor disconnected.   |
| 000E    | A dead end has been detected. If this is not the case, try increasing the Cal value.   |
| 00EE    | This message will start to flash when the battery is low (<11.0V). If this message is flashing to blank then the pump is turned off to protect the battery (<10.0V). |

## Set Up - User Settings, Store

The user settings allow you to quickly change between two different setups. Both flow rate and dead end calibration are saved.

To save the settings, set the unit flow rate and dead end calibration as normal (see quick start guide). Press the user button ('U'). The display will show USER.



Pressing up or down will select the user U1 or U2.



Press and hold enter to store the U1 settings. The display will then briefly display STOR.



To save the current settings to U2, repeat the sequence above. However use the up and down to select U2.

## Set Up - User Settings, Recall

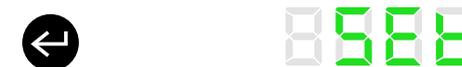
To apply the saved settings to the pump controller, make sure you are not in any user or cal menus. For this example we will recall the second user settings. Press the user button ('U'). The display will show USER.



Press up or down to select U2.



Press enter to confirm that you want to select U2 settings. The display will then briefly display set.



For the first user settings, follow the above example, but press up or down until U1 is displayed, then press enter to apply these to the pump controller.

## Set Up - Charging

The charging function requires no additional set up. When the car engine is running, the alternator turns over, raising the voltage at the car battery to above 13.2V. At this voltage the car alternator and battery are connected to the leisure battery to charge it up.

When the car engine is switched off and the alternator is not running, the car alternator and battery are disconnected from the leisure battery. The pump controller is then running from the leisure battery only.

The charging function is active when the unit is on or off. When it is activated, the display will flash a message.

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In addition to monitoring the main battery voltage, you can monitor the car battery / alternator voltage. When in normal flow mode, press enter to display the current battery voltage.

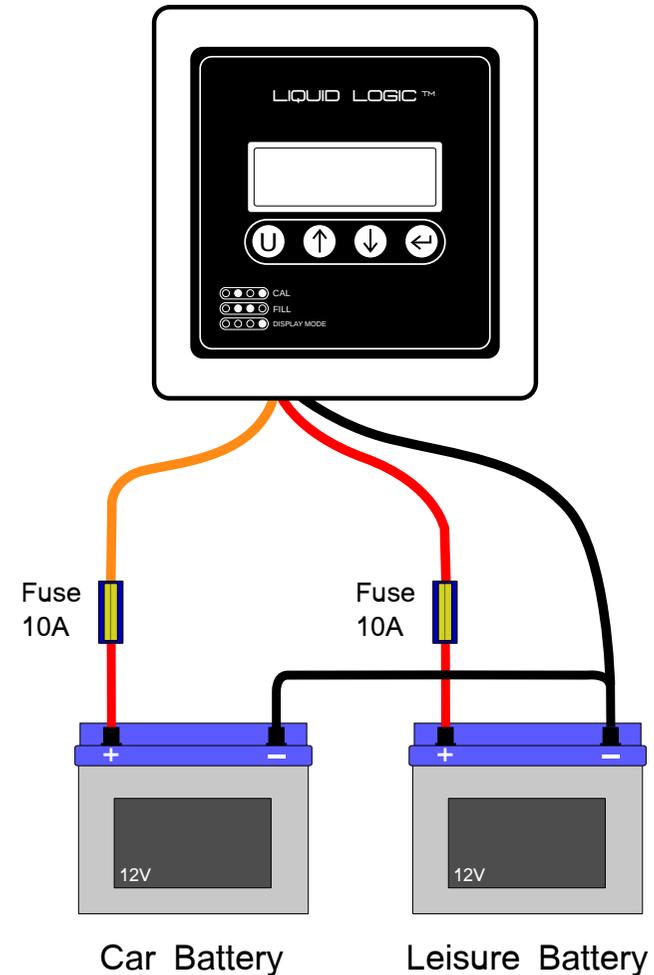
⏪ 0000, 12.4

Press enter again to monitor the car battery.

⏪ 0000, 13.1

## Additional Wiring

Connect the pump controller following this diagram. NOTE only fit the fuses once all connections are made.



Make sure correct fuse is fitted inline. Failure to do so will result in damage to the unit. Observe correct battery polarity. Failure to do so will result in damage to the unit.

## Set Up - Tank Filling

To start filling the tank simply press and hold the up and down buttons briefly. This will activate the solenoid valve, allowing water to fill the tank, until the float switch detects that the tank is full.



The tank can be filled when the unit is on and pumping or off. While the solenoid valve is on and the tank is filling, the display will flash the message FIL.



