

EURO-SPECTRUM ENHANCER - CdTe

INSTRUCTION'S MANUAL



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MAIN CHARACTERISTICS OF THE EURO-SPECTRUM ENHANCER

The Euro-Spectrum Enhancer is a spectrometric system, specifically adapted to detectors, probes and preamplifier developed by Eurorad.

The Euro-Spectrum Enhancer system can be used together with CdTe and CdZnTe detectors for high energy spectrometry applications (^{137}Cs).

Since it incorporates a time discriminator, the resolution FWHM and the P/V ratio are both improved with minimum loss in counting rate.

The Euro-Spectrum Enhancer system includes both bias generator and power supply, allowing full practical efficiency with minimum external connections.



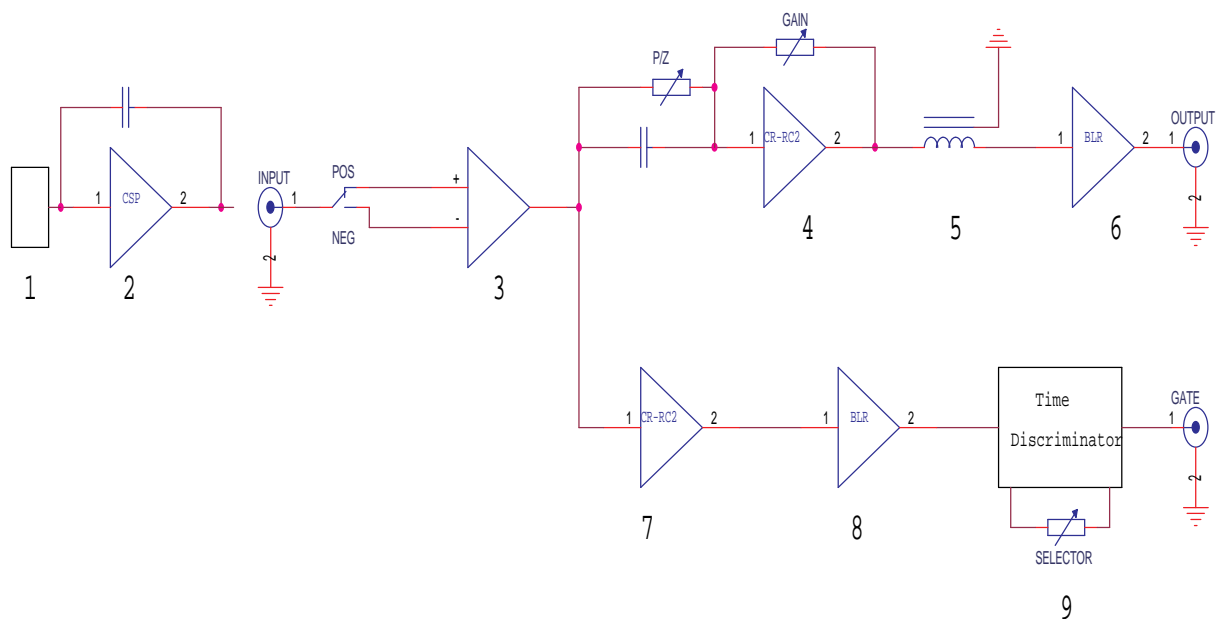
PRESENTATION

The Eurospectrum Enhancer set contains:

- One spectroscopic amplifier with shaping time adjusting
- One fast spectrometric amplifier
- One time discriminator
- One bias generator (optional)
- The power supply

