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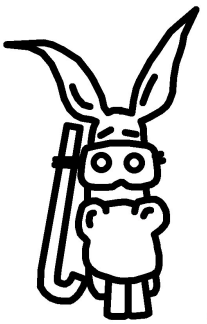


In-use instructions

1) Switch the power on and light comes out the end of your lamp.
1a) Actually, it toggles between high- and low-power modes each time you switch it on.
2) That's about it, really.

Thermal information

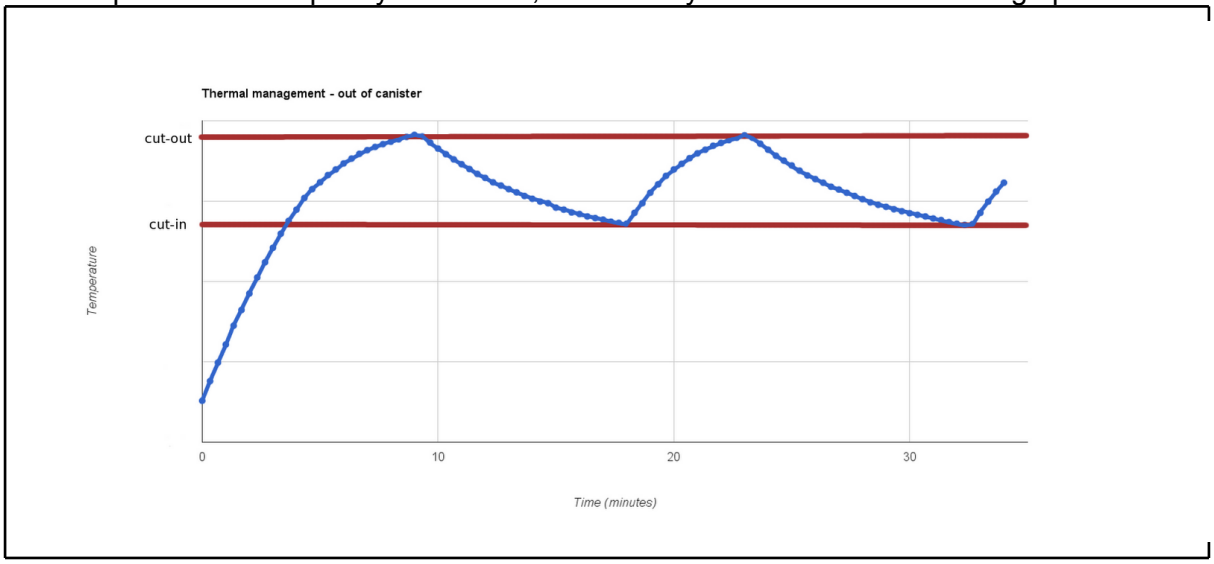
If the unit is used whilst out of water it will heat up within minutes. It won't be damaged as the controller board will switch to low power before it gets too hot (although it may be too hot to comfortably hold). Once it's cooled down, it will automatically switch back to high power - see graph further down.

When your canister lamp is in water, the thermal regulation is very unlikely to kick in. Water is very good at taking away heat.

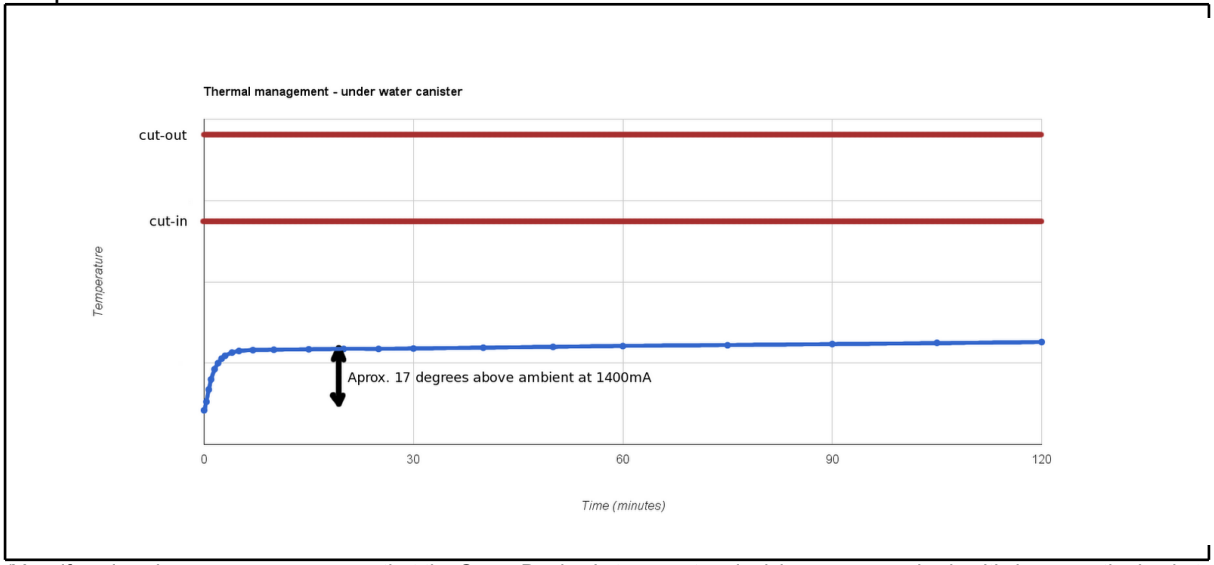
If you don't need the low-power mode, it can be disabled before installing. (This doesn't affect thermal regulation - it will always switch to low-power if regulation kicks in)

