KEITHLEY

How do we calculate the total uncertainty on 1000 V range for Model 2000 DMM?

The one-year accuracy spec for 1000 V Range is given as ±(45 ppm of Reading + 6 ppm of range). In addition, there is a foot note given for this range which reads "**For signal level > 500V, add 0.02ppm/V uncertainty for the portion exceeding 500 V**."

In order to calculate, assume the Signal level is 1000 V.

Step 1: Calculate the Additional uncertainty portion for the 1000 V signal:

"For signal level>500V, add 0.02ppm/V uncertainty for the portion exceeding 500 V"

0.02 ppm /V x (1000V – 500V) = 10 ppm

10 ppm on the 1000V Range = (10 x 1000)/1000000 = 10 mV

Step 2: Total Uncertainty for 1000 V on 1000 V range is given as:

±(45 ppm of reading + 6 ppm of range + additional uncertainty)

45 ppm x 1000V + 6 ppm x 1000V + 10 mV

45 mV + 6 mV + 10 mV = 61 mV

Thus the measured signal will fall between the values of 999.939 V to 1000.061 V.