POLON-ALFA LATEST TECHNOLOGY. HIGHEST QUALITY

RADIOMETRIC
DETECTION TECHNOLOGIES

RK-100-2 RADIOMETER / RK-100 PROBE

Portable radiometer RK-100-2 is dedicated for measurement of ambient dose equivalent rate, ambient dose equivalent, absorbed dose rate in air, absorbed dose in air of X, gamma radiation and surface contamination (alpha, beta and gamma emitters). It is easy to use radiometer with a durable case and light weight.

PRODUCT FEATURES

- measurement of ambient dose equivalent rate $\dot{H}^*(10)$ Sv/h
- measurement of ambient dose equivalent $H^*(10)$ Sv
- measurement of absorbed dose rate in air $\dot{D}$ Gy/h (KERMA rate in air $\dot{K}a$ Gy/h)
- measurement of absorbed dose in air D Gy (KERMA in air Ka Gy)
- measurement of surface contamination for alpha, beta and gamma emitters (surface radiation emission)
- sound signalizing of exceeding a set threshold
- display backlight
- possibility of saving and reading of measured values
- work on alkaline batteries and rechargeable batteries
- readout of registered values by PC with dedicated software

APPLICATIONS

- monitoring of work conditions with the possibility of direct readout of the measured values and triggering alarms
- finding the borders of supervised area, controlled area and emergency area
- exposure assesment for staff in their workplaces
- testing radiation shielding in apparatus contains radioactive sources
- leakage test for the sealed radioactive sources (stray radiation - scatter and possible leakage radiation)
- control of radioactive contamination on surfaces like hands, clothes, tables in various insitutions
- finding content of radioactive substances in swabs (the wipe samples) used for surface decontamination
- didactics for students
- used in the border control and emergency services
- control of surface contamination and measurement of ambient dose equivalent rate in transportation - road and rail

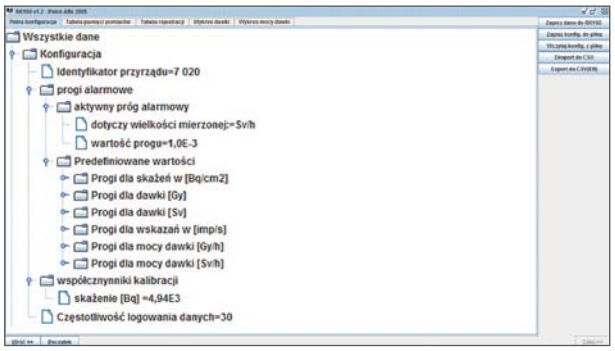
RK-100-2 radiometer meets the requirements for dosimetric devices, according to Council of Ministers regulation from 23.12.2002 (Dz. U. nr 239, poz. 2032)

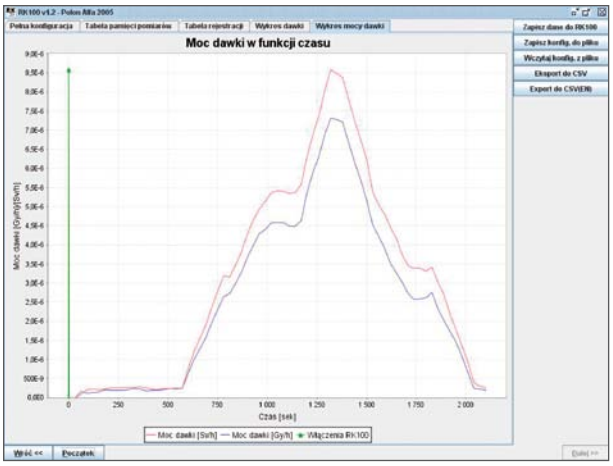
TECHNICAL SPECIFICATION

Measurement range for external probe	
- alpha, beta and gamma emitters contamination	up to 10^4 s^{-1}
Measurement range for the internal counter	
- ambient dose equivalent rate	up to 50 mSv/h
- absorbed dose rate in air	up to 50 mGy/h
- ambient dose equivalent	0,1 µSv ÷ 10 Sv
- absorbed dose in air	0,1 µGy ÷ 10 Gy
Indication error for Cs-137 using internal counter	
- ambient dose equivalent rate over 1 µSv/h	≤ 20%
- absorbed dose rate in air over 1 µGy/h	≤ 20%
Internal counter nonlinearities for gamma radiation in range	
- 65 keV ÷ 1 MeV	≤ 25%
- 40 keV ÷ 1,25 MeV	≤ 30%
External probe nonlinearities for gamma radiation in range 40 keV to 1,25 MeV	≤ 25%
Background level:	
- while ambient dose equivalent rate measurement	≤ 0.27 µSv/h
- while absorbed dose rate in air measurement	≤ 0.23 µGy/h
- while surface contamination measurement	≤ 5 s^{-1}
Power supply	6 V (4 x AAA)
Power consumption	< 10 mW
Operating temperature range	-25 °C ÷ +40 °C

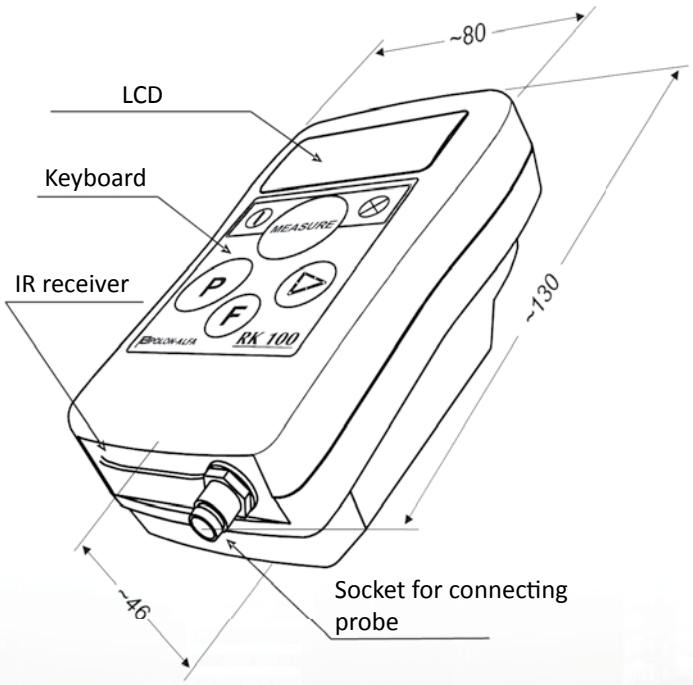
SOFTWARE

RK-100-2 has the ability to communicate with a personal computer in the 'off-line' mode. This means that during the connection no measurements are done, only data are transferred to/from the PC. Transmission is utilizing a standard IrDA protocole. One can transfer configuration data, calibration coefficients and predefined settings as well as the data from the radiometer, showing the dose in the function of time and dose rate.

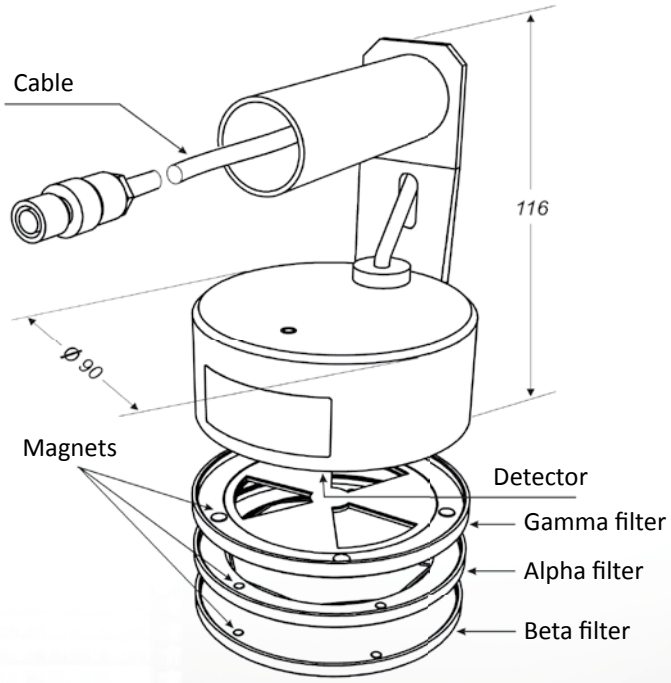




DIMENSIONS [mm]



RK-100-2 RADIOMETER



EXTERNAL PROBE RK-100

STANDARD ACCESSORIES

PRODUCT	NAME	DESCRIPTION
	RK-100-2 Radiometer	allows the measurement of ambient equivalent dose rate, ambient equivalent dose, absorbed dose rate in air and absorbed dose in air
RK-100-2 ACCESORIES 	Protective case	allows for safe carry of the radiometer
	4 x AAA battery	for powering of the radiometer
	Software	allows for readout of data and graphs (dose, dose rate) or change of the certain parameters (configuration data, calibration coefficients)
	Manual, Warranty	operating instructions and warranty conditions of the radiometer

OPTIONAL ACCESSORIES

PRODUCT	NAME	DESCRIPTION
	USB to IrDA adapter	allows to communicate radiometer RK-100-2 with PC without IrDA port
POLON-ALFA LABORATORIUM WZORCUJĄCE URZĄDZEŃ DOZYMETRYCZNYCH	Calibration Certificate	confirms calibration done by dosimetry devices calibration laboratory at POLON-ALFA (certificate number AP109)
	RK-100 External probe	allows for measuring surface contamination (alpha, beta and gamma emitters); standard cable length is 1,25 m (on request a 2,5 m cable might be fitted)
RK-100 EXTERNAL PROBE ACCESSORIES 	Alpha filter	filters out alpha radiation
	Beta filter	filters out alpha and beta radiation
	Gamma filter	corrects the sensitivity of the external probe in the range of *H*(10)* for gamma and X radiation

ZR-2 RADIOMETRIC SET

ZR-2 radiometric set is a peripheral device intended for installing in measuring equipment and in radiation monitoring systems. The unit works together with specific measurement device or board system by adjusting of communication protocol. It has a durable case, light weight and unusual small dimensions.

