



RAMSYS™

LM 212S™

Off-line Gamma Liquid Monitor



Sampling liquid from a pipe, a tank or a pool. Can withstand seismic conditions. Version with a 4 π 4" shielding.

DESCRIPTION

The LM 212S monitor 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 faces a liquid sampler inside a 4 π lead shielding for the gamma emitting isotope monitoring.

A radioactive source ²⁴¹Am built into the NaI scintillator 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.

FEATURES

- ✓ Energy spectrum and temperature change 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

LM 212S™ OFF-LINE GAMMA LIQUID MONITOR

PHYSICAL CHARACTERISTICS

- Radiation detected: gamma
- Detector: 1¼" x1" NaI(Tl) scintillator + PMT with ²⁴¹Am source (SG/NAI 1¼"x1")
- Lead thickness: 4 π/10 cm (4 π/4 in)
- Energy range: 100 keV to 2.5 MeV
- Measurement range: 3.7 10⁺³ to 3.7 10⁺⁹ Bq/m³ (10⁻⁷ to 10⁻¹ μCi/cc)

ENVIRONMENTAL CHARACTERISTICS

- Normal temperature: +5 °C to +40 °C (+41 °F to +104 °F)
- Temperature limit: -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)
 - Detector: 100 Gy (10⁺⁴ rad)

PNEUMATIC CHARACTERISTICS

- Standard flow rate: 10 l/min (0.57 scfm)
- Beaker volume: 4.3 l

MECHANICAL CHARACTERISTICS

- Dimensions (detection subassembly): 1052 mm (41.4 in) x Ø 514 mm (20.2 in)
- Weight (detection subassembly): ~ 735 kg (~ 1617 lb)
- Color: gray RAL 7030 (decontaminable paint)

ELECTRICAL CHARACTERISTICS

- Power supply: refer to possible versions
- Data link outputs: one RS232 (LPDU only) and two isolated RS485
- Alarm relays: three SPDT relays
- I/O: two isolated analog outputs and one 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: three lights (red, yellow, green)

REFERENCE STANDARDS

- Nuclear: IEC60861
- Environmental: IEC/IEEE 60780-323
- Seismic: IEC60980, IEEE344
- EMC: 2014/30/EU and 2014/35/EU, EPRI 102323, RG 1.180, IEC61000-6-2 and IEC61000-6-4

VERSIONS

- 230 Vac or 230 Vac + 400 Vac 3Ø or 120 Vac + 400 Vac 3Ø
- Local processing and display unit (LPDU) or local processing unit (LPU)
- Valve plate
- Pumping system

ACCESSORIES

- Calibration tools
- Software: MASS2™, RAMVISION™, SIMS2™ applications...
- USB converters
- Seismic qualified wall mounting bracket for LP(D)U



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