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NUCLEAR
MEDICINE

PAM-100

PORTABLE ACTIVITY METER



MAIN ADVANTAGES

- Gasless scintillation detector
- Compact, lightweight and resistant design
- User friendly, ease of use
- High sensitivity, uniform response
- Fast selection from stored measurement presets
- Two settable alarm levels
- Fast replacement of light-tight foil
- Optional measurement of the dose rate

PURPOSE

The PAM-100 series activity meters are portable hand-held instruments intended for the measurement of surface contamination. They contain a scintillator covered with light-tight foil, with a photomultiplier and two-channel processing electronics.

Types **A, B, and C** have **suppressed sensitivity to gamma radiation** and thus low response to gamma background. This allows setting of lower alarm levels comparing to the D and E types.

- **A** measures only alpha contamination and is therefore designed especially for plants for the production and / or processing of nuclear fuel, uranium mining and / or processing.
- **B** measure alpha and beta contamination but cannot discriminate them. It has the highest sensitivity to beta contamination, especially low energies.
- **C** is a two-channel monitor, which can distinguish between alpha and beta contamination.

Types B and C are suitable for nuclear plants, where the gamma background may be increased or variable.

Types **D and E** have **increased sensitivity to gamma radiation** and thus higher response to gamma background. This prevents them from setting as low alarm levels as can be set for the B and C types.

- **D** measures all types of radiation (alpha, beta, gamma) in one channel. It is suitable for nuclear

medicine workplaces where Tc-99m radionuclide and possibly others pure gamma emitters are used.

- **E** measures all types of contamination and can discriminate alpha. It is suitable for training or experimental workplaces.

The meter allows the measurement of the surface contamination in two modes:

- **Ratemeter** - continuous measurement of the average pulse frequency to aid searching for a contaminated surface.
- **Contamat** - integration measurement for deciding on contamination or cleanliness of a specific area in comparison with the set threshold.

The meter is controlled using a graphical display with the possibility of backlit illumination and three push buttons.

One or two channels can be displayed on the display simultaneously. The measured values can be displayed as count rate, or for specific selected radionuclides in units of activity, surface activity, emission and surface emission. The display shows the selected quantity digitally and/or as a bar-graph.

PAM-100 can save up to 25 different presets for measurement mode, quantity and unit, radionuclide, response factor and alarm levels.

For each channel the background radiation level can be measured manually and stored in memory. This background is then automatically deducted from the measurement results indicated on the display.

The PAM-100 meters can optionally contain an integrated GM tube for **measurement of the gamma dose equivalent rate**. It is an additional measurement, which can give a warning to the operator of higher ambient radiation levels.

The meter can also acoustically indicate pulses generated by the detector. Dual-channel monitors distinguish between pulse detection in the alpha channel and in the beta channel by a different sound.

To carry the monitor you can use a portable carrying case that is included in the delivery.

PAM-100

PORTABLE ACTIVITY METER

The currently measured values in the "Ratemeter" mode and the results of the integration measurements in the "Contamat" mode can be stored in the measurement archive together with a time stamp. The archive can then be exported to a file.

Service software is used to export the archive, and set the essential parameters or update firmware by means of a PC/notebook connected by a service port.

TYPES OF MONITORS

Name	1. channel	2. channel
PAM-100A	alpha	-
PAM-100B	alpha + beta	-
PAM-100C	beta	alpha
PAM-100D	alpha + beta + gamma	-
PAM-100E	beta + gamma	alpha

OPTIONAL ACCESSORIES

Part Number	Name
50-A-0016292	Shoulder strap with connectors
3-0101-00012	Adapter for the measuring of filters and smear samples
51-A-0000259	Service cable, USB A – Fischer 5 pin

SPECIFICATIONS

Detector type	plastic scintillator and/or ZnS/Ag
Active area	100 cm ²
Dimensions (W × H × D)	(124 × 111 × 225) mm
Weight	1,1 kg with batteries
Power supply	2x alkaline or NiMH rechargeable C size batteries, or through a service cable
Battery life	approx. 120 hours (without back illumination)
Temperature range	from -20 to +40 °C
Units	cps, cps/cm ² , cpm, cpm/cm ² , dpm, Bq, Bq/cm ² , pps, pps/cm ²

MEASUREMENT OF THE DOSE EQUIVALENT RATE

Monitors containing the integrated GM tube are named PAM-100AG, PAM-100BG, PAM-100CG, PAM-100DG, and PAM-100EG.

Detector type	GM tube
Measurement Range	100 nSv/h to 500 mSv/h

RELATED PRODUCTS

PAM-170	Portable Activity Meter
PAM-525	Portable Activity Meter

SELECTED RADIOMETRIC PARAMETERS

Model	Channel	Radionuclide	Efficiency [%]	Detection threshold [Bq/cm ²]
PAM-100A	α	²⁴¹ Am	41	0,01
PAM-100B	α	²⁴¹ Am	41	0,05
	β	³⁶ Cl	49	0,03
PAM-100C	α	²⁴¹ Am	44	0,01
	β	³⁶ Cl	41	0,04
PAM-100D	α	²⁴¹ Am	38	0,10
	β	³⁶ Cl	50	0,06
	γ	¹³⁷ Cs	42	0,06
PAM-100E	α	²⁴¹ Am	44	0,01
	β	³⁶ Cl	43	0,07
	γ	¹³⁷ Cs	36	0,08