PRODUCT FEATURES

- measurement of ambient dose equivalent rate of X and gamma radiation $\dot{H}^*(10)$ Sv/h
- measurement of absorbed dose rate in air of X and gamma radiation $\dot{D}$ Gy/h (KERMA rate in air $\dot{K}a$ Gy/h)
- measurement of ambient dose equivalent of X and gamma radiation $H^*(10)$ Sv
- measurement of absorbed dose in air of X and gamma radiation D Gy (KERMA in air Ka Gy)
- communication with the master measuring device by I^2C bus and two additional control lines (“ready information” and “alarm”)
- it is possible to order the device without an enclosure in customer’s mounting board
- high mechanical resistance with the broad range of measured values
- it is possible to build the stationary radiation monitoring of ionizing radiation or mobile system in case of vehicles
- software can be adjusted to the specific solution which allows data imaging and configuration of alarm thresholds
- contains two PIN (Si) diode detectors
- auto control mechanism of work parameters
- values of calibration coefficients, alarm thresholds and gathered doses are stored in non-volatile memory
- autonomic work of the device thanks to the alarm output

APPLICATIONS

- measurement of ambient dose equivalent rate of gamma, X radiation and detection of neutron radiation in harsh environment
- part of the ionizing radiation monitoring in or out of the laboratories, industrial buildings and public utility buildings
- installed inside of mechanized combat vehicle of all types
- used on the boards inside the cabin of helicopters, on ships and other buoyant objects of Navy
- works with specific measurement device or board system by adjusting of communication protocol
- testing radiation shielding in different devices

ZR-2 radiometric set meets the requirements of military standard NO-42-A204:2005 in the range of:

- **radiometric parameters;**
- **mechanical parameters.**

TECHNICAL SPECIFICATION

Power supply[1]	~ 5 V
Current consumption	~ 120 mA
Safety device	against reverse polarity + transil
Trasmission interface	I²C according to DTR-R136-01
Transmission protocol	according to DTR-R136-01
Cable length	up to 30 cm
Weight	~ 0.2 kg
Enclosure material	stainless steel, aluminium
Operating temperature range	-30 °C ÷ +60 °C
Maximum temperature range	-50 °C ÷ +70 °C
Measured radiation	gamma, X
Measurement range of absorbed dose rate in air	0,05 µGy/h ÷ 10 Gy/h
Measurement range of ambient dose equivalent rate	0,05 µSv/h ÷ 10 Sv/h
Energy range of measured radiation	(48 ÷ 1250) keV
Measurement range[3]	
- absorbed dose in air	(0 ÷ 100) Gy
- ambient dose equivalent	(0 ÷ 100) Sv

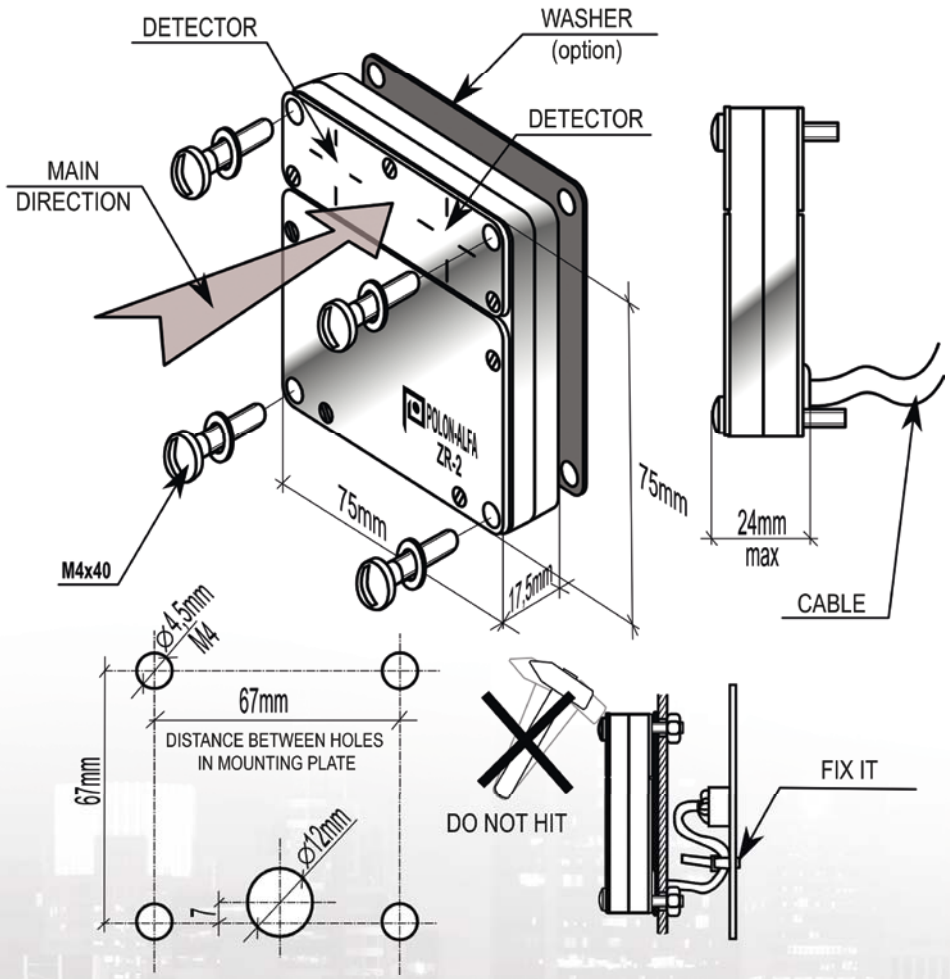
Neutron detection[2]	s^{-1}
Energy range of detected neutrons	> 2 MeV
Detection method	proton rejection
Alarm thresholds	for Gy/h and Sv/h
Registered value in non-volatile memory	dose or turning on
Available memory (number of cells)	511
Time between subsequent saves	180 s

[1] Higher voltage applied without current limit e.g. 12 V battery can cause irreversible damage of the device.

[2] Neutron detection without measurement of dose rate/dose.

[3] The device is resistant to 100 Gy. Logic limit of absorber dose is 1.8 MGy/1.8 MSv.

DIMENSIONS [mm]



STANDARD ACCESSORIES

PRODUCT	NAME/TYPE	DESCRIPTION
	ZR-2 radiometric set	peripheral device intended for installing in measuring equipment and in radiation monitoring systems

STANDARD ACCESSORIES OF ZR-2		Mounting screws with nuts and washers	allows for mounting the radiometric set
		Communication cable[1]	dedicated for the connection radiometric set with other external device (e.g. PC)
		Additional documentation	it contains cables description and I²C device address
		Manual guide, Warranty card	operating instructions and warranty conditions of the device

[1] the length of the cable has to be specified in the order, however it is advised to order the cable not longer than 30 cm; also it is possible to specify the place of cable output

OPTIONAL ACCESSORIES

PRODUCT	NAME/TYPE	DESCRIPTION
	Washer	rubber element which seal the junction between ZR-2 and montage surface
	Manual– Communication protocol I²C	allows for a protocol adjusting for specific master device
	Software	enables the device configuration, measuring and diagnostic tests of ZR-2
	USB/RS-232 – I²C adapter	an element which enables the connection between ZR-2 and PC through USB or RS-232
	RS-232 – RS-485 adapter	an element which allows the extension of distance up to 100 m between ZR-2 and master device (e.g. PC)
POLON-ALFA LABORATORIUM WZORCUJĄCE URZĄDZEŃ DOZYMETRYCZNYCH	Calibration certificate	it confirms calibration done by dosimetry devices calibration laboratory at POLON-ALFA
	Testing	order of reliability testing (vibration, thermal exposure, shock)

UNIVERSAL RADIOMETER RUM-2

RUM-2 radiometer is an universal device allowing for connecting to a personal computer various radiometric probes produced by POLON-ALFA as well as other pulse sources. This device enables a detailed analysis of the investigated samples, allowing to perform spectrometric and quantitative measurements.

PRODUCT FEATURES

- quantitative analysis of pulse frequency
- spectrometric analysis of pulse height distribution (4096 channels)
- temporal analysis of events (coincidence work mode)
- possibility of counting over the triggering threshold or limited by an amplitude or time window
- high voltage power supply for powering photomultipliers or G-M tubes
- data transmission via USB, RS-232 or RS-422 interface, depending on the version
- controlling external devices or measurements controlled by external devices
- can be used with most of POLON-ALFA probes, including the most popular SSU-3-2, SSU-70-2, SSA-1P, SPNT-3, SPNT-3-2 or counter probes SGB-1P, SGB-2P, SGB-1R, SGB-2D, SGB-3P
- allows to be used with other detectors with an appropriate configuration (user can get help in order to connect the detectors)
- computer software is an integral part of the radiometer and is used to control it from a PC
- can be powered from a dedicated power supply 230 V or from a voltage converter in case of 12 V supply (eg. in a car)
- it is possible to power the device from USB port if POLON-ALFA probes are used and no other USB ports are used
- allows for any scaling, marking and recalculating the output graphs

APPLICATIONS

- detection of the radioactive substances in the sample
- control of radiation shielding in various devices containing radioactive sources
- allows for relative activity measurements (thyroid iodine uptake)
- radioactive sources spectrometric analysis
- control of radioactive contamination on surfaces like hands, clothes, tables in various insitutions
- finding content of radioactive substances in swabs (the wipe samples) used for surface decontamination
- testing the radioactive shielding
- didactics for students

TECHNICAL SPECIFICATION

Number of channels	4096
Nominal channel width	366 µV
Channel width variance	-75 % ÷ 75 %
Maximum count rate with impulse amplitude analysis	25 000 s^{-1}
Maximum count rate without impulse amplitude analysis	200 000 s^{-1}
Analyzer input signal range	(5 ÷ 1440) mV
Temperature peak shift	≤ ± 1.5 channel/K
Power supply	via dedicated mains power supply 230 V
Internal high voltage power supply	(300 ÷ 1500) V
Internal low voltage power supply	24 V ± 5 %
Temperature range	-10 °C ÷ +40 °C
Pressure range	(900 ÷ 1100) hPa
Weight	~ 0.9 kg
Dimension [LxWxH]	(140 x 126 x 136) mm
Ingress protection rating	IP 40

