DIGITAL MULTI CHANNEL ANALYZER

BASE527 SPECTROMETER SERIES

DESCRIPTION

Together with a detector, the Base527 Series are complete spectrometer with integrated bias supply and preamplifier for PMT based detectors. It may be used for gamma-ray spectroscopy applications with NaI, LBC, SrI2 or similar scintillation detectors.
The Base527 modules are suitable for detectors with 14-pin (standard version) or 12-pin photomultiplier tubes like the Hamamatsu R6231, R1306 *(Jedec B14)* or R9420, 9102B, XP2060B *(Jedec B12).*
Special socket options are available on request. Kindly refer to our internet site for the *socket variants datasheet.*
The Base527 series are categorized in their respective computer interfaces and comes either with USB- *(Base527)*, Ethernet & USB- *(Base527E)* or with a RS485 *(Base527R).*
The whole module is powered from the USB interface port, or by “Power over Ethernet”.
Due to the integration of all hardware components for a gamma spectroscopy system in one package, there is only one cable necessary to connect the system to a computer or network switch. The Base527 can be operated with our free of charge software programs, available for the entire MCA527 product family, such as WinSpec or WinMCS.

KEY FEATURES	*BENEFITS*
Up to 4k channel resolution	• *High performance gamma spectroscopy with PMT- based detectors*
Very low power consumption of 0.4W	• *Long time operation with battery power sources* • *Powering direct via computer interface*
Available with 14-pin or 12-pin-socket, Special pin assignment versions upon request	• *Special and favored PMT can be applied*
Functional tripod & beaker optional available, Fixed cable version available	• *Very good operability and mobility* • *Robust connection, avoids loosening*
Fully digital signal processing	• *All parameter are computer adjustable* • *Allows a wide range of filter settings*
Eloxed aluminum housing	• *Excellent electrical shielding and robustness*

Technical Specification

Base527 Series

Photomultiplier Tube Setting
All PMTs for the JEDEC B14A socket are supported (like the Hamamatsu R6231, R1306) Kindly refer to our internet site for the *variants of socket datasheet.*

Spectrometric Performance	
Number of maximal channels	4096
Example: Resolution: 2k channels measured with NaI Detector Size: 63mm x 63mm	(FWHM) @ 662keV <5.8 %
Throughput into memory (input rate 150kcps, 0.2µs shaping time)	> 100.000cps

Operation Modes	
PHA (Pulse Height Analysis)	✓
MCS (Multichannel Scaling)	✓
Sample Mode (Transient Record)	✓
Oscilloscope Mode	✓
Firmware Repeat Mode	✓

Digital Signal Processing	
Trigger Filter	double differential filtering
Differential non-linearity	<1% (for 2k, @ 1µs shaping time)
Pile Up Rejection	✓
Pulse Pair Resolution	~400ns
Trigger Threshold Adjustment	automatically / manually
Shaping Time	0.1µs to 2µs, step 0.1µs
Flat Top Time	0µs to 15µs, step 0.1µs
Fine Gain Adjustment	0.5 to 6.5, step 0.0001
Channel Splitting	128, 256, 512, 1024, 2048, 4096
Base Line Restorer	BLR with fixed averaging
Pole Zero Adjustment	Decay time down to 40µs can be compensated
Peak Stabilization Modes	standard mode

Analog Digital Converter	
Sample Rate	10MS/s
Resolution	14bit
Integral non-linearity	≤0.05%

PMT Amplifier Unit	
Type	Charge sensitive preamplifier for photomultiplier tubes
Gain Steps	10, 50
Integrated bias supply	0V to +1000V, (negative polarity on request)
Input -and bias voltage monitoring	✓

Power supply		
Base527	(µUSB Version)	via USB PC-Port, ≤500mA
Base527E	(Ethernet Version)	- Power over Ethernet ≤ 2W - USB PC-Port ≤ 500mA - USB wall-adapter ≤ 500mA
Base527R	(RS485 Version)	via USB –A PC port (Adapter)
Power consumption (running, without detector, HV off)		0.4W

Computer Interface		
Base527	(µUSB Version)	USB 2.0 compliant
Base527E	(Ethernet Version)	- Ethernet 10/100Mbit, RJ45 - µUSB 2.0 compliant
Base527R	(RS485 Version)	- RS485 compliant - USB 2.0 compliant (adapter)

Mechanical	
Dimensions (Ø x L)	72mm x 100mm
Pin Socket	JEDEC B14A (standard version)
Weight	~400g

Environmental Conditions	
Operation Temperature Range	0°C – 50°C
Humidity	≤90%, non-condensing
IP Protection Class	IP20

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