

# T-REF Chamber Type 34091

## Reference detector for small fields

- ▶ Very low total area density of 72 mg/cm<sup>2</sup>
- ▶ No measurable perturbation of the beam
- ▶ High and very stable signal
- ▶ No contact to linac head
- ▶ Fast and easy to mount

The T-REF chamber 34091 provides a solution to the problem where to put a reference detector in small fields. The T-REF chamber is an easy-to-use large-area plane-parallel transmission reference chamber. From the minimum distance to the water surface on, there are no measurable perturbations of the beam. The very good signal-to-noise-ratio makes it an excellent option for use as a reference detector.

### General

Type of product	vented plane-parallel ionization chamber
Application	reference for relative dosimetry in high-energy small field photon beams
Design	waterproof, vented, guarded, perturbation-free
Direction of incidence	perpendicular to the entrance window, see label "Focus"

### Specification

Nominal sensitive volume	10.5 cm <sup>3</sup>
Nominal response	325 nC/Gy (at <sup>60</sup> Co free in air)
Chamber voltage	400 V nominal ±500 V maxima
Polarity effect	≤ ±1 %
Reference point	inner surface of the entrance window, at the center of the window
Leakage current	≤ ±100 fA
Cable leakage	≤ 1 pC/(Gy·cm)



### Materials and measures

Total area density	72 mg/cm <sup>2</sup>
Water-equivalent window thickness	0.7 mm for photons
Dimension of sensitive volume	radius 40.8 mm depth 2 mm

### Ion collection efficiency at nominal voltage

Ion collection time	67 μs
Max. dose rate for	
≥ 99.5 % saturation	21 Gy/s
≥ 99.0 % saturation	42 Gy/s
Max. dose per pulse for	
≥ 99.5 % saturation	0.9 mGy
≥ 99.0 % saturation	1.8 mGy

### Ranges of use

Chamber voltage	±(300 ... 400) V
Radiation quality	<sup>60</sup> Co ... 25 MV photons
Max. field size in 20 cm distance to water surface	(5 x 5) cm <sup>2</sup>
Temperature	(10 ... 40) °C (50 ... 104) °F
Humidity	(10 ... 80) %, max 20 g/m <sup>3</sup>
Air pressure	(700 ... 1060) hPa

### Ordering Information

TN34091 T-REF chamber, connecting system BNT including holder
TW34091 T-REF chamber, connecting system TNC including holder
TM34091 T-REF chamber, connecting system M including holder