



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

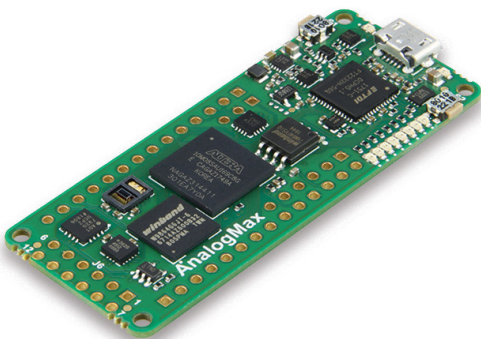
Part of the AnalogMAX series of boards, the AnalogMAX-01 platform is a full-featured sensor fusion FPGA board featuring Analog Devices' ADPD188BI integrated optical module for smoke and aerosol detection, a 3-axis micropower ADXL362 MEMS accelerometer, a $\pm 0.25^\circ\text{C}$ accurate, 16-bit digital 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 $2\ \mu\text{A}$ at a 100 Hz output data rate and 270 nA when in motion triggered wake-up mode.

The board provides additional flexibility through the AD5592R programmable 8-channel ADC/DAC/GPIO. The board can be user-configured in any combination of up to eight independent channels, allowing designers the ability to provide multiple system monitoring and control functions with a single compact board. Each channel can be configured as either a 400 kSPS ADC, 6 μsec settling time DAC or digital inputs/outputs GPIO that communicates over SPI to the FPGA. Low power consumption and compact size make the AnalogMAX-01 an ideal starting point for battery-operated applications in a wide range of building automation and environmental monitoring use cases.

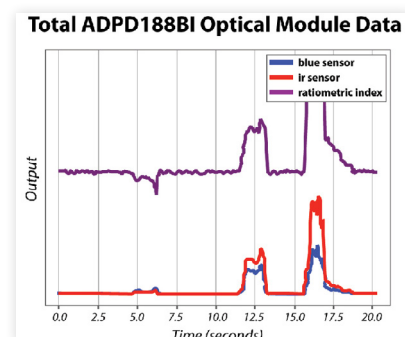
Benefits of the AnalogMAX-01 Platform

- > **Small form-factor, low power sensor, expandable board:** 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, and programmable 8-channel ADC/DAC/GPIO AD5592R. Easily adjusts to a wide range of use cases.
- > **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

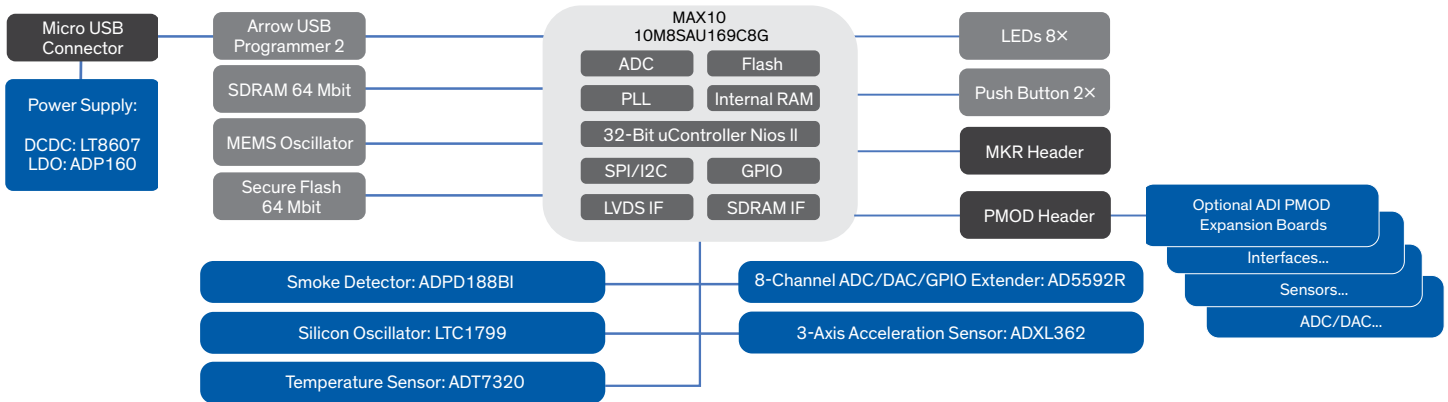


Part #: [AnalogMAX-01](#)
(2.5 × 6.15 cm)



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
- > On-board Intel® MAX® 10 FPGA to combine and preprocess multiple sensor inputs
- > 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

