

Product Catalog 2026

TechnoAP

TechnoAP Co., Ltd. – Company Profile

Bridging cutting-edge scientific research and industrial infrastructure with advanced measurement and control systems.

TechnoAP Co., Ltd. is an in-house manufacturer handling the development, design, manufacturing, and sales of cutting-edge radiation measurement solutions. Serving as a bridge between pioneering scientific discovery and industrial/social infrastructure, we deliver high-precision hardware and software that drive technological progress and public safety.

Our core strength lies in specialized measurement systems for demanding fields, including X-ray/gamma-ray measurement, synchrotron radiation, nuclear physics, neutron measurement, and radiochemistry. We seamlessly integrate fast, low-noise preamplifiers for all detector types with high-performance Digital Signal Processors (DSPs) and advanced analysis software. Notably, our high-count-rate, high-resolution technologies power state-of-the-art research worldwide—such as XAFS at large synchrotron facilities and neutron/gamma-ray discrimination.

Committed to a sustainable future, we also provide advanced solutions for next-generation fusion research, environmental radiation monitoring, and decommissioning operations. Leveraging our expertise, we deliver optimal measurement systems across diverse domains, including space applications, medical imaging (PET), and non-destructive testing for infrastructure protection.

Major Clients

Research Institutes & Laboratories

High Energy Accelerator Research Organization (KEK) RIKEN National Institute of Advanced Industrial Science and Technology (AIST) National Institute for Fusion Science (NIFS) Institute for Molecular Science (IMS) Central Research Institute of Electric Power Industry (CRIEPI) Toyota Central R&D Labs., Inc.
Comprehensive Research Organization for Science and Society (CROSS) Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
National Institute for Materials Science (NIMS) National Research Institute of Police Science (NRIIPS) The Wakasa Wan Energy Research Center Nuclear Regulation Authority (NRA)
University of Tsukuba Hospital Nuclear Safety Technology Center (NUSTEC) Japan Chemical Analysis Center (JCAC) Japan Aerospace Exploration Agency (JAXA)
Japan Radioisotope Association (JRIA) Forestry and Forest Products Research Institute (FFPRI) National Institute of Information and Communications Technology (NICT)
Kavli Institute for the Physics and Mathematics of the Universe (Kavli IPMU) Center for Nuclear Study, The University of Tokyo (CNS)
Research Center for Nuclear Physics, Osaka University (RCNP) Institute for Integrated Radiation and Nuclear Science, Kyoto University (KURNS)

Corporate Clients

Hitachi, Ltd. Hitachi-GE Vernova Nuclear Energy, Ltd. HIPUS Co., Ltd. Hitachi Zosen Corporation Hitachi High-Tech Corporation Hitachi Building Systems Co., Ltd.
Chiyoda Technol Corporation Sumitomo Electric Industries, Ltd. DENSO Corporation Global Nuclear Fuel-Japan Co., Ltd. Toshiba Corporation Mitsubishi Materials Corporation
Mitsubishi Chemical Corporation NIPPON STEEL CORPORATION Kanadevia Corporation Mirai Imaging Inc. Randsviv Co., Ltd. Hamamatsu Photonics K.K. EX-Fusion Inc.
NTT DATA Corporation KDDI CORPORATION SoftBank Corp. NEC Corporation CMI Co., Ltd. OXIDE Corporation Shimizu Corporation TAISEI CORPORATION
TAKENAKA CORPORATION HAZAMA ANDO CORPORATION Bio Fuel Co., Ltd. Yamazaki-Biscuits Co., Ltd.

Universities & Educational Institutions

Ibaraki University Ibaraki Prefectural University of Health Sciences University of Tsukuba Hokkaido University Muroran Institute of Technology Rakuno Gakuen University
Iwate University Tohoku University Hirosaki University Fukushima University Yamagata University Kanagawa University Kanto Gakuin University Kitasato University
Keio University Senshu University The University of Electro-Communications Chiba University Tokai University Tokyo Gakugei University Tokyo Institute of Technology
The University of Tokyo Tokyo University of Agriculture and Technology Tokyo University of Science Tokyo Metropolitan University Tokyo City University Toho University
Nihon University National Defense Academy of Japan Rikkyo University Yokohama National University Waseda University Sophia University Gunma University
Ashikaga University Chubu University Shizuoka University Tsuru University University of Toyama Nagoya University Niigata University The Nippon Dental University
University of Fukui Fukui University of Technology University of Yamanashi Osaka University Osaka Sangyo University Osaka City University Osaka Prefecture University
Kyoto University of Education Kyoto Institute of Technology Kyoto University Kindai University Konan University University of Hyogo Ritsumeikan University
Nara Institute of Science and Technology The University of Shiga Prefecture Okayama University Hiroshima University Kochi University of Technology Tokushima University
Kyushu University Fukuoka University Kumamoto University Fukuoka Institute of Technology University of the Ryukyus

International Clients

[Denmark] University of Southern Denmark
[Australia] Commonwealth Scientific and Industrial Research Organisation (CSIRO)
[China] Peking University Tsinghua University National Institute of Metrology, China (NIM) Institute of Physics, Chinese Academy of Sciences
North China Electric Power University University of Science and Technology of China (USTC) Heilongjiang Academy of Sciences Sun Yat-sen University
School of Space Science and Physics, Shandong University (Weihai) Institute of Modern Physics, Chinese Academy of Sciences Jilin University Northeast Normal University
Shaoxing University China Jiliang University
[Poland] The Henryk Niewodniczański Institute of Nuclear Physics Polish Academy of Sciences (IFJ PAN)
[Romania] Horia Hulubei National Institute of Physics and Nuclear Engineering (IFIN-HH)
[Vietnam] Hanoi University of Science and Technology (HUST)
[Czech Republic] Charles University
[Ecuador] Ministry of Non-Renewable Natural Resources
[South Korea] Seoul National University

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Research & Education

We meet the diverse needs of research institutes, corporations, and universities worldwide—contributing to scientific advancement and talent development through measurement technologies spanning cutting-edge research to educational experiments. We comprehensively develop, manufacture, and sell total radiation measurement solutions. Our integrated portfolio includes various detectors (semiconductor, scintillation), charge-sensitive amplifiers, digital processing equipment (DSPs, DPPs), multichannel analyzers, and DAQ/spectral analysis software.

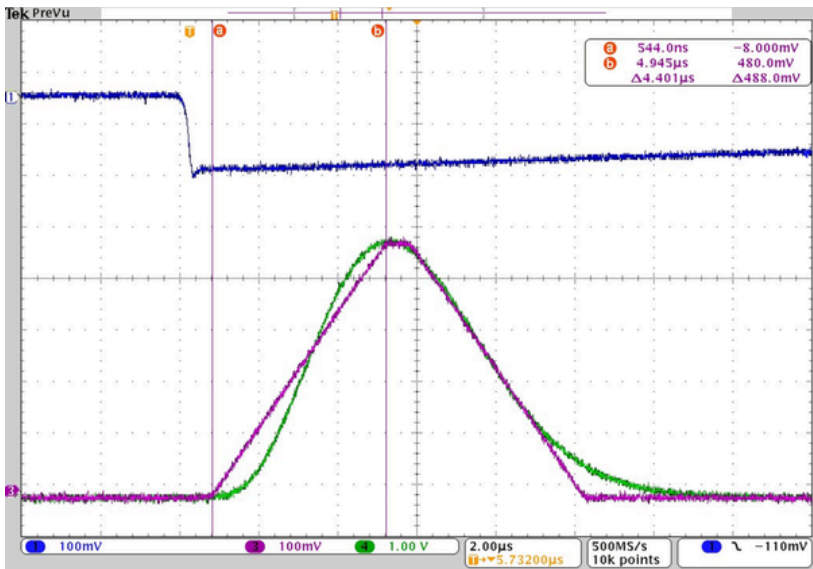
Digital Signal Processor

Digital Signal Processor

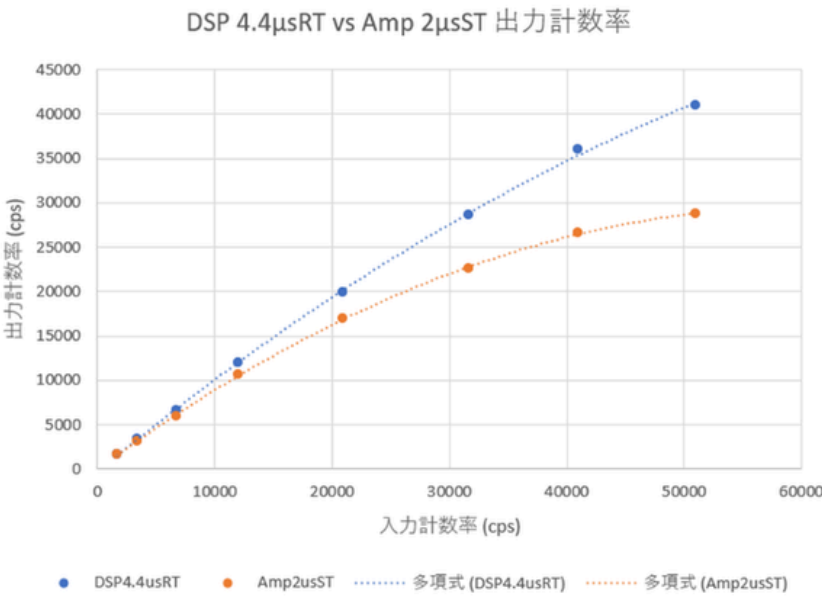
Signals from the charge-sensitive amplifier undergo DSP trapezoidal filtering to acquire precise energy data. A high-resolution ADC minimizes noise for superior energy resolution. Optional waveform output is also available, making it ideal for pulse-shape analysis with multi-element HPGe detectors.

Trapezoidal Filter

Digital Signal Processing (DSP) uses "trapezoidal filtering" instead of traditional analog "Gaussian shaping." Featuring a flat top at the pulse peak, it compensates for signal rise-time variations (ballistic deficit) common in coaxial HPGe detectors, preventing energy resolution degradation.



Compared to Gaussian shaping, trapezoidal filtering returns to the baseline faster, minimizing dead time and enabling superior output count rates and energy resolution under high count-rate conditions. Executed in real time on an FPGA, these operations combine high-precision AD conversion with a robust Baseline Restorer (BLR) algorithm to ensure reliable spectral analysis across all count-rate ranges.



Digital Signal Processor

Digital Signal Processor Series

Signals from the charge-sensitive amplifier undergo DSP trapezoidal filtering to capture precise energy data. A high-resolution ADC minimizes noise for exceptional energy resolution. Optional waveform output is also available, making it ideal for pulse-shape analysis with multi-element HPGe detectors.



APV8016A/APV8008A

This high-performance 16/8-channel VME Digital MCA features a high-speed 100 MSPS ADC. It delivers high-resolution energy spectra and precise timing information, making it ideal for multi-detector configurations.

Analog Input	16CH/8CH
ADC	100Msps, 16bit
ADC Gain	up to 16k channels



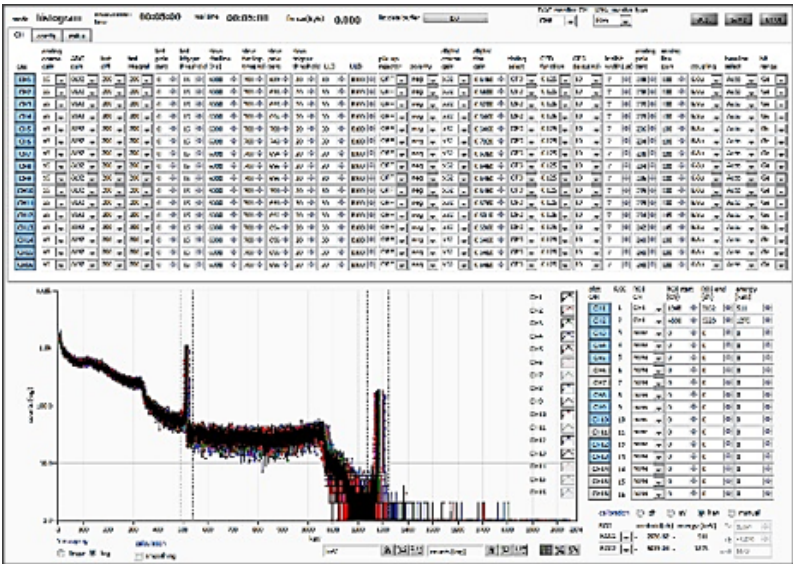
APV8032

Designed for large-scale systems, this 32-channel VME-bus parameter model delivers efficient data acquisition and high processing capacity.

Analog Input	32CH
ADC	100Msps, 14bit
ADC Gain	up to 4k channels



CBL-HIF-LEMO16



Data Acquisition Software



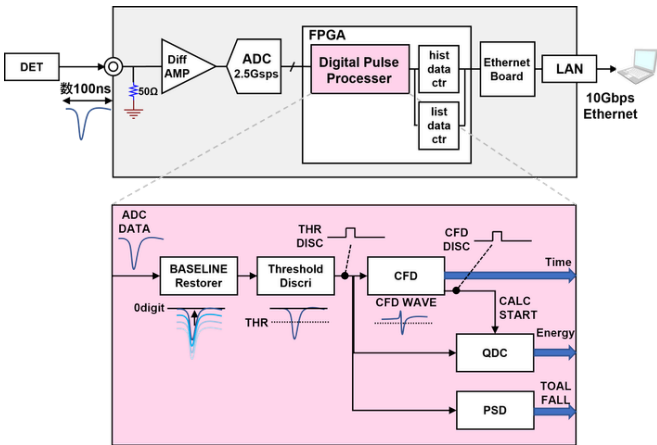
Desktop Type

*All models are also available in a desktop type.

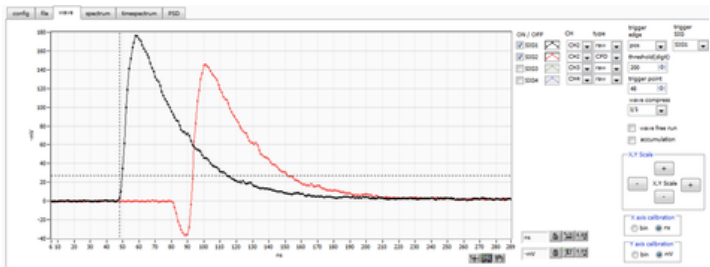
Digital Pulse Processor

Digital Pulse Processor

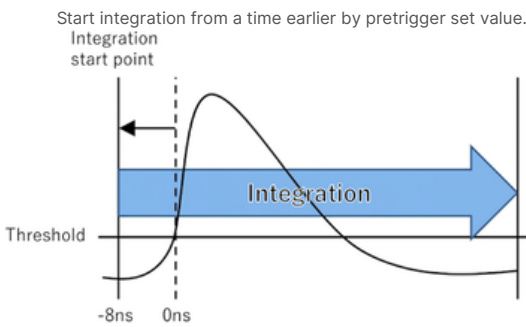
A Digital Pulse Processor (DPP) digitizes high-speed pulse waveforms from radiation detectors for detailed analysis. It is ideal for short pulses (a few to several hundred nanoseconds) from scintillation detectors. Using a high-resolution ADC and an onboard FPGA, this product performs advanced DSP—including QDC (energy), TDC (timing), and PSD (pulse shape discrimination). FPGA parallel processing minimizes dead time, ensuring stable measurements even at high count rates.



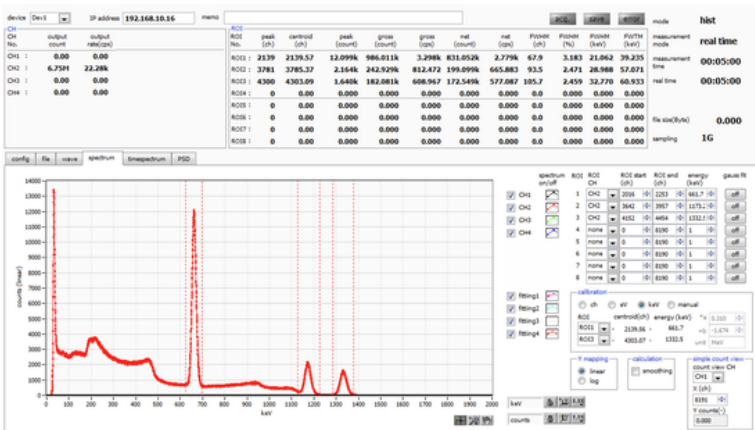
Unlike conventional analog systems, dedicated PC software offers intuitive operation. The user-friendly "Wave Mode" works like an oscilloscope, allowing real-time inspection of raw waveforms and noise. Users can easily fine-tune QDC parameters—such as Threshold, Pre-trigger, and Integral Range—directly on-screen.



Wave Mode (Raw ADC waveform: Black, CFD waveform: Red)



This streamlined workflow enables setup to energy spectrum acquisition (Hist Mode) in just a few minutes. Despite its compact hardware, this innovative module achieves exceptional energy resolution—3.18% with a LaBr₃(Ce) detector.



Data Acquisition Software

Digital Pulse Processor

Digital Pulse Processor Series

This digitizer directly inputs fast pulses from PMTs, MPPCs, or preamplifiers and processes them via a high-speed ADC. TechnoAP's Digital Pulse Processor uses digital CFD and QDC to acquire precise energy and timing data. Real-time FPGA polynomial interpolation enables time resolution superior to the sampling interval with improved differential linearity—all in just 100 ns. Optional functions like PSD and LIST-WAVE are also available.



APV825G2 Series

This measurement board features an ultra-fast, high-resolution ADC (2.5 GSPS, 12-bit). The 1 Gbps Ethernet model (APV825G2-1G) offers high-precision signal processing with versatile communication and easy operation. The 10 Gbps Ethernet model (APV825G2-XG) leverages high data throughput to enable ultra-fast acquisition of up to 1 million waveforms per second.

