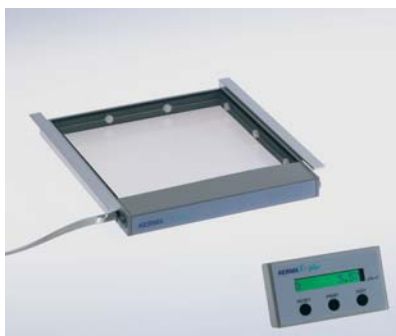
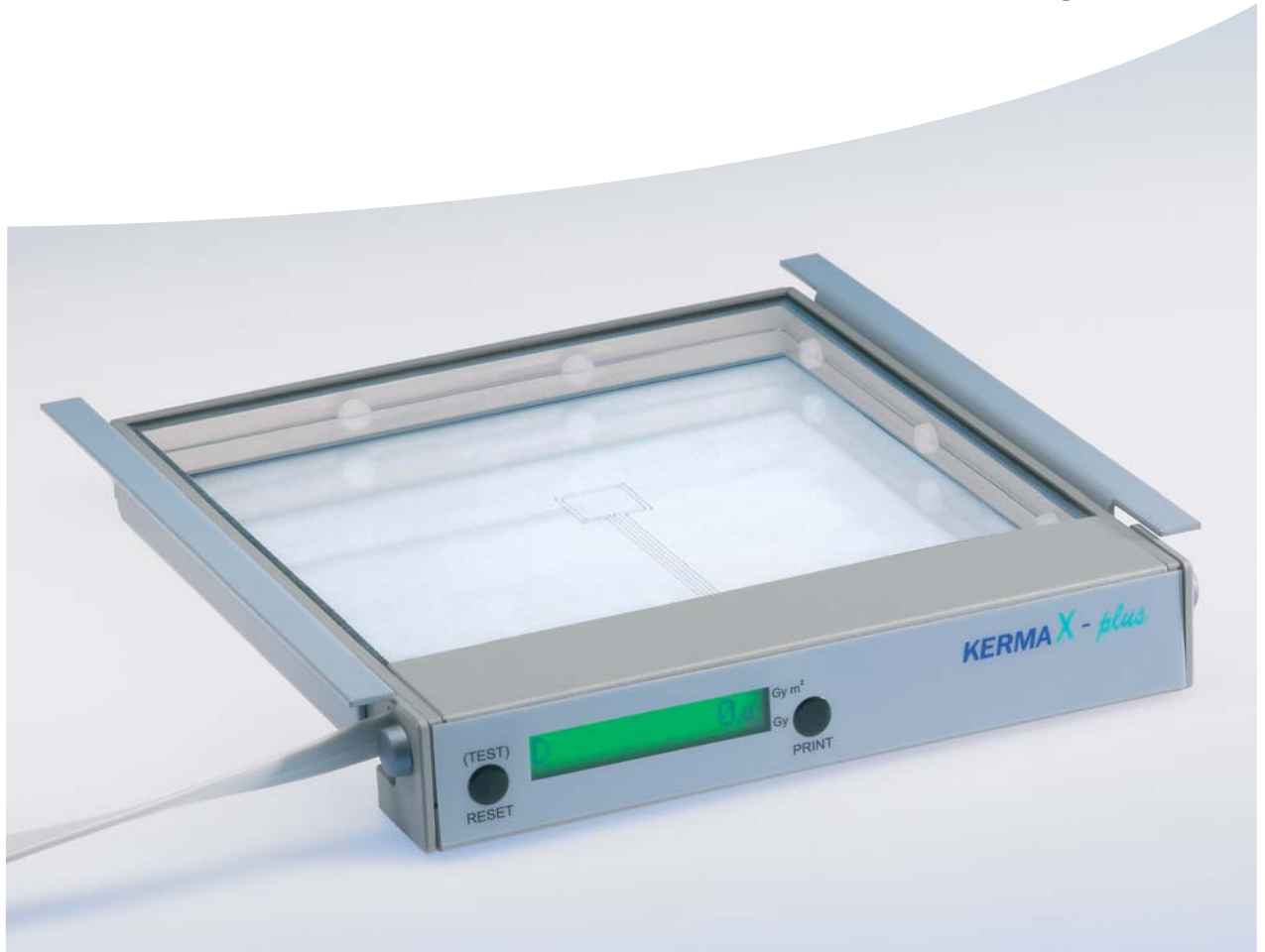


FDA 21CFR Part 1020

"Dose Measurements at Fluoroscopic units" –

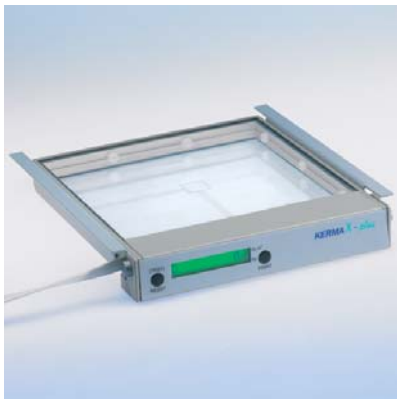
**Our Answer: KermaX<sup>®</sup> plus TinO – Two in One** |



