

LAM-502

LIQUID ACTIVITY MONITOR



KEY FEATURES

- Measurement of the volumetric activity of gamma-emitting radionuclides in process liquids at nuclear facilities.
- ATL monitor type: the detector is mounted directly onto the measured pipeline.
- Built-in Cs-137 check source for automatic spectrum stabilization and functional testing.
- Optional safety-classified function, Category C according to IEC 61226.

DESCRIPTION

The monitor is designed to measure the volumetric activity of gamma-emitting radionuclides in process liquids at nuclear facilities under routine, accident, and post-accident conditions.

The LAM-502 monitor assembly consists of:

- LAD-02 detector assembly, comprising:
 - GD-51 gamma detector with a NaI(Tl) Ø1" × 1" crystal,
 - lead collimator,
 - Cs-137 check and stabilization source.
- RPU-06 radiation processing unit equipped with a DIM-15 digital multichannel analyser configurable to 1K, 2K, 4K, or 8K channels.

The detector is installed at an appropriate distance from the pipeline through which the measured liquid flows.

By default, the DIM-15 analyser determines the total volumetric gamma activity with respect to the selected reference radionuclide.

Optional spectrometric functionality enables the identification and quantification of up to sixteen gamma-emitting radionuclides.

The RPU-06 locally displays measurement results and operating states, stores measured values and other monitor parameters, and visually and audibly indicates when preset alarm levels are exceeded.

The delivery package includes the RadSpec software for configuration and calibration of the device's spectrometric parameters.

If local data display is not required, the RPU-06 can optionally be replaced by the RPU-04 unit, which does not feature an integrated display.



RPU-04

Remote indication of measurement results can be provided by:

- RDU-12 Remote Display Unit
- ASU-50 Alarm Signal Unit

The monitor can communicate with one or two independent host systems via:

- RS-485 serial interface (ModBUS RTU)
- Ethernet 10 Mbit/s (ModBUS TCP)
- optional analogue inputs/outputs (4-20 mA)
- optional digital (relay) inputs/outputs

The monitor can transmit data simultaneously to both non-safety-classified and safety-classified host systems.

SPECIFICATION

Detector	Nal(Tl) Ø1" × 1" (alternatively YAP or CeBr ₃)
Detector collimator	lead, 1 cm
Measurement range	depends on the measured pipeline (1E5 to 1,5E10 Bq/m ³ for a pipeline with Ø63 cm and wall thickness 8 mm)
Reference radionuclide	Cs-137 (total gamma activity) Up to 16 gamma radionuclides for spectrometric measurement
Check source	Cs-137, 16 kBq
Sample temperature	+5 to +50 °C
Weight with shielding	approx. 15 kg
Dimensions	
• detector (w × h × d)	194 × 313 × 80 mm
• RPU-06 (w × h × d)	330 × 360 × 366 mm
Ingress protection	IP 67
Power supply	+ 24 V DC/ max. 2 A
Communication Interfaces	Ethernet 10 Mbit/s (Modbus TCP) RS-485 (Modbus RTU)



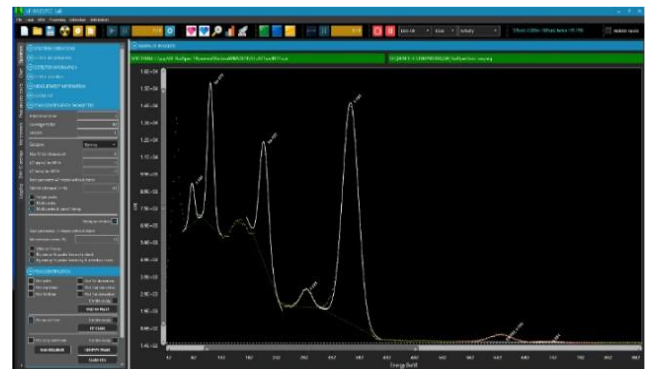
Detector installation next to the measured pipeline

OPTIONAL ACCESSORIES

RDU-12	Radiation Display Unit
ASU-50	Alarm Signal Unit
CIM-05	RPU module: isolator between safety-classified and non-safety-classified systems
ICIM-01	RPU module: eight relay outputs and two current loop outputs (4–20 mA)
ICIM-02	RPU module: eight digital inputs and eight digital outputs
ICIM-03	RPU module: four current loop outputs (4– 20 mA)
ICIM-04	RPU module: four current loop inputs (4–20 mA)

RELATED PRODUCTS

LAM-503	Gamma activity monitor for steam–air mixture from the vacuum pump sump; medium and high range; ATL type
LAM-504	Liquid gamma activity monitor for normal operation; standard range; ATL type
N16M-504	N-16 activity monitor for primary-circuit leakage monitoring; ATL type
MSLM-504	Main-steam-line liquid activity monitor; ATL type
LAM-544	Liquid gamma activity monitor for normal operation; standard range; in-line type
LAM-561	Gamma activity monitor for high-temperature liquids under normal, emergency, and post-emergency conditions; medium and high range; off-line type
LAM-564	Liquid gamma activity monitor for normal operation; standard range; off-line type with shielded measurement chamber



RadSpec spectroscopy software