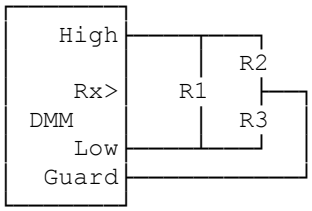
Measuring 1 of 3 Resisters

By G8MNY (new Mar 06)

(8 Bit ASCII graphics use code page 437 or 850)

I recently bought an old LAB DMM (Datron 1061a) meter. It has an unusual feature, the ability to measure one Resistor R1 in a triangle of 3 (R2 & R3) while all connected.



As the DMM has uProcessor you might expect the Guard line to be connected to the Low then High & then disconnected, to give 3 values of Rx, then with 3 equations & 3 unknowns all the Rs can be calculated....

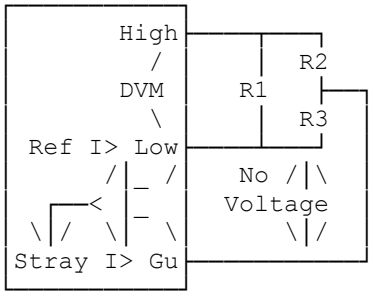
1/ Guard connected to Low $Rx = \frac{R1 + R2}{R1 \times R2}$

2/ Guard connected to High $Rx = \frac{R1 + R3}{R1 \times R3}$

3/ Guard not connected $Rx = \frac{R1 + R2 + R3}{R1 \times (R2+R3)}$

But that is not the purpose of the Guard line in a sensitive measuring circuit.

source across Rx & measures the voltage to get the R1 value. But with R2 + R3 in circuit this will give a wrong reading as some of the accurate current will flow through R2 + R3. But on this meter the Guard line has another current generator with its control arranged to make the Guard the same potential as the Low...



So as long as the Guard stray current generator can put the error current through R2 the Reading of Rx = R1 & be correct.

Why Don't U send an interesting bul?

73 De John, G8MNY @ GB7CIP