NANO SECOND PULSE X-RAY PORTABLE ION CHAMBER

Model – TBM-IC-PULSE-X

FEATURES:
- PULSED X-RAY RESPONSE
- MEETS 10CFR 34.25 REQUIREMENTS
- MEETS AND EXCEEDS 100 R/h (other ranges available)
- DIGITAL READOUT:
  6 digit-rate, 8 digit integrate
  DOSE RATE & TOTAL DOSE READ OUT
- LIGHTWEIGHT 26 oz.
- FLAT RESPONSE - SEALED AIR ION CHAMBER
- SEES AXIALLY BELOW 5 KEV GAMMA OR X-RAY
- SEES HIGH ENERGY UP TO 10 MeV & ABOVE
- SEES BETA, GAMMA, X-RAY, POSITRONS
- FAST RESPONSE
- IP64
- CE MARK

APPLICATION:
Whenever a fast, sensitive ion chamber instrument is needed, the TBM-IC-PULSE-X is the latest in a series. These portable ion chambers are now smaller and lighter. Based on stable, essentially drift-free electrometer technology.

Especially useful in Non-Destructive Testing or other Industrial or Medical applications where pulsed x-rays are used.

PULSED X-RAY RESPONSE:
TBM-IC-PULSE-X is the ONLY radiology imaging portable ion chamber that will detect nanosecond pulsed x-rays. It will accurately measure the integrated Total Dose from pulsed x-ray machines over a wide range of pulse widths and repetition rates.

This monitor also measures low energies and short pulses that other survey meters ignore to the detriment of worker health.

DESCRIPTION:
The TBM-IC-PULSE-X consists of a 3” dia air ion chamber coupled to MOSFETstable input electrometer with built in Analog to Digital converter to read out directly in mR/h or total mR.

Rate range is 0.01 R/h to 100 R/h in a single range.
Dose range is 0.001R - 100R in a single range. Other Ranges are also available.

- MEETS 10CFR 34.25 - FEDERAL REQUIREMENTS FOR RADIATION SURVEY INSTRUMENTS

TECHNICAL ASSOCIATES
OVERHOFF TECHNOLOGY
NANO SECOND PULSE X-RAY
PORTABLE ION CHAMBER

Model – TBM-IC-PULSE-X

SPECIFICATIONS:

PULSED X-RAY RESPONSE

Total Dose: 1 mR to 100 R in a single range (8 digits)
Dose Rate Range: 1 mR/hr to 10,000 mR/hr (6 digits) or
                10 mR/h to 100,000 mR/h
Pulse Width Range: 20 nano-seconds to continuous emission
Repetition Rates: Single pulse to 1000/second and above Wide
Energy Range: 2 KeV to 10 MeV & above
High Dose Limits: Per customer specification*

User should inform TA of highest-expected: 10-second, total-dose exposure

*Note: TA also makes TBM ion chambers that measure up to 10 million R/hr

DETECTOR:
Sealed Air ion chamber 3” dia. Internal volume 50 cc
Inside Wall: Plastic plus graphite lining
Cap: Removable protective cap
Window: 2.3” dia. x 0.5 mg/cm² Kapton.

ELECTRONICS:
Readout: LCD 8 digits with backlight
Count Lamp: Green Flashing LED
Over-range: Red LED Indicator
Audio Alarm: User settable anywhere within TBM range
Electrometer: Solid State MOSFET input.
Electronics: Analog to Digital converter LCD drivers.
Batteries: NEDA 15A, 6 ea. (AA)– 200 hour life.
           NEDA CR-1220 - 7 years life.

WEIGHT & DIMENSIONS:
Dimensions: 5-1/2” x 3-1/2” x 8” including handle.
Weight: 2.9 lbs. complete with batteries.

OPTIONS:
Other Rate or Integrated Ranges
Other Readout Units such as Si units: Sv and
Sv/h. Chamber sleeves or Caps
X-Ray-SLV is X-Ray compliance sleeve with 10cm² aperture.
# NANO SECOND PULSE X-RAY
# PORTABLE ION CHAMBER

## Model – TBM-IC-PULSE-X

### NAVY TEST RESULTS TBM-IC-PULSE-X with TBM-IC-PULSE-X Prototype

<table>
<thead>
<tr>
<th>INTEGRATE MODE</th>
<th>X-RAY SOURCE</th>
<th>PULSES/SEC</th>
<th>DISTANCE</th>
<th>FIELD TLD mR</th>
<th>TBM-IC-MVR -Prototype</th>
<th>DEVIATION</th>
<th>TBM-IC-Pulse-X</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>XR-200</td>
<td>198</td>
<td>24”</td>
<td>145</td>
<td>115.6</td>
<td>-20%</td>
<td>±5%</td>
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<tr>
<td></td>
<td></td>
<td>198</td>
<td>48”</td>
<td>41.2</td>
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<td>-29%</td>
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<tr>
<td></td>
<td>XR-300</td>
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<td>24”</td>
<td>228</td>
<td>1.89</td>
<td>-18%</td>
<td>±8%</td>
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<tr>
<td></td>
<td></td>
<td>198</td>
<td>48”</td>
<td>2.28</td>
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<td>-17%</td>
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</tr>
<tr>
<td></td>
<td>LR-FLASH</td>
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<td>24”</td>
<td>150</td>
<td>123</td>
<td>-18%</td>
<td>±8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td>48”</td>
<td>22</td>
<td></td>
<td>-14%</td>
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<tr>
<td></td>
<td>BETATRON</td>
<td>7.5 MeV</td>
<td>45 sec</td>
<td>4 meters</td>
<td>61</td>
<td>-50%</td>
<td>±12%</td>
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**NOTE:** other brands also read low on BetaTron. Navy admits TLD might be at fault.

<table>
<thead>
<tr>
<th>DOSE</th>
<th>DOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cs-137</td>
<td>5 mR 9 mR</td>
</tr>
<tr>
<td>Cs-137</td>
<td>500 mR 500 mR GOOD</td>
</tr>
<tr>
<td>Cs-60</td>
<td>1,000 mR 1,060 mR +6%</td>
</tr>
<tr>
<td>Cs-60</td>
<td>500 mR 500 mR GOOD</td>
</tr>
<tr>
<td>Cs-60</td>
<td>1,000 mR 1,060 mR GOOD</td>
</tr>
</tbody>
</table>

### DOSE RATE MODE

| H-100 | 100 mR/hr 130 | +30% |
| H-60  | 300 mR/hr 390 | +30% |
|       | 2R/hr 2.6    | +30% |

### NAVY COMMENTS / COMPLAINTS

<table>
<thead>
<tr>
<th>COMPLAINT</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microphonics</td>
<td>Protect the window with screen when window is tapped</td>
</tr>
<tr>
<td>TA SUCCESS ITEM</td>
<td>Battery Life OKAY</td>
</tr>
<tr>
<td>Weight</td>
<td>OKAY</td>
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