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AnalogMAX-01: Full-featured Programmable Sensor Fusion Development Platform

Featuring Analog Devices' Dual-Wavelength Optical Module, 3-Axis Accelerometer, Temperature Sensor, and an 8 Channel Configurable ADC/DAC

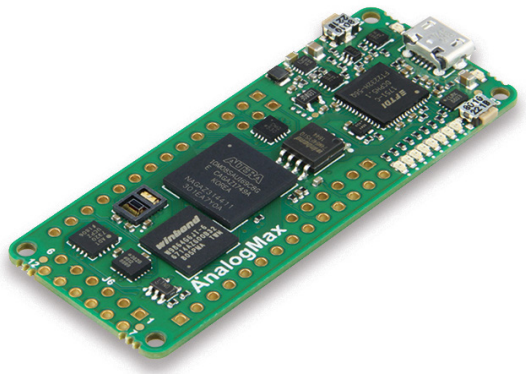
Part of the AnalogMAX series of boards, the AnalogMAX-01 platform is a full-featured sensor fusion FPGA board featuring Analog Devices' ADPD188BI integrated optical module for smoke and aerosol detection , a 3-axis micropower ADXL362 MEMS accelerometer, a ±0.25 °C accurate, 16-bit digital SPI temperature sensor (ADT7320) and the Intel® MAX® 10 FPGA. The ADPD188BI is a complete photometric system for smoke detection using optical dual-wavelength technology. The module integrates a highly efficient photometric front end, two Light Emitting Diodes (LEDs), and two PhotoDiodes (PDs). The ADXL362 is an ultralow power, 3-axis, 12-bit MEMS accelerometer that consumes less than 2 µA at a 100 Hz output data rate and 270 nA when in motion triggered wake-up mode.

The board also has an AD5592R ADC/DAC/GPIO combination device that includes a 400-Ksps ADC, 6-µsec settling time DAC, digital inputs/outputs, and a reference on a single chip. The device can be user-configured in any combination of up to eight independent channels, allowing designers to use a single IC to complete multiple system monitoring and control functions. Low-power consumption and compact size makes the AnalogMAX-01 an ideal starting point for battery-operated applications in building automation and environmental monitoring use cases.

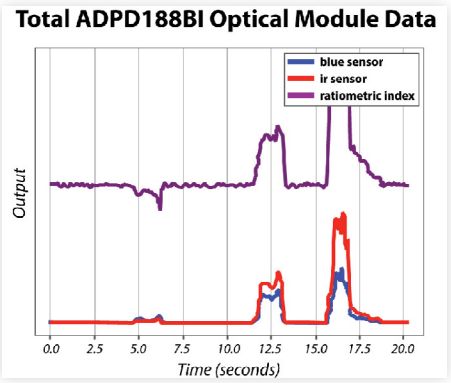
Benefits of the AnalogMAX-01 Platform

- **Small form-factor, low power sensor, expandable broad:** Can be used to collect a wide range of sensor data that can be combined to create higher value data.
- **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 the Jupyter notebook with Python code.
- **Quick customization services:** Add new functionality, lower BOM cost, or have the complete product designed.

Analog Devices Programmable Sensor Fusion Development Platform

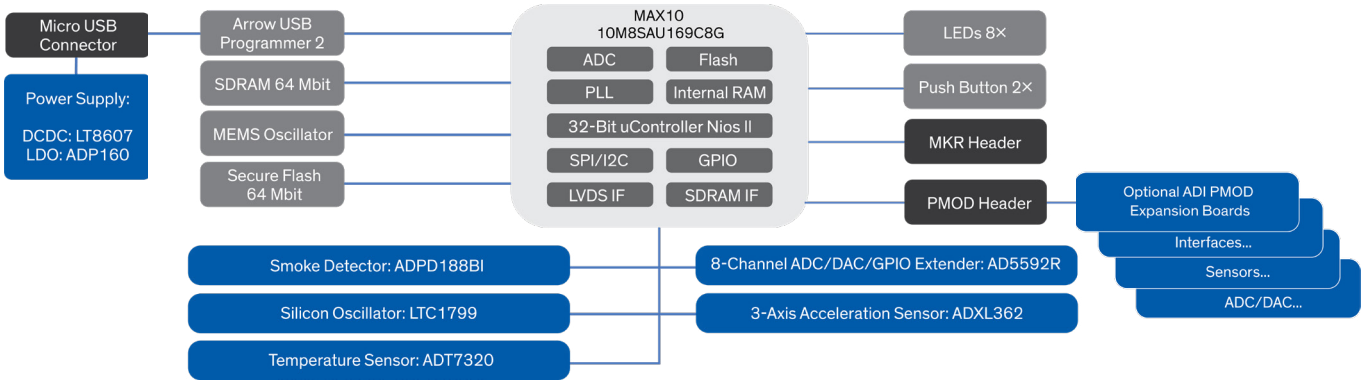


Part #: AnalogMAX-01
(2.5 × 6.15 cm)



Jupyter notebook with Python code for demos that allow data collection out-of-the-box

AnalogMAX-01 Block Diagram



Hardware Features

- On-board sensors
  - ADPD188BI: Integrated optical module for smoke and aerosol detection
  - ADXL362: Micropower, 3-axis, ±2 g/±4 g/±8 g digital output MEMS accelerometer
  - ADT7320: ±0.25 °C accurate, 16-bit digital SPI temperature sensor
- AD5592R: 8 channel, 12-bit, configurable ADC/DAC with on-chip reference, SPI interface
- Intel® MAX® 10 FPGA with 8K LEs in the UBGA-169 package
- PMOD and Arduino MKR IoT for optional expansion boards

Software and Demo Features

- User experience includes intuitive demos featuring the Jupyter Notebook software tools
- Works out-of-the-box with the latest code and wiki documentation on GitHub
- Python code is executed within a Jupyter notebook file allowing easy customizations and an intuitive graphical interface

Ordering Information

Part #: AnalogMAX-01

Key Sensing Features:

- Three on-board sensing functions with up to 8 channels of any combination of 12-bit ADC, 12-bit DAC or GPIO
- All on-board sensors plus expansion sensors run through the FPGA allowing for on-board data combination and analysis
- Out-of-the-box experience includes sensing scripts that can be used as a starting point to create you specific sensor fusion data capture

Documentation and Instructions

github.com/ArrowElectronics/AnalogMAX/wiki

Online

www.arrow.com/analogMAX

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Five Years Out

13_02/2020