APV825G2-1G

Analog Input	2CH
ADC	2.5Gsp/s, 12bit
Features	Equipped with an ultra-high-speed 2.5Gsp/s high-resolution 12bit Flash ADC

APV825G2-XG

Analog Input	2CH
ADC	2.5Gsp/s, 12bit
Features	2.5Gsp/s, 12bit Flash ADC with 10 Gigabit Ethernet Interface



APV8108-14 / APV8104-14 / APV8102-14

This high-speed, multi-channel DPP features a 1 GSPS / 500 MSPS, 14-bit ADC with ultra-fine time resolution. Optimized for precise coincidence and Time-of-Flight (TOF) measurements, it is ideally suited for large-scale, multi-channel systems.

Analog Input	8CH / 4CH / 2CH
ADC	1Gsp/s, 14bit
Communication	Gigabit Ethernet (TCP/IP and UDP)

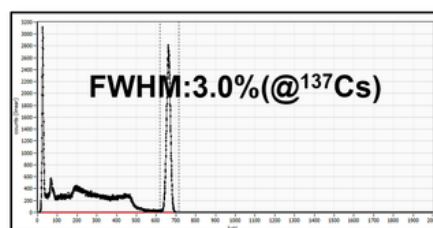


APV8516-14 / APV8508-14 / APV8504-14

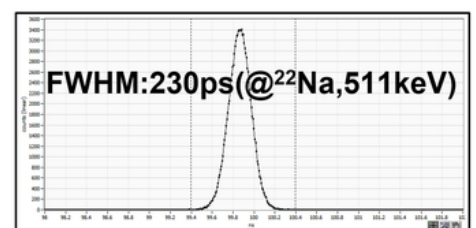
Analog Input	16CH / 8CH / 4CH
ADC	500Msp/s, 14bit
Communication	Gigabit Ethernet (TCP/IP and UDP)



*All models are also available in a desktop type.



Energy Spectrum
Detector: 1-inch LaBr₃(Ce) Scintillator



Time Spectrum
Detector: 1-inch LaBr₃(Ce) VS LaBr₃(Ce)

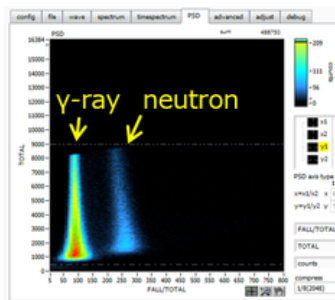
Digital Pulse Processor



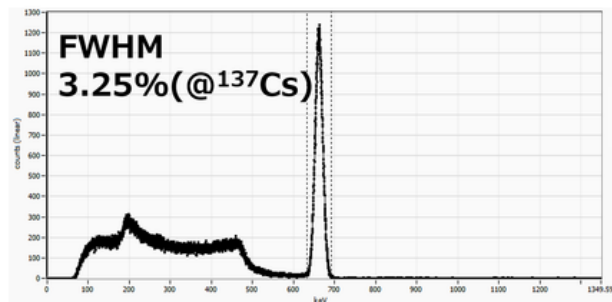
APU8504S

Equipped with four channels of high-speed 500 MSPS, 14-bit ADCs, this system operates on a single 12 V power supply. Its compact footprint enables seamless deployment from laboratories to field applications.

Analog Input	4CH
ADC	500Msps, 14bit
Throughput	> 2 Mcps / channel
Time Resolution	Coarse : 2ns Fine : 7.8 ps LSB



PSD機能、n-γ弁別
スチルベンシンチレーション検出器(φ50.8×50.8mm)



Energy Spectrum
Detector: 1-inch LaBr₃(Ce) Scintillator

Desktop Digital Pulse Processor with Built-in Power Supply

This compact, lightweight desktop instrument integrates a Digital Pulse Processor and high-voltage power supply. Eliminating external modules and complex wiring, it handles everything from power supply to data analysis in a single unit—just by connecting a detector. High-speed data transfer via Gigabit Ethernet enables instant, space-saving system setup on a PC.



APU301

Featuring two processing channels, a high-voltage power supply, and an MPPC bias supply, this unit enables immediate measurement with minimal setup. Powered by FPGA real-time polynomial interpolation, it delivers exceptional time resolution and accurate data acquisition for single-unit time-spectrum measurement.

Analog Input	2CH
ADC	1Gsps, 14bit
Throughput	> 2 Mcps / channel
Time Resolution	Coarse : 1ns Fine : 3.9ps LSB

APU201 Series

The APU201-G features a 1 GSPS ADC to deliver superior time resolution, while the APU201-M offers an economical choice equipped with a 500 MSPS ADC.

APU201-M

Analog Input	1CH
ADC	500Msps, 14bit

APU201-G

Analog Input	1CH
ADC	1Gsps, 14bit



Digital Spectrometer

Digital Spectrometer Series

This high-performance desktop instrument integrates a digital MCA, high-voltage power supply, and preamplifier power supply into an all-in-one package. A high-speed ADC (100 MSPS, 16-bit) with FPGA trapezoidal shaping delivers exceptional energy resolution and high count-rate performance. Featuring Gigabit Ethernet and intuitive software, it streamlines the workflow from setup to analysis. Compatible with HPGe, CdTe, Si, and scintillation detectors, this is the premier choice for cutting-edge research.



APU101 Series

This desktop digital spectrometer integrates a digital MCA, high-voltage power supply, and preamplifier power supply in an all-in-one package. Accepting direct detector input, a high-speed ADC (100 MSPS, 16-bit) with FPGA trapezoidal shaping processes signals and transfers spectra via Gigabit Ethernet. Two HV options are available: Type G ($\pm 5000\text{ V}$ / 0.67 mA) and Type S ($\pm 4000\text{ V}$ / 1 mA). Real-time analysis software is included.

APU101G

Analog Input	1CH
ADC	100Mps, 16bit
HV Supply	$\pm 5000\text{V}$ (Max 0.67mA)

APU101S

Analog Input	1CH
ADC	100Mps, 16bit
HV Supply	$\pm 4000\text{V}$ (Max 1mA)



APU102 Series

This desktop digital spectrometer features dual inputs with two-channel high-voltage and preamplifier power supplies, enabling simultaneous or independent operation of two semiconductor detectors. Dedicated real-time software operates independently for each channel, providing advanced analytical capabilities.

APU102G

Analog Input	2CH
ADC	100Mps, 16bit
HV Supply	$\pm 5000\text{V}$ (Max 0.67mA)

APU102S

Analog Input	2CH
ADC	100Mps, 16bit
HV Supply	$\pm 4000\text{V}$ (Max 1mA)



Bundled Spectrum Analysis Software

Hybrid Digital Spectrometer

Hybrid Digital Spectrometer Series

This hybrid DSP board digitally processes both anode signals from scintillation detectors and preamplifier signals from semiconductor detectors. Combining real-time DPP with high-speed DSP capabilities, its pipeline processing achieves dead-time-free operation with exceptional time and energy resolution.

Supporting sophisticated coincidence, anti-coincidence, GATE, and VETO processing, it excels in diverse simultaneous measurements across various detector types, including HPGe.



APV8M42



APV8M22

APV8M42

For Scintillation Detectors

4CH

ADC: 500Mps, 14bit

For Semiconductor Detectors

2CH

ADC: 62.5Mps, 16bit

APV8M22

For Scintillation Detectors

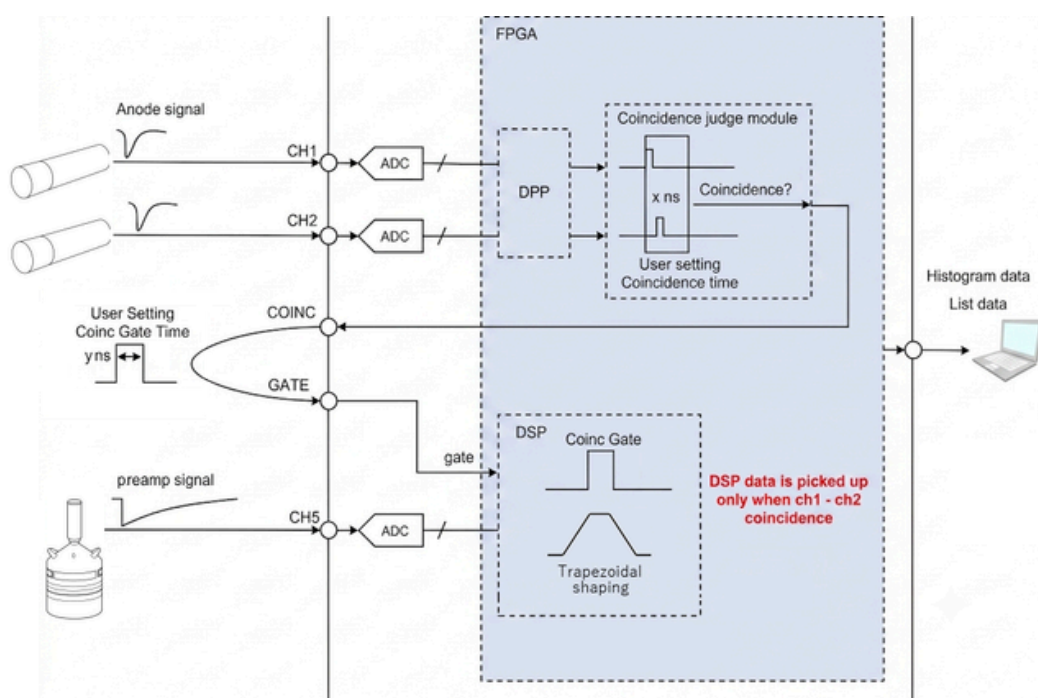
2CH

ADC: 1Gsps, 14bit

For Semiconductor Detectors

2CH

ADC: 62.5Mps, 16bit



Coincidence Logic Output

Multi Channel Analyzer

USB Series

This high-speed MCA features a pocket-sized form factor and a state-of-the-art SAR ADC. Operating on USB bus power, it eliminates the need for an AC adapter. It includes dedicated spectrum analysis software with real-time updating. Widely used for laboratory research and university education, this high-performance instrument offers exceptional affordability.



APG7300D

This compact Multi-Channel Analyzer supports high-resolution, high-speed data processing for stable spectrum measurement. It is ideal for both research and educational applications.

Analog Input	1CH
Fixed Dead Time	1.0μs
ADC Gain	up to 16k channels
Mode	Histogram



APG7302B

This pocket-sized, high-speed 2-channel MCA features a SAR ADC with a fixed 1.0 μs dead time. It supports multiple operating modes, including Histogram, List, Coincidence, and MCS.

Analog Input	2CH
Fixed Dead Time	1.0μs
ADC Gain	up to 16k channels
Mode	Histogram, List, MCS, Coincidence



APG7400B

This pocket-sized, high-speed 4-channel MCA features a SAR ADC with a fixed 1.5 μs dead time and comes standard with real-time spectrum analysis software. In addition to Histogram mode, it natively supports List mode (logging time, amplitude, and channel), Coincidence, and MCS modes.

Analog Input	4CH
Fixed Dead Time	1.5μs
ADC Gain	up to 4k channels
Mode	Histogram, List, MCS, Coincidence



APG7305B

This compact, USB-connected MCA features an integrated digital amplifier. Its semi-Gaussian pulse shaping ensures stable, high-resolution measurements, with shaping parameters easily adjustable via the included software.

Analog Input	1CH
Fixed Dead Time	1.5μs
ADC Gain	up to 4k channels
Mode	Histogram, Wave Readout

Multi Channel Analyzer

Desktop Series

This high-speed 8-channel MCA features a latest-generation SAR ADC, Gigabit Ethernet, and real-time spectrum analysis software. It offers selectable 8k or 16k histogram channels, while fast peak detection and a 1.0 μ s fixed dead time deliver high throughput. Standard Ethernet protocols enable easy system integration.



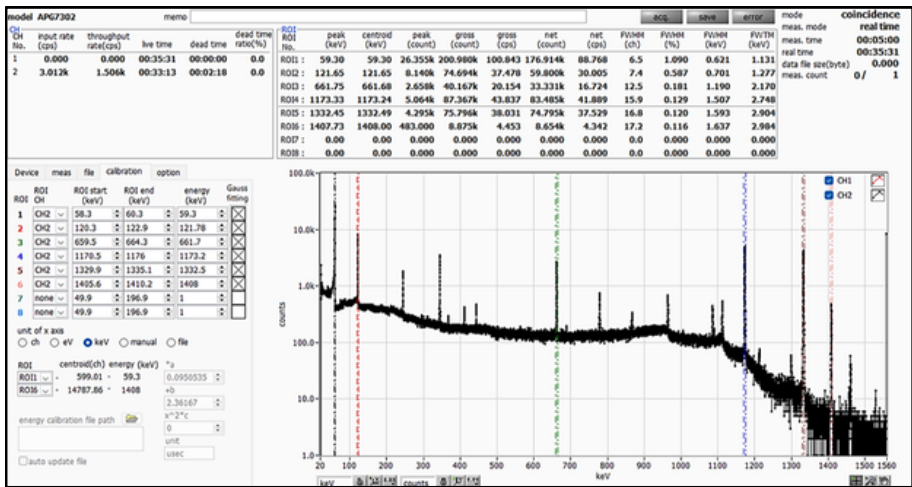
APU7308-8k

Analog Input	8CH
Fixed Dead Time	1.0 μ s
ADC Gain	up to 16k channels
Mode	Histogram, List, MCS



APU7308-16k

Analog Input	8CH
Fixed Dead Time	1.0 μ s
ADC Gain	up to 16k channels
Mode	Histogram, List, MCS



Histogram Mode

High Voltage Power Supply

This standard VME-bus high-voltage (HV) power supply board provides independent control for up to four channels. It supports network remote operation via the included application software.

* HV polarity is specified upon ordering.



APV3302G / APV3304G

Maximum Ratings: $\pm 5000\text{ V}$ / $\pm 0.67\text{ mA}$

Output Connectors	SHV Connectors APV3302G: 2-ch (Independent) APV3304G: 4-ch (Independent)
Output Voltage	Max. Rating: $\pm 5000\text{ V}$
Output Current	Max. Current: $\pm 0.67\text{ mA}$
Ripple	$0.01\%\text{Vp-p}$



APV3302S / APV3304S

Maximum Ratings: $\pm 4000\text{ V}$ / $\pm 1.0\text{ mA}$

Output Connectors	SHV Connectors APV3302S: 2-ch (Independent) APV3304S: 4-ch (Independent)
Output Voltage	Max. Rating: $\pm 4000\text{ V}$
Output Current	Max. Current: $\pm 1.00\text{ mA}$
Ripple	10mVp-p (typ.)



APV3018

Maximum Ratings: $\pm 1000\text{ V}$ / $\pm 0.67\text{ mA}$

Output Connectors	SHV Connectors: 8-ch (Independent)
Output Voltage	Max. Rating: $\pm 1000\text{ V}$
Output Current	Max. Current: $\pm 1.00\text{ mA}$
Ripple	$0.01\%\text{Vp-p}$



APV3008

Designed to drive MPPCs, this HV board provides up to 8 independent channels. Simply set the target voltage to deliver precise, temperature-compensated bias voltages for each channel.

Output Connectors	R03-R05F Connector: 8-ch (Independent)
Output Voltage	Both 0: $+40.0\text{ V}$ (Min.) Both 9: $+49.9\text{ V}$ (Standard)
Temperature Compensation	Temperature Compensation Function for Output Voltage

* Customizable up to $+89.9\text{ V}$ depending on the application.

Preamplifier Power Supply



APV4004

This VME-sized power supply board for 4-channel charge-sensitive preamplifiers delivers $\pm 12\text{ V}$ and $\pm 24\text{ V}$ (over 50 mA each) to every channel. All four outputs utilize D-sub 9-pin connectors with NIM-compliant pin assignments.

Output Connectors	D-sub 9-pin Connector: 4-ch (Independent)
Output Voltage	$+12\text{ V}$, $\geq 50\text{ mA}$ -12 V , $\geq 50\text{ mA}$ $+24\text{ V}$, $\geq 50\text{ mA}$ -24 V , $\geq 50\text{ mA}$
Output Current	

Pin Assignment

- 1 : GND
- 2 : GND
- 3 : NC
- 4 : $+12\text{ V}$
- 5 : NC
- 6 : -24 V
- 7 : $+24\text{ V}$
- 8 : NC
- 9 : -12 V



CBL-DSUB9-DSUB9-3
Connector: D-sub 9-pin
Left: APV4004 side
Right: Preamp side
Length: 3 m

* Total output current for all 4 channels must be 230 mA max.

Preamplifier



APG1500

Designed for fast scintillators, this high-speed preamplifier features a rise time of 20 ns or less and adjustable input capacitance up to 2200 pF.

Applications	Fast Scintillation Detector (Preamplifier for $\text{LaBr}_3(\text{Ce})$ / CeBr_3)
Rise Time	≤ 20 ns
Noise	Low Noise (≤ 100 μVrms)
Feature	High Count Rate (1 Mcps or more)



APG1700

This high-speed amplifier features switchable 10x/100x gain. With a rise time of less than 1 ns and ultra-low noise, it effectively processes fast output pulses from various detectors.

Applications	High-Speed Analog Signal Amplification
Rise Time	Rise Time < 1 ns
Noise	Equivalent Input Noise: ≤ 75 μVrms
Feature	Gain Switchable ($\times 10$ / $\times 100$) / DC Coupling



APG1701

This high-speed discriminator features a fast 1 ns rise time. Delivering real-time TTL output and low-jitter timing, it is ideal for Time-of-Flight (TOF) systems.

Applications	High-Speed Timing Measurement
Rise Time	Rise Time < 1 ns
Noise	Low Timing Jitter
Feature	5 V TTL Output / Polarity Switch



APG1603 / APG1603-SHV

This low-noise charge-sensitive preamplifier for CdTe and CZT detectors supports up to 1000 V bias and delivers 750 eV energy resolution. The APG1603-SHV variant features an SHV connector for up to 2000 V using the dedicated CBL-APG1603 cable.

Applications	Semiconductor Detector (Preamplifier for CdTe / CZT)
Rise Time	Rise time < 40 ns
Noise	Ultra-Low Noise (≤ 750 eV at 0 pF)
Feature	High Bias Voltage Support (Max. ± 1000 V)

NIM Module



Compliant with the international NIM standard, these high-performance front-end electronic modules leverage advanced analog technology for maximum stability.

