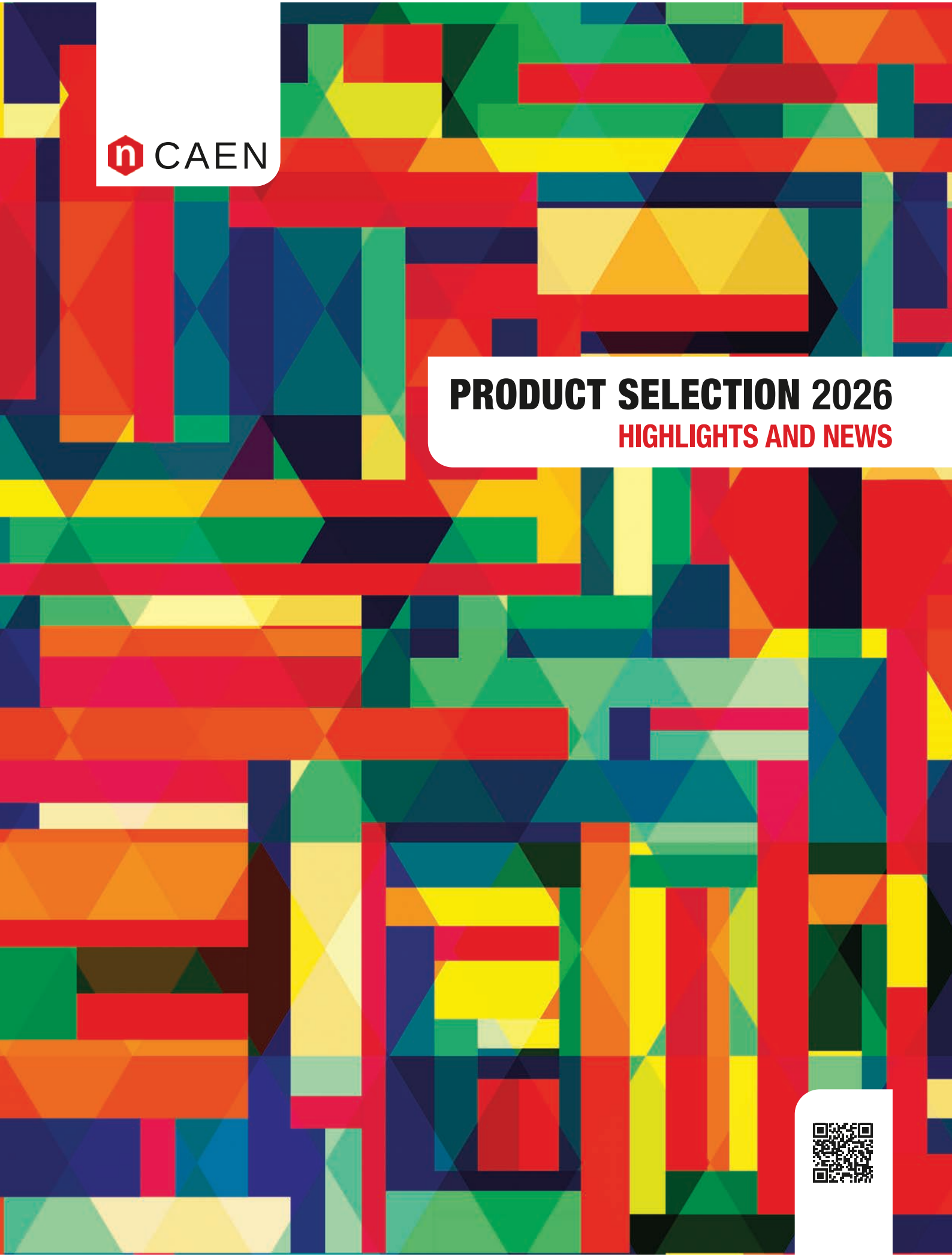
CAEN

PRODUCT SELECTION 2026

HIGHLIGHTS AND NEWS



We are proud of the high quality of our products.

ISO 9001

ISO 9001:2015 approved quality system ensures all our internal processes.

From R&D to the registration of the incoming purchase orders, through:
- Resource Planning
- Scheduling
- Production

Our quality system is responsible for the proper functioning of all our internal processes and is subject to regularly audits, carried out by the National Standards Authority.

From the initial product design and its development stages, till the delivery of the production batches, we follow documented procedures that cover every aspect of our business.

The quality of CAEN S.p.A. products is constantly monitored by the application of the UNI EN ISO 9001:2015 standard. CAEN S.p.A. is ISO 9001 certified since 1998.

IMQ CERTIFIED
QUALITY MANAGEMENT SYSTEM
ISO 9001:2015

IQNET
RECOGNIZED CERTIFICATION

Authorised research laboratory of the MIUR

INDEX

CAEN
Tools for Discovery

Electronic Instrumentation

CAEN SpA is a worldwide leading company provider of a comprehensive range of high/low voltage power systems and data acquisition/front-end modules compliant with IEEE standards for nuclear and particle physics.

Extensive research and development capabilities allowed CAEN SpA to play an important long-term role in this field. Thanks to years of close collaborations with the most important Research Centres of the world, CAEN strikes to deliver innovative products and services worldwide.

CAEN portfolio includes over a thousand products and solutions for nuclear measurements, whose quality is monitored throughout the entire production cycle and guaranteed by UNI EN ISO 9001:2015 standard. Its products appeal to a wide range of customers including engineers, scientists and technical professionals who all trust them to achieve their goals quickly and effectively.

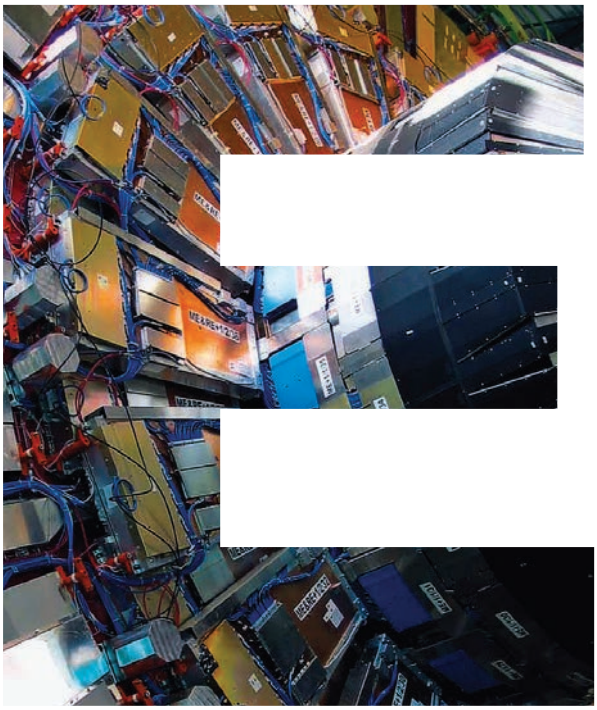
Thanks to plenty of experience in physics research, CAEN instruments are now used in several advanced industrial applications.

Products

Modular Pulse Processing Electronics
Waveform Digitizers
Digital Spectroscopy
Electronics for SiPM
Power Supplies
Digital Detector Emulators
Educational Kits

Applications

High Energy Physics
Astrophysics
Neutrino Physics
Dark Matter Investigation
Nuclear Physics
Material Science
Medical Imaging Applications
Homeland Security
Industrial Applications



CAEN SyS Spectroscopy Division

Products

Systems for waste decommissioning and dismantling activities

Radiation Monitoring Systems & Health Physics

Environmental Monitoring Stations and Systems

Nuclear Fuel Monitoring and Nuclear Safeguard solutions and Unattended platform

Nuclear Security systems (fixed, mobile and IoT solutions)

Gamma Spectroscopy (product and systems)

Neutron Counting, Multiplicity and Spectroscopy

Airborne Gamma Ray Spectrometry

CAEN **SyS** is the Systems & Spectroscopy Division of CAEN Spa, leader worldwide in development of Radiation Measurements Systems and Spectroscopy Solutions, engaged with high performance operations involving Nuclear Facilities, Measurements Laboratories, Security and Safeguards Applications.

CAEN **SyS** is committed to delivering exceptional innovative nuclear measurement instrumentation, expertise and technical support. CAEN **SyS INNOVATION** main goals are centered in the field of Nuclear Waste Management, Nuclear Security and Nuclear Safeguards.

Applications

Nuclear Safety & Safeguards

Nuclear Security

Laboratories

CUSTOMER SERVICE

CAEN is committed to delivering a comprehensive, reliable, and responsive Customer Support experience. Through the MyCAEN Portal users access an integrated suite device registration, technical support, warranty assistance and licence management

MyCAEN+

With a free **MyCAEN+** account, customers can register devices, activate and manage licenses, and submit tracked support tickets to our technical team. If remote troubleshooting isn't sufficient, the portal manages the RMA (Return Merchandise Authorization) process in coordination with CAEN HQ or local partners worldwide.

WARRANTY

Reliability is not optional. Every product in the CAEN catalog now **includes a standard 3-year warranty**, ensuring long-term reliability and support. Moreover, CAEN stands behind its technology, offering optional extended protection for your research and applications.

SALES NETWORK & CONTACTS

CAEN operates a Sales Network in more than 80 countries. National offices are listed at the end of this catalogue; distributors and local representatives are available at www.caen.it/sales-network.
For general enquiries, visit www.caen.it/contact-us/

Support requests should be submitted via **MyCAEN**, as described above.

CAEN

POWER SUPPLY
HIGHLIGHTS AND NEWS

Did you know?

More Flexibility for Your HV Systems, now with REDEL or RADIALL multipin connectors: a new option designed to enhance flexibility and compatibility in our high voltage (HV) boards.

A161X-A162X FAMILIES AND A1632H

INDIVIDUAL FLOATING CHANNEL DUAL RANGE BOARDS

The new generation of CAEN HV individual floating power supplies, particularly suitable for silicon detectors and resistive plate chambers

Compatible with CAEN Universal Multichannel Systems., housing and controlling high-voltage and low-voltage boards: up to 16 slot and 768 channels per crate.

Model	CH	Max Output Voltage	Max Output Current / Current Resolution	
			High Power	High Resolution
A1619 (*)	16	250 V	1mA Res: 1 nA	0.1 mA Res: 100 pA
A1612 (*)	16	500 V	1mA Res: 1 nA	0.1 mA Res: 100 pA
A1625	8	1 kV	20 mA Res: 100 nA	2 mA Res: 10 nA
A1626	16	1 kV	10 mA Res: 50 nA	1 mA Res: 5 nA
A1632H	8	6 kV	100 µA Res: 1 nA	20 µA Res: 50 pA

(*) Full Floating Board

UP TO
6 kV

SOFTWARE & LIBRARY

GECO · CAEN OPC Server · CAEN HV Wrapper · CAEN HiVoCS · EPICS

MORE INFO

A1612 A1619

A1625 A1626

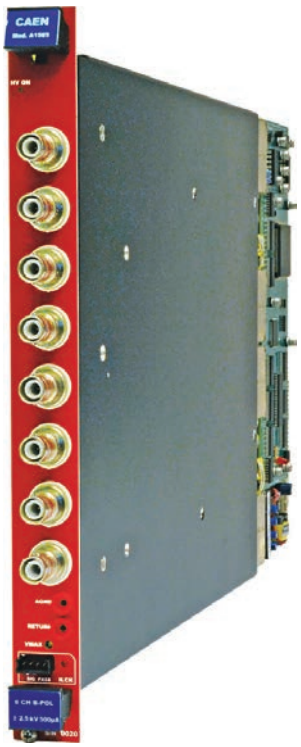
A1632H

HIGHLIGHTS

- Up to 16 independently controllable individual floating channels (A1619/A1612 Full Floating CH)
- Overcurrent programmable protections
- Programmable TRIP parameter
- Current generator operation in overcurrent condition
- Configurable maximum output voltage via front panel potentiometer (common value for all board channels)
- Interlock logic for unit enable
- Software Tools for easy channel management
- Fully compatible with CAEN Universal Multichannel Power Supply Systems

A1589

8 CHANNEL ± 2.5 kV/500 µA - 4 QUADRANT BIPOLAR BOARD



4-Quadrant power supply for industrial and accelerator-related applications

Compatible with CAEN Universal Multichannel Systems., housing and controlling high-voltage and low-voltage boards: up to 16 slot and 768 channels per crate.

The A1589 board contains 8 independent channels providing High Voltage through SHV connectors; it is compatible with the CAEN Universal Multichannel Power Supply System (SY4527, SY5527).

All channels are differential and can operate in the so-called four-quadrant regime, either supplying power or functioning as a resistive load. They provide a maximum voltage of ±2.5 kV (with 100 mV setting resolution) and a maximum current of ±500 µA, with excellent long-term output stability. In addition, the channels share a common floating return, which allows on-detector grounding and reduces noise levels; the floating return is insulated from the crate ground up to ±50 V (with a 65 V hardware limit)."

The board is provided with both current and voltage protections.

The maximum output voltage can be set through a potentiometer to a value which is common to all channels and can be read out via software. Channels may be enabled or disabled via the Interlock logic. The HV ramp-up and ramp-down rates may be selected independently for each channel in the 1 ÷ 500 V/s range (1 V/s step).

UP TO

2.5 kV

SOFTWARE & LIBRARY

GECO · CAEN OPC Server · CAEN HV Wrapper · CAEN HiVoCS · EPICS

MORE INFO

HIGHLIGHTS

- 8 independently controllable High Voltage channels
- Four-quadrant bipolar channels
- SHV coaxial connector
- Common floating return shared by all channels
- Low ripple
- Excellent long-term output stability
- Under/over-voltage alert, overcurrent and max. voltage protection
- Interlock logic for unit enable
- Software Tools for easy channel management
- Fully compatible with CAEN Universal Multichannel Power Supply Systems

A161X-A162X FAMILIES AND A1632H

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(*) Full Floating Board

UP TO
6 kV

HIGHLIGHTS

- Up to 16 independently controllable individual floating channels (A1619/A1612 Full Floating CH)
- Overcurrent programmable protections
- Programmable TRIP parameter
- Current generator operation in overcurrent condition
- Configurable maximum output voltage via front panel potentiometer (common value for all board channels)
- Interlock logic for unit enable
- Software Tools for easy channel management
- Fully compatible with CAEN Universal Multichannel Power Supply Systems

SOFTWARE & LIBRARY

GECO · CAEN OPC Server · CAEN HV Wrapper · CAEN HiVoCS · EPICS

MORE INFO

A1612 A1619

A1625 A1626

A1632H

COMING SOON

X2470

4 CHANNEL ± 8 kV/3 mA - REVERSIBLE HV POWER SUPPLY

UP TO
8 kV

FORM FACTOR

DESKTOP **NIM**

FEATURES

Touchscreen

SW-Selectable Polarity

SOFTWARE & LIBRARY

GECO

CAEN HV Wrapper

CAEN LabVIEW

Software-controlled polarity for total flexibility!

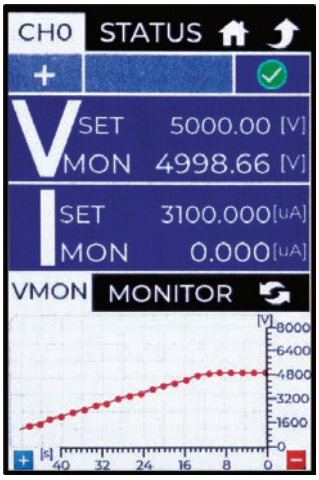
The CAEN Mod. N2470ET provides 4 independent High Voltage channels in a double-width NIM module. Each channel can deliver up to ±8 kV output voltage, 3 mA maximum current, and 12 W maximum power. Thanks to its ARM-based architecture, the module offers advanced channel management, including the possibility to reverse polarity directly via software.

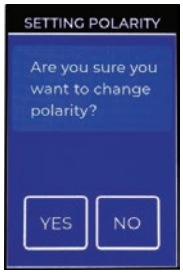
All channels share a common floating return (insulated from the crate ground), and HV outputs are provided through SHV connectors. Ramp-up and ramp-down rates are independently selectable for each channel in the range of 1 to 500 V/s with 1 V/s steps. The module features a 5 nA Iset/Imon resolution, with a ×10 zoom function on Imon for 500 pA precision.

Control can be performed locally through a touchscreen LCD display with a redesigned, intuitive interface, or remotely via USB 2.0 (type C) or Ethernet. A complete suite of software tools is available for remote operation, including low-level libraries, LabVIEW drivers, and graphical control applications freely downloadable from the CAEN website.

