Things That Work

Tested by Home Power

Brand Electronics'
Digital Power Meter

Tested by Richard Perez

This instrument makes accurately measuring the power and energy consumption of 117 vac appliances a snap! It's easy to use with "plug and play" connections, simple programming, and best of all, it's accurate and inexpensive.

The Brand Model 04-1850 Digital Power Meter

This instrument lives in a black plastic box, 2.5 inches high by 5 inches wide by 6 inches deep. It has a heavy plug and cord which is inserted into any 117 vac receptacle (wall socket). The appliance under measurement is plugged into the female 117 vac receptacle on the meter's back. Using this meter is very simple. Plug the meter into a 117 vac source, then plug the appliance into the meter. That's all, measurement begins automatically.

Brand Electronics calls this instrument a power meter, but it's really a power (watt) meter, an energy (watt-hour) meter, an energy cost monitor, and an elapsed time meter. The Brand Power Meter measures power in watts, energy in kilowatt-hours, and elapsed time in hours. The user can program the meter with their energy cost in cents per kilowatt-hour, and the meter will calculate the cost to run an appliance in both elapsed time mode and estimated monthly cost mode. Using and programming the meter is accomplished by four push buttons. Information is displayed by a 16-character alphanumeric LCD.

There is a lot going on inside this meter. A single chip microprocessor accurately measures voltage and current four thousand times per second (4 kHz). The microprocessor then takes this fine grained data and computes wattage, energy, and energy cost—all very slick and very fast. Since this meter is digitally based, it will accurately measure under any power factor and any ac waveform. This ability makes the Brand the only meter we know of capable of accurately measuring energy produced by modified sine wave and square wave inverters. The Brand meter automatically recalibrates itself every time it's plugged in or every time you push the reset button.

Brand Power Meter Specifications

Power Range	1 to 1850 watts
Power Resolution	2 watts
Power Accuracy	±2% of reading, ±2 in the least significant digit
Energy Range	1 watt-hour to 9999 kilowatt-hours
Energy Resolution	1 watt-hour
Energy Accuracy	±2% of reading, ±2 in the least significant digit
Power Supply Voltage	70 to 150 vac rms
Power Waveform	any (sine, mod sine, square, or triangle waveforms)
Power Frequency	3 to 100 Hz

Using the Brand Power Meter

I began testing the Brand meter in March of 1998 and have been using it for six months now. I started small, measuring the energy consumption of some of our office equipment such as fax machines, monitors, and computers. The instrument was so easy to use that I branched out into appliances I had never really measured before. The reason for this was the intermittent nature of the appliance's power

consumption. I measured the energy consumption of our washing machine, deep well pump, and home entertainment center. Since this meter is a recording watt-hour meter, it is ideally suited to measure the energy consumption of automatic appliances such as refrigerators, freezers, washing machine, air conditioners, and such—any appliance which automatically turns itself on or off. I became a Measurement Maniac. This meter is so easy to use, that I began measuring everything in the house and the office! And I got accurate, long-term data as a reward for very little effort on my part.

We've always known that our 117 vac entertainment center was a phantom load, so we use a switched plug strip to fully shut it off. But the Brand meter quantified these phantom loads—our Kenwood stereo, JVC VCR, and Sony 19 inch TV consume 23 watts when off. The switched plug strip on this entertainment center saves us about 460 watt-hours per day—the rough equivalent of the daily energy production of two PV modules.

Essential Solar Tool
Every RE system begins with a load analysis. The Brand Digital Power Meter is the instrument that takes all the guesswork out of load analysis. This meter will measure the power and energy consumption of any 117 vac appliance under 1850 watts. It will accurately measure difficult-to-meter loads such as refrigerators and freezers. The meter can take a couple of days of measurement and project this data into a monthly figure.

For those designing a system for themselves, or for RE dealers who design many systems for others, the Brand Meter is an essential tool. It's so simple to use that you can do a real load analysis on a home in just a few days. No guesswork, just real and accurate data. This meter is an essential solar tool. Why guess when you can know for real?

Cost of the Brand Meter
You get all of this for $149.95, shipped and delivered! In the world of electrical energy measurement, you can easily spend four times the money and get an instrument that doesn't even come close to the accuracy, simplicity, and performance of this Brand meter. The "lifetime" warranty offered by Brand is really a six-month free replacement or repair warranty with lifetime repair or replacement for a single $40 payment.

Who needs this meter?
We all do. Whether you live on-grid or off-grid, the first step to saving energy is knowing where it's being wasted. The Brand is the instrument that can tell you this at an affordable price. Look at it this way—if you are on-grid, use this meter, and act upon the data, it will

easily save you the cost of the meter in less than a year. After you're done with your home, you can lend the meter to your neighbors.

If you are off-grid or designing a new system for off-grid use, then this meter can save you thousands of dollars in system components you won't have to buy. You will have already identified, measured, and eliminated all of the inefficient and inappropriate appliances in the system.

I've done dozens of "Things that Work!" reports for *Home Power*. This is the first time that I have wished for more than two thumbs.... Great work, Ethan Brand and Richard McGarth of Brand Electronics! You folks have created an accurate and effective instrument which is both easy to use and inexpensive. Both Thumbs Up!

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