Keysight M3102A/M3100A
PXIe Digitizers with Optional Real-Time Sequencing and FPGA Programming
500 MSa/s, 14 Bits, 2/4 Channels
100 MSa/s, 14 Bits, 4/8 Channels

Technical Overview

Improve Your Measurement Fidelity, Signal Integrity and Measurement Throughput

M3102A/M3100A digitizers are high-performance, high-bandwidth digitizers with advanced data acquisition system (DAQ). Performance meets simplicity thanks to easy-to-use programming libraries, real-time sequencing technology (Hard Virtual Instrumentation or HVI), and graphical FPGA programming technology.

Features

Options
- 500 MSa/s simultaneous sampling, 14 bits, 2/4 channels, 200 MHz BW
- 100 MSa/s simultaneous sampling, 14 bits, 4/8 channels, 100 MHz BW

Advanced data acquisition system (DAQ)
- Flexible triggering (HW trigger, HVI trigger, SW trigger)
- Programmable cycles and data bursts to avoid PC saturation

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 peer-to-peer (P2P) capabilities (PCIe Gen 2)
- Independent direct memory access (DMA) channels for fast and efficient data transfer

Applications

General purpose digitizer
BB electronics designs and manufacturing in wireless devices
R&D/scientific research equipment
Aerospace & defense (A/D), angle of arrival (AoA), electronic warfare (EW)
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 & data exchange
- FPGA programming
  - Graphical M3602A FPGA design environment (-FP1 option required on HW)
  - No FPGA know-how required
  - Include 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

<table>
<thead>
<tr>
<th>Product</th>
<th>Type</th>
<th>Outputs (AWGs)</th>
<th>Inputs (Digitizers)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Speed (MSa/s)</td>
<td>Bits</td>
<td>Ch</td>
</tr>
<tr>
<td>M3202A</td>
<td>1000</td>
<td>14</td>
<td>2/4</td>
</tr>
<tr>
<td>M3201A</td>
<td>500</td>
<td>16</td>
<td>2/4</td>
</tr>
<tr>
<td>M3102A</td>
<td>Digitizer</td>
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<tr>
<td>M3100A</td>
<td>Digitizer</td>
<td>100</td>
<td>14</td>
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<tr>
<td>M3302A</td>
<td>Combo</td>
<td>500</td>
<td>16</td>
</tr>
<tr>
<td>M3300A</td>
<td>Combo</td>
<td>500</td>
<td>16</td>
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</tbody>
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PCI eXtensions for Instrumentation (PXI) modular instrumentation delivers a rugged, PC-based high-performance measurement and automation system.