

# Safari + Meerkat96™ FAE Demonstration Kit: Built for Intelligent Embedded and Edge Applications

Based on Analog Devices AD7124-8, a 16-Channel, Low Noise, Low Power, 24-Bit, Sigma-Delta ADC and NXP i.MX 7Dual SoC

The Safari + Meerkat96™ FAE Demonstration Kit is a high-precision data acquisition platform based on the 96Boards standard. The kit includes Novtech's Meerkat96™ Boards Single Board Computer (SBC) with the NXP i.MX 7Dual SoC, a multi-input multi-channel sensor interface 96Boards mezzanine card based on Analog Devices' AD7124-8 19.2kSPS 24-bit Delta-Sigma ADC, and Analog Devices and Adafruit sensors. Users can connect up to 8 differential or 15 single-ended output analog sensors, and amplify, bias, digitize and filter the signals send to the Meerkat96™ processor board, where data can be processed and sent to the cloud via Wi-Fi. This evaluation kit has been designed to accommodate analog sensors such as vibration, noise, temperature, pressure, humidity, and more.

## Benefits of the Safari + Meerkat96™ FAE Demonstration Kit

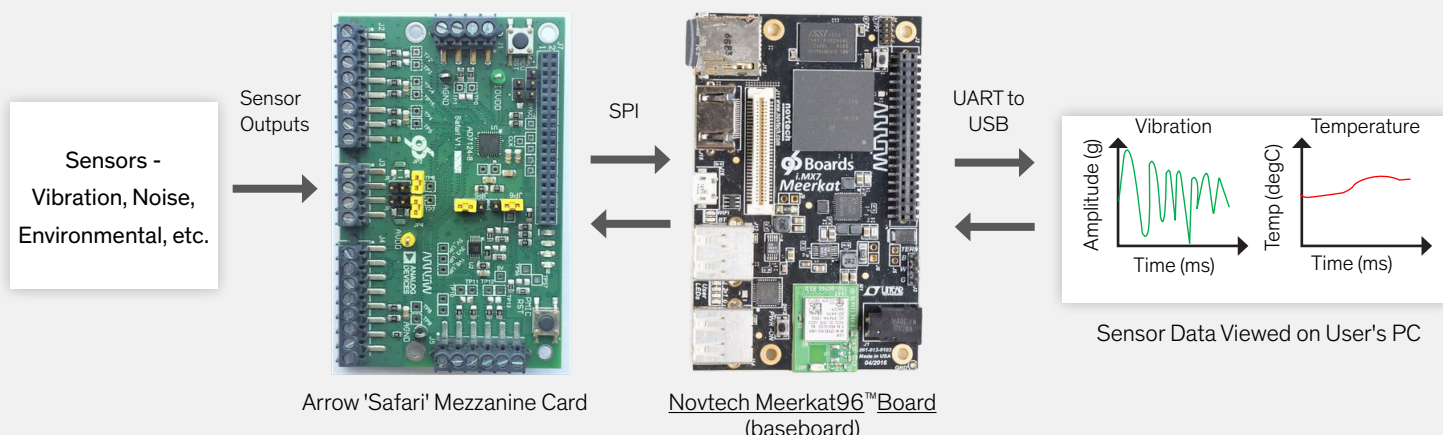
- > **High-precision analog front-end:** Ideal for applications requiring accurate data capture from several sensor outputs (8 differential inputs or 15 pseudo-differential inputs)
- > **High processing capability:** The NXP i.MX 7Dual SoC is based on Arm® Cortex®-A7 at up to 1.2 GHz per core, enabling applications requiring high-performing data compute capabilities
- > **Flexible platform:** The Safari 96board mezzanine can be used in combination with any other 96Boards to allow access to other microprocessors and FPGA options to create a combination that meets end-application requirements
- > **Compact design:** The highly integrated analog and digital circuitry enables small form-factor devices
- > **Low-power:** The combination of a low-power processor and a low-power analog-to-digital converter makes this kit a good target for battery-operated devices