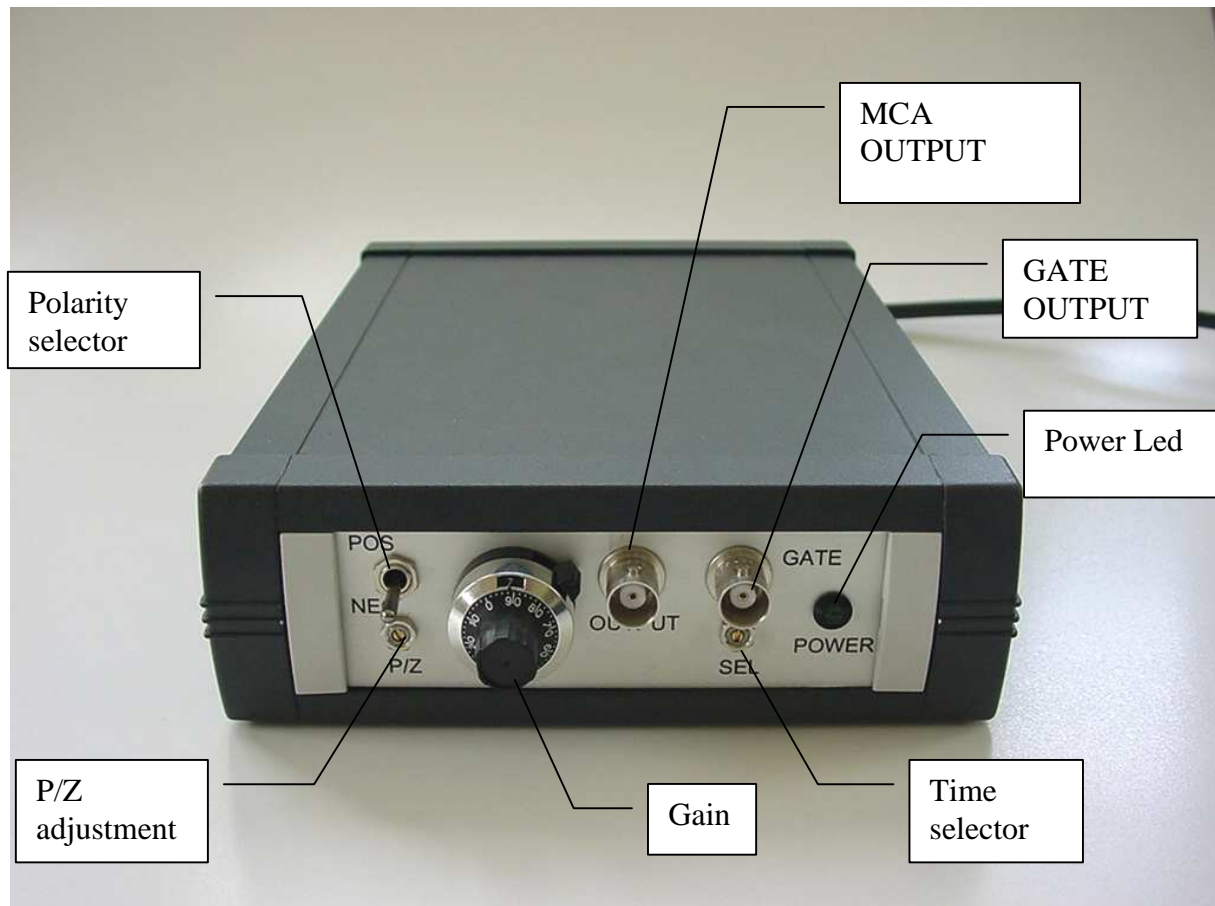
By selecting fast rise time pulses, the system permits an enhancement of the spectra obtained with CdTe and CZT detectors.

