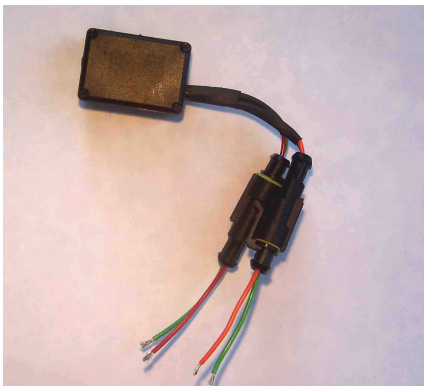
RS125 Voltage Regulator 14.8V

Voltage control for RS125s running total loss (battery powered).

When running a total loss system one of the problems is maintaining a constant voltage. The alternator regulator block is unsuitable as it is a shunt regulator and effectively shorts the power lines if the voltage exceeds 14.2 Volts wasting battery energy. Running the battery direct is one solution but power valve motors and other equipment attached to the power source can become over stressed by the initial high voltages of metal-hydride battery packs. A common Linear regulator would work in this application but would waste this excess voltage in generating heat, by using a switch mode technology voltage regulator the unit can convert this excess voltage into usable current.

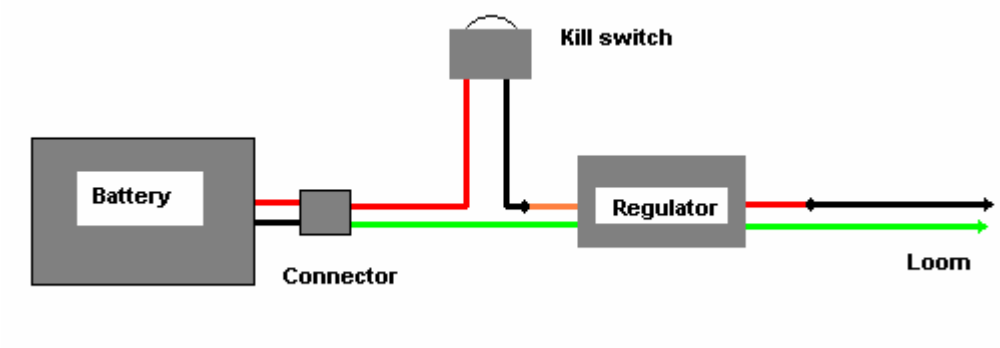
Example:
With 18 volts of battery voltage and a (large) load of 2.6 Amps a voltage of 14.8 volts will be supplied the RS125 and only 2.0 Amps will be drawn from the battery



Connections:

Orange	Battery Positive
Green	Battery Negative (Chassis)
Red	power output positive
Green	Power output Negative (Chassis)

Keep all power wires as short as possible, use cables of grades 24/0.2 for short connections (100mm or less) and 32/0.2 or greater for longer cable runs



Batteries

Number of cells:
12 to 14 cells of 1.2V each this provides 14.4 or 16.8 Volts nominal
Peak voltage can be 2V per cell just after charging => 24V to 28V peak

Capacity:
To power a RS125 without water pump 3Ah minimum
To power a RS125 with water pump 4AH minimum

Specifications:

Abs Max Voltage range	4V to 30V
Usable Voltage range	13V to 28V
Input Current	7A peak
Output voltage	15V nominal
Output voltage under full load	13V minimum
Max output current	4A nominal 5A peak
Efficiency	>90%
Maximum number of cells	14
temperature range	-10degC to +80degC
Weight	Approx 30g

Diagram 1
The red line is the input voltage; the green line is output voltage at 1.5A load, the blue line at 2.5A. The output of the regulator is always 0.8 to 1 volt below the input voltage and higher input voltages are reduced down into the regulated 14 to 15.3 volt range

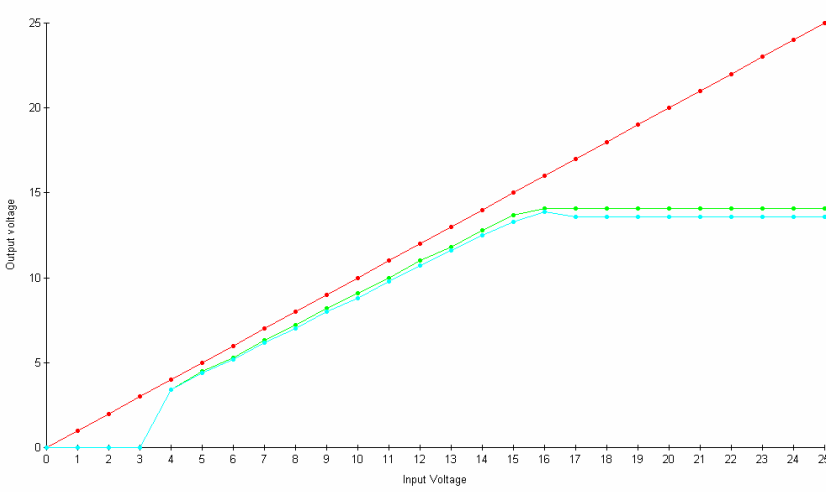
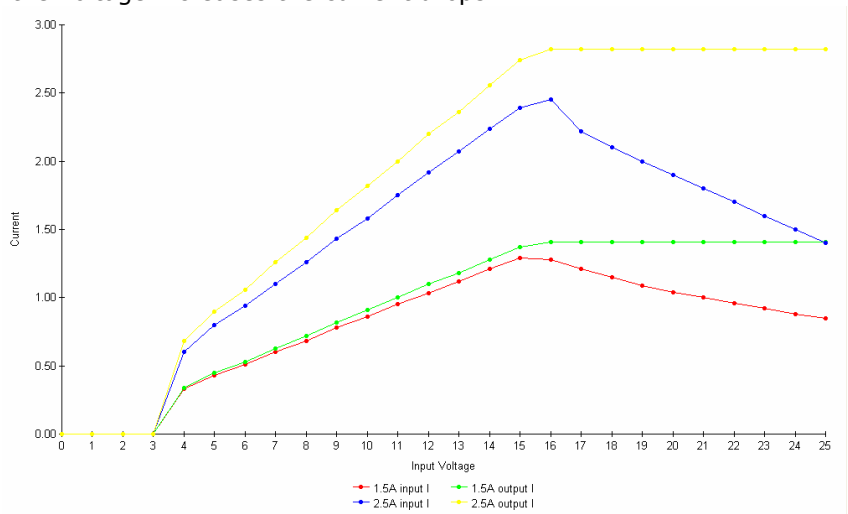


Diagram 2
The advantage of switch mode technology is shown in this diagram, the green line is the current drawn from the regulator with a 1.5Amp load. The red line shows the battery current, as the voltage increases the current drops



With increased current the effect is increased; At 2.5A load (yellow line) the blue line shows the input current fall as the input voltage increases