The RAM R-200 Meter

Ruggedized Multipurpose Survey Meter

Description

The **RAM-R-200** is a portable multifunctional, rugged survey meter designed for measuring wide range gamma radiation fields and contamination. The sturdy casing and internal electronics are designed to withstand shocks and vibrations and perform reliably in extreme environments.

An internal detector containing two energy compensated GM tubes together with optional external probes will detect, measure, and digitally display both dose and dose rate levels of gamma radiation from 0.1μSv/h to 100 Sv/h (10μR/h – 10,000 R/h), and alpha/beta contamination from 0 to 1 Mcpm.
The **RAM R-200** can be used with a three-segment sturdy telescopic rod for the external gamma probe.
The **RAM R-200** meter and its external detectors include embedded microprocessors, data memory, and communication functions. An audible indication is activated either by frequency fluctuations in accordance with the field strength or chirp for each measured pulse.

The **RAM R-200**'s auto-ranging meter utilizes a combination display consisting of a smoothed digital display for minimum fluctuations, and a two-decade logarithmic analog bar graph for fast response.

Applications

- General-purpose rugged survey capabilities.
- Readings of hard-to-reach areas (i.e. vehicle surveys, elevated piping, etc.).
- α,β,γ Surface contamination detection and measurement.
- Portable or stand-alone radiation measurement station.

Features

- Wide range internal gamma detector.
- Ruggedized, portable, compact, lightweight instrument.
- Simple operation: only four push buttons.
- Built-in RS-232 communication - three channels.
- Special operating modes accessed via our configuration software.
- Large, easy to read, digital and analog customized LCD.
- Display backlight offers bright illumination for use in dark areas.
- Easy connection of optional external probes.
- Reliable telescopic rod containing a quick connection housing for meter and external gamma probes.
- Audible alarm.
- Automatic self-test of meter and external probes.
- Automatic detector identification with each change of detector.
- Automatic recording of dose accumulation by the internal detector also when the meter measurement is done by an external probe.
- Low current consumption, more than 100 hours of continuous operation with a single 9V battery.
- Passed sub-pressures, dust, shock, vibration, drop and immersion tests. Meets MIL-STD 810. Electromagnetic compatibility tests meet MIL-STD 461.
- CE marked.

Technical Data

Internal detector

Counting tubes	GM tube *ZP-1202 (ZP-1201)
	GM tube *ZP-1314 (ZP-1313)
Measuring range	*0.1 µSv/h to 1 Sv/h (10µR/h to 100R/h)
Energy response	±35% from 60 to 2000 keV
Sensitivity	17 cps/mR/h(ZP1201)
	1.4 cps/mR/h(ZP1313)
Accuracy	±10 % of reading, within the measuring range
Data logging	1000 data records
Display	DigiLog (3 digits and 2 decades of analog bar graph)
	Four push-buttons: On/off, Light, Speaker, Mode
Measuring units	Radiation: Sv/h, Sv or R/h, R (e.g. µR/h, mR/h , R/h)
	Contamination: cpm or counts (e.g. cpm, Kcpm, Mcpm)
Power source	One 9-Volt alkaline battery
	100 hours of continuous operation
Temperature range	**Operation:** -30°C to +60°C (-22°F to 140°F)
	Storage: -30°C to +70°C (-22°F to 158°F)
Humidity range	10% to 95% RH (non condensing)
Casing	Seawater resistant aluminum alloy, shock resistant
Meter dimensions:	**Length** 134 mm (5.3")
	Breadth 80 mm (3.15")
	Width 35 mm (1.4")
Weight	460 gr (1 lb) (incl. cell)

* Ambient Dose Equivalent

Meter part no:	BAK-2070

Accessories:
Leather carrying bag:	BAK-1590

Telescopic rod
- 50cm to 150cm (0.5 yard - 1.6 yards):	BAK-2060
95cm to 330cm (1 yard – 3.6 yards):	BAK-1790

Cables
Meter to Detector:	BAK-0400
Meter to P.C. :	BAK-2050
Detector to P.C. adapter:	BAK-0010
TeleRod – PA100 detector:	BAK-2370

Detector RG-10 model BAK-2140 α,β,γ contamination detector		
Range	0 - 1.00 Mcpm	
Window	1.5 - 2.0 mg/cm^2	
Effective area	15.5 cm^2	
Sensitivity	3500 cpm/mR/h(^{137}Cs), 500 cpm/Bq/cm^2 (^{90}Sr ^{90}Y), 175 cpm/Bq/cm^2 (^{239}Pu)	
Geiger	NRC 2006	
Accuracy	± 10% of reading	
Temperature Range	-30ºC to +60ºC (-22ºF to 140ºF)	
Weight	310 gr (0.7lb)	
Dimensions	181 mm (7.1″) x 62 mm (2.4″) Diam.	
Casing	Aluminum, splash proof, IP-64	
Output Signals	RS-232 or RS-485 and TTL pulses **for all detectors.**	

