

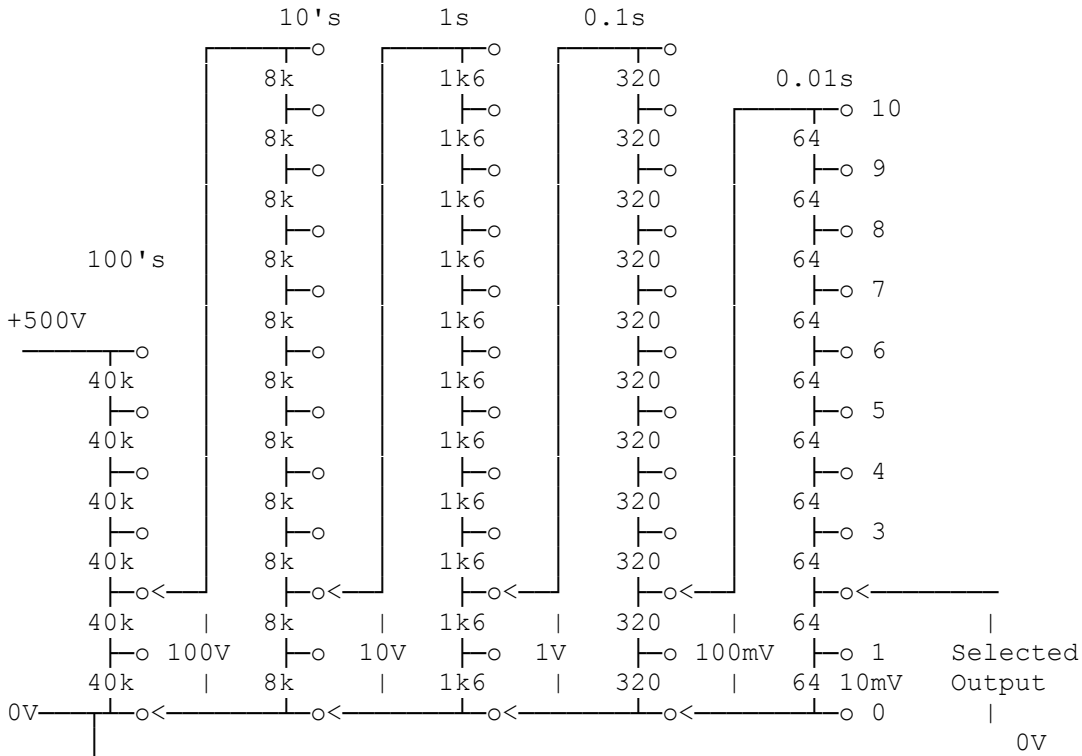
Kelvin Varley Voltage Divider

By G8MNY

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(8 Bit ASCII Graphics use code page 437 or 850

I came across this intriguing circuit in an old Fluke Differential Valve Voltmeter. It divides the reference 500V into 50,000 x 10mV steps.



HOW IT WORKS

The last 0.01V decade divider is conventional, with 10x 64ohm (11 steps). This is then fed from 2 taps apart of the 0.1s (11 320ohm Rs) switch giving 10 steps. Each step has a 100mV, as the 0.01 chain load is 10x 64 = 640, across 2x 320 = 640 making the 2 taps apart look like 320 to the other 9 320 in that chain keep the 10:1 divide ratio perfect. This only works for 11 resistor chains with 5x the previous value. The other divide banks do the same thing.

All resistors are 0.1% stable types. In practice the 6 high value 40k Rs are all made with a calibration 1k preset + 39k5 for good accuracy.

Note the output Z is quite variable from 64ohms for 10mV to 50k for 255V. So the dialled up voltage is only with no load like a valve volt meter.

Why don't U send an interesting bul?

73 De John, G8MNY @ GB7CIP