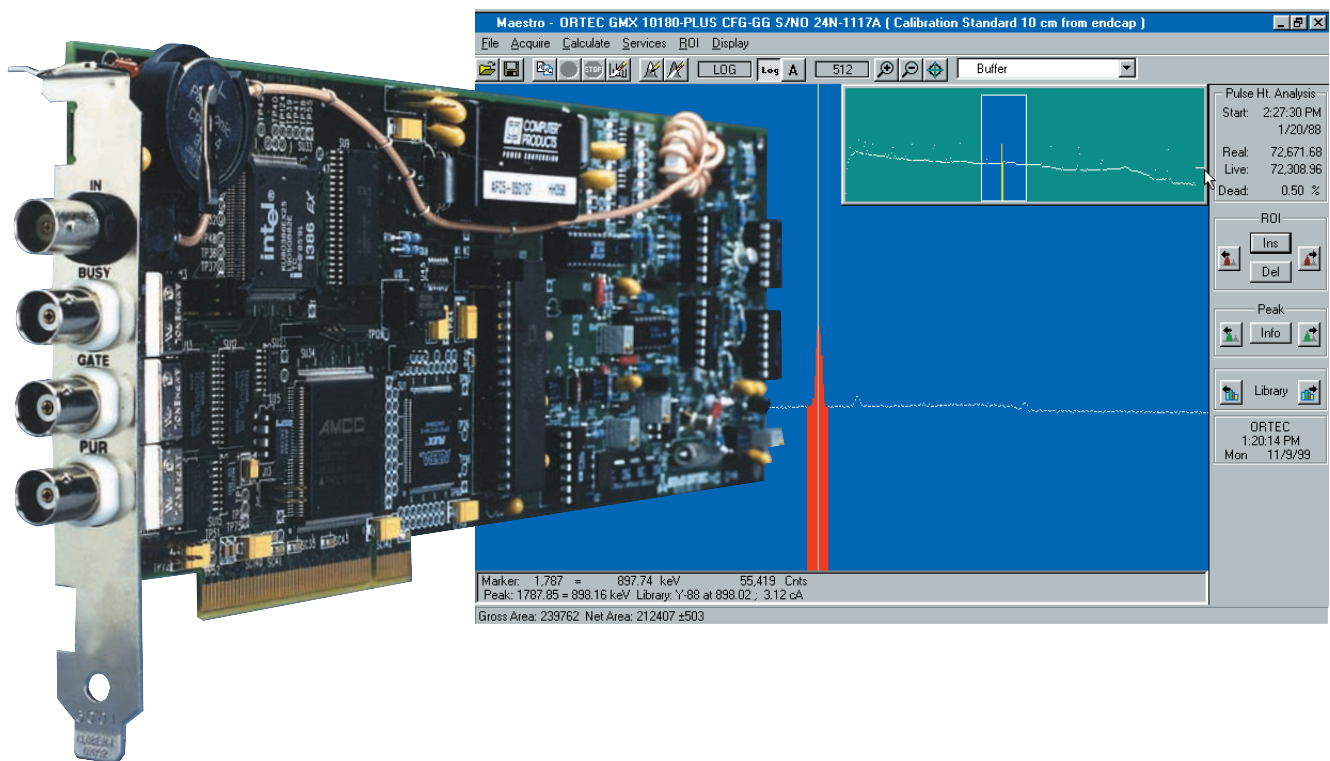
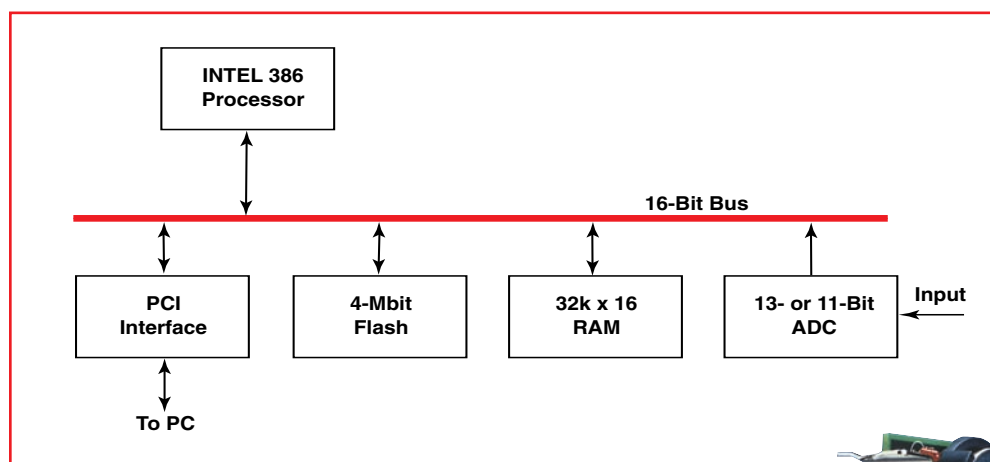


