

# X-RAY COMPLIANCE TEST METER

Model ~ TBM-IC-XRAY w/Built-in Detector

FDA Regulation 21 CFR1020.40 Mandates Exposure Rate Limit Of  
0.5 mR/h At 5 cm From X-Ray Systems as Measured With 10cm<sup>2</sup> Aperture

## FEATURES:

- ION CHAMBER – AIR EQUIVELANT
- ONE HAND OPERATION
- DIGITAL READOUT: 6 digit-rate, 8 digits integrate
- SMALL LIGHTWEIGHT: 3 lbs with SLEEVE
- SEES AXIALLY X-RAYS OR BELOW 15 KeV GAMMA
- REMOVABLE SLEEVE PROVIDES OMNI DIRECTIONAL DETECTION INCLUDING LOW X-RAY ENERGY SCATTER
- FLAT ENERGY RESPONSE



## APPLICATION:

- X-RAY MACHINES, TV, and MONITORS
- LUGGAGE and PEOPLE SCANNERS
  - Provides accurate compliance testing of a wide variety of equipment.
  - Protects the health and safety of airport and shipping personnel while they protect the public.

## DESCRIPTION:

The **TBM-IC-XRAY** consist of an air-equivalent probe coupled to a stable solid state MOSFET input electrometer with built in A to D converter to read out directly in mR/h or mR.

- The **TBM-IC-XRAY** is small and light weight.
- Based on stable, essentially drift-free electrometer technology.
- Removable sleeve provides OMNI directional detection including low X-RAY energy scatter.

## SPECIFICATIONS:

<b>Detector:</b>	ION CHAMBER.
<b>Window:</b>	Light-tight 0.9 mg/cm <sup>2</sup> Mylar laminate. 10 sq cm area. 36 mm (1.4") dia.
<b>Readout:</b>	LCD 8 digits
<b>Indicator Light:</b>	<b>Green LED</b> 10 pulses/min per mR/h. <b>Red LED</b> Over-range Indicator.
<b>Range:</b>	Rate 6 digits 0.1 mR/h to 10,000 mR/h in one range. Integrate 8 digits 0.01 mR to 9.9R.
<b>Photon Energy Range:</b>	5 KeV - 3 MeV
<b>Energy Range:</b>	15 KeV - 500 KeV ± 20%. TBM-IC-X-Ray can be re-optimized for use with higher energy emissions.



**TECHNICAL ASSOCIATES**

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## SPECIFICATIONS (cont'd):

### ELECTRONICS:

**Bias Voltage:** 45 VDC

**X-Ray Rep Rate:** Use either rate or integrate mode for pulses with repetition rate more frequent than 1.0 per Sec.

Use Integrate Mode for pulses separated by more than 1.5 per Sec.

**Electrometer:** Solid State MOSFET input.

**Electronics:** Pulse Shaper. A-D converter LCD drivers. Test and display functions.

**Pulse Duration & Content:** With sufficient repetitions, TBM-IC-XRAY can accurately integrate pulses of less than a microsecond duration & longer, including continuous emission.

Pulse content of 0.5 nanoR are measurable with sufficient repetition rate to give at least 0.1 mR/hr for at least 5 to 10 seconds.

### ENVIRONMENT:

**Temperature of Operation:** -20° to 50° C

**Relative Humidity:** 0 - 95%

**Radio Frequency:** 10 mW/cm<sup>2</sup> up to 4 GHz affects meter viewing < ± 10%

**Magnetic Effects:** 200 Gauss ± 5% effect

**Geotropism:** < ± 2% effect

**Response Time:** 2-3 seconds for rate and for integrate at 1mR/h or greater.

**Time to Zero:** If count-rate goes to zero, the digital display will hold the old count for 12 seconds before displaying "0.0."

**Batteries:** Front panel battery test is provided.

6 ea. (AA) - over 100 hours of operation.

### WEIGHT & DIMENSIONS:

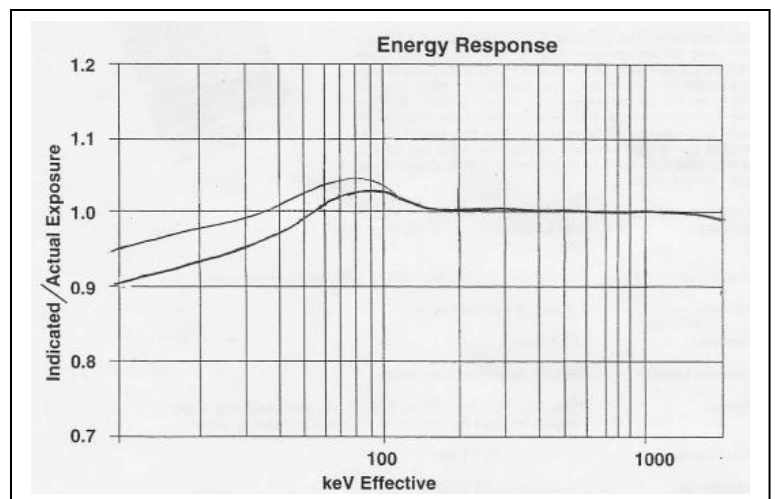
**Dimensions:** 4" H x 3.5" W x 9.5" L with Sleeve (does not include handle)

**Weight:** Complete with batteries and internal detector: 3 lbs with sleeve

### OPTIONS:

- Readout in Si units (μSv/h)
- Ra-UBG - Check source.
- Other entrance window material or thickness.
- 5 cm nylon positioning bumpers.

**SIGNAL WITHOUT SLEEVE**



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