



AnalogMAX-DAQ2: A Programmable 16-Bit μ Module[®]-Based Data Acquisition Platform with the Intel[®] MAX[®] 10 FPGA

Based on Analog Devices' ADAQ7980/ADAQ7988 16-Bit, 1 MSPS/500 kSPS, μ Module[®] Data Acquisition System

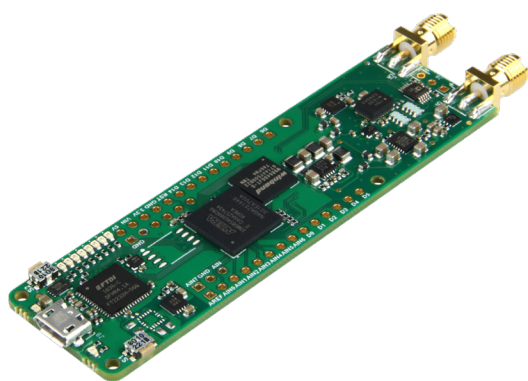
AnalogMAX-DAQ2 is a high-accuracy data acquisition platform that meets footprint, power, and reliability requirements of measurement instruments in industrial, medical, and scientific applications. The data acquisition platform is based on the high-impedance, programmable ADC driver stage using AD8251 driving the ADAQ7988, a 16-bit μ Module[®] that integrates several signal chain components into a tiny LGA 4 mm x 5 mm package. This platform is ideal for small form factor systems that require accurate and reliable operation over long periods of time. The non-volatile low-cost Intel[®] MAX[®] 10 FPGA offers 8K Logic Elements (LEs) and a flexible environment to customize designs for a variety of use cases.

The ADAQ7988 μ Module[®] solution contains a high accuracy, low power, 16-bit SAR ADC, a low power, high bandwidth, high input impedance ADC driver, a low power, stable reference buffer, and an efficient power management block. The level of system integration in the ADAQ7988 solves many design challenges, while the devices still provide the flexibility of a configurable ADC driver feedback loop to allow gain and/or common-mode adjustments. The μ Module[®] shortens the analog signal chain design time and improves time to market.

Benefits of the AnalogMAX-DAQ2 platform

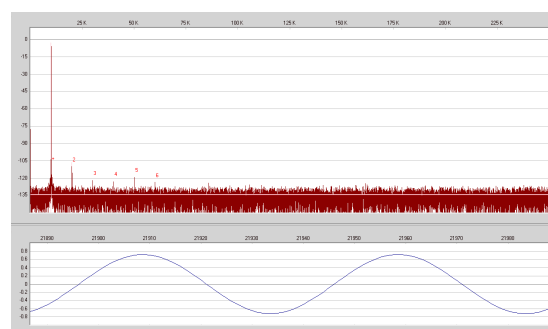
- > **Simplifies analog signal chain design:** The level of integration in ADAQ7980/ADAQ7988 simplifies the development of high-accuracy data acquisition systems
- > **Flexible platform:** Based on the programmable Intel[®] MAX[®] 10 FPGA, easily adjusts to a wide range of use cases and production needs
- > **Rapid prototyping and product development:** Rapid development and testing with an out-of-the-box experience that includes a Jupyter notebook demo with Python code
- > **Quick customization services:** Add new functionality, lower BOM cost, or have the complete product designed

μ Module[®] Data Acquisition Platform Based on Intel[®] MAX[®] 10 FPGA



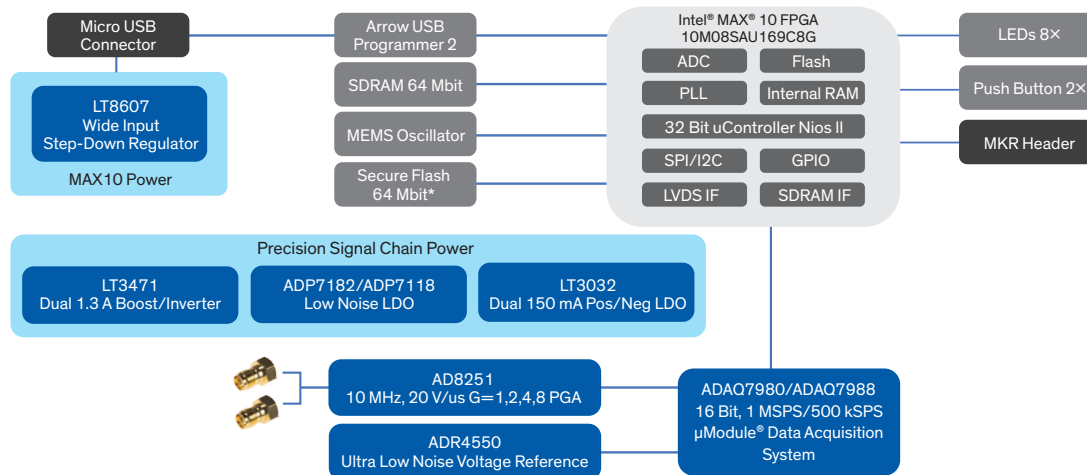
Part #: AnalogMAX-DAQ2

Signal Spectrum



Input signal is a 1 kHz sine wave

AnalogMAX-DAQ2 Block Diagram



*: Optional, not mounted on the PCB

Hardware Features

- > Intel[®] MAX[®] 10 FPGA with 8K LEs, in the UBG-169 package
- > 16-bit, 1MSPS, μ Module[®] data acquisition system (Analog Devices ADAQ7980). Also pin-compatible with ADAQ7988
- > Power: Small foot-print, low-noise power design
- > Memory: SDRAM Memory up to 64 Mb @ 166 MHz, 64 Mb Quad SPI Flash and 4 Kb EEPROM Memory
- > Dual high-speed USB to multipurpose UART/FIFO IC
- > Micro USB2 Receptacle 90
- > 2x SMA female connectors
- > I/O interface: 23 x GPIO
- > Dimension: 86.5 mm x 25 mm

Key Components

Processor

- > Intel[®] MAX[®] 10 FPGA:
Non-volatile low-cost FPGAs
(part #:10M08SAU169C8G)

Analog Signal Chain

- > ADAQ7980/ ADAQ7988: 16-bit, 1MSPS/500kSPS, μ Module[®] Data Acquisition System
- > AD8251: 10 MHz, G = 1, 2, 4, 8 iCMOS[®] Programmable Gain Instrumentation Amplifier
- > ADR4550: Ultra-Low-Noise, High-Accuracy 5.0 V Voltage Reference

Software and Demo Features

- > ADC performance evaluation demo – Utilizes the VisualAnalog[™] software package and works out-of-the-box
- > Signal processing and data visualization demo – Uses a Jupyter notebook demo with Python code available to change gain and capture corresponding data. Time-domain and FFT plots available

Power

- > LT8607: 42 V, 750 mA Synchronous Step-Down Regulator with 2.5 μ A Quiescent Current
- > LT3471: Dual 1.3 A, 1.2 MHz Boost/Inverter in 3 mm x 3 mm DFN

Features of the ADAQ7980/ ADAQ7988 16-Bit 1 MSPS/500 kSPS, μ Module[®] Data Acquisition System:

- > Low-power data acquisition system with 16-bit, 1MSPS/500kSPS μ Module[®]
- > Includes all critical passive parts
- > INL: ± 8 ppm typ.
- > SNR: 91.5 dB typ.
- > THD: -105 dB at 10 kHz

Ordering Information



Part #:
AnalogMAX-DAQ2

Chat live and in real-time on arrow.com or connect with a Customer Support team:

Online

www.arrow.com/analogMAX

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