MCA-on-a-Card for the Latest PCI-Bus PCs with *CONNECTIONS* MAESTRO[®]-32 MCA Emulation Software



- Fast (8 μ s) ADC and memory on a PCI-Bus plug-in card
- Computer control of all MCA functions
- High-resolution, powerful, easy-to-use MAESTRO-32 MCA Emulation program
- Highly-accurate dead-time correction method¹
- PUR, BUSY, and GATE inputs
- Easy to control via mouse or keyboard
- True live display of data being acquired
- Advanced analysis capabilities
- Two versions . . . 8k and 2k channels

The ORTEC TRUMP-PCI MCA brings the highly-successful TRUMP MCA on a card into PCI format. TRUMP-PCI plugs into a PCI option slot on the latest PCs to provide a computer-controlled multichannel pulse-height analyzer (MCA). Each TRUMP-PCI card consists of a single-slot plug-in card and MAESTRO-32 software. The TRUMP-PCI hardware comprises an ADC, microprocessor with data and program memory, and PCI-Bus interface, on a single PCI format plug-in card.

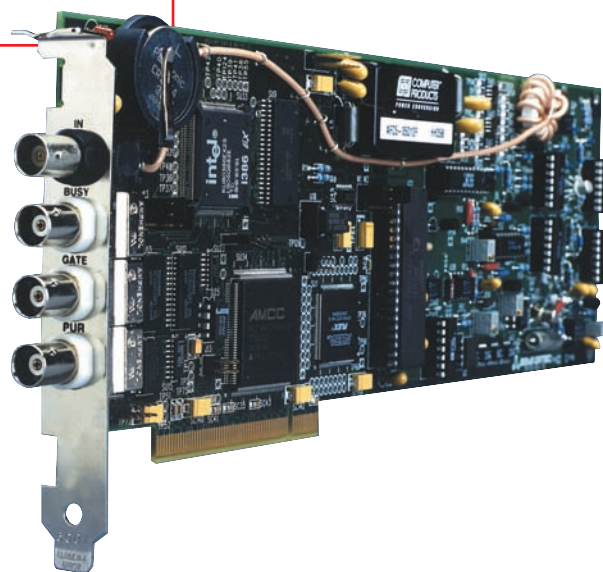


A successive-approximation ADC (8k or 2k) and matched data memory with a capacity of $2^{31}-1$ (over 2 billion) counts per channel is provided. Dead time per event is only 8 μ s, including time to add one to memory. The conversion gain is computer selectable as 512, 1024, and 2048 for the 2k TRUMP-PCI, with additional choices of 4096 and 8192 for the 8k version.

Two methods of dead time correction are available. Either Extended Live-Time correction according to the Gedcke-Hale¹ method or Simple Live-Time correction with the clock turned off during the conversion time can be selected using printed wiring board (PWB) jumpers.

In addition to the Input signal, the TRUMP-PCI Card accepts an ADC GATE input, a PUR pile-up rejection input, and a BUSY input used by the live-time correction circuits.

Up to eight TRUMP-PCI Cards can be controlled from the same PC under one copy of the MCA Emulator program (MAESTRO-32) with no overhead on the PC resources. During data acquisition the computer is entirely free to run other tasks.



¹Ron Jenkins, R.W. Gould, and Dale Gedcke, *Quantitative X-Ray Spectrometry* (New York: Marcel Dekker, Inc.), 1981, pp. 266–267.

TRUMP™-PCI-8k/2k

PCI Format MCA Plug-In Card and Software

MAESTRO-32 MCA Emulation Software

TRUMP-PCI operates within the ORTEC *CONNECTIONS* environment under the latest version of the popular MAESTRO-32 MCA emulation software for Windows 2000/XP. A large number of ORTEC application software packages support the TRUMP-PCI and developer's toolkits are also available.