SYNOPTIC



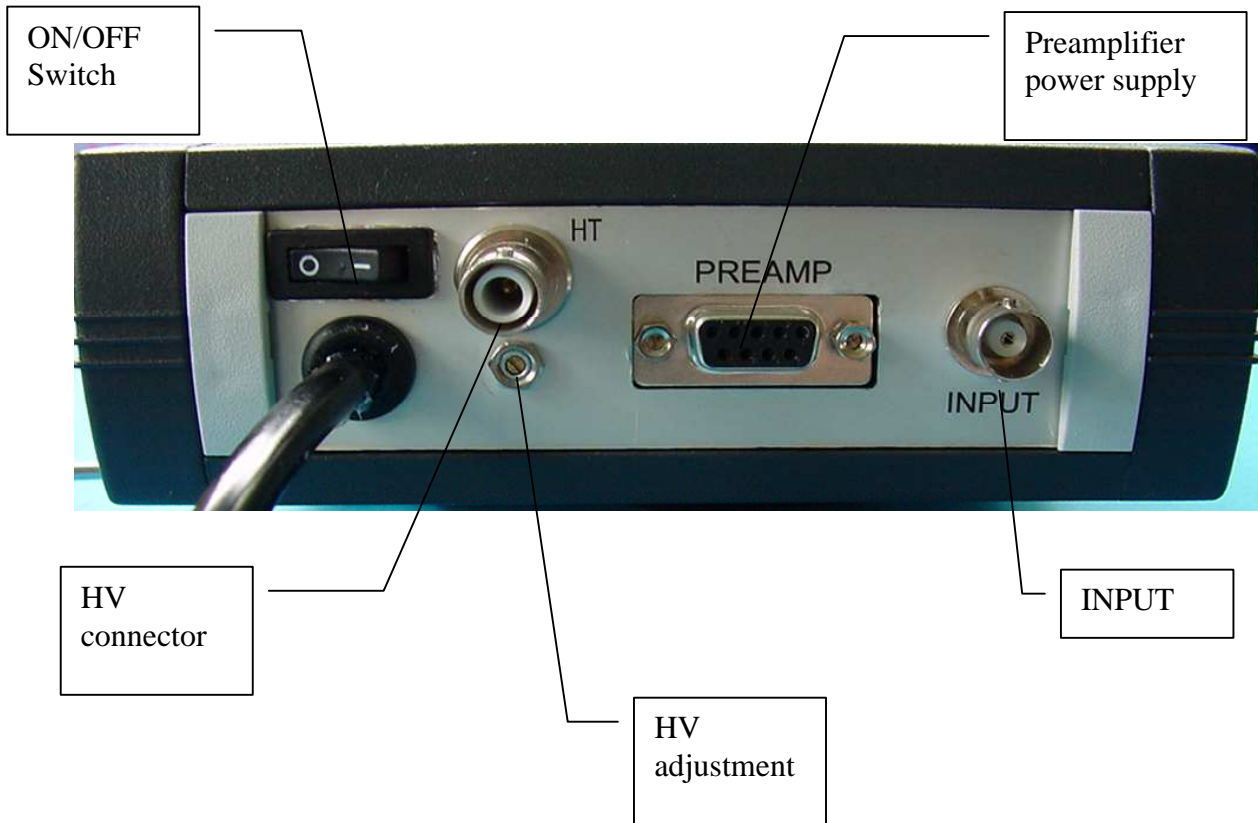
- 1 Detector
- 2 Preamplifier
- 3 Polarity selector
- 4 Main amplifier and P/Z cancellation
- 5 Delay line
- 6 Base line restorer
- 7 Second fast amplifier
- 8 Base line restorer
- 9 Time discriminator & selector potentiometer

FRONT PANEL VIEW



- Polarity : Pos/Neg switch
- P/Z: 10 turns screwdriver potentiometer
- Gain: Precision potentiometer from x15 to x550
- OUTPUT: Unipolar output
 - $Z_o=50\Omega$
 - Full scale range 0 to +10V
 - Shaping times are factory adjusted : 0.5 μ s, 1 μ s & 2 μ s (**adapted to HgI₂**)
- GATE: TTL output
 - About 5.5 μ s positive pulse
- Selector : 10 turns screwdriver potentiometer
 - Turn counterclockwise to have more selection and less efficiency
 - Turn clockwise to have less selection and more efficiency

