

MINI

The 900 series Mini-Monitor



MONITOR

Scintillation Monitors for Contamination Control

The mini-monitor is well established in teaching, research, hospital and industrial laboratories as a reliable, convenient and inexpensive contamination meter.

The 900 series has the following features:

- * A large logarithmically scaled meter with an open scale at the lower end to show background levels of contamination while displaying high levels without switching.
- * A speaker to give an audible estimate of radiation intensity.
- * An alarm which can be set to trip at any level on the scale.
- * Battery or mains operation using a separate power unit. Included is an internal constant current charger for rechargeable batteries.
- * Lightweight aluminium case.
- * A comprehensive manual containing tables and curves of response to different radiations and other useful information.
- * The monitor conforms to the requirements of the International Electrotechnical Commission publication 325.

Specification

| | |
|-----------------------------------|--|
| Weight | 1.0kg without probe. |
| Size | 180w by 110d by 165 mm overall. |
| Batteries | 6 type AA cells, alkaline (IEC LR6) or rechargeable (IEC KR 15/51). |
| Battery life | Approximately 120 hours at 4 hours/day. |
| Meter range | 0.5 to 5000 counts s^{-1} . |
| Paralysis time | Scale corrected to give true count rate. |
| Ratemeter integration time | 1 to 4 seconds set to match count rate. |
| Radiation detector | Most portable scintillation probes having a single cable termination are suitable. |
| HV supply | 600-1500 volts set internally. |
| Overload protection | Provision to indicate excess tube current. |
| Mains power | 12-18 volts D.C. from mains unit. |

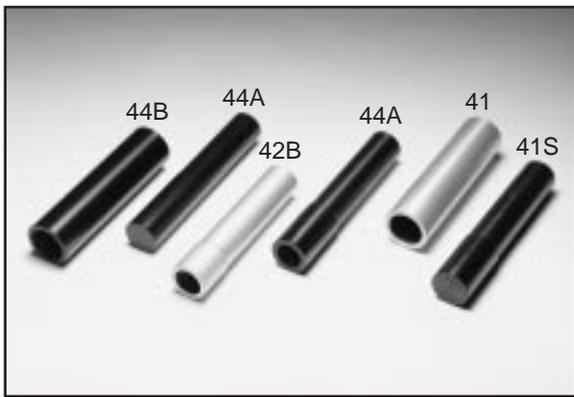
MINI

MINI-INSTRUMENTS LTD
Manufacturers of Nucleonic Equipment

MINI-INSTRUMENTS LTD
Manufacturers of Nucleonic Equipment



Certificate no. FM23048



MINI

The 900 Series Mini-Monitor Scintillation Probes

GAMMA SCINTILLATION PROBE TYPE TYPE 41

Sodium iodide crystal 19mm dia by 25mm thick. Suitable for energies from 25keV upwards. A lead cylinder surrounds the crystal giving the probe directional properties as well as reducing background.

Diameter 40mm Length 210mm.

Sensitivity

$10\mu\text{Sv h}^{-1}$ (1mR/h) ^{137}Cs approx 1000 counts s^{-1}
 3.7kBq (0.1 μCi) of $^{99\text{m}}\text{Tc}$ at 20mm approx 130 counts s^{-1}

Background 3–8 counts s^{-1} depending on locale.

GAMMA SCINTILLATION PROBE TYPE 41S

Similar to type 41 but without lead shielding and has a larger sodium iodide crystal (25mm dia by 38mm thick) for increased sensitivity. Suitable for energies from 25keV upwards. The probe is essentially omni-directional for medium and high energy gamma radiation.

Diameter 38mm Length 217mm.

Sensitivity

$10\mu\text{Sv h}^{-1}$ (1mR/h) ^{137}Cs approx 3500 counts s^{-1}
 Background 20–30 counts s^{-1} depending on locale.

X-RAY SCINTILLATION PROBE TYPE 42A

Sodium iodide crystal 23mm dia by 1mm thick with a 14mg cm^{-2} aluminium window. This probe has a higher sensitivity than the Type 41 for γ energies below 60keV to a minimum of 10–15 keV. An integral lead collimator makes it particularly useful for ^{125}I thyroid monitoring and deep vein thrombosis location.

Diameter 40mm Length 187mm.

Sensitivity

3.7kBq (0.1 μCi) of ^{125}I at 20mm approx 330 counts s^{-1}

Background 2–3 counts s^{-1} depending on locale.

X-RAY SCINTILLATION PROBE TYPE 42B

This probe is the beryllium window version of the type 42 and detects very low γ energies down to 5keV. The response above 15keV is almost identical to the 42A. Window weight 47mg cm^{-2} .

SCINTILLATION PROBE TYPE 44A

(as illustrated on front)

The sodium iodide crystal (32mm dia by 2.5mm thick) is mounted on the front surface of the probe to facilitate monitoring of large contaminated areas. It is suitable for a range of energies from approximately 15keV to 250keV. It is also β sensitive for energies above 500keV. Diameter 50mm Length 180mm. Aluminium window weight 14mg cm^{-2} .

Sensitivity

3.8, 1.6 & 1.4 counts s^{-1} for 1Bq cm^{-2}
 ($2.7 \times 10^{-5}\mu\text{Ci cm}^{-2}$) of ^{125}I , $^{99\text{m}}\text{Tc}$, ^{57}Co respectively.
 Background 4–8 counts s^{-1} depending on locale.

SCINTILLATION PROBE TYPE 44B

This probe is the beryllium window version of the above and extends the sensitivity down to approximately 5keV making it useful for ^{55}Fe . 3.7kBq (0.1 μCi) of ^{55}Fe at 10mm approx 180 counts s^{-1} . Window weight 47mg cm^{-2} .

ELECTRICAL SPECIFICATION

| | |
|----------------------|---|
| Socket outlet: | Single PET 100 series for single output + H.V. supply. |
| Dynode chain: | approximately 55Mohms. |
| Preamplifier: | sealed unit giving a maximum of 1 volt negative pulse into a minimum load of 1000 ohms. No supply required. |
| Pulse decay time: | 2.5 μs in above load. |
| Current consumption: | approximately 17 μA at 1000 volts. |

Unless otherwise stated, none of these probes are suitable for the detection of alpha or beta radiation.

MONITOR