# DSP APV(U)8000 Series
## Digital Signal Processor for Gamma-ray Spectrometer

VME/UNIT

20181211

Gamma-ray spectrometer equipped with Digital Signal Processing (DSP) function. Output signal of HPGe detector preamp is processed by high speed ADC (100 MHz, 14-bit) and high-density FPGA. Analyzed data using histogram, event, and waveform applications is transferred to PC via Ethernet (TCP/IP or UDP). Application software is supplied as a standard accessory.

4 Ch. DSP APU8004 (Unit)

8 Ch. DSP APV8008 (VME 6U)

## Features

| | | |
|---|---|---|
| ◆ | Number of Channels | 2, 4, 8 Channels (Simultaneous sampling) |
| ◆ | Energy resolution | 1.7 keV @ 1.33 MeV |
| ◆ | Time resolution | 0.625 ns (minimum unit) |
| ◆ | Throughput | 100 kcps and over |
| ◆ | Operation mode | Histogram, List, and Waveform |
| ◆ | Functions | Spectroscopy Amp, Timing Filter Amp, CFD, and DAC for input & filtered output |
| ◆ | Communication I/F | TCP/IP |
| ◆ | Options | UDP Data Communication, Dual-CH Coincidence and Rise Time Measurement |
| ◆ | Accessories | Application software (Windows) Instruction manual (Hardware / Software) *Input AC cable 3 P (for UNIT) |

8 Ch. DSP APV8008 (VME 6U)

VME powered crates with 7 (seven) slots
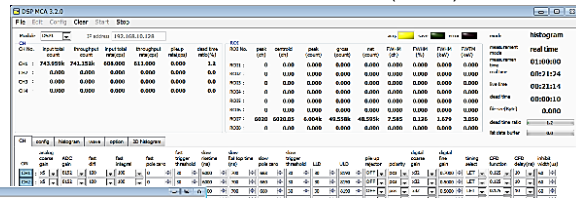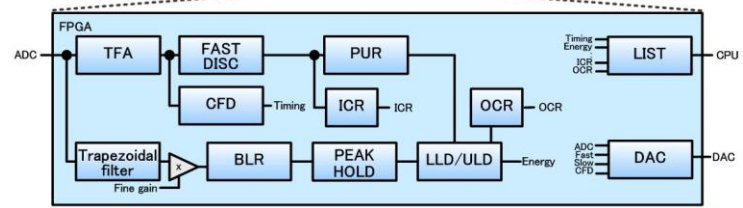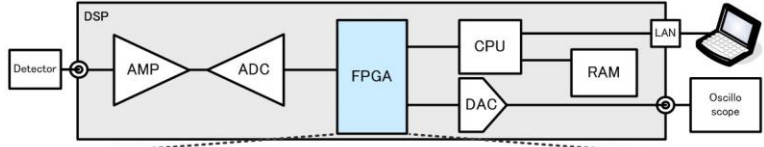
Application Data （Histogram and waveform）

Preamp

Trapezoidal Filter

DAC Output

## Specifications

| Analog Input | 2, 4, 8 Channels |
|---|---|
| Coarse Gain | x 2, x 4, x 10, x 20 |
| Fine Gain | x 0.5 to x 1.5 |
| ADC Input Signal | ±1 V |
| Input Impedance | 1 k ohm |
| Sampling Rate | 100 MSPS |
| Resolution | 14-bit |
| ADC GAIN | 8 K, 4 K, 2 K, 1 K, 512, 256 ch. |
| Trapezoidal Filter | 0.4 to 16 µs (0.01 steps) |
| Digital Signal Processing | Baseline Restorer, Pileup Rejecter, CFD, etc. |
| External dimensions (Unit: mm) | VME 6U: 20 (W) x 262 (H) x 187 (D) Unit: 300 (W) x 56 (H) x 335 (D) |
| Weight | VME 6U: about 400 g Unit: about 3300 g |
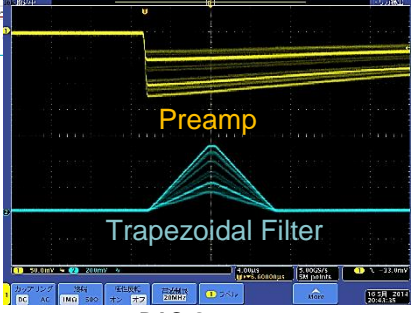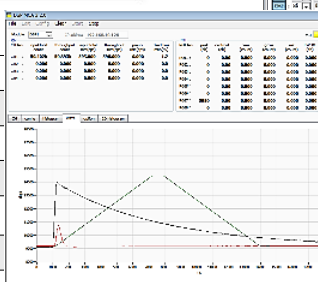
*Images is for illustration purpose.
*Please note that contents may change without prior notice.

