



SUN NUCLEAR

A MIRION MEDICAL COMPANY

SunSILICON™ & SunSILICON™ P Detectors

Optimized for Precision in
Relative Photon and Electron
Dosimetry



SunSILICON™ and SunSILICON™ P are precision-engineered silicon diode detectors designed for advanced relative dosimetry in cylindrical water phantoms.

Designed to meet evolving clinical needs, these detectors provide high signal fidelity and robust stability for use in cylindrical water phantom* dosimetry.

SunSILICON (model 1048) is an unshielded diode ideal for very small photon fields and electron dosimetry, while **SunSILICON P (model 1049)** is a shielded diode optimized for small to large photon fields.

Key Benefits

- Waterproof
- Compatible with IMRT, SRT, and IGRT techniques
- Custom, fully guarded p-type silicon diode
 - Small active volume of 0.053 mm³ for high spatial resolution
 - High sensitivity for faster scanning speeds
 - Leading radiation hardness and leakage characteristics for better data quality
- Water equivalent housing using HE Solid Water®
- Clearly marked housing for simplified setup
- Consistent detector-to-detector performance enabled by tighter mechanical tolerances
- Low dose per pulse dependence

* Compatible with SunSCAN™ 3D and 3D SCANNER™ systems.



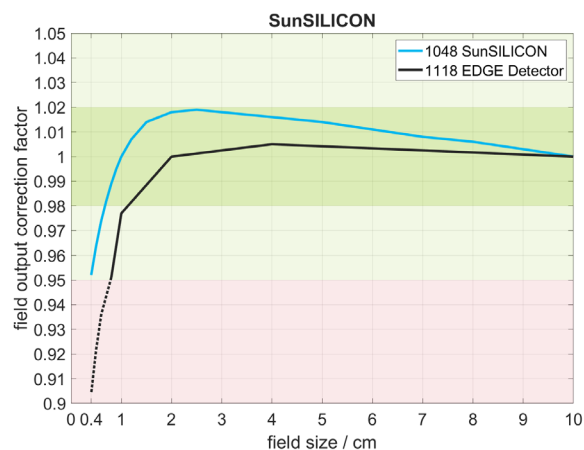
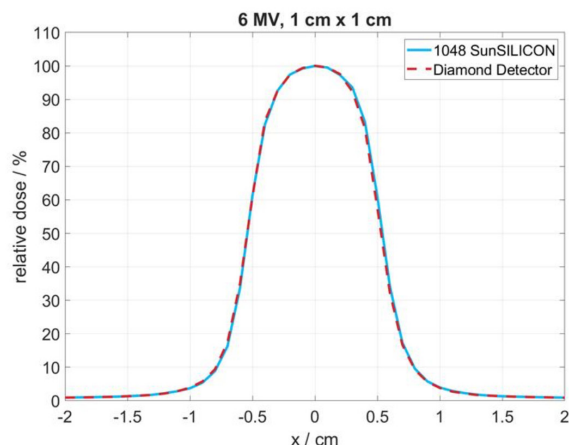
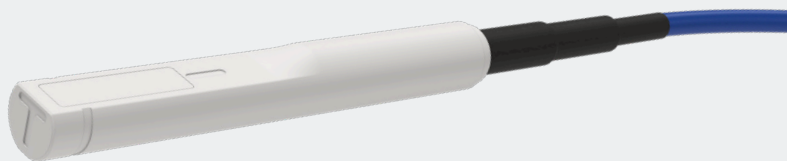
“These detectors strengthen our portfolio for commissioning electron linear accelerators through superior measurement precision and handling.”