REAR PANEL VIEW

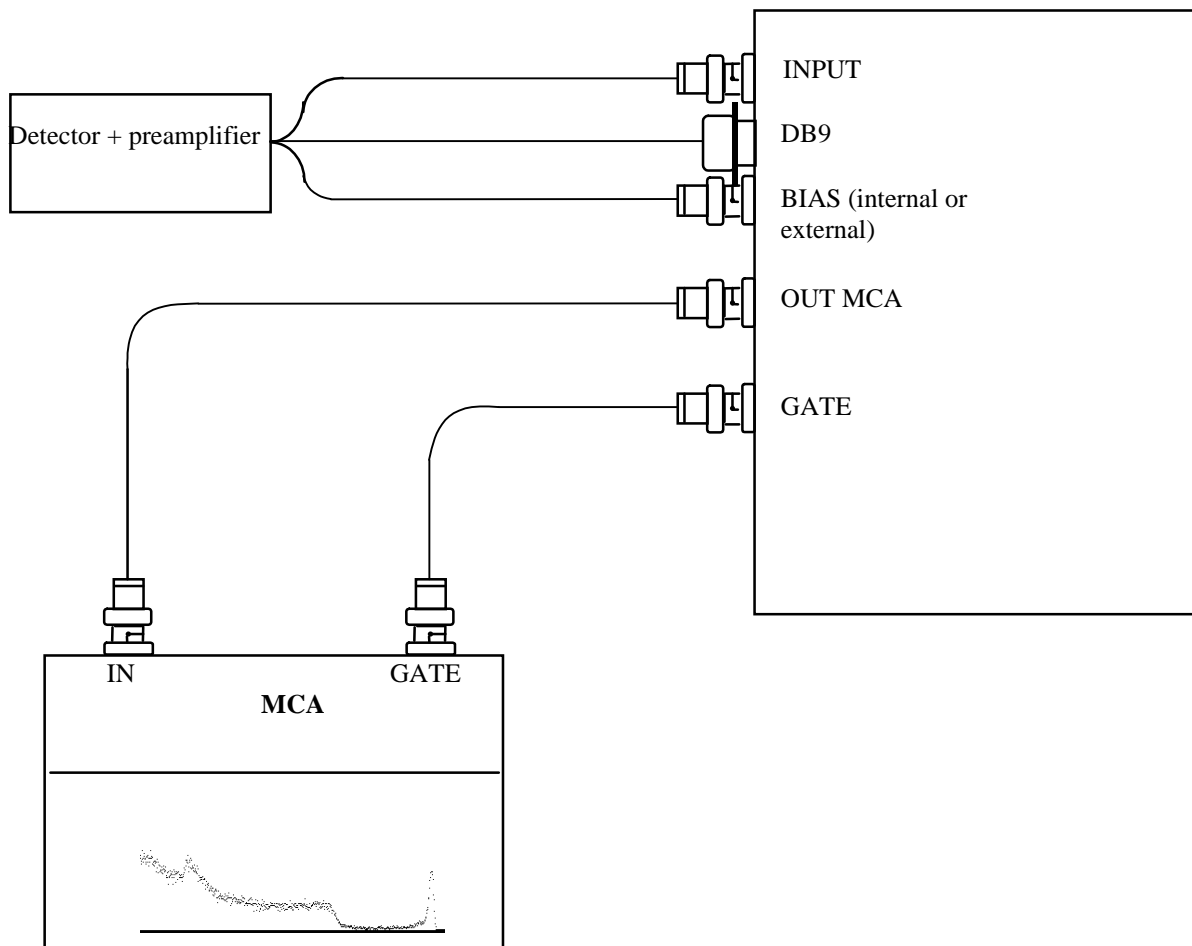


- SHV male connector and HT detector adjustment potentiometer (From +30 to +140V)
- ON/OFF switch:
 - O for OFF
 - I for ON
- PREAMP: 9-pin female Amphenol connector for preamplifier +/-12V
- INPUT : Type BNC connector.
 - DC coupled
 - Zin about 1K Ω
- Power
 - 100-240VAC 0.2A 50/60 Hz
 - Power required +12V at 60mA and -12V 45mA (without preamplifier)
 - Fuse T1A into the box

