CASE STUDY

Moku:Pro software defined instrument leveraging EV10AQ190 ADC cross-point switch capability and best-in-class low frequency noise performance.

June 2022

LIQUID INSTRUMENTS

TELEDYNE e2v | Semiconductors
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SUMMARY

Moku:Pro is a scalable, high-performance test solution for developing and validating next-generation devices and systems. It offers users flexibility and reconfigurability through software-defined instrumentation with 4 input and 4 output channels. Teledyne's EV10AQ190 high speed and high precision data converter was the natural choice for this platform, delivering Moku:Pro its best-in-class data acquisition performance. Its unique cross point switch enables the system to dynamically switch its channel usage and deliver high speed interleaved data. While its low frequency noise performance enables Moku:Pro blended ADC technology achieving industry leading noise performance.

MOKU:PRO – A SOFTWARE DEFINED INSTRUMENTATION PLATFORM FOR THE MOST DEMANDING RESEARCH AND ENGINEERING APPLICATIONS

Moku:Pro delivers both performance and flexibility through sophisticated FPGA-based architecture, a high-bandwidth, low noise analog front end, and robust networking and storage. All of the instruments you need are available in an instant without compromising performance for flexibility. An innovative hybrid front-end design performs frequency-dependent signal blending from multiple ADCs, delivering exceptional noise performance from acoustic to radio frequencies. With more than 10 instruments on one hardware platform, engineers and researchers can streamline their test benches or even bring the lab home with them.

By integrating test bench essentials like an oscilloscope, waveform generator, and more into a single hardware platform, Moku:Pro enables engineering teams to work from home. With a small footprint, low power consumption at 115 W, and a suite of core test instruments, pivoting to remote work has never been easier.

Moku:Pro's multi-instrument mode lets you run multiple instruments at the same time and lets you connect these instruments to each other to build a customised test system.

Advanced users can access Moku:Pro's FPGA to implement custom digital signal processing by writing their own VHDL code. This cloud-based tool is accessed directly from a browser, allowing you to develop, compile and deploy custom algorithms to your Moku:Pro without a single software download.

Find out more on Moku:Pro:
https://www.liquidinstruments.com/products/hardware-platforms/mokupro/

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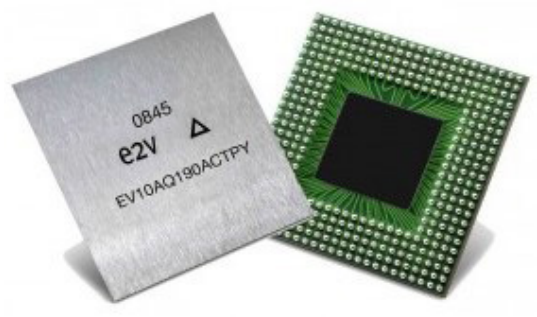
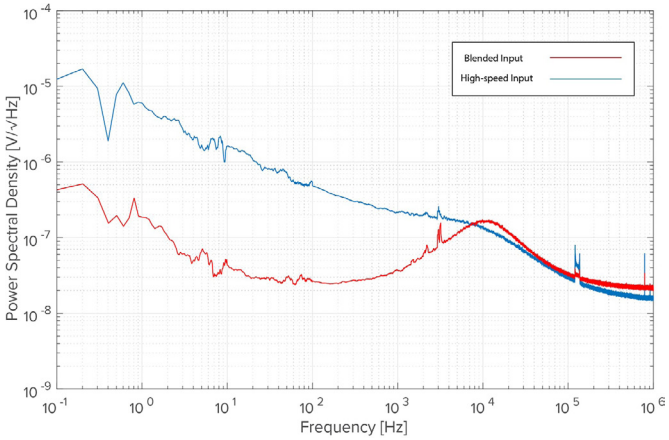
EV10AQ190 – HIGH-SPEED ADC ENABLING BEST-IN-CLASS DATA ACQUISITION IN MOKU:PRO PLATFORM



The EV10AQ190, a 10b high-speed ADC with 3.2GHz input analogue bandwidth from Teledyne e2v, is a fitted solution to high-speed and high-performance data acquisition. Through its internal cross-point switch and multi-core architecture, it is dynamically configurable to work as a quad-channel device up to 1.25GSps, a dual-channel device up to 2.5GSps or a single-channel device up to 5GSps. Moku:Pro takes advantage of this feature to support its multi-instrument capability switching between different channel configuration of the ADC.

The 10b high-speed ADC is coupled with a lower speed ADC through Liquid Instruments blended ADCs technology for industry leading noise performance. This blended ADCs technology is made possible in part thanks to the EV10AQ190 best-in-class low frequency noise (1/f noise). Both the high-speed EV10AQ190 1/f performance and the improvement brough by Liquid Instruments blended ADC technology are illustrated beside.



Building upon the success of the EV10AQ190, Teledyne e2v has more recently released a 12b successor, the EV12AQ605 pushing further the data acquisition limits in terms of resolution, sampling speed and performance while continuing the product line cross-point switch implementation ensuring flexibility in channel usage for high data acquisition applications. And improving on ease of use through features such as serial interface and easier synchronization mechanism.

Find out more on EV10AQ190:
https://semiconductors.teledyneimaging.com/en/products/data-converters/ev10aq190a

Find out more on EV12AQ605:
https://semiconductors.teledyneimaging.com/en/products/data-converters/ev12aq600/

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