

## DIGITAL MULTI CHANNEL ANALYZER

# MCA527<sub>MICRO</sub> / MICRO+



### DESCRIPTION

The MCA527<sub>micro</sub> / <sub>micro+</sub> is a very small and ultra low power consuming multichannel analyzer module, designed for the direct integration into a detector housing. It is intended for use in NaI- and CdZnTe- detectors but it may be also usable for other applications such as neutron counters or CsI detectors. In conjunction with a preamplifier and a high voltage power supply it is possible to create a very small spectrometer. Communication and power are provided over the micro USB connector on board. The <sub>micro+</sub> Version operates with 16k channel resolution for HPGE detector applications.

GBS Elektronik offers optionally a preamplifier board for photomultiplier tubes. It has a built-in bias supply, which is software adjustable in the range of (+) or (-) 1000V, a charge sensitive preamplifier with two coarse gain steps and a monitor circuit for the supply voltage and bias voltage. Kindly refer to our internet site for the extended datasheet.

The application programs from our MCA software family are free of charge and allow to operate the device as a general purpose multi channel analyzer, multi channel scaler, universal counter or oscilloscope.



KEY FEATURES	BENEFITS
<i>Cost-effective high integrated design</i>	<ul style="list-style-type: none"><li>• Offers outstanding price-performance ratio and ultra low power consumption of 0.3W</li></ul>
<i>Up to 4k / 16k channel resolution (micro+)</i>	<ul style="list-style-type: none"><li>• Best performance with NaI, CdZnTe, LaBr / HPGE detectors</li></ul>
<i>Equipped with a lot of useful Interface- and power supply ports</i>	<ul style="list-style-type: none"><li>• Development of additional applications, e.g. GPS receiver, sensors or microcontroller around the board possible</li></ul>
<i>Dimensions in ultra small format (50 x 20 x 5mm)</i>	<ul style="list-style-type: none"><li>• Realization of very small spectrometer</li><li>• Direct integration in detector housings possible</li></ul>
<i>Designed to interconnect with our preamp. PCB</i>	<ul style="list-style-type: none"><li>• Easy and suitably expandable</li></ul>

# Technical Specification

## MCA 527 micro / micro+



Spectrometric Performance		Channel Splitting	128, 256, 512, 1024, 2048, 4096
<b>Example: (micro+)</b> Resolution: 16k channels Detector: HPGE 500mm <sup>2</sup> planar, Count rates < 10kcps Source: Am241 @ 59keV	(FWHM) @ 2μs shaping time  <460eV	Channel Splitting (micro+)	128, 256, 512, 1024, 2048, 4096, 8192, 16384
<b>Example 2:</b> Resolution 2k channels Input: Test generator signal	(FWHM)  <<0.1%	Base Line Restorer	BLR with fixed averaging
Throughput into memory (input rate 150kcps, 0.2μs shaping time)	> 100.000cps	Base Line Restorer (micro+)	BLR with adjustable averaging
Operation Modes		Pole Zero Adjustment	Decay time down to 40μs can be compensated
PHA (Pulse Height Analysis)	✓	Peak Stabilization Modes	standard mode LED mode
MCS (Multichannel Scaling)	✓	Analog Digital Converter	
Sample Mode (Transient Record)	✓	Input signal	DC coupled, differential
Oscilloscope Mode	✓	Differential input voltage range	± 1V
Firmware Repeat Mode	✓	Common mode voltage	1.5V
Gate Mode (by time)	✓ (micro+)	Temperature stability	TK50
Gate Mode (by state)	✓ (micro+)	Sample Rate	10MS/s
List Mode (optional)	✓ (micro+)	Resolution	14bit
Digital Signal Processing		Integral non-linearity	≤ 0.05%
Trigger Filter	double differential filtering	MCA Power Supply	
Trigger Filter (micro+)	single and double differential filtering	Input Voltage via micro USB	4.5V - 5.25V, 80mA
Differential non-linearity	<1% (for 2k, @ 1μs shaping time)	Power consumption (running, without detector, HV off)	0.3W
Pile Up Rejection	✓	Mechanical	
Pulse Pair Resolution	~400ns	Dimensions (in mm)	50 x 20 x 5
Trigger Threshold Adjustment	automatically / manually	Weight	5g
Shaping Time	0.1μs to 2μs, step 0.1μs	Communication & Connections	
Shaping Time (micro+)	0.1μs to 25.5μs, step 0.1μs	Computer Interfaces	micro USB
Flat Top Time	0μs to 15μs, step 0.1μs	Pin assignment	Kindly refer to our internet site for the extended datasheet.
Fine Gain Adjustment	0.5 to 6.5, step 0.0001	Environmental Conditions	
		Operation Temperature Range	0°C – 50°C
		Humidity	≤90%, non condensing
		IP Protection Class	IP00