Before installing, you can select what power level you wish the high-power to be: 700mA, 1050mA or 1400mA. You should work out how long your battery will last at each power and select accordingly.

This graph shows what happens to the temperature when it's not installed in a canister at all. The temperature rises quickly to the limit, and then cycles between low and high power.



This graph shows what happens when it's correctly installed in a canister, and in water. Even at full power (1400mA), the Sump Donkey is stable, well below the thermal regulation temperature.



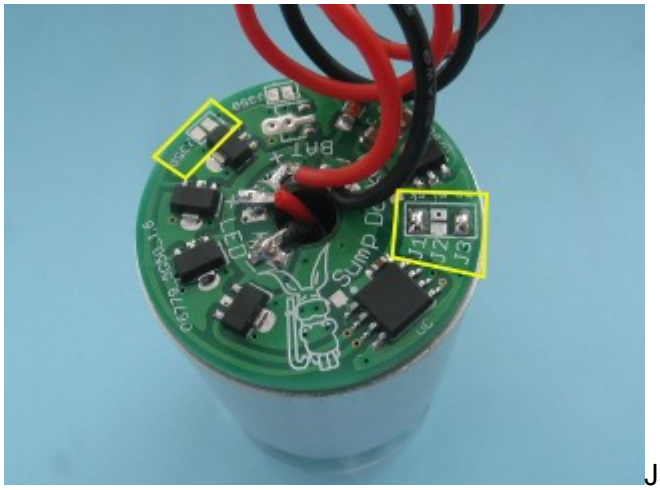
(Yes, if you've sharp eyes, you can see that the Sump Donkey's temperature is rising very very slowly. It's because the bucket of tap water it was submersed in was warming up to room temperature)

Installing

Connect up the supplied 2 amp plug tails to 12v in your canister - make sure you get the + and - the right way round, otherwise the Sump Donkey won't work. Make sure the connections are electrically insulated and won't short to anything. You'll need to arrange the cables to make sure they don't get snagged or caught when the Sump Donkey is inserted, and you may need to pack any unused space to ensure the Sump Donkey sits in the correct place for the canister's glass window etc.
Connect up the plug and briefly confirm it's all working. Mind your eyes.
Use the supplied thermal grease around the aluminium barrel of the Sump Donkey. It tends to get everywhere, but try not to get it on the optic, LEDs or circuit board! The thermal grease should ensure that the Sump Donkey gives as much heat as possible to the canister (and eventually out to the water).

Hard-set options

The Sump Donkey has been designed to be adjustable, as long as you are happy using a soldering iron.
If you need to remove a solder-blob, you will need to use a solder-sucker or some solder-wicking copper braid. Or you could melt the blob and try flicking it off.



J350 on the left; J1, J2 and J3 on the right.

Adjusting power levels
The Sump Donkey should be set to run at 1050mA in high mode, and 230mA in low mode when you get it. By adjusting jumpers J3 and J350 you can alter the power levels as shown in the table below. (There are actually two solder jumpers marked J350; use the jumper that's next to a chip - not the one that's next to a blank space)

(O is soldered; blank is unsoldered)

J3	J350	High mode	Low mode
		700mA	230mA
O		1050mA	230mA
	O	1050mA	330mA
O	O	1400mA	330mA

Fitted in a metal canister, with thermal-grease to provide a continuous thermal pathway to water, the Sump Donkey will happily run at 1400mA without needing the thermal regulation. The choice of power to use should be made based on the likely run-time of the lamp with your battery.

Disabling low-power mode
The Sump Donkey should have the low mode enabled when you get it. If you place a solder blob across the two pads of J2, you'll disable the low power mode so it will always switch on to full-power when switched on. (Although it will still switch to low-power if thermal regulation kicks in.)

Don't change J1. It adjusts the thermal regulation. It is set in the factory after calibration.

Version 2. February 2012. Description of power level jumpers J3 and J350 clarified.
