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

The World’s Fastest X-ray Digital Pulse Processor
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: ±4V, or ±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