

Subminiature Spectrometric Detection Probes



Main Applications

Main Features

- ▶ Very small dimensions
- ▶ High energy resolution
- ▶ Room temperature operation
- ▶ Small consumption power

- ▶ High-activity nuclear materials verification
- ▶ Spectrometric nuclear power plant monitoring
- ▶ Measurements in high intensity gamma-radiation fields
- ▶ Nuclear waste treatment facilities
- ▶ Measurements in difficult of access places

TEN YEARS IN THE FIELD
OF ROOM TEMPERATURE
SEMICONDUCTOR DETECTORS



NUCLEAR RADIATION
SEMICONDUCTOR DETECTORS
AND ASSOCIATED ELECTRONICS

Spectrometric Detection Probe SDP 313

The Spectrometric Detection Probe SDP 313 is a subminiature gamma-ray detection device consisting of removable probe and attached cable with connectors. Removable probe contains a single small size CdZnTe quasi-hemispherical detector and charge sensitive preamplifier placed in a watertight housing connected to a cable. Modifications of SDP 313 probes, which differ in used detectors sizes, spectroscopy performance, cable length and connectors types are available.

These probes have been designed for application in difficult of access places. The main feature of this probe is a very small external diameter, 6 mm only.

Specifications

Basic

• detector type	CdZnTe quasi-hemispherical detector
• detector volume	1 ... 10 mm ³
• energy resolution at 662 keV	< 22 keV
• detector high voltage	up to 500 V
• detector high voltage polarity	positive
• output signal polarity	negative
• output impedance	50 Ω
• output signal rise time	< 250 ns
• conversion coefficient	> 0.1 mV/keV
• integral nonlinearity (60 keV ... 1.3 MeV)	< 0.2 %
• range of recommended operation temperature	0 to 40 °C
• shift peak position in range of recommended operation temperature	< 0.02 %/ °C
• shift peak position for 8 hours of continuous operation	< 0.2 %
• power requirements	+ 5 V, 5 mA; - 5 V, 4 mA

Dimensions

• length of removable probe	63 mm
• diameter of removable probe	6 mm
• standard length of connecting cable	20 cm
• maximal length of connecting cable	up to 20 m
• diameter of connecting cable	4 mm

Connectors

• single	5-pin LEMO connector
or	
• low voltage	9-pin connector D type
• output	BNC
• detector bias voltage	SHV