HIGHLIGHTS

- 4 independent High Voltage channels in 1U or 2U NIM module
- Output range: up to ±8 kV / 3 mA, 12 W max per channel
- Software-selectable positive or negative polarity for each ch.
- Common floating return and SHV coaxial output connectors
- Low ripple and high output stability
- Comprehensive protection system: overcurrent, under/over-voltage, and maximum voltage limits
- Interlock logic for board enable and individual channel kill
- Current monitor resolution: 5 nA (500 pA with ×10 Imon Zoom)
- 3.5″ touchscreen display for local control (2U version only)
- Remote control via USB-C or Ethernet, with daisy-chain capability
- Complete software tools for configuration, monitoring, and channel management





Graph function for monitoring Vmon and Imon values in real time during channel activity, with software-selectable positive or negative polarity for each channel.

Fully compatible with CAEN NIM crates, providing up to 12 slots and 2 kW.

MORE INFO

N2470 N2470ET NDT2470

A2554

8 CHANNEL 64 V/1.5 A - FULL FLOATING CHANNEL LV

High-performance output in a compact form factor, while maintaining the renowned CAEN reliability.

Compatible with CAEN Universal Multichannel Systems, housing and controlling high-voltage and low-voltage boards: up to 16 slot and 768 channels per crate.

The A2554 is a single-width (5 TE) board featuring 8 independent low-voltage floating channels accessible through DB37 connectors; fully compatible with CAEN Universal Multichannel Power Supply Systems (SY4527, SY5527).

Floating design enables on-detector grounding and reduces noise, with channel-to-channel insulation up to ±500 V. Each output features remote sensing to compensate for cable voltage drops.

Output range: 0–64 V (2 mV monitor resolution), Maximum output current is 1.5 A (50 µA resolution), up to 60 W per channel. Programmable ramp-up/down rates: 1–500 V/s (1 V/s steps).

Safety features include overvoltage, undervoltage, and overcurrent detection. In overcurrent mode, channels can shut down after a programmable trip time or continue as current generators. Channels can be enabled/disabled globally or individually via front panel logic signals.

UP TO
64 V

HIGHLIGHTS

- 8 independently controllable Low Voltage channels
- 0÷64 V output voltage and 1.5 A maximum current (60 W)
- Full Floating Channels
- DB37 output connectors
- Low ripple
- Individual remote sense lines
- Under/over-voltage alert, overcurrent and max. voltage protection
- Interlock logic for unit enable
- Software Tools for easy channel management
- Fully compatible with CAEN Universal Multichannel Power Supply Systems

SOFTWARE & LIBRARY

GECO · CAEN OPC Server · CAEN HV Wrapper · CAEN HiVoCS · EPICS

A255X FAMILY BOARDS

- **A2551:** 0÷8 V output voltage and 12 A maximum current (60 W)
- **A2552:** 0÷16 V output voltage and 6A maximum current (60 W)
- **A2553:** 0÷32 V output voltage and 3A maximum current (60 W)
- **A2554:** 0÷64 V output voltage and 1.5A maximum current (60 W)

MORE INFO

X8034H FAMILY

8-16 CHANNEL 6 kV/20 µA - HIGH RESOLUTION POWER SUPPLY UNITS

The new high resolution HV family is available in NIM, 19" Rack or Desktop form factor.

The modules provide either 8 or 16 HV channels with 6 kV / 20 µA output full scale, through SHV connectors. The channels are positive or negative, and can be individually enabled.

The voltage ramp rates may be set independently for each channel.

If overcurrent occurs, the channels can turn off after a programmable trip time, or remain on, and provide the maximum allowed current (current generator mode).

All units can be controlled either locally, via LCD Touchscreen, or remotely, via USB and Ethernet. User friendly apps and software libraries for the devices control are available as well.

UP TO
6 kV

FORM FACTOR

DESKTOP **RACK** **NIM**

FEATURES

Touchscreen

SOFTWARE & LIBRARY

GECO, CAEN HV Wrapper, CAEN LabVIEW

APPLICATIONS

- Silicon strip and pixel detectors
- Micro-pattern gaseous detectors (GEM, Micromegas)
- PIN diode arrays for beam and dose monitoring
- High-precision tracking and timing in nuclear physics

MORE INFO

R8034H DT8034H N8034H

HIGHLIGHTS

- NIM (2U), 19" Rack or Desktop unit
- 8 or 16 Independently controllable HV channels
- 6 kV maximum output voltage
- Positive or negative polarity
- 20 µA maximum output current
- Individual channels enable
- 100 mV voltage monitor resolution
- 500 pA current monitor resolution (with x10 Imon ZOOM: 50 pA)
- Programmable voltage ramp up / down rates
- Typical voltage ripple smaller than 2 mVpp (1 kHz ÷ 20 MHz)
- Overcurrent programmable protections
- Programmable TRIP parameter
- SHV connectors
- Current generator operation in overcurrent condition
- Local control via 2.7" LCD Touchscreen
- Remote control via USB or Ethernet
- Software Tools for easy channel management

A7590D/DT5490

1 CH 75 V/50 mA - FLOATING DIGITAL CONTROLLED SIPM POWER SUPPLY

COMING SOON

The A7590D is an isolated high-voltage regulator specifically designed to bias SiPMs. It includes a built-in temperature compensation controller with a programmable coefficient.

The module can be controlled digitally via UART and I2C. The output voltage can also be controlled proportionally by an analog input, which is provided on a dedicated pin.

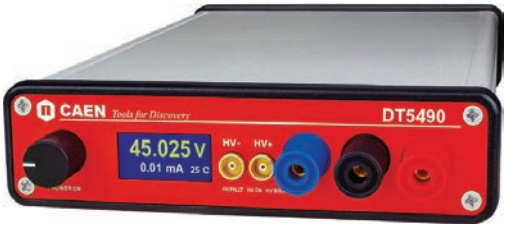
The A7590D can deliver up to 50 mA, with the output voltage regulated from 2 V to 75 V at a 1 mV resolution. You can also set a programmable ramp with a configurable slope, starting from 1.2 V up to the setpoint.

For monitoring, the module is equipped with a 24-bit ADC for both output voltage and current. A PID controller can be enabled to leverage the high resolution of the ADC to stabilize the output.

The module's output is electrically isolated from its power supply and control interface. This allows it to be used as a floating power supply. Alternatively, by grounding either the negative or positive output, it can function as a non-isolated positive or negative power supply.

An external USB-controlled desktop version, the DT5490, is also available. This version is powered by an external +12V power supply.

Produced in collaboration with Nuclear Instruments.



UP TO
75V

HIGHLIGHTS

- 2-75 V Output Voltage
- Programmable output ramp starting from 1.2 V to output voltage
- 50 mA maximum output current
- 1 mV Output Step Voltage
- Low noise, 560 µVrms at 50mA
- Isolated output. It can be used to provide both positive and negative power supply
- I2C, UART, USB and Analog Voltage control
- HV SiPM temperature compensation with remote temperature sensing
- 100 µV resolution voltage monitor
- 100 nA resolution current monitor
- 0.05°C resolution temperature monitor
- Programmable over-current protection
- Open source libraries in C/C++ and Python compatible with Arduino and Raspberry PI
- Working on Windows® and Linux®
- Zeus User interface to control multiple devices both via I2C, UART or USB
- THT and SMT compatible footprint

COMM. INTERFACES

UART · USB 2.0 · I²C COMM

SOFTWARE & LIBRARY

CAEN ZEUS

APPLICATIONS

- Precision timing and fast photon counting
- Dual-gain spectroscopy with SiPM detectors
- Scalable readout for large SiPM arrays
- Medical imaging and trigger-based acquisition

MORE INFO

CAEN

WAVEFORM DIGITIZERS

HIGHLIGHTS AND NEWS

Did you know?

Our VME64 and VME64X digitizers are fully compatible with the new µ-crate enclosure, allowing them to be used as desktop modules.

DIGITIZER SERIES 1.0

WAVEFORM RECORDING AND DIGITAL PULSE PROCESSING

Reliable, proven, and widely adopted, from waveform capture to real-time data acquisition, across countless physics applications

APPLICATIONS

- Nuclear and Particle Physics
- Neutrino Physics
- X-ray and Gamma Spectroscopy with HPGe or Silicon detectors
- Homeland Security and Environmental Monitoring
- Fast Neutron spectroscopy
- Dark Matter and Astroparticle Physics
- Fusion Plasma diagnostic
- High resolution Time of Flight
- PET and other Medical Imaging modalities

The CAEN Digitizers 1.0 family represents the first generation of CAEN's digital acquisition platforms, developed through years of experience in nuclear electronics and widely adopted by research laboratories around the world. Available in VME64, VME64X, and Desktop form factors, these digitizers offer a flexible architecture: from basic waveform recording using Flash ADCs or switched capacitor arrays, to advanced Digital Pulse Processing (DPP) via dedicated firmware.

Acquisition modes include both common trigger — for synchronous capture across all channels — and channel-independent self-triggering, enabling trigger-less operation. Data is stored in on-board SRAM memory with configurable event sizes and pre/post-trigger regions.

Multi-board synchronization is supported through external clock and trigger distribution lines. The digitizers also feature a wide set of analog and digital I/O options to integrate seamlessly into complex setups.

CAEN provides dedicated software tools for board configuration and data acquisition, along with libraries and demo codes to support user-defined developments. A variety of firmware versions is offered, each tailored to specific use cases, ranging from waveform recording to real-time extraction of energy, timing, and pulse shape parameters. Firmware can be updated according to application requirements.

- **Flash ADC or switched capacitor ADC architecture**
- **Multi-event acquisition memory (SRAM) with programmable event size and trigger window**
- **Common trigger mode for synchronous multi-channel acquisition**
- **Independent self-trigger mode available with DPP firmware**
- **Real-time Digital Pulse Processing (DPP) for energy, timestamp, and PSD extraction (on supported models)**
- **DC offset adjustment on each channel**
- **Clock and trigger I/Os for multi-board synchronization**
- **Analog input: single-ended, 50 Ω impedance**
- **General-purpose digital I/Os via LEMO or LVDS connectors (depending on form factor)**
- **Analog monitor output (LEMO) for trigger, test pulses, occupancy or DC level**
- **Communication interfaces: USB 2.0, Optical Link, VME64/VME64X**

DIGITIZER 1.0 FAMILIES

	x720 8/4/2 CH. 12-BIT 250 MS/s - FLASH ADC	x724 8/4/2 CH. 14-BIT 100 MS/s - FLASH ADC	x725S/ x730S 16/8 CH. 14-BIT 250/500 MS/s - FLASH ADC	x740 64/32 CH. 12-BIT 62.5 MS/s - FLASH ADC	x751 8-4/4-2 CH. 10-BIT 1/2 GS/s - FLASH ADC	x761 2/1 CH. 10-BIT 4 GS/s - FLASH ADC	x742 32+2/16+1 CH. 12-BIT 5 GS/s - SWITCHED CAPACITOR	x743 16/8 CH. 12-BIT 3.2 GS/s - SWITCHED CAPACITOR
FIRMWARE								
WAVEFORM RECORDING	WV, TS, ZS	WV, TS, ZS	WV, TS	WV, TS	WV, TS	WV, TS	WV, TS	WV, TS, QDC
DPP PSD	ICH, WV, TS, QDC, PSD	-	ICH, WV, TS, TDC, QDC, CFD, PSD	-	ICH, WV, TS, TDC, QDC, CFD, PSD	-	-	-
DPP PHA	-	ICH, WV, TS, PHA	ICH, WV, TS, TDC, PHA	-	-	-	-	-
DPP QDC	-	-	-	ICH, WV, TS, QDC	-	-	-	-
DPP ZLE PLUS	-	-	WV, TS, ZS	-	WV, TS, ZS	-	-	-
DPP DAW	-	ICH, WV, TS, DAW	ICH, WV, TS, DAW	-	-	-	-	-
SOFTWARE								
CoMPASS CAEN	●	●	●	●	●	-	-	-
WAVE DUMP 2 CAEN	●	●	●	●	●	-	-	-
WAVE DUMP CAEN	●	●	●	●	●	●	●	-
CAEN WAVECATCHER	-	-	-	-	-	-	-	●

List of the features acronyms

ICH Independent channels: the channels can trigger and acquire data independently and can be correlated using a user-defined (anti) coincidence logic criteria

WV Waveforms: acquisition of a programmable number of ADC samples (raw waveforms)

TS Timestamp: trigger coarse time stamp with low resolution

TDC Time to Digital Converter: fine time stamp information from the interpolation fast digital discriminator filter with high resolution (sub-ns resolution)

QDC Charge to Digital Converter: gated integrator (charge)

CFD Constant Fraction Discriminator: digital Constant Fraction Discriminator with programmable delay and fraction. Works in combination with TDC

PHA Pulse Height Analysis: pulse height of any exponential signals or coming from charge sensitive preamplifier

PSD Pulse Shape Discrimination: particle discrimination via double gated integration

ZS Zero Suppression: acquisition of a programmable number of ADC samples with zero suppression

DAW Dynamic Acquisition Window: acquisition of a dynamically adjusted number of ADC samples

DIGITIZER SERIES 2.0

WAVEFORM RECORDING AND OPEN FPGA DIGITAL PULSE PROCESSING

Fast, smart, and fully customizable, from waveform capture to real-time pulse analysis, in any physics experiment

- **DDR4 memory for larger acquisition buffers**
- **High-speed data readout via USB 3.0 and 1/10 GbE**
- **Selectable acquisition modes: common trigger for synchronous capture, independent trigger for trigger-less operation**
- **On-board DPP firmware for real-time extraction of energy, timestamp, and PSD**
- **Open FPGA option for user-defined logic**
- **Embedded Linux ARM processor for automation and local data handling**
- **Simple multi-board synchronization via clock connector passing clock and run-start signals**

The CAEN Digitizers 2.0 family builds on the experience gained with the Digitizers 1.0 series, introducing architectural upgrades and new features. The design includes DDR4 acquisition memory for deeper buffers, higher readout throughput via USB 3.0 and 1/10 GbE, and expanded FPGA resources for complex processing. The analog inputs are digitized by per-channel ADCs, with data processing handled in the FPGA. Different firmware types can be selected via software to match the application. Common trigger mode acquires all channels simultaneously, suitable for waveform recording with optional zero suppression. Independent trigger mode enables per-channel, self-triggered acquisition for trigger-less setups. Digital Pulse Processing (DPP) firmware performs real-time parameter extraction (energy, charge, time stamp, PSD), with the option to save both raw and processed data. The Open FPGA option allows implementation of custom logic alongside standard functions, while an embedded Linux-based ARM processor enables local automation and service tasks without a permanently connected DAQ PC. Multi-board synchronization is simplified by a clock connector capable of distributing both clock and run start signals.

APPLICATIONS

- Nuclear and Particle Physics
- Neutrino and Dark Matter Physics
- Nuclear Fusion and Fast Timing Diagnostics
- Gamma and Neutron Spectroscopy with Pulse Shape Discrimination
- Medical Imaging (PET, SPECT, Time-of-Flight)
- X-ray and Gamma Spectroscopy with HPGe or Silicon detectors
- Homeland Security, Radiation Monitoring, and Non-Destructive Testing
- Accelerator and Beam Diagnostics

DIGITIZER 2.0 FAMILIES

FIRMWARE	x2740 / 2745	x2730	x2751	x5560	DT5571
SCOPE FIRMWARE	WV, TS, DC	WV, TS	WV, TS		
DPP PSD	ICH, WV, TS, TDC, QDC, CFD, PSD	ICH, WV, TS, TDC, QDC, CFD, PSD	ICH, WV, TS, TDC, QDC, CFD, PSD		
DPP PHA	ICH, WV, TS, PHA	ICH, WV, TS, PHA	-		
DPP ZLE PLUS	WV, TS, ZS	COMING SOON	COMING SOON		
SCI 55XX				CH, WV, TS, PHA	CH, WV, TS, PHA
SOFTWARE					
WAVE DUMP 2 CAEN	•	•	•		•
CoMPASS CAEN	•	•	•		•
SCI-COMPILER Open FPGA	•	•	COMING SOON	•	•
CAEN FELib	•	•	•		•

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QDC Charge to Digital Converter: gated integrator (charge)

DC Decimation: scalable sampling rate

CFD Constant Fraction Discriminator: digital Constant Fraction Discriminator with programmable delay and fraction. Works in combination with TDC

PHA Pulse Height Analysis: pulse height of any exponential signals or coming from charge sensitive preamplifier

PSD Pulse Shape Discrimination: particle discrimination via double gated integration

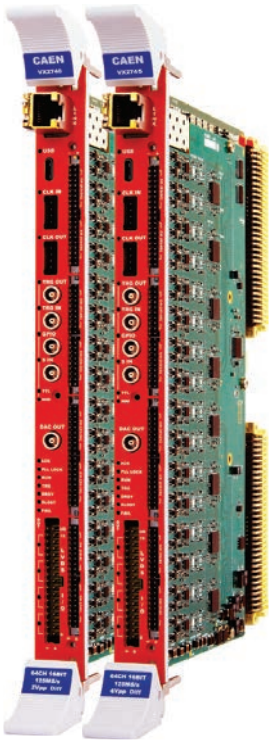
ZS Zero Suppression: acquisition of a programmable number of ADC samples with zero suppression

DAW Dynamic Acquisition Window: acquisition of a dynamically adjusted number of ADC samples

x2740/x2745 FAMILIES

64 CH 16 BIT 125 MS/s

Open FPGA and Digital Pulse Processing algorithms for high-channel density experimental setups!



