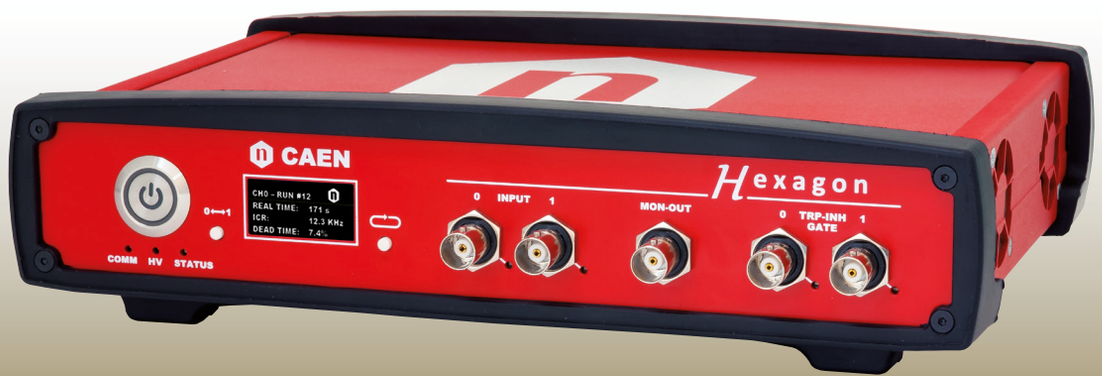
CAEN
Tools for Discovery

Hexagon

Dual Independent 32k Digital MCA with HV & Preamplifier Power Supply



A compact and flexible solution for digital nuclear spectroscopy

Features

- Dual 32k Digital MCA & Pulse Processor
- Provides pulse height analysis (PHA), multichannel scaling (Coming Soon) and Time-stamped list modes
- Suited for high resolution spectroscopy with HPGe, Silicon and scintillation detectors as NaI and $LaBr_3$
- Operates with Resistive Feedback and Transistor Reset preamplifiers
- Pole/zero compensation, baseline restoration, pile-up rejection and live time correction capabilities
- Digital and analog signal inspector for a fast setup and multi-trace monitoring
- Open access to embedded Linux-based CPU for custom developments
- 2 dual range HVPS channels (2 kV/1 mA and 5 kV/50 µA), software controlled, to fit for low-range and high-range bias Detectors.
- 2 dual range channels for preamplifier power supply (±12 V/100 mA and ±24 V/50 mA) on DB9 connectors with dedicated input for Detector Temperature read
- 2 BNC inputs for TRP inhibit or ADC gate
- Front panel OLED Display for time acquisition, readout and HVPS data monitoring
- Ethernet and USB readout interfaces
- Link for synchronizing multiple MCAs
- Programmable digital I/Os (e.g. ICR, SCA, MCS start/stop, MCS advance and sweep, etc.) (Coming Soon)
- Fully controlled by the MC^2 Analyzer software for event acquisition and basic spectrum analysis

Overview

Hexagon is a compact, stand-alone dual digital 32k MCA with integrated HV & Preamplifier Power Supply, available in desktop form factor. It is designed for high energy resolution semiconductor detectors, like HPGe and Silicon Detectors but also for scintillation detectors as NaI and $LaBr_3$

Hexagon integrates advanced firmware algorithms operating Digital Pulse Processing for Pulse Height Analysis (PHA), MCS and time stamped list mode.

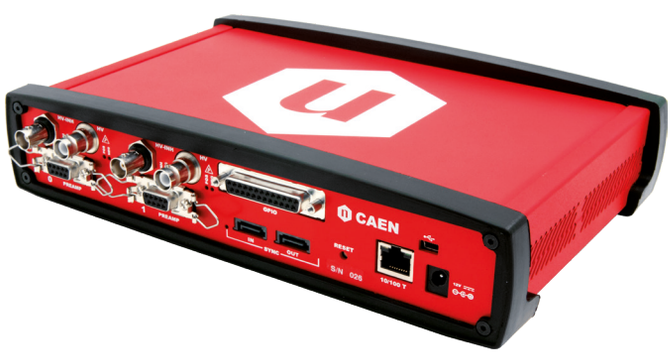
The embedded CPU running Linux is able to execute custom routines for automated operations. The processing algorithms can be easily adapted to different detectors and application ensuring effective data analysis even at high count rates. It provides advanced tools for configuring baseline restoration and pile-up rejection. Moreover the module features on-

board spectrum recording, acquisition settings logging and autonomous data acquisition when unconnected from external devices. Thanks to the two input simultaneous acquisition, the module is able to manage coincidence and anti-coincidence logic between detectors, allowing the user, for example, to easily take advantage of background rejection or anti-Compton techniques.

Hexagon embeds I/O connectors for SCA, MCS and Coincidence/Anticoincidence functions, it integrates High Voltage Inhibit and TRP Inhibit. Clock and Synchronization connectors are provided, which allow the time stamp of multiple modules to be aligned with high accuracy. The module embeds an LCD screen to monitor real time the data acquisition results, e.g. ICR, OCR and dead time. Hexagon may provide at the same time energy, time stamp and the digitized pulse in a configurable time window (e.g. including the rising edge region) in order to perform further offline analysis.

Acquisition settings and mathematical analysis are performed through the MC^{2}Analyzer software, providing energy spectra with up to 32k channels, which can be exported and imported in ASCII or N42.42 compliant files. CAEN further provides drivers for the supported communication interfaces, configuration software tools, C / LabVIEW libraries and Development kit (Coming Soon).

Each high voltage power supply channel is hardware suitable for two HV ranges, selectable by software, to match a wider detectors class. The two HV channels can be ordered in three different polarity configurations: both channel positive, both channels negative and mixed.



Rear View

Software

MC^2 Analyzer (MC^{2}A)

Digital MCA Data Acquisition and Analysis Software

MC^{2}A is a software specifically designed to manage Hexagon and other CAEN Digital MCA (780/781 family, DT5770, *γstream*) as well as CAEN digitizers CAEN digitizers running DPP-PHA (Digital Pulse Processing for the Pulse Height Analysis) firmware, like 724, 725 or 730 family.

It allows the user to set the relevant parameters, to manage the HV channels configuration (x780, *γstream* and Hexagon only), to collect the spectra and perform mathematical analysis like energy calibration, peak search, background subtraction, peak fitting, etc.

This software features multi-channel and multi-board capabilities: it can control the event acquisition from multiple boards simultaneously.

FREE DOWNLOAD

All CAEN Control Software is available for free download on the web site.

Ordering Option

Code	Description	Form Factor
WDT5000XMAAA	HEXAGON-M - Dual Digital MCA +2kV 1mA / +5kV 50µA, -2kV 1mA / -5kV 50µA, 2 LVPS ±12V/100mA, ±24V/50mA	Desktop
WDT5000XNAAA	HEXAGON-N - Dual Digital MCA - 2 HVPS -2kV 1mA / -5kV 50µA, 2 LVPS ±12V/100mA, ±24V/50mA	Desktop
WDT5000XPAAA	HEXAGON-P - Dual Digital MCA - 2 HVPS +2kV 1mA / +5kV 50µA, 2 LVPS ±12V/100mA, ±24V/50mA	Desktop

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