

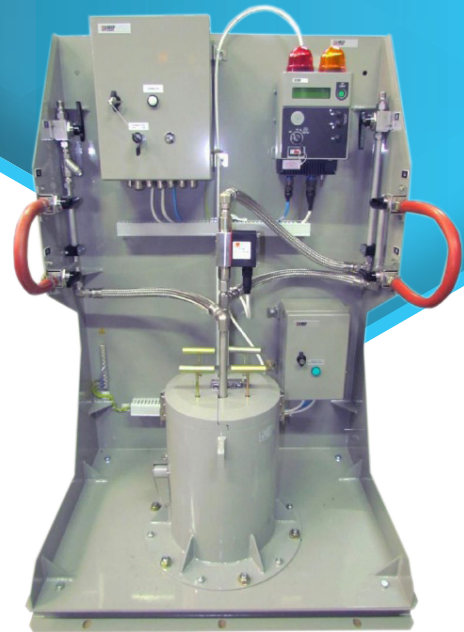


## RAMSYS

# LM 211S™

*Off-line Gamma Liquid Monitor*

Sampling liquid from a pipe, a tank or a pool. Can withstand seismic conditions. Version with a 4π 2" shielding.



## FEATURES

- Energy spectrum and temperature changes compensation
- Available with or without display or local signaling
- Seismically qualified
- Available under 10 CFR 50 App.B, ASME NQA-1 and IEC61226 programs for safety related applications

## DESCRIPTION

The LM 211S 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 <sup>241</sup>Am 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.

# LM 211S | OFF-LINE GAMMA LIQUID MONITOR

## PHYSICAL CHARACTERISTICS

- Radiation detected: gamma
- Detector: 1¼" x1" NaI(Tl) scintillator + PMT with <sup>241</sup>Am source (SG/NAI 1¼"x1")
- Lead thickness: 4 π/5 cm (4 π/2 in)
- Energy range: 100 keV to 2.5 MeV
- Measurement range: 3.7 10<sup>+3</sup> to 3.7 10<sup>+9</sup> Bq/m<sup>3</sup> (10<sup>-7</sup> to 10<sup>-1</sup> 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<sup>+4</sup> rad)
  - Detector: 100 Gy (10<sup>+4</sup> rad)

## PNEUMATIC CHARACTERISTICS

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

## MECHANICAL CHARACTERISTICS

- Dimensions (detection subassembly): 1002 mm (39.4 in) x Ø 478 mm (18.8 in)
- Weight (detection subassembly): ~ 300 kg (~ 661 lb)
- Color: gray RAL 7030 (decontaminable paint)

## ELECTRICAL CHARACTERISTICS

- Power supply: refer to possible versions
- Data link outputs: 1 RS232 (LPDU only) 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: 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...
- USB converters
- Seismic qualified wall mounting bracket for LP(D)U

Featuring:

