A note from Electrosound: We purchased a number of 100W lamps to try out the system. They were all labelled 240V, despite the fact that the mains voltage has been 230V for the past 10 years. Using 240V as a baseline gives the resistance of a 100W lamp as 576Ω and the current through it as 0.399A. This agrees exactly with our measurements taken. We have put the calculations for using a 240V lamp in **bold** type below. It seems that the manufacturers have decided that it is not worth redesigning their products for the new 230V supply voltage. In practice this means that a 100W, 240V lamp running on 230V only gives out 92W. (But at least it should last longer!)

The potential difference of 230 V will be shared in that ratio.

Genuine 230V lamp	***240V lamp***
$\frac{529\Omega}{529\Omega + 28.8\Omega}$ across the 230 V lamp	$\frac{576\Omega}{576\Omega + 28.8\Omega}$
$\frac{28.8\Omega}{529\Omega + 28.8\Omega}$ across the 12 V lamp	$\frac{28.8\Omega}{576\Omega + 28.8\Omega}$

Note that adding together the two expressions in each column gives together 230V.

The total current flow will be:

$$\frac{230V}{529\Omega + 28.8\Omega} \qquad \frac{230V}{576\Omega + 28.8\Omega}$$