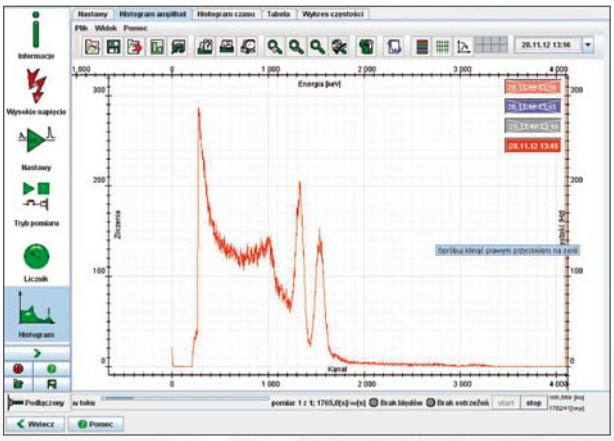
CONNECTOR TYPES:

PC connection possibilities (one to be chosen in the order)[1]	
	USB – 5 m range
	RS-232 – 12 m range
	RS-422 – 100 m range
High voltage power supply	
	C-5 output connector[2]
	BNC-2,5 in/out signal/power connector[3]
Low voltage power supply	BNC-50 connector
Synchronization in/out	BNC-50 connector
Linear output	BNC-50 connector

[1] – has to be specified in the order
[2] – or other, on request
[3] – or other, on request

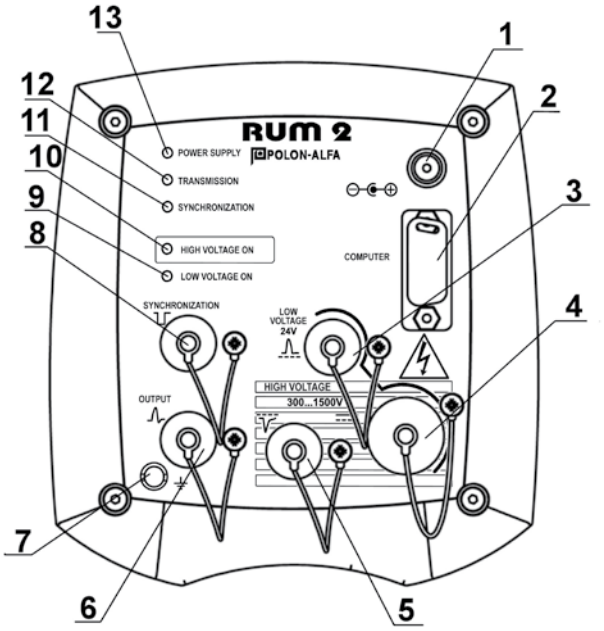
SOFTWARE

Radiometer does not have its own display or controls - configuration is carried out through PC. Thanks to that user can control the device easily. All the configuration parameters can be controlled from a PC - high voltage, analog path (gain, trigger threshold, offset correction) etc. The software also allows for scaling, marking and recalculating obtained graphs.



Software has also a demo mode which allows for demonstrating the radiometer features without a device connected. Software can be downloaded from POLON-ALFA website. Control panel of the software might be adjusted on request of the user.

FRONT PANEL



1. Power supply input
2. Computer connection
3. Low voltage output/positive pulses input
4. High voltage output
5. High voltage output/negative pulses input
6. Linear input
7. Grounding terminal
8. Synchronization in/out
9. Low voltage on port 3 signalization
10. High voltage on ports 4 and 5 signalization
11. Low state on synchronization port signalization
12. PC transmission on port 2 signalization
13. Power supply on port 1 signalization

STANDARD ACESSORIES

PRODUCT		NAME/TYPE	DESCRIPTION
		Universal radiometer RUM-2	RUM-2 radiometer is an universal measurement device allowing to connect a personal computer in order to collect data from various types of POLON-ALFA probes and other pulse sources
RUM-2 STANDARD BUNDLE		CD or other medium with the software	contains the software dedicated to the radiometer
		Power supply for the radiometer (appropriate for the ordered version)	for powering the radiometer (appropriate for the ordered version)
		Coaxial cables	two low voltage BNC-50 cables for connecting external devices
		PC connection cable	enables connection of the radiometer with PC (appropriate for the ordered version)
		Manual; Warranty card	operating instructions and warranty conditions of the device
		Protective case	allows for safe carry of the device

OPTIONAL ACCESSORIES

PRODUCT	NAME/TYPE	DESCRIPTION
	Universal scintillation probe SSU-70-2	designed for radiometric measurements of alpha, beta, gamma and X radiation using dedicated scintillators; the probe is connected using two coaxial cables: high voltage cable with C-5 connector and signal cable BNC-50 connector
	Universal scintillation probe SSU-3-2	designed for radiometric measurements of alpha, beta, gamma and X radiation using dedicated scintillators; the probe is connected to the power supply and measurement device by a single cable with BNC-2,5 connector
	Surface measurement scintillation probe SSA-1P	designed for measuring the surface contamination contains alpha emitters; the probe is connected to the power supply and measurement device by a single cable with BNC-2,5 connector
	Spectrometric scintillator NaJ/Tl 40 x 25 mm (SKG 1 U04) Spectrometric scintillator NaJ/Tl 40 x 40 mm (SKG 1 U05)	- scintillator for spectrometric measurements of gamma radiation > 30 keV - scintillator for spectrometric measurements of gamma radiation > 30 keV
	SKX 40 x 2 mm (SKX 11 U14) Al scintillator SKX 40 x 2 mm (SKX 12 U14) Be scintillator	- scintillator designed for X radiation measurement with 0.1 mm aluminium window [(15 ÷ 75) keV] - scintillator designed for X radiation measurement with 0.15 mm beryllium window [(5 ÷ 75) keV]
	ZnS/Ag SAD-12 scintillator	scintillator designed for alpha radiation measurement, shielded with thin aluminium foil (surface density < 1 mg/cm²)
	SPF-32 scintillator	scintillator designed for beta radiation measurement, shielded with thin aluminium foil (surface density < 1.3 mg/cm²)

UNIVERSAL SCINTILLATION PROBE SSU-70-2

Universal scintillation probe SSU-70-2 is designed for radiometric measurements of alpha, beta, X and gamma radiation (depending on the used scintillator). Its robust design, ease of use and a vast array of accessories makes it a true universal probe for the most of the laboratories (scientific, industrial and medical).

PRODUCT FEATURES

- probe can be used with radiometers produced by POLON- ALFA (URL-1, URL-2, RUST-1, RUST-2, RUM-2)
- probe is equipped with spectrometric approx. 50 mm photomultiplier tube placed on a spring damper; it helps installing new scintillators and maintaining high parameters and repeatability
- probe is connected with the measurement-powering setup with two cables - one for high voltage power and second for transmitting output signal, so there is no effect of high voltage slope when pulses are transmitted
- probe is equipped with a socket for external generator connection, what allows performing test procedures with a known signal (confirmation of preamplifier work mode)
- a vast array of scintillators is available

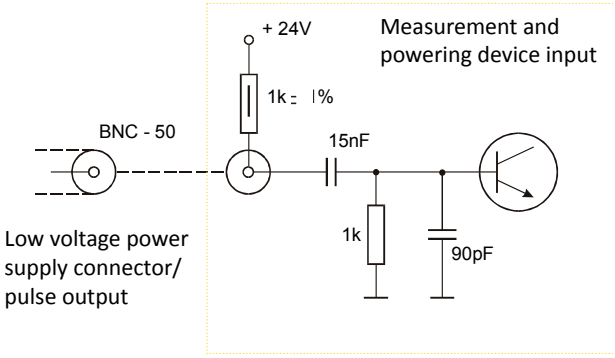
APPLICATIONS

- activity evaluation of alpha, beta and gamma emitters
- spectrometric measurements of samples emitting gamma radiation
- finding content of radioactive substances in swabs (the wipe samples) used for surface decontamination
- leakage test for sealed radioactive sources (stray radiation - scatter and possible leakage radiation)
- detection of radioactive substances in the sample
- control of radiation shielding in various devices containing radioactive isotopes sources
- allows for relative activity measurements (thyroid iodine uptake)
- control of radioactive contamination on surfaces like hands, clothes, tables in various insitutions
- didactics for students

TECHNICAL SPECIFICATION

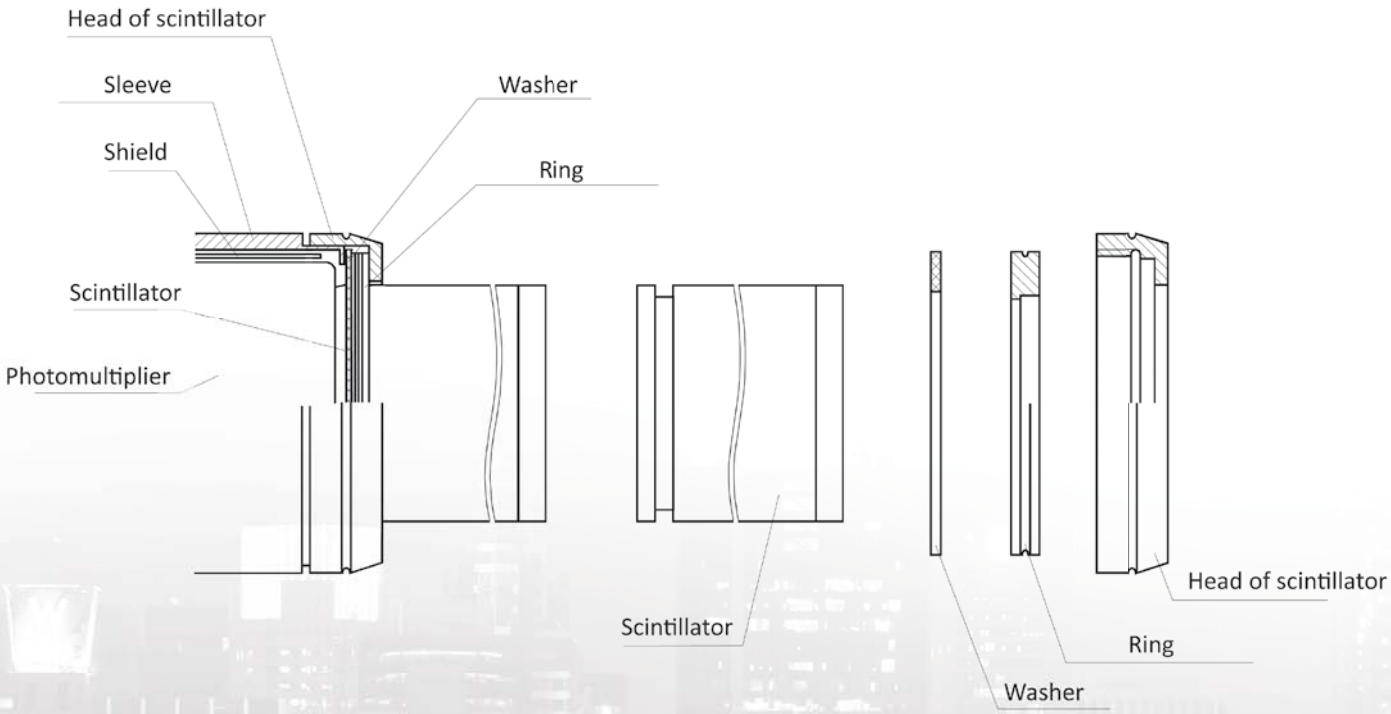
Supply voltage:	
- high voltage	(600 ÷ 1400) V, stabilized DC
- low voltage	+24 V, stabilized DC
Maximal current consumption from the high voltage source	0.25 mA
Output signal polarity	positive
Energy nonlinearity in the range (360 ÷ 1330) keV	≤ 2.0%
Photomultiplier tube with magnetic screen	6097A (Electron Tubes Ltd.) or equivalent
Light-tightness (when using shielded scintillators)	probe maintains light-tightness up to 500 lx
Cable lengths	~ 3 m
Temperature range	+5 °C ÷ +40 °C
Maximum relative humidity	20 % ÷ 80 %
Weight	~ 2 kg
Dimensions of the probe (DIA x L)	~ (ø 65 x 306) mm (without the scintillator)
Connectors:	
- low voltage power supply and pulses output	BNC-50 connector on the coaxial cable
- high voltage power supply	C-5 connector on the coaxial cable
- test signal input to the preamplifier	BNC-50 socket on the probe body