Gerhard Wessing, Dipl.-Phys., CEO Licom GbR & Head of Physics Division, Radiologie Vechta, Germany

sunnuclear.com

SunSILICON

An unshielded silicon diode detector for relative electron and small photon field dosimetry



Lateral Beam Scans

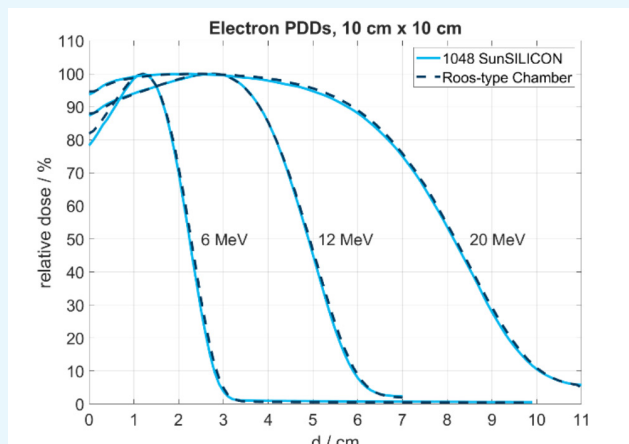
- Excellent performance in lateral beam profile scans of small to medium field sizes
- Excellent performance against best-in-class current technology

Field Output Correction Factors

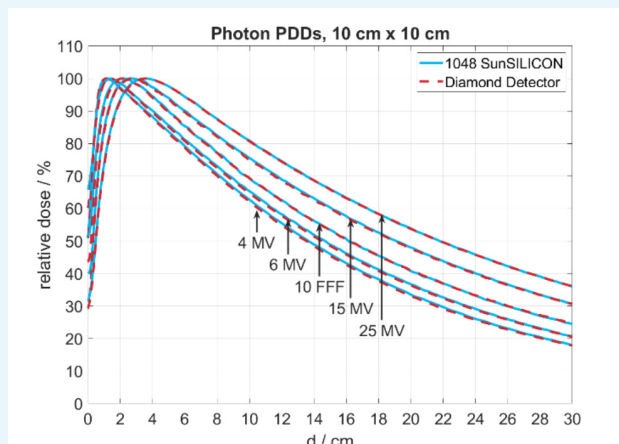
- Significantly improved TRS 483 / TG 155 small field output correction factors
- Improved field size range, now from 0.4 cm x 0.4 cm to 10 cm x 10 cm
 - EDGE was 0.8 cm x 0.8 cm to 10 cm x 10 cm
- Field output correction factors are within $\pm 2\%$ from 0.7 cm x 0.7 cm to 10 cm to 10 cm

Percentage Depth Dose

- For Electron Beams:
 - Excellent performance in electron beams in both PDDs and lateral beam profiles (Note: A parallel plate chamber can only be used for PDD measurements.)

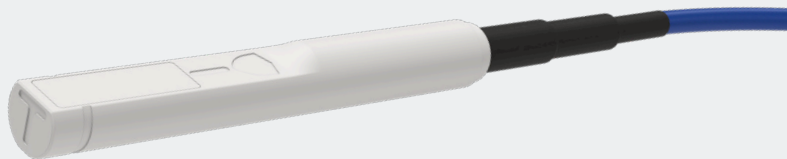


- For Photon Beams:
 - Excellent performance in PDD/TRP scans of small to medium field sizes
 - Excellent performance against best-in-class current technology



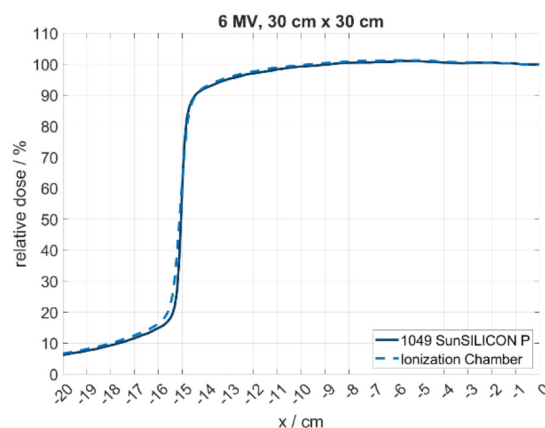
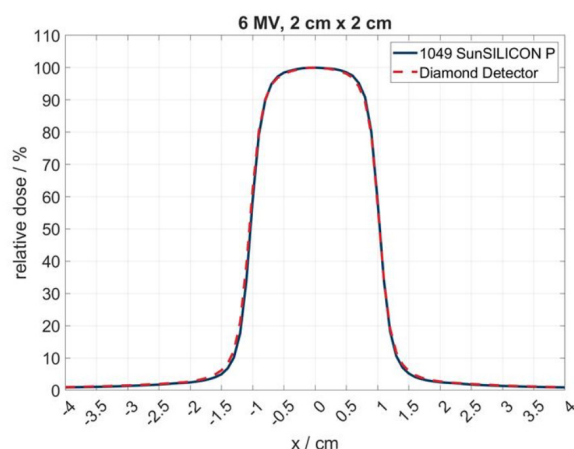
SunSILICON P

