

bMCA\Ethernet

A compact digital MCA



FEATURES

- Fully digital Multi-channel analyzer (MCA) mounted on a compact 14-pin tube base of a photo-multiplier
- Full Pulse-Height Analysis (PHA) and Multi-Channel scaling (MCS) modes for data acquisition
- Up to 4096 channels for PHA and MCS acquisitions
- Advanced electronic noise reduction algorithms
- Compact MCA with sizes of H 75 mm x D 55 mm
- Ethernet data communications and device control using fix IP or DHCP.
- Extremely fast data communication with less than 200 nanoseconds for transmission of 1k PHA spectrum.
- Miniature, low consumption and low-noise power supply, included into the MCA socket
- Basic spectrum acquisition and device control soft-ware supplied
- Available programming libraries for Windows and Linux Operating System (upon request).
- LED indications for communications and device power, HV power and in-coming count rates (ICR)

The bMCA is an advanced fully digital compact multi-channel analyzer (MCA). This device is used to process the electronic pulses coming out of a photo-multiplier that is coupled to a scintillator detector. Scintillator detectors are commonly used in the detection of gamma-ray radiation due to their high detection efficiency, medium energy resolution and relatively low price. This kind of MCA is able to retrieve the energy spectrum detected by such scintillator and store its distribution in time into the MCA electronic memory.

The bMCA has built in two modes of data acquisition:

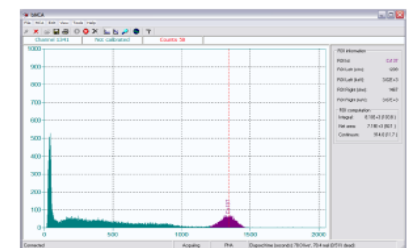
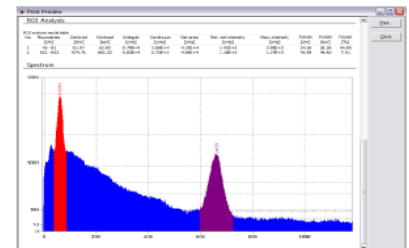
- Pulse Height Analysis (PHA)
- Multi-channel scaling (MCS)

PHA mode is regularly used in nuclear spectrometry and radiometry, while MCS is a very useful feature for following photon detections in a particular specific energy regions in function of time. MCS acquisition mode is useful to both laboratory and industrial applications that made use of radioactive sources or seek for radioactive materials.

bMCA has been design with the latest advantages of digital electronics. The device has built-in powerful mathematical algorithms to clearly retrieve the useful electronic signals among electronic noises and to perform correctly under high count rate conditions. It also contains a miniaturized power supply for low power consumption and to conveniently provide the necessary power for large size scintillator detectors.

The device has a memory size of up to 4096 channels and can perform MCS as well. The data communication in this MCA is extremely fast with less than 200 nano-seconds for transmitting a 1k energy spectrum.

A basic acquisition software is provided for the device setup, control and data acquisition visualization. The basic software provides as well a few spectrometry-related functions like ROI analysis, peak search, etc. It also incorporates a digital oscilloscope function for better bMCA setup and fine tuning to specific detector signals.



bMCA\Ethernet - A compact digital MCA

bMCA is a compact digital-based multi-channel analyzer (MCA), which is able to perform Pulse Height Analysis (PHA) of the electronic pulses coming out of a 14-pin standard photomultiplier. This kind of electronic arrangement is commonly used with scintillator type of radiation detectors (e.g. NaI(Tl), LaBr₃ (Ce), LaCl₃(Ce), etc).

The device is therefore useful to retrieve the energy spectrum of the photon radiation being detected by these detectors and it can be easily couple with a typical PC or notebook with data communication via standard USB port.

The device can be set into your local network and be controlled via standard Ethernet connection. It can be powered via Ethernet using Power-over-Ethernet (PoE) technology.

The MCA comes with a basic software to control it, acquire and visualize the energy spectrum. Using this software multiple devices can be installed and control in your network. The bMCA software incorporates an advance and easy-to-use "Discover" function, which automatically detects all the bMCAs (USB or Ethernet) available for connection.

The bMCA has also a set of programming libraries that makes its inclusion into existing radiation systems and setups very easy. The programming libraries are available for MS Windows and Linux operating systems.

SPECIFICATIONS:

PHA acquisition mode

Memory of 256, 512, 1024, 2048 and maximum of 4096 channels

Gain and Fine Gain. Gain settings with amplification factors of 1, 2, 4 and 8. Fine Gain from 1 to 2 in steps of 1/4096

Upper and Lower Level discriminator settings given in channels

MCS acquisition mode

Memory of 256, 512, 1024, 2048 and maximum of 4096 channels

Dwell time from 0.1 sec to "count-forever"

Easy to setup via stored ROIs, Nuclide-specific or ROIs set in the PHA mode

Digital Settings

Rise Time: from 0.1 to 12 μ sec in steps of 0.2 μ sec

Flat Top: from 0.1 to 8.0 in steps of 0.1 μ sec

Threshold: 1 to 255

Digital Base Line Restorer (BLR)

Pile Up Rejector (PUR)

High Voltage Power Supply

Miniature HV power supply embedded into the MCA assembly

Maximum Voltage: 0 to 1 500 Volts in 4096 steps

Data communication

Ethernet, set up via fix IP or DHCP.

Very fast data communication. Less than 200 nanoseconds for the transmission of a 1024 channels energy spectrum.

OPTIONAL: Set of cables and PoE injector

Physical

Connections : Ethernet (RJ45 standard connector)

Size: height 75 mm, diameter of 55 mm

Weight: approximately 150 grams

Indicators: Red color LED for detector high voltage, Yellow color LED for incoming count rate (ICR) , Green color LED for power and communication

Others : The device is supplied with a basic software for its operations, data acquisition control and visualization. The software also includes a digital oscilloscope. The software also provides device discovery function to easily connect to existing bMCAs in the network or your local PC.

Certifications: The device is CE compliant



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