PROBE POWERING



SSU-70-2 probe can be adapted to be used not only with POLON-ALFA instruments but also with third-party devices. In such case user might use scheme of high voltage and signal connection to the probe shown above to adapt the device.

SCINTILLATOR FIXING



STANDARD ACCESSORIES

PRODUCT	NAME/TYPE	DESCRIPTION
	SSU-70-2 probe (without scintillator)	designed for radiometric measurements of alpha, beta, gamma and X radiation using dedicated scintillators; the probe is connected using two coaxial cables: high voltage cable with C-5 connector and signal cable BNC-50 connector

STANDARD BUNDLE FOR SSU-70-2 PROBE			
		Light-obscuring disc	it is installed instead of scintillator in case of longer work pause in order to protect the photomultiplier against the light
		Silicone grease tube	enables proper contact between scintillator and photomultiplier's photocathode
		Manual with TEST CERTIFICATE	operating instructions and examination results of the device
		Warranty card	warranty conditions of the device
		Protective case	allows for safe carry of the device

ADDITIONAL ACCESSORIES

PRODUCT	NAME/TYPE	DESCRIPTION
	Universal radiometer RUM-2	RUM-2 radiometer is an universal measurement device allowing to connect a personal computer in order to collect data from various types of POLON-ALFA probes and other pulse sources; this device allows for a broad analysis of radioactives samples thanks to modules allowing spectrometric measurements and quantitative analysis of pulse frequency

PRODUCT	NAME/TYPE	DESCRIPTION
	Spectrometric scintillator NaJ/Tl 40 x 25 mm (SKG 1 U04)	scintillator for spectrometric measurements of gamma radiation > 30 keV
	Spectrometric scintillator NaJ/Tl 40 x 40 mm (SKG 1 U05)	scintillator for spectrometric measurements of gamma radiation > 30 keV
	SKX 40 x 2 mm (SKX 11 U14) Al scintillator SKX 40 x 2 mm (SKX 12 U14) Be scintillator	scintillator designed for X radiation measurement with 0.1 mm aluminium window [(15 ÷ 75) keV] or with 0.15 mm beryllium window [(5 ÷ 75) keV]
	ZnS/Ag SAD-12 scintillator	scintillator designed for alpha radiation measurement, shielded with thin aluminium foil (surface density < 1 mg/cm²)
	SPF-32 scintillator	scintillator designed for beta radiation measurement, shielded with thin aluminium foil (surface density < 1.3 mg/cm²)

UNIVERSAL SCINTILLATION PROBE SSU-3-2

Universal scintillation probe SSU-3-2 is designed for radiometric measurements of alpha, beta, X and gamma radiation (depending on the used scintillator). Its robust design, ease of use and a vast array of accessories makes it a true universal probe for measuring samples activity, radioisotope identification etc.

PRODUCT FEATURES

- probe can be used with radiometers produced by POLON-ALFA (URL-1, URL-2, URS-3, RUST-1, RUST-2, RUST-3, RUM-1 and RUM-2)
- probe is equipped with spectrometric approx. 50 mm photomultiplier tube placed on a spring damper, it helps installing new scintillators and maintaining high parameters and repeatability
- it is possible to use this probe with third-party devices thanks to the internal pulse amplifier powered by the high voltage divider of the photomultiplier tube
- a vast array of scintillators is available
- probe is connected with the radiometer using a single cable supplying high voltage and sending back output signal

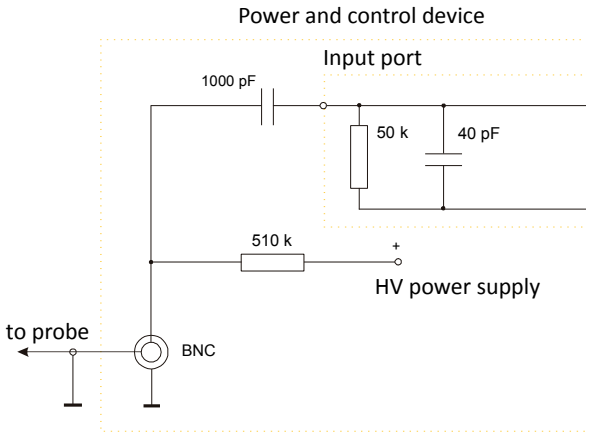
APPLICATIONS

- activity evaluation of alpha, beta and gamma emitters
- for spectrometric measurements of samples emitting gamma radiation
- finding content of radioactive substances in swabs (the wipe samples) used for surface decontamination
- leakage test for sealed radioactive sources (stray radiation - scatter and possible leakage radiation)
- detection of radioactive substances in the sample
- control of radiation shielding in various devices containing radioactive isotopes sources
- allows for relative activity measurements (thyroid iodine uptake)
- control of radioactive contamination on surfaces like hands, clothes, tables in various insitutions
- testing the radioactive shielding
- didactics for students

TECHNICAL SPECIFICATION

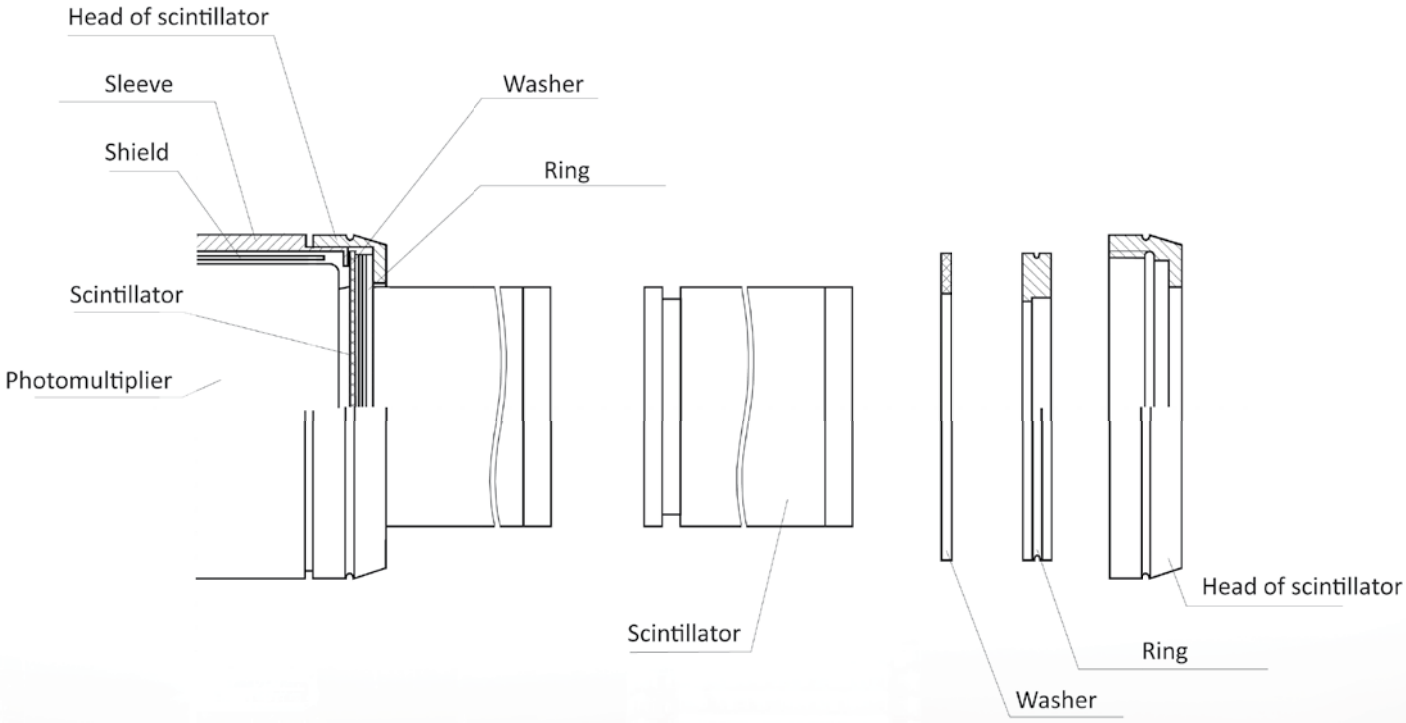
Supply voltage:	
- high voltage (HV)	(600 ÷ 1400) V, stabilized DC
Max. current consumption from the HV source	≤ 0.03 mA
Output signal polarity	negative
Photomultiplier tube with magnetic screen	6097A (Electron Tubes Ltd.) or equivalent
Light-tightness (when using shielded scintillators)	probe maintains light-tightness up to 500 lx
Cable length	~ 2 m
Temperature range	+5 °C ÷ +40 °C
Maximum relative humidity	20 % ÷ 80 %
Weight	~ 1.3 kg
Dimensions of the probe (DIA x L)	~(ø 65 x 250) mm (without the scintillator)
Connectors:	
- power supply and signal output	BNC-2,5 connector on the coaxial cable

PROBE POWERING



SSU-3-2 probe can be adapted to be used not only with POLON-ALFA instruments but also with third-party devices.
In such case user might use the scheme of high voltage and signal connection to the probe shown above to adapt the device.

