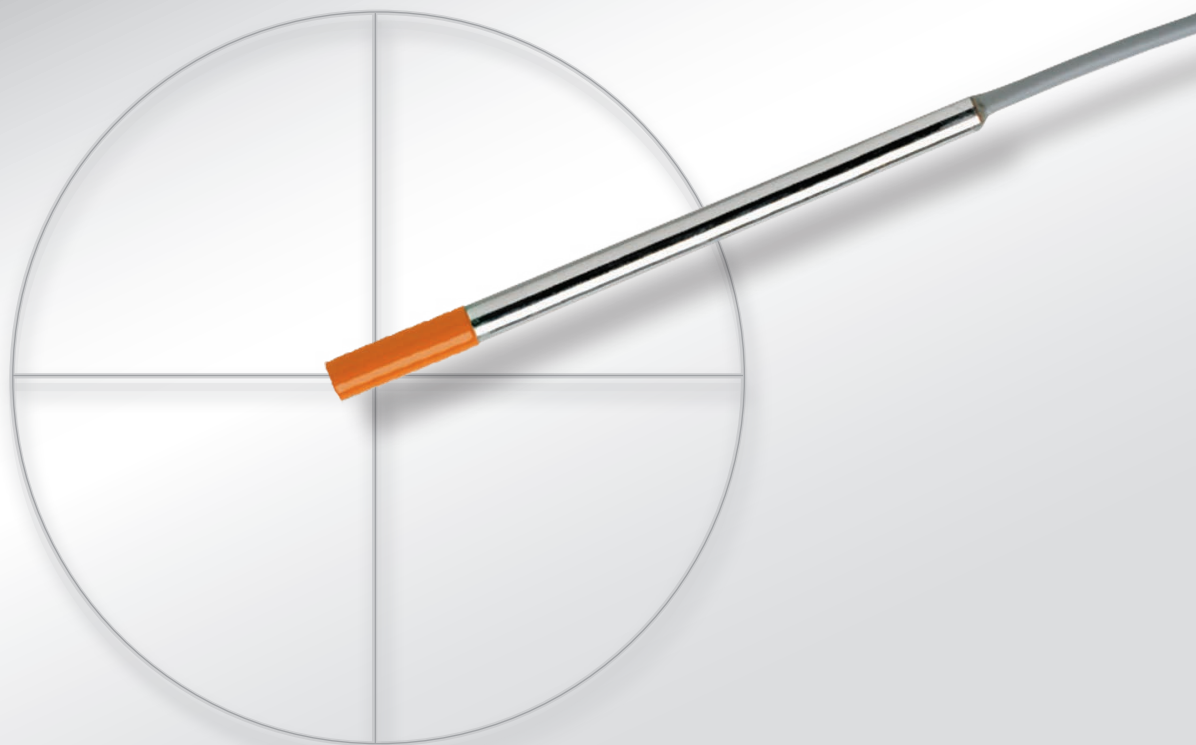


High Performance Diode Detector for Small Field Dosimetry in RT **RAZOR Detector**



The RAZOR Diode Detector is designed for Relative Dosimetry of Photon and Electron Beams in Radiotherapy

- Depth dose and profile measurements "in air" (i.e. inside a solid phantom) and in a water phantom
- Output factor measurements in small to medium sized photon beams
- Verified performances in the range of photon beam qualities ^{60}Co -15 MV, and 6-15 MeV electron energies
- Rigid and long-lasting semiconductor
- Based on *p*-type silicon diode chip

Technical Specifications

Dosimetric Performance

Parameter	Value		Conditions	Notes
	Typ.	Max.		
Sensitivity	4.1 nC/Gy		⁶⁰ Co	
Dose linearity	<0.2%	0.5%	0.02–40 Gy, ⁶⁰ Co	Absolute deviation from endpoint fit
Dose per pulse dependence	±0.5%	±1%	D _p = 0.1–2.3 mGy	Normalization at 0.4 mGy
 dS/dD 	1% / kGy	2% / kGy	⁶⁰ Co	Very worst case: real time sensitivity measurement during irradiation, no annealing ~1month between irradiation and measurement
	1% / kGy	4% / kGy	6 MV	
	2% / kGy	4% / kGy	15 MV	
PRF dependency		0.5%	12–400 Hz D _p = 0.1–2.3 mGy	Absolute sensitivity change
Energy dependence	0.5%	1%	5 x 5 cm ² , 6 MV, 30 cm depth	Absolute deviation between PDDs measured with the Razor and CC08 chambers
Lifetime	≥200 kGy		10 MeV electrons	
Temperature dependence	0.05% / °C		15–40°C	

Cables & Connectors

Cable length	2 m
Cable	Low-noise coaxial
Connector	Triaxial ¹ , TNC or BNC (with 2 lugs)

¹ On the TNC connector the inner and outer screens are connected.

Size, Materials & Dimensions

Stem material	Stainless steel
Enclosure material	ABS plastic (acrylonitrile butadiene styrene) and epoxy
Position of measurement point	Indicated by a cross-hair at the top of the detector
Effective measurement point	0.8 ± 0.2 mm from surface
Chip size (mm)	0.95 x 0.95 x 0.4
Active detector diameter (mm)	0.6
Active detector thickness (mm)	0.02
Head diameter (mm)	4.0
Head length (mm)	15
Stem diameter (mm)	4.0
Total length (mm)	60

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