Detector RG-12 model BAK-2150 α,β,γ contamination detector		
Range	0 – 1.00 Mcpm	
Window	1.5 - 2.0 mg/ cm^2	
Effective area	6.4 cm^2	
Sensitivity	1500cpm/mR/h(^{60}CO), 120 cpm/Bq/ cm^2 (^{90}Sr^{90}Y), 51 cpm/Bq/cm^2 (^{239}Pu)	
Geiger	LND 7231	
Accuracy	± 10% of reading	
Temperature Range	-30ºC to +60ºC (-22ºF to 140ºF)	
Dimensions	155 mm (6.1″) x 40 mm (1.6″)Diam.	
Weight	280 gr (0.6 lb)	
Casing	Aluminum, splash proof, IP-64	

Detector RG-40 model BAK-2160 High range γ radiation detector		
Range	1mSv/h - 100 Sv/h (0.1 R/h –10,000 R/h)	
Energy response	± 35% from 60 KeV to 2.0 MeV	
Sensitivity	77 cps/R/h	
Geiger	4G60M	
Accuracy	± 10% of reading	
Temperature Range	-30ºC to +60ºC (-22ºF to 140ºF)	
Dimensions	145 mm (5.7″) x 30 mm (1.2″)Diam.	
Weight	130 gr (0.3 lb)	
Casing	Aluminum, splash proof, IP-67	

Detector RG-42 model BAK-2130 Low range γ radiation detector		
Range	0.5 µSv/h to 40 mSv/h (50 µR/h to 4 R/h)	
Energy response	± 35% from 50 KeV to 3.0 MeV	
Sensitivity	1.7 cps/µSv/h (17 cps/mR/h) (^{137}Cs)	
Geiger	1201	
Accuracy	± 10% of reading	
Temperature Range	-30ºC to +60ºC (-22ºF to 140ºF)	
Dimensions	175 mm (6.9″) x 30 mm (1.2″)Diam.	
Weight	150g (0.4 lb)	
Casing	Aluminum, splash proof, IP-67	

Detector PA-100/M model BAK-1340 α contamination detector		
Range	0 to 1.0 Mcpm	
Type	Air proportional	
Window Thickness	0.85mg/cm^2 aluminized window	
Effective area	100 cm 2 (15.5 in^2)	
Probe Efficiency 2p	*18%	
Surface Sensitivity	*530cpm/Bq/cm^2 compensated in the meter to 100% to be 3000 cpm/Bq/cm^2	
Accuracy	*15% of reading	
Temperature Range	-10ºC to +50ºC (14ºF to 122ºF)	
Width	75mm (3")	
Height	55mm (2.2")	
Length	240mm (9.5")	
Weight	1Kg (2.2 lbs)	
Casing	Aluminum, splash proof, IP-64 (*related to^{241}Am)	

Detector RP-11 model BAK-2170 High sensitive γ radiation detector		
Range	0 to 50,000cps	
Radiation Detected	Gamma above 50 keV	
Scintillator	NaI(Tl) 2" diameter, 2" thick. Window of 1 mm. (0.04") Al.	
Sensitivity	20,000 cps/mR/h (^{137}Cs)	
Energy Calibration	Software calibrated single channel analyzer (SCA).	
Temperature Range	-30ºC to +60ºC (-22ºF to +140ºF)	
Humidity Range	10% to 95% RH (non condensing)	
Dimensions	340mm (13.4") x 70mm (2.75") Diam.	
Weight	1.75kg (3.9lbs)	
Casing	Aluminum, splash proof, IP-65	

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Accessories

Emergency Response Kit #1

Includes:
Pelican case 1400
RAM R-200 Survey Meter
RG-12 detector   (α, β, γ contamination detector)
Dimensions: 13" x 12" x 6"

Optional: RG-10 detector (α, β, γ contamination detector)

Emergency Response Kit #2

Includes:
Pelican case 1500
RAM R-200 Survey Meter
RG-12 detector   (α, β, γ contamination detector)
PA-100 detector   (α contamination detector)
Dimensions: 18" x 15" x 7"

Optional: RG-10 detector (α, β, γ contamination detector)

Emergency Response Kit #3

Includes:
Pelican case 1520
RAM R-200 Survey Meter
RG-12 detector   (α, β, γ contamination detector)
RG-40 detector   (γ high range radiation detector)
PA-100 detector   (α contamination detector)
TeleRod 50 to 150 cm
Dimensions: 19" x15" x 7"

Optional: RG-10 detector (α, β, γ contamination detector)

Emergency Response Kit #4

Car no.

Includes:
Pelican case SKB 4009
RAM R-200 Survey Meter
RG-12 detector   (α, β, γ contamination detector)
RG-40 detector   (γ high range radiation detector)
TeleRod 95 to 330 cm
Dimensions: 44" x 14 " x 8"

Optional: RG-10 detector (α, β, γ contamination detector)

ROTEM INDUSTRIES reserves the right to change specifications without advance notice

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