16-bit AWG runs up to eight channels

Martin Rowe - April 18, 2017

Signals keep getting more complex. Bandwidth requirements for wireless devices keep forcing new standards, which require simulated signals to test receivers. On top of that, electronic warfare needs ever more complicated signals to test communications and radar devices. Researchers in labs around the world need signals to simulate physical phenomena. To keep up the demand for ever more complex signals, Tektronix has introduced the AWG5200 series of arbitrary waveform generators (AWGs).

Available in three base models with two, four, or eight analog outputs, the AWG5200 series has sample rates up to 10 Gsamples/s (2.5 Gsamples/s standard), 16-bit resolution, and 2 Gsamples/ch of waveform memory.

The base prices, shown in the **table** below, get you a basic AWG that also includes an I/Q modulator. Thus, it can take the place of a vector-signal generator in test systems. Futhermore, the AWG5202 has many options that enhance its capability. For example, plugins are available for RADAR, multitone/chirp, high-speed serial data signals, assorted RF signals, and optical signals. There's also a precompensation plugin that lets you compensate for losses in transmission channels. An additional plugin lets you create signals from S-parameters.

To appreciate the capabilities of the AWG5200, you need to look at its front and rear panels. The front panel has four, eight, or sixteen signal connectors because each channel is a differential output. Standard output voltages are ±1.5 V_{PK-PK} with ±4 V_{PK-PK} optional (see **table** below). There's also a removable hard-disk drive for sensitive applications. It's the read panel, however, where things get interesting.

Each channel has four digital "marker" outputs (32 shown for eight channels) that you can use to initiate events based on specified signal conditions. Think of them as trigger outputs. Each channel has an auxiliary output (eight shown) that you can use as a clock signal. Finally, the system has two trigger inputs.

If you need more channels than a single instrument can provide, you can synchronize multiple AWGs. Any instrument can be set up as a master or slave.

Because many test systems—especially those used for testing military devices—can be in service for years, the AWG5200 series uses the same user interface as the AWG70000 series. The two series are also software compatible, sharing a common API. That common API means you can also use Tek's SourceXpress software, which lets you create waveforms and load them into the instrument.

Option	AWG5202 (2 ch)	AWG5204 (4 ch)	AWG5208 (8 ch)
2.5 Gsamples/s (± 1.5 V$_{PK\text{-}PK}$)	$47,000	$58,000	$82,500
10.2 Gsamples/s (± 1.5 V$_{PK\text{-}PK}$)	$60,000	$84,000	$126,000
Sequencing	$10,000	$10,000	$10,000
High-amplitude AC (± 4 V$_{PK\text{-}PK}$)	$4000	$8000	$16,000
High bandwidth	$1000	$2000	$4000
Digital up conversion	$4000	$8000	$16,000

All options are field upgradeable except number of channels.

Tektronix, AWG5200 product page

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- Modular AWGs: How they work and how to use them
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