SCINTILLATOR FIXING



STANDARD ACCESSORIES

PRODUCT	NAME/TYPE	DESCRIPTION
	SSU-3-2 probe (without scintillators)	designed for radiometric measurements of alpha, beta, gamma and X radiation using a dedicated scintillators; the probe is connected to the power supply and measurement device by a single cable with BNC-2,5 connector

STANDARD BUNDLE FOR SSU-3-2 PROBE			
		Light-obscuring disc	it is installed instead of scintillator in case of longer work pause in order to protect the photomultiplier against the light
		Silicone grease tube	enables proper contact between scintillator and photomultiplier's photocathode
		Manual with TEST CERTIFICATE	operating instructions and examination results of the device
		Warranty card	warranty conditions of the device
		Protective case	allows for safe carry of the device

OPTIONAL ACCESSORIES

PRODUCT	NAME/TYPE	DESCRIPTION
	Universal radiometer RUM-2	RUM-2 radiometer is an universal measurement device allowing to connect a personal computer in order to collect data from various types of POLON-ALFA probes and other pulse sources; this device allows for a broad analysis of radioactives samples thanks to modules allowing spectrometric measurements and quantitative analysis of pulse frequency

PRODUCT	NAME/TYPE	DESCRIPTION
	Spectrometric scintillator NaJ/Tl 40 x 25 mm (SKG 1 U04)	scintillator for spectrometric measurements of gamma radiation > 30 keV
	Spectrometric scintillator NaJ/Tl 40 x 40 mm (SKG 1 U05)	scintillator for spectrometric measurements of gamma radiation > 30 keV
	SKX 40 x 2 mm (SKX 11 U14) Al scintillator SKX 40 x 2 mm (SKX 12 U14) Be scintillator	scintillator designed for X radiation measurement with 0.1 mm aluminium window [(15 ÷ 75) keV] or with 0.15 mm beryllium window [(5 ÷ 75) keV]
	ZnS/Ag SAD-12 scintillator	scintillator designed for alpha radiation measurement, shielded with thin aluminium foil (surface density < 1 mg/cm²)
	SPF-32 scintillator	scintillator designed for beta radiation measurement, shielded with thin aluminium foil (surface density < 1.3 mg/cm²)

SCINTILLATION PROBE SSA-1P

The scintillation probe SSA-1P is designed for measurement of surface contamination with alpha emitters. Durable case and smooth surface enables an easy decontamination of the probe.

PRODUCT FEATURES

- probe can be used with radiometers produced by POLON-ALFA (URL-1, URL-2, URS-3, RUST-1, RUST-2, RUST-3 RKP-2-2, RUM-1 and RUM-2)
- probe is equipped with the approx. 50 mm photomultiplier tube placed on a spring damper
- air cone optic fibre covered by white diffusing coat ensures efficient collection of light impulses emitted by a scintillator
- it is possible to use this probe with third-party devices thanks to the internal pulse amplifier powered by the high voltage divider of the photomultiplier tube
- probe is connected with the radiometer using a single cable supplying high voltage and sending back output signal

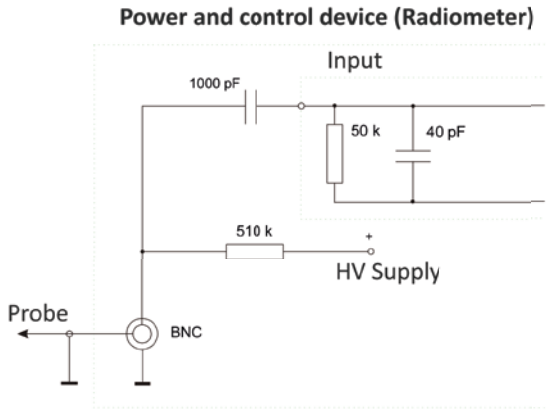
APPLICATIONS

- control of radioactive contamination on surfaces like hands, clothes, tables in various institutions
- leakage test for sealed radioactive sources (stray radiation - scatter and possible leakage radiation)
- finding content of radioactive substances in swabs (the wipe samples) used for surface decontamination
- activity evaluation of alpha emitters
- didactics for students

TECHNICAL SPECIFICATION

Scintillator	ZnS/Ag on the organic glass substrate (ø 125 x 4) mm with the lightproof foil (surface density ~ 1 mg/cm^2)
Effective surface	approx. 85 cm^2
Background level (in the operating point of probe)	≤ 0.033 s^{-1}
Non-uniformity of surface efficiency distribution	± 10 % (against centre of active area)
Light-tightness	illumination of 500 lx does not increase the background level
Supply voltage	(750 ÷ 1350) V, stabilized DC, positive, fed by BNC-2.5 coaxial connector
Current consumption	≤ 35 µA (at 1500 V)
Operating temperature range	-10 °C ÷ +40 °C
Weight	approx. 2.5 kg
Dimensions (DIA x DIA x L)	~(ø 66 x ø 140 x 320) mm

PROBE POWERING



SSA-1P probe can be adapted for using not only with POLON-ALFA instruments but also with third-party devices.
In such case user might use scheme of high voltage and signal connection to the probe shown above to adapt the device.

STANDARD ACCESSORIES

PRODUCT		NAME/TYPE	DESCRIPTION
		Probe SSA-1P	designed for measuring the surface contamination contains alpha emitters; the probe is connected to the power supply and measurement device by a single cable with BNC-2,5 connector
STANDARD BUNDLE FOR SSA-1P PROBE		Cover - scintillation head cover (shielding)	shielding which enables protection of probe's active area
		Protective case	allows for safe carry of the device
		Manual with TEST CERTIFICATE	operating instructions and examination results of the device
		Warranty card	warranty conditions of the device

OPTIONAL ACCESSORIES

PRODUCT	NAME/TYPE	DESCRIPTION
	Universal radiometer RUM-2	RUM-2 radiometer is an universal measurement device allowing to connect a personal computer in order to collect data from various types of POLON-ALFA probes and other pulse sources; this device allows for a broad analysis of radioactives samples thanks to modules allowing spectrometric measurements and quantitative analysis of pulse frequency

PORTAL MONITOR FOR GAMMA AND NEUTRON RADIATION PM-703AGN

Portal monitor for gamma and neutron radiation PM-703AGN is designed to detect radioactive and special nuclear materials (SNM) carried out by people crossing the controlled area or in controlled objects (baggage trolley, conveyor, cars).

PRODUCT FEATURES

- gamma detectors made of organic plastic scintillator and neutron detector allows for detection of gamma and neutron radiation low levels (LLR)
- automatic control during the crossing or passage the conrolled area without traffic difficulties
- audible and light alarms
- outdoor and indoor installation
- lead shielding on the rear and sides of the gamma detectors in order to reduce the background radiation and increase the ability to detect SNM passing through the portal
- both pillars are equipped with tamper switch and power fail indicators
- the modular design allows quick and easy repair and maintenance
- information about system status (exceeding of given alarm levels, fault conditions etc.) can be realized using external portal monitors control terminal TK-1
- internal reserve batteries, which feed the system in case of blackout
- 24 /7 continuous work
- ready to work within 2 minutes (from activation)
- exploitative durability not shorter than 8 years
- possibility of supervising a few monitors placed in different locations

APPLICATIONS

- Detection of gamma emitters and nuclear materials in case of following localizations:
  - border crossings (pedestrian, road, sea or airport)
  - nuclear plants and other facilities of nuclear industry, nuclear physics institutes
  - the entrances to the public and national institutions, banks, post offices

RADIOMETRY SYSTEM

In case of supervising a few monitors placed in different locations, the computer registration system of radiation events called RADIOMETRIA can be used. The system has following features:

- monitoring of connection status with other system monitors
- monitoring of working status
- registering of all events signalled by the monitors, especially an alarm status
- collecting the data which describe occurring gamma or neutron alarm as a special application form
- collecting the data about the system operation in dedicated database

CONTROL TERMINAL TK-1

The control terminal TK-1 is dedicated for remote operation of radiation portal monitors. It is designed for optical and acoustic signaling of given alarm states, exceeding of the background or fault of the system.

On the LCD display one can observe counts (impulse/second) from the specific detectors. Also one might read out all the status monitor information. Embedded thermal printer allows for printing the report in case of alarm status occurrence and other situations described by the user. Terminal is equipped with the memory allowing for the recovery of events history. The terminal can supervise at the same time up to 16 radiation portal monitors.

TECHNICAL SPECIFICATION

Nominal detection zone (width x height)	(3 x 2) m for PM-703AGN-1(p) (6 x 2) m for PM-703AGN-2(p)
Maximal speed of vehicle	5 km/h for PM-703AGN-1(p) 8 km/h for PM-703AGN-2(p)
Detector type	gamma detector made of organic plastic scintillator and neutron detector - proportional counter
Sensitivity	detection of background radiation exceeding in the nominal detection zone
Alarm signalling	acoustic and optical
No. of false alarms/No. of objects in zone	1/10 000
PC communication	RS-232, RS-485 or Ethernet
Power requirements	230 V/50 Hz, reserve battery (12V) with up to 16 h life after external power failure
Power consumption when heating is OFF	≤ 50 VA
Power consumption when heating is ON	≤ 550 VA
Duty cycle	24 h/day
Operating temperature range outdoor/indoor	-30 °C ÷ +50 °C / -5 °C ÷ +50 °C
Relative humidity (at 40°C)	up to 95%
Atmospheric pressure	[84 - 106.7] kPa
Dimensions: MASTER and SLAVE (HxWxD)	(1600 x 380 x 300) mm
Weight: MASTER	~ 90 kg
Weight: SLAVE	~ 90 kg

TECHNICAL SPECIFICATION TK-1

Max number of radiation portal monitors	16
Max number of events memory	10 000
Power requirements	230 V / 50 Hz; reserve battery (24 V) with up to 32 h life after external power failure
Max current consumption from mains	0.8 A
Duty cycle	24 h / day
PC communication	RS-232
Operating temperature range	+5 °C ÷ +40 °C
Relative humidity (at 40°C)	up to 95%
Atmospheric pressure	(84 ÷ 106) kPa
Dimensions (H x W x D)	(483 x 393 x 190) mm
Weight	~ 11 kg

