

Re: high end multimeters, part II

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- *From:* Mike Monett <No@xxxxxxxxxx>
 - *Date:* Fri, 20 Apr 2007 20:38:15 +0000
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"Steve" <sjburke1@xxxxxxxxxxxx> wrote:

- > If you need the capabilities of a 189, you're not going to
- > duplicate that in your own shop for under \$500 – unless your time
- > is free and you have no deadlines.

Your estimate is way too high. I got a small 3 1/2 digit from Walmart. It's fine for general troubleshooting.

For other applications like process control, you don't need much. The ADI chip is great.

- > And you still have to face the obsolescence question – its just
- > been moved to somewhere else.

Very few people need the capability of the ADI chip. It won't go obsolete for a very long time.

- > If your DIY equipment fails (it always fails while you are trying
- > to accomplish some other task, otherwise you wouldn't know it had
- > failed),

Why would it fail? Plenty of people here have designed products that are still in service 20 or 30 years later.

- > you suggest you might have to redesign it to use some other chip
- > that's available at the time. I don't see how that's any more cost
- > effective than throwing out a dead/unrepairable DMM and buying a
- > newer model.

The modules are so cheap I usually make a bunch. They are so simple the reliability is very high. If something happens to one, I just put another on-line.

A general-purpose dvm has a lot in a small package. For some reason, all the ones I got from Fluke, Radio Shack, and others died in the humid Canadian summers.

The more expensive equipment had a higher failure rate due to the

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complexity. I could not afford to have multiple copies, so when they went down, it was a major panic trying to find someone who could repair them, ship them across country, then find them broken due to shipping damage on the return trip.

Enough of that. I now make \$25 to \$50 modules that do anything I need. Very rarely is there any reason to go more expensive, then not by much. Certainly for the price of a used piece of test equipment, I can make a whole lab of useful modules all ready to link together on an opto-isolated bus and control processes or simply take data.

- > Either way, there is a secondary investment at an inopportune
- > time, to replace equipment that you expected to last longer than
- > it did.

If you make your own modules, you can easily afford multiple copies. This is very useful for complex projects, since you can afford to do much more than you could when buying commercial equipment.

- > If its a DIY device, the investment may be primarily time, instead
- > of cash. But its still real money, and real schedule time.

You can have greater performance for less cost, don't have to lug 19 inch rack equipment around, no need to pay for all the duplicate displays, power supplies, keyboard entry, internal cabling, and separate chassis big enough and strong enough to support all that wasted redundancy.

When you control your own software, you can make the modules do anything you want. Just try that with most commercial equipment.

Which, by the way, is now running on some version of Windows. The reliability, or lack thereof, is sufficient reason alone to make your own equipment.

- > Overall, I am very happy with the 189. I wouldn't let impending
- > obsolescence keep me from buying another one. Most of the time,
- > DMM's last long enough that they don't owe us anything by the time
- > they die.

A simple dmm is not a big deal. It probably will give you some good use, then die.

- > (My Heath DMM is 30 yrs old and works fine, but I needed true RMS
- > and logging so I bought the 189. I still use both, plus several
- > old HP bench DMM's).

See? A well-designed piece of equipment can last a long time.

For some reason, more recent equipment doesn't have the same longevity. See my next comment.

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- > Buy what you need from a reputable brand, and assume that either
- > the warranty will cover problems, or else it will last long enough
- > that you aren't pissed off when it becomes necessary to replace
- > it.

- > And the third possibility, that its unrepairable in a short time
- > due to some part supply problem that the manufacturer didn't
- > adequately plan for, becomes a very low probability risk that you
- > should be able to live with. As someone else suggested, in that
- > case you should still be able to buy replacement parts on ebay.

Long ago, I paid over \$50,000 for a brand-new HP 8505 network analyzer just released. One year later, they took it off the market because it was so badly designed.

When it died a short while later, the repair cost was so exorbitant, that after I wasted so much time trying to fix it myself, I threw it in the garbage.

Too bad. It had a nice YIG oscillator. But that was the part that died.

> Steve

Regards,

Mike Monett

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