## Applications

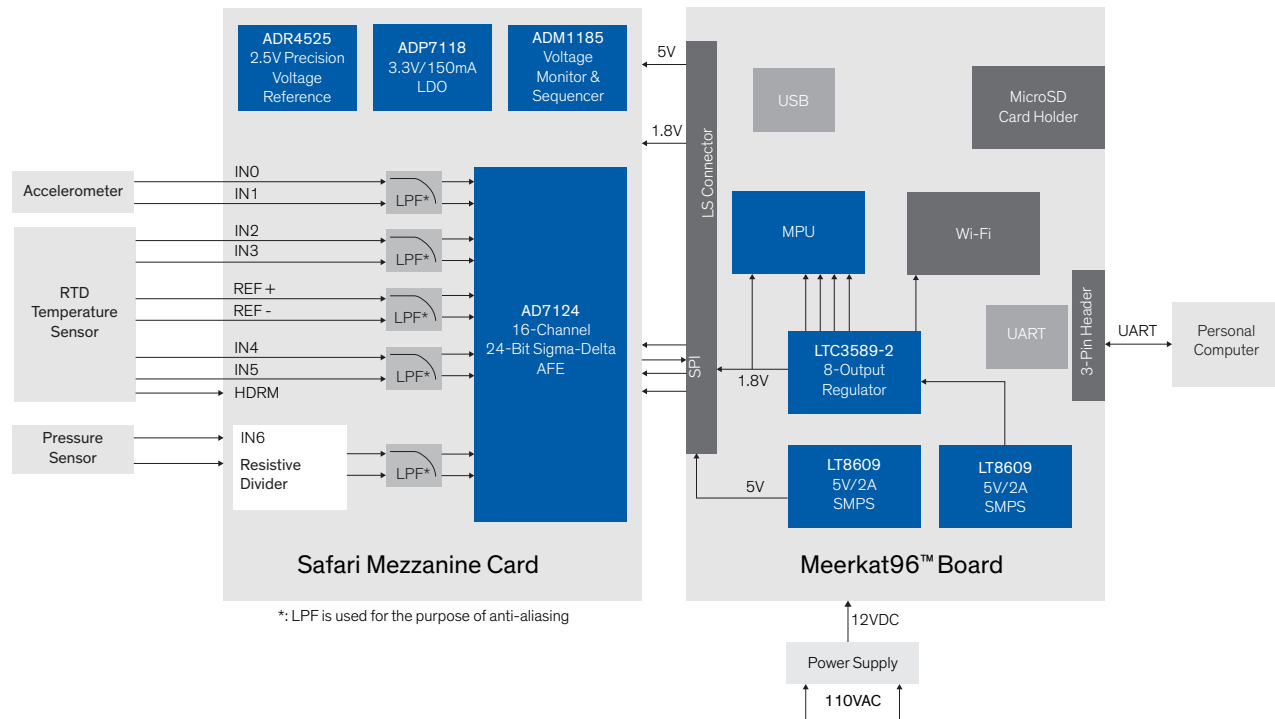
This kit is ideal for high-precision measurement use cases in:

- > Industrial automation and monitoring
- > Process control
- > Instrumentation and measurement
- > Healthcare

Safari + Meerkat96™ FAE Demonstration Kit is Ideal for Intelligent Embedded and Edge Applications



## Safari + Meerkat96™ FAE Demonstration Kit Block Diagram



## Safari Demo

In order to demonstrate some of the capabilities of the Safari board an application has been written which, when used along with the recommended hardware allows the user to view the outputs of 3 connected analog sensors in real-time on a PC.

## Features

- > Very low noise- 24 nV rms at 1.17 SPS (Low Power), 20 nV rms at 2.34 SPS (Mid Power), 23 nV rms at 9.4 SPS (High Power), for gain=128
- > Resolution: 19.2 ENOB (Gain=1), 17.6 ENOB (Gain=16), 15.7 ENOB (Gain=128) at Mid Power Mode (Data Rate 25 sps)
- > 96Boards Consumer Edition form-factor mezzanine card and motherboard
- > Multiple input multi-channel sensor interface board using Analog Devices AD7124-8, a 15-Channel 24-Bit Sigma-Delta ADC with programmable gain and digital filtering
- > NXP i.MX7 SoC based on dual-core Arm® Cortex®-A7 core at up to 1.2 GHz per core
- > 15 pseudo-differential, 8 differential or 16 single-ended sensor inputs
- > Auto channel sequencing & on-board precision voltage reference
- > Downloadable demo software displays the outputs of 3 sensors on a PC\*

## Safari + Meerkat96™ FAE Demonstration Kit Components

- > Arrow Safari Mezzanine card based on AD7124-8 (24-bit sigma-delta ADC)
- > Novtech Meerkat96™\_SBC (based on NXP i.MX 7Dual SoC)
- > Analog Devices ADXL203EB evaluation board: Precision  $\pm 1.7$  g Dual-Axis iMEMS® Accelerometer
- > Adafruit 3290 PT100 RTD temperature probe
- > USB to UART cable
- > Precision resistor

\* Demo software needs to be modified to visualize additional sensor outputs

## Key Components

- > **Analog Front-End - AD7124-8:**  
Low-power, low-noise 24-bit, sigma-delta ADC with PGA and reference
- > **Processor - NXP i.MX 7Dual SoC:**  
Dual-core Arm® Cortex®-A7 core at up to 1.2 GHz per core

## Contact Information

Contact your local Arrow FAE for a demonstration.

