

# AT6130 Radiation Monitor

## Pocket Radiation Monitor

Compact device intended for gamma and X-radiation ambient dose equivalent and ambient dose equivalent rate measurement, as well as for measurement of beta particle flux density on contaminated surfaces.

In search mode it measures count rate in counts per second.

### AT6130 HAS TWO VARIANTS:

- w/o PC communication interface
- with Bluetooth interface



## Operating principle

Device operating principle is based on the process of count rate measurement of impulses, generated in Geiger-Muller counter tube under the influence of X, gamma and beta radiation.



When the filter cap opens the instrument switches to beta particle flux density measurement mode automatically.

Count rate is converted automatically into measurable physical values throughout the range. Energy compensating filter allows correcting energy dependence of sensitivity efficiently in entire energy range of photon radiation.

Microprocessor-based unit is responsible for controlling the radiation monitor operating modes, calculations, storing and displaying measurement results and for self-checking function.

The Radiation monitor can be secured in a holder to facilitate evaluation of radioactive contamination.



## Applications

- Radiation protective measures in case of nuclear disasters
- Civil protection
- Radioecology
- Fire-fighting service
- Customs service
- Dosimetric monitoring in manufacturing facilities, health care and other institutions
- Identification of banknote, identity document, personal belongings, clothing, etc. contamination with radioactive substances

## Features

- Low weight and small size
- Automatic compensation of intrinsic detector background
- Sound and visual alarm in case threshold level is exceeded for dose, dose rate and flux density
- Rapid reaction to statistically significant change of dose rate (measurement process restart)
- Selective measurement of beta and gamma radiation in mixed fields
- Field operation capability over a wide temperature range
- In search mode each registered gamma quantum (beta particle) is indicated by a sound signal
- Up to 2000 measurement results can be stored in non-volatile memory with information about measurement date and time
- Measurement results, current time, date and battery life indicator is displayed on matrix LCD screen
- Measurement results can be transmitted to a PC via Bluetooth interface (If available)
- Headphones can be attached when working in noisy environment
- Bright white backlit LCD-screen
- Display in either Sv/h or in rem/h (configurable per request)



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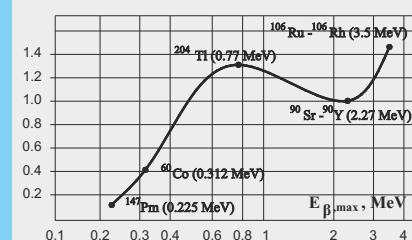
# AT6130 Radiation Monitor

## Specification

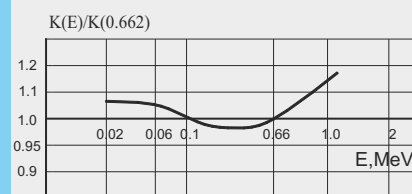
Ambient gamma and X radiation dose rate equivalent indication range *	0.01 $\mu\text{Sv/h}$ ...10 mSv/h or 1 $\mu\text{rem/h}$ ...1 rem/h
Ambient gamma and X radiation dose rate equivalent measurement range *	0.1 $\mu\text{Sv/h}$ ...10 mSv/h or 10 $\mu\text{rem/h}$ ...1 rem/h
Ambient gamma and X radiation dose equivalent indication range *	1 nSv...100 mSv or 0.1 $\mu\text{rem}$ ...10 rem
Ambient gamma and X radiation dose equivalent measurement range *	0.1 $\mu\text{Sv}$ ...100 mSv or 10 $\mu\text{rem}$ ...10 rem
Beta particles measurement range: * - flux density - surface activity - count rate	10...1·10 <sup>4</sup> particle·min <sup>-1</sup> ·cm <sup>-2</sup> 0.5...500 Bq·cm <sup>-2</sup> 0.1...1·10 <sup>6</sup> cps
Intrinsic relative error of dose rate measurement in the range from 0.1 $\mu\text{Sv/h}$ to 10 mSv/h (10 $\mu\text{rem/h}$ ...1 rem/h)	±20% max.
X and gamma radiation energy range	20 keV...3 MeV
Spectrum maximum energy range of registered beta particles	155 keV...3.5 MeV
Energy dependence relative to 662 keV ( <sup>137</sup> Cs)	±30%
Sensitivity To <sup>137</sup> Cs gamma radiation To <sup>90</sup> Sr + <sup>90</sup> Y beta radiation	2.8 cps/ $\mu\text{Sv}\cdot\text{h}^{-1}$ 0.05 cps/particles·min <sup>-1</sup> ·cm <sup>-2</sup>
Response time for dose change from 1 to 10 $\mu\text{Sv/h}$	≤7s (accuracy error ≤±10%)
Radiation overloading	Radiation monitor can withstand 100-fold rise of dose rate measurement and beta particles flux density upper range limit for 5 minutes with readings not lower than maximum
Burn-up life	≥100 Sv
Continuous run time	≥500 h
Working temperature range	-20°C...+55°C
Relative humidity with air temperature ≤35°C without condensation	≤95%
Drop protection	From ≤1.5 m to hard surface
Protection class	IP57
Power supply	2 x AAA-size batteries (LR 03) or 2 x AAA-seize rechargeable cells with nominal voltage 1.2 V
Overall dimensions, weight	110x60x38 mm, 0.25 kg

