

LAM-562

LIQUID ACTIVITY MONITOR



MAIN ADVANTAGES

- Spectrometric measurement of volumetric activity of gamma-emitting radionuclides in liquids.
- Off-line monitor type with a flow-through measuring chamber.
- Built-in K-40 check source for automatic spectrum stabilization and functional testing.
- Compliant with IEC 60861 - Equipment for monitoring of radionuclides in liquid effluents and surface waters.

PURPOSE

The LAM-562 monitor is designed for continuous measurement of the volumetric activity of gamma-emitting radionuclides in liquids. It is primarily intended for use in process circuits of nuclear power plants and research centres. It can also be used to control the release of liquid effluents into the environment.

The monitor uses spectrometric peak analysis to identify individual artificial radionuclides present in the measured liquid, such as F-18, I-131, Cs-137, and Co-60. In addition to artificial radionuclides, it can also identify natural radionuclides such as K-40 or Bi-114.

The LAM-502 monitor consists of:

- **GD-52** Gamma Detector with a NaI(Tl) scintillator,
- K-40 check and stabilisation source,
- a frame with a shielded measuring chamber, through which the liquid sample flows (flow is provided by an external pump),
- **RPU-06** Radiation Processing Unit, equipped with a DIM-15 digital multichannel analyser configurable to 1K, 2K, 4K, or 8K channels.

The DIM-15 analyser can evaluate the volumetric activity of up to sixteen gamma radionuclides using spectrometric peak analysis.

The RPU-06 locally displays measurement results and operating states; stores measured spectra, 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.

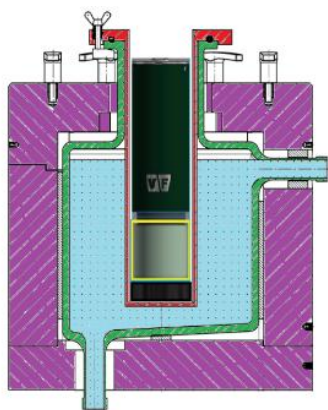
The monitor supports communication standards ANSI/IEEE N42.42 and IEC 62755.

SPECIFICATION

Gamma detector GD-52	Nal(Tl) scintillator (alternatively CeBr ₃)
Scintillator dimensions	Ø2" x 2" (alternatively other dimensions)
Resolution	< 8 % (at 662 keV)
Measuring range	depending on the measuring chamber and shielding thickness
Energy range	50 keV to 3 MeV
Radionuclide library	Up to 16 radionuclides
Stabilization radionuclide	K-40, source type CBSS20
Communication interface	Ethernet 10 Mbit/s (Modbus TCP) RS-485 (Modbus RTU)
Ambient temperature	-10 to +55 °C
Ingress protection	
Detector	IP 68
RPU-06	IP 44
Power supply	100–240 V AC / 45–65 Hz

OPTIONAL FEATURES

External pump for providing continuous liquid flow through the measuring chamber.



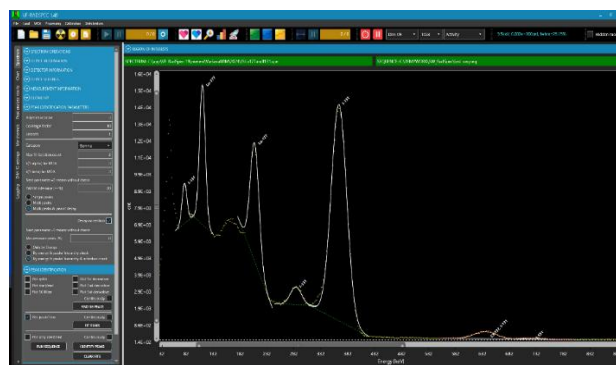
Example of the LAM-562 measuring geometry

OPTIONAL ACCESSORIES

N/A	Check point source (Co-60 or Cs-137) for verification of detector efficiency
50-A-0017839	Calibration fixture for repeatable positioning of the check source at a distance of 25 cm from the detector.
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-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 a shielded measurement chamber
LEMS-200	System designed for monitoring of liquid discharges from nuclear facilities and for collecting emergency samples for laboratory analysis



Spectrum of I-131 and Lu-177 in the RadSpec software