Mailbag: continued

New op amp fixed Milliohm Adaptor

I made the Millohm Adaptor (SILICON CHIP, February, 2010) and have experienced the same problem as did K. R. (Ask SILICON CHIP, April 2011). Until I made the adaptor, I was using a meter with an LM317T as a constant current source and a PM128 LCD panel meter. This gave quite good results but when I saw your adaptor I was impressed with the features of the design and constructed one.

Like K. R., calibration was straightforward, after doing the modification to get the zeroing correct. On both ranges, the adaptor gives good results with resistances towards full scale. For lower value resistances, the adaptor indicates a lower value than the actual resistance. This happens on both ranges.

For example, on the 10-ohm range, a resistor marked as 1Ω gives 0.835Ω on the adaptor. On a bench-top DMM it indicates 0.98Ω and on my old meter it indicates 0.99Ω. This is similar to the results noted by K. R. The error is similar on the 1-ohm range.

After much reading and measuring I came to the conclusion that there was a significant offset voltage at the output; up to 15mV at low resistances. With the input shorted to ground to do the Zero Set adjustment, the offset was 5mV. Eventually I bit the bullet and got a new AD623AN. This fixed all the problems. During the initial setting up or doing the modifications around the zero set circuit I may have shorted the output, so giving the strange results.

My experience may be useful to others with the same problem.

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