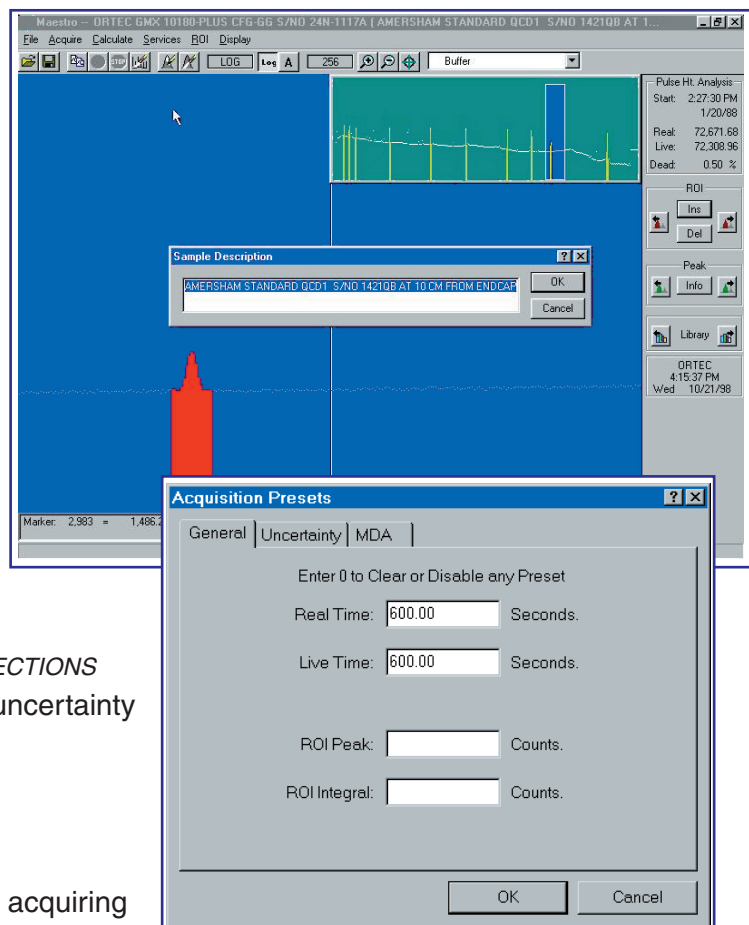
MAESTRO-32 provides an advanced MCA emulator that is easy to use by mouse or keyboard and features the latest Windows GUI enhancements. *CONNECTIONS* networking capabilities allow remote control and live display from remote PCs. Data security is assured by the provision of password-protected detector locking.

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 MAESTRO-32

Features Include:

- Full networking capabilities under ORTEC *CONNECTIONS*
- Multiple acquisition preset types, including peak uncertainty and nuclide MDA
- Mariscotti² fast peak search and nuclide ID
- Index to next ROI or peak in spectrum
- Automatic operation through job file feature
- Live update of key peak parameters while data is acquiring
- 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
- Supports up to 8 TRUMP-PCI cards



²⁴A Method for Automatic Identification of Peaks in the Presence of Background and its Application to Spectrum Analysis," *Nucl. Instrum. Methods* 50 pp. 309-320 (1967).

TRUMP™-PCI-8k/2k

PCI Format MCA Plug-In Card and Software

Specifications

Performance

ADC Successive-approximation type with sliding scale linearization.

MAX RESOLUTION 8k: 8192 channels, software selectable as 8192, 4096, 2048, 1024, 512, and 256. 2k: 2048 channels, software selectable as 2048, 1024, 512, and 256.

DEAD TIME PER EVENT 8 μ s, including memory transfer.

INTEGRAL NONLINEARITY $\leq \pm 0.025\%$ over the top 99% of the dynamic range.

DIFFERENTIAL NONLINEARITY $< \pm 1\%$ over the top 99% of the dynamic range.

GAIN INSTABILITY $\leq \pm 50$ ppm/°C.

DEAD-TIME CORRECTION Printed wiring board (PWB) 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 Terminate acquisition when any channel exceeds $2^{31}-1$.

Peak Uncertainty

Nuclide MDA

MICROPROCESSOR Intel 386; 32k x 16 RAM with battery backup; 4 Mbit flash memory.

Controls

ADC ZERO Computer controlled, ± 125 mV.

ADC LLD Computer controlled, from 0 to 100% full scale.

ADC ULD Computer controlled, from 0 to 100% 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 μ s, or delay-line-shaped with width > 0.25 μ s. $Z_{in} \approx 1$ k Ω , dc-coupled. No internal delay. BNC connector on rear panel.

ADC GATE Optional, slow-positive NIM input. Computer selectable Coincidence or Anticoincidence. Signal must occur prior to and extend 0.5 μ s beyond the peak of the pulse; rear-panel BNC connector. $Z_{in} \approx 1$ k Ω .

PUR Pile-up rejection input; accepts slow-positive NIM signal; signal must occur prior to peak detect. $Z_{in} \approx 1$ k Ω . 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. $Z_{in} \approx 1$ k Ω . BNC connector on rear panel.

Electrical and Mechanical

POWER REQUIRED +5 V, 1.5 A.

DIMENSIONS Standard full-slot PCI card.

Weight

Net 1.4 kg (3.1 lb)

Shipping 2.3 kg (5 lb)

Software Prerequisites

MAESTRO-32 will run on any PC that supports Windows 2000/XP.

Ordering Information

To order, specify:

Model

TRUMP-PCI-2K

TRUMP-PCI-8K

Description

2k MCA PCI Plug-In Card with MAESTRO-32 Software

8k MCA PCI Plug-In Card with MAESTRO-32 Software

Specifications subject to change
051807

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