The CAEN 2740 and 2745 families are 64-channel digital signal processors for radiation detectors, available in VME64, VME64X, and Desktop form factors (with optional 19” rack conversion kit). The 2740 features fixed-gain front-end electronics, while the 2745 provides software-programmable analog gain up to ×100, offering flexibility for different detector types. Typical applications include multi-channel analysis in nuclear spectroscopy with silicon strip detectors, segmented HPGe, scintillators with PMTs, and wire chambers. Firmware selection can be performed via Web Interface, allowing the user to switch between Scope mode, for waveform recording in triggered mode, and a range of Digital Pulse Processing modes including DPP-PSD for pulse shape discrimination, with charge integration and CFD algorithms, and DPP-PHA for pulse height analysis, suited for streaming readout applications, where no global trigger is needed. The Open FPGA architecture combined with the Sci-Compiler software tool enables users to develop custom scope or DPP firmwares without requiring FPGA design expertise. They support high-speed data readout via USB 3.0, 1 GbE, and 10 GbE UDP.

HIGHLIGHTS

- 64 analog input channels, differential or single-ended
- On-board firmware selection: Scope mode with common trigger, or DPP mode with independent channel self-triggers
- Open FPGA architecture enabling customization of pulse analysis algorithms via Sci-Compiler software tool
- High-speed connectivity via USB 3.0 and 1 GbE; 10 GbE (UDP) available on request.

FORM FACTOR

VME64 VME64X DESKTOP RACK

FEATURES

open FPGA

VGA

COMM. INTERFACES

1/10 GbE

USB 3.0

SOFTWARE & LIBRARY

SCI-COMPILER Open FPGA

CoMPASS CAEN

WAVE DUMP 2 CAEN

CAEN FELib

WEB INTERFACE

MORE INFO

x2740 Family | V2740 | VX2740 | DT2740

x2745 Family | V2745 | VX2745 | DT2745

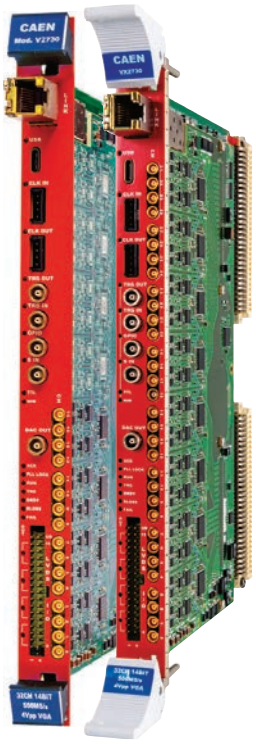
x2730 FAMILY

32/16 CH 14 BIT 500 MS/s

Unmatched resolution and sampling rate for the most demanding fast detector needs.

UPDATE

Introducing the new 16-channel version, also available as a VME64 form factor.



The CAEN x2730 is a high-performance 16/32-channel digitizer designed for fast and high-resolution signal acquisition. With 14-bit resolution and 500 MS/s sampling rate per channel, it is ideal for capturing fast and very fast signals from detectors such as liquid or inorganic scintillators coupled to PMTs or SiPMs.

Built on the powerful Xilinx Zynq UltraScale+ SoC, which combines programmable FPGA logic with ARM multi-core processors, the x2730 enables advanced real-time data processing and flexible signal handling.

Firmware can be selected via software, allowing the user to switch between Scope mode, for waveform recording with common trigger logic, and a range of Digital Pulse Processing modes including DPP-PSD for pulse shape discrimination, with charge integration and CFD algorithms, and DPP-PHA for pulse height analysis, suited for trigger-less applications, where no global trigger is needed.

The Open FPGA options allow users to develop custom signal processing algorithms through the SciCompiler software, making the generation of customized firmware easily accessible even to those who are not experts in FPGA programming.

The x2730 supports high-speed data readout via USB 3.0 and 1/10 GbE and is also available in a 16-channel version, with the option of a VME64 form factor for seamless integration into modular systems.

FORM FACTOR

VME64 VME64X DESKTOP RACK

FEATURES

open FPGA · VGA

COMM. INTERFACES

1/10 GbE · USB 3.0

SOFTWARE & LIBRARY

SCI-COMPILER Open FPGA · CoMPASS CAEN · WAVE DUMP 2 CAEN · CAEN FELib · WEB INTERFACE

MORE INFO

x2730 Family · VX2730 · DT2730

V2730

HIGHLIGHTS

- Available in 32- or 16-channel configurations, with the 16-channel model also offered in VME64 form factor
- Selectable firmware: Scope mode for common trigger acquisitions, or dedicated DPP firmware for trigger-less operation
- User-programmable FPGA for custom pulse processing and real-time signal analysis
- High-speed connectivity via USB 3.0 and 1 GbE; 10 GbE (UDP) available on request
- Easy synchronization tools for multi-board setups

x2751 FAMILY

16 CH 14 BIT 1 GS/s

Engineered for Ultra Fast Signals. Built for High Resolution

The CAEN x2751 is a 16-channel digitizer engineered for high-precision, ultra fast signal capture. Featuring 14-bit resolution and a 1 GS/s sampling rate per channel, it excels in accurate waveform digitization for time-critical physics experiments and ultra fast detectors such as scintillators, SiPMs, Diamonds, and PMTs.

Built on the powerful Xilinx Zynq Ultrascale+ SoC platform, combining programmable FPGA logic with dual-core ARM processors, the x2751 enables real-time data processing.

The possibility of real-time switching between multiple firmware simultaneously stored on-board, makes these digitzers easily manage different acquisition modes: basic recording of digitized waves (Scope mode with record length up to 80 ms) in triggered mode, and signal processing by algorithms (DPP mode) specialized in pulse shape discrimination (DPP-PSD), including charge integration and CFD algorithms, suited for streaming readout applications, where no global trigger is needed.

The Open FPGA options allow the User the development of custom signal processing algorithms through the Sci Compiler software, generating customized firmware is easily accessible also to users not expert in FPGA programming.

The x2751 can be accessed via Ethernet or USB interfaces, offering a versatile and robust solution for demanding fast, high-resolution digital readout applications in research environments.

HIGHLIGHTS

- Selectable on-board firmware: Scope Mode (common trigger) and DPP Mode (independent self-trigger per channel)
- Open FPGA architecture enabling full customization of pulse processing algorithms via Sci Compiler
- Multiple high-speed interfaces: USB 3.0, 1 GbE standard, and optional 10 GbE UDP for high-throughput data transfer
- Easy synchronization tools for multi-board setups

FORM FACTOR

VME64X **DESKTOP** **RACK**

FEATURES

open FPGA

VGA

COMM. INTERFACES

1/10 GbE

USB 3.0

SOFTWARE & LIBRARY

CI-COMPILER Open FPGA

CoMPASS CAEN

WAVE DUMP 2 CAEN

CAEN FELib

WEB INTERFACE

MORE INFO

x2751 Family

VX2751

DT2751

COMING SOON

DTL27XX FAMILY

UP TO 8 CH 1 GS/s

Bringing the Digitizer 2.0 great experience at the level of your lab! Suited for small set-up and experiments.

FORM FACTOR

DESKTOP

FEATURES

open FPGA

VGA

COMM. INTERFACES

1 GbE

USB 3.0

SOFTWARE & LIBRARY

CI-COMPILER Open FPGA

CoMPASS CAEN

WAVE DUMP 2 CAEN

CAEN FELib

WEB INTERFACE

MORE INFO

DTL2745 DTL2730 DTL2751

The DT27XX family of waveform digitizers features a compact desktop form factor and enough channel density to be profitably employed in laboratory environment, attending to low-channel applications in the different fields of Radiation Detection. Derived from the know-how of recent Digitizer 2.0, the new modules keep the main characteristics: triggered and streaming readout acquisitions modes; closed firmware solutions for the waveform recording (Scope) ad Digital Pulse Processing (DPP) with real-time switching option between multiple firmware stored onboard. The Open FPGA options allow for user development of custom signal processing algorithms. Generation of customized firmware is easily accessible also to users not expert in FPGA programming. Fully supported by CAEN software, libraries, and F/SDK.

HIGHLIGHTS

- DTL2745 - 8 Ch. 16 bit 125 MS/s Digitizer
- DTL2730 - 8 Ch. 14 bit 500 MS/s Digitizer
- DTL2751 - 4 Ch. 14 bit 1 GS/s Digitizer
- Based on Kintex UltraScale+ FPGA
- USB-3.0 and 1 GbE fast communication interfaces
- Triggered and streaming readout modes
- Scope and DPP firmware solutions ready to use
- FDK and SDK provided for Open FPGA and open Arm customizations
- Sci-Compiler, WaveDump2, CoMPASS fully supported

DT5571

1 CH 14 BIT 200 MS/s

COMING SOON

Flexible digitizer with Open FPGA and Sci-Compiler: waveform acquisition and real-time processing in a streamlined desktop format.

The DT5571 is a high-performance waveform digitizer featuring 14-bit resolution and a 200 MS/s sampling rate on a single analog input. Designed to meet the needs of modern acquisition setups, it combines precision, speed, and flexibility in a streamlined desktop form factor.

Two operating modes are supported: Scope Mode for raw waveform recording, and DPP Mode for real-time on-board signal processing. With software-selectable input polarity and an internal memory buffer, the DT5571 is ideal for reading out scintillators, SiPMs, and other fast detectors.

The module offers USB 2.0 and 1 GbE Ethernet interfaces for fast data transfer and remote access. Its Open FPGA architecture enables full customization of acquisition logic via CAEN's Sci-Compiler, with a graphical environment accessible to users with no VHDL experience.

It is also fully compatible with WaveDump2 and CoMPASS, supporting both advanced analysis and straightforward configuration. Whether for R&D, prototyping, or education, the DT5571 delivers reliable performance and flexibility in a compact, lab-friendly solution.

The DT5571 is available in desktop version and is ready to support your next acquisition challenge.

Produced in collaboration with Nuclear Instruments.

HIGHLIGHTS

- 1 analog input, 14-bit @ 200 MS/s, 50 Ω
- Scope & DPP modes with internal memory buffer
- Open FPGA – user firmware via Sci-Compiler
- USB 2.0 and 1 GbE Ethernet interfaces
- Compatible with WaveDump2 and CoMPASS

FORM FACTOR

DESKTOP

FEATURES

open FPGA · VGA

COMM. INTERFACES

1 GbE · USB 2.0

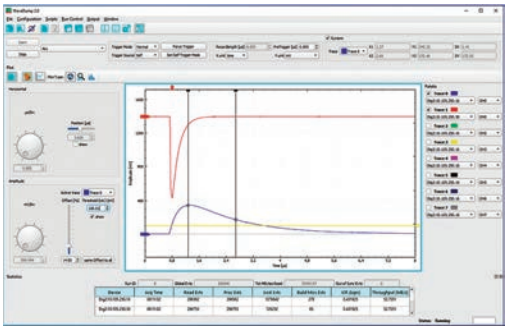
SOFTWARE & LIBRARY

CI-COMPILER Open FPGA · CoMPASS CAEN · WAVE DUMP 2 CAEN · CAEN FELib · WEB INTERFACE

MORE INFO

WAVEDUMP2

READOUT APPLICATION FOR CAEN DIGITIZER SERIES 1.0 - 2.0



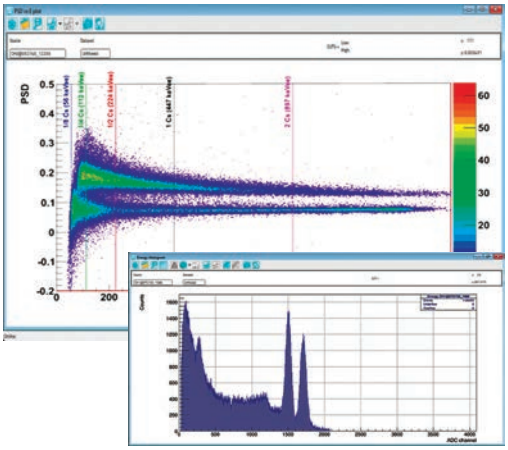
WaveDump2 combines powerful control of CAEN Digitizers running Scope firmware with a user-friendly interface, multi-board management, and advanced oscilloscope tools for seamless waveform acquisition, analysis, and data export.

WaveDump2 is an open-source C++ application based on the Qt framework, developed for advanced control and real-time monitoring of CAEN Digitizers 2.0 running Scope firmware. Built on the Dig1 library, it ensures backward compatibility with Digitizer 1.0 families (x725, x730, x740, x751). It features a powerful configuration GUI for full control of acquisition settings—sampling, trigger, I/O, and memory handling—with support for loading/saving user-defined setups. Multi-board and synchronized acquisitions are managed via a dedicated interface. A real-time 8-channel digital oscilloscope view enables interactive debugging and optimization, with zoom, cursors, trigger visualization, FFT, and histogram tools. Waveforms can be exported in ASCII or binary format. Fully open-source, it is ideal for lab development, system integration, and DAQ test benches.

MORE INFO

COMPASS

MULTIPARAMETRIC DAQ SOFTWARE FOR PHYSICS APPLICATIONS



CoMPASS turns your CAEN Digitizers into a powerful spectroscopy workstation — real-time multi-parameter acquisition, intuitive analysis, and seamless control of synchronized, multi-board DPP setups, all in one software.

CAEN Multi-Parameter Spectroscopy Software (CoMPASS) is a complete DAQ solution for CAEN Digitizers 1.0 and 2.0 running Digital Pulse Processing (DPP) firmwares, designed for multiparametric data acquisition in nuclear and particle physics. It enables simultaneous recording of energy, timing, and PSD information with a streamlined GUI supporting up to six real-time plots or histograms. Compatible with all CAEN DPP algorithms, CoMPASS offers intuitive parameter setup, channel-level monitoring, and full support for multi-board and synchronized acquisition. Advanced tools allow for event correlation across boards, ROI selection, live statistics, PSD/time gating, and peak fitting. Acquired data can be saved in multiple formats, including ROOT, ASCII, binary, and n42. Ideal for lab measurements, experimental setups, and portable spectroscopy systems, CoMPASS offers a powerful yet user-friendly environment for fast data inspection and analysis.

MORE INFO

SCI-COMPILER

OPEN FPGA DEVELOPMENT TOOL

Design your own firmware for Open FPGA modules – no VHDL required, just drag, connect and compile with Sci-Compiler.

Sci-Compiler is a graphical FPGA design tool tailored for CAEN's Open FPGA digitizers and logic modules. It allows users to create fully custom Digital Pulse Processing (DPP) using a visual environment – no VHDL or hardware knowledge required.

With a rich block library including arithmetic operators, comparators, logic gates, trapezoidal filters, constant fraction discriminators and time-stamping units, users can build complex real-time processing flows by simply connecting visual blocks in a flowchart-like interface.

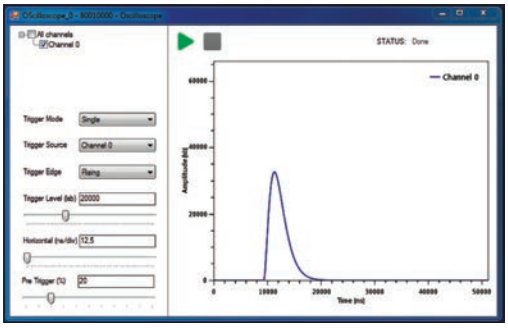
Sci-Compiler offers built-in simulation, real-time debugging tools, and one-click deployment to supported devices. Its intuitive workflow is suitable for both experienced developers and beginners in instrumentation and signal processing.

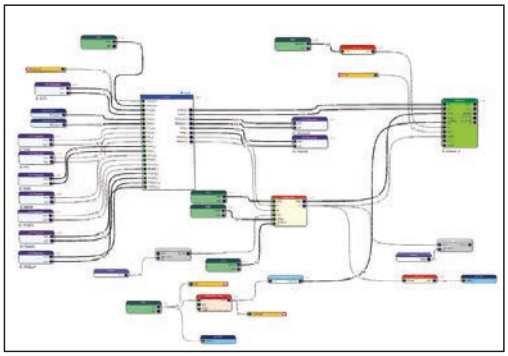
Compatible modules span across several CAEN product lines: digitizers, logic units, and multi-channel readout platforms.

It also offers access to the Sci-SDK, the general-purpose software development kit that allows users to quickly develop acquisition software fully compatible with the custom firmware created in Sci-Compiler.

