VEHICLE RADIATION MONITOR

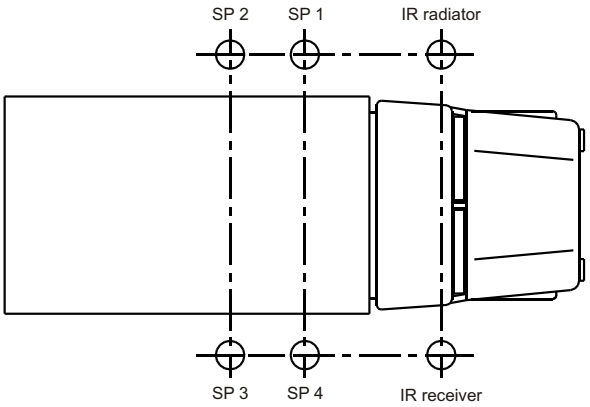
WITH USING OF ALARM DOSIMETER AT2327

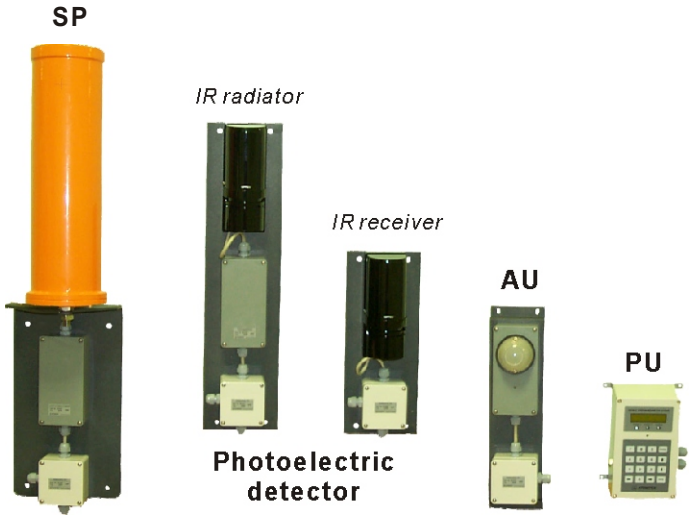
Automatic stationary radiation monitoring device based on AT2327 alarm dosimeter designed for detection of gamma radiation sources in transportation vehicles crossing check points

AUTOMATIC DETECTION OF GAMMA RADIATION SOURCES

Features

- *Up to 10 highly sensitive smart probes in hermetic aluminum containers, simultaneously measuring intensity of gamma radiation*
- *Audible and visual alarm at threshold exceeding*
- *Automatic switch from background measuring mode to detection mode when photoelectric detector infrared beam is interrupted by transportation vehicle.*
- *Radiation monitoring of transportation vehicles in motion*
- *Self control of components during operation*
- *Extreme environment operation*
- *Database of counting rate values and alarm threshold excesses*
- *Reserve power supply - up to 6 hours of continuous operation with a fully charged battery*





Application

- *Metallurgy industry*
- *Waste handling*
- *Cargo entrances in ports and railroad stations*
- *Nuclear industry*

Automatic stationary device for continuous radiation monitoring is designed as stationary equipment mounted on site based on AT2327 alarm dosimeter. The alarm dosimeter principle of operation is based on gamma radiation smart probes BDKG-11/1 and/or BDKG-11/2 (SP), maximum quantity 10 smart probes. When a transportation vehicle crosses area under monitoring, it interrupts infrared beam that passes from IR radiator to IR receiver of photoelectric detector, in this case all smart probes automatically switch from rated background measuring mode to detection mode. When preset threshold of counting rate is exceeded, the audible and visual alarm unit (AU) warns personnel about detection of a gamma source. During measurement, counting rate information is transferred from each smart probe to processing unit (PU) located remotely in control room, via RS485.

The processing unit displays measured values of the selected smart probe and real time. Alarm threshold exceeding or a failure of any system units is accompanied by audible and visual signals showing symbolically the problem location on the display. The processing unit is intended to setup thresholds for each smart probe, monitor smart probe state, correct the real-time clock, protect several service functions with a password and review counting rate and threshold exceeding history of any smart probe.

Specification

Number of smart probes ..... up to 10

Detector
BDKG-11/1 ..... NaI(Tl) ∅63x63 mm
BDKG-11/2 ..... NaI(Tl) ∅63x160 mm

Sensitivity, not less than
on ^{241}Am
BDKG-11/1 ..... 12700 cps/ mSv·h^{-1}
BDKG-11/2 ..... 30000 cps/ mSv·h^{-1}
on ^{137}Cs
BDKG-11/1 ..... 1960 cps/ mSv·h^{-1}
BDKG-11/2 ..... 4900 cps/ mSv·h^{-1}
on ^{60}Co
BDKG-11/1 ..... 1030 cps/ mSv·h^{-1}
BDKG-11/2 ..... 2500 cps/ mSv·h^{-1}
radiation background 0.08 mSv·h^{-1}
BDKG-11/1 ..... 150 cps
BDKG-11/2 ..... 370 cps

Sensitivity on ^{137}Cs, point source
located to "+" mark on hermetic container
BDKG-11/1 ..... 60.8 ± 12.1 cps/kBq
BDKG-11/2 ..... 120 ± 24 cps/kBq

Maximum input statistical load
BDKG-11/1, BDKG-11/2 ..... not less than $5 \cdot 10^4$ s^{-1}

Gamma radiation energy range ..... 0.05 - 3 MeV

Instability of measuring results during
continuous operation ..... not more than 5 %

Maximum vehicle speed
during measurement ..... 5 km/h

Monitoring time per vehicle ..... not more than 20 s

Operation mode setup time ..... not more than 5 min

Operating temperature range
processing unit ..... +5 ÷ +40 °C
other units and BDKG-11/1 ..... -30 ÷ +50 °C
BDKG-11/2 ..... -15 ÷ +40 °C

3-level visual and audible alarm

Interface
(cable communication) RS485

Maximum width of checkpoint ..... 5000 mm

Maximum distance between
a smart probe and the processing unit
(cable communication) ..... 1000 m

Protection class
smart probes IP57
other components IP50

Radio disturbance
EN 55022:1998

Electromagnetic compatibility
IEC 61000-4-11:2004
IEC 61000-4-4:2004
IEC 61000-4-2:2001
IEC 61000-4-3:2005

Continuous operation time
AC supply ..... not less than 24 h
with fully charged battery ..... not less than 6 h

Power supply
AC mains .... 220 (+22;-33) V; frequency 50 (±2) Hz
Accumulator battery at
emergency .. 12.6 (+1.3;-1,6) V or 25.2 (+2.6;-3.2) V

Complete set: processing unit, smart probes BDKG-11/1 and/or BDKG-11/2 in hermetic containers, alarm units, photoelectronic detector, terminal-block boxes, AC adapter, interface adapter, Manual, complete of assembly parts and accessories.
Backup power unit **on additional order**.

Alarm dosimeter AT2327 has pattern approval certificates of Republic of Belarus, Russian Federation, Ukraine and Kazakhstan.
It complies with IEC 61017-7 International standard requirements. They also conform with the 89/336/EEC directive complying with EN 61000-6-3, EN 61000-6-2, EN 50371, EN 61010-1 standard requirements.

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