A shielded silicon diode detector for relative photon dosimetry



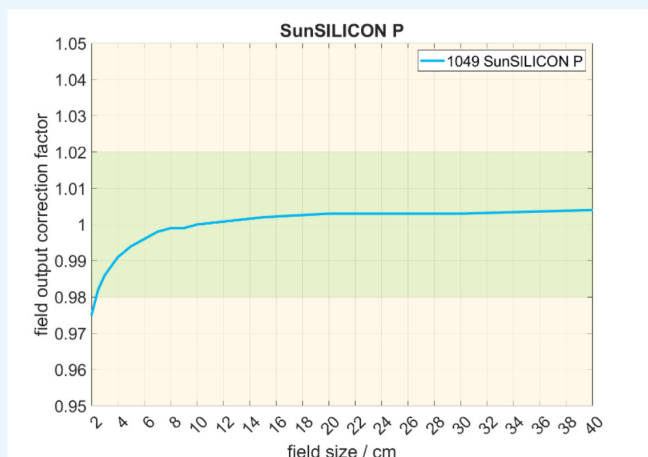
Lateral Beam Scans

- Excellent performance in lateral beam profile scans of small and large field sizes
- Excellent performance against best-in-class current technology



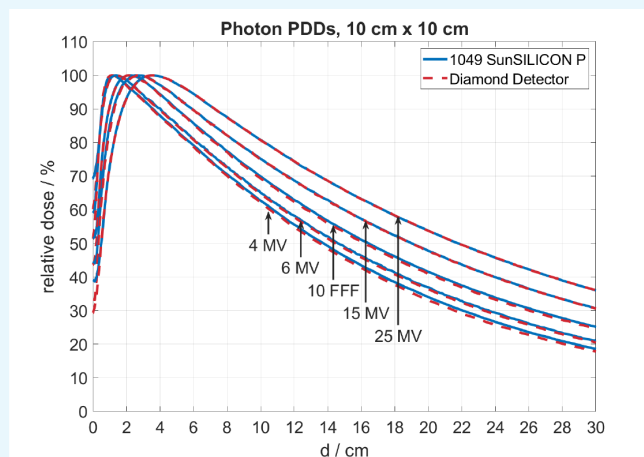
Field Output Correction Factors

- Significantly improved large output correction factors
- Improved field size range, now from 2 x 2 cm² to 40 x 40 cm²
 - EDGE was limited to 10 x 10 cm²
- Field output correction factors are within $\pm 2\%$ from 2.5 x 2.5 cm² to 40 x 40 cm²



