

## Digital Signal Processor for X-ray Spectroscopy



APN504X is a radiation measurement device with digital signal processing (DSP) for X-ray spectroscopy. APN504X does not use conventional spectroscopy amp. It directly input the preamp signal of the detector, such as SDD, Si(Li), SSD, SiPin, etc. And then, it does digital signal processing by high-speed ADC (100MHz, 14Bit) and highly-integrated FPGA. The measurements data are Histogram and Quick scan. These data transferred to the PC via network. The application is attached without cost.

Quick scan mode is a time resolution measurement. In this mode, it sends histogram data to the PC by every outside trigger timing (Min. 10ms), and PC saves data to an HDD consecutively. This mode is most suitable for the QXAFS measurement.

- **Channel** 4CH simultaneous sampling
- **Resolution** [In the case of 19 elements SSD]
  - @5.9keV 139eV 6μs Peaking time
  - 250eV 0.5μs Peaking time \*Comparable Analog 0.25μs
 [In the case of SDD (high-resolution type)]
  - 125eV 2μs Peaking time
  - 145eV 0.5μs Peaking time \*Comparable Analog 0.25μs
- **Throughput** 1Mcps and more
- **Mode** Histogram, Quick scan
- **Multi function** Spectroscopy amp, Timing filter amp, CFD, Input and filter waveform output DAC
- **External** NIM1U
- **Interface** TCP/IP, Gigabit Ethernet
- **Software** Application and Hard/Soft manual



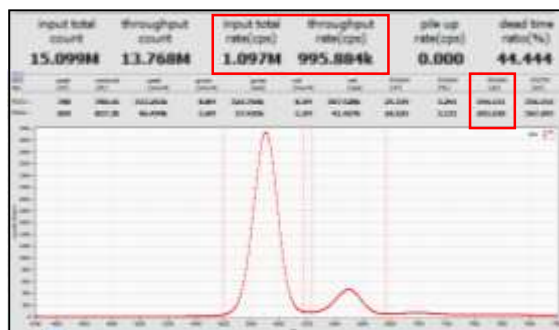
### Quick scan data example

Event#1	CH1 4096ch	CH2 4096ch	CH3 4096ch	CH4 4096ch
Event#2	CH1 4096ch	CH2 4096ch	CH3 4096ch	CH4 4096ch
	:			
Event#N	CH1 4096ch	CH2 4096ch	CH3 4096ch	CH4 4096ch

Front Rear

### Specifications

Analog input	4CH, LEMO 00 series connector Input impedance 1kΩ
Coarse Gain	x2, x4, x10, x20
Fine Gain	x0.5~x1.5
ADC	Input signal ±1V, Sampling 100MSPS Resolution 14bit
ADC Gain	4096, 2048, 1024, 512, 256ch
Trapezoidal Filter	0.05~12μs
Digital Signal Processing	Baseline Restorer, Pileup Rejecter, CFD *All parameters setting by PC.
Quick scan mode	Minimum time distance 10ms Data Size: 32768byte (= 2byte x 4CH x 4096ch)
External terminal	Filter waveform output, Clock input, GATE (Trigger) input, VETO input, Clear input
Interface	Gigabit Ethernet (TCP/IP)
External Dimensions (Unit: mm)	NIM1U 34(W) x 221(H) x 249(T) *Without connector
Weight	About 900g

