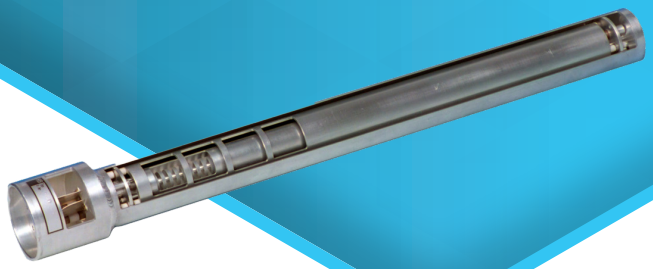
MIRION TECHNOLOGIES

PROTK

KNK/KNU 50™

Neutron Ionization Chambers



Coated with enriched B10 and used for intermediate/power ranges. Simple in construction and saturation-proof, with background compensation of gamma radiation.

FEATURES

- Wide measuring range
- Simple and rugged construction
- Saturation proof
- Large and steady sensitive length
- Output signal: DC current starting at 1 pA
- Compensation of gamma radiation (KNK 50)
- LOCA proof (KNK 50 SAC)

DESCRIPTION

The KNK/KNU 50 neutron ionization chambers are designed for neutron flux monitoring in ex-core positions.

The neutron sensitivity of these ionization chambers is achieved by the coating of one electrode with enriched boron-10. Thermal neutrons react with the isotope boron-10 emitting alpha particles, which produces ionization in the gas within the detector. Their discharge on the electrodes causes charge pulses. These charge pulses are integrated to a DC current, which can be measured in the external circuit.

KNK/KNU 50 | NEUTRON IONIZATION CHAMBERS

TECHNICAL CHARACTERISTICS

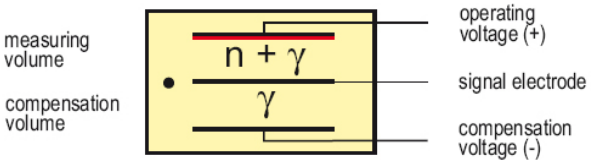
Notice: 1 nv = 1 neutron/cm^{2}s

Type	Sensitivity (A/nv)	Measuring Range (nv)	Total Lenght	Operating Temperature		Remarks
				Continuous	3h max.	
KNK 50	3.3e-14; 4.2e-14	1e2 ... 1e10	555; 665 mm (21.8; 26.1 in)	0 ... 85°C (32 ... 185°F)	120°C (248°F)	E,P,O
KNK 50 SAC	3.3e-14; 4.2e-14	1e2 ... 1e10	555; 665 mm (21.8; 26.1 in)	0 ... 150°C (32 ... 302°F)	180°C (356°F)	E,M,T,L
KNU 50(S)	1.2 ... 4.2e-14	1e5 ... 1e10	300 ... 665 mm (11.8 ... 26.1 in)	0 ... 85°C (32 ... 185°F) 0 ... 150°C (32 ... 302°F)	120°C (248°F) 180°C (356°F)	P,T M,T

E = electrically compensated M = mineral cable O = operational experience L = LOCA proof
P = plastic cable T = type tested

COMMON DATA

- Detector diameter: 50 mm (1.9 in)
- Detector length: see table
- Operating voltage: +800V typ.
- Compensation voltage (KNK 50): 0 ... -500V
- Filling gas: pure nitrogen, 1 bar
- Housing and electrodes: pure aluminium
- Insulators: alumina ceramic



DIGITAL SIGNAL PROCESSING CHANNELS TK 250

Mirion Technologies (MGPI H&B) GmbH offers type tested neutron flux monitoring channels system TK 250 for signal processing of the output signals of KNK/KNU 50 neutron ionization chambers, and for all other types of neutron detectors:

- DAK 250-g: digital start-up channel for the pulse range and for the intermediate range
- DGK 250: digital power range channel
  These signal processing channels are characterized by efficient functions, useful procedures for periodic testing, a comfortable operator's interface structure, and a stable operational behaviour. They are designed and qualified for applications within the reactor protection system.

Featuring:

MGPI H&B

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