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Dosimetry Diode P Type 60016

Waterproof silicon detector for dosimetry in high-energy photon beams up to field size 40 x 40 cm²

The 60016 Dosimetry Diode P is ideal for dose measurements in small photon fields as encountered in IORT, IMRT and stereotactic beams. The excellent spatial resolution makes it possible to measure very precisely beam profiles even in the penumbra region of small fields. The superior energy response enables the user to perform accurate percentage depth dose measurements which are field size independent up to field sizes of 40 x 40 cm².The waterproof detector can be used in air, solid state phantoms and in water

- Useful for measurements in small and large photon fields
- Excellent spatial resolution
- Minimized energy response for field size measurements up to 40 x 40 cm²

Specifications

Type of product	P-type silicon diode
Measuring quantity	Absorbed dose to water
Reference radiation	^{60}Co
Sensitive volume	0.03 mm³ (nominal)
Design	Waterproof, disk-shaped sensitive volume perpendicular to detector axis
Reference point	On detector axis, 2 mm from detector tip
Nominal response	9 nC/Gy
Dose stability	≤ 0.5% / kGy at 6 MV ≤ 1% / kGy at 15 MV ≤ 0.5% / kGy at 5 MeV ≤ 4% / kGy at 21 MeV
Temp .response	≤ 0.4% / K
Energy response	At higher depths than $d_{max,}$ the percentage depth dose curves match curves measured with ionization chambers within ±0.5%
Signal polarity	Negative
Detector bias	0 V
Directional response in water	≤ ±0.5% for rotation around the chamber axis, ≤ ±1% for tilting ≤ ±40°
Leakage current	≤ ±50 fA
Cable leakage	≤ ±1 pC/(Gy·cm)

Materials and measures

Entrance window	1 mm RW3 1.045 g/cm³ 1 mm epoxy
Total window area density	220 mg/cm²
Water-equivalent window thickness	2.21 mm
Sensitive volume	1 mm² circular 30 µm thick
Outer dimensions	7 mm diameter 47 mm length

Useful ranges

Radiation quality	Co-60 to 25 MV photons
Field size	1 x 1 to 40 x 40 cm² 1 x 1 to 10 x 10 cm², photons
Temperature	10 to 40° C, 50 to 104° F
Humidity	10 to 80%, max 20 g/m³

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