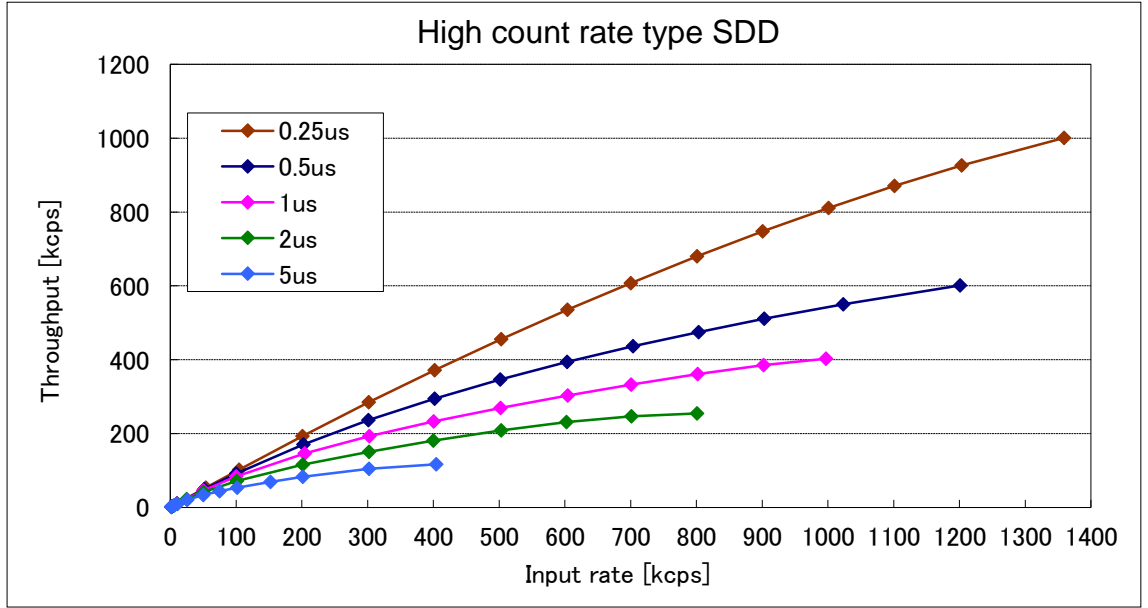


Emitted light exposure examination

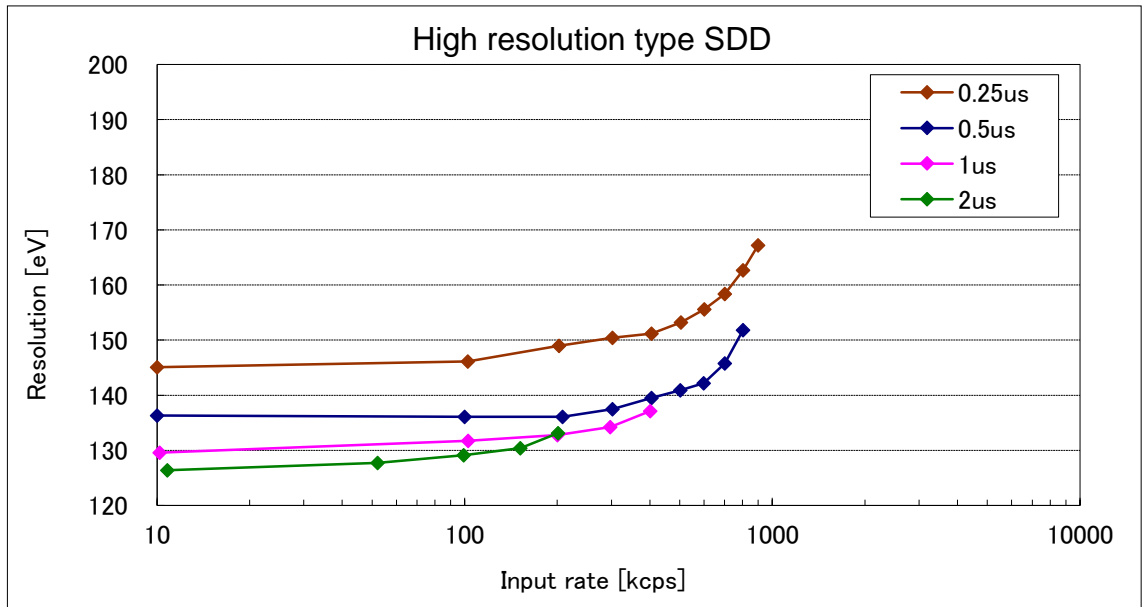
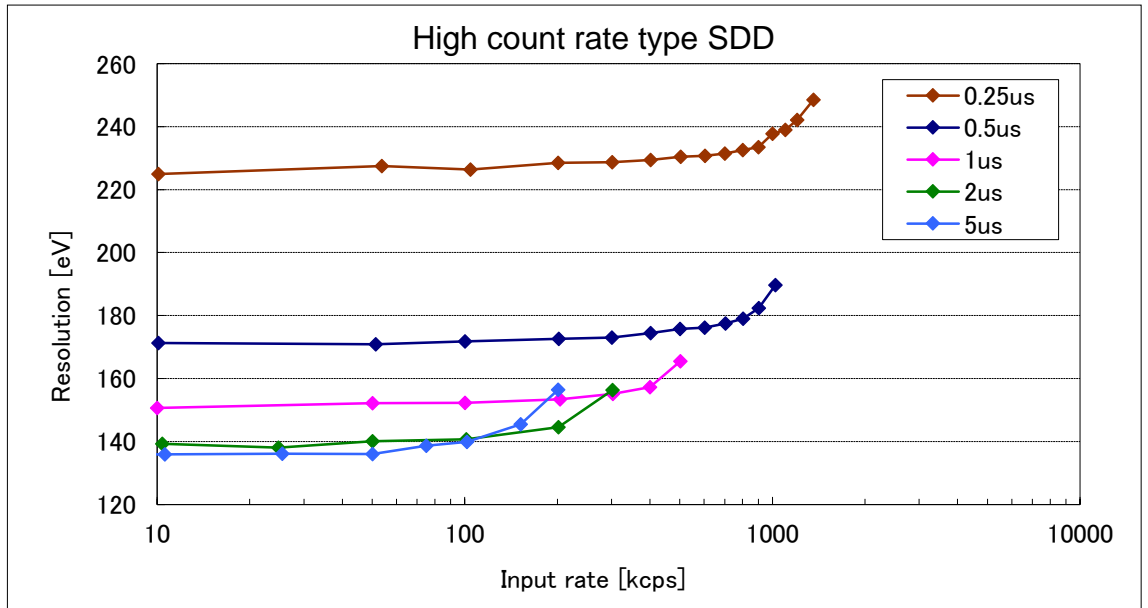
Mn target, ICR 1.1Mcps, OCR 1.0Mcps, FWHM 194eV@5.9keV MnKa 0.15μsPT

\*Images is for illustration purpose.  
\*Please note that contents may change without prior notice.

## Count rate



## Resolution



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# TechnoAP

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