

Gamma detector

CRGJ15

Gamma ionization chamber

Application

- ✓ Measurement of high intensity gamma radiations

Features

Guard ring structure
Watertight
Integral cables

Nuclear characteristics at 20°C ³

Sensitivity to ⁶⁰ Co γ -rays:	5x10 ⁻⁸	A/Gy.h ⁻¹
Gamma dose rate range ⁴ :	10 ⁻⁵ - 5x10 ¹	Gy.h ⁻¹
Exposure limits:	max 10 ⁹	Gy

Electrical characteristics

Insulating resistance at 600V:	Between signal and outer shell	min 10 ¹²	Ω
	Between HV and outer shell	min 10 ¹²	Ω
	Between signal and HV	min 10 ¹³	Ω
Operating voltage ⁵ :	Nominal up to 250°C	600	V
	Maximum at 20°C	1200	V
	Limit with no radiation	1300	V
Cables:	Capacitance	280	pF/m
	Line resistance	1.8	Ω /m

Mechanical and physical characteristics

Detector:	Materials:	Outer shell Electrodes Insulator Brazing	Stainless steel High purity aluminium Al ₂ O ₃ NiCuAu
	Structure:		Coaxial with guard ring
Filling gas ⁶ (pressure)			Xenon (at 900 kPa)
Dimensions:	Max external diameter ⁷	56	mm
	Detector length	195	mm
	Overall length, on request ⁸	max 30	m
Cable:	Sensitive length	120	mm
	Quantity	2	
	Type ⁹	CX4	
	External diameter	4 mm	
Connector:	Insulator	MgO	
	Curvature radius ¹⁰	min 40 mm	
	Type ¹¹	Watertight HN	
	Signal	Female	
	High voltage	Male	
	Insulator	Al ₂ O ₃	

Accessories: lead attenuators ¹

ACC-CRGJ15/2:	Lead thickness:	2mm
ACC-CRGJ15/4:	Lead thickness:	4mm

Notes.

Unless otherwise stated, all characteristics are given at 20°C

¹ The lead attenuator is made with lead encapsulated within a stainless steel sleeve to be screwed on the detector case. X and gamma rays with energy less than 500 keV are attenuated leading to an improved relative sensibility to gamma radiation with energy more than 700 keV. Maximum lead thickness : 4 mm. As a basic version, CRGJ15 is delivered without lead within the stainless steel sleeve. The lead attenuators must be ordered as accessories (ACC-CRGJ15/x with x = lead thickness inside the attenuator). See drawings on pages 3 and 4.

² Gamma source dimensions : \varnothing 25 mm, thickness = 3 mm. Not delivered with the CRGJ15. The gamma source allows to fix the background of the detector or check its characteristics.

³ All characteristics are given for ⁶⁰Co gamma-ray energy (1.25 MeV).

⁴ The lower limit highly depends on the capability of the measurement equipment to separate the useful signal from the background (leakage current).

⁵ Polarity (-) on the HT cable. The operating voltage depends on the γ dose rate to be measured.

⁶ Other filling gas on request.

⁷ CRGJ15 is available without lead attenuator under reference CRGJ16 (external diameter = 42.5 \pm 0,1mm. Shrink sleeve can be removed : on request.

⁸ The overall length (detector + cable + connector) constitutes the version code to be added to the basic type number. For example CRGJ15/5 indicates a detector with HN connectors and an overall length of 5 m. Other connectors are possible on request.

⁹ The "CX4" cable is the 1 AcAc 40 cable from Thermocoax.

¹⁰ The minimum curvature radius allowing one reversible deformation.

¹¹ In order to avoid humidity penetration during storage, connectors are closed with caps 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).

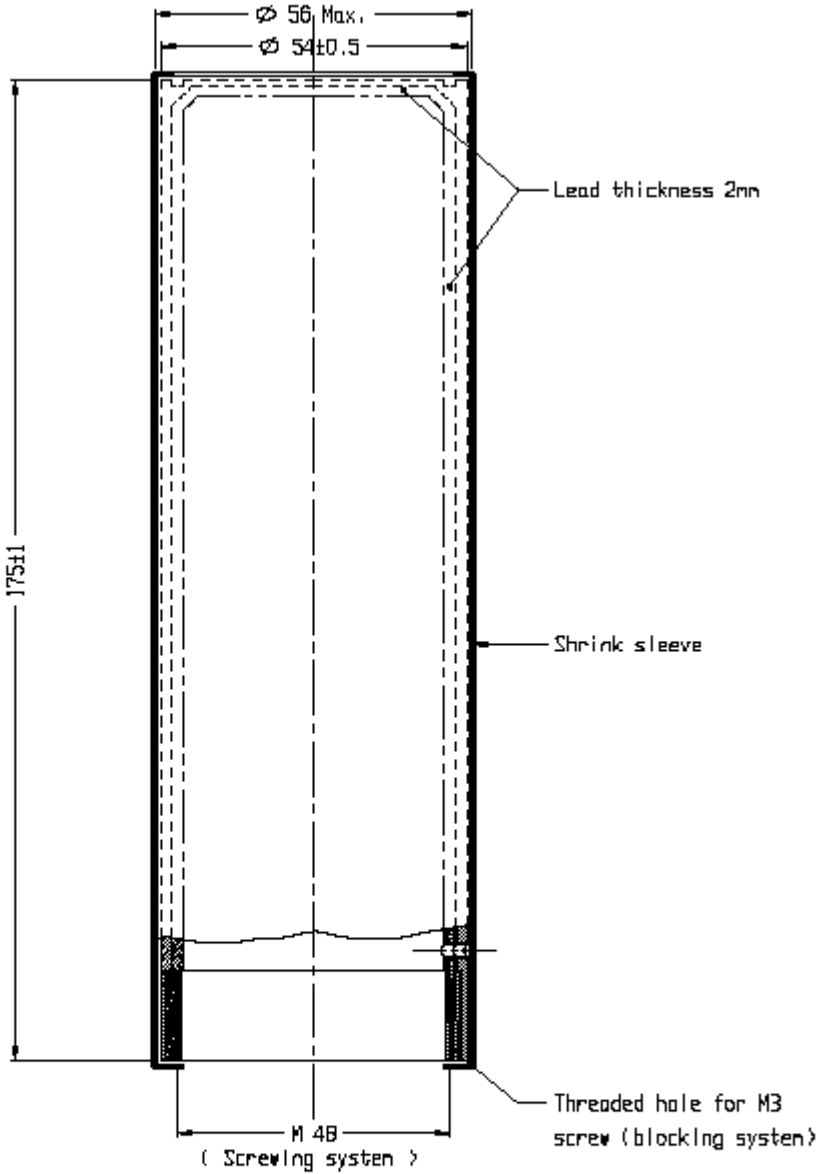
¹² Including temperature increase due to gamma radiation. The leakage current in the cables increases rapidly with temperature. It is therefore necessary to take into account this characteristic, which limits the maximum temperature so that the ratio of wanted signal/parasitic signal remains acceptable.

Gamma detector

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Outline (dimensions in mm)

ACC-CRGJ15-2



Gamma detector

CRGJ15

Outline (dimensions in mm)

ACC-CRGJ15-4

