



IM 201L

Iodine Monitor



Nuclear
Power



Healthcare



Homeland
Security
& Defense



Labs and
Education



Industrial and
Manufacturing

OVERVIEW

The IM 201L monitor forms part of the RAMSYS product line.

It has been developed to continuously measure the gamma volumetric activity of radioactive iodine sample, in both molecular and organic forms (methyl iodine), contained in air drawn from stacks, ventilation ducts or working areas. An NaI scintillation detector faces the activated charcoal cartridge in which radioactive iodine is trapped. The proximity of the detector and the cartridge, enclosed within a 4 π/5 cm (4 π/2 in) lead shielding, serves to optimize detection efficiency. A ²⁴¹Am radioactive source built into the NaI crystal allows compensation of temperature and aging related drifts. The spectrometry capability, based on a 1024 channel spectrum analysis, allows radio iodine isotope localization.

KEY FEATURES

- Embedded ²⁴¹Am source for energy spectrum stabilization against temperature changes and aging
- 1024 channels spectrum analysis
- Effluent trapping of both molecular and organic forms of iodine

RELATED MONITORS

- IM 201M: mobile version
- IM 201S: seismically qualified version
- PING 206S: version with particulate and noble gas
- PIM 206S: version with particulate

PHYSICAL CHARACTERISTICS

- Radiation detected: gamma
- Detector: 1¼"x1" NaI(Tl) scintillator + PMT
- Iodine cartridge: 57.7 mm (2.27 in)
- Energy range: 100 keV to 3 MeV
- Typical energy windows: 314 - 414 keV (¹³¹I, E_γ 364.5 keV)
- 1024 channels spectrum
- Typical measurement range: 3.7 to 3.7 10⁺⁶ Bq/m³ (10⁻¹⁰ to 10⁻⁴ μCi/cc)

ENVIRONMENTAL CHARACTERISTICS

- Long term temperature: +10°C to +40°C (+50°F to +104°F)
- Maximum periodic ambient temperature: -5°C to +55°C (+23°F to +131°F)
- MTBF: > 20 000 hours, with preventive maintenance
- TID: 100 Gy (10⁺⁴ rad)

PNEUMATIC CHARACTERISTICS

- Standard flow rate: 35 l/min (1.24 scfm)
- Pressure drop: according to the filter dust loading

MECHANICAL CHARACTERISTICS

- Dimensions: 864 mm x 725 mm x 440 mm (34 in x 28.5 in x 17.3 in)
- Weight: ~ 220 kg (~ 495 lb)
- Color: gray RAL 7030 (decontaminable paint)
- Inlet tube connection: Ø 12 mm OD (1/2 in)
- Outlet tube connection: Ø 12 mm OD (1/2 in)

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

- Nuclear: IEC60761, IEC61171
- EMC: 2014/30/EU and 2014/35/EU, IEC61000-6-2 and IEC61000-6-4

VERSIONS

- 230 Vac or 120 Vac
- LPDU or LPU
- With or without dust filter holder
- Pumping unit
- Monitor wall or floor fixing plate

ACCESSORIES

- Calibration tools
- Software
- USB converters

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