Data Sheet

CFUR43

Fission chamber for in-core use

Application

- Detection of thermal neutrons in a flux up to $1.5x10^{14}$ $n.cm^{-2}.s^{-1}$
- In-core measurements

Features

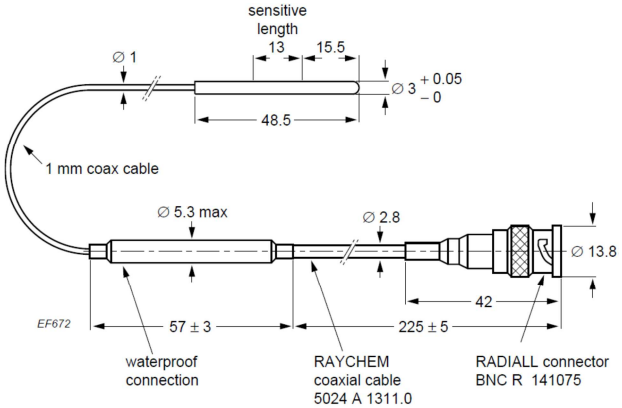
- Watertight stainless steel structure
- Integral, mineral insulated cable

Nuclear characteristic			
Sensitivity to thermal neutrons in current mode [1]		$3x10^{-18}$	$A/n.cm^{-2}.s^{-1}$
Neutron flux range in current mode [2]		$10^{11}/1.5x10^{14}$	$n.cm^{-2}.s^{-1}$
Gamma sensitivity		$7x10^{-13}$	$A/Gy.h^{-1}$
Exposure limits	Thermal neutrons [3]	max $1.5x10^{20}$	$n.cm^{-2}$
	Gamma exposure	max 10^{19}	Gy
	Gamma dose rate	max 10^{7}	$Gy.h^{-1}$

Electrical characteristics			
Insulating resistance at 150 VDC [4]	at 20°C	min 10^{12}	Ohm
	at 350°C	min 10^{8}	Ohm
Operating voltage	Nominal up to 350°C	150	VDC
	Maximum at 20°C	200	VDC
	Limit with no radiation	500	VDC
Cable capacitance		280	pF/m
Line resistance		1.8	Ohm/m

Mechanical and physical characteristics		
Detector	Case, electrodes	Stainless steel (Co<0.05%)
	Insulators	Al_2O_3
	Sensitive layer	U > 90% enriched in ^{235}U
	Filling gas	Argon at 110 kPa
Cable	Type	Coaxial
	Insulator	Al_2O_3
	Curvature radius [5]	min 20 mm
Connector [6]	Type	BNC
	Insulator	PTFE

Outline



max. total length: 80 m

Notes.

[1] Values depending on the characteristics and the calibration of the measurement equipment.

[2] Current mode operating range : the lower limit of the current mode operating range depends on the electronics (specially on the input amplifier) and on the signal / parasitic current ratio (parasitic current = leakage current + gamma current + a-current). The upper limit is depending both on the detector and the elctronics (loss of linearity).

[3] Flux corresponding to a 10 % sensitivity loss of the detector.

[4] The insulating resistance measurement includes the alpha current.

[5] This is the smallest curvature radius allowing one reversible deformation.

[6] In order to avoid humidity penetration during storage, the connector is closed with a cap to be removed just before use. As a general rule, prevent any humidity penetration at the connection level (refer to "Instructions for use and handling" in the package). Other connector types are possible. To be required when ordering.

Max operating temperature of detector and cable: 350 °C
Max operating temperature of the connector: 70 °C

Unless otherwise stated, all characteristics are given at 20°C and dimensions in mm.

2017-05-04

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