Whether you're developing a complete DPP firmware or just customizing a filter, Sci-Compiler gives you full control of your Open FPGA hardware.

Produced in collaboration with Nuclear Instruments.





HIGHLIGHTS

- Graphical FPGA design tool – no VHDL required
- Compatible with multiple CAEN product families
- Full DPP chain creation: triggering, logic, timing, DSP
- Library including 150+ functions typically used in nuclear and particle physics
- One-click compile & upload to CAEN Open FPGA modules
- Simulation and debug tools built-in

MORE INFO

Sci-Compiler is compatible with CAEN Open FPGA digitizers, logic units, and readout platforms. Look for the "Sci-Compiler" label in this catalog or visit "sci-compiler.com" to explore the full list of supported products.

CAEN

FRONT-END READOUT SYSTEMS & ASICS

HIGHLIGHTS AND NEWS

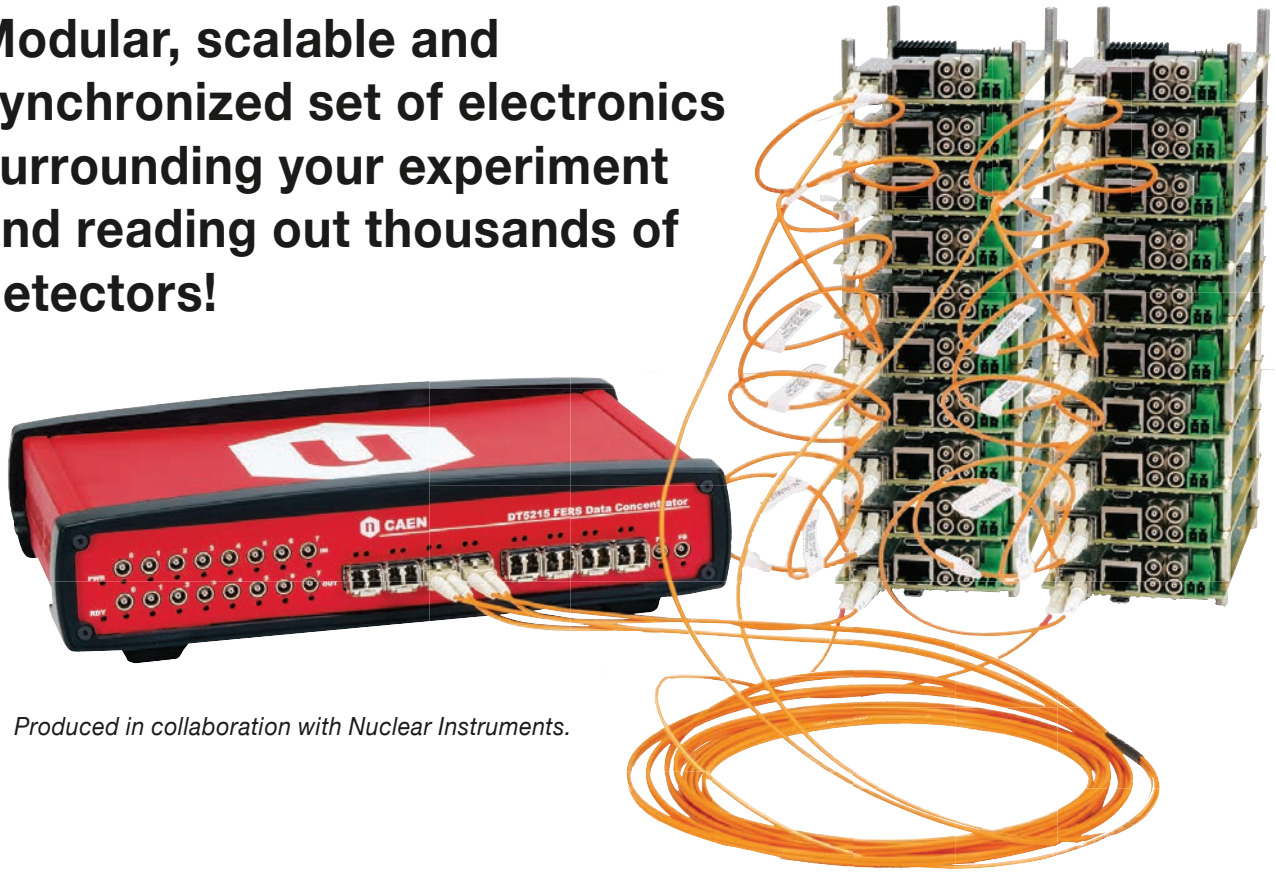
Did you know?

The FERS platform is designed to quickly integrate new ASICs, and the latest WEEROC chips will be implemented in the near future.

FERS-5200 FAMILY

MODULAR FRONT-END READOUT SYSTEM

Modular, scalable and synchronized set of electronics surrounding your experiment and reading out thousands of detectors!



Produced in collaboration with Nuclear Instruments.

- **Modular front-end readout system based on high-density ASICs (CITIROC, picoTDC, RADIOROC, PSIROC, etc.)**
- **High channel count (64/128 ch per board) with low power and low cost per channel**
- **Scalable architecture: from standalone boards to synchronized networks with thousands of channels**
- **Optical daisy-chain synchronization via DT5215/DT5216 concentrators**
- **Managed via Janus software (customized per board type)**
- **Unified C++ control API with FERSlib for acquisition and slow control**
- **Ideal for SiPMs, PMTs, silicon strips, GEMs, wire chambers, and more**

HIGH CHANNEL DENSITY POWERED BY ASIC FRONT-ENDS

At the core of each FERS board is a carefully selected ASIC, chosen by CAEN to match the characteristics of specific detector technologies. Leveraging commercial chips such as CITIROC, picoTDC, and RADIOROC, FERS boards provide compact front-end solutions with 64 or 128 acquisition channels per module—optimizing both cost-per-channel and power efficiency.

The board-level design is the result of CAEN's long-standing collaboration with Nuclear Instruments, where electronics are engineered specifically around the chosen ASIC to ensure optimal analog performance and full digital integration. Starting with the A5204, FERS boards adopt a common PCB layout that ensures long-term compatibility with future Weeroc ASICs, thanks to their pin-to-pin equivalence. This strategy streamlines development while maintaining support for next-generation features without redesigning the entire system—ensuring continuity, scalability, and reliability.

A SCALABLE AND MODULAR READOUT ARCHITECTURE

FERS is designed to seamlessly scale from compact lab setups to large-scale experiments with thousands of channels. Each board integrates analog front-end, digitization or time stamping, acquisition logic, and communication interface into a compact, self-contained module. To offer maximum flexibility, FERS boards are available in two hardware configurations: the naked version, optimized for integration into mechanical frames and dense detector planes, and the desktop version, ideal for standalone use during prototyping, testing, or small-scale experiments.

Single-board systems can be powered and controlled directly via Ethernet/USB, while multi-board installations rely on a robust synchronization and data routing infrastructure based on optical TDlink connections and the use of DT5215 or DT5216 concentrators. These units ensure precise distribution of clock and control signals across the acquisition chain.

Importantly, the DT5215 also allows synchronization of the FERS system with external instrumentation, including CAEN digitizer families and GPS-based timing sources, enabling full integration into hybrid DAQ environments where precise time alignment is critical.

This architectural flexibility allows users to reuse the same FERS electronics across different scales and use cases, with minimal reconfiguration. Whether you're reading out a few SiPMs on the bench or managing timing for a large calorimeter array, FERS ensures consistency, precision, and ease of deployment—making it an ideal solution for both R&D environments and production-grade detector systems.

UNIFIED SOFTWARE CONTROL: JANUS & FERSLIB

FERS boards are controlled via Janus, CAEN's acquisition software tailored to each board type. Janus provides a graphical interface for configuration, monitoring, run control, and data visualization. Every board has its own version of Janus, optimized for its specific acquisition modes and parameters—whether you're working with pulse-height analysis, counting, TDC or streaming data. For advanced integration, the FERSlib C++ API allows users to develop custom acquisition and control applications. FERSlib abstracts hardware complexity, providing uniform access to registers, data buffers, and synchronization logic across the entire FERS ecosystem. Together, Janus and FERSlib streamline both development and operation, making the system accessible for users at all levels.

CONNECTIVITY & CONTROL HIGHLIGHTS

	10/100 Mb Ethernet	RJ-45 port on every FERS unit. Provides TCP/IP control and data at up to ~2–3 MB/s, ideal for standalone tests, firmware updates and fast prototyping. IP address, DHCP and basic health metrics are set in the on-board Web Interface.
	TDlink Optical Link	Optical link running proprietay TDlink protocol over duplex fiber (3.125 Gb/s) that combines clock, slow-control and data. One DT5215 hub fans out 8 links, each daisy-chaining up to 16 boards, for 128 units, >8 k channels with <20 ps jitter and <6.4 ns fixed skew. The DT5216 features a single link that supports up to 8 daisy-chained units.
	USB 2.0	Micro-USB (front-ends) or USB-C (DT5215). Sustains ~ 3 MB/s and supports firmware upgrades or quick lab setups; synchronization is limited to single-board use.
	Embedded Web Interface	A browser-based GUI is available on all FERS boards. For single units, it allows network configuration and real-time status monitoring. On the DT5215 concentrator, it also provides TDlink control, log file download, and one-click FPGA/CPU firmware upgrade—no additional software required.
	USB 3.0, 1 GbE, 10 GbE	The DT5215 offers USB 3.0, 1 GbE, and 10 GbE interfaces for data acquisition, with transfer rates up to ~300 MB/s (USB 3.0, 10 GbE) and ~100 MB/s (1 GbE). The DT5216 provides only USB 3.0 connectivity.

A5202/DT5202

CITIROC-BASED 64 CH SIPM READOUT & BIAS

Flexible readout for single SiPMs or arrays. Full support for 64-channel matrices.

The A5202 (naked board) and DT5202 (desktop version) are compact, high-density front-end modules designed for the direct readout of Silicon Photomultipliers (SiPMs) within the CAEN FERS-5200 platform. Each unit integrates two Citiroc-1A ASICs, providing a total of 64 channels with complete analog signal conditioning and peak detection. Each channel includes a preamplifier, a fast shaper followed by a discriminator, and a slow shaper connected to a peak-and-hold circuit. The peak amplitude is acquired sequentially from each Citiroc-1A via a 13-bit external ADC under FPGA control, enabling accurate energy (pulse height) measurements. The fast shaper output is used to implement self-triggering per channel, as well as for Time over Threshold measurements, event counting, and the generation of a bunch trigger to start energy acquisition.

The module features a built-in A7585D programmable high-voltage supply to bias the connected SiPMs individually, eliminating the need for external HV sources.

The A5202/DT5202 can operate in standalone mode via USB or Ethernet for configuration and basic data acquisition. In larger systems, it connects via the TDlink protocol over optical fiber, which handles data readout, slow control, and synchronization to a DT5215/DT5216 concentrator board. This allows multiple FERS units to operate in a fully synchronized and scalable acquisition system based on a common reference clock.

The system is fully supported by the Janus 5202 open-source software, which provides intuitive GUI and console-based control for configuration and data acquisition. For advanced integration, CAEN also provides the FERSlib C++ library, enabling users to develop custom applications and DAQ systems. A wide selection of input adapters, remote cabling options, and mechanical accessories is available to ensure compatibility with various SiPM formats and experimental setups. The A5202/DT5202 is an ideal solution for scalable, low-power front-end readout in applications such as particle and nuclear physics, medical imaging, and radiation monitoring.

COMM. INTERFACES

10/100 MbE · USB 2.0 · TDLINK

SOFTWARE & LIBRARY

WEB INTERFACE · JANUS FERS CAEN · CAEN FERSlib

APPLICATIONS

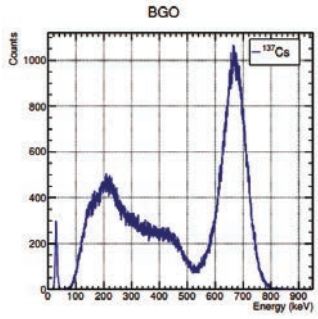
- Cosmic ray and particle detection
- Nuclear and gamma spectroscopy
- Calorimetry and high-energy physics
- Medical imaging and dosimetry

MORE INFO

A5202 DT5202

Amplitude Measurements with SiPM and ASIC (Citiroc 1A) Front-End Electronics.

Abstract - [...] In this paper, we describe a SiPM-based application with CAEN Front-End Readout System based on Citiroc 1A chip from Weeroc . Besides the use of this chip for well known single photon spectra and event counting, this paper exploits the possibility to acquire energy spectra directly from scintillators, paired with SiPM, through peak-and-hold readout. In particular, good energy resolutions have been achieved even with slow scintillators, like LYSO, CsI(Tl), and BGO, which have 40 ns, 1000 ns, and 300 ns of light decay time, respectively.[...] Several measurements have been performed using multiple radioactive γ sources and the resulting energy spectra demonstrate a resolution compatible with that found in literature [4] [5] [6] [7]. [...]



Calibrated energy spectra from 137Cs γ-radioactive source measured with BGO crystal coupled with single 6 × 6 mm2 SiPMs and acquired with the A5202 board.

See: Documentation Area - CAEN - Tools for Discovery/ AR9655 - Amplitude Measurements with SiPM and ASIC (Citiroc 1A) Front-End Electronics

A5203/DT5203

PICOTDC-BASED 64/128 CH HIGH-RESOLUTION TDC MODULE

The best achievable timing resolution in a compact form factor and optional dual-threshold discriminators.

The A5203 (and its desktop version DT5203) is a compact front-end module (~7 × 17 cm) within the CAEN FERS-5200 ecosystem, integrating the CERN picoTDC ASIC and providing 64 digital LVDS inputs (128 in the A5203B). Each channel timestamps rising and falling edges to reconstruct Time of Arrival (ToA), either as absolute time or as deltaT relative to a Tref pulse, and records Time over Threshold (ToT) for amplitude estimation and walk correction. At firmware level, a ToT filter rejects spurious low or saturated events, reducing noise and data throughput—especially valuable in high-rate environments.

Acquisition modes supported include Common Start, Common Stop, Trigger Matching, and continuous Streaming, allowing flexible operation in triggered or free-running scenarios

The unit offers 3.125 ps LSB resolution with typical jitter around 7 ps RMS for fixed-amplitude signals, and about 20 ps RMS over a 50 dB dynamic range after walk correction via ToT.

Multiple A5203/DT5203 units can be synchronized using optical TDlink via the DT5215 or DT5216 concentrator, enabling scalable multi-board systems with global timing alignment.

Full control and data acquisition is handled through Janus 5203, CAEN's open-source software suite for Windows® and Linux, featuring both GUI and console modes for configuration, monitoring, run control, histogramming, and data export. For advanced users, the FERSlib C++ API enables development of fully customized acquisition and analysis software.

COMM. INTERFACES

10/100 MbE · USB 2.0 · TDLINK

SOFTWARE & LIBRARY

WEB INTERFACE · JANUS FERS CAEN · CAEN FERSlib

APPLICATIONS

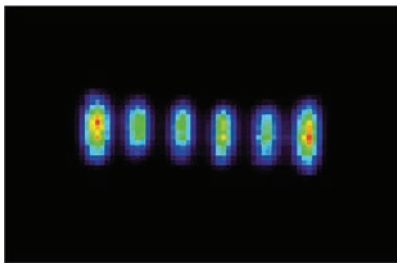
- Particle tracking
- Time-of-flight (ToF) systems
- Fast detector R&D
- Synchronized multi-channel acquisition systems

MORE INFO

A5203 DT5203

Picosecond timing measurements with the FERS-5200.

Abstract - [...] The A5203 FERS houses the recently released CERN picoTDC ASIC and provides high-resolution time measurements of Time of Arrival (ToA) and Time over Threshold (ToT). In this work we will analyze the performances of the A5203 unit: 3.125 ps LSB, ToA measurements down to ~7 ps RMS for signals of fixed amplitude over a single board, and ~20 ps RMS for input signals of variable amplitude (over a 50 dB dynamic range). The walk effect introduced by different amplitudes is corrected using the ToT. Besides walk correction, the ToT is used for signal amplitude reconstruction and background reduction. The A5203 has been used in various applications, both experimental and industrial. At the end of this work, its application in the ProVision PET scanner will be presented. Compactness, scalability and applicability to thousands of channels is required for the readout electronics.



Coronal view of a stack of 6 Na22 sources obtained during tests of the Picotech PET scanner.

See: https://pos.sissa.it/476/1203/

A5204/DT5204

RADIOROC-BASED 64 CH SIPM READOUT WITH HIGH-RESOLUTION TDC

Ideal for large SiPM arrays. Fully supports 64-channel matrices with bias and timing readout.