The versatile lineup includes spectroscopy amplifiers (A101 / A1008) for ultra-low-noise signal amplification, a constant-fraction differential discriminator (A201) for nanosecond timing extraction, and a Time-to-Amplitude Converter (TAC, A301).

Offering superior linearity and long-term stability, this series provides reliable measurement solutions for nuclear physics research, university labs, and industrial monitoring.

A101

This high-performance spectroscopy amplifier accurately amplifies and shapes radiation detector preamplifier signals.

Category	Spectroscopy Amplifier
Gain	×1 to ×1500
Noise Performance	EIN: ≤ 5 μV (at 2 μs, Gain ≥ 100)
Integral Nonlinearity	< ±0.05% (at 2 μs)

A201

This constant-fraction differential discriminator delivers high-precision timing signals, ideal for coincidence systems and timing applications.

Category	Constant Fraction Differential Discriminator
Discri Mode	Integral, Differential
Timing Mode	Constant Fraction (CF) Slow Rise-Time Rejection (SRT)
Functions	Blocking / Walk Adjustment Monitor

A1008

This versatile 8-channel spectroscopy amplifier is fully compatible with HPGe detectors.

Category	Spectroscopy Amplifier
Gain	×1 to ×750
Noise Performance	EIN: ≤ 4 μV (at 2 μs, Gain ≥ 100)
Integral Nonlinearity	< ±0.05% (at 2 μs)

A301

This Time-to-Amplitude Converter (TAC) converts time intervals into analog amplitude signals for high-precision timing.

Category	Time-to-Amplitude Converter
Time Range	20 ns to 1 ms (15 steps)
Input Signal	TTL or NIM Logic Pulse / 0 to 10V Pulse
Gate Mode	Coincidence / Anticoincidence

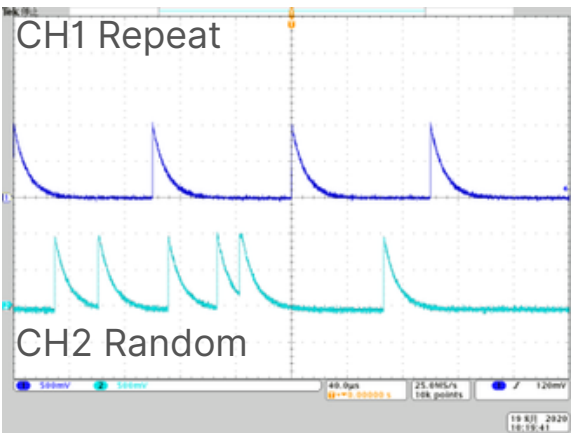
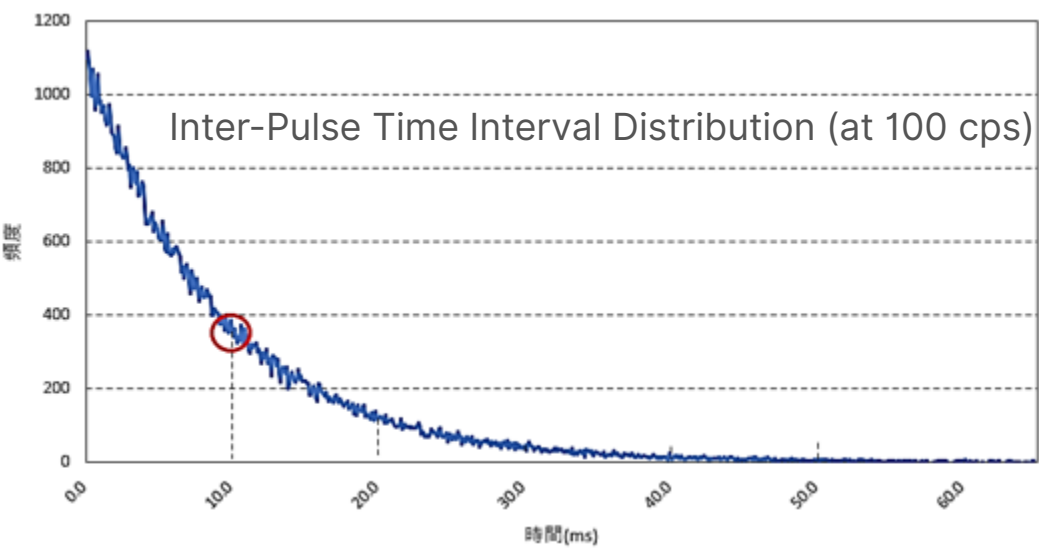
Random Pulse Generator

Utilizing DSP to simulate radiation decay pulses, this device features a front LCD for configuring amplitude, rise/decay times, and period. It is available in a standard 2-width NIM module or desktop version.

APN6001



NIM-Type



APU6001



Desktop-Type



Output	2CH
Output Impedance	50Ω
Count Rate	1cps ~ 1Mcps (1Hz ~1MHz)
Mode	Random or Repeat

VME Power Crate

Designed for VME 6U boards, this power crate comes in 3, 4, or 20-slot configurations. It features an EIA 7U form factor with optional EIA/JIS rack-mount side frames. Both vertical and horizontal enclosures are available to suit your system scale.

Vertical Type



APV9004

4 Slots (VME 6U Size)

Built-in Power Supply	+5V@40.0A (200W)
	+12V@3.0A (36W)
	-12V@1.5A (18W)
Board Size	VME 6U Size
Cooling Method	2x DC Fans (Powered from -12 V)



APV9007

7 Slots (VME 6U Size)

Built-in Power Supply	+5V@60.0A (300W)
	+12V@8.5A (102W)
	-12V@4.3A (51.6W)
Board Size	VME 6U Size
Cooling Method	2x DC Fans (Powered from -12 V)



APV9020 / APV9020E

20 Slots (VME 6U Size) with Optional Side Frames

Built-in Power Supply	APV9020 :
	+5V@60A (300W)
	+12V@12A (144W)
	-12V@12A (144W)
	APV9020E :
	+5V@120A (600W)
Board Size	+12V@12A (144W)
	-12V@12A (144W)
	VME 6U Size
Cooling Method	5x DC Fans (Powered from -12 V)

Horizontal Type



APV9003R

3 Slots (VME 6U Size)

Built-in Power Supply	+5V@30A (150W)
	+12V@3.0A (36W)
	-12V@1.5A (18W)
Board Size	VME 6U Size
Cooling Method	1x DC Fan (With dedicated internal power supply)

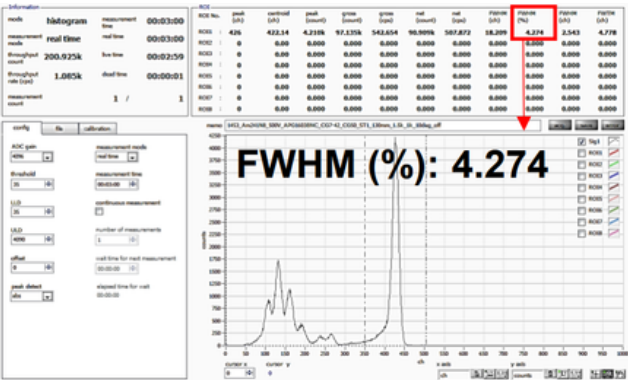
Semiconductor Detector



XCT101001

Despite its compact design, it offers high detection efficiency and directly converts radiation into electrical signals. Operating at room temperature, it is well-suited for diverse applications.

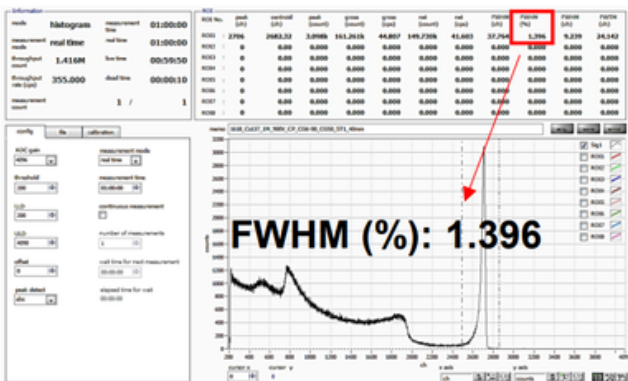
Category	Schottky Type
Crystal Size	10 x 10 x 1 mm(t)
Applied Voltage	+500V
Connector	BNC
Energy Resolution	< 5% @59.5keV



XCZT101005

This compact, room-temperature detector offers high efficiency and reliable operation. It delivers consistent performance across diverse applications, even in high background environments up to approximately 1 mSv/h.

Category	Planar Type
Crystal Size	10 x 10 x 5 mm(t)
Applied Voltage	+900V
Connector	BNC
Energy Resolution	< 2% @ 662 KeV



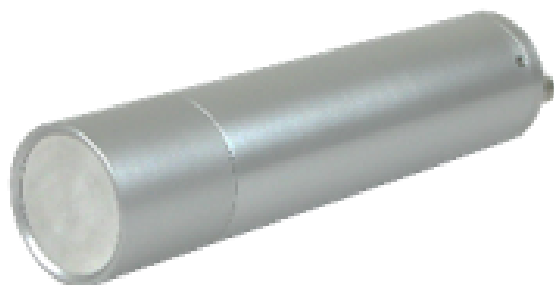
Scintillation Detector



XBF110、XBF464025、XBF464015

The BaF_2 scintillation detector features an ultra-fast rise time (approx. 1.4 ns at -3000 V). It is ideal for high-precision timing applications such as Positron Annihilation Lifetime Spectroscopy (PALS).

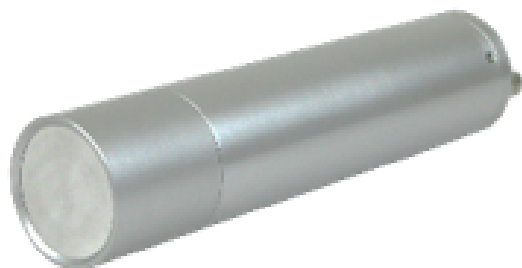
Crystal	BaF_2
Crystal Size	XBF110 : $\phi 28 \times 20$ (mm) , Cylindrical XBF464025 : $\phi 46 \times \phi 40 \times 25$ (mm), Conical XBF464015 : $\phi 46 \times \phi 40 \times 15$ (mm), Conical
Time Resolution	XBF110 : < 170 ps *Typically XBF464025、XBF464015 : < 190 ps *Typically
Hygroscopicity	Non-hygroscopic



XL150

This $\text{LaBr}_3(\text{Ce})$ scintillation detector offers approx. 3% energy resolution at 662 keV and a 16-ns decay time—about twice the resolution of $\text{NaI}(\text{TI})$. Enclosed in aluminum with a 1.5-inch crystal, PMT, HV divider, and magnetic shielding, it provides anode and dynode outputs for high-count-rate applications.

Crystal	$\text{LaBr}_3(\text{Ce})$
Crystal Size	$\phi 38 \times 38$ (mm)
Time Resolution	2.8~3.5% @ 662 keV
Hygroscopicity	Deliquescent



XCE150

The CeBr_3 scintillation detector offers anode/dynode outputs, approx. 4% energy resolution at 662 keV (2x better than $\text{NaI}(\text{TI})$), and a fast 17-ns decay time for high-count-rate applications. The XCE150 model features a 1.5-inch crystal for maximum efficiency.

Crystal	CeBr_3
Crystal Size	$\phi 38 \times 38$ (mm)
Time Resolution	4.0~4.2% @ 662 keV
Hygroscopicity	Deliquescent

Scintillation Detector

XN300

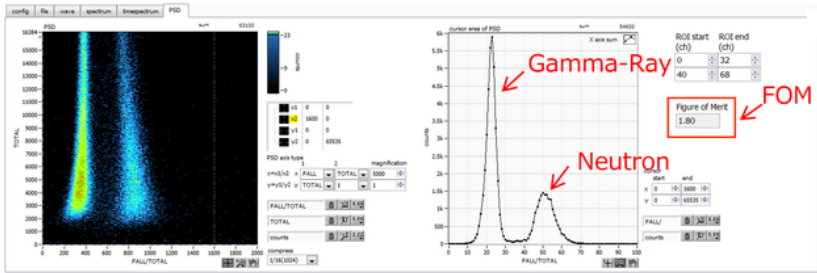
Widely used for diverse applications, this easy-to-handle detector offers exceptionally high detection efficiency. The XN300 model features a large 3-inch NaI(Tl) crystal for maximum efficiency.

Crystal	NaI(Tl)
Crystal Size	φ76 × 76 (mm)
Energy Resolution	7~8%@662keV
Hygroscopicity	Deliquescent

XOG200

Equipped with an Organic Glass Scintillator (OGS), this detector discriminates between gamma rays and neutrons. To match the scintillator's fast rise time, it integrates a high-speed PMT with nanosecond-order response.

Crystal	Organic Glass Scintillator (OGS)
Crystal Size	φ50.8 × 50.8 (mm)
Rise Time	0.82 ns
Decay Time	2.2 ns
PSD Performance (FOM Value)	1.80 @ Cf-252



PSD Measurement Interface in the Provided Software

All-in-One Digital Spectrometer

This versatile measurement system integrates a scintillation or semiconductor detector with a charge-sensitive preamplifier and a digital MCA into a single compact unit, making it suitable for a wide range of applications.

XL150-SYS



XCE150-SYS



XCZT101005-SYS





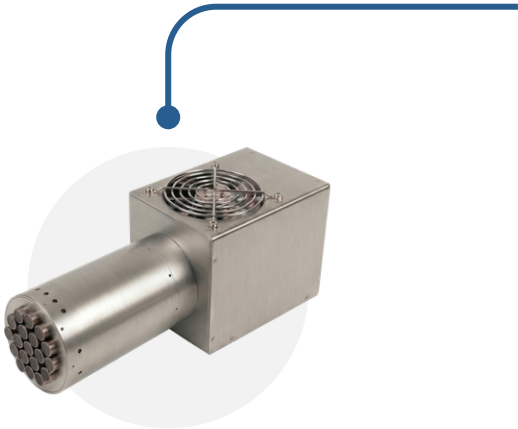
Large-Scale Research, Accelerators & Quantum Beam Science

For advanced research at synchrotron and high-intensity proton facilities—especially XAFS structural analysis—we deliver DSPs, detectors, fast preamps, and DAQ systems that meet extreme count rates and superior energy resolution.

Beyond instrumentation, we integrate hardware and software across entire experimental setups, including power supply and sample stage control systems.

Silicon Drift Detector System

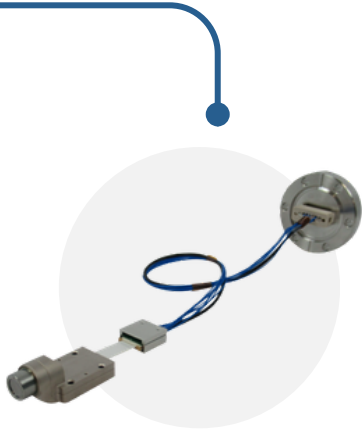
Housing & Integration Styles



Cylinder-Type
Silicon Drift Detector



Box-Type
Silicon Drift Detector



Direct-Entry-Type
Silicon Drift Detector

- 19-Element SDD System
- 7-Element SDD System
- 4-Element SDD System
- Single-Element SDD System

- Box-Type SDD System

- Direct-Entry-Type SDD System

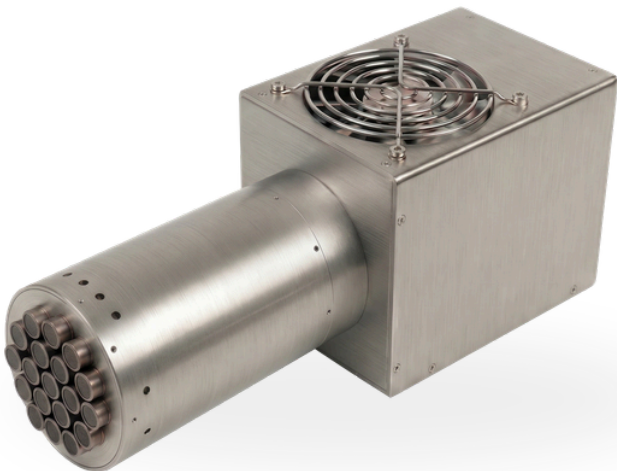
SDD Window Selection Guide

Below is a list of window materials available for our detectors. Compatibility may vary depending on the selected product model, so please contact us for specific details and availability.

Type	Model Notation	Thickness	Remarks
Windowless	WL	-	Compatible with He and N atmospheres.
Graphene	GRCH	1 μm	For high energy. Compatible with 8 μm and 12.5 μm Be windows. No support grid.
	GRCL	165 nm	For low energy. Silicon support grid (86% open area ratio).
Silicon Nitride	C1	150 nm	Light-tight.
	C2	40 nm	Not light-tight. Not compatible with He atmosphere.
Beryllium	Be	12.5 μm	-

Silicon Drift Detector System

Cylinder-Type Silicon Drift Detector

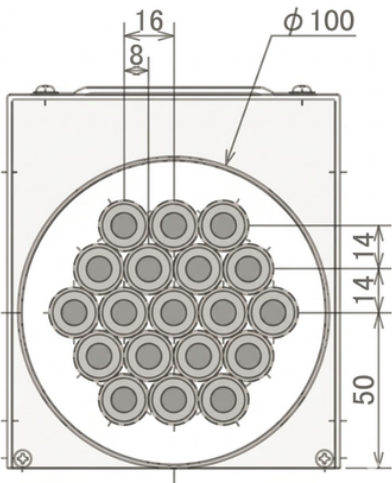


19-Element Silicon Drift Detector System

Featuring a graphene window and a multi-element design 65 mm^2 times 19 elements = 1235 mm^2 , this detector achieves exceptionally high sensitivity. With an optimized transistor reset circuit and advanced DSP technology, it enables high count rates up to 1 Mcps while maintaining energy resolution from 125 eV at 5.9 keV.

