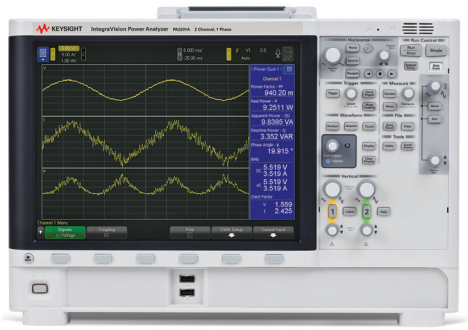
JACK BROWNE | Technical Contributor

Power Analyzer Integrates Scope

This versatile measurement tool packs a power analyzer and high-speed digital oscilloscope into a single compact housing to measure ac and dc voltage, current, and power.

POWER ANALYSIS HAS grown more complex as designers of electronic devices continue to add functionality, while at the same time attempting to curb power consumption for these increased capabilities. Power measurements on these devices usually require a power analyzer and a high-speed oscilloscope. But tracking down both instruments can be challenging in any workplace—unless, of course, an engineer or technician is fortunate enough to have a model PA2201A Integra-Vision Power Analyzer from Keysight Technologies on hand.

This single compact instrument combines an accurate power analyzer with 16-b resolution and 0.05% measurement accuracy (for 50-/60-Hz measurements) and a high-speed digital oscilloscope with touchscreen control. Packing both instruments into a single portable housing itself saves power while helping to speed and simplify both steady-state and dynamic power measurements.



The model PA2201A IntegraVision Power Analyzer combines a power analyzer with a digital oscilloscope, showing results with high resolution on a 12.1-in. diagonal LCD touchscreen display.

The PA2201A IntegraVision Power Analyzer is a two-channel, single-phase measurement tool perhaps most distinguished by its large front-panel liquid-crystal-display (LCD) touchscreen *(see the figure)*. This truly is a "hybrid" instrument, with all of the measurement capability of an ac/dc power analyzer and the high-resolution display capabilities of a digital oscilloscope.

Power can be measured by feeding highly isolated test input ports (with 1000-V isolation between all input test ports) or by using an isolated BNC input to connect external current probes to measure current levels greater than 50 A. Test input ports are protected by a clever sliding cover when not in use.

The combination instrument itself is powered by a 5-MSample/s digitizer to capture voltage, current, and power (with 16-b resolution) in real time. It can analyze voltage to 1000 V (across voltage bandwidths as wide as wide as 2 MHz) and current to 50 A (across a current bandwidth as wide as 100 kHz). The power analyzer can capture continuous and transient power events while the digital oscilloscope is able to make repetitive and single-shot measurements. Results are shown on a bright, 12.1-in. (305-mm) diagonal liquid-crystal-display (LCD) screen that also provides touchscreen control of measurements.

The PA2201A IntegraVision Power Analyzer allows frequency- and time-domain analysis of power, current, and voltage in order to fully understand the constant and/or changing power consumption of an electronic circuit or design. The power analyzer/scope captures as many as 4 million data points simultaneously for each sampled waveform.

The compact instrument measures just 16.8 × 11.4 × 10.0 in. with a carrying handle. Its rear panel includes Universal Serial Bus (USB) and local-area-network (LAN) ports for connections to external computers and networks. Admittedly, measurements of current, voltage, and power are not typically high on the list of RF/microwave engineers when designing high-frequency components, devices, or systems. But power consumption is a critical parameter for any electronic device, and the PA2201A analyzer provides the versatility to study power use as a device under test (DUT) shifts operating modes and states.

Measuring power now requires a great deal of flexibility, since such measurements involve measuring ac and dc fundamental and harmonic frequencies; transient changes in power supply and consumption; and changes in operating states.

Finally, the IntegraVision Power Analyzer is well suited for analyzing power-conversion efficiency in power-conversion systems. It can be used to measure common ac power parameters, such as frequency, phase, and harmonics. mw

KEYSIGHT TECHNOLOGIES INC., 1400 Fountaingrove Pkwy., Santa Rosa, CA 95403; (707) 577-2663, *www.keysight.com*

503MRF_43C.indd 95 3/3/15 3:31 PM