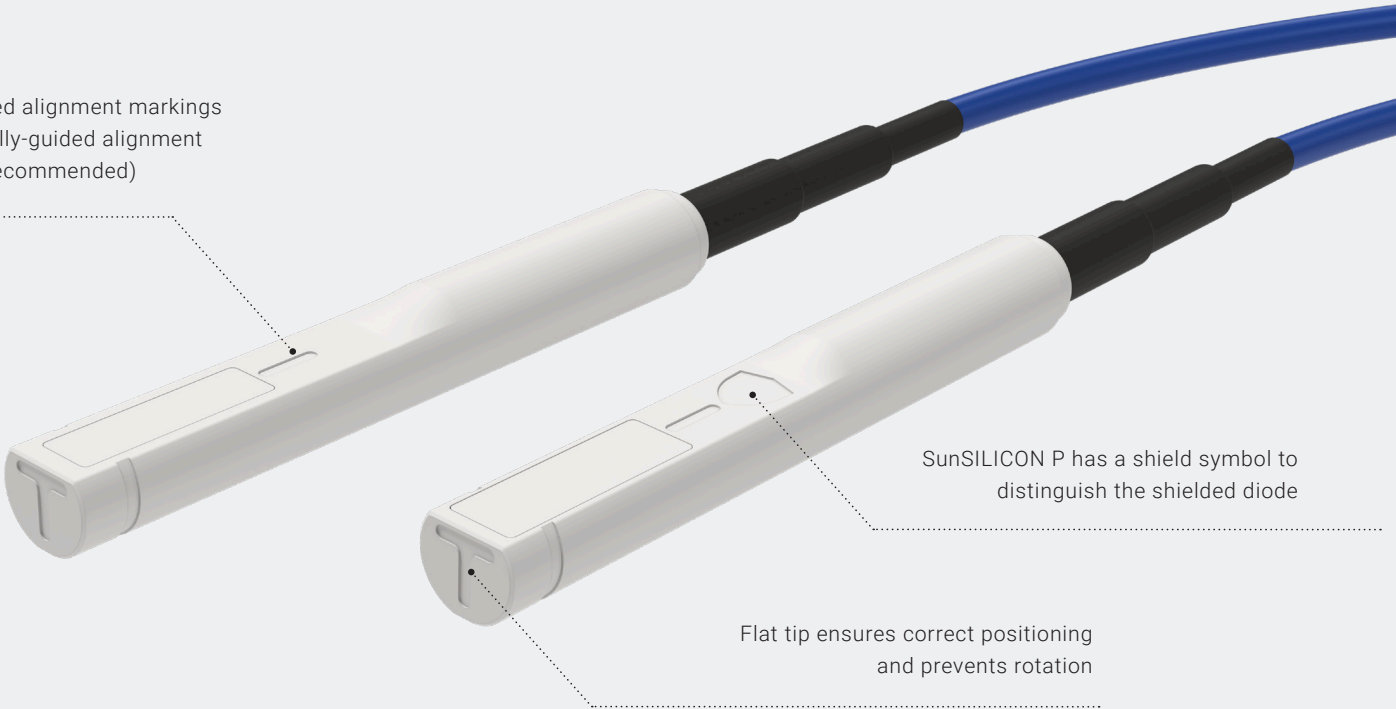
Percentage Depth Dose

- For Photon Beams:
 - Excellent performance in PDD/TPR scans of small and large field sizes
 - Excellent performance against best-in-class current technology



Features

Clear, engraved alignment markings support visually-guided alignment (auto-setup recommended)



Specifications

	SunSILICON (1048)	SunSILICON P (1049)
External Dimensions (Diameter x length)	8.22 mm x 59 mm	8.22 mm x 59 mm
Cable Length	1.5 meters nominal	1.5 meters nominal
Detector Type	Unshielded p-type silicon diode	Shielded p-type silicon diode
Field Size Range	(1 x 1) cm ² to (10 x 10) cm ² (photons) (1 x 1) cm ² to (40 x 40) cm ² (electrons)	(2 x 2) cm ² - (40 x 40) cm ² (photons)
Smallest Field Size*	(0.4 x 0.4) cm ²	(1.2 x 1.2) cm ²
Sensitivity	36 nC/Gy	38 nC/Gy
Output Polarity	Negative	Negative
Connector	BNC or TNC	BNC or TNC
Impedance	> 1000 MΩ	> 1000 MΩ
Active Volume	0.053 mm ³	0.053 mm ³
Water Equivalent Build-up	1.25 mm	1.25 mm
Reference Point	1 mm from top surface, as indicated by crosshair markings	1 mm from top surface, as indicated by crosshair markings

Ordering Information

Model	Connector	Part Number
SunSILICON (1048)	BNC	1048000-0Z
SunSILICON (1048)	TNC	1048000-1Z
SunSILICON P (1049)	BNC	1049000-0Z
SunSILICON P (1049)	TNC	1049000-1Z

** Refer to IAEA TRS-483 or AAPM TG-155 for the methodology of applying field output correction factors to ensure high-accuracy output factor measurements in very small photon fields.*