

FalconX

The World's Fastest X-ray Digital Pulse Processor

POWERED BY



FalconX, from XIA LLC, powered by SITORO™ technology, provides radically faster analysis than conventional pulse processors. Combining a cutting-edge hardware platform with patented SITORO™ *accelerated analysis*, Falcon X virtually eliminates the effects of pulse pile-up.

Analysis up to 10X faster with exceptional resolution

- Data usually lost to pulse pile-up are accurately recovered
- Virtually no resolution degradation from low to high count rate
- No requirement to change shaping times across count rates
- Peak position is stable across all count rates

Stable and accurate analysis at high count rates with low dead time

- Process input count rate (ICR) > 1.5 million cps
- Excellent pulse pair resolution: < 50 nanoseconds
- Detector sees all radiation events even at the highest count rates

XIA's intuitive, market-leading user interface; Versatile 'plug and play' design

- Low noise analog front end feeding high-speed 16-bit ADC
- Powerful FPGA chip drives complex SITORO™ algorithms
- Intuitive user GUI and flexible data readout formats

SITORO™ Accelerated Analysis - Revolutionizing Digital Pulse Processing

Southern Innovation's patented SITORO™ digital pulse processing technology implements advanced non-linear signal processing algorithms to decode pulse pile-up in real-time. By decoding rather than discarding pile-up events, very little data is rejected, resulting in a dramatic increase in measurement efficiency. For more information go to www.southerninnovation.com



XIA

Instruments that advance the art

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Feature List

- High input rate capability: > 1.5 Mcps
- Very high throughput – advanced SITORO™ algorithm processes nearly every event with high quality output
- Very low dead time
- Efficient pile-up recovery – very few events discarded
- Pile-up peaks virtually eliminated
- Pulse-pair resolution < 50 ns for fast detectors
- Excellent timing resolution: events time-stamped with resolution < 5 ns
- Accurate input counting rate (ICR) and live-time reporting for precise dead-time correction & count rate linearity
- Operates with virtually any x-ray detector containing a reset or resistive feedback preamplifier. Also operates with a range of gamma-ray detectors
- Supports advanced digitizer mode – processor works as a digital oscilloscope
- MCA mode operation
- List mode operation: detected events & times are passed to PC for further processing
- Synchronized spectra – create time-binned spectra based upon synchronized input signal
- USB2 interface supports very high-speed data transfers: up to 40 MB/sec peak transfer rate
- Operates from single 12V power supply (provided) – all required voltages generated internally by custom-designed, low noise power supply
- Front panel LED indicators provide real-time view of processor status

Specifications

Analog Section:

- Input connector: SMA. Input impedance: 50 ohms or 1 kohm, switch selectable
- Input attenuation: x1 or x0.5 (0 dB or -6 dB), switch selectable
- Input voltage range: $\pm 4V$, or $\pm 8V$ with x0.5 attenuation selected
- -3dB bandwidth: 50 MHz (supports rise times less than 10 ns)
- Gain control: fixed gain or variable gain, user selectable
- Variable gain: fine gain control over a x16 (24 dB) range controlled by a 16-bit DAC; Computer controllable coarse gain
- AC coupling with wide range of user selectable decay times
- DC coupling option available to support resistive-feedback preamplifiers
- Offset control: 16-bit DAC used to cover full ADC range

Digital Inputs:

- Connectors: MCX
- Voltage levels: 3.3V CMOS, 5V tolerant. Compatible with standard TTL levels
- Gate: logic input for externally timed data collection
- Sync / Ext Clk: logic input used as signal or clock source (in addition to or instead of on-board clock source)

Data I/O:

- High-speed USB2 connection offers peak data transfer speeds up to 40 MB/sec
- Computer control of front-end gain and offset
- Full computer control of advanced SITORO™ pulse processing algorithm, including pulse shape calibration, pile-up inspection criteria and output event quality selection
- Data collection control: MCA limits, bin widths, time binning, and regions of interest all under computer control
- Data outputs:
 - » Spectrum: up to 16K channels, 32 bits deep
 - » Timing: supports spectra synchronized to external signal
 - » List Mode Data acquisition is supported, allowing ultimate application flexibility
 - » Complete statistics provided, allowing for accurate correction for pile-up
 - » Wide variety of diagnostics available allowing user to optimize performance
 - » 16 auxiliary hard-wired digital I/O connections available to support custom applications

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