



# SAM 202K

Spectrum Analysis Monitor



Nuclear  
Power



Healthcare



Homeland  
Security  
& Defense



Labs and  
Education



Industrial and  
Manufacturing

## OVERVIEW

The SAM 202K forms part of the RAMSYS product line. It has been developed to detect gamma radiations and provide gamma spectra analysis with identification of isotopes. The SAM 202K is designed for continuous unattended operation and can cover most of the gamma measurement ranges required by regulations and industry guidelines.

Four sizes of detector are available which make this monitor very efficient and reliable, with high sensitivity, wide measurement range and fast response time.

## KEY FEATURES

- Wide measurement range
- Can be used for various types of application
- Minimal periodic maintenance
- 1E qualification and embedded safety related software
- Available under 10 CFR 50 App. B, ASME NQA-1 and IEC61226 programs for safety related applications

## RELATED MONITORS

- SAM 201K: version with 1¼"x1" NaI(Tl) detector
- SAM 203K: version with 2"x2" NaI(Tl) detector
- SAM 204K: version with 3"x3" NaI(Tl) detector

## PHYSICAL CHARACTERISTICS

- Radiation detected: gamma
- Detector: 3"x2" NaI(Tl) scintillator + PMT
- Energy range: 100 keV to 7 MeV
- Spectrometry analysis: 1024 channels
- Typical measurement range: 6 decades between  $3.7 \cdot 10^{+2}$  to  $3.7 \cdot 10^{+12}$  Bq/m<sup>3</sup> ( $10^{-8}$  to  $10^{+2}$   $\mu$ Ci/cc)

## ENVIRONMENTAL CHARACTERISTICS

- Long term temperature: +10°C to +40°C (+50°F to +104°F)
- Periodic temperature: -5°C to +55°C (+23°F to +131°F)
- MTBF: > 20 000 hours
- TID (processing unit): 100 Gy ( $10^{+4}$  rad)
- TID (detector):  $10^{+3}$  Gy ( $10^{+5}$  rad)
- Protection index: IP65 and IK07

## MECHANICAL CHARACTERISTICS

- Dimensions:
  - Processing unit: 390 mm x 196 mm x 187 mm (15.3 in x 7.7 in x 7.3 in)
  - Detector: 329 mm x 388 mm x 513 mm (13 in x 15.3 in x 20.2 in)
- Weight:
  - Processing unit: 8 kg (17.6 lb)
  - Detector: 210 kg (463 lb)
- Color: gray RAL 7030 (decontaminable paint)

## ELECTRICAL CHARACTERISTICS

- Power supply: 230 Vac – 50 Hz or 120 Vac – 60 Hz
- Data link outputs: 1 RS232 and 2 isolated RS485
- Alarm relays: 3 SPDT relays
- I/O: 2 isolated analog outputs and 1 isolated analog input (0/4-20 mA)

## SIGNALING (Applicable to LPDU only)

- Alphanumeric display: measurement, status...
- Sound alarm: buzzer 90 dBA at 1 meter
- Visual alarm: 3 lights (red, yellow, green)

## REFERENCE STANDARDS

- Environmental: IEC60780, IEEE323
- Seismic: IEC60980, IEEE344
- EMC: 2006/95/CE, 2004/108/CE, EPRI 102323, MIL STD 461 E, IEC61000-6-2 and IEC61000-6-4

## VERSIONS

- 230 Vac or 120 Vac
- LPDU or LPU
- Without protection, 2  $\pi/5$  cm (2  $\pi/2$  in) or 4  $\pi/5$  cm (4  $\pi/2$  in) detector lead shield
- With or without RS485 junction box
- Detector cable length: from 20 m (65.6 ft) to 100 m (328 ft)
- Junction box cable length: 2 m (6.56 ft), 5 m (16.4 ft) or 10 m (32.8 ft)

## ACCESSORIES

- Calibration tools
- Software
- USB converters
- Seismic qualified wall mounting bracket
- Detection sub-assembly support

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