MECHANICAL SPECIFICATIONS

- Dimensions of the box: 50x152.5x220 mm
- Weight: About 1.5Kg

CONNECTION DIAGRAMM



MATERIAL REQUIREMENT

Sensitivity preamplifier : 2V/pc minimum

Preamplifier power voltages : +/-12V

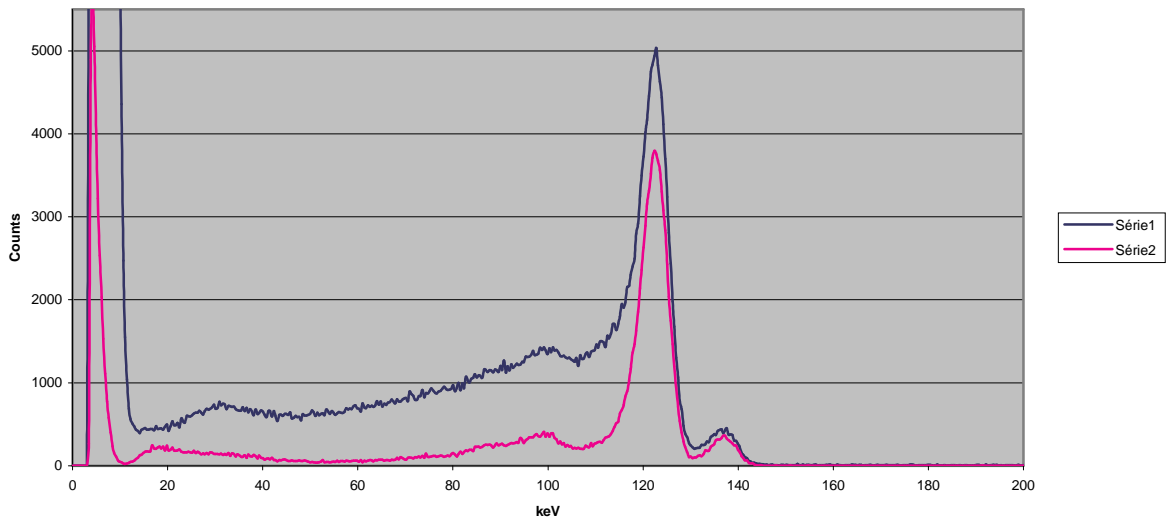
INSTALLATION

- Plug the power supply cable into a plug
- Plug the DB9 preamplifier to PREAMP on the rear panel
- Connect the preamplifier OUTPUT to the BNC INPUT
- Plug the SHV connector and adjust the high voltage (+110V in factory)
- Switch the EURO-SPECTRUM ENHANCER ON, green led goes on
- Connect OUTPUT to MCA and an oscilloscope
- Place a radioactive source in front of the detector
- Observe the spectrum and adjust the gain
- Connect GATE output to MCA GATE input
- Select the coincidence mode (refer to the MCA's user manual)
- Adjust the selector potentiometer to obtain a good spectrum response

EXAMPLE OF SPECTRUM

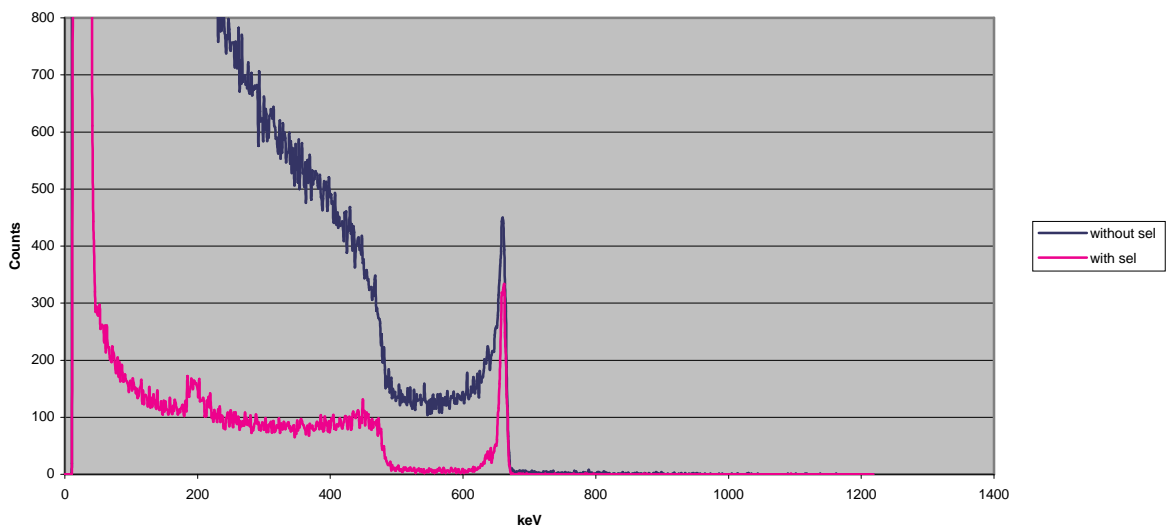
CdTe ⁵⁷Co spectrum with different selection

57Co SPECTRUM WITH AND WITHOUT SELECTION



CdTe ¹³⁷Cs spectrum

137Cs SPECTRUM WITH AND WITHOUT SELECTION



CdTe ^{133}Ba spectrum

^{133}Ba spectrum with and without sel