The A5204 (naked board) and DT5204 (desktop version) are advanced 64-channel front-end modules developed for high-performance readout of Silicon Photomultipliers (SiPMs) within the CAEN FERS-5200 ecosystem. At their core is the RADIOROC ASIC, specifically designed for fast and precise signal acquisition from SiPMs. Each channel includes a programmable preamplifier, dual-gain shaping chain, discriminator, and peak-and-hold logic, enabling both energy and time measurements. Timing is further enhanced by the integration of a 64-channel picoTDC ASIC from CERN, delivering sub-nanosecond resolution with 3.125 ps LSB.

The A5204 provides an internal programmable high-voltage generator (up to +85 V) and per-channel 8-bit DACs for fine SiPM bias adjustment, gain equalization, and temperature compensation. The fast discriminator line supports self-triggering down to 1/3 photoelectron, as well as majority and coincidence logic for trigger formation.

Data acquisition modes include spectroscopy, counting, and timing (common start/stop and streaming). Communication interfaces include USB, Ethernet, and optical TDlink, allowing the module to operate either standalone or as part of a synchronized multi-board system via the DT5215 or DT5216 concentrator.

Full control and data acquisition are provided by Janus 5204 open-source software, available in both GUI and console modes. For user-customized applications, the system is also supported by the FERSlib C++ API, enabling the development of tailored acquisition and control software.

COMM. INTERFACES

10/100 MbE · USB 2.0 · TDLINK

SOFTWARE & LIBRARY

WEB INTERFACE · JANUS FERS CAEN · CAEN FERSlib

APPLICATIONS

- Precision timing and fast photon counting
- Dual-gain spectroscopy with SiPM detectors
- Scalable readout for large SiPM arrays
- Medical imaging and trigger-based acquisition

HIGHLIGHTS

- 64-channel front-end with RADIOROC + picoTDC architecture
- Dual-gain energy readout with programmable shaping for PSD
- Sub-nanosecond timing resolution (55 ps FWHM, 3.125 ps LSB)
- Internal HV generator up to +85 V with per-channel DAC trimming
- Fast self-triggering down to 1/3 photoelectron
- Multiple acquisition modes: spectroscopy, timing, counting
- Full support for trigger logic, coincidences, and majority logic
- Standalone or scalable setup with TDlink optical daisy chain
- Real-time control and visualization with Janus 5204 software (GUI/Console)
- Compact size, USB/Ethernet/TDlink interfaces, low power consumption
- For user-customized applications, the system is also supported by the FERSlib C++ API, enabling the development of tailored acquisition and control software.

MORE INFO

A5204 DT5204

COMING SOON

A5205/DT5205

PSIROC-BASED 64 CH CHARGE & TDC READOUT MODULE

Ideal for precision readout of silicon strips, GEMs, and PIN diodes in high-resolution tracking and low-charge detection systems.

The A5205 (naked version) and DT5205 (desktop version) are 64-channel front-end modules of the CAEN FERS-5200 family, designed for the high-resolution readout of PIN diodes, silicon strip detectors, and GEMs. At their core is the Weeroc Psiroc ASIC, coupled with the CERN picoTDC chip, enabling precise charge and timing measurements for capacitive detectors operating at very low signal levels.

Each channel features a charge-sensitive preamplifier with programmable gain from 125 mV/pC up to 4 V/pC, followed by a shaping stage and peak detector. The input stage accepts both positive and negative polarity signals. Psiroc chip enables triggering down to 0.5 fC on sub-20 pF detectors, and supports dual-gain charge measurement. For input charges above a few pC, a channel-wise Time over Threshold (ToT) output is also available, providing high-rate, low-dead-time pulse amplitude estimation without the need for multiplexed ADC conversion.

Data acquisition can operate in global or per-channel mode, with individual triggers routed to the integrated picoTDC, offering sub-nanosecond timing resolution (3.125 ps LSB). Timestamp and PHA acquisition are fully supported.

The A5205/DT5205 includes synchronization and communication interfaces (USB, Ethernet, and TDlink) and is fully managed by the Janus 5205 open-source software, available for Windows® and Linux®. A complete set of dedicated accessories—cables, adapters, and remote connectors—is available to support a wide range of detector formats and experimental configurations.

COMM. INTERFACES

10/100 MbE · USB 2.0 · TDLINK

SOFTWARE & LIBRARY

WEB INTERFACE · JANUS FERS CAEN · CAEN FERSlib

APPLICATIONS

- Silicon strip and pixel detectors
- Micro-pattern gaseous detectors (GEM, Micromegas)
- PIN diode arrays for beam and dose monitoring
- High-precision tracking and timing in nuclear physics

MORE INFO

A5205 DT5205

HIGHLIGHTS

- 64-channel readout with Weeroc Psiroc ASIC
- Triggering down to 0.5 fC for sub-20 pF detectors
- Dual-gain charge measurement and ToT output
- Sub-ns timing resolution with picoTDC (3.125 ps LSB)
- Positive/negative input polarity supported
- Adjustable gain up to 4 V/pC, shaping from 20 ns to 3 µs
- Low dead time acquisition without multiplexed ADC
- Fully supported by Janus 5205 software suite

DT5215

CONCENTRATOR BOARD FOR FERS-5200

The DT5215 Concentrator Board manages synchronization and data aggregation from multiple FERS units within the CAEN acquisition ecosystem. It provides 8 optical links running the CAEN TDlink proprietary protocol, each capable of daisy-chaining up to 16 FERS boards, for a total of up to 128 modules per concentrator—corresponding to several thousand acquisition channels, depending on the configuration.

At the heart of the concentrator is an embedded Linux®-based single board computer, which supervises the FERS network and collects data fragments from each unit. These fragments are transmitted directly to the host computer through high-speed communication interfaces, including USB 3.0, 1 Gb Ethernet, and 10 Gb Ethernet, supporting data rates up to 300 MB/s.

Multiple DT5215 boards can be synchronized to build scalable, distributed acquisition systems with unified timing. Synchronization can also be extended to CAEN digitizer families, enabling time-correlated acquisition across heterogeneous systems. In such cases, FERS modules and digitizers typically run under separate acquisition software, unless the user develops a custom unified solution using the available software libraries.

The DT5215 is fully supported by CAEN's Janus software for system configuration, monitoring, and control, and by the FERSlib C++ API, which allows users to develop custom acquisition and data handling applications.

COMM. INTERFACES

USB 3.0 | 1 GbE | 10 GbE

FEATURES

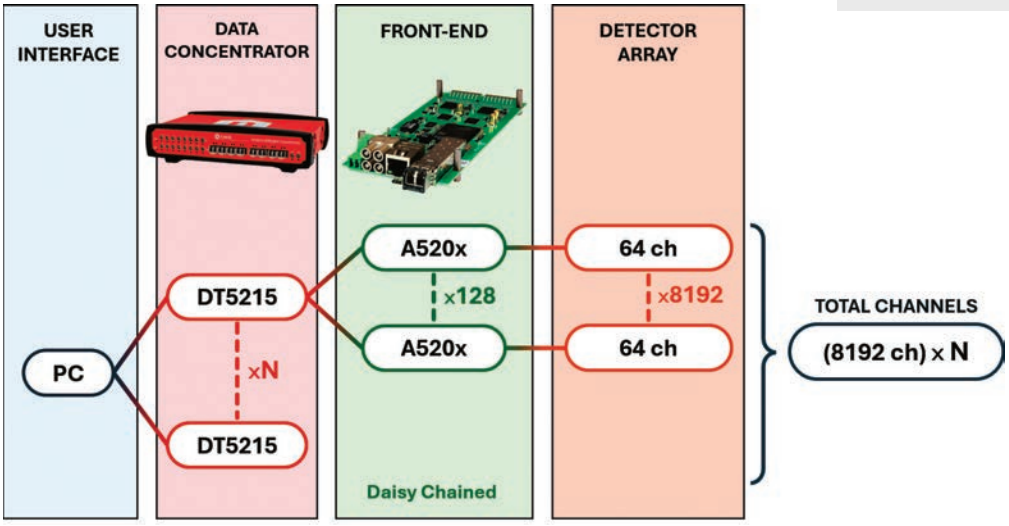
MULTI BOARD SYNC

SOFTWARE & LIBRARY

WEB INTERFACE | JANUS FERS CAEN | CAEN FERSlib

HIGHLIGHTS

- Concentrator board for multiboard management in FERS-5200, the CAEN platform for the readout of large arrays of detectors (SiPM, MA-PMTs, Gas Tubes, Si detectors, ...).
- Scalability: from a single standalone FERS unit for prototyping to many thousands of channels, with simple tree network structure.
- Modularity: multiple FERS units can be distributed on large detector volume and managed by a single Concentrator board.
- 8x TDlink for event data building, processing and formatting.
- Easy-synch: one single optical link (TDlink) for data readout, slow control and boards synchronization.
- Available also in single TDlink version (DT5216): supports up to 8 FERS units in daisy chain.



NOTE: using the A5203B the channel number is doubled

MORE INFO

DT5216

COMPACT DATA CONCENTRATOR FOR FERS-5200

Ideal for mid-scale detector setups. Manages up to 8 FERS units with synchronized readout and control.

The DT5216 is a compact Data Concentrator developed for the CAEN FERS-5200 platform, designed to manage small-to-medium scale readout systems based on front-end units such as the A5202, A5203, A5204 and A5205. It features a single TDlink optical port and supports up to 8 FERS units in daisy chain, allowing the acquisition of up to 512 channels when used with 64-channel front-end boards. TDlink handles data transfer, slow control, and timing synchronization over a single optical connection, significantly simplifying system architecture.

Communication with the host PC is provided via high-speed USB 3.0 (Type-C), ensuring fast data throughput and streamlined setup. The DT5216 is ideal for prototyping, beamline tests, and mid-scale experiments requiring synchronized, multi-board operation without the complexity of a full-scale system. Its compact size and low channel count make it a cost-effective alternative to the DT5215 concentrator, while maintaining compatibility with the entire FERS-5200 ecosystem.

Firmware is upgradable via USB, and synchronization performance is optimized through software compensation of optical delays, achieving typical clock jitter of 20 ps and fixed skew under 6.4 ns.

COMM. INTERFACES

USB 3.0

SOFTWARE & LIBRARY

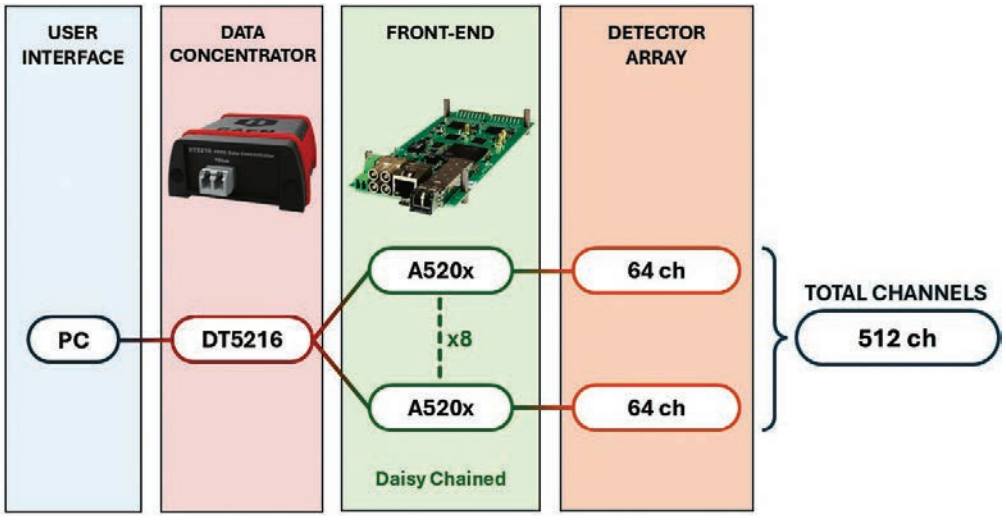
JANUS FERS CAEN

CAEN FERSlib

HIGHLIGHTS

- Compact concentrator for up to 8 FERS units via TDlink
- USB 3.0 host interface with up to 300 MB/s readout rate
- Full synchronization: data, control, and timing over one link
- Ideal for prototyping and distributed DAQ setups
- Firmware upgradeable via USB; plug-and-play operation
- Seamless integration with Janus software

MORE INFO



NOTE: using the A5203B the channel number is doubled

JANUS

FERS-5200 DAQ SOFTWARE

A single DAQ software to control the FERS-5200 board family. Available in Console and GUI Mode, it allows the user to customize the DAQ, and offers an easy way to approach multi-boards and high-channel density FERS-5200 systems.

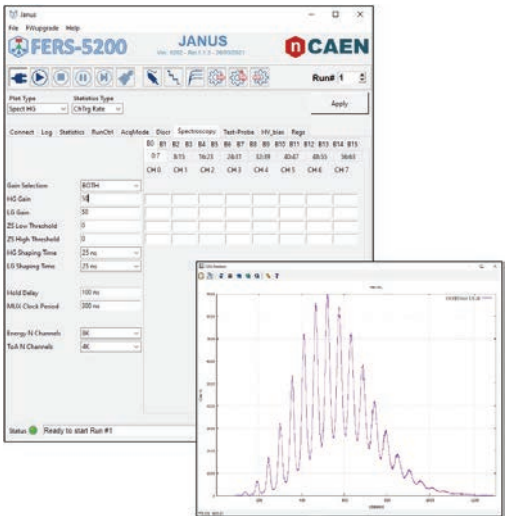
Janus is an open source software for the control and readout of FERS-5200 boards. Available in versions different for each FERS unit,, it can be used as a platform for the development of custom DAQ, tailored to the specific application. Indeed, the user can change the data treatment, the acquired statistics and the output file format.

Janus can manage multiple FERS units connected via Ethernet or USB directly as well as the readout of the DT5215 or DT5216 Concentrator Board, so that a single user interface is available for the whole system.

Janus is composed of two parts, one written in C, which is the real heart of the application, one written in Python which manages the user interface. The plots are executed through Gnuplot. All the configuration parameters are written in a textual configuration file.

It is possible to launch and use Janus in 2 different modes:

- **Console Mode**. In this case, the Python part of the software is not used. The user can edit the configuration file with any text editor and save the proper values for the desired parameters. Then, the user can launch a purely textual console window. The application writes a series of messages (which are also saved in a log file) and, during the run, prints statistics on the screen. The only graphical part is the plot, which is managed by Gnuplot.
- **GUI Mode**. In this case, the user only have to run the Python program which calls the C program and connects to it via a socket to send commands and receive messages which are then displayed in the Python GUI.



HIGHLIGHTS

- Model-dependent GUI for a quick and easy start
- Open-Source for user customization
- Management of the acquisition parameters of all connected boards
- Multi parametric Jobs and Runs with time or counts preset
- Data saving of lists in .bin, .txt format
- Statistics and Plots visualization

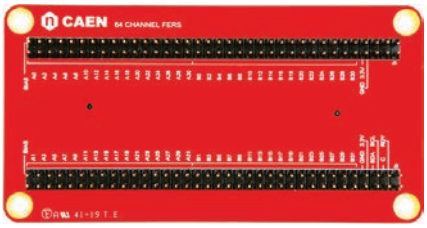
MORE INFO

MORE INFO

ACCESSORIES
FOR FERS-5200

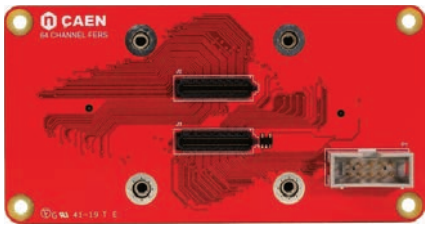
A5250

Converts 2.54 mm pitch pin headers to FERS-5200 input format, enabling direct connection of SiPMs or similar detectors to CAEN A5202 and A5204 front-end readout boards.



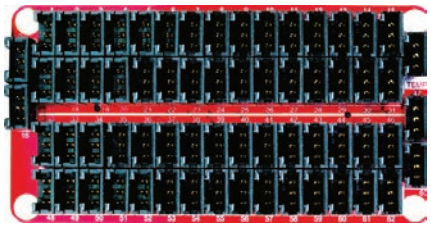
A5251

Interfaces Hamamatsu S13361-3050AE-08 SiPM matrices with A5202 and A5204 boards, providing direct signal routing to FERS-5200 inputs via Samtec-compatible high-density connectors.



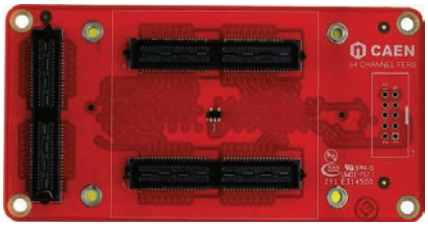
A5253

Ideal for connecting individual SiPMs to A5202 and A5204 boards via 3-pin connectors; compatible with A5261 cable for low-noise, remote signal transmission to FERS-5200 inputs.