System Components

- Graphene Windowed Silicon Drift Detector XSD50-19GRCH
- Desktop-type SDD Signal Processing Unit APU519XG
- Desktop-type SDD Power Supply Unit APU3900-19



Atmosphere

Window Material : Graphene
Active Area : 1235 mm^2
Collimated Area : 893 mm^2
Tube Length : 150 mm * Customizable

Vacuum

*Please contact us.

Functions	Histogram, ROI-SCA, Quick-Scan
Energy Resolution	125eV-128eV@5.9 keV Mn-K α
ADC	100Msps, 16bit
SDD Power Supply	-200 V, $\pm 5\text{ V}$, +3.3 V
Communication	10 Gigabit Ethernet (TCP/IP and UDP)
Included	Data acquisition software, sample programs, user manual
Peaking Time	0.25 μ s
Count Rate	1Mcps
Power Supply	AC 100 V

Silicon Drift Detector System

Cylinder-Type Silicon Drift Detector

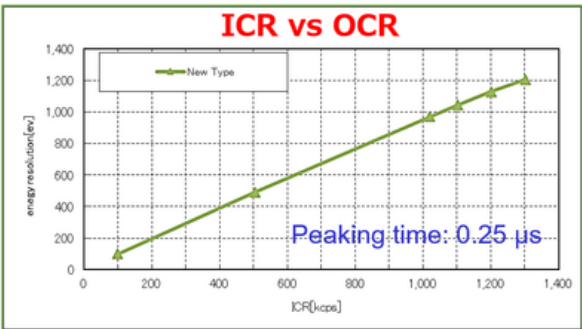
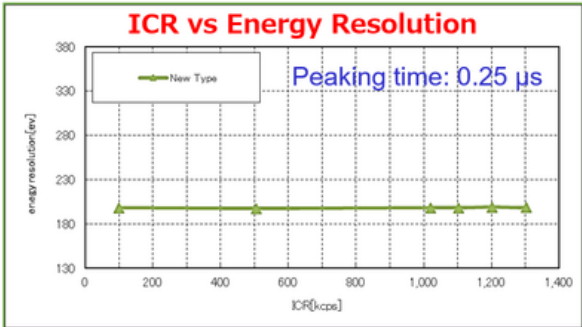


System Components

- Silicon Drift Detector
XSD50-07GRCH
- High Counting Signal Processing Module
APU508XP or APU508XP-10G

7-Element Silicon Drift Detector System

Featuring a multi-element array of high-count-rate, high-resolution SDDs, this system achieves a 455 mm² active area (65 mm² times 7) for ultra-high sensitivity. Transistor reset processing and DSP technology further enable high-count-rate measurements.



Atmosphere	Window Material :	Graphene, Beryllium
	Active Area :	455 mm ²
	Collimated Area :	329 mm ²
	Tube Length :	200 mm * Customizable
Vacuum	*Please contact us.	

Functions	Histogram, List, Waveform, ROI-SCA
Energy Resolution	125eV-128eV@5.9 keV Mn-Kα
ADC	100Msps, 16bit
SDD Power Supply	-200 V, ±5 V, +3.3 V
Communication	1 / 10 Gigabit Ethernet (TCP/IP and UDP)
Included	Data acquisition software, sample programs, user manual
Peaking Time	0.25μs
Count Rate	1Mcps
Power Supply	AC 100 V

Silicon Drift Detector System

Cylinder-Type Silicon Drift Detector

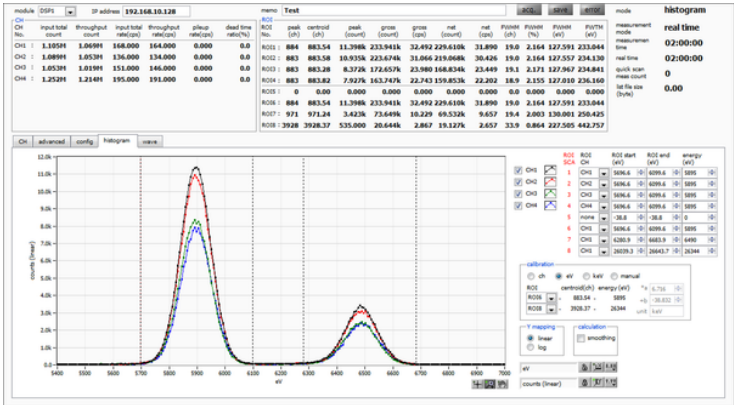


System Components

- Graphene Windowed Silicon Drift Detector XSD50-04GRCH
- High Counting Signal Processing Module APU504XP

4-Element Silicon Drift Detector System

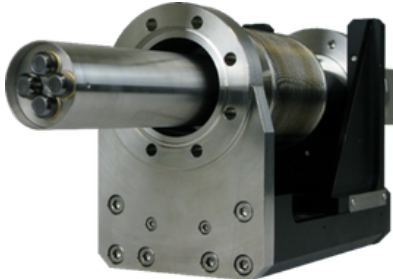
This 4-element Silicon Drift Detector (SDD) pairs with the APU504XP, an X-ray digital spectrometer integrating HV/preamp power supplies and a digital MCA. Direct digital conversion and real-time DSP deliver superior energy/time resolution and high stability, even at high count rates.



Vacuum-Compatible SDD (ICF114)



Vacuum-compatible drive mechanism with bellows



SDD angle:25 degrees



Atmosphere

Window Material :
Active Area :
Collimated Area :
Tube Length :

Graphene, Beryllium, Silicon Nitride, Windowless
260 mm²
188 mm²
200 mm * Customizable

Vacuum

Window Material :
Tube Length :

Windowless, Graphene, Beryllium, Silicon Nitride
200 mm * Customizable

Functions

Histogram, List, ROI-SCA, Waveform, Quick-Scan

Energy Resolution

125eV-128eV@5.9 keV Mn-Kα

ADC

100Msps, 16bit

SDD Power Supply

-200 V, ±5 V, +3.3 V

Communication

Gigabit Ethernet (TCP/IP and UDP)

Included

Data acquisition software, sample programs, user manual

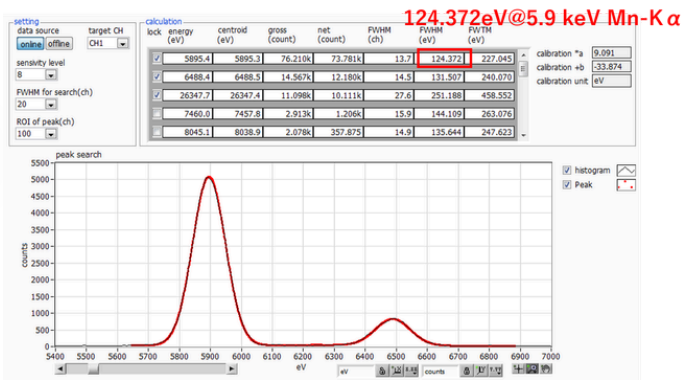
Silicon Drift Detector System

Cylinder-Type Silicon Drift Detector



Single Element Silicon Drift Detector System

Combining high count-rate performance with superior energy resolution, the APU101X is an all-in-one digital spectrometer with an integrated detector power supply and advanced DSP technology.



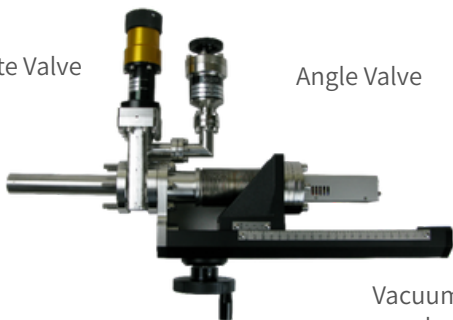
System Components

- Graphene Windowed Silicon Drift Detector XSD50-01GRCH
- Digital Spectrometer for X-ray APU101X



Vacuum-Compatible SDD (ICF70)

Gate Valve



Angle Valve

Vacuum-compatible drive mechanism with bellows

Atmosphere

Window Material : Graphene, Beryllium, Silicon Nitride
Active Area : 65 mm²
Collimated Area : 47 mm²
Tube Length : 200 mm * Customizable

Vacuum

Window Material : Windowless, Graphene, Beryllium, Silicon Nitride
Tube Length : 200 mm * Customizable

Functions	Histogram, List, ROI-SCA, Waveform, Quick-Scan
Energy Resolution	125eV-128eV@5.9 keV Mn-Kα
ADC	100MSPs, 16bit
SDD Power Supply	-200 V, ±5 V, +3.3 V
Communication	Gigabit Ethernet (TCP/IP and UDP)
Included	Data acquisition software, sample programs, user manual

Silicon Drift Detector System

Box-Type Silicon Drift Detector



*The cooling fan is optional.

Box-Type Silicon Drift Detector System

This palm-sized box-type Silicon Drift Detector (SDD) forms a complete solution paired with the APU101X—an integrated unit with detector power supply and digital MCA. It is ideal for XRF analysis and diverse research applications.

System Components

- Graphene Windowed Silicon Drift Detector
XSD50-01GRCH-BOX
- Digital Spectrometer for X-ray
APU101X

Atmosphere

Window Material : Graphene, Beryllium, Silicon Nitride
Active Area : 65 mm²
Collimated Area : 47 mm²

Vacuum

Window Material : Windowless, Graphene, Beryllium, Silicon Nitride

Functions	Histogram, List, ROI-SCA, Waveform, Quick-Scan
Energy Resolution	125eV-128eV@5.9 keV Mn-Kα
ADC	100Msps, 16bit
Communication	Gigabit Ethernet (TCP/IP and UDP)
Included	Data acquisition software, sample programs, user manual
Cooling Method	Thermoelectric Cooling (TEC)
Material	Enclosure: Aluminum, Options: Detector cover (Stainless steel)
SDD Power Supply	-200 V, ±5 V, +3.3 V
Digital Signal Processor	Trapezoidal Filter, Timing Filter, Baseline Restorer (BLR)

Silicon Drift Detector System

Direct-Entry-Type Silicon Drift Detector

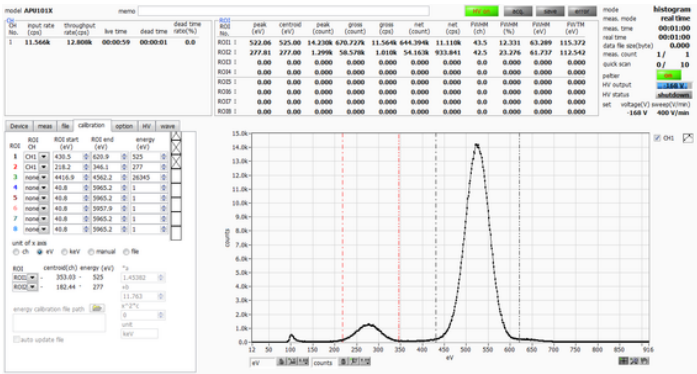
Direct-Entry-Type Silicon Drift Detector System



Featuring a space-saving design for flexible placement in vacuum chambers, this detector is ideal for XRF and diverse research applications. Customizable SDD specifications ensure an optimal measurement environment for your target.

System Components

- Graphene Windowed Silicon Drift Detector XSD50-01GRCHDT-ICF
- Digital Spectrometer for X-ray APU101X



Soft X-ray Spectrum Obtained with a Windowless SDD

Atmosphere

Window Material :
Active Area :
Collimated Area :
Cable Length :

Graphene, Beryllium, Silicon Nitride
65 mm² *Depends on the fitted SDD.
47 mm² *Depends on the fitted SDD.
Customizable

Vacuum

Window Material :
Cable Length :

Windowless, Graphene, Beryllium, Silicon Nitride
Customizable

Functions	Histogram, List, ROI-SCA, Quick-Scan
Energy Resolution	125eV-128eV@5.9 keV Mn-Kα *Depends on the fitted SDD.
ADC	100 Msps, 16bit
Communication	Gigabit Ethernet (TCP/IP and UDP)
Included	Data acquisition software, sample programs, user manual
Cooling Method	Thermoelectric Cooling (TEC)
Material	Enclosure: Aluminum
SDD Power Supply	-200 V, ±5 V, +3.3 V
Digital Signal Processor	Trapezoidal Filter, Timing Filter, Baseline Restorer (BLR)

High-Count-Rate DSP for XAFS

-Multi Channel



APU536XG

Designed for advanced multi-element systems, this 36-channel HPGe detector DSP features 10 Gbps Ethernet for ultra-fast, high-resolution Quick Scan data transfer.

Analog Input	36CH
ADC	100Msps, 16bit
ADC Gain	up to 8k channels
Communication	10 Gigabit Ethernet (TCP/IP and UDP)



APU508XG

Designed to maximize the performance of high-end SDDs and HPGe detectors, this 8-channel X-ray DSP delivers superior energy resolution and high count rates.

Analog Input	8CH
ADC	100Msps, 16bit
ADC Gain	up to 4k channels
Communication	10 Gigabit Ethernet (TCP/IP and UDP)



APU504X

Equipped with 100-Msps high-speed ADCs, this 4-channel XAFS DSP enables high-precision, time-resolved Quick Scan measurements required at state-of-the-art synchrotron facilities.

Analog Input	4CH
ADC	100Msps, 16bit
ADC Gain	up to 4k channels
Communication	Gigabit Ethernet (TCP/IP and UDP)

High-Count-Rate DSP for XAFS

-Single Channel

APU101X

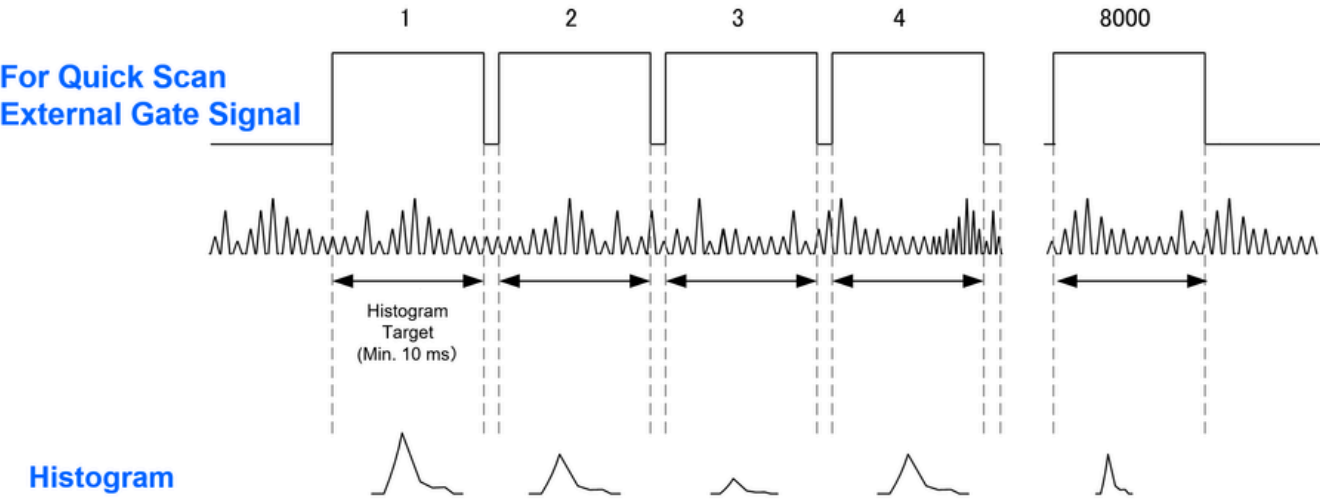
Integrating a high-performance digital MCA and detector power supply into a compact unit, this all-in-one digital spectrometer delivers a simple yet powerful benchtop measurement environment.



Analog Input	1 Ch, LEMO Connector, Input Range: ± 1 V, Input Impedance: 1 k Ω
Analog Gain	Coarse Gain: $\times 5$, $\times 10$, $\times 20$ / Fine Gain: $\times 0.333$ to $\times 1.0$
ADC	100Msps, 16bit
ADC Gain	up to 4k channel
Digital Signal Processor	Trapezoidal Shaping: Rise time 0.01 to 20 μ s (0.01 μ s steps), Flat top time 0.05 to 2 μ s (0.01 μ s steps), Baseline Restorer, Pile-up Rejector, etc.
Mode	Histogram, List, Wave, Quick-Scan
Option	Quick Count
Energy Resolution	125-135eV@5.9keV, Peaking Time 2 μ s 150eV@5.9keV, Peaking Time 0.15 μ s
Throughput	1Mcps 以上
Functions	ROI-SCA
HV Power Supply	Up to -200 V
Preamplifier Power Supply	± 5 V (Max. 60 mA)
Peltier Cooling Power Supply	+1.8 V (Max. 1 A)
Communication	Gigabit Ethernet (TCP/IP and UDP)
Included	Data Acquisition and Control Software

High-Count-Rate DSP for XAFS - Functions

Quick-Scan



Upon starting measurement, the system accumulates spectral data during the external gate High period and transfers it to the PC.

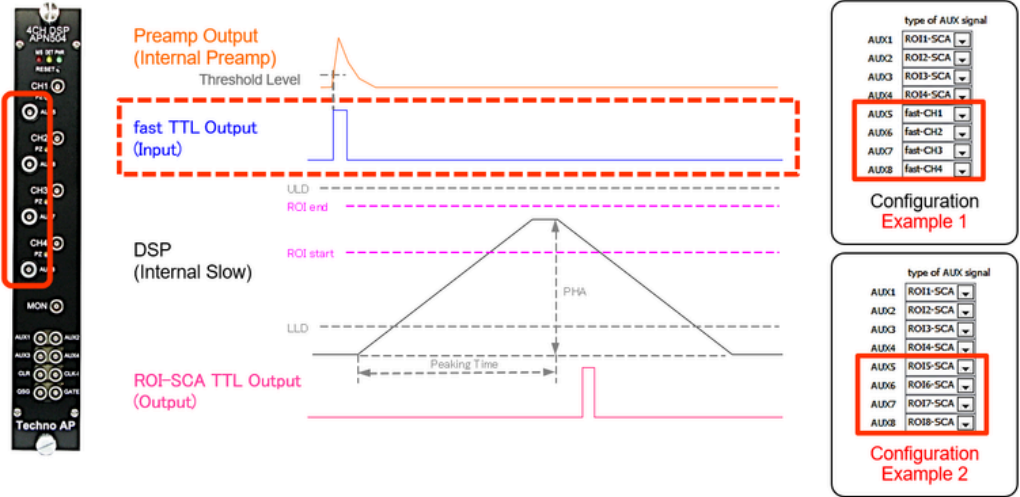
Each subsequent external gate signal generates a new spectral data set, supporting a minimum High duration of 10 ms and up to 8,000 acquisition cycles.

