



SPN DETECTORS

Self-Powered Neutron Detectors



Nuclear
Power



Healthcare



Homeland
Security
& Defense



Labs and
Education



Industrial and
Manufacturing

OVERVIEW

SPN-detectors are designed for the detection of thermal neutrons within the core of the reactor. These detectors generate a current proportional to the neutron flux density without applying an external voltage source.

In general, the detector current of these detectors is caused by the emission of beta radiation (electrons) from the target material which gets activated by neutrons. Therefore, besides the name SPN-detector (Self-Powered Neutron detector), also the name n,β -detector (neutron-beta-detector) is in use.

KEY FEATURES

- Detection of thermal neutrons within the reactor core
- WL-23293 with co-emitter: short response time
- Small dimensions, proven construction
- Large measuring range up to $1e15$ nv
- Output signal: DC-current
- Very low gamma sensitivity

RELATED PRODUCTS

- KNK/KNU 50: neutron ionization chambers
- Proportional counter tubes BF3 filled
- TK 250: digital signal processing channels for start-up and power range

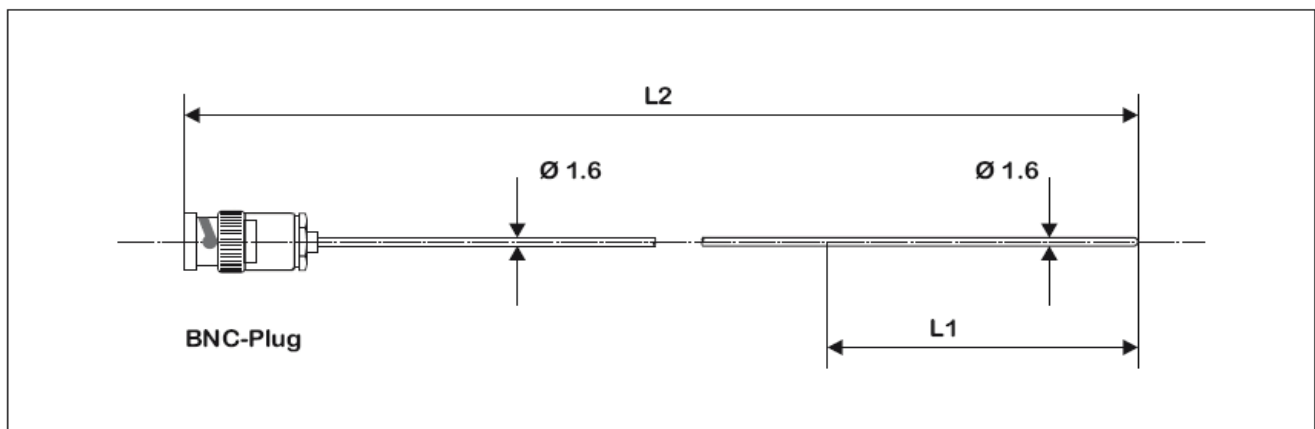
PREFERRED TYPES OF THE IST-PROGRAM

Notice: 1 nv = 1/cm²s

Type	Emitter Material	Neutron Sensitivity (A/nv)	Gamma Background	Measuring Range (nv)	Response Time (s)	Detector Length L1 (mm)	Total Length L2 (mm)
WL-23215	Rhodium	1.0e-20	2%	1e9 ... 1e15	60	76	8 543
WL-23226	Vanadium	1.1e-20	2%	1e9 ... 1e15	300	1.321	9 144
WL-23283	Cobalt	1.4e-21	5%	1e10 ... 1e15	1e-10	864	4 877

COMMON DATA

- Operating temperature: 400°C max. (752°F)
- Diameter of detector and cable: 1.6 mm
- Connector: BNC-Plug
- Material of detector and cable sheath: stainless steel
- Insulation: Al₂O₃ or MgO
- Manufacturer: Mirion Technologies (IST) Corporation, Horseheads, NY/USA



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