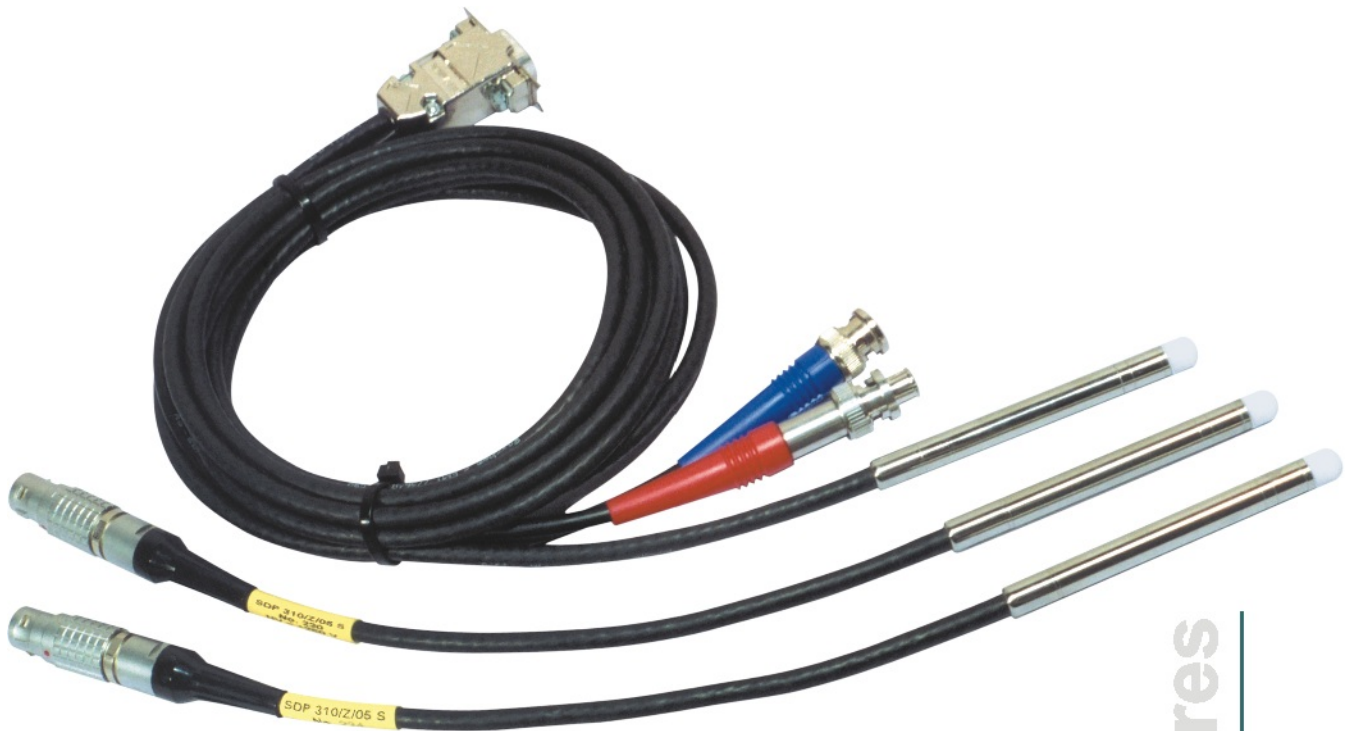


Miniature Spectrometric Detection Probes



Main Applications

Main Features

- ▶ Small dimensions and weight
- ▶ High energy resolution
- ▶ Room temperature operation
- ▶ Wide detection range
- ▶ High efficiency
- ▶ High countrate capability
- ▶ Small consumption power

- ▶ Fresh and spent nuclear fuel verification
- ▶ Nuclear waste treatment facilities
- ▶ Nuclear power plant monitoring
- ▶ Field and industrial gamma-spectrometry
- ▶ Application in difficult of access places
- ▶ Portable instruments

**TEN YEARS IN THE FIELD
OF ROOM TEMPERATURE
SEMICONDUCTOR DETECTORS**



Spectrometric Detection Probe SDP 310/Z

The Spectrometric Detection Probe SDP 310/Z is a miniature gamma-ray detection device consisting of removable probe and attached cable with connectors. Removable probe contains a single CdZnTe quasi-hemispherical detector and charge sensitive preamplifier placed inside a watertight cylindrical case hermetically connected to a cable. There are few modifications of SDP 310 probes, which differ in used detectors size, spectroscopy performance, cable length and connectors type.

