

DIGITAL MULTI CHANNEL ANALYZER

CUBE527 SPECTROMETER SERIES



DESCRIPTION

The Cube527 Spectrometer series offers high performance gamma-spectroscopy at very low power consumption.

The smart design allows to swap the CZT detector module and increases the field of application in terms of sensitivity and performance adjustment as well as customers budget requirements. There are three detector modules with different crystal volumes available. The ultra small dimensions and low weight of the Cube527 offering an excellent mobility and access to hard-to-reach areas, for instance with a drone. The Cube527 series are categorized in their respective computer interfaces and comes either with USB- (*Cube527*), Ethernet & USB- (*Cube527E*) or with a RS485 (*Cube527R*)



computer connection. The Cube527 is powered from the USB interface port, or by “Power over Ethernet“. Furthermore, we offer fixed cable versions for each computer interface version. Due to the integration of all hardware components which are required for a full gamma spectroscopy system in one package, only one cable is necessary to connect the system to a computer or network switch. The Cube527 series can be operated with our free of charge software programs, such as WinSpec or WinMCS.

KEY FEATURES	BENEFITS
<i>All-in-one spectrometer @ 4k channel resolution</i>	<ul style="list-style-type: none">• High performance gamma-spectroscopy at very low power consumption• Power via computer interface
<i>Detector can be exchanged in a minute, detector modules with three crystal volumes of 60mm³, 500mm³ or 1500mm³ available</i>	<ul style="list-style-type: none">• Easy & fast modifiable in terms of sensitivity and spectroscopy performance
<i>Dimensions in ultra small format, Fixed cable versions available</i>	<ul style="list-style-type: none">• Excellent operability and mobility• Robust connection, avoids loosening
<i>Fully digital signal processing</i>	<ul style="list-style-type: none">• All parameter are computer adjustable• Allows a wide range of filter settings
<i>Eloxed aluminum housing</i>	<ul style="list-style-type: none">• Excellent electrical shielding and robustness

Technical Specification

Cube527 Series

CdZnTe Detector Module	
<ul style="list-style-type: none"> - Quasi-hemispherical crystal shape - Energy Range: 20keV to 3MeV - Available with volumes of 60mm³, 500mm³, 1500mm³ 	
Spectrometric Performance	
<i>Example 1</i> Resolution: 2k channels Detector crystal size: 60mm ³	(FWHM) @ 662keV <2.5%
<i>Example 2</i> Resolution: 2k channels Detector crystal size: 500mm ³	(FWHM) @ 662keV <2.5%
<i>Example 3</i> Resolution: 2k channels Detector crystal size: 1500mm ³	(FWHM) @ 662keV <3.5%
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 0.1
Flat Top Time	0µs to 15µs, step 0.1
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	Signal 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%
Amplifier Unit	
Type	ADC Driver
Gain (fixed)	10
Bias supply	0V to 2000V, (software adjustable)
Power supply	
Cube527 (µUSB Version)	via USB PC-Port, ≤500mA
Cube527E (Ethernet Version)	- Power over Ethernet ≤ 2W - USB PC-Port ≤ 500mA - USB wall-adapter ≤ 500mA
Cube527R (RS485 Version)	via USB-A PC port (adapted), or open end wire upon request
Power consumption (running, without detector, HV off)	0.3W (Cube527) 0.5W (Cube527E)
Computer Interface	
Cube527 (µUSB Version)	USB 2.0 compliant
Cube527E (Ethernet Version)	- Ethernet 10/100Mbit, RJ45 - USB 2.0 compliant
Cube527R (RS485 Version)	- RS485 compliant - USB 2.0 compliant (adapted)
Digital input / output (GPIO)	
Useable for start signal, triggering, loop through mode, counter, signal generator, starting up more than one device. <i>(not available for Cube527R)</i>	
Weight & Dimensions with Detector (H x W x L)	
Cube527 (µUSB Version)	25mm x 25mm x 63mm 80g
Cube527E (Ethernet Version)	25mm x 25mm x 110mm 150g
Cube527R (RS485 Version) (Dimensions with Lemo socket)	25mm x 25mm x 76mm 90g
Environmental Conditions	
Operation Temperature Range	5°C – 50°C
Humidity	≤90%, non-condensing
IP Protection Class	IP40