



VF NUCLEAR



NUCLEAR  
POWER PLANTS



WASTE  
MANAGEMENT



RESEARCH  
CENTRES



INDUSTRY  
& MANUFACTURING

LAD-07

# LIQUID ACTIVITY DETECTOR



## MAIN ADVANTAGES

- Monitoring of fuel integrity through Kr-88 detection in the primary circuit of a nuclear reactor
- Attached to line (ATL) monitor
- Detector shielding reducing the response to increased background
- Water cooled monitor
- Checking of the detector function by means of LED check source (without using radioactive source)

## PURPOSE

The detector is designed to measure the Kr-88 radionuclide in the primary circuit of a nuclear reactor.

Kr-88 is present in the coolant water only in case of fuel cladding leakage.

The detector consists of:

- GD-52 gamma detector with 2.5 "x 2.5" NaI(Tl) crystal (correct functioning of the detector can be checked by a built-in LED),
- Sandwich shielding of the GD-52 detector (lead, tin, copper) near the pipeline with the measured liquid,
- Stainless steel cooler of the GD-52, through which the coolant permanently flows (ensuring that the maximum working temperature of the detector is not exceeded),

LAD-07 can be optionally connected to processing and display unit RPU-12 or RPU-04 with a 1024 channel analyzer (MCA) to evaluate data from detector.

RPU-12, comparing to the RPU-04, contains in addition:

- Monochrome display with 86 × 115 mm area
- Optical indication of alarms

The following cards are always installed in the RPU unit of the LAD-07 detector:

- DIM-09 - 1024 channel analyzer MCA
- CIM-03 - RS-485 interface to a host system.

Remote data presentation and status indication can be provided by:

- RDU-12 remote display unit, which communicates with the local RPU-12 (or RPU-04) via the RS-422 interface
- The ASU-50 alarm unit connected to the local RPU unit by digital outputs.



RPU-04

# LAD-07

# LIQUID ACTIVITY DETECTOR

## SPECIFICATION

Measurement range	from 5E07 to 1E12 Bq/m <sup>3</sup>
Reference radionuclide	<sup>88</sup> Kr
Sensitivity	5,89E-09 cps/(Bq/m <sup>3</sup> )
Temperature range	from 5 to 40 °C
Weight (shielding including)	250 kg
IP protection	IP 65
Power supply	+24 V DC/ max. 2 A
Interface	RS-485 Modbus RTU

## OPTIONAL ACCESSORIES

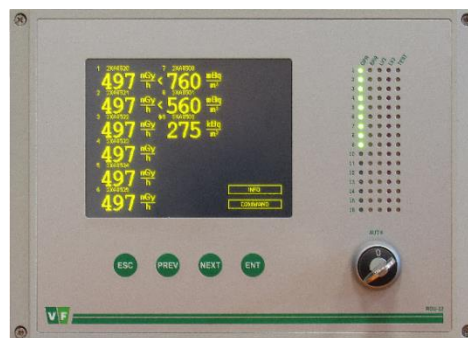
<b>RPU-04</b>	Data acquisition and processing unit (without display)
<b>RDU-12</b>	Radiation Display Unit
<b>ICIM-01</b>	Instrumentation and Control System interface with 2 outputs to PAMS, type 4 - 20 mA and 4 digital outputs for signaling of operation, errors, exceeding of 1st and 2nd alarm levels
<b>ASU-50</b>	Alarm Slave Unit
<b>CIM-05</b>	Modbus/TCP (Ethernet) Card

## RELATED PRODUCTS

<b>LAD-08</b>	Device for measuring the tightness of fuel cladding in the primary circuit of a nuclear reactor based on the detection of I-132 in liquid
---------------	---



RPU-12



RDU-12



GD-52

VF, a.s. Czech Republic

T: +420 516 428 611

E: sales@vfnuclear.com

www.vfnuclear.com

Specification subject to change without prior written notice.



VF NUCLEAR

VF1908290262 / 04 / 2020-06-05