MCA8000 Multichannel Analyzer
Premium Performance at a Price You Can Afford

- Configurations with 1000, 2000, 4000, 8000 or 16,000 channels of spectrum memory
- Standalone package with PC control
- Easy installation and setup via Ethernet 10/100 base-T or RS-232
- No slots or reserved memory required in the PC
- Includes 32-bit QuantumMCA software

The MCA8000 is DP E's latest multichannel pulse height analyzer. Its features make pulse-height analysis a pleasure to perform. This MCA was designed to give outstanding performance and value at an economical price. Packaged as a standalone unit, it features total computer control, excellent performance and flexibility. There are two ways to connect the MCA8000 to the computer: Ethernet and RS-232. In addition, the MCA8000 is available in configurations from 1000 channels of spectrum memory to 16,000. Each unit also comes with QuantumMCA software for Microsoft Windows, and it is compatible with our fully quantitative gamma analysis software package QuantumGold.

The MCA8000 features an 8.12 microsecond successive approximation ADC. With hardware add-one to memory and an on-board 20 MHz processor, there is processing power to spare. Differential non-linearity is less than ±1 percent over the top 99 percent of the range, and integral non-linearity is less than 0.05 percent over the same range. Digital stabilizers are provided for both the gain and offset. Data is stored as 31 bits per channel with an additional 8 bits for ROI information. Flexible live time correction is provided with a choice of simple busy, Lowes, Gedcke-Hale, or external dead time methods.

Full Computer Control

The MCA8000 is fully computer controlled. There are no pots to adjust. Upper level (ULD) and lower level (LLD) discriminators and the ADC zero off-set are all computer controlled. Conversion gain can be set in increments of: 250, 500, 1000, etc. up to the maximum for the particular mode. A wide range of presets is available, including live time, real time, integral of all ROIs, integral of selected ROIs, total SCA counts, net ROI statistics, and gross ROI statistics. The MCA8000 has many of the I/O connections you need for configuring any measurement application. External rear panel BNC connections are provided for GATE, REJECT, BUSY-IN, and ADC-INPUT. The polarity of REJECT and BUSY-IN can be programmed from the MCA software. MCA outputs include SCA OUT, PEAK DETECT, and ADC BUSY. The polarity of the PEAK DETECT and ADC BUSY signals can

also be

programmed from the software. A 26-pin DSUB connector is provided for ROI outputs and digital control signals.

Analytical Software

For qualitative analysis, the MCA8000 includes QuatumMCA software at no additional charge. And, for those applications that require quantitative gamma analysis, DP E offers QuantumGold as an option. This package features an intuitive, user-friendly interface. The main screen is not cluttered with buttons and controls. Tool-tips allow frequently used functions to be quickly and easily identified.

For the user who wants control of the analytical process, QuantumGold will still be a pleasure to use. The Tools Setup window allows the fine-tuning of parameters associated with the analytical calculations. Some of these controls include peak search sensitivity, line matching for library-based identification of isotopes, and ROI definitions. The efficiency calibration process is as simple as selecting energy lines assocated with the various calibration standards, and then pressing one button. The efficiency curve is generated along with a theoretical model for the response of the detector.

The gamma activity report includes all information associated with the analysis. Likewise, each spectrum data file contains all information associated with the calibration that was in effect at the time of acquisition.

Computer and Network Connectivity

QuantumMCA has a single hardware setup and search utility that establishes communication with PGT multi-channel analyzers via Ethernet 10/100 base-T or RS-232. Ethernet capability allows users to enjoy the benefits of connecting the MCA8000 directly to a PC or to the local area network. The RS-232 interface provides a quick and simple method of connecting the MCA 8000 directly to a PC in the field or other location where Ethernet is not available. For RS-232, an unused COM port is all that is needed.

MCA8000 Specifications

ADC

- 8.12μs successive approximation ADC (14-bit resolution)
- Discriminators (PC adjusted): upper (0 to 105% of full scale) and lower
- (<1% to 105% of full scale) in 0.41% increments
- Zero adjustment in increments of 0.41% (PC adjusted)
- Maximum throughput: 70,000 cps

Spectrum memory

- MCA 8001: 250, 500, 1000 channels
- MCA 8002: 250, 500, 1000, 2000 channels
- MCA 8004: 250, 500, 1000, 2000, 4000 channels
- MCA 8008: 250, 1000, 2000, 4000,8000 channels
- MCA 8016: 250, 1000, 2000, 4000, 8000, 16000 channels
- maximum counts per channel: $2^{31}-1$ (i.e., 2.1E9)

Digital Stabilizer

- Internal ADC zero and gain stabilIzation
- PC controlled time constants
- Balanced channel and ROI centroid Modes
- Gain: ± 12.5% of range
- Zero: ± 1.25% of range

Multichannel Scaling

- Input Rate: 5 MHz
- Dwell Time: 10 ms to 2.1E7 seconds
- Dead-time: 3μs between passes and 3μs between channels
- Signal sources: internal SCA, any ROI, external input

Counting presets

Real time	Live time
Integral of all ROIs	Integral of selected ROIs
Gross ROI statistics	Net ROI statistics
Total system counts	Total SCA counts

Linearity

- Differential non-linearity: < ± 1% over top 99% of range
- Integral non-linearity: < ± 0.05% over top 99% of range

Battery backup for

- Spectrum
- Setup parameters
- Clock memory

Computer Control

- Ethernet 10/100 base-T
- RS-232 baud rates: 2400, 9600, 19200, 38400, 57600, 115200
- Max. number units connected to PC: 8

Front panel indicators

- LEDs for: Acquire, Event, Serial Com, AUX I/O in-use, power
- 3-color LED array for dead-time

Rear panel controls and connectors

- Power switch
- 2.5mm power jack
- Fuse housing
- 9-pin D male RS-232 connector
- 26-pin D female connector for ROI output
- 9-pin D auxiliary I/O connector
- Ethernet interface connector (RJ-45)
- ADC input (BNC) 0-10V unipolar or bipolar pulse
- ADC gate input (BNC) (coin. / anti-coin. / off) CMOS/TTL
- Pile-up reject input (BNC) CMOS/TTL
- SCA output CMOS/TTL
- ADC busy out (BNC) CMOS/TTL

Weight

- 4.06lb (1.85kg)

Dimensions

- 10.4in. (26.4cm) wide
- 12.3in. (31.2cm) deep
- 2.75in. (7.0cm) tall

Power requirements

- 10-18 VDC, 9.6 watts, external
- 12V universal AC supply provided

Software

- 32-bit QuantumMCA compatible with
- Windows 95/98/NT

Accessories

- QuantumGold software for quantitative analysis
- High-purity germanium detectors
- Selection of cables

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For More Information Contact:

Berkeley Nucleonics
2955 Kerner Blvd
San Rafael, CA 94901
Tel: (415) 453-9955
Fax: (415) 453-9956
www.berkeleynucleonics.com