MANUFACTURERS' FIRST CHOICE

*The new KermaX<sup>®</sup> plus TinO – Two in One – is a multifunctional measuring system which combines a real time dosimeter and a DAP meter*

- measures simultaneously:
  - Entrance dose (mGy),
  - Entrance dose rate (mGy/s)
  - DAP ( $\mu\text{Gym}^2$ )
  - DAP rate ( $\mu\text{Gym}^2/\text{s}$ ) and
  - Exposure time (Time resolution: 500  $\mu\text{s}$ )
  
- Fully complies with the following standards:
  - FDA 21CFR Part 1020 "Electronic Products; Performance standard for Diagnostic X-ray systems and their major components; Final Rule"
  - IEC 60580 "Medical Electrical Equipment - Dose area product meters"
  - IEC 60601-2-43 "Medical Electrical Equipment - Particular requirements for the safety of X-ray equipment for interventional procedures"
  - IEC 60601-1 "Medical Electrical Equipment - General requirements for basic safety and essential performance"
  
- Rectangular or circular ionization chamber with a central dose measuring area (not visible on the x-ray image)
- Suitable for measurements in paediatric applications due to its digital resolution of **0.01 $\mu\text{Gym}^2$**
- Light transparency of more than 75 %
- Extended kV range starting from 40 kV underline the outstanding features
- Easy installation due to cost effective and flexible cabling system based on telecommunication standard cable (**no high voltage cable is used**)



### KermaX<sup>®</sup> plus TinO IDP

Compact measuring system consisting of a rectangular, transparent ionization chamber with a central dose measuring area, integrated electronics and a 10-digit internal background lighting LC- display, with test / reset and print buttons; optional RS 232 / RS 485 interface for connecting a printer or a PC (RIS / HIS) system

Our quick and easy solution for cost-effective retrofit installations at overcouch tube systems



### KermaX<sup>®</sup> plus TinO SDP

Rectangular, transparent ionization chamber with a central dose measuring area, integrated electronics and a separate 10-digit internal background lighting LC- display with test, reset and print buttons; integrated RS 232 interface for printer or PC (RIS / HIS) connection

Ideal solution for installations at undercouch tube systems



### KermaX<sup>®</sup> plus TinO DDP

Rectangular, transparent ionization chamber with a central dose measuring area, integrated electronics and the **KermaX<sup>®</sup> plus TinO** Master display unit which contains two very bright, configurable LED display lines and a printer interface

Indications:

- Dose and dose rate or
- DAP and DAP rate or
- Dose resp. DAP and exposure time



### KermaX<sup>®</sup> plus TinO C

Circular, transparent or non-transparent ionization chamber with a central dose measuring area, a separate electrometer box, and a separate 10-digit internal background lighting LC- display with test, reset and print buttons; integrated RS 232 interface for printer or PC (RIS / HIS) connection

# KermaX<sup>®</sup> plus TinO |

## Technical specifications:

<b>Reproducibility:</b>	< 1 % under constant air pressure and temperature
<b>Energy dependence:</b>	better than 8 % related to 100 kV, according to IEC 60580 from 40 to 150 kV
<b>Digital Dose resolution:</b>	0.001 mGy (for values < 1 mGy) 0.01 mGy (for values $\geq$ 1 mGy)
<b>Dose rate – measuring range:</b>	lower limit 100 $\mu$ Gy/s
<b>Dose area product rate:</b>	minimum: 0.01 $\mu$ Gym <sup>2</sup> / s maximum: 3 000.00 $\mu$ Gym <sup>2</sup> / s
<b>Minimal DAP resolution:</b>	0.01 $\mu$ Gym <sup>2</sup> (suitable for paediatric applications)
<b>Maximal DAP indication:</b>	99999999.99 Gym <sup>2</sup>
<b>Linearity:</b>	better than 2 %
<b>Exposure Time - Resolution:</b>	500 $\mu$ s
<b>Optical transparency:</b>	$\geq$ 75 %
<b>Active area:</b>	at rectangular chambers: 146 x 146 mm; at circular chambers: depending upon the surface area of the chamber
<b>Voltage range:</b>	15 – 28 V DC (KermaX <sup>®</sup> plus TinO IDP: 15 – 20 V DC)
<b>Cabling :</b>	cost effective low voltage cable based on telecommunication standards or network patch cable
<b>Mechanical adaptation - Rectangular chambers:</b>	can be mounted directly on the collimator by using the appropriate adaptor rails (distance 176 or 167 mm)
<b>Serial interface:</b>	<b>KermaX<sup>®</sup> plus TinO DDP:</b> RS 232 printer interface <b>KermaX<sup>®</sup> plus TinO IDP:</b> optional RS 485/232 PC (RIS/HIS) / printer interface
<b>AC /DC converter:</b>	L: 95.9 mm / W: 55.5 mm / H: 30.5 mm Not suitable for installing in the collimator.
	Connection cable for KermaX <sup>®</sup> plus TinO: 650 mm long Connection cable (input voltage): 900 mm long Maximal current consumption: 1 A Input voltage: 20 – 50 V DC / 12 – 35 V AC When using the AC / DC converter it is absolutely essential that international standards and national laws are observed.

Technical data are subject to change without prior notice.

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