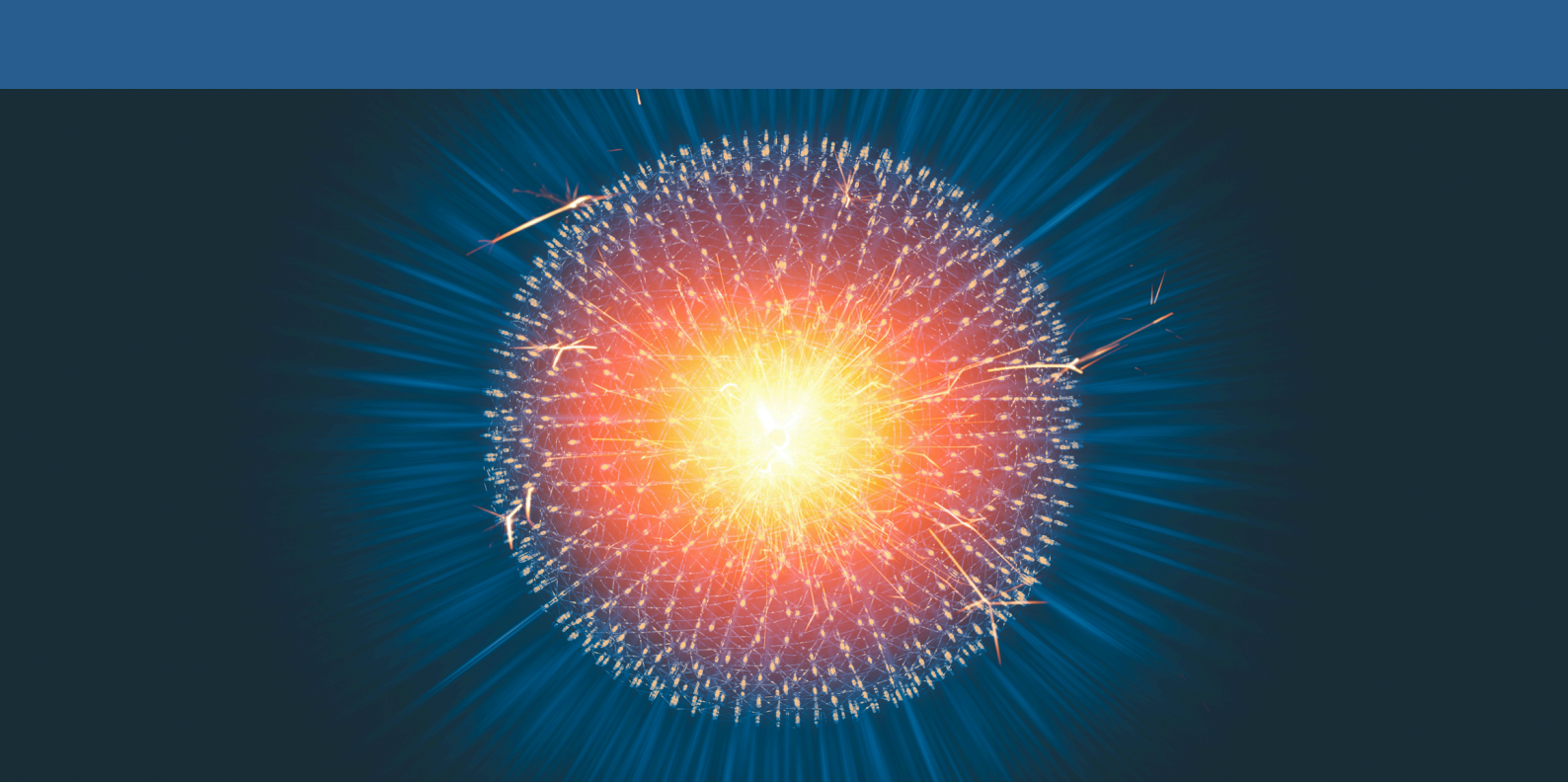
Configured for a 10 ms pulse width, each cycle features a 10 ms High duration followed by a minimum 10 μ s Low state.

Item	Size (Byte)	Description
RUN Number	2	Experiment Number: 0 to 65535
Number of Measurements	2	Number of Measurements: 1 to 8000
Number of Channels	2	Number of Channels (Bins): Typically 4096
Reserved	14	Reserved
Total	20	

FAST-SCA

Expanding the ROI-SCA output by 4 channels allows **TTL output (50 ns pulse width) even in FAST timing mode** (Configuration Example 1). Furthermore, **the 4 expanded channels can be assigned as ROI-SCAs** (Configuration Example 2).





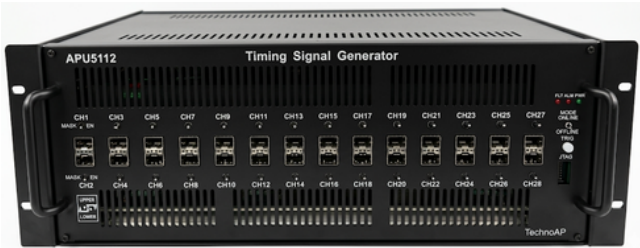
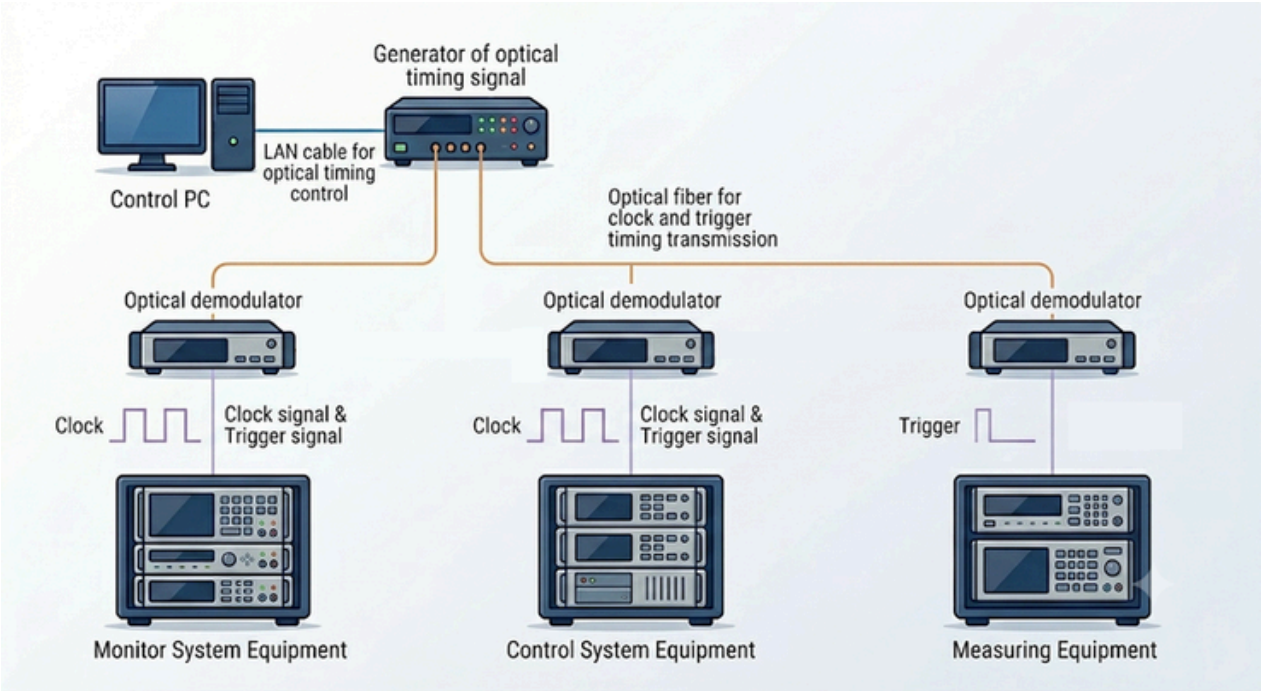
Nuclear Fusion & Next-Generation Energy

We support large-scale measurement and control in extreme environments through the supply of Thomson scattering measurement systems for high-precision plasma temperature and density evaluation, quench detector systems for high-temperature superconducting plasma magnets, optical timing devices for inter-device synchronization, control systems for plasma heating RF oscillators and material thermography testing, and neutron measurement systems.

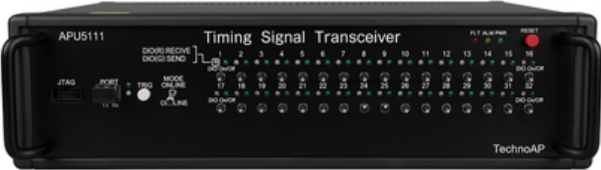
Optical Timing Module System

Capturing the exact moment of plasma generation, our Optical Timing Module System is an advanced solution for high-precision device synchronization far exceeding microsecond levels.

Generated from control-PC timing patterns, optical timing signals are transmitted via fiber optics to distant instruments and systems without degradation. Paired with multi-channel optical splitters and demodulators, the system simultaneously distributes perfectly synchronized clock and trigger signals across all connected devices.



Generator of optical timing signal device

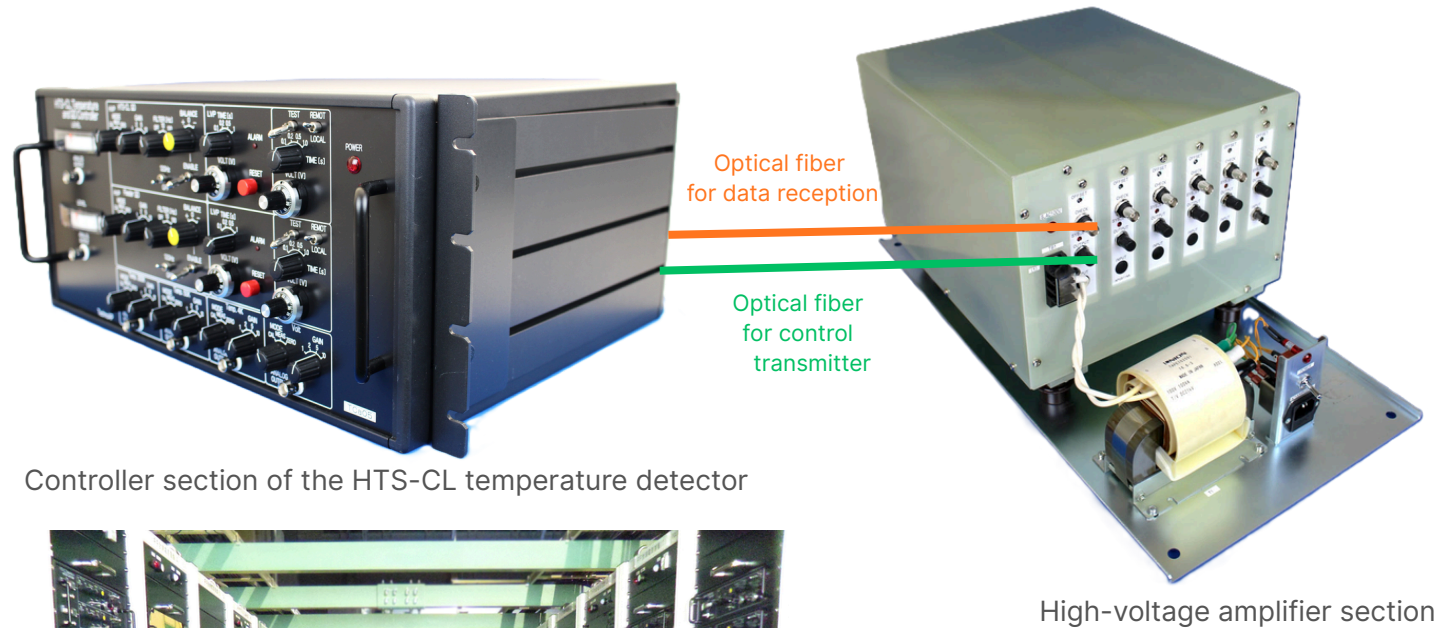
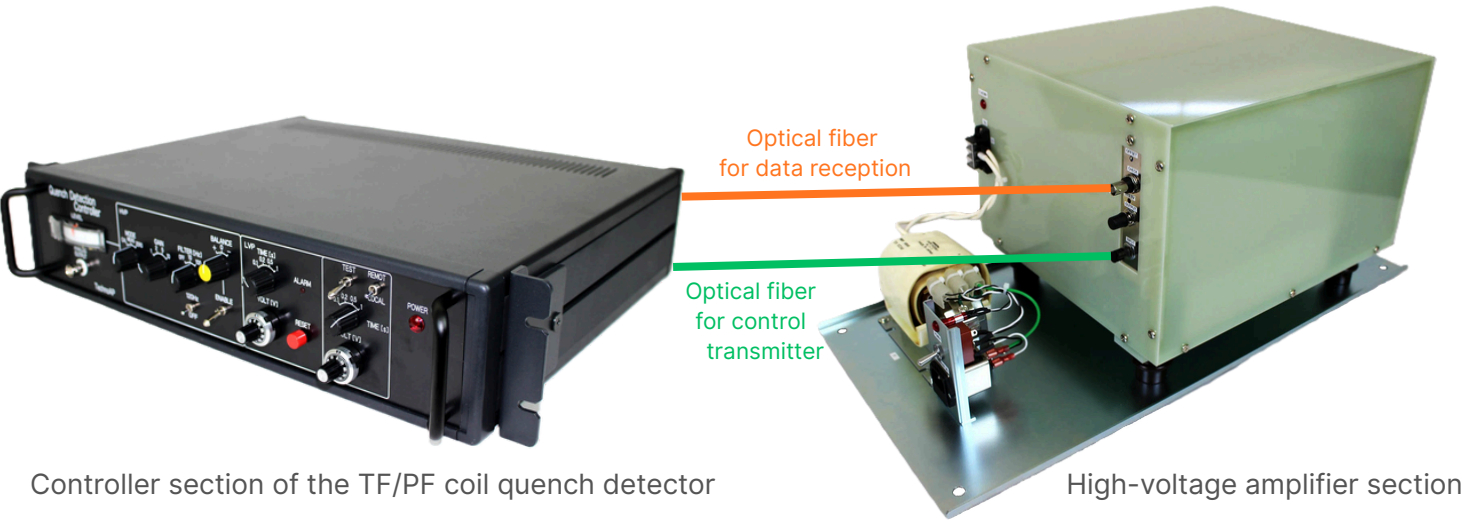


Optical demodulator

Quench Detector System

High-Temperature Superconducting Current Leads

Designed to instantly detect abnormal "quench" phenomena, this protection system consists of a High-voltage amplifier section and a Controller section of the TF/PF coil quench detector connected via optical fiber. It features configurable quench levels and timers, along with selectable filter constants.



Neutron Measurement

OG Scintillation Detector System



XOG200-SYS

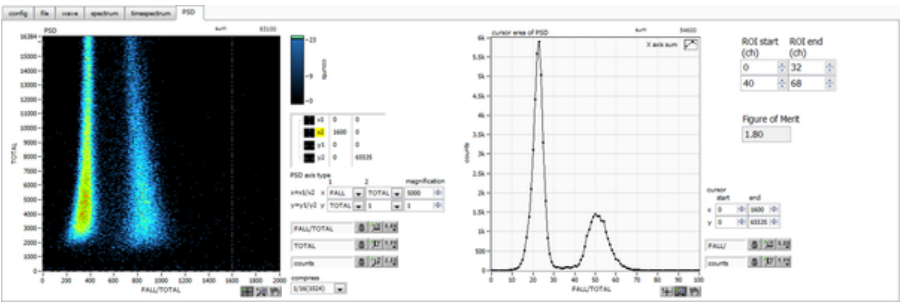
Featuring the novel Organic Glass Scintillator (OGS), this detector enables discrimination between gamma rays and neutrons. To complement its fast rise time, the system incorporates a photomultiplier tube (PMT) with nanosecond-scale response characteristics.

Detector

OGS (Organic Glass Scintillator),
Crystal Size : $\Phi 1.5" \times 1.5"$,
Rise 0.82 ns, Decay 2.2 ns

Digital Pulse Processor

1Gsps, 14bit, Bias 4000V max., Gigabit Ether, PSD application



Digital Pulse Processor



APV825G2 Series

Equipped with an ultra-fast, high-resolution ADC (2.5 Gsps, 12-bit), this measurement board offers two high-performance models. The APV825G2-1G (1 Gbps Ethernet) provides high-precision signal processing with intuitive operation over a versatile interface, while the APV825G2-XG (10 Gbps Ethernet) leverages high transfer speeds to enable ultra-fast waveform acquisition of up to 1 million waveforms per second.

