



MULTIFUNCTIONAL GAMMA MONITOR MFM 203

OVERVIEW

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1. DESCRIPTION

MFM 203 is a portable-size instrument, functionally completely compatible with the previous AMES type MFM 202A. It is designed for the continuous monitoring of gamma radiation in the environment. MFM 203 autonomously performs all the necessary functions of a self-sustained local monitor. When connected to a data communication link, it can serve as a smart field unit of the real-time early warning network. Supplied with two energy-compensated GM probes of different sensitivities, it can cover dose-rates from the normal background to the accidental levels.

The microprocessor-controlled monitor is equipped with a keyboard and an alphanumeric LC Display. Small printer can be connected as an option. Unit autonomously processes, displays and prints (if equipped with the printer) all measured data and warnings, triggering visual and audible alarms. It is designed to be connected on-line (via modem and telephone line or radio link) to the central data collecting and controlling computer of an early warning system. Data can be transferred in real time or at scheduled time intervals.

In the standard version the instrument consists of the following components:

- MFM 203 measuring unit
- remote "A" (high-sensitive) probe
- remote "B" (low-sensitive) probe

1.2 FUNCTIONS

MFM 203 performs the following functions:

- measures and displays:
 - Dose rates (Sv/h),
 - Statistical uncertainties of measurements in %,
- with a predefined statistical uncertainty, it automatically adjusts measuring intervals to the intensity of the radiation (variable time constant of the instrument);
- triggers the adjustable alarms (with visual and audible signals) and records their occurrences;
- measures the dose increment (μSv) from the last periodic report (usually 24 hours);

- automatically gives periodic reports on the dose increment, dose rates, alarms and functional warnings
- measures the total dose (μSv) of a longer time period

1.3 HIGHLIGHTS

- quick and simple assembly and initiation;
- automatic operation and easy management with instructions shown on the LCD;
- predefined precision of the measurements with automatic optimisation of the number of measurements
- self-controlled operation with diagnostic and warning printouts;
- bypassing of mains power failure (approx. 2 days) with a built-in rechargeable battery or with an optional larger external 12 V battery
- linking to the communication network (modem + telephone line, radio - link) for the centralised on-line data collection and control (early warning system) over the built-in buffer memory and RS-232-C port;
- simple type-in reprogramming of code-protected measuring parameters (for example, when introducing a new measuring mode or when changing the probe calibration constants);
- possibility to directly connect sensor for rain intensity and quantity (tipping-bucket ombrometer)

2. TECHNICAL SPECIFICATIONS

RANGE OF DOSE RATES	# standard version with Probes A and B: 50 nSv/h ($50 \cdot 10^{-9}$ Sv/h) to 1000 mSv/h (1 Sv/h) # version with Probe A only: 50 nSv/h ($50 \cdot 10^{-9}$ Sv/h) to 600 μ Sv/h ($600 \cdot 10^{-6}$ Sv/h)
RANGE OF DOSES IN μSv	# limited to 5 digit display and one digit decade exponent (XXXXXe+Y)
ENERGY RESPONSE OF PROBES	# equal in the energy interval from 60 keV to 1.3 MeV within ± 20 %
LINEARITY	# deviation less than 7 % within stated range
PROBES	# aluminium weather-proof housing with the exchangeable plastic cap, weatherproof connector, operating temperature range - 40°C, +70°C, over-range output signal, audible indication of pulses; power supply: 12 V DC, internal high-voltage generator
DIAGNOSTICS	# programmed, with malfunction warnings and their combinations
CONNECTION TO THE COMMUNICATIONS NETWORK	# over buffer memory and RS-232-C port
POWER SUPPLY	# 220 V 50Hz / 12V DC (option) # from built-in rechargeable battery approx. 2 days
POWER CONSUMPTION	# without display illumination 0.4 W (12 V, 30 mA)
DIMENSIONS AND WEIGHT	# monitor: L 30 x W 20 x H 10 cm; 4.5 kg # printer (option): L 24.0 x W 17.6 x H 8.0 cm; 1.2 kg # probe (1): L 31 cm x \varnothing 5 cm; 0.8 kg
TEMPERATURE RANGE (°C):	# - 40 to + 65 (operation), - 60 to + 80 (storage)
RELATIVE HUMIDITY:	0 – 95% (non condensing); protection grade of the instrument cases (probes & instrument): IP 65 (protected against splashing)

Manufacturer reserves the right to change specifications without prior notice.

OPTIONS

- Extended length of probe cables up to a maximum of 150 m
- Printer
- FLASH EEPROM memory unit
- Probes of different dose rate ranges for special purposes
- External alarm set-up
- Permanent external battery power supply set-up

ACCESSORIES ON SPECIAL ORDER

- Two 1.6 m long aluminium poles for upright positioning and fixing Probes above ground with a minimum shading of ground
- Plastic expendable protective caps for Probes
- Polypropylene plastic tube $\varnothing=20$ mm for outdoor Probe cable protection