

Diamond Detector



Waterproof diamond detector for dose measurements in high-energy photon and electron beams

Features

- ▶ Very small sensitive volume of 1 to 6 mm² and typically 0.3 mm thickness
- ▶ Good tissue-equivalence
- ▶ Suitable for dose scanning in IMRT and stereotactic fields because of its excellent spatial resolution
- ▶ The angular response in water is better than $\pm 2\%$
- ▶ Suitable for use in remote controlled water phantoms

The Diamond Detector¹, based on a naturally grown diamond, is a nearly tissue-equivalent radiation detector. It is designed for dose distribution measurements in high-energy photon and electron beams, featuring a favorable signal-to-noise ratio. Because of its small sensitive volume, the detector is applied for IMRT, stereotactic beams, brachytherapy and water phantom scanning, and is especially well suited for beams with very small field sizes or steep fluence gradients. The Diamond Detector responds with an excellent spatial resolution, low energy and temperature dependence, high sensitivity, nearly no directional dependence and high resistance to radiation damage. The nominal photon range of the detector is from 100 keV up to 20 MeV. The nominal electron range is 4 to 20 MeV. The detector has a short stem for mounting to a water phantom mechanism and a flexible cable of 1.5 m in length to be connected to a dosimeter with connecting system M, which supplies the required bias voltage of 100 V.

¹ The Diamond Detector was developed in cooperation with the IPTP Institute, Riga.

Ordering Information

TM60003 Diamond Detector, connecting system M

- ▶ TANDEM Dual Channel Electrometer *page 14*
- ▶ Detector Extension Cables *page 28*
- ▶ TBA Detector Holding Devices *page 46*

microLion Ionization Chamber



Liquid filled ion chamber for dose distribution measurements in radiotherapy with high spatial resolution

Features

- ▶ Liquid filled sensitive volume of 0.002 cm³
- ▶ Suitable for dose scanning in radiotherapy beams with a superior spatial resolution
- ▶ Suitable for use in water
- ▶ Connector types: BNT, TNC or M

The waterproof micro liquid ion chamber¹ (microLion) has been specially designed for relative beam profile and depth dose curve measurements in a motorized water phantom. It is used for characterization of LINAC radiation fields where superior spatial resolution is desired, like stereotactic fields. Due to the liquid filling, the microLion chamber delivers a high signal in relation to its very small sensitive volume.

The recommended chamber voltage of 800 V is delivered by an additional HV-Supply. The HV-Supply can be connected to the UNIDOS^{webl}ine or the latest versions of the TANDEM dosimeter.

¹ The microLion chamber was designed in collaboration with Göran Wickman and Thord Holmstroem, University of Umeå, Sweden and is based on a well-tested and patented LIC concept.

Ordering Information

TN31018 microLion chamber 0.002 cm³,
connecting system BNT

TW31018 microLion chamber 0.002 cm³,
connecting system TNC

TM31018 microLion chamber 0.002 cm³,
connecting system M

- ▶ UNIDOS^{webl}ine *page 13*
- ▶ HV-SUPPLY *page 15*
- ▶ TBA Detector Holding Devices *page 46*