

LARS

Large Area γ -Radiation Scanner



Requirements:

The mobile, highly sensitive radiation detection system LARS (Large Area Radiation Scanner) serves for fast, reliable and effective scanning of large areas in order to search for γ -contamination, e.g. grounds of nuclear installations or transshipment points of radioactive waste containers or fuel element containers.

The system is equipped with 1, 2 or 4 large-area plastic scintillation detector(s).

The detector has a total surface area of 2500 cm².

- for fast, reliable and effective control of large areas for γ -contamination
- to detect covert radioactive materials/ sources
- to assess the risk/ threat concerning the radioactive situation e.g. after terrorist attacks ('dirty bomb')
- assimilable into search vehicles

Fields of Applications:

- Nuclear power plants
- Military installations/ to assess the risk/ threat concerning the radioactive situation in deployed areas
- 'Critical infrastructure'/ 'Homeland security'

Characteristics:

- Large-area plastic scintillation detector for γ -radiation with a total detector surface area of 2500 cm², available with 1, 2 or 4 detectors
- Stainless steel housing combined with plastic laterals, aluminium made detector window
- Distance between detector and ground electrically height-adjustable from 5 to 35 mm
- μ -processor controlled electronics
- Digital display (graphic LC-display)
- Parallel indication of momentary background and measurement value (selectable in cps, Bq or Bq/cm² referring to the key nuclide e.g. Cs-137, 4 key nuclides selectable)
- Automatic calibration menu for key nuclides (taking into account the distance between detector and ground)
- Dual-channel, energy selective measurement procedure for accuracy improvement (high energy-, low energy-, entire energy channel)
- Optical and acoustical alarm
- Built in rechargeable battery with external battery charger
- Alarm thresholds programmable in σ -steps
- The system calculates the minimally accessible detection limit and the maximum speed as a function of the given alarm threshold for the chosen nuclide taking into account the current zero effect
- The speed is indicated as a bar graph on the LC display. An excess of the maximum speed triggers an optical/ acoustical alarm. The sensible speed amounts to approx. 1-2 km/h
- Alternatively the LARS system can be equipped with β detectors (thin-layered plastic scintillation detectors)

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Technical Data:

Type of detector:	Large-area plastic scintillation detector, available with 1, 2 or 4 detectors, total surface area of 2500 cm ² (or 2 x 1250 cm or 4 x 625 cm ²)		
Measurement channels:	2	- entire energy	from approx. 100 keV – approx. 2 MeV
		- high energy	from approx. 500 keV – approx. 2 MeV
Detector electronic:	high voltage producing 500 V to 3000 V preamplifier for scintillation detectors, source amplifier with management driver and discriminators for energy-selective measurement		
Measurement electronic:	μ-processor controlled measuring electronics with integrated control LCD, matrix keyboard query, relay outputs, count inputs		
Keyboard:	Foil keyboard, 4 single keys, 2 x arrow and 2 x functional keys		
Alarm:	separately for each channel adjustable		
Measuring value display:	selectable in cps, Bq or Bq/m ² (4 key nuclides)		
Measuring time:	0.5sec, 1sec and 2sec – 10sec (adjustable) simultaneously		
Display:	large-area LC display, 4 x 20 characters		
Power supply:	12 V, lead-gel accumulator battery 12 Ah		
Dimensions:	approx. 900 x 780 x 350 mm (length x width x height), without steering handle		
Weight:	approx. 60 kg		
Housing:	ergonomically formed, combined plastic/ stainless steel tin housing		
Protection class of housing:	IP 54		
Detection limits:	see figure 1 for Co-60, depending on the current speed		

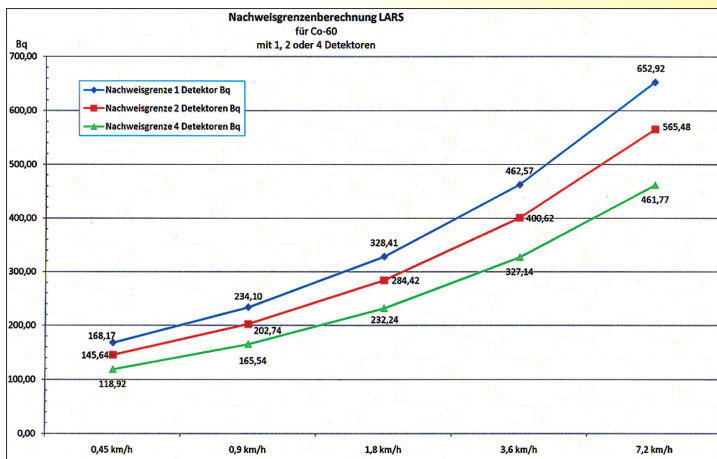


Fig.1
Detection limits for LARS system with 1, 2 or 4 detectors depending on the speed

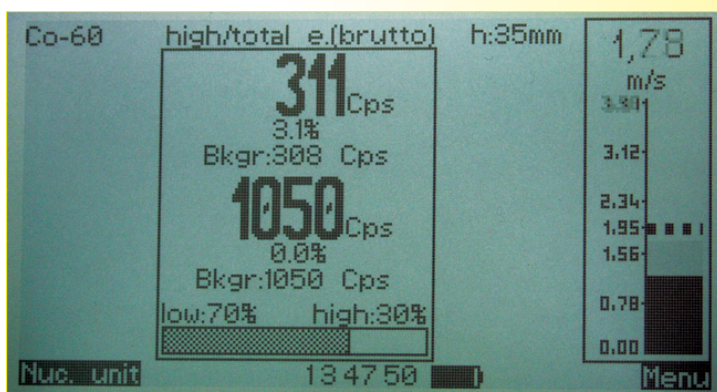


Fig. 2
Measuring value display for the LARS system with 1 detector