Tech Note : A speed comparison of the Model 2000 and Model 2700

The purpose of this tech note is to highlight the suitability of the model 2700 for DMM applications for which the model 2000 is typically used.

Both the Model 2000 and 2700 happen to have the same measurement engine. In almost every DMM selection process where switching is not required, one tends to think of a model 2000. But in circumstances where speed is a concern, the model 2700 should be considered as well as the 2000.

The data sheet specifications for both of these products indicate 5 readings/second at 10 NPLC in VDC mode (Auto Zero OFF) at 6.5 digits of resolution.

A benchmark was performed at 5 NPLC but with Auto Zero and filtering enabled. Both the Model 2000 and 2700 were configured as follows using LabVIEW 6i with GPIB Read/Write VIs to send SCPI commands. Both DCV and 2-wire Ohms functions were tested.

Configuration	2000 GPIB	2700 GPIB
Function	DCV / Ohms(2w)	DCV / Ohms(2w)
Digits	6.5	6.5
PLC / Rate	5	5
Filter Type	Repeat	Repeat
Filter Count	10	10
Range	Auto	Auto
Auto Zero Status	ON	ON
Reading Rate (reading/secs)	1 reading/ 3.5 Sec	1 reading / 1.1Sec

This configuration used ASCII data transfer (rather than binary) with the 'READ?' command to trigger and fetch data from the instruments.

The test results show the Model 2700 to be 3 times faster than the Model 2000. An additional test was performed with the Filter turned off. The model 2700 was again three times faster than the 2000 (110msec vs. 350msec to measure and transfer the data over the GPIB bus).

For applications that requires throughput without sacrificing accuracy, the model 2700 should be considered.