APV825G2-1G

Analog Input

2CH

ADC

2.5Gsps, 12bit

Features

Equipped with an ultra-high-speed 2.5Gsps, high-resolution 12bit Flash ADC

APV825G2-XG

Analog Input

2CH

ADC

2.5Gsps, 12bit

Features

2.5 Gsps, 12bit Flash ADC with 10 Gigabit Ethernet Interface



Advanced Fundamental Physics, Aerospace, Material Characterization

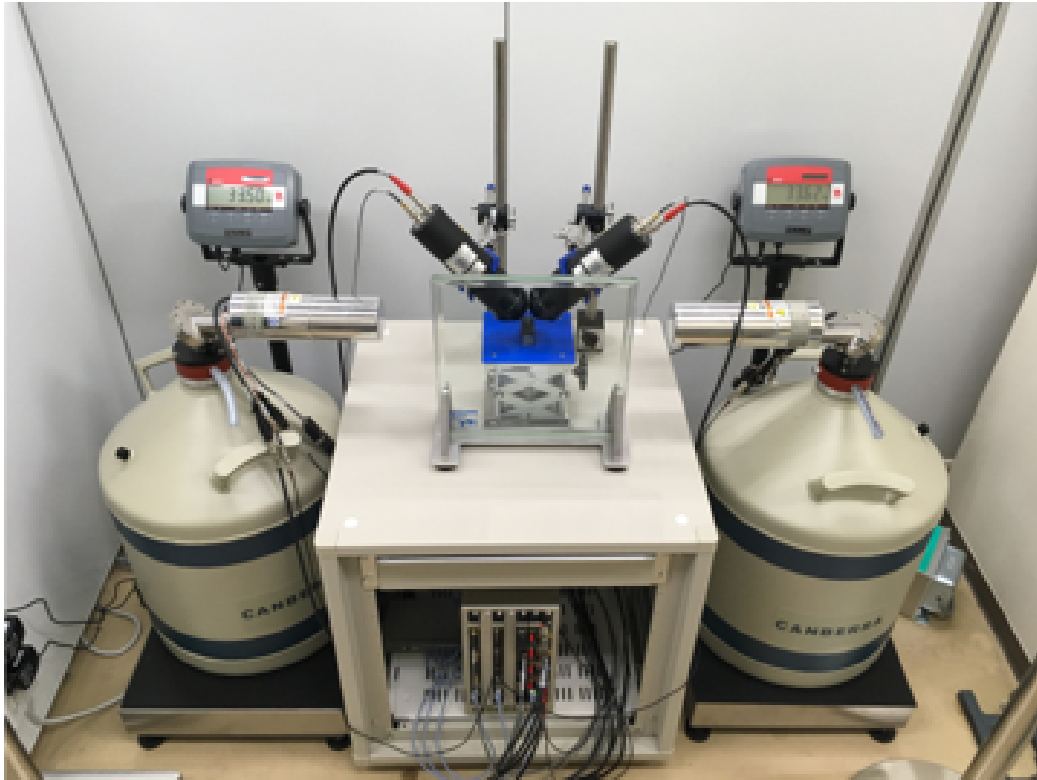
We provide specialized measurement instruments for fundamental research exploring truths in nuclear and particle physics, as well as for extreme environments such as outer space.

Our activities include constructing network-distributed data acquisition systems for high-precision, online processing of gamma rays emitted from atomic nuclei, as well as developing portable radiation detectors designed for use in space.

Furthermore, we deliver Positron Annihilation Lifetime Spectrometry / Doppler Broadening (PALS) systems for evaluating microdefects in materials to research institutions and material manufacturers both in Japan and overseas.

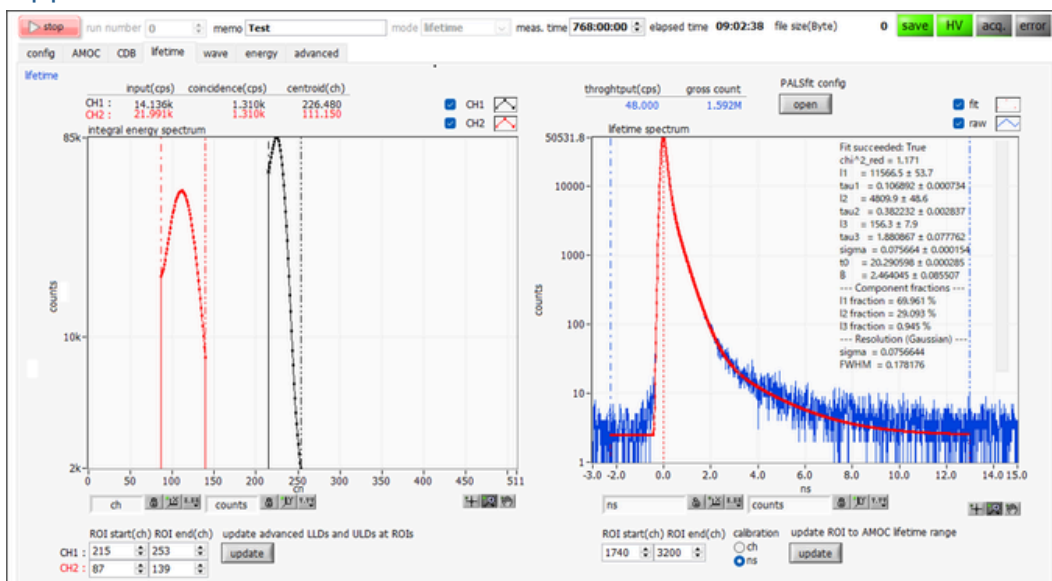
Positron Annihilation Lifetime / Doppler Broadening Measurement System (PALS)

This system integrates all power and measurement hardware for Positron Annihilation Spectroscopy, analyzing molecular nanoscale structures. For Lifetime measurement, high-speed signals from two BaF₂ scintillators are captured via a 3 Gsps ADC board. For Coincidence Doppler Broadening (CDB), coincidences from two HPGe detectors generate 2D pulse-height histograms. Combining these enables Age-Momentum Correlation (AMOC) measurement. All module settings and data retrieval are managed over a network using dedicated PC software.

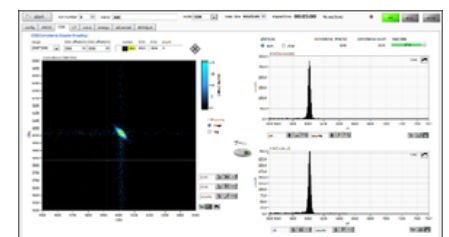


DPALMS-LCABG: Positron Annihilation Lifetime / Doppler Broadening Measurement System

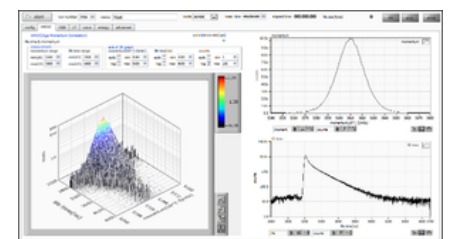
Application



Lifetime
(Positron Annihilation Lifetime)



CDB
(Coincidence Doppler Broadening)



AMOC
(Age-Momentum Correlation)

In the Lifetime tab, specifying Start/Stop energies on the left graph updates the right graph with a real-time lifetime spectrum. Advanced fitting with multiple Gaussian functions runs continuously to calculate and display time resolution, lifetime values, and intensities on the fly without interrupting measurement, achieving zero lag between data acquisition and analysis.



Environmental Radioactivity, Nuclear Facilities, Decommissioning

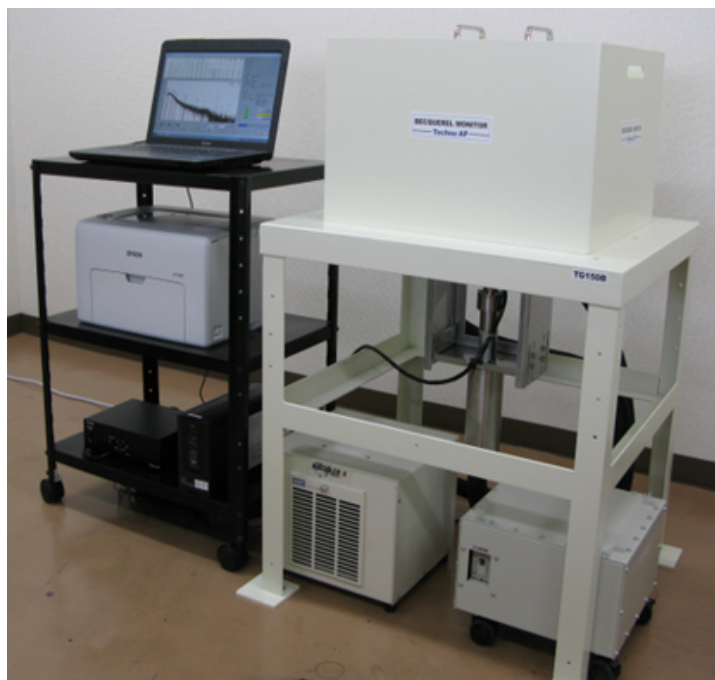
We offer measurement systems for ensuring food and environmental safety, as well as for the operation and decommissioning of nuclear facilities.

We have supplied numerous radioactivity measurement systems to determine radioactive concentrations in food, soil, and water, along with continuous ambient dose rate monitoring systems.

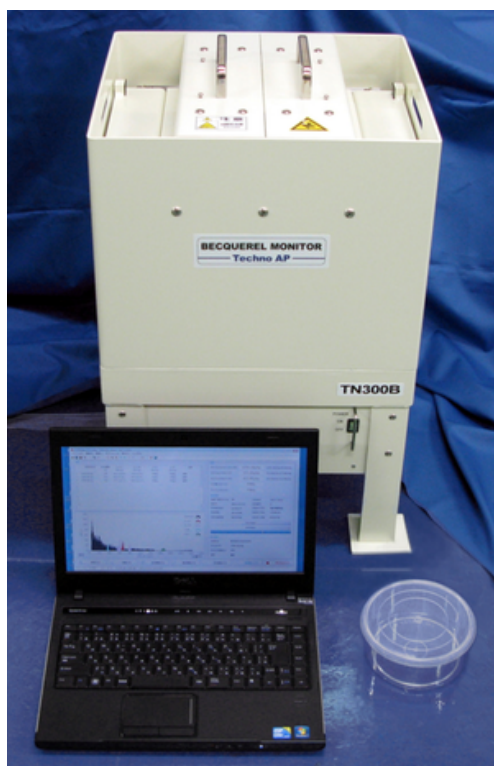
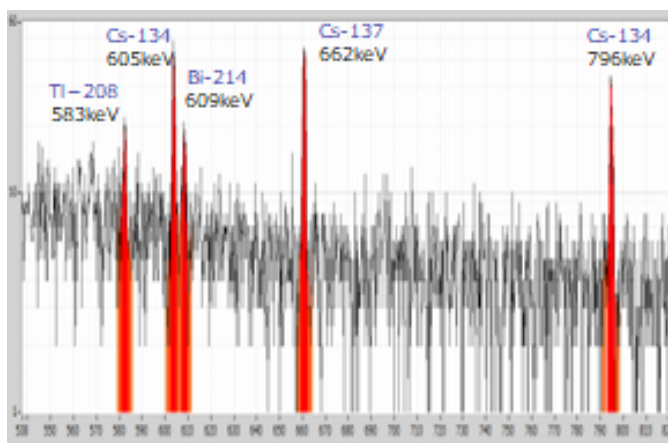
Furthermore, we develop and supply specialized equipment directly tied to radiation safety management, including continuous radionuclide measurement and control systems for waste treatment facilities.

Radioactivity Measurement System (Becquerel Monitor)

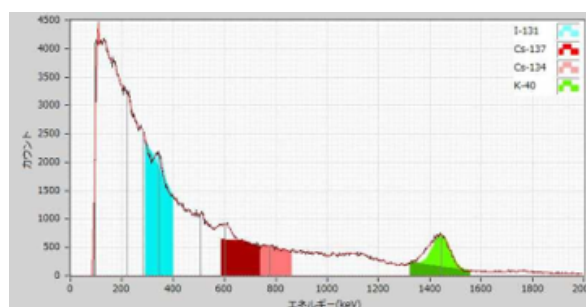
Designed for effortless operation by anyone, this instrument measures radioactivity in food and soil, displaying real-time results in Bq/kg. Ideal for screening purposes, it delivers superior accuracy and rapid throughput using either a high-precision HPGe semiconductor detector or a high-sensitivity 3-inch NaI(Tl) scintillator. A 50 mm lead shield minimizes environmental background radiation while maintaining a compact overall footprint.



TG150B (equipped with HPGe Semiconductor Detector)



TN300B (equipped with NaI(Tl) Scintillation Detector)



測定値	
セシウム合計	不検出<1.8Bq/kg
セシウム137	不検出<0.8Bq/kg
セシウム134	不検出<1.0Bq/kg
ヨウ素131	2.2Bq/kg±0.6Bq/kg
カリウム40	56.5Bq/kg±3.3Bq/kg
サポート情報	天然の放射性物質が含まれている可能性があります。

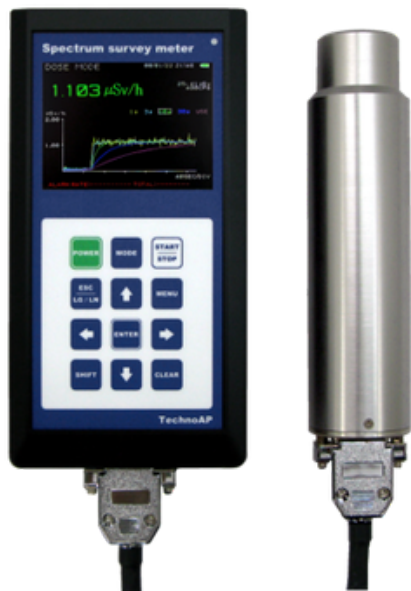
Spectrum Survey Meter



TS215

This energy-compensated gamma-ray spectroscopic survey meter features a large 1.5-inch LaBr₃(Ce) scintillator with ~3% energy resolution and a rapid 16 ns decay time. Powered by an onboard DSP for fast digital filtering, it enables real-time nuclide identification and qualitative/quantitative measurement. A built-in rechargeable lithium-ion battery supports mobile use.

Detector	LaBr ₃ (Ce) Scintillator 1.5 inch
Dose Rate Range	0.001µSv/h~600µSv/h
Energy Range	30keV~3MeV
Energy Resolution	2.8~3.7% (typ.)



TS500

This high-performance, energy-compensated spectroscopic survey meter features a CeBr₃ scintillator, offering superior energy resolution and a fast 17 ns decay time for high-sensitivity detection across wide ranges. With exceptionally low intrinsic background (self-activity), it delivers extremely high measurement precision.

Detector	CeBr ₃ Scintillator 1.0 inch
Dose Rate Range	0.001µSv/h~300µSv/h
Energy Range	30keV~3MeV
Energy Resolution	4.0% (typ.)



TC300L

The TC300L is a compact, energy-compensated gamma survey meter offering high sensitivity (42,000 cpm). It provides real-time dose rate readouts (µSv/h) and graphical gamma-ray spectrum displays. Built-in USB connectivity allows seamless data viewing and saving on a PC.

Detector	CsI(Tl) Scintillator 40 x 40 x 15mm
Dose Rate Range	0.001µSv/h~10µSv/h
Energy Range	150keV~3MeV
Weight	340g



Medical & Life Sciences

We offer systems that contribute to next-generation diagnostic imaging equipment and biological information measurement.

We supply data acquisition systems and advanced digital signal processing circuits tailored for cutting-edge medical diagnostic imaging techniques, such as Positron Emission Tomography (PET), to universities and research institutions.

Furthermore, we are actively engaged in developing innovative sensors and measurement systems for healthcare and medical applications.

Positron Emission Tomography (PET)

PETsys SiPM Readout System

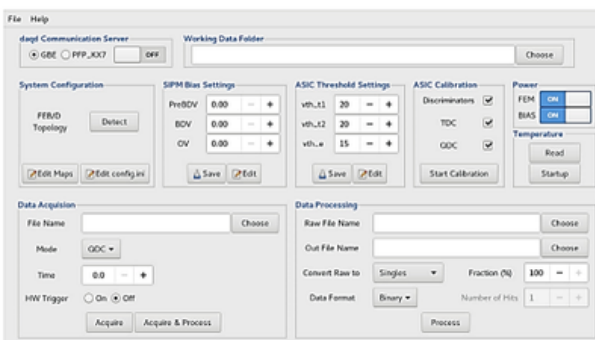
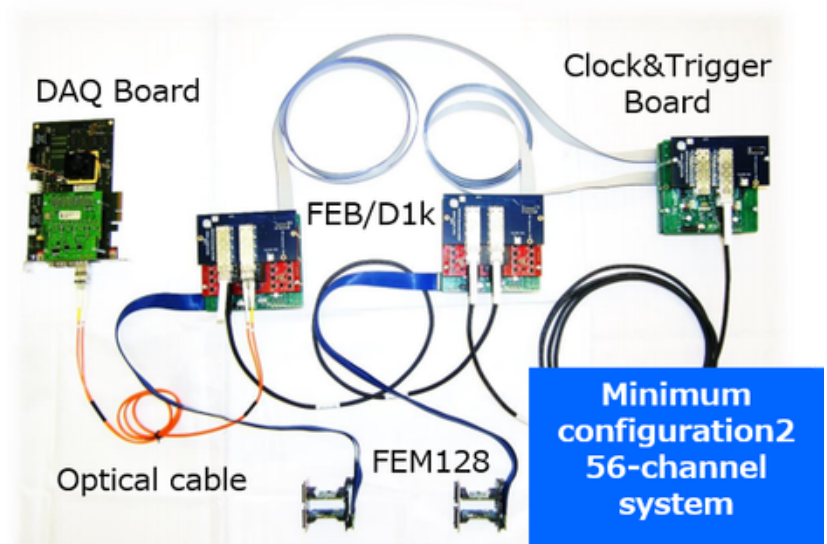
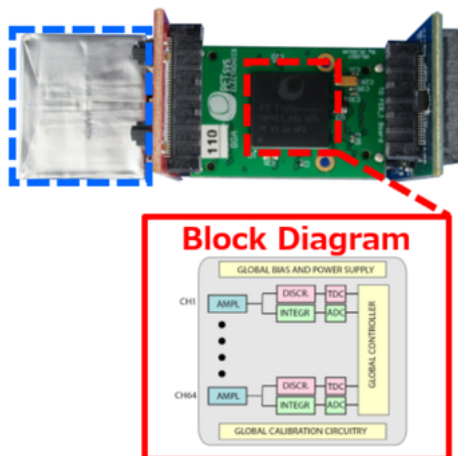
The "TOFPET2" ASIC chip for MPPC array readout features 64 channels of discriminators, QDCs, and TDCs, enabling the construction of large-scale imaging systems with up to 491,520 channels. Boasting exceptionally high time resolution, high count-rate capabilities, and outstanding cost performance, it delivers innovation across a wide range of applications—not only in healthcare, but also in high-energy physics, astrophysics, nuclear medicine, materials and life sciences, and non-destructive testing.



