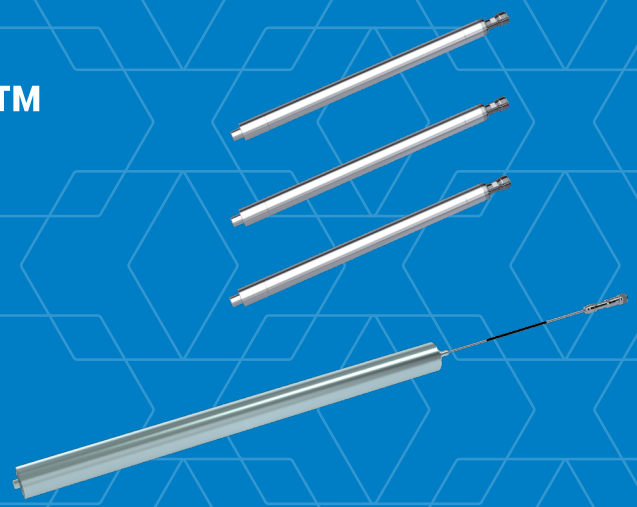
MIRION TECHNOLOGIES

PROTK™

PN 25/PN 50™

B-10 Proportional Counters



Neutron flux detectors for the source range

DESCRIPTION

The B 10 proportional counters of type PN 25 and PN 50 are designed to measure the neutron flux outside the reactor core in the source range during reactor start-up. The detector signal consists of charge pulses that are generated in the active gas volume of the B 10 proportional counter by either the lithium nucleus or the alpha particle resulting from the B 10 (n, α) Li 7 reaction.

These detectors are available with a neutron sensitivity of 4.5 cps/nv for the PN 25 and from 5 to 15 cps/nv depending on the sensitive length for the PN 50. The typical thermal neutron flux range covered with these detectors is therefore approx. 0.1 nv to 3E+5 nv.

FEATURES

- Wide thermal neutron flux range
- Robust design, uniform sensitivity
- High temperature range (up to 200 °C)
- Available in various lengths with sensitivities up to 15 cps/nv
- Connectorized (HN connectors) or with integral mineral insulated cable (PN 50)
- Suitable for long-term operation in high radiation environment (w/o organic materials)
- Integral MI cable with PEEK layer for mechanical protection and electrical insulation (PN 50)
- Environmental and seismic qualification

PN 25/PN 50™ B-10 PROPORTIONAL COUNTERS

SPECIFICATIONS AND PERFORMANCE

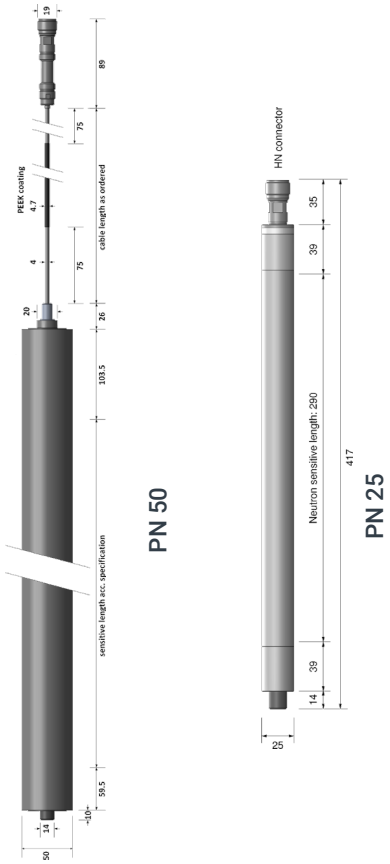
Product Code	Sensitivity (cps/nv)	Operation Voltage (V DC)	Neutron Flux Range (nv)	Total/ Sensitive Length (mm)	Diameter (mm)	Integral MI Cable/ Impedance	Connector
PN 25	4.5	+700 … +850	0.1 … 2e+5	417/290	25	-	HN (female)
PN 50-2 **PN 50-4** **PN 50-6**	5 10 15	+600 … +900	0.1 … 3e+5 0.1 … 2e+5 0.1 … 1e+5	379/180 559/360 739/540	50	max. 15 m/ 50 Ω	HN (female)

For specific applications and for receiving further technical data related to these and more detectors, please contact Mirion.

ENVIRONMENTAL DATA	
Operating temperature, humidity	Max. 200 °C, 100% r.H.
Ambient pressure (absolute)	0 … 800 kPa
Gamma dose rate (Cs-137)	< 10 Gy/h
Neutron fluence, **γ TID (detector and cable/connector)**	2E+19 nvt > 200/> 4 MGy

MATERIALS	
Filling gas/pressure	Ar + CO_2/30 kPa
Detector housing and HV electrodes	Al, Al-Mg-alloy
Detector, **Cable isolators**	Al_2O_3 SiO_2 (PN 50)
Integral cable outer sheath, **with isolation protection (optional)**	Stainless steel, OD = 4 mm PEEK, OD = 4.7 mm

proTK™ SIGNAL PROCESSING UNITS AND MONITORS	
Suitable signal processing unit for the proportional counters PN 25 and PN 50: **DAK 260-i + NV 320**  	Mirion can provide the complete neutron flux monitoring system for reactor start-up. In the source range the digital start-up signal processing unit DAK 260-i with the pulse pre-amplifier NV 320 is used with a PN 25 or PN 50 (other proportional counters are equally suitable). See also corresponding source range neutron flux monitor SRM 510.



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