



Implementing a 0.18-micron CMOS-based generator-on-a-chip ASIC device, Tektronix has readied a new family of arbitrary/function generators that establishes a new benchmark in performance and ease of use. Combining an arbitrary waveform generator, function generator and pulse generator into one instrument, the AFG3000 is a next-generation signal source that offers more usability, simplicity and better performance than competing equipment. It also fills the gap left by such instruments in the 100 MHz to 240 MHz range.

Comprising six models, the AFG3000 series of arbitrary/function generators offers a large display and an intuitive user interface with competitive pricing. The large LCD (5.6 inches) on every AFG3000 series model is easy to read and offers ample space for both graphical and instrumental settings (see the figure). Simple on-screen menus are supplemented by shortcut keys that control the most common waveform parameters. In fact, it has the same look and feel of its TDS1000/2000/3000B oscilloscopes. While all the models in the series offer color displays, the single-channel AFG3021 offers a monochrome LCD.

The Two dual-channel models (AFG3022/3252) provide completely independent selection of waveform and frequency for each channel. Plus, by using the phase align and phase adjust features, the dual-channel versions are also suitable for generating I and Q channels for testing of communications equipment components.

The AFG3000 supports 12 standard functions, including sinusoidal waves at frequencies up to 240 MHz. Plus, a built-in arbitrary generator is capable of delivering waveforms at sample rates up to 2 Gsamples/s and 14-bit amplitude resolution. Arbitrary waveforms can be generated up to 128 K in length at high sampling rates. On pulse waveforms, leading and trailing edge time can be set independently. All the models in the series are equipped with a stable time base whose drift is only 1 ppm per year, according to the maker. Modes of operation include continuous, burst, sweep and modulated. Speaking of modulation, the schemes offered by the AFG3000 generators include AM, FM, PM, FSK and PWM.

Furthermore, the ArbExpress 2.0 software facilitates the creation and editing of arbitrary waveform on a PC. It seamlessly translates oscilloscope data from all Tektronix oscilloscopes and enables direct transfer of waveform data out of the MathWorks' MATLAB software. In addition, it allows the building of equations.

The custom waveform generator ASIC integrates on-chip direct digital synthesis (DDS), a digital-to-analog converter (DAC), and other signal generating elements. These include a pulse generator with variable period and independently adjustable rise and fall times, a modulation source, a noise source, and a frequency sweep generator. Plus, it contains twice as much arbitrary waveform memory (up to 128 K)

Specification

Model	AFG3022B	AFG3252
Channels	2	2
Waveforms	Sine, Square, Pulse, Ramp, Triangle, Sin (x)/x, Exponential Rise and Decay, Gaussian, Lorentz, Haversine, DC, Noise	
Sine Wave	1 μ Hz to 25 MHz	1 μ Hz to 240 MHz
Resolution	1 mV	1 mV
Output impedance	50 Ω	50 Ω
Noise Bandwidth (-3 dB)	25 MHz	240 MHz
Accuracy	$\pm(1\%$ of setting + 5 mV + 0.5% of amplitude (V _{p-p}))	
Power Source	110 to 240 V, 47 to 63 Hz, or 115 V, 360 to 440 Hz	