STANDARD ACCESSORIES

PRODUCT	TYPE	PM-703 AGN-1(1p)*	PM-703 AGN-2(2p)*
	MASTER	1 pcs	1 pcs
	SLAVE		1 pcs
	Mounting plates (according to the requirements)	1 pcs	2 pcs
	Documentation (manual guide, test certificate, guarantee book, certificate of conformity)	1 pcs	1 pcs
	Shipment, assembly, start-up and training		

***Versions**

PM-703AGN-1: the device is designed for indoor installation; it consists one detection pillar (MASTER)
PM-703AGN-2: the device is designed for indoor installation; it consists two detection pillars (MASTER and SLAVE) standing one opposite another
PM-703AGN-1p: the device is designed for outdoor installation; it consists one detection pillar (MASTER)
PM-703AGN-2p: the device is designed for outdoor installation; it consists two detection pillars (MASTER and SLAVE) standing one opposite another

OPTIONAL ACCESSORIES

PRODUCT	TYPE	DESCRIPTION
	Control terminal TK-1	Remote supervising of portal monitors; optical and acoustic signaling of given alarm states, exceeding of background or fault of the system; the terminal can supervise at the same time up to 16 radiation portal monitors.
	Gamma monitor PM-1401M	The device is designed for the detection and localization of radioactive and special nuclear materials hidden inside of vehicles and objects. The rate of the alarm signal will increase when the instrument approaches the radiation source and will decrease when it moves away from the source, thus allowing a user to locate the radiation source.
	RADIOMETRY System	The computer registration system of radiation events in case of supervising a few monitors placed in different locations.

PORTAL MONITOR FOR GAMMA RADIATION VM-250AG

Portal monitor for gamma radiation VM-250AG is designed to automatically detect the radioactive and special nuclear materials (SNN) hidden inside of vehicles and objects (e.g. ferries, buses, wagons, containers) crossing the controlled area. The appliance consists of two detection pillars (MASTER and SLAVE) standing one opposite another and supervising zone with the conventional dimensions: (6 x 4) m. Each pillar contains two gamma detectors made of organic plastic scintillator.

PRODUCT FEATURES

- gamma detectors made of organic plastic scintillator allows for the detection of gamma radiation low levels
- automatic control when an object is crossing the controlled area without traffic difficulties
- audible and light alarms
- outdoor and indoor installation
- lead shielding on the rear and sides of the gamma detectors in order to reduce the background radiation and increase the ability to detect SNM passing through the portal
- both pillars are equipped with tamper switch and power fail indicators
- the modular design allows quick and easy repair and maintenance
- information about system status (exceeding of given alarm levels, fault conditions etc.) can be realized using external portal monitors control terminal TK-1
- internal reserve batteries, which feed the system in case of blackout
- 24 /7 continuous operation
- ready to work after 2 minutes (from activation)
- exploitative durability not shorter than 8 years
- possibility of supervising a few monitors placed in different locations

APPLICATIONS

- Detection of gamma emitters and nuclear materials in case of following localizations:
  - border crossings (pedestrian, road, sea or airport)
  - scrapyards, scrap dumps, waste treatment plants
  - nuclear plants and other facilities of nuclar industry, nuclar physics institutes
  - the entrances to the public and national institutions, banks, post offices

RADIOMETRY SYSTEM

In case of supervising a few monitors placed in different locations, the computer registration system of radiation events called RADIOMETRIA can be used. The system has following features:

- monitoring of connection status with other system monitors
- monitoring of working status
- registering of all events signalled by the monitors, especially an alarm status
- collecting the data which describe occurring gamma or neutron alarm as a special application form
- collecting the data about the system operation in dedicated database

TECHNICAL SPECIFICATION

Nominal detection zone (width x height)	(6 x 4) m
Maximal speed of vehicle	8 km/h
Detector type	gamma detector made of organic plastic scintillator
Sensitivity	detection of background radiation exceeding in the nominal detection zone
Alarm signalling	acoustic and optical
No. of false alarms/ No. of objects in zone	1/10 000
PC communication	RS-232, RS-485 or Ethernet
Power requirements	230 V/50 Hz, reserve battery (12V) with up to 16 h
Power consumption when heating is OFF	≤ 50 VA
Power consumption when heating is ON	≤ 550 VA
Duty cycle	24 h/day
Operating temperature range	-30 °C ÷ +50 °C
Relative humidity (at 40°C)	up to 95%
Atmospheric pressure	[84 - 106.7] kPa
Dimensions: MASTER and SLAVE (HxWxD)	(3065 x 700 x 385) mm]
Weight: MASTER	~ 350 kg
Weight: SLAVE	~ 350 kg

CONTROL TERMINAL TK-1

The control terminal TK-1 is dedicated for remote operation of radiation portal monitors. It is designed for optical and acoustic signaling of given alarm states, exceeding of the background or fault of the system.

On the LCD display one can observe counts (impulse/second) from the specific detectors. Also one might read out all the status monitor information. Embedded thermal printer allows for printing the report in case of alarm status occurrence and other situations described by the user. Terminal is equipped with the memory allowing for the recovery of events history. The terminal can supervise at the same time up to 16 radiation portal monitors.

TECHNICAL SPECIFICATION TK-1

Max number of radiation portal monitors	16
Max number of events memory	10 000
Power requirements	230 V / 50 Hz; reserve battery (24 V) with up to 32 h life after external power failure
Max current consumption from mains	0.8 A
Duty cycle	24 h / day
PC communication	RS-232
Operating temperature range	+5 °C ÷ +40 °C
Relative humidity (at 40°C)	up to 95%
Atmospheric pressure	(84 ÷ 106) kPa
Dimensions (H x W x D)	(483 x 393 x 190) mm
Weight	~ 11 kg

STANDARD ACCESSORIES

PRODUCT	TYPE
	Portal monitor for gamma radiation VM-250AG (MASTER and SLAVE) - 1 set
	Mounting plates - 2 pcs
	Documentation (manual guide, test certificate, guarantee book, certificate of conformity)
	Shipment, assembly, start-up and training

OPTIONAL ACCESSORIES

PRODUCT	TYPE	DESCRIPTION
	Control terminal TK-1	Remote supervising of portal monitors; optical and acoustic signaling of given alarm states, exceeding of background or fault of the system; the terminal can supervise at the same time up to 16 radiation portal monitors.
	Gamma monitor PM-1401M	The device is designed for the detection and localization of radioactive and special nuclear materials hidden inside of vehicles and objects. The rate of the alarm signal will increase when the instrument approaches the radiation source and will decrease when it moves away from the source, thus allowing a user to locate the radiation source.
	RADIOMETRY System	The computer registration system of radiation events in case of supervising a few monitors placed in different locations.

PORTAL MONITOR FOR GAMMA RADIATION VM-250AG/09Z

Portal monitor for gamma radiation VM-250AG/09Z is designed to automatically detect the radioactive and special nuclear materials (SNN) hidden inside of vehicles and objects (e.g. ferries, buses, wagons, containers) crossing the controlled area. The appliance consists of two detection pillars (MASTER and SLAVE) standing one opposite another and supervising zone with the conventional dimensions: (6 x 4) m. Each pillar contains two gamma detectors made of organic plastic scintillator.

PRODUCT FEATURES

- gamma detectors made of organic plastic scintillator with great active volume allows for detection of gamma radiation low levels
- automatic control when an object is crossing the controlled area without traffic difficulties
- audible and light alarms
- outdoor and indoor installation
- lead shielding on the rear and sides of the gamma detectors in order to reduce the background radiation and increase the ability to detect SNM passing through the portal
- both pillars are equipped with tamper switch and power fail indicators
- the modular design allows quick and easy repair and maintenance
- information about system status (exceeding of given alarm levels, fault conditions etc.) can be realized using external portal monitors control terminal TK-1
- internal reserve batteries, which feed the system in case of blackout
- 24 /7 continuous operation
- ready to work after 2 minutes (from activation)
- exploitative durability not shorter than 8 years
- possibility of supervising a few monitors placed in different locations

APPLICATIONS

- Detection of gamma emitters and nuclear materials in case of following localizations:
  - scrapyards, scrap dumps, waste treatment plants
  - border crossings (pedestrian, road, sea or airport)
  - nuclear plants and other facilities of nuclear industry, nuclear physics institutes
  - the entrances to the public and national institutions, banks, post offices

RADIOMETRY SYSTEM

In case of supervising a few monitors placed in different locations, the computer registration system of radiation events called RADIOMETRIA can be used. The system has following features:

- monitoring of connection status with other system monitors
- monitoring of working status
- registering of all events signalled by the monitors, especially an alarm status
- collecting the data which describe occurring gamma or neutron alarm as a special application form
- collecting the data about the system operation in dedicated database

TECHNICAL SPECIFICATION

Nominal detection zone (width x height)	(6 x 4) m
Maximal speed of vehicle	8 km/h
Detector type	gamma detector made of organic plastic scintillator
Sensitivity	detection of background radiation exceeding in the nominal detection zone
Alarm signalling	acoustic and optical
No. of false alarms/ No. of objects in zone	1/10 000
PC communication	RS-232, RS-485 or Ethernet
Power requirements	230 V/50 Hz, reserve battery (12 V) with up to 16 h life after external power failure
Power consumption when heating is OFF	≤ 100 VA
Power consumption when heating is ON	≤ 600 VA
Duty cycle	24 h/day
Operating temperature range	-30 °C ÷ +50 °C
Relative humidity (at 40°C)	up to 95%
Atmospheric pressure	[84 - 106.7] kPa
Dimensions: MASTER and SLAVE (HxWxD)	(3065 x 700 x 385) mm
Weight: MASTER	~ 430 kg
Weight: SLAVE	~ 430 kg

CONTROL TERMINAL TK-1

The control terminal TK-1 is dedicated for remote operation of radiation portal monitors. It is designed for optical and acoustic signaling of given alarm states, exceeding of the background or fault of the system.

On the LCD display one can observe counts (impulse/second) from the specific detectors. Also one might read out all the status monitor information. Embedded thermal printer allows for printing the report in case of alarm status occurrence and other situations described by the user. Terminal is equipped with the memory allowing for the recovery of events history. The terminal can supervise at the same time up to 16 radiation portal monitors.