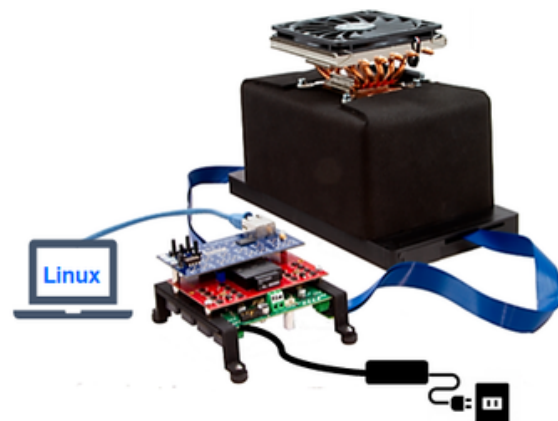
<https://www.petsyselectronics.com>

TechnoAP Co., Ltd. is the authorized distributor of PETsys Electronics in Japan, offering the "PETsys SiPM Readout System." Beyond product sales, we support our customers' cutting-edge research and development through prompt, locally tailored technical support and after-sales service. Please feel free to contact us anytime with your system requirements or inquiries.

Scintillator + MPPC (8x8)



Included Application



Evaluation Kit

- All-in-One: Complete kit for 256-channel measurement.
- Easy PC Link: Simple connection via 1000Base-T.
- Scalable: Expandable up to 1,024 channels with additional FEM128.



Simulation

We provide advanced analysis technologies based on "Geant4," the global standard simulation toolkit. Our key strength lies in the faithful modeling of detector geometries and the automatic generation of response functions (G-functions) optimized for arbitrary crystal sizes and materials.

This enables ultra-high-precision efficiency calibration even in environments without standard radiation sources, which were previously essential. Furthermore, we deliver a one-stop solution ranging from energy compensation with characteristic correction to the deconvolution of complex radiation spectra—dramatically reducing measurement hurdles while boosting data reliability.

High-Precision Gamma-Ray Analysis with Unmatched Reproducibility

Geant4-Based HPGe Detector Geometry Construction & Simulation

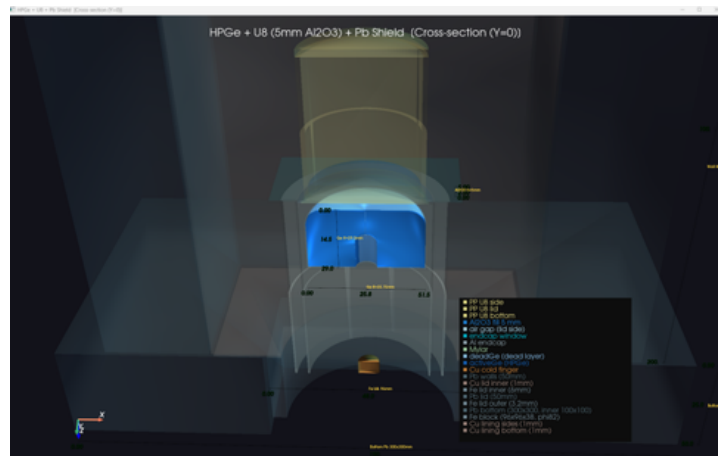
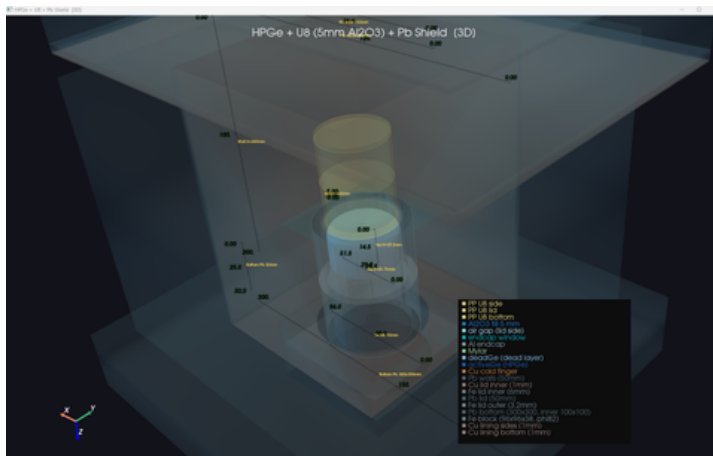
Compatible with "Geant4," the global de facto standard in advanced radiation simulation, we construct and deliver ultra-high-precision HPGe semiconductor detector geometries tailored to your specific operational environment.

By using this program, complex shielding configurations and diverse sample geometries (varying in volume, density, and composition) can be faithfully reproduced in virtual space. Beyond pre-measurement evaluation, it enables comprehensive gamma-ray analysis simulations—including efficiency calibration in specialized environments where standard sources are unavailable, as well as detailed background noise assessment.

Combining excellent agreement with actual measurement data and the flexibility to easily modify parameters, this solution dramatically reduces the time and cost spent on experimental trial and error. It accelerates R&D and elevates the reliability of your data analysis to the next level. Customization is also available to meet your unique requirements.



Geant4 HPGe geometry Marinelli 1L



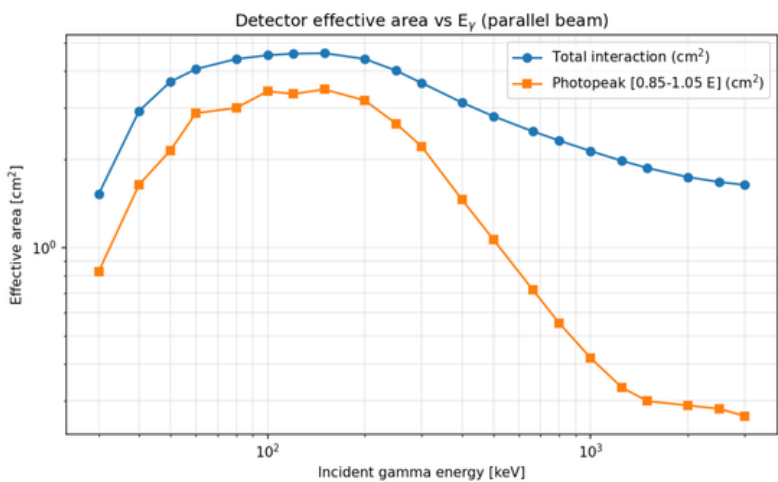
Geant4 HPGe geometry 3D U8

Maximizing Detector Potential via Geant4-Based G-Function Generation

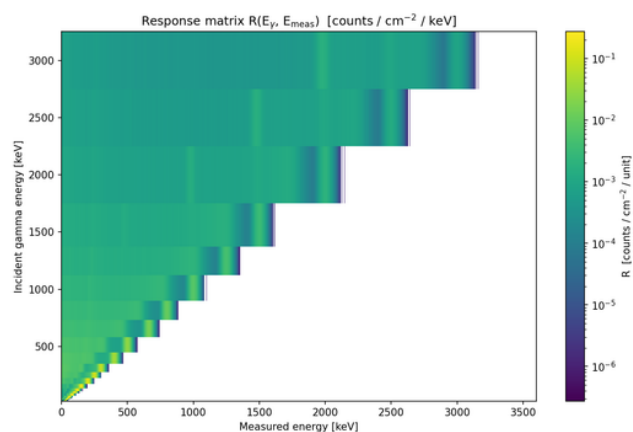
Leveraging "Geant4," the global standard for Monte Carlo simulation, we have established technology to automatically generate ultra-high-precision "G-functions" (response functions) tailored to any crystal size and material, including NaI(Tl) and LaBr₃(Ce).

By precisely modeling the unique G-functions for each detector size and type, highly complex spectra can be deconvolved with exceptional accuracy. This achieves "ideal energy compensation" that completely overcomes energy dependence, allowing subtle peaks and continuum components to be captured with remarkable clarity.

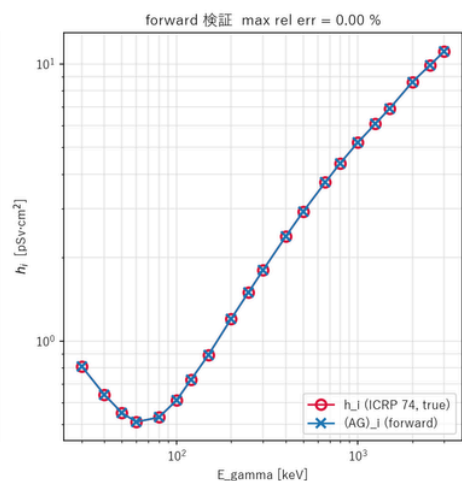
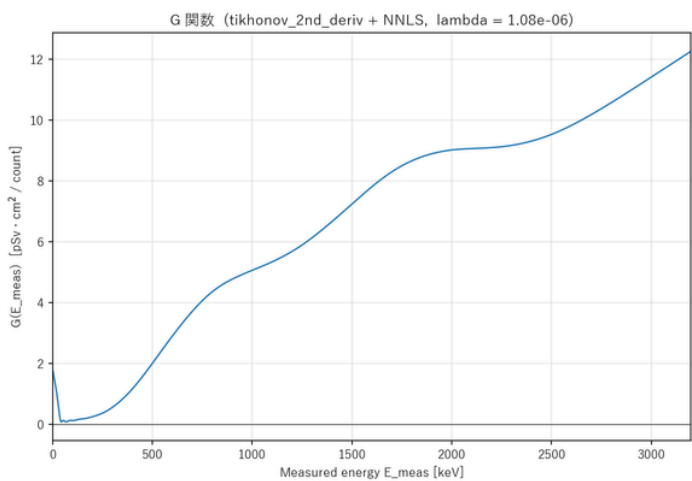
Whether you face challenges such as "difficulties in analyzing custom-made crystals" or have needs like "achieving uniform energy compensation across energy ranges," our Geant4 simulation delivers the optimal solution. We unlock the full potential of your detectors and bring ultimate reliability to your measurement data. Experience the power of our advanced G-function generation solutions.



G-Function NaI(Tl)



G-Function



response matrix keV

Neutron Energy Spectrometry via Geant4

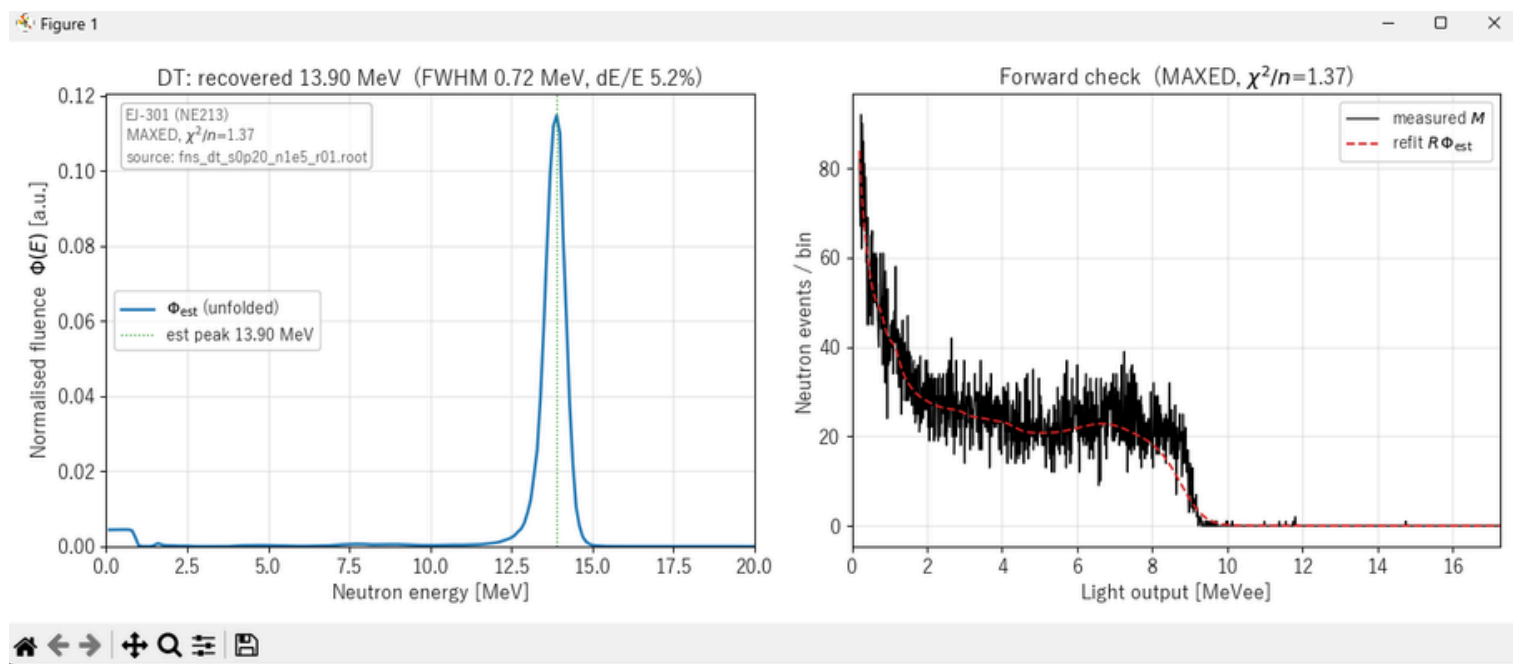
Response Functions and Iterative Unfolding

Neutron Energy Spectroscopy via Geant4 Response Matrices and Iterative Unfolding

Converts pulse-height (MeVee) spectra from liquid scintillators (EJ-301/NE213) into neutron energy spectra $\Phi(E)$ by solving the inverse problem ($M = R\Phi$) using a Geant4 Monte Carlo-generated detector response matrix R and literature-standard algorithms (GRAVEL / MAXED). Users can replace the response matrix with custom files (.cpv) modeled for their specific detector geometries in Geant4. Goodness-of-fit is quantitatively indicated by χ^2/n , with selectable solver options for GRAVEL and MAXED.

Specification Highlights

- Response Functions: Geant4-based neutron transport + NE213 non-linear light output (Cecil 1979) + resolution modeling (Dietze-Klein form: $\text{FWHM} = \sqrt{((\alpha L)^2 + \beta^2 L + \gamma^2)}$).
- Unfolding Algorithms: Selectable between GRAVEL (iterative, positive-definite, no regularization parameter λ required), MAXED (maximum entropy), and Tikhonov regularization.
- Bring-Your-Own Response Matrix: Supports external user-provided response matrices (.cpv files).
- Fit Metric: Continuous output of goodness-of-fit (χ^2/n), supporting sources from monoenergetic DD/DT to continuous Cf-252.
- Real-Time Display: Capable of near-real-time neutron spectral visualization.



neutron spectrum



Software

We provide data acquisition/control software and spectral analysis software designed for our proprietary digital spectrometers and other instrumentation.

It enables complex gamma-ray spectral analysis, radionuclide identification, and quantitative analysis. Featuring an intuitive UI, it maximizes the performance of trapezoidal shaping and MCA, flexibly supporting diverse measurement modes—from basic measurements to advanced time-correlation analysis, including histogram, list, coincidence, MCS, and waveform modes.

For analysis, it features Levenberg-Marquardt (LM) Gaussian fitting, automated peak detection via second-derivative filtering, and advanced calibration file generation. This achieves high reliability in deconvoluting overlapping peaks and calculating precise count rates.

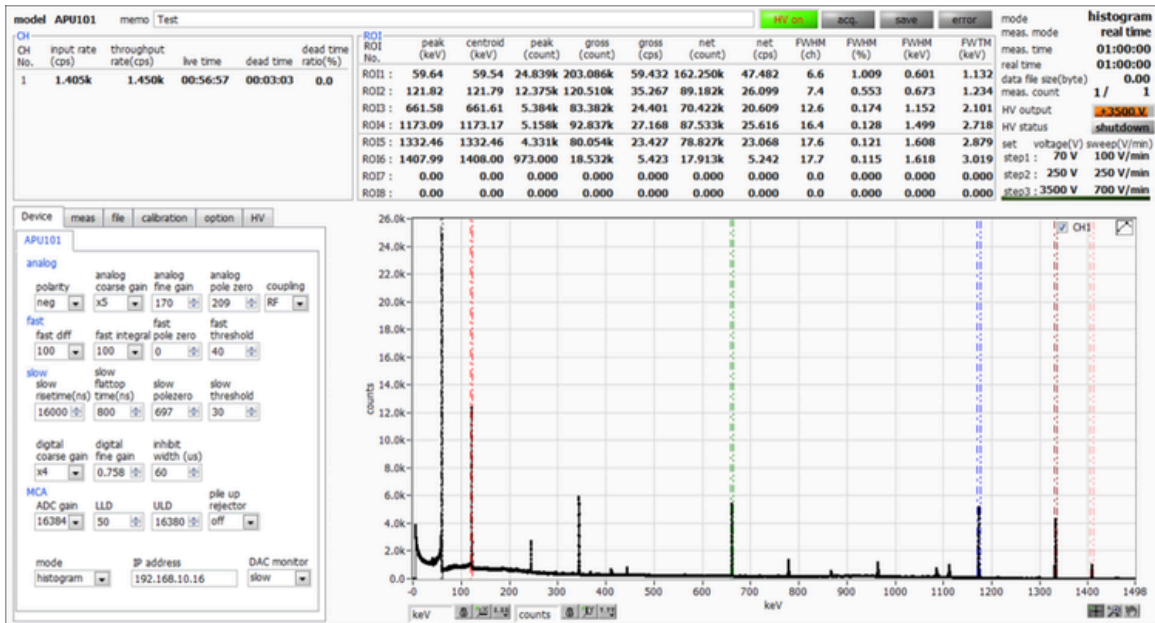
Data Acquisition and Control Software

Advanced Radiation Measurement Made Intuitive

Through an intuitive user interface (UI), our software unlocks the full performance of digital spectrometers and MCAs. It flexibly meets a wide range of needs, from basic energy spectrum measurements to timestamped event logging, coincidence detection, and Multi-Channel Scaler (MCS) measurements.