Website

Manufacture of Radiation and Radioactivity measurement devices

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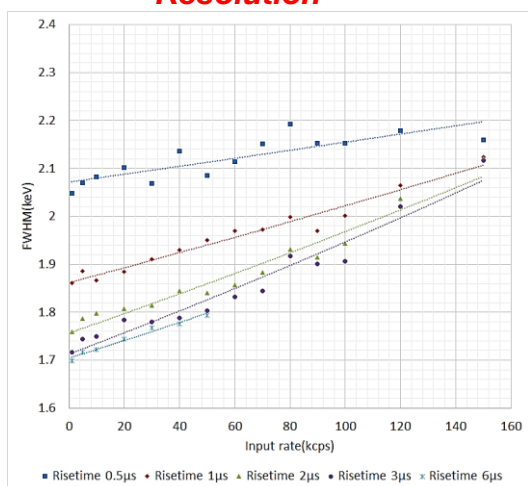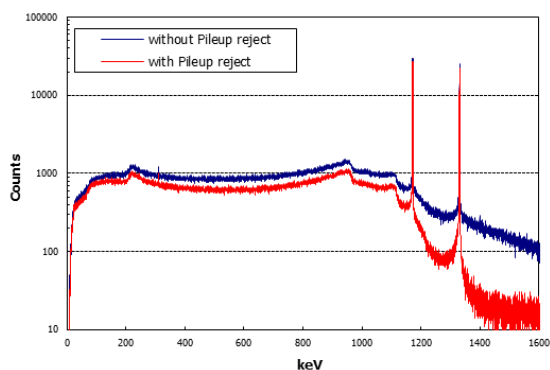## Digital Signal Processor for Gamma-ray Spectrometer

**MADE IN JAPAN**

**VME/UNIT**

### Performance

20181211

#### --- Resolution ---



■ Risetime 0.5μs ● Risetime 1μs ▲ Risetime 2μs ● Risetime 3μs ✕ Risetime 6μs

#### --- Throughput ---



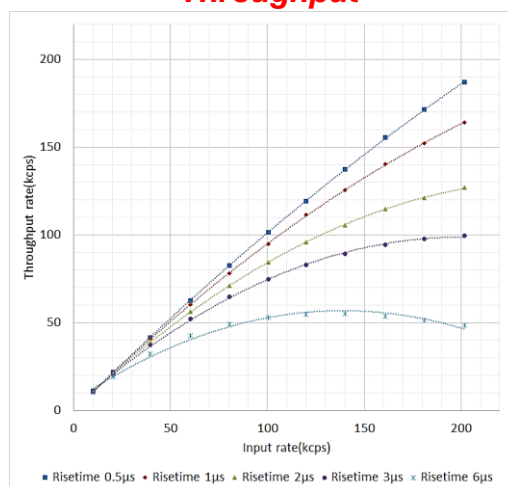■ Risetime 0.5μs ● Risetime 1μs ▲ Risetime 2μs ● Risetime 3μs ✕ Risetime 6μs

#### --- Pileup Rejection ---

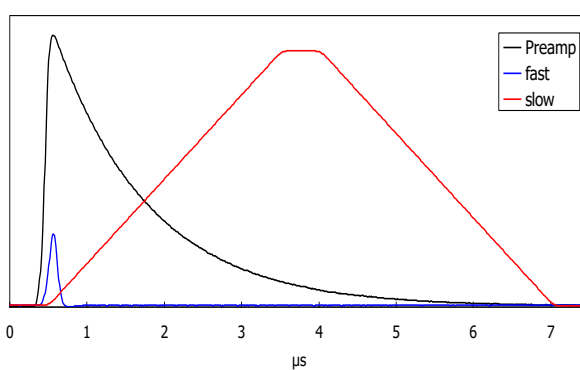

*Using our HPGe semiconductor detector.

#### --- Digital Pulse Shaping ---



| Form | Model number | Number of channels | Input SW* | Option | Price |
|------|--------------|--------------------|-----------|--------|-------|
| VME 6U | APV8002 | 2 | O | O | From 8,000 USD |
| | APV8004 | 4 | O | O | From 14,000 USD |
| | APV8008 | 8 | O | - | From 18,000 USD |
| UNIT | APU8002 | 2 | O | O | From 10,000 USD |
| | APU8004 | 4 | O | O | From 16,000 USD |
| | APU8008 | 8 | O | - | From 20,000 USD |
| Option | UDP Transfer | Upgrade Standard TCP/IP speed from 1 MB / sec. to 2 MB / sec. | | | Negotiable |
| | Coincidence | Coincidence counting: AND / OR / Coincidence time 10 ns to 500 ns | | | Negotiable |
| | Coincidence two-dimensional histogram | Create a two-dimensional histogram between CHs from coincidence measurement results | | | Negotiable |
| | Rise Time Measurement | Rise time measurement of preamplifier signal. 10 to 90% or 20 to 80%, 0.625 ns (minimum unit) | | | Negotiable |
| | Rise Wave Measurement | Add the rise waveform of the preamplifier signal to the event data | | | Negotiable |
| VME crate | For 7 (seven) slots | Power Supply : 5 V (60 A, 120 mV ripple typ.), +/- 12 V | | | Negotiable |

***Input switching**: It is possible to change the settings of the **resistance feedback** method or the **transistor reset** method.

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