



LM 212S

Off-line Gamma Liquid Monitor



Nuclear
Power



Healthcare



Homeland
Security
& Defense



Labs and
Education



Industrial and
Manufacturing

OVERVIEW

The LM 212S from the RAMSYS product line has been developed to sample liquid from a pipe, a tank or a pool. A 1¼"x1" NaI scintillation detector face a liquid sampler inside a 4 π lead shielding for the gamma emitting isotope monitoring.

A radioactive source ²⁴¹Am built into the NaI crystal allows compensation of potential drift whenever temperature changes occur.

The spectrometry capability, based on a 1024 channel spectrum analysis, allows immediate and easy radio isotope identification in case of alarm.

KEY FEATURES

- Energy spectrum and temperature changes compensation
- Available with or without display or local signaling
- Seismically qualified
- The hinge mounted cover of the lead shielding makes maintenance easier on the detector
- Available under 10 CFR 50 App.B, ASME NQA-1 and IEC61226 programs for safety related applications

RELATED MONITORS

- LM 211S: version with 5 cm (2 in) lead shield

PHYSICAL CHARACTERISTICS

- Radiation detected: gamma
- Detector: 1¼" x1" NaI(Tl) scintillator + PMT with ²⁴¹Am source
- Lead thickness: 4 π/10 cm (4 π/4 in)
- Energy range: 100 keV to 2.2 MeV
- Measurement range: 3.7 10⁺³ to 3.7 10⁺⁹ Bq/m³ (10⁻⁷ to 10⁻¹ μCi/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, with preventive maintenance
- TID (processing unit): 100 Gy (10⁺⁴ rad)
- TID (detector): 1.5 10⁺⁴ Gy (1.5 10⁺⁶ rad)

PNEUMATIC CHARACTERISTICS

- Standard flow rate: 10 l/min (0.57 scfm)
- Beaker volume: 4.5 l

MECHANICAL CHARACTERISTICS

- Dimensions: 1303 mm x 750 mm x 675 mm (51.3 in x 29.5 in x 26.6 in)
- Weight: ~ 800 kg (~ 1763 lb)
- Color: gray RAL 7030 (decontaminable paint)

ELECTRICAL CHARACTERISTICS

- Power supply: refer to possible versions
- 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: IEC60861
- Environmental: IEC60780, IEC60323
- Seismic: IEC60980, IEC60344
- EMC: 2014/30/EU and 2014/35/EU, IEC61000-6-2 and IEC61000-6-4

VERSIONS

- 230 Vac or 230 Vac + 400 Vac 3Ø or 120 Vac + 400 Vac 3Ø
- LPDU or LPU
- Valve plate
- Pumping system

ACCESSORIES

- Calibration tools
- Software
- USB converters
- Seismic qualified wall mounting bracket for LP(D)U

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