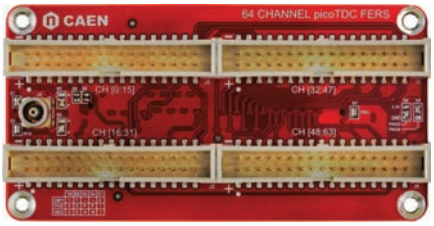
A5254

Connects OnSemi SiPM matrices (ARRAYJ/ARRAYC-60035-64P-PCB) to A5202 and A5204 boards using high-density Samtec connectors, ensuring reliable signal transfer to FERS-5200 inputs.



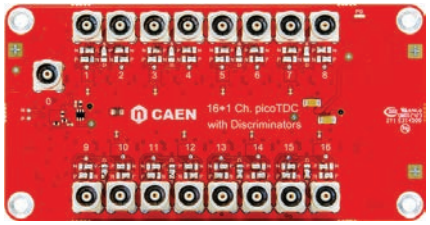
A5255

Provides direct connection of 64 LVDS differential inputs to A5203 via 2.54 mm pitch quad-row header, allowing signal routing from custom detectors to the FERS-5200 TDC system.



A5256

Provides 16+1 single-threshold or 8+1 dual-threshold edge discriminators for single-ended signals, delivering LVDS outputs to A5203 for time digitization in FERS-5200 systems.



A5260

Flat cable with 2.54 mm pitch connectors, used to place FERS boards away from front-end adapters, reducing mechanical constraints near the detector.

A5261

Shielded cable with 3-pin connectors designed to route single-ended signals to A5202/A5204 inputs via A5253 adapter, ensuring low-noise remote connection.

A5270

Fan unit for FERS boards, used when ventilation is limited or when required by system specifications to ensure proper cooling of non-boxed modules.

MORE INFO

WEEROC

FRONTEND ASICS FOR PARTICLE PHYSICS

CAEN carries the worldwide distribution agreement with Weeroc, the microelectronics company designing front-end readout ASICs for many photodetectors commonly used in physics applications. Weeroc offers a complete range programmable readout chips and associated support for a fast and succesfull integration in the final system.

RADIOROC
Radioroc is a 64-channel front-end ASIC designed to readout silicon photo-multipliers (SiPM).

Up to 64 channels

High channel density in BGA or QFP form factor, allowing for an ultra-compact and cost-effective design of your experiment

Wide variety of detectors

Suitable for SiPM, GEMs, Si strip, MA-PMTs and other

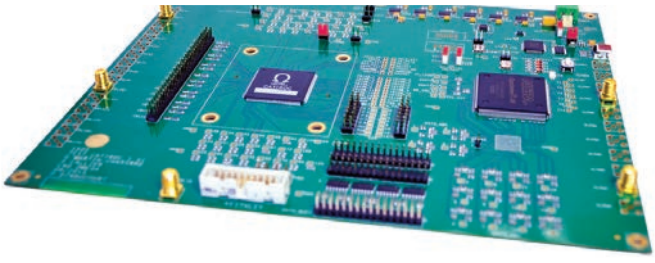
LIROC
Liroc is a 64-channel front-end ASIC designed to readout silicon photomultipliers (SiPM) for LIDAR/fast photon counting.

PSIROC
Psiroc is a 64-channel front-end ASIC designed to readout PIN diodes, silicon strips and GEMs, handling detector capacitances ranging from 0 up to few hundreds of pF.

TEMPOROC
Temporoc is a 64-channel front-end ASIC designed to readout silicon photomultipliers (SiPM) in particle time-offlight (TOF) measurement applications.

Testboard available for each ASIC, to evaluate its performances easily and quickly, allowing a versatile use with real detectors

POPROC
POPROC is a 64-channel front-end ASIC for MA-PMT readout, specifically design for fast single photon counting.



Testboard

For each of the available ASIC, Weeroc offers a testboard designed to test and characterize the chip. This tool is suited to easily evaluate the performances of the ASIC and, thanks to its features, allows a versatile use with real detectors.

CAEN

DIGITAL SPECTROSCOPY

HIGHLIGHTS AND NEWS

Did you know?

CAEN offers a wide range of MCAs to suit most applications and budgets.

HEXAGON

DIGITAL MULTICHANNEL ANALYZER

A high-performance digital MCA for lab and field use: compact, flexible, and ideal for nuclear research, safety, security, environmental monitoring, NDT, and education.

Hexagon is a compact digital Multi-Channel Analyzer (MCA), available in single or dual input versions, ideal for semiconductor detectors (HPGe, Silicon, CZT) and scintillators (NaI, $LaBr_3$). It supports signals from resistive-feedback or transistor-reset preamplifiers, as well as PMT anodes. Hexagon operates in Pulse Height Analysis (PHA), Multi-Channel Scaling (MCS), Multi-Spectral Scaling (MSS), and Time-Stamped List modes. Dual-input models support AntiCompton acquisition. I/O lines are available for trigger, coincidence, acquisition control, and automation. Multiple units can be synchronized via daisy-chain connection. An OLED display shows acquisition status and HV parameters. Integrated HV supplies offer selectable ranges for PMTs, HPGe, or Silicon detectors, with hardware protection. Powered by an embedded Linux® ARM processor, Hexagon is managed via USB or Ethernet. A service web interface is available and it can be controlled using Quantus software or user-developed applications via SDK, based on CAEN MCALib Library.

COMM. INTERFACES

10/100 MbE
USB 2.0

SOFTWARE & LIBRARY

Quantus CAEN
WEB INTERFACE
CAEN MCALib

MORE INFO

HIGHLIGHTS

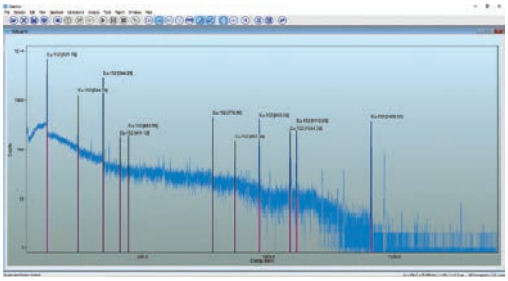
- Single or Dual input 32k Digital MCA
- Pulse Height Analysis with MSS and Coinc/AntiCoinc
- Multichannel Scaling and Time-Stamped List modes
- Ideal for HPGe, CZT, Silicon, and scintillators
- Supports PMTs, Resistive Feedback, and Transistor Reset preamps
- Controlled via Quantus
- On-board SSD for data storage

QUANTUS

QUANTITATIVE SPECTROMETRY SOFTWARE

MORE INFO

Quantus is CAEN's high-performance software for quantitative gamma-ray spectrometry with Hexagon digital MCAs. Designed for flexibility, it supports a wide range of detector geometries, and sample conditions, enabling radionuclide identification and activity quantification. Its multi-document interface allows simultaneous acquisition and analysis from multiple detectors. The advanced, customizable GUI includes tools for peak search, ROI definition, energy and efficiency calibration, nuclide ID, and activity calculation. Interactive spectrum views support peak labeling, FWHM calibration, and artifact detection. Quantus ensures full data traceability via XML-based project files and supports import from formats such as CHN, CNF, SPE, and N42.42. Reports can be customized and exported in rich HTML format. Available for both Windows® and Linux®.



HIGHLIGHTS

- Detector-MCA setup and acquisition control
- Powerful spectrum analysis and calibration tools
- Radionuclide identification and activity calculation procedures support

DT5771

1 CH - DIGITAL MCA

CAEN's newest MCA module offers multiple spectrum acquisition modes, fast data acquisition, and 1 Gbit Ethernet for high-speed communication.

The DT5771 is a 64 k Digital Multi-Channel Analyzer, optimized for high-resolution gamma spectroscopy. It features a 14 bit 200 MS/s ADC, 1Gbit Ethernet and USB 2.0 communication interfaces, and a user-friendly web-based software interface, including a JupyterLab for custom Python-based scripting.

Hardware enhancements include variable gains (dynamic ranges 40 mVpp–5 Vpp), selectable 1 kΩ/50 Ω input termination, AC/DC coupling, and a bandwidth of 20 MHz-900 MHz. The front-panel includes status LEDs for fast diagnostics, while rear-panel integrates DB9 connector for pre-amplifier power supply (±12 V/± 24 V).

The DT5771 is compatible with a wide range of detectors, including HPGe (with resistive feedback and transistor reset preamplifiers), silicon and scintillation detectors (such as NaI and LaBr3). The module allows multiple operating modes: Pulse Height Analysis (PHA with trapezoidal filter) for energy spectrum analysis and peak sensing to emulate analog processing, with an improved SNR.

Analysis options include single and multiple peak fitting, spectrum calibration and peak detection. An integrated spectral peak database supports also customizable spectra combinations.

Produced in collaboration with Nuclear Instruments.

FORM FACTOR

DESKTOP

COMM. INTERFACES

1 GbE

USB 2.0

SOFTWARE & LIBRARY

WEB INTERFACE

MORE INFO

HIGHLIGHTS

- 64K channels Digital MCA
- Suitable for resistive feedback and transistor reset preamplifiers
- AC/DC coupling
- Variable Gain matching dynamic: 40 mVpp – 5 Vpp
- DB9 connector for pre-amplifier power supply
- USB 2.0 / 1 GbE
- Web-based GUI
- Analysis: single and multiple peak fitting, calibration, Peak Detector mode
- Multiple operating modes: PHA and peak sensing
- JupyterLab support for Python scripting - Coming Soon

I-SPECTOR FAMILY

INTELLIGENT SILICON PHOTOMULTIPLIER TUBE

The i-Spector family delivers compact PMT replacement modules, combining scintillation crystals, SiPMs, and electronics, with some models featuring a complete digital readout chain.
Models:

S2560	Analog-only
PLUS S2560T	With Timing Unit (ToF, photon counting, coincidence)
Digital S2570	4k MCA with web GUI
PSD S2590	Gamma/neutron discrimination with EJ-276

Built for field, lab, and embedded applications, the modules combine 100 Mb Ethernet, Web Interface, and essential analysis tools. OEM and assembly versions offer flexibility with different SiPM/crystal options. Thanks to their compact design, they fit perfectly into handheld or mobile systems, with Python and C# libraries ensuring easy integration.

Produced in collaboration with Nuclear Instruments.

HIGHLIGHTS

- Integrated detector, front-end & processing
- CsI or EJ-276 crystals, 24×24 or 30×30 mm² SiPM
- Up to 4k MCA, TDC & PSD (per model)
- Ethernet + Web GUI, analog output, open-source libraries

COMM. INTERFACES

10/100 MbE

FEATURES

SiPM

SOFTWARE & LIBRARY

WEB INTERFACE

MORE INFO

R7795

MULTICHANNEL ANALYZER FOR UNATTENDED USE

The R7795 is a rack-mount 32k MCA with signal conditioning, fast ADC, digital processing, HV and preamplifier supplies. It runs Pulse Height Analysis (PHA) with HPGe, silicon, CZT, and scintillator detectors for gamma-ray spectrometry.

It provides two HV outputs (50 V–5000 V, positive/negative polarity) for PMTs, HPGe, and silicon detectors, and is supported by a user firendly web interface software and Quantus software for radionuclide identification, quantification, and spectrum analysis.

An embedded Linux ARM processor enables unattended operation. Dual SD cards and USB OTG ensure redundant storage and easy data retrieval, while an API supports custom software integration. Reliability is ensured with MTBF >100,000 hours.

HIGHLIGHTS

- 32k Digital MCA & Pulse Processor for lab or unattended use
- Quantus software with PHA, List & MCS modes
- Supports HPGe, CZT, Silicon & scintillator detectors
- Redundant storage, web interface & API
- MTBF >100,000 h for high reliability

SOFTWARE & LIBRARY

Quantus CAEN

WEB INTERFACE

MORE INFO

CAEN

NEUTRON & UNATTENDED MONITORING SYSTEMS

HIGHLIGHTS AND NEWS

Did you know?

Many of our neutron and unattended solutions have been validated by the IAEA.

R7771

32 CH NEUTRON PULSE TRAIN RECORDER

The R7771 Neutron Pulse Train Recorder captures signals from 32 neutron detectors, producing time-stamped TTL pulse lists with independent 10 ns pulse pair resolution on every channel. The R7771 provides the most complete information on neutron counting, giving the capability to characterize nuclear material in passive mode and to analyse the transients in active nuclear material interrogation. The 32 independent inputs allow for the acquisition from big volume assay systems composed by multiple neutron detectors.

COMM. INTERFACES

10/100 MbE

USB 2.0

MORE INFO

SOFTWARE & LIBRARY

Control Software and Libraries

WEB INTERFACE

R7780

UNATTENDED MONITORING SYSTEM

The R7780 is a complete readout, acquisition and analysis module for up to 8 neutron detectors that can work in unattended mode. It can be operated rack mount or as a standalone unit. The device combines the functions of a Shift Register and a Pulse Train Recorder. The 8 single-ended TTL inputs (LEMO) feature independent counting capability. Moreover, adjustable input thresholds give the possibility to compensate TTL signal voltage drops in case of long-distance use. Redundant storing mechanisms are available to ensure reliability during unattended operation.

COMM. INTERFACES

1 GbE

USB 2.0

USB 3.1

FEATURES

DATA LOG

SOFTWARE & LIBRARY

Control Software and Libraries

WEB INTERFACE

MORE INFO

DT7790

UNATTENDED DUAL CURRENT MONITOR

The DT7790 is a Desktop Dual Current Monitor (UDCM) for Nuclear Safeguards applications such as ion chamber gamma monitoring. The DT7790 has two independent inputs detecting currents in three user-selectable ranges that span from -100 fA to -800 µA. Data can be retrieved via an Ethernet connection or by monitoring the frequency of the TTL pulse stream on dedicated SMA connectors. In this way, the DT7790 can simplify instrumentation needs by enabling the use of a simple pulse counter for both neutron and gamma measurements. For added reliability, data are stored on dual redundant micro-SD cards and automatically downloaded onto a USB flash drive. The UDCM also features a programmable negative HV power supply providing detector bias voltages from 0 V to -1 kV.

The DT7790 is compliant with IAEA RAINSTORM, and it features a redundant operating system, backup data storage, comprehensive system health information, and monitoring of temperature, humidity, and power to ensure reliable performance in a wide range of environments.

COMM. INTERFACES

10/100 MbE

FEATURES

DATA LOG

USB FLASH

SOFTWARE & LIBRARY

Control Software and Libraries

WEB INTERFACE

MORE INFO

NBRICK

32 CH NEUTRON POSITION SENSING SYSTEM

FORM FACTOR

RACK

COMM. INTERFACES

1 GbE

SOFTWARE & LIBRARY

THANOS CAEN

FEATURES

3He Tubes

ALLinONE system

MORE INFO

A complete readout chain and DAQ for position-sensing $^3He/BF_3$ tubes.

The CAEN NBrick is a state-of-the-art, rack-mount system specifically designed for high-performance neutron detection, combining advanced electronics and firmware to deliver precise signal acquisition, real-time processing, and complete system control. Engineered for use with position-sensitive neutron detectors, such as ^3He and BF_3 tubes, it provides a turnkey solution for demanding applications in nuclear physics, radiation monitoring, and neutron imaging.

It combines three main CAEN boards:

- Charge Sensitive Preamplifier specifically designed for gaseous detectors
- 32-channel 14-bit 125 MS/s Pulse Processor
- High Voltage board

Together, these modules form a tightly integrated platform capable of supporting up to 16 dual-ended position-sensing tubes. The system delivers differential analog signals to the digitizer through the preamplifier, while ensuring full control of the high-voltage channels. This unified design ensures compatibility between stages, making NBrick easy to deploy in complex experimental setups or industrial systems.

The Pulse Processor leverages a Flash ADC architecture, enabling the system to handle event rates up to 100 kcps per channel. Its onboard firmware processes signals in real time, applying trigger logic, baseline stabilization, and Resistive Charge Division algorithms to extract accurate energy, timing, and position information from each event. When a trigger condition is met, the system freezes the baseline and integrates the signal over a predefined gate, ensuring precision in energy measurement even in high-background or high-rate conditions.

The resulting data, energy values, timestamps, and optionally waveform traces, are immediately available to the acquisition software for further processing. The digitized signals are streamed via Ethernet to Thanos, CAEN's dedicated DAQ software, which offers a complete remote configuration for NBrick and where the user can visualize, analyze, and store data in real time.

Robust, scalable, and ready to use, the CAEN NBrick platform delivers everything needed to implement precise and reliable neutron detection systems, combining performance, integration, and ease of use in a single, efficient package.

Produced in collaboration with Nuclear Instruments.