TECHNICAL SPECIFICATION TK-1

Max number of radiation portal monitors	16
Max number of events memory	10 000
Power requirements	230 V / 50 Hz; reserve battery (24 V) with up to 32 h life after external power failure
Max current consumption from mains	0.8 A
Duty cycle	24 h / day
PC communication	RS-232
Operating temperature range	+5 °C ÷ +40 °C
Relative humidity (at 40°C)	up to 95%
Atmospheric pressure	(84 ÷ 106) kPa
Dimensions (H x W x D)	(483 x 393 x 190) mm
Weight	~ 11 kg

STANDARD ACCESSORIES

PRODUCT	TYPE
	Portal monitor for gamma radiation VM-250AG/09Z (MASTER and SLAVE) - 1 set
	Mounting plates - 2 pcs
	Documentation (manual guide, test certificate, guarantee book, certificate of conformity)
	Shipment, assembly, start-up and training

OPTIONAL ACCESSORIES

PRODUCT	TYPE	DESCRIPTION
	Control terminal TK-1	Remote supervising of portal monitors; optical and acoustic signaling of given alarm states, exceeding of background or fault of the system; the terminal can supervise at the same time up to 16 radiation portal monitors.
	Gamma monitor PM-1401M	The device is designed for the detection and localization of radioactive and special nuclear materials hidden inside of vehicles and objects. The rate of the alarm signal will increase when the instrument approaches the radiation source and will decrease when it moves away from the source, thus allowing a user to locate the radiation source.
	RADIOMETRY System	The computer registration system of radiation events in case of supervising a few monitors placed in different locations.

PORTAL MONITOR FOR GAMMA AND NEUTRON RADIATION VM-250AGN

Portal monitor for gamma and neutron radiation VM-250AGN is designed to automatically detect the radioactive and special nuclear materials (SNN) hidden inside of vehicles and objects (e.g. ferries, buses, wagons, containers) crossing the controlled area. The appliance consists of two detection pillars (MASTER and SLAVE) standing one opposite another and supervising zone with the conventional dimensions: (6 x 4) m. Each pillar contains two gamma and four neutron radiation detectors.

PRODUCT FEATURES

- gamma detectors made of organic plastic scintillator and neutron detector allows for detection of gamma and neutron radiation low levels (LLR)
- automatic control when an object is crossing the controlled area without traffic difficulties
- audible and light alarms
- outdoor and indoor installation
- lead shielding on the rear and sides of the gamma detectors in order to reduce the background radiation and increase the ability to detect SNM passing through the portal
- both pillars are equipped with tamper switch and power fail indicators
- the modular design allows quick and easy repair and maintenance
- information about system status (exceeding of given alarm levels, fault conditions etc.) can be realized using external portal monitors control terminal TK-1
- internal reserve batteries, which feed the system in case of blackout
- 24 /7 continuous operation
- ready to work after 2 minutes (from activation)
- exploitative durability not shorter than 8 years
- possibility of supervising a few monitors placed in different locations

APPLICATIONS

- Detection of gamma, neutron emitters and nuclear materials in case of following localizations:
  - border crossings (pedestrian, road, sea or airport)
  - scrapyards, scrap dumps, waste treatment plants
  - nuclear plants and other facilities of nuclear industry, nuclear physics institutes
  - the entrances to the public and national institutions, banks, post offices

RADIOMETRY SYSTEM

In case of supervising a few monitors placed in different locations, the computer registration system of radiation events called RADIOMETRIA can be used. The system has following features:

- monitoring of connection status with other system monitors
- monitoring of working status
- registering of all events signalled by the monitors, especially an alarm status
- collecting the data which describe occurring gamma or neutron alarm as a special application form
- collecting the data about the system operation in dedicated database

TECHNICAL SPECIFICATION VM-250AGN

Nominal detection zone (width x height)	(6 x 4) m
Maximal speed of vehicle	8 km/h
Detector type	gamma detector made of organic plastic scintillator and neutron detector - proportional counter
Sensitivity	detection of background radiation exceeding in the nominal detection zone
Alarm signalling	acoustic and optical
No. of false alarms/ No. of objects in zone	1/10 000
PC communication	RS-232, RS-485 or Ethernet
Power requirements	230 V/50 Hz, reserve battery (12 V) with up to 16h life after external power failure
Power consumption when heating is OFF	≤ 100 VA
Power consumption when heating is ON	≤ 600 VA
Duty cycle	24 h / day
Operating temperature range	-30 °C ÷ +50 °C
Relative humidity (at 40°C)	up to 95%
Atmospheric pressure	(84 ÷ 106.7) kPa
Dimensions: MASTER and SLAVE (HxWxD)	(3065 x 700 x 385) mm
Weight: MASTER	~ 380 kg
Weight: SLAVE	~ 380 kg

CONTROL TERMINAL TK-1

The control terminal TK-1 is dedicated for remote operation of radiation portal monitors. It is designed for optical and acoustic signaling of given alarm states, exceeding of the background or fault of the system.

On the LCD display one can observe counts (impulse/second) from the specific detectors. Also one might read out all the status monitor information. Embedded thermal printer allows for printing the report in case of alarm status occurrence and other situations described by the user. Terminal is equipped with the memory allowing for the recovery of events history. The terminal can supervise at the same time up to 16 radiation portal monitors.

TECHNICAL SPECIFICATION TK-1

Max number of radiation portal monitors	16
Max number of events memory	10 000
Power requirements	230 V / 50 Hz; reserve battery (24 V) with up to 32 h life after external power failure
Max current consumption from mains	0.8 A
Duty cycle	24 h / day
PC communication	RS-232
Operating temperature range	+5 °C ÷ +40 °C
Relative humidity (at 40°C)	up to 95%
Atmospheric pressure	(84 ÷ 106) kPa
Dimensions (H x W x D)	(483 x 393 x 190) mm
Weight	~ 11 kg

STANDARD ACCESSORIES

PRODUCT	TYPE
	Portal monitor for gamma and neutron radiation VM-250AGN (MASTER and SLAVE) - 1 set
	Mounting plates - 2 pcs
	Documentation (manual guide, test certificate, guarantee book, certificate of conformity)
	Shipment, assembly, start-up and training

OPTIONAL ACCESSORIES

PRODUCT	TYPE	DESCRIPTION
	Control terminal TK-1	Remote supervising of portal monitors; optical and acoustic signaling of given alarm states, exceeding of background or fault of the system; the terminal can supervise at the same time up to 16 radiation portal monitors.
	Gamma monitor PM-1401M	The device is designed for the detection and localization of radioactive and special nuclear materials hidden inside of vehicles and objects. The rate of the alarm signal will increase when the instrument approaches the radiation source and will decrease when it moves away from the source, thus allowing a user to locate the radiation source.
	RADIOMETRY System	The computer registration system of radiation events in case of supervising a few monitors placed in different locations.

PORTAL MONITOR FOR GAMMA AND NEUTRON RADIATION VM-250AG2N

Portal monitor for gamma and neutron radiation VM-250AG2N is designed to automatically detect the radioactive and special nuclear materials (SNN) hidden inside of vehicles and objects (e.g. ferries, buses, wagons, containers) crossing the controlled area. The appliance consists of two detection pillars (MASTER and SLAVE) standing one opposite another and supervising zone with the conventional dimensions: (6 x 4) m. Each pillar contains two gamma and neutron radiation detectors.

PRODUCT FEATURES

- gamma detectors made of organic plastic scintillator and neutron detector allows for detection of gamma and neutron radiation low levels (LLR)
- automatic control when an object is crossing the controlled area without traffic difficulties
- audible and light alarms
- outdoor and indoor installation
- lead shielding on the rear and sides of the gamma detectors in order to reduce the background radiation and increase the ability to detect SNM passing through the portal
- both pillars are equipped with tamper switch and power fail indicators
- the modular design allows quick and easy repair and maintenance
- information about system status (exceeding of given alarm levels, fault conditions etc.) can be realized using external portal monitors control terminal TK-1
- internal reserve batteries, which feed the system in case of blackout
- 24 /7 continuous operation
- ready to work after 2 minutes (from activation)
- exploitative durability not shorter than 8 years
- possibility of supervising a few monitors placed in different locations

APPLICATIONS

- Detection of gamma, neutron emitters and nuclear materials in case of following localizations:
  - border crossings (pedestrian, road, sea or airport)
  - scrapyards, scrap dumps, waste treatment plants
  - nuclear plants and other facilities of nuclear industry, nuclear physics institutes
  - the entrances to the public and national institutions, banks, post offices

RADIOMETRY SYSTEM

In case of supervising a few monitors placed in different locations, the computer registration system of radiation events called RADIOMETRIA can be used. The system has following features:

- monitoring of connection status with other system monitors
- monitoring of working status
- registering of all events signalled by the monitors, especially an alarm status
- collecting the data which describe occurring gamma or neutron alarm as a special application form
- collecting the data about the system operation in dedicated database

TECHNICAL SPECIFICATION VM-250AG2N

Nominal detection zone (width x height)	(6 x 4) m
Maximal speed of vehicle	8 km/h
Detector type	gamma detector made of organic plastic scintillator and neutron detector - proportional counter
Sensitivity	detection of background radiation exceeding in the nominal detection zone
Alarm signalling	acoustic and optical
No. of false alarms/ No. of objects in zone	1/10 000
PC communication	RS-232, RS-485 or Ethernet
Power requirements	230 V/50 Hz, reserve battery (12 V) with up to 16h life after external power failure
Power consumption when heating is OFF	≤ 100 VA
Power consumption when heating is ON	≤ 600 VA
Duty cycle	24 h / day
Operating temperature range	-30 °C ÷ +50 °C
Relative humidity (at 40°C)	up to 95%
Atmospheric pressure	(84 ÷ 106.7) kPa
Dimensions: MASTER and SLAVE (HxWxD)	(3065 x 700 x 385) mm
Weight: MASTER	~ 380 kg
Weight: SLAVE	~ 380 kg

CONTROL TERMINAL TK-1

The control terminal TK-1 is dedicated for remote operation of radiation portal monitors. It is designed for optical and acoustic signaling of given alarm states, exceeding of the background or fault of the system.