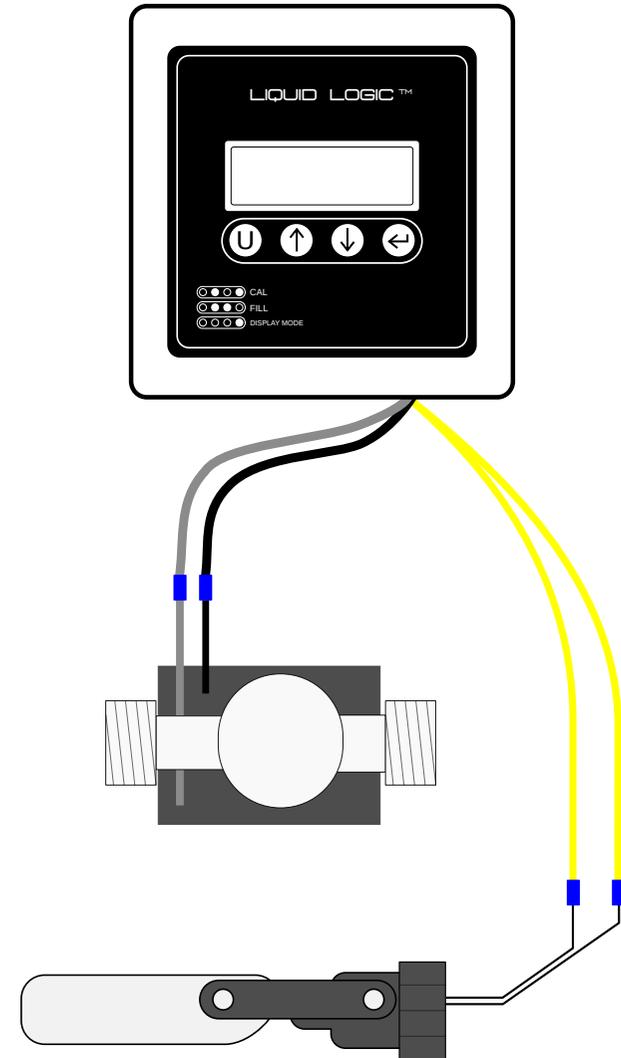
To manually stop the tank filling, press and briefly hold the up and down buttons again. The display will stop showing the FIL message.



The solenoid valve will be turned off if the unit detects a dead battery situation (below 10.0V).

## Additional Wiring

Wire the solenoid valve and float switch following this diagram. Use only wires from right hand gland.



## Set Up - TDS (Total Dissolved Solids)

The TDS function provides an indication of the water purity. The TDS values displayed are in ppm (impurities in parts per million). The TDS meter is intended to check pure water and has a max reading of 50ppm.

We recommend TDS1 probe be fitted after the RO (reverse osmosis) filter. You can then check the RO is working correctly.

We recommend TDS2 probe be fitted after the DI (de-ionising) vessels. You can then check DI vessels are working.

For good cleaning a TDS of below 5ppm after the DI is recommended.

To monitor water temperature (in degrees centigrade) press enter repeatedly until it displays tp.

⬅ 88.88, 88.88

Press enter again to monitor TDS1 reading (in ppm).

⬅ 2254, 88.88

Press enter again to monitor TDS2 reading (in ppm).

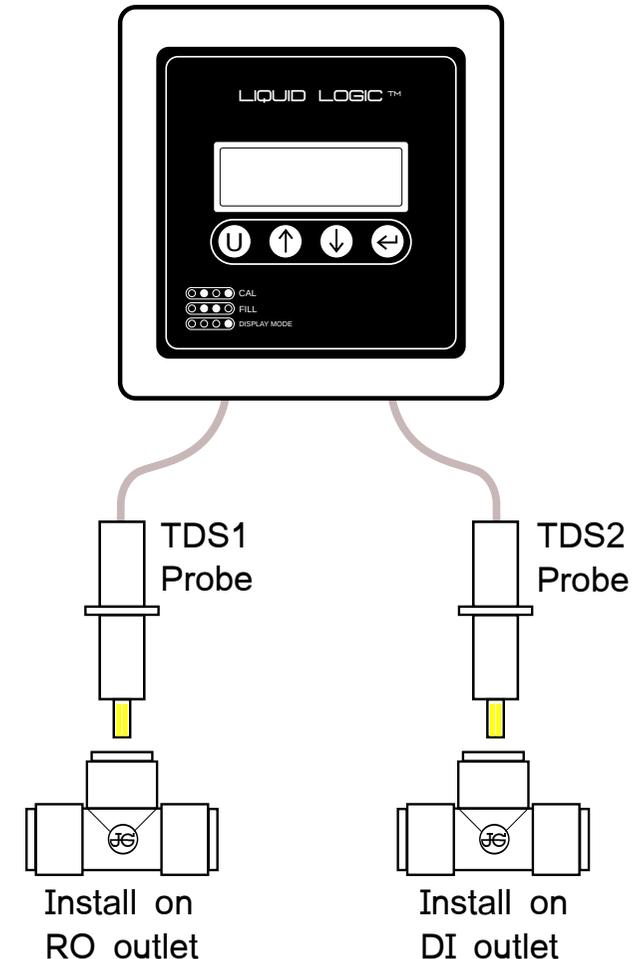
⬅ 2252, 88.88

A TDS reading greater than 50ppm will display high.

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## Additional Wiring

Fit the TDS probes in John Guest 1/2" equal tee (not supplied) as shown on the diagram.



Take care when handling TDS probes. Do not damage gold plated contacts as this will affect TDS accuracy.  
Ensure gold plated contacts are clean before use (clean with ISOPROPANOL and a soft cloth).  
Dirty contacts will affect TDS accuracy.