THANOS

DAQ SOFTWARE INTERFACE

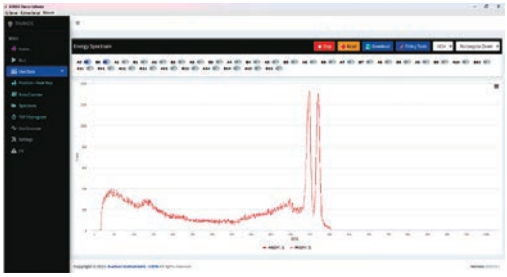
Thanos is the advanced data acquisition software provided by CAEN to fully manage and operate the NBrick neutron detection system. It is a powerful and intuitive interface that allows users to remotely configure and control the digitizer and high-voltage power supply via Ethernet, ensuring full monitoring capabilities through a real-time overview of the system status.

Thanos provides a wide range of data acquisition tools, including real-time waveform visualization, energy spectrum analysis, Time-of-Flight (ToF) histograms, and accurate position reconstruction. It also features oscilloscope functionalities, along with advanced calibration options and fitting tools for detailed signal evaluation.

Users can define runs, and manage data and plots storage in multiple formats for further offline analysis.

Designed for flexibility and ease of use, Thanos enhances the overall functionality of the NBrick system, enabling fast setup and high-precision operation. Whether used in research or industrial settings, Thanos ensures seamless integration and superior performance for any neutron detection task.

Produced in collaboration with Nuclear Instruments.



MORE INFO

Position heatmap (counts over position) corresponding to four different ^{3}He tubes and 2D-projection of counts onto the y-axis of a single tube.

CAEN

CONNECTIVITY, LOGIC & EMULATOR MODULES

HIGHLIGHTS AND NEWS

Did you know?

Our programmable Logic Units are today even more flexible and powerful thanks to the Sci-Compiler software.

DT4810

1 CH 14 BIT 500 MS/s - MICRO DIGITAL DETECTOR EMULATOR

The DT4810 is CAEN's newest single-channel pulse generator designed for compactness and ease of use. Up to 500 MS/s for improved output signals quality.

The DT4810 is a Micro Digital Detector Emulator featuring a 14 bit 500 MS/s DAC, with high-quality output signals. It generates analog pulses with rise time down to 5 ns and exponential decay time up to 200 µs.

Equipped with a nuclide database of over 50 real acquired spectra, it can emulate various signal types, including PMTs signals, continuous reset preamplifier signals, white noise and random walk.

The DT4810 includes USB 2.0 and 1 Gbit Ethernet communication interfaces. A user-friendly web-interface allows full control and signal visualization, and it features a JupyterLab for custom Python-based scripting. Basic operations can also be managed via the front-panel display.

Produced in collaboration with Nuclear Instruments.

FORM FACTOR

DESKTOP

COMM. INTERFACES

1 GbE

USB 2.0

SOFTWARE & LIBRARY

WEB INTERFACE

MORE INFO

HIGHLIGHTS

- Emulation of detector-like signals
- 500 MSps 14-bit DAC
- Analog output rise time down to 5 ns and exponential signal decay time up to 200 µs
- Nuclides database with more than 50 real acquired spectra
- White noise, random walk and continuous reset preamplifier emulation
- USB 2.0, 1 Gbit Ethernet
- User-friendly Web-based GUI
- JupyterLab support for Python scripting - Coming Soon

COMING SOON

N1082/DT1082

COMPACT 4-SECTION LOGIC, COUNTING AND TIMING MODULE

Advanced logic and timing unit with touch control, web GUI, and Sci-Compiler – powerful, flexible, and user-programmable.

The N1082 (NIM) and DT1082 (Desktop) are advanced multi-function modules designed to replace or extend traditional NIM logic units. They feature four independent sections, each including 6 configurable inputs (NIM, TTL, or analog) and 4 NIM/TTL outputs. Every section can implement counting, coincidence, timing, logic operations, or pulse generation functions.

Analog inputs are handled via a Gate&Delay + Leading Edge Discriminator stage, while outputs support monostable generation. Users can configure each section using the touch screen or the enhanced Web Interface, which provides intuitive widgets, live signal monitoring, and full remote control.

One of the major innovations is the support for CAEN Sci-Compiler, giving access to the Open FPGA for users who wish to create or extend logic functions graphically without VHDL coding.

The modules are ideal for fast prototyping, lab setups, training labs, where versatile I/O logic, timing, and digital processing are needed. With Ethernet and USB 2.0 interfaces, it ensures seamless integration in both desktop and remote-controlled environments.

The N/DT1082 redefines modular logic instrumentation with unprecedented flexibility and user control.

Produced in collaboration with Nuclear Instruments.

HIGHLIGHTS

- Double-width NIM or Desktop format
- 4 sections, each with: 6 inputs (NIM/TTL/Analog), 4 outputs
- Input stage with Gate&Delay and Leading Edge Discriminator for analog input signals
- Logic, counting, timing, pulse generation functions
- Touch screen + Web GUI for control and monitoring
- USB 2.0 and 1 Gbps Ethernet interface
- Open FPGA programmable via Sci-Compiler
- Python SDK suite included

FORM FACTOR

DESKTOP **NIM**

FEATURES

Touchscreen | open FPGA

COMM. INTERFACES

1 GbE | USB 2.0

SOFTWARE & LIBRARY

SCI-COMPILER Open FPGA | WEB INTERFACE

MORE INFO

N1082 DT1082

A4818

USB 3.0 TO CONET2 ADAPTER

A portable and easy-to-use USB-3 to CONET2 adapter for your PC!

The A4818 is a CAEN USB-3 to CONET2 adapter, USB powered. CONET2 is the CAEN proprietary protocol for optical link, which is able to communicate with Digitizers and VME Controllers by direct connection or in daisy chain of up to 8 boards simultaneously. The A4818 is compliant with the USB-3.1 Gen1 speed protocol and can be connected to the USB port of the PC running Windows® or Linux® OS. The optical link maximum transfer rate is 80 MB/s, which is shared within the boards connected in daisy chain.

COMM. INTERFACES

OPTICAL LINK | USB 3.1

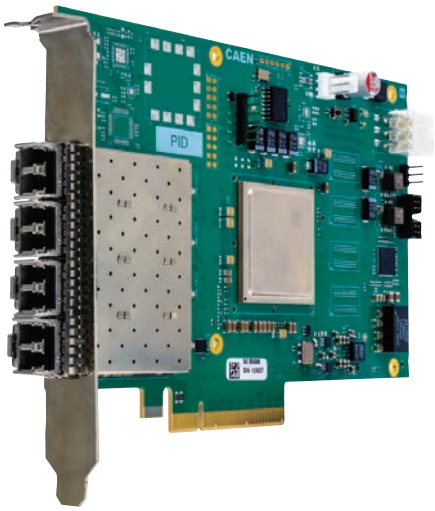
MORE INFO

HIGHLIGHTS

- Compact aluminum box 41x94x20 mm^3 (WxLxH)
- 80 MB/s transfer rate by the optical link
- Up to 8 boards in Daisy Chain on the optical link
- Suitable for Windows® 10/11 and Linux® (all kernels)
- CAEN USB drivers required

A5818

PCI EXPRESS GEN 3 CONET2 CONTROLLER



High-performance optical connectivity for modular control.

The A5818 is a PCI Express Gen 3 x8 card that can plug into x8 or x16 PCI Express slots, which allows the User to control up to 4 CONET2 independent networks (each network can be made of up to 8 CONET2 slaves). The device is also able to manage the Interrupt VME protocol and is fully compatible with CAEN Libraries.

The optical link maximum transfer rate is 80 MB/s, which is shared amongst the boards connected in daisy chain.

COMM. INTERFACES

OPTICAL LINK | PCI express 3.0

MORE INFO

HIGHLIGHTS

- PCI Express Gen 3 x8
- 4 optical links available
- CONET2 CAEN Proprietary Optical Link Compatible
- Up to 32 CAEN CONET2-compliant Optical Slave Cards controlled by a single A5818
- 80 MB/s transfer rate per single link by the optical link
- Interrupt VME protocol supported
- Drivers for Linux® and Windos OS
- Supported by CAEN Libraries (CAENDigitizer, CAENComm, CAENVMELib)

CAEN

PREAMPLIFIERS

HIGHLIGHTS AND NEWS

Did you know?

CAEN provides a broad selection of preamplifiers, from 1 to 64 channels, in a compact form factor.

PREAMPLIFIERS

CAEN's portfolio of preamplifiers covers a wide range of detectors, including diamond, fission chambers, GEM, $^{3}He/BF_3$ tubes, PMTs (suitable for scintillators), proportional/ionization counters, proton-recoil detectors, RPCs, segmented silicon, bulk silicon, and SiPM/MPPC. The table below indicates the preferred (though not exclusive) pairings. For complete and precise specifications, please refer to each model's data sheet.

	Model	Form Factor	N. Ch.	Description
	A1421	desktop	1	Preamplifier and Discriminator for 3He tubes
	A1422	desktop	1/4/8	Low Noise Fast Rise Time Charge Sensitive Preamplifiers
	A1422CD	desktop	8	Low Noise Fast Rise Time Charge Sensitive Preamplifier
	A1422E/F	desktop	2/4	Low Noise Fast Rise Time Charge Sensitive Preamplifiers
	A1422H	Single in-line package	1	Low Noise Fast Rise Time Charge Sensitive Preamplifiers (SIP)
	A1423B	desktop	1	Wideband Preamplifier
	A1424	desktop	1	Scintillation Preamplifier
	A1425	desktop	1	Fast Charge Sensitive Preamplifier
	A1426 CARDARELLI	desktop	1	Matched Charge Preamplifier
	A1427FC	desktop	1	Low Noise Fast Current Neutron Flux Preamplifier (Fission Chamber)
	A1427PR	desktop	1	Low Noise Fast Current Neutron Flux Preamplifier (Proton Recoil)
	A1429	desktop	64	Charge Sensitive Preamplifier
	A1436A / A1436	desktop	1/8	Differential Input Low Noise Transimpedance Amplifiers
	A1442	desktop	16/32	Charge Sensitive Preamplifier
	A422A	desktop	1	Charge Sensitive Preamplifier with Timing
	R1443	19" rack unit	32/64	Preamplifier Unit for 3He tubes

	SUITABLE FOR										
Sensitivity	Diamond	Fission Chamber	GEM	He3 / BF3 Tubes	PMT / Scintillators	Proportional Counters Ionization Chambers	Proton Recoil	RPC	Segmented Silicon	Silicon (Si)	SiPM / MPPC
30 mV/fC on HiZ (15 mV/fC on 50 Ω)				●							
5/45/90/400/450 mV/MeV (Si)				●		●			●	●	
5 mV/MeV (Si)				●							
200 mV/MeV (Si)										●	
5/45/90/400/450 mV/MeV (Si)										●	
Selectable From +18 dB to +54 dB	●				●						●
Selectable 0.8/0.9/1.1/1.3/1.5/1.7/2.5/ 3/5/10 mV/pC					●						
3.6 mV/fC	●										
Up to 5 mV/fC	●							●		●	
700÷2500 (Trimmer adjustable)		●									
500÷1500 (Trimmer adjustable)							●				
20/45/90/200/400 mV/MeV (Si)			●						●		
Programmable $10^9/10^8/10^7/10^6/10^5/10^4/10^3$ V/A, 10^9 V/A (A1436 only)	●				●					●	
Selectable 20/100 mV/MeV (Si)			●						●		
5/30/70 mV/MeV (Si)						●				●	
2.25 V/pC				●							

A1426 CARDARELLI

1 CH MATCHED CHARGE PREAMPLIFIER

Remote spectrometric Readout for fast solid state detectors

The A1426 CARDARELLI was specifically developed to address a critical challenge in high-energy and nuclear physics: enabling spectroscopic charge readout from fast solid-state detectors (such as diamond, RPC, and Zaphire) operating in environments too harsh for both preamplifiers and other front-end electronics. Thanks to its 50 Ω matched input, it delivers clean, high-fidelity signals even from detectors placed up to 100 meters away.

HIGHLIGHTS

- Fast, non-inverting preamplifier, positive output
- Up to 5 mV/fC sensitivity
- ENC of 0.3 fC (2000 e)
- Input impedance can be matched to a 50 Ω transmission line
- Amplifier can be very far from the detector (up to 100m)
- Output range 0 to 1 V
- Output impedance of 50 Ω

MORE INFO

Based on the fast preamplifier developed by Roberto Cardarelli, INFN Roma2 - ITALY

A1422

1/4/8 CH LOW NOISE FAST RISE TIME CHARGE SENSITIVE PREAMPLIFIERS

The CAEN A1422 series are charge sensitive preamplifiers packaged in a 1/4/8 channels box. Various sensitivity values are available and various detectors capacitances are supported:

		Sensitivity mV/MeV(Si)
F2 type	up to 200 pF	5, 45, 90, 400, 450
F3 type	up to 1000 pF	5, 45, 90 1 COMING SOON

HIGHLIGHTS

- Fast, low noise inverting preamplifier
- Up to 1000 pF detector capacitance supported
- 1, 4 and 8 channel model available
- Up to 2 kV (positive or negative) detector bias voltage

MORE INFO

R1443

32/64 CH PREAMPLIFIER UNIT FOR NEUTRON DETECTORS

FEATURES

MORE INFO

Preamplifier unit with up to 64 channels for neutron detectors as ^{3}He or BF_3 tubes.

R1443 is a 32/64 channels Charge Sensitive Preamplifier in a 19″ rack unit (120/230 V 50/60 Hz AC Powered) and It is specifically designed for operating with neutron detectors as ^{3}He or BF_3 tubes. Given the number of input channels, it can handle up to 16/32 position-sensitive tubes, each tube having two outputs, one for each end.

HIGHLIGHTS

- Specifically designed for ^{3}He/BF_3 tube detectors
- 19” rack unit (height = 2U)
- Total Gain: 2.5 V/pC
- Max bias voltage: +/- 2 kV
- Test input on BNC (1 pF charge injection capacitors)
- Differential outputs on RJ45 connectors
- Three available versions:
  - 32 channels
  - 64 channels
  - 32 channels with 16 independent HV inputs (1 per tube)

Developed in collaboration with Institut Laue-Langevin in Grenoble, France

A1429

64 CH CHARGE SENSITIVE PREAMPLIFIER

FEATURES

MORE INFO

Ultra high density preamplifier for big size segmented silicon and gas detector arrays

The A1429 is a 64-channel charge preamplifier for single- or double-sided multi-strip silicon detectors and multi-channel detectors with common bias. Its compact design and low power consumption make it ideal for direct coupling in high-vacuum systems. Two LEMO bias inputs are provided (channels 0–31 and 32–63). The preamplifier output signals are in true differential supporting low-cost twisted flat cables for the output connection.

Available sensitivities: 20, 45, 90, 200, 400 mV/MeV (Si).

HIGHLIGHTS

- Max. output voltage: +/- 4.5 V differential on 100 Ω termination
- Sensitivities: 20, 45, 90, 200, 400 mV / MeV (Si)
- Dimension: 180x105x25 mm^3 (WxLxH)
- Max bias voltage: +/- 400 V
- ESD input protection
- TEST pulse input
- Low power consumption (< 50 mW for ch.)

A1436/A1436A

1/8 CH DIFFERENTIAL INPUT LOW NOISE TRANSIMPEDANCE AMPLIFIERS

COMING SOON

A1436 is a series of transimpedance amplifiers designed with a differential input configuration. Its primary function is to generate an output voltage proportional to the difference between the input currents. This design choice is crucial, as it minimizes induced noise in applications where significant sources of interference are present.

Both versions are well suited for reading currents from various semiconductor detectors, such as diamond detectors, silicon detectors, and photodiodes. They can operate in both photovoltaic and photoconductive modes. A bias voltage can be internally generated and supplied to the differential inputs, programmable up to a maximum of 10 V. This bias voltage is applied differentially, with a positive bias to the cathode and a negative bias to the anode, ensuring reverse junction polarization of the detector. Both models also feature electrostatic discharge (ESD) input protection.

All operational parameters of the A1436 preamplifiers are individually programmable via an RS485 connection. Configuration is performed using a Command Line Interface (CLI) through a USB-RS485 adapter connected to a PC and a terminal emulator (such as PuTTY). The module settings are stored in non-volatile memory and are automatically restored upon power-on. The devices operate on a ±12 V power supply.

For system integration, up to 254 modules can be connected in a chain, each requiring a unique ID from 1 to 254. Communication occurs in half-duplex mode. To conserve power and further reduce noise, the modules enter sleep mode after 20 seconds of inactivity, greatly reducing microcontroller-induced noise on the preamplifier outputs. They can be reactivated by sending any two characters followed by the Enter key.

Both versions include a programmable 1 kHz low-pass filter. The 8-channel version provides 7 selectable transimpedance values per channel (10^9 to 10^3), while the 1-channel version provides 6 values (10^8 to 10^3).