These probes have been designed for application in difficult of access places, like fuel rods inside of a fuel assembly or nuclear spent fuel in underwater storing.

Specifications

Spectroscopy Performance

Detection Probe	Detector Volume, mm ³	Energy Resolution (FWHM) at 662 keV, keV		Peak-to-Compton Ratio at 662 keV	
		Standard Grade	Super Grade	Standard Grade	Super Grade
SDP 310/Z/01	0.8...1.5	≤ 20 keV	n/a	≥ 1.3	n/a
SDP 310/Z/05	4.0...6.0	≤ 22 keV	≤ 10 keV	≥ 1.6	≥ 2.5
SDP 310/Z/20	10...20	≤ 22 keV	≤ 10 keV	≥ 1.6	≥ 2.5
SDP 310/Z/60	50...60	≤ 25 keV	≤ 15 keV	≥ 1.8	≥ 2.5

Basic

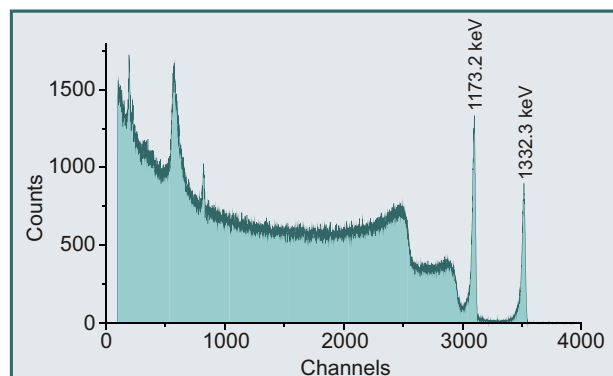
• detector type	CdZnTe quasi-hemispherical detector
• detector high voltage	up to 600 V
• detector high voltage polarity	positive
• output signal polarity	negative
• output impedance	50 Ω
• output signal rise time	< 150 ns
• conversion coefficient	> 0.1 mV/keV
• integral nonlinearity (60 keV ... 1.3 MeV)	< 0.2 %
• range of recommended operation temperatures	0 to 40 °C
• shift peak position in range of recommended operation temperatures	< 0.02 %/ °C
• shift peak position for 8 hours of continuous operation	< 0.2 %
• power requirements	+ 12 V, 12 mA; - 12 V, 8 mA

Dimensions

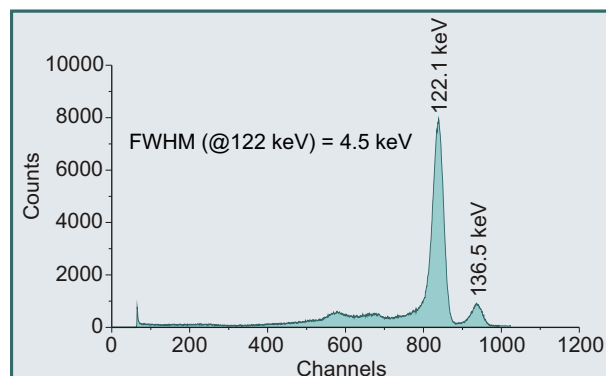
• length of removable probe	90 mm
• diameter of removable probe	8.2mm
• standard length of connecting cable	
for probes SDP310/Z	20 cm
for probes SDP310/Z/LC	4m and 8 m
• maximal length of connecting cable	up to 20 m

Connectors

• for probes SDP310/Z	5-pin LEMO connector
• for probes SDP310/LC	
low voltage	9-pin connector D9 type
output	BNC
detector high voltage	SHV



⁶⁰Co Spectrum Registered by SDP 310/Z/60 S.



⁵⁷Co Spectrum Registered by SDP 310/Z/60 S.