M3202A/M3201A

PXIe Arbitrary Waveform Generators with Optional Real-Time Sequencing and FPGA Programming

1 GSa/s, 14 Bits, 4 Channels
500 MSa/s, 16 Bits, 4 Channels

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Generate High-Precision, Complex, Real-World Signals

The M3202A/M3201A high-performance, high-bandwidth arbitrary waveform generators combine an advanced waveform generation system with embedded function generators and modulators (frequency/phase/amplitude) for broadband and IF signal generation. Performance meets simplicity thanks to easy-to-use programming libraries, real-time sequencing technology (HVI), and graphical FPGA programming technology.

Features

Options

- 1 GSa/s, 14 bits, 4 channels, 400 MHz BW (800 MHz IQ)
- 500 MSa/s, 16 bits, 4 channels, 200 MHz BW (400 MHz IQ)

Embedded advanced arbitrary waveform generators (AWGs)

- Advanced triggering and marking (up to 8 reconfigurable I/Os)
- Waveform queue system with cycles, delays and prescalers

Embedded high-precision function generators (FGs)

- Sinusoidal, triangular, square, DC, and more
- 45-bit frequency resolution (up to ~ 5.68 µHz)
- 24-bit phase resolution (up to ~ 21.5 µdeg)

Embedded ultra-flexible amplitude and angle modulators

High-quality output signal with low phase noise

- SFDR: ~ 65 dBc at 20 MHz
- Average noise density: down to ~ –145 dBm/Hz

Optional features

- Simultaneous amplitude and angle modulations

Optional HW programming for high-performance applications

- Real-time sequencing (HVI technology)
- FPGA programming
  - Xilinx Kintex-7 325T or 410T FPGA

Up to 2 GB of onboard RAM (~ 1 Gsamples)

Mechanical/interface

- 1 slot 3U (PXIe)
- Up to 1.6 GB/s transfer BW with P2P capabilities (PCIe Gen 2)
- Independent DMA channels for fast and efficient data transfer

Applications

Quantum computing, 5G research

Manufacturing in wireless devices, automated test equipment (ATE)

MIMO, beam forming and other multi-channel coherent signal generation

General purpose, RF/arbitrary waveform generation

R&D/scientific research equipment, aerospace and defense (A/D)

Programming technology and software tools

Software programming

– Easy-to-use native programming libraries for most common languages: C, C++, Visual Studio, LabVIEW, MATLAB, Python, and more

Hardware programming (optional)

– Real-time sequencing (Hard Virtual Instrumentation or HVI technology)
  – Graphical flowchart-style M3601A design environment (-HV1 option required on HW)
  – Ultra-fast, fully-parallelized, hard real-time execution
  – Ultra-fast, time-deterministic decision-making
  – Off-the-shelf inter-module synchronization and data exchange
– FPGA programming
  – Graphical M3602A FPGA design environment (-FP1 option required on HW)
  – No FPGA know-how required
  – Include from high-level to low-level design elements: off-the-shelf DSP blocks, MATLAB/Simulink designs, Xilinx CORE Generator IP cores, Xilinx VIVADO/ISE projects, VHDL or Verilog code
  – Ultra-fast, one-click compiling and on-the-fly programming

No programming

– Ready-to-use SD1 SPF (software front panels)

M31XX/M32XX/M33XX family product table

Product	Type	Outputs (AWGs)				Inputs (Digitizers)			
		Speed (MSa/s)	Bits	Ch	BW (MHz)	Speed (MSa/s)	Bits	Ch	BW (MHz)
M3202A	AWG	1000	14	4	DC-400				
M3201A	AWG	500	16	4	DC-200				
M3102A	Digitizer					500	14	4	DC-200
M3100A	Digitizer					100	14	4/8	DC-100
M3302A	Combo	500	16	2	DC-200	500	14	2	DC-200
M3300A	Combo	500	16	2/4	DC-200	100	14	4/8	DC-100

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