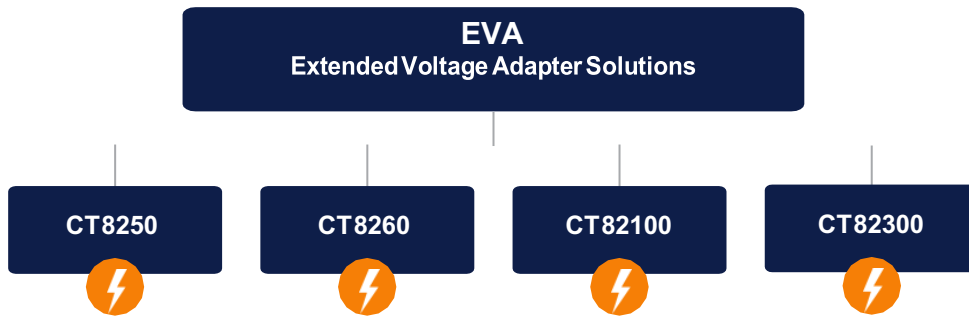


Extended Voltage Adapters

A High-Performance Solution for High-Resolution Data Acquisition



The Solution

The EVA Solutions from Genuen are 8-channel data acquisition modules for the NI FlexRIO platform that natively supports differential input signals up to $\pm 300V$. Combined with the NI FlexRIO FPGA card and a PXI chassis, the EVA Solutions offer a capable and cost effective approach enabling the configuration of high performance data acquisition systems with extended voltage range coverage quickly and easily.

The EVA Solutions provide 8 channels of high resolution, extended voltage range inputs, scalability with PXI and PXI Express, and a fully programmable FPGA. The default configuration includes simultaneous real-time data correction delivering integral linearity performance better than 0.1% across the entire signal input range. Leveraging the FlexRIO architecture, every channel can be independently programmed.

The FlexRIO FPGA platform also allows a variety of features, such as custom triggering, inline signal processing, filtering and more. In addition, the FlexRIO FPGA can be programmed to analyze and time stamp incoming signals using a variety of available analysis modules -- or the FPGA may be programmed for a custom data compression/analysis required for a specific application. This provides you with the ultimate flexibility to fit your specific instrumentation and testing needs.

Extended Voltage Challenges

If you have ever been tasked with capturing high resolution data on an array of 28V or 48V signals, then you already know the difficulty involved in finding the right test equipment solution for extended voltage range environments. Instrumentation and testing applications in areas such as nondestructive test, closed-loop test cells and high-power component testing often require increased voltage levels and sampling rates across multiple channels – a challenging problem.

Your options? Time-consuming design and build of front end filters and signal conditioning for the incoming signals to bring them down to “usable” levels. While this approach is certainly workable, it is often costly and burdensome.

Features	Benefits
Supports up to $\pm 300V$ input voltage range with true differential signal inputs	Can be used with LV-148 Testing
8 Channels of differential	Smaller overall footprint for multi-channel testing
Input Simultaneous 16-bit sampling up to 2MS/s on each independently programmable channel	Allows for flexibility in sampling sets and amount of data captured
Integral linearity performance better than 0.1% across full input range	More accurate readings that span the measured signals



What Do YOU Get?

A powerful, high performance solution that can be used in design, testing and troubleshooting.

EVA



=Key Specifications

Input Ranges (4 options)	±50V; ±60V; ±100V; ±300V
Sampling Rate	2 MS/s
Resolution	16 bits
Number of Channels	8, Differential
Typical Bandwidth	500 kHz
Integral Linearity	0.1% across full input range
Accuracy	50: ±5mV ±0.05% 60: ±6mV ±0.06% 100: ±10mV ±0.1% 300: ±30mV ±0.3%
Input Impedance	10Meg ohm, Differential
FlexRIO Compatibility	Kintex-7

PLATFORM

Since the platform is based on the FlexRIO FPGA, custom data algorithms may be easily programmed. The power of the FPGA architecture manifests itself in a number of ways. These benefits include increased performance, time to market, cost, reliability and long-term maintenance. Taking advantage of hardware parallelism, FPGAs exceed the computing power of digital signal processors (DSPs) by breaking the paradigm of sequential execution and accomplishing more per clock cycle. Further, controlling inputs and outputs (I/O) at the hardware level provides faster response times and specialized functionality to closely match application requirements.

SYSTEM



Key Specifications

Input Range	Based on EVA card
Sample Rate	2 MS/s
Resolution	16 bits
Number of Channels	24, 32, or 64; Differential
Bandwidth	≥ 1 MHz
DC Accuracy	≤ 0.1%
Input Impedance	10Meg ohm
Trip level / Direction	4 per channel
Programmable Windowing	.008V to 2V
Time Stamp	0 - 7.1 minutes (1 μSec resolution)
FlexRIO Compatibility	Kintex-7

Who Benefits?

Design and Test Engineers

The solution, designed by Genuen, uses custom, real-time data analysis leveraging FPGA's along with multiple 8-channel cards each with extended voltage front ends. The combined packages come pre-programmed with two different analysis solutions:

Edge Triggered Recording

This method uses a programmable trip level (up to 4 per channel) along with a programmable delay and a voltage reading. This is used to precisely characterize high voltage pulses that occur over a long period of time. Each event is time stamped with time and voltage level.

Windowing Triggered Recording

This method uses a programmable event window to trigger an event, then resets the event window (each event is time stamped). This is an easy way to characterize pulse patterns or step changes to a signal that may occur over long periods of time without continually recording the data.

Extended Voltage Solutions

Our EVA Solutions along with the NI FlexRIO FPGA provides you with your most streamlined option when dealing with extended voltage and high channel counts.