The ORTEC Model 926 Multichannel Buffer (MCB) is a single-wide NIM module designed for high performance in real-time data acquisition. The 926 is a hardware component that provides Analog-to-Digital Conversion (ADC) and Memory. A personal computer is interfaced, through the provided USB connector, to utilize the data acquisition, storage, display, and analysis functions. This is accomplished by issuing ASCII commands from the PC to the 926 MCB’s internal 80C188 microprocessor.

Extended Live-Time correction according to the Gedcke-Hale method,1 or Simple Live-Time correction with the clock turned off during the conversion time, can be selected using printed wiring board jumpers.

MAESTRO-32 MCA emulation software and quantitative analysis software are available for use with a variety of personal computers in the Windows environment. The easy-to-use command language complies with the standard NIM digital bus NIM/488 per DOE/ER-0457T (formerly NIM/GPIB) protocol definitions.2 Control of all functions, including acquisition, presets, and ADC conversion gain are provided using this protocol.
USB Connectivity

The USB connector allows you to operate the 926 MCB from any supported computer that has an available USB port. The cable provided has a 37-pin D-connector that is attached to the rear of the 926 MCB. The USB connector is then plugged into the PC USB port. You can even connect multiple 926 MCBs into a single PC, through a powered USB hub.

If you have an older PC that does not have USB ports, an optional female 25-pin D-connector is provided. To utilize, simply remove the manufacturer installed connector and mount the optional female connector. Attach the 926 MCB to your PC using the optional Interface/Cable Pack.

The 926 Operates with the Latest MCA Emulation Software . . .

MAESTRO-32 MCA Emulation provides, under the popular Windows Graphical User interface, an advanced MCA Emulator that is easy to use by keyboard or mouse. The truly live spectral display is easily manipulated with the mouse; rapid peak searches, ROI settings, and nuclide activity calculations are just a button click away. "Hot" keys are included for many functions. Up to 16k-channel full display, with logarithmic and variable-linear vertical display scale, is available. Advanced features include:

- Mariscotti\textsuperscript{2} fast peak search and nuclide ID
- Index to next ROI or peak in spectrum
- Automatic operation through command file feature
- Live update of key peak parameters while data is collecting
- Peak centroid and shape calculation
- Net Area and Gross Area for peaks
- Spectrum Sum
- Spectrum Smooth
- Quadratic energy calibration, with shape parameter, stored to disk
Specifications

PERFORMANCE

ADC  Successive-approximation type with sliding-scale linearization.
MAX RESOLUTION  8192 channels, software selectable as 8192, 4096, 2048, 1024, and 512.
DEAD TIME PER EVENT  8 µs, including memory transfer.
INTEGRAL NONLINEARITY  \( \leq 0.025\% \) over the top 99% of the dynamic range.
DIFFERENTIAL NONLINEARITY  \( \leq 1\% \) over the top 99% of the dynamic range.
GAIN INSTABILITY  \( \leq 50 \text{ ppm}/\text{C} \).
DEAD TIME CORRECTION  Printed wiring board jumper selects either Extended Live Time correction according to the Gedcke-Hale method, or Simple Live Time correction with the clock turned off during the conversion time.
DATA MEMORY  8k channels of battery backed-up memory; 2\(^{31}–1\) counts per channel (over 2 billion).

PRESETS

Real Time/Live Time  Multiples of 20 ms.
Region of Interest  Peak count/Integral count.
Data Overflow  Terminates acquisition when any channel exceeds 2\(^{31}–1\).

MICROPROCESSOR  Intel 80C188; 32k Dual-Port RAM with battery backup; 16k "scratchpad" RAM with battery backup. 32k program memory.

FRONT-PANEL INDICATORS AND CONTROLS

CPU BUSY  Red, busy-rate LED; intensity indicates the relative activity of the microprocessor.
ADC BUSY  Red, busy-rate LED flashes once for each pulse digitized by ADC.
ADC ZERO  Screwdriver potentiometer, \( \pm 250 \text{ mV} \).
ADC LLD  Screwdriver potentiometer, from 0 to 10% full scale.

INPUTS AND OUTPUTS

INPUT  Accepts positive unipolar, positive gated-integrator, or positive-leading bipolar analog pulses in the dynamic range from 0 to +10 V; +12 V maximum; semi-Gaussian-shaped or gated-integrator-shaped time constants from 0.25 to 30 µs, or delay-line-shaped with width >0.25 µs. \( Z_{in} \approx 1 \text{ k}\Omega \), dc-coupled. No internal delay. BNC connectors on front and rear panel.
ADC GATE  Optional, slow-positive NIM input. Computer-selectable Coincidence or Anticoincidence. Signal must occur prior to and extend 0.5 µs beyond the peak of the pulse; front-panel BNC connector. \( Z_{in} \approx 1 \text{ k}\Omega \).
PUR  Pile-up rejection input; accepts slow-positive NIM signal; signal must occur prior to peak detect. \( Z_{in} > 1 \text{ k}\Omega \). BNC connector on rear panel.

BUSY  Busy input used by live-time correction circuits. Accepts slow-positive NIM signal; signal must occur prior to peak detect. \( Z_{in} > 1 \text{ k}\Omega \). BNC connector on rear panel.
DUAL-PORT MEMORY (ORTEC)  37-pin D-connector provides the PC with a communication link and direct access to the Model 926's internal data memory.
PARALLEL PORT  Provides for control of the instrument and access to the data memory from a standard IBM PC printer port; male 25-pin D-connector.
PRINTER  User installed connection provided to attach either another 926 MCB or a printer to the system; jumper selectable; female 25-pin D-connector.

ELECTRICAL AND MECHANICAL

POWER REQUIRED  +12 V, 200 mA; –12 V, 200 mA; +6 V, 600 mA.
WEIGHT  Net  0.9 kg (2 lb).
           Shipping  2.25 kg (5 lb).
DIMENSIONS  NIM-standard single-wide 3.43 x 22.13 cm (1.35 x 8.714 in.) front panel per DOE/ER0457T.
926-M32-USB
Multichannel Analyzer

Ordering Information
To order, specify:

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<tr>
<th>Model</th>
<th>Description</th>
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<tr>
<td>926-M32-USB</td>
<td>926 Multichannel Buffer</td>
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<tr>
<td></td>
<td>MAESTRO-32 for Windows MCA Emulation Software</td>
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<td></td>
<td>Driver update (CONNECTIONS-32)</td>
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<td></td>
<td>DPM to USB interface converter (5 meters)</td>
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Interface/Cable Packs

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Optional Integrated Software

| A66-B32                   | GammaVision Gamma-Ray Analysis with Ge         |
| Global Value              | Gamma Spectroscopy Automation and Custom Reporting |

Additional hardware options:

USB HUB: Powered USB hub includes connections for up to seven 926 inputs. Configuration functions are the same as any other
Connections-32 device. Available in 4-input and 7-input models.

| C-USB-HUB-4B             | 4 Port USB Hub                                |
| C-USB-HUB-7B             | 7 Port USB Hub                                |
| USBEXT                   | USB Active Extension Cable (powered by USB)    |

2Please refer to “Standard NIM Digital Bus (NIM/488),” DOE/ER-0457T, U.S. NIM committee, May 1990; Standard NIM Instrumentation System, NTIS,