【Main Measurement Modes】

- Histogram Mode: Plots energy pulse height versus counts in real time. It features automatic stop functions based on Real Time, Live Time, or target counts, making it ideal for routine measurements.



- List Mode: Continuously saves timestamps, pulse heights, and channel numbers for every event. It enables offline analysis of time-dependent fluctuations and supports an automatic file-splitting feature.
- Coincidence Mode: Collects events occurring simultaneously across multiple channels within a user-defined time window (adjustable from 40 ns min. to 10 μ s max.). It supports two-dimensional (2D) histogram creation and coincidence list data saving.
- MCS Mode (Multi-Channel Scaler Mode): Generates time-series histograms with customizable channel widths (dwell time: adjustable from nanoseconds to seconds). Ideal for half-life measurements and periodic event monitoring via external reset inputs (VETO/CLR).
- Wave Mode: Displays amplitude versus time for internal DSP (Digital Signal Processing) signals—including preamplifier, fast, slow, and CFD signals—providing a visual diagnostic tool for pole-zero adjustment.

【Analysis & Hardware Control】

- Real-Time Analysis & Calibration: Automatically calculates peaks, centroids, gross counts, and net counts via Region of Interest (ROI) settings. Supports 1-point and 2-point energy/time calibration (eV, keV, μ s) as well as resolution evaluations based on FWHM and FWTM.
- Hardware & Synchronization Control: Synchronizes data acquisition via external GATE/VETO signals and provides oscilloscope-like waveform monitoring, enabling visual optimization of various parameters (such as polarity and gain).

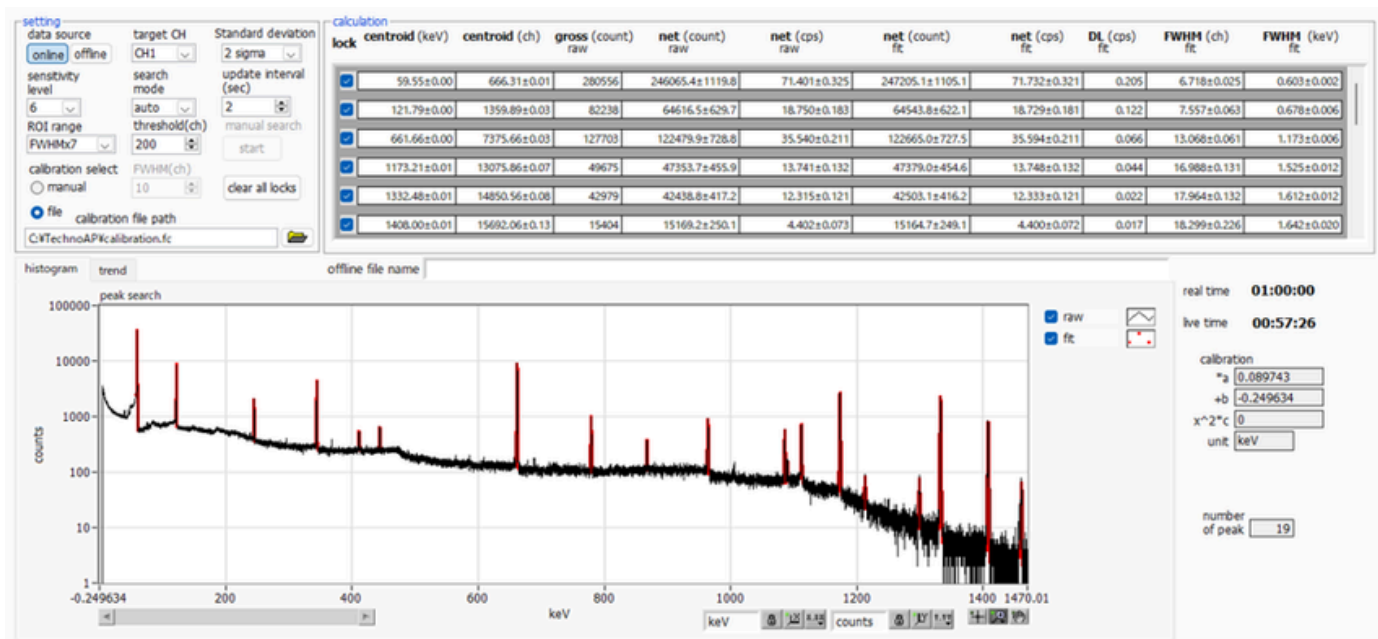
【Data Storage & Formats】

- Histogram Data: Continuous auto-save in CSV or CHN formats.
- List Data: Lightweight binary or CSV format support, complete with a binary-to-CSV batch converter.
- 2D & Waveform Data: Simple CSV export for 2D histograms and live waveforms.

Spectral Analysis Software

Peak Search Analysis

Automatically detects peaks from live histogram data or saved data files, calculating key parameters such as Full Width at Half Maximum (FWHM) and counts.



【Key Features & Functions】

- Automated Filter Processing: Applies smoothing and differentiation to the acquired spectra using a Gaussian-smoothed second-derivative filter. High-precision peak searching is performed by comparing these filtered results with counting (statistical) errors. All filter parameters are calculated automatically.
- Flexible ROI Settings: The width of the Region of Interest (ROI) for each detected peak can be set manually to any desired value. Alternatively, optimal ROI widths can be automatically assigned based on energy levels using an FWHM calibration file.

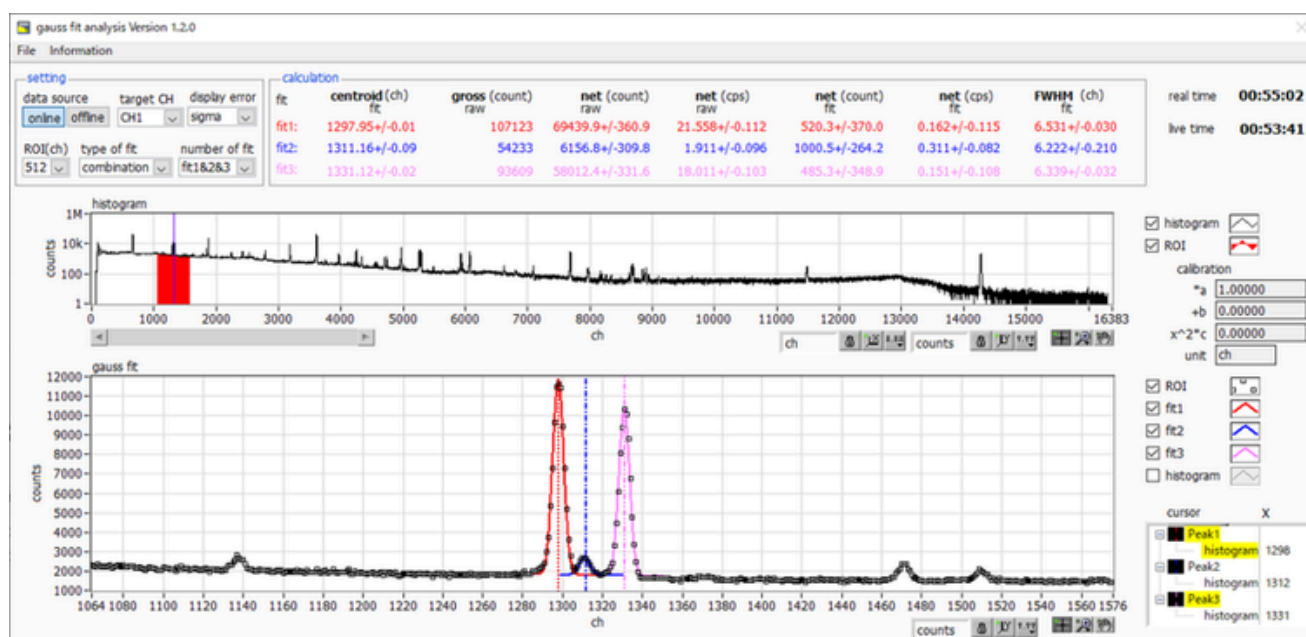
【Advanced Energy Calibration Files】

- Calibration File Creation Tool: Easily generates Energy Calibration Files (.ec) and FWHM Calibration Files (.fc) simply by selecting target ROIs on the histogram. Utilizing these generated files ensures accurate energy calculations during histogram measurements and enables automatic assignment of ROI widths according to the peak's center channel position.

Spectral Analysis Software

Gaussian Fitting Analysis

Uses Gaussian fitting (non-linear least-squares fitting via Gaussian functions) to accurately resolve low-count peaks and complex overlapping peaks, calculating essential parameters such as Full Width at Half Maximum (FWHM) and counts.



【Key Features & Functions】

- High-Precision Fitting Algorithm: Adopts a "Gaussian function + linear equation" model that accounts for background noise. The calculation utilizes the Levenberg-Marquardt method, which combines the strengths of the steepest descent and Gauss-Newton methods to deliver exceptional convergence performance.
- Accurate Count Calculation via Covell Method: Employs the Covell method for calculating gross and net counts, achieving ultra-high-precision spectral analysis.
- Simultaneous Analysis of Up to 3 Peaks: Executes simultaneous Gaussian fitting analysis for up to three peaks within a single histogram Region of Interest (ROI).

X-ray Analysis Software: XRF Live Monitor

Our X-ray Analysis Software, "XRF Live Monitor," is a state-of-the-art solution designed for qualitative elemental analysis of X-ray fluorescence (XRF) spectra and online quality control. It is specially built for applications such as XAFS measurements at synchrotron radiation facilities and various online X-ray analysis sites.

Its primary strength lies in high-precision peak deconvolution, combining background estimation via the SNIP (Statistics-sensitive Non-linear Iterative Peak-clipping) method with multi-Gaussian fitting. After stably estimating the continuum background, it automatically inserts peaks from the residuals and constrains them to physically valid peak widths through FWHM (Full Width at Half Maximum) calibration. It reliably resolves complex overlapping multiplet peaks and automates elemental identification using built-in K- and L-line libraries, dramatically streamlining specialized analytical workflows.

In addition to post-measurement offline analysis, the software supports real-time monitoring via automated folder watching. It automatically re-analyzes newly acquired data to instantly visualize dynamic spectral changes on-site. Equipped with dead-time correction for high count rates, it powerfully supports rapid decision-making in the field.

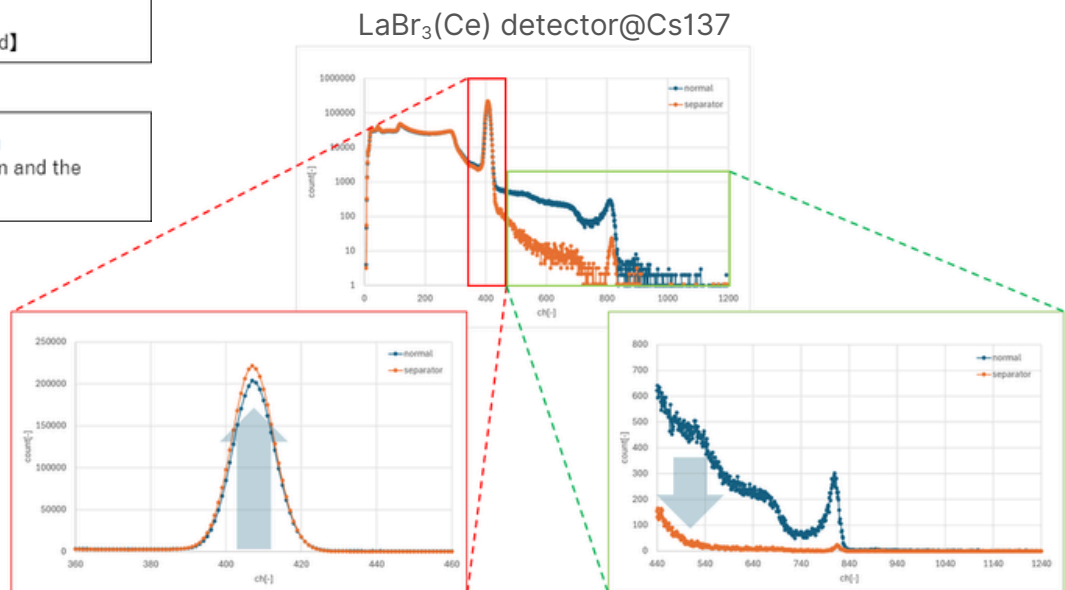
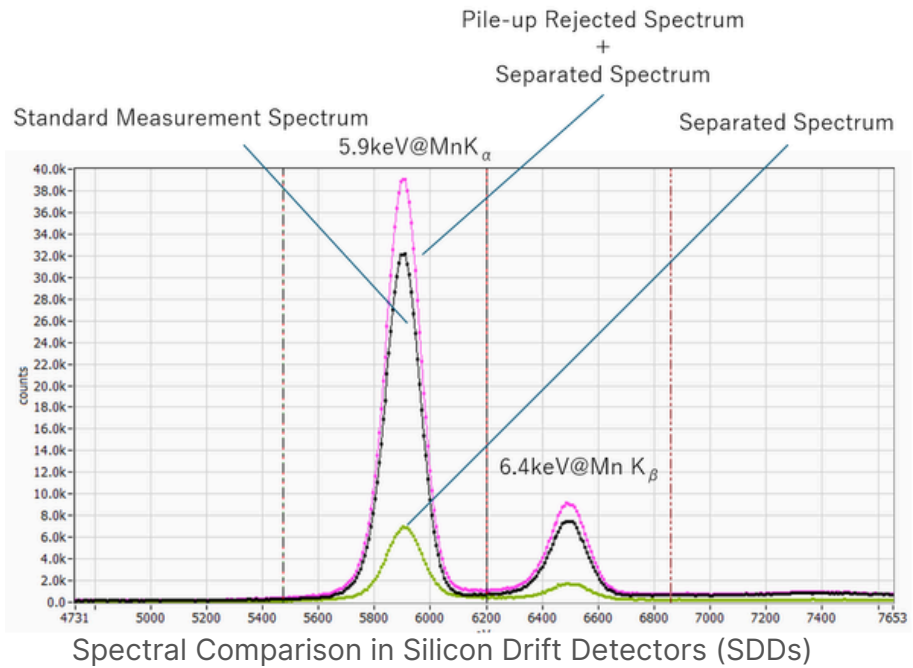
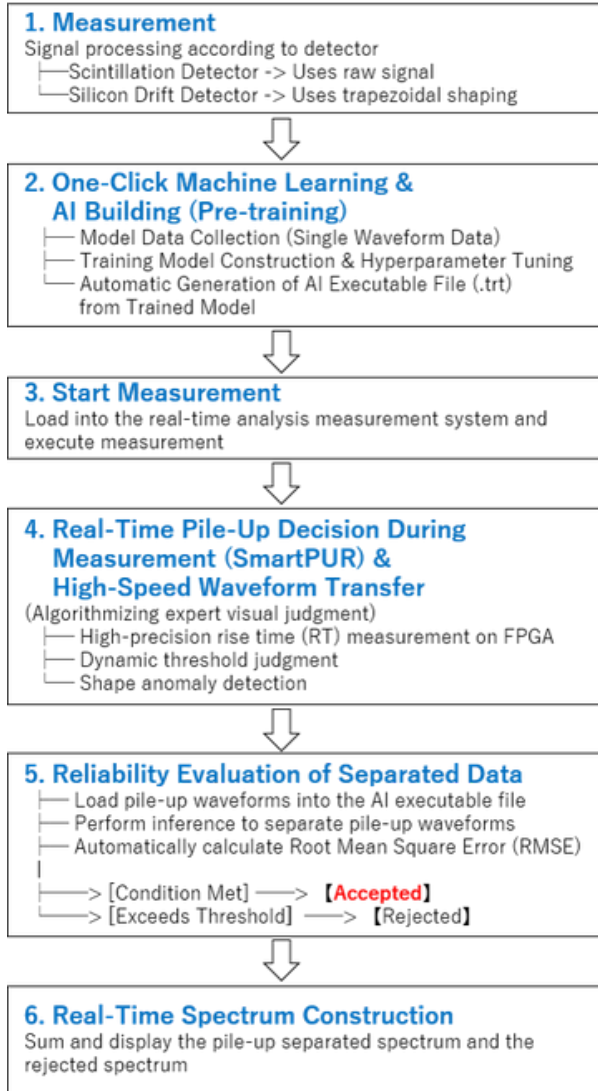


Pile-up Recovery via Smart Algorithm for Multi-pulse Unmixing and Reconstruction AI

Machine Learning-Driven Pileup Separation for Scintillators and SDDs

Accurately separates pileup signals in scintillation and Silicon Drift Detectors (SDDs). This prevents significant data loss at high count rates, fundamentally resolving the trade-off between energy resolution and measurement throughput.

Process Flow



Separation of Scintillation Detector Spectra under Pulse Pileup



Social Infrastructure, Transportation, and Industrial Equipment Maintenance

We specialize in the contract development (custom engineering) and manufacturing of specialized instruments designed for preventive maintenance and safety inspection of social infrastructure and industrial facilities that support everyday life.

Our track record includes neutron-based non-destructive testing (NDT) systems, periodic inspection equipment for elevators, diagnostic devices for low-speed rotating bearings, and acoustic emission (AE) sensor systems for early fault detection.

Furthermore, we boast extensive experience in constructing measurement systems that ensure the safe operation of transportation networks, ranging from feasibility studies on high-voltage circuits to the development of analyzers for Automatic Train Control (ATC) systems.



Security, Crime Prevention, and Access Control

We design and manufacture system devices that secure physical security for corporate offices and critical facilities.

We boast an extensive track record in the contract development and mass production of high-precision access control readers that combine contactless IC card technology with biometrics, such as finger vein authentication.

Furthermore, we deliver comprehensive security solutions, including intrusion detection sensors and alarm control systems.

Business Lines

- Development, fabrication and sale of radiation measurement hardware
- Development, fabrication and sale of electronic application equipment
- Design and fabrication of electronic circuit and software
(Analog circuit, digital circuit, various sensor circuit, built-in FPGA program, micro computer, firmware, etc...)
- Design and fabrication of instrumentation control program
- Design and fabrication of auto instrumentation system by computer

Contact

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