On the LCD display one can observe counts (impulse/second) from the specific detectors. Also one might read out all the status monitor information. Embedded thermal printer allows for printing the report in case of alarm status occurrence and other situations described by the user. Terminal is equipped with the memory allowing for the recovery of events history. The terminal can supervise at the same time up to 16 radiation portal monitors.

TECHNICAL SPECIFICATION TK-1

Max number of radiation portal monitors	16
Max number of events memory	10 000
Power requirements	230 V / 50 Hz; reserve battery (24 V) with up to 32 h life after external power failure
Max current consumption from mains	0.8 A
Duty cycle	24 h / day
PC communication	RS-232
Operating temperature range	+5 °C ÷ +40 °C
Relative humidity (at 40°C)	up to 95%
Atmospheric pressure	(84 ÷ 106) kPa
Dimensions (H x W x D)	(483 x 393 x 190) mm
Weight	~ 11 kg

STANDARD ACCESSORIES

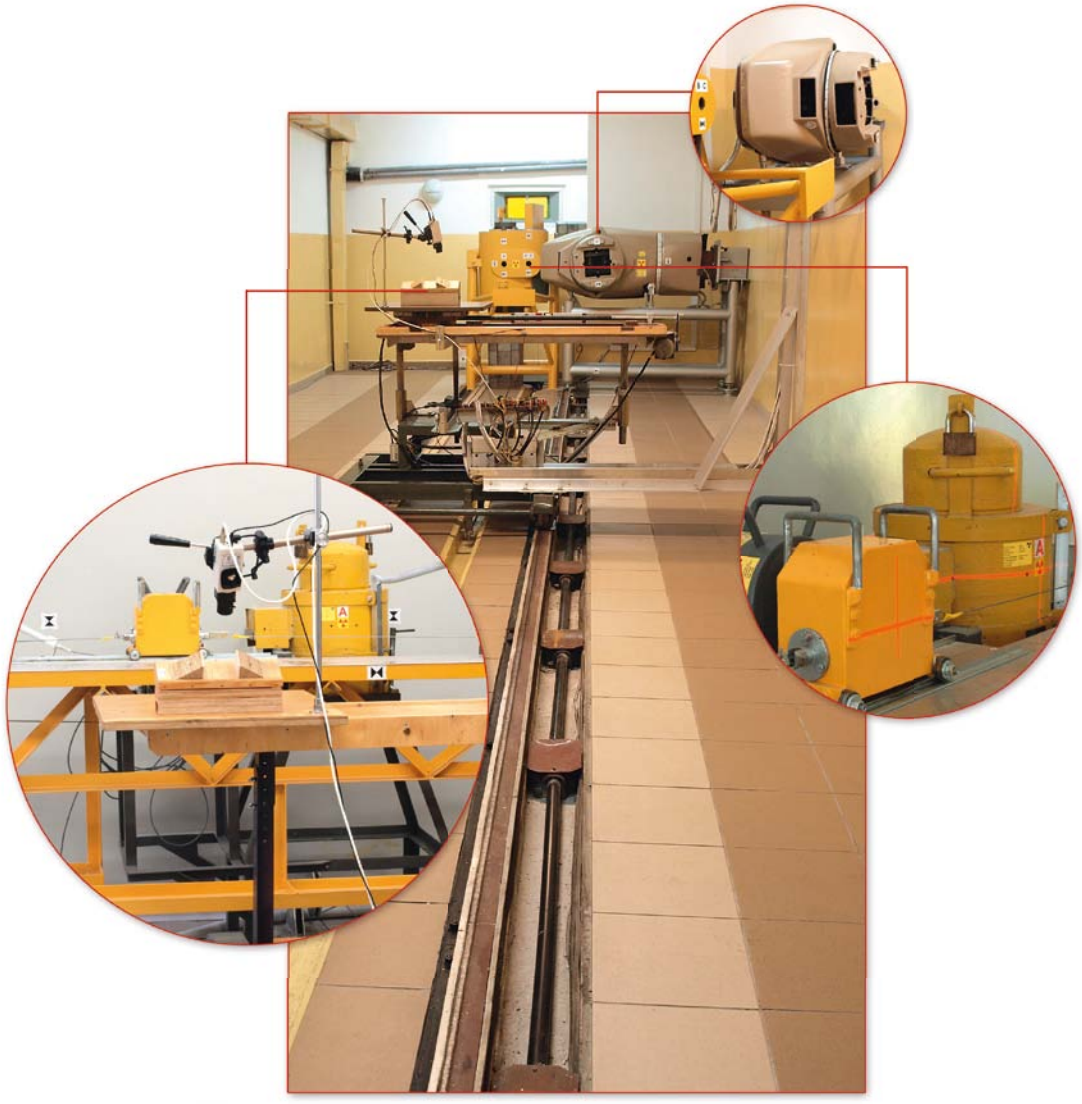
PRODUCT	TYPE
	Portal monitor for gamma and neutron radiation VM-250AG2N (MASTER and SLAVE) - 1 set
	Mounting plates - 2 pcs
	Documentation (manual guide, test certificate, guarantee book, certificate of conformity)
	Shipment, assembly, start-up and training

OPTIONAL ACCESSORIES

PRODUCT	TYPE	DESCRIPTION
	Control terminal TK-1	Remote supervising of portal monitors; optical and acoustic signaling of given alarm states, exceeding of background or fault of the system; the terminal can supervise at the same time up to 16 radiation portal monitors.
	Gamma monitor PM-1401M	The device is designed for the detection and localization of radioactive and special nuclear materials hidden inside of vehicles and objects. The rate of the alarm signal will increase when the instrument approaches the radiation source and will decrease when it moves away from the source, thus allowing a user to locate the radiation source.
	RADIOMETRY System	The computer registration system of radiation events in case of supervising a few monitors placed in different locations.

ACCREDITED DOSIMETRY CALIBRATION LABORATORY

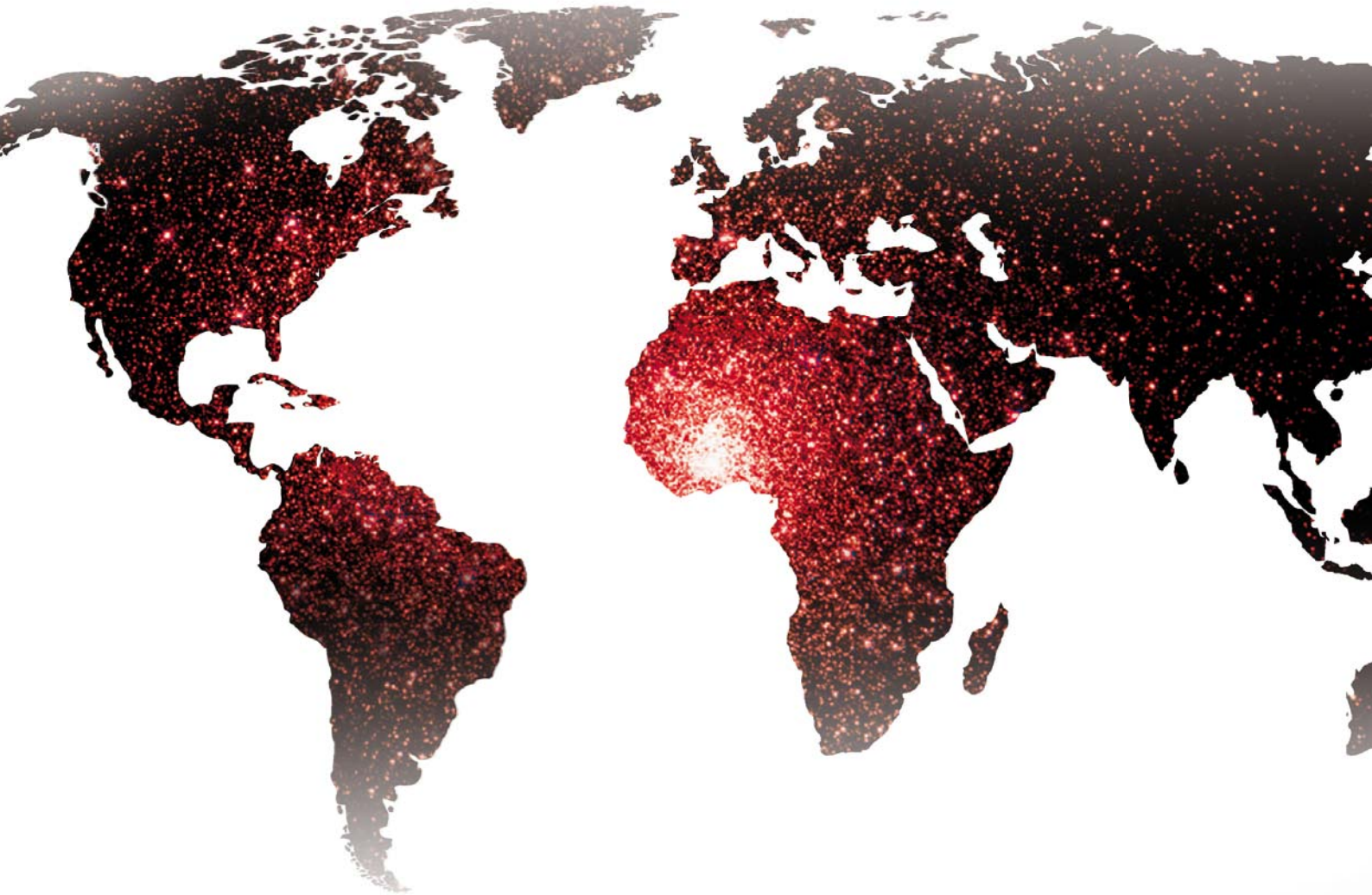
The company has the unique apparatus for calibration of dosemeters. It is also used to supervising of current production of mentioned devices. Calibration of units is realized by Accredited Dosimetry Calibration Laboratory located in POLON-ALFA, which has an accreditation certificate of PCA (Polish Centre of Accreditation).



POLON-ALFA

POLON-ALFA has more than 50 years of experience in the design and manufacture of instruments for measurements of ionizing radiation. Over that period we manufactured many of such instruments for polish and foreign customers such as: Polish Army, Civil Defense, nuclear medicine laboratories, radiation safety officers, nuclear power plants and other “non-nuclear” services.

POLON-ALFA resources include own R&D department with experienced engineers and designers, huge manufacturing potential and unique test and measurement laboratories.



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