MORE INFO

HIGHLIGHTS

- 1/8 independent channels
- 6/7 Transimpedance range (*): 10^9, 10^8, 10^7, 10^6, 10^5, 10^4, 10^3 V/A
- 3 nV Eq. Input Noise
- Bandwidth from 10/15 kHz to 1 MHz (**)
- Differential input configuration:
  - CMRR > of 80 dB (A1436)
  - CMRR > of 60 dB (A1436A)
- Programmable 1 kHz low pass filter
- All parameters remotely programmable
- Bias voltage programmable up to 10 V (12-bit resolution)
- Electric discharges input protection.
- 1/8 single ended output
- +12 / -12 V Power Supply
- Remotely programmable via an RS485 connection

(*) 10^9 V/A, A1536 (8-channel) only
(**) A1436: 15kHz, A1436A: 10 kHz

CAEN

CAEN Educational

HIGHLIGHTS AND NEWS

Did you know?

Join the Edu community to share your ideas and new experiences!

SP5622B - DETECTION SYSTEM PLUS

PORTABLE SCINTILLATING TILE FOR COSMIC RAYS DETECTION

The SP5622B is a compact and complete didactic system designed to introduce students to modern physics, particle physics, and special relativity. It provides a practical way to explain the scientific method through experiments with cosmic rays.

FORM FACTOR

DESKTOP

MORE INFO

The SP5622B is based on a plastic scintillating tile coupled to a solid-state Silicon Photomultiplier (SiPM), together with all the frontend electronics needed. This avoids having high voltages, generator, cables, connectors, and offers an additional safety margin for students.

The module management is easily allowed via the selectors and buttons on the front panel. It is equipped with a front display that shows information related to the settings of main parameters and four histograms: charge distribution of the signal, timing distribution of the cosmic rays, cosmic flux rate vs time, and flux distribution per minute. The data can be recorded on a removable microSD card.

HIGHLIGHTS

- Portable compact form factor
- Integrated single scintillating tile with programmable threshold
- Compatible with SP5620CH
- Fully manually controlled
- Removable storage microSD card for offline data analisys

SP5620CH - COSMIC HUNTER

COSMIC RAYS DETECTION SYSTEM

MORE INFO

Cosmic Hunter is an educational tool developed to inspire young students and guide them towards the analysis and comprehension of cosmic rays. Cosmic Hunter, Silicon Photomultipliers (SiPM) based, is composed of one detection coincidence unit together with two plastic scintillating tiles.

HIGHLIGHTS

- Based on SiPM detectors and plastic scintillating tiles
- Up to 3 scintillating tiles management
- Flexible system geometry
- No software interface needed
- Embedded E Ink Display
- SD card to download data
- A new software for data taking is under development

SP5650 - OPEN FPGA KIT

PULSE PROCESSING LAB

The Open FPGA kit allows the user to perform a series of lab experiments without using radioactive source and detector, by simulating the signals and to create specific processing of pulses.

HIGHLIGHTS

- Complex trigger logic
- Event Counters
- Single Channel (SCA) and Multi Channel Analyzer (MCA)
- Time to Digital Converter
- Replacement for any old logic-based system
- Time tagging logic
- Particle real-time Time of Arrival distribution calculation
- Waveform recording digitizer
- Logic Analyzer

MORE INFO

SP5640 - GAMMAEDU

BACKPACK RADIATION DETECTOR

Just one tablet click to perform radioactive measurements outdoor!

A portable detection backpack for revealing the presence of radioactive materials in the environment. The high efficiency of the scintillation crystal allows the user to perform a measurement in few minutes.

GammaEDU can identify industrial, medical, and naturally occurring radioactive isotopes in static and dynamic acquisition

The GammaEDU detection backpack includes NaI(Tl) scintillator crystal (0.3 L) coupled with a Photomultiplier Tube (PMT) and the S2580 - GammaStream. The GammaStream integrates High Voltage Power Supply, Preamplifier, and digital Multi-Channel Analyzer for scintillation spectroscopy. The GammaEDU has high detection efficiency, low power consumption, and the data taking can be uninterrupted up to 6 hours, very suitable for outdoor gamma radiation measurements.

A 10'' tablet including CAEN GammaEDU application is part of the product.

With the GammaEDU Android application the students can acquire and analyze in real time a γ-ray spectrum to get the K, U and Th abundances, keep track of the surrounding environment, take the GPS coordinates, and shoot a picture of the on-going measurements. The data are saved in a .kmz file ready to be visualized on Google Earth and shared on Google Drive for producing a radioactivity map of the area.

HIGHLIGHTS

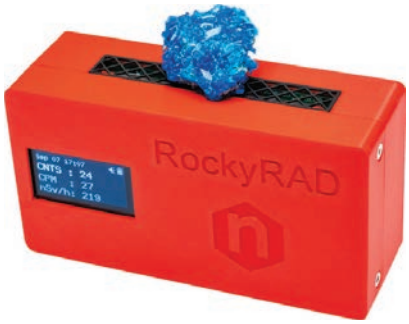
- Environmental Gamma detection and spectroscopy
- Mapping of potential radon-prone areas
- Environmental monitoring in land field
- Geochemical and mineral exploration
- Statistics
- Customs protection and border control
- Scenario of emergency services
- Homeland security

MORE INFO

SP5660 - ROCKYRAD EDUCATIONAL KIT

PORTABLE GEIGER-MÜLLER FOR NUCLEAR RADIATION

With RockyRAD, looking at a rock will never be the same again!
From geology to daily life, RockyRAD bridges the gap: discover the fascinating world of rock radioactivity and then expand your horizon to detect the unseen radiation in our everyday surroundings.



Natural radioactivity is all around us, and thanks to RockyRAD, high school students now have the opportunity to approach this mysterious world in an innovative and engaging manner.

RockyRAD is not just a learning tool, but a bridge between the ancient allure of rocks and the tangible realities of everyday life. It allows students to go beyond what they see, exploring the nuclear radiations present in our environment.

Its operation is remarkably simple: by placing a material on the device, RockyRAD detects its radioactivity level. Due to its lightweight and portability, it can be used both in the classroom and during outdoor learning sessions.

For those who love an interdisciplinary approach, RockyRAD is an invaluable resource. Not only does it promote exciting STEM activities, but it also acts as a catalyst for projects that merge various subjects, such as Physics, Mathematics, Earth Sciences, Statistics, Computer Science, and Geography, creating a comprehensive educational experience.

Each RockyRAD kit is enhanced with a set of rock samples from different origins, allowing students to immediately begin their detection experiments.

Now, every stone tells a story, a story of radiation and energy. And this story is ready to be explored.

COMM. INTERFACES

BT

MORE INFO

HIGHLIGHTS

- Detector: Geiger-Müller Tube
- Display Information: Total Counts, Counts Per Minute, Equivalent Dose Rate
- Wi-Fi for data download
- Bluetooth connection
- Rechargeable Battery (USB-C)
- Android App

ROCKYBOX - ADDITIONAL ROCKS KIT

RockyBox enriches the selection of samples already included in the SP5660 kit with new specimens representing a variety of lithotypes of geological, geochemical and radiometric interest.

CAEN SyS

Radiation Monitoring Systems

CAEN Systems & Spectroscopy Division

HIGHLIGHTS AND NEWS

Did you know?

Several of our systems have a NATO stock number.

GAMON-S / GAMON-D

GAMMA RADIATION SPECTROSCOPY AND DOSE RATE MONITORING SYSTEMS

The GAMON-S and GAMON-D radiation monitoring series have been designed for outdoor real-time radiation control, early environmental warning, and emergency response. They can operate in harsh weather conditions and are protected from rain and moisture.

The probes can be installed on fixed or relocatable supports and powered through dedicated cabinets offering various battery and solar panel configurations, and they can be seamlessly integrated into monitoring network software for real-time data control and analysis.

Currently, over 40 stations are deployed by ISIN (National Inspectorate for Nuclear Safety and Radiation Protection) for the early warning Italian environmental network.

Operative Application

- Ring monitor systems around nuclear facilities
- Nationwide environmental monitoring networks
- Area monitor system in nuclear research laboratories
- Relocatable station for emergency response

MORE INFO

GAMON-D GAMON-S

GAMON-Drone

LIGHTWEIGHT UAV MOUNTABLE DOSE AND SPECTROMETRIC DETECTION UNIT

GAMON-Drone is a compact and lightweight spectrometer specifically designed for UAV environmental radiation protection, inspection, and site remediation after the dispersion of radiological or nuclear material. The system can be used as a measurement device for first responders for the exploration of hazardous areas.

GAMON-Drone system is designed to offer the best combination of portability, low power consumption and performance. The unit is assembled in a lightweight enclosure that contains both the scintillator detector and the digital signal processing electronics.

Operative Application

- Emergency and first response applications for fast control of the contaminated area
- Location survey and control before, during, and after public events
- Characterization of NORM in industrial and geological applications
- Detection of orphan sources in large areas without exposing the personnel to radiation

MORE INFO

DiscoveRAD

RADIONUCLIDE IDENTIFYING DEVICE (RID)

The DiscoveRAD is an ultra-compact, rugged, and highly sensitive Radionuclide Identifying Device (RID) designed for fast and accurate identification of radioactive sources.

Used by law enforcement, customs, emergency responders, and radiation protection teams, it detects and identifies radioactive materials in real time, even in complex environments. The device features multiple operating modes with visual and audio alarms, and its advanced isotope identification uses a template matching algorithm for high accuracy, meeting ANSI RID standards.

Operative Application

- Interception and prevention of terrorist threats through RDD's (Radioactive Dispersal Device) or dirty bombs
- Orphan source searching and identification
- Emergency and first response applications for prompt control of the contaminated area
- Control of illicit traffic of radioactive material at border and custom control

MORE INFO

Sniper-GN

SPECIAL NUCLEAR MATERIAL PORTABLE IDENTIFIER

The SNIPER-GN is a radiation detection system designed to be quickly deployed by the nuclear security community for homeland security and/or for emergency response purposes.

The SNIPER-GN can detect and identify Plutonium, SNM, and spent fuel in just a few seconds and at distances ten times greater than current detection standards. It ensures security personnel by immediately recognizing and resolving hidden threats without the need to introduce costly secondary detection measures or highly specialized personnel.

A patented and innovative algorithm allows to identify the SNM through neutron measurements, feature not yet included in any standard.

Operative Application

- Security control in airports
- Nuclear industrial facilities and sensitive area's radiation survey
- Parcel scanning in parcel-sorting facilities
- Public event fast deployment
- Undercover scanning for early warning in public crowded areas
- Spent fuel safeguards and UF6 cylinders characterization

MORE INFO

GAMON Mobile

VEHICLE MOUNTABLE GAMMA SPECTROMETRIC MAPPING SYSTEM

The GAMON Mobile is a high-efficiency detection system designed to perform radionuclide identification from a moving vehicle such as a car, helicopter or boat. It is composed of spectrometric and dosimetric units, and it can identify radionuclides and differentiate them by category, e.g., NORM, Medical, Industrial.

The system is very well suited to be operated on-field to assess rapid threats and to monitor large areas via mobile mounting/deployment. It is ideal for scanning sensitive areas, entry points and strategic areas such as embassies, EXPO events, critical infrastructure, airports, railway stations.

Operative Application

- Radiological threat search
- Emergency and first-response application for easy control of the area
- Large area survey and control for public events and country borders
- Georeferenced measurements for radioactive mapping and characterization of the soil
- Access monitoring of harbors, airports, train stations
- Discrete monitoring of suspicious vehicles or vessels

MORE INFO

GAMON-Diver

COMPACT UNDERWATER SYSTEM FOR RADIONUCLIDES IDENTIFICATION

The GAMON-Diver is a highly efficient spectroscopic measurement system designed to perform underwater radiometric measurement. The system can be deployed in multiple scenarios for gamma radionuclide identification in case of accident mitigation, first emergency response, or can be installed as a long term monitoring device for sensitive underwater locations as port access points, nuclear facilities and Oil&Gas infrastructures.

Operative Application

- Detection and monitoring of water reservoirs, lakes, ports or sea.
- Long-term monitoring of drinking water sources, at the extraction or purification points
- Control of the TENORM content in the waste of industrial processing facilities and monitoring of the pipes for Oil&Gas transportation
- Search of orphan sources in fresh or saltwater
- First emergency response and site remediation in case of nuclear accident or radiological material dispersion

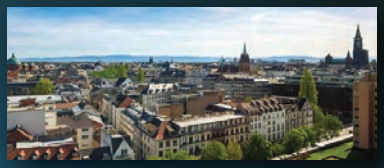
MORE INFO

CAEN global presence

CAEN Worldwide presence CAEN SyS

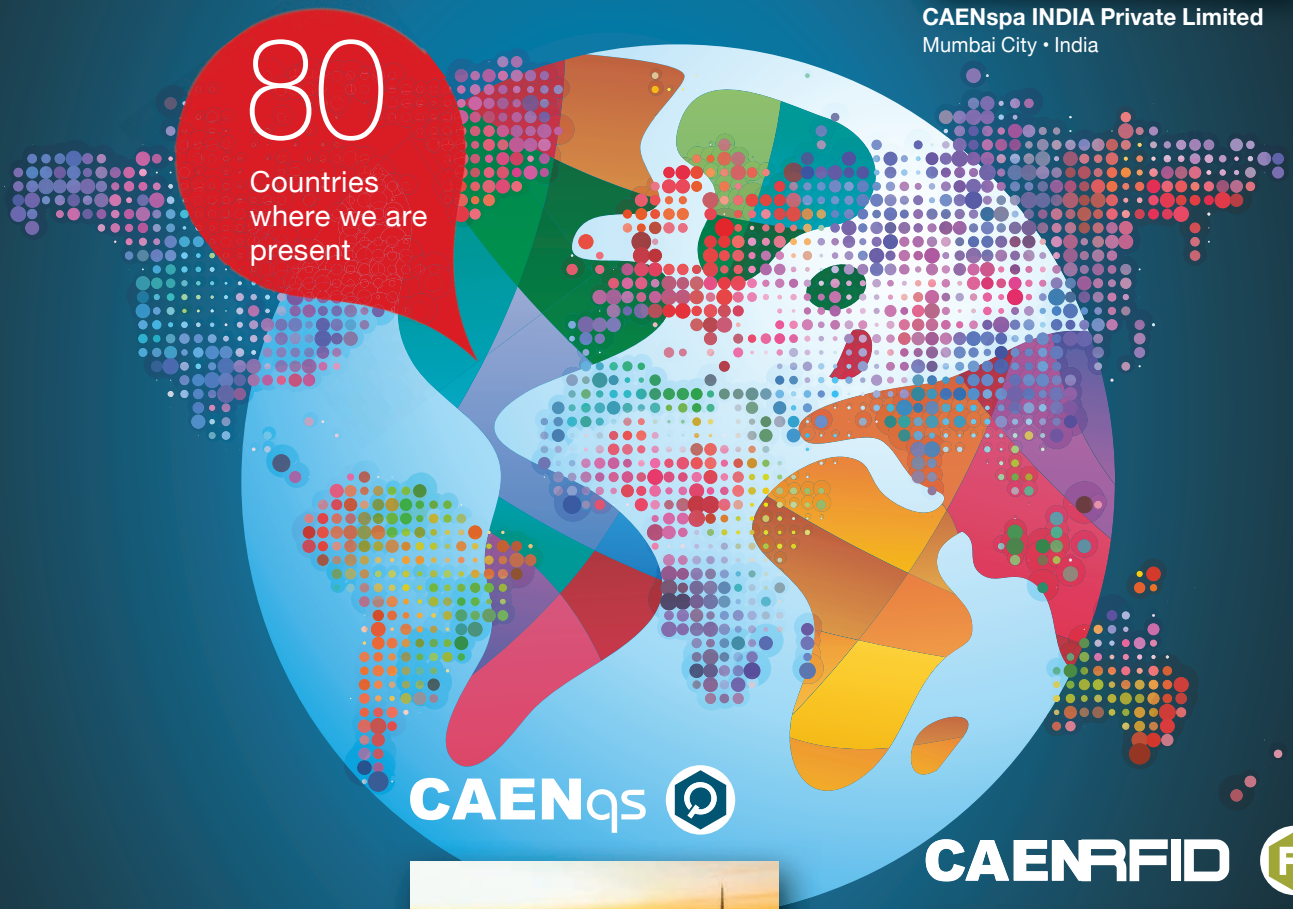
CAEN Technologies, Inc.
Staten Island, NY • USA

CAEN S.p.A
Viareggio • Italy



CAEN GmbH
Weiterstadt • Germany

CAENspa INDIA Private Limited
Mumbai City • India



CAENqs

CAEN Quantum Security srl
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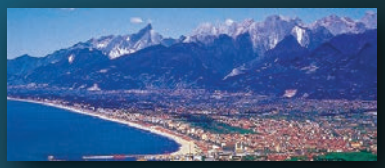

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