

For thorough monitoring of any item within seconds, at 5000 dpm levels, and with the confidence of a controlled measurement even in elevated background, there is no substitute for the SAM11.

SAM11

Small articles and tools monitor for low level gamma measurement



Thermo Electron Corporation SAMs are operating on most North American power utility sites, demonstrating why using a SAM11, or "SAMMING", is the ideal method of monitoring for unrestricted release. SAM11 replaces the complexity of using hand held probes by:

- Complete coverage.
- Precise, computerized measurement control.
- Background shielding and compensation to reduce shine and scatter effects.
- Simple operation suited to unsupervised use.
- Microprocessor control with menu setup, easy testing and automated calibration procedures.
- Ruggedness and reliability.

The SAM11 retains these qualities of monitoring at barrier control points and in elevated backgrounds, and is suitable for most locations where release level monitoring is likely to be required. Measurements are made by loading up, closing the door and pressing the START button.

Items can be checked individually or together - the savings are obvious. Documents only take seconds; objects which have cavities and hollows are checked thoroughly by the SAM11 in far less time than is possible by beta frisking. 5000 dpm (83 Bq) sensitivity is achieved, even in elevated backgrounds, because self-shielding is generally



not significant for objects which fit into the SAM11. When used for free release surveys during decommissioning, items cut down enough in size to be easy handled can generally be monitored at 5000 dpm.

SAM11's ruggedness, 4π geometry, stainless steel replaceable liner and extra-strong door hinges provide a clear contrast with the drawbacks of beta detection methods:

- No fragile window to replace.
- No grills to trap grit.
- No gas to buy, no bottles to change.
- Negligible signal loss from distance effect.
- Negligible signal loss from air absorption.
- No regular maintenance, saving time and money.

For applications with low energy gamma emitters an optional low density, high strength liner is offered on the SAM11LE.

Measures fixed, smearable, internal and external gamma contamination simultaneously

5000 dpm independent of methodology

Excellent uniformity of response

Fast, easy and thorough with no special training or supervision required

Equally effective for single particles or disseminated contamination



System Specifications

Environmental: Operating Temp.
Range 0 to 45 °C (32 to 113 °F).
Humidity range, up to 95%
non-condensing.

EMC & LVD: EMC Compliances:
EN 50081 (emissions), EN 50082
(immunity). LVD Compliances:
EN 61010

Dimensions:
877 H x 687 W x 837 D mm
(34.5" H x 27" W x 33" D*)
*922 mm (36.3") for 6
detector, 2 door option.

Weights: 670 kg (1480 lb) nett,
770 kg (1700 lb) packed (1" lead)
1380 kg (3040 lb) nett, 1480 kg
(3270 lb) packed (2" lead).

Power: Integral 12 V power pack, 12
hours operation if AC supplies are
lost. Integral continuous Dual
State Float Charger, 85 to 264 VAC,
47 to 63 Hz 65 VA.

Detectors: 4 or 6, BC-408 plastic
scintillation detectors, 1451 cm²
(225 in²) each. The 4 detector
SAM11's have detectors in the base,
top and two sides. The 6 detector
variant has additional detectors in
the front and at the back. Detectors are
fitted with a magnetic shield.

Detection Areas:
4 detectors, 5776 cm² (900 in²).
6 detectors, 8664 cm² (1350 in²).

Detection Volumes:
4 detectors, 32923 cm³ (2025 in³).
6 detectors, 49385 cm³ (3037 in³).

Lead Shielding: 2.5 or 5 cm (1" or
2") lead shielding may be
specified as standard.

Doors: One or two doors may be
specified.

Performance: 5000 dpm detection
Limits at 90% confidence (1.3 s),

0.1%, False Alarms (3.1 s).
4 detector/2.5 cm (1") lead
version detects 5000 dpm within
10 s in backgrounds up to 0.15 µSv/h
(15 µR/h).
6 detector/ 5 cm (2") lead version detects
5000 dpm within 30 s backgrounds up to
1 µSv/h (100 µR/h).

Measuring Volume:
381 H x 381 W x 457 D mm
(15" H x 15" W x 18" D).

Typical Efficiencies (% 4p, at
standard 3" (75 mm) calibration
point): 6 detector version:
⁶⁰Co: 61%. ¹³⁷Cs: 26%. ⁵⁴Mn:
30%.

Low energy option: ²⁴¹Am: 13%.
Energy Range: 50 keV to 2 MeV.
Signal Thresholds: 1 fixed, 1
programmable used for setting
best signal over background ratio.

Display: 240 x 128 graphics display.
Switches: Door switch for
background collection.
Push-button to activate count
cycle.

Parameters: Choice of dpm, nCi or
Bq for: reliably detected activity,
alarm level, (1 to 1,000,000) and
high level alarm, (1 to 1,000,000).

Low counts alarm: 0 to 99.999 cps.

Monitor Time: 1 to 100 s.

False Alarm: 0.1 to 10 s.

Confidence Level: 0 to 10 s.

User Functions

- Language choice
- Screen messages
- Auto recount
- Results printout
- Changing background alert

Applications

- The Health Physics Control Point
- The Clean Tool Shop
- The Hot Tool Shop
- The Green Tag Table
- As an active barrier at the RCA
Boundary
- At unsupervised locations, using
SAM11's networking signal
outputs
- At containment exits
- At boot barriers / step-off pads
- For monitoring laundry and
garment bags
- For segregation
- For free release surveys during
dismantling
- For contamination control during
outage
- Monitoring for incoming Naturally
Occurring Radioactive
Material (NORM) at 5000 dpm.
(e.g., flash-light batteries can
exceed 5000 dpm)

Order Codes

Variants:

- 4 or 6 detectors
- 1 or 2 doors
- 25 mm or 50 mm (1" to 2") lead
shielding
- Low energy versions have 50 mm (2")
lead shielding, plastic liner, copper
shielding and a choice of 1 or 2 doors

Options:

- Mounting plinth (illustrated overleaf),
height 700 mm (27.5')
- 37 kBq point source with set up jig

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