\* Units of measure are chosen during ordering procedure and cannot be altered later

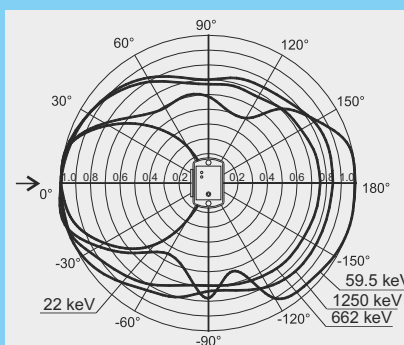
Design and specifications are subject to change without notice



Normal relationship between monitor sensitivity and maximum beta spectrum energy during beta radiation flux density measurement



Normal energy relationship between monitor sensitivity and <sup>137</sup>Cs gamma radiation energy of 662 keV



Normal relationship between monitor sensitivity and gamma radiation incidence angle relating to the calibration direction

The radiation monitor AT6130 meets International standard requirements:

IEC 60846-1:2009

IEC 60325:2002

Safety standard requirements:

IEC 61010-1:2001

EMC requirements:

EN 55011:2009

IEC 61000-4-2:2008

IEC 61000-4-3:2008

The radiation monitor AT6130 has the pattern approval certificates of Republic of Belarus, Russian Federation, Ukraine, Kazakhstan and Lithuania.



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# AT6130A, AT6130D Radiation Monitors

## Pocket Radiation Monitor



Compact devices intended for gamma and X-radiation ambient dose equivalent and ambient dose equivalent rate measurement.

### **AT6130A and AT6130D HAVE TWO VARIANTS:**

- *w/o PC communication interface*
- *with Bluetooth interface*

### **Operating principle**

Devices operating principle is based on the process of count rate measurement of impulses, generated in Geiger-Muller counter tube under the influence of X and gamma radiation.

Count rate is converted automatically into measurable physical values throughout the range. Energy compensating filter allows correcting energy dependence of sensitivity efficiently in entire energy range of photon radiation.

Microprocessor-based unit is responsible for controlling the radiation monitors operating modes, calculations, storing and displaying measurement results and for self-checking function.

### **Applications**

- Radiation protective measures in case of nuclear disasters
- Civil protection
- Radioecology
- Fire-fighting service
- Customs service
- Dosimetric monitoring in manufacturing facilities, health care and other institutions

### **Features**

- Low weight and small size
- Automatic compensation of intrinsic detector background
- Sound and visual alarm in case threshold level is exceeded for dose and dose rate
- Rapid reaction to statistically significant change of dose rate (measurement process restart)
- Field operation capability over a wide temperature range
- In search mode each registered gamma quantum is indicated by a sound signal
- Up to 2000 measurement results can be stored in non-volatile memory with information about measurement date and time
- Measurement results, current time, date and battery life indicator is displayed on matrix LCD screen
- Measurement results can be transmitted to a PC via Bluetooth interface (If available)
- Headphones can be attached when working in noisy environment
- Bright white backlit LCD-screen
- Display in either Sv/h or in rem/h (configurable per request)



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# AT6130A, AT6130D Radiation Monitors

## Specification

### Ambient gamma and X radiation dose rate equivalent indication range

AT6130A	0.01 $\mu\text{Sv/h}$ ...10 mSv/h (or 1 $\mu\text{rem/h}$ ...1 rem/h)*
AT6130D	0.01 $\mu\text{Sv/h}$ ...100 mSv/h (or 1 $\mu\text{rem/h}$ ...10 rem/h)*

### Ambient gamma and X radiation dose rate equivalent measurement range

AT6130A	0.1 $\mu\text{Sv/h}$ ...10 mSv/h (or 10 $\mu\text{rem/h}$ ...1 rem/h)*
AT6130D	0.1 $\mu\text{Sv/h}$ ...100 mSv/h (or 10 $\mu\text{rem/h}$ ...10 rem/h)*

### Ambient gamma and X radiation dose equivalent indication range

AT6130A	1 nSv...100 mSv (or 0.1 $\mu\text{rem}$ ...10 rem)*
AT6130D	1 nSv...1 Sv (or 0.1 $\mu\text{rem}$ ...100 rem)*

### Ambient gamma and X radiation dose equivalent measurement range

AT6130A	0.1 $\mu\text{Sv}$ ...100 mSv (or 10 $\mu\text{rem}$ ...10 rem)*
AT6130D	0.1 $\mu\text{Sv}$ ...1 Sv (or 10 $\mu\text{rem}$ ...100 rem)*

### Intrinsic relative error of dose rate measurement in the range from 0.1 $\mu\text{Sv/h}$ to 10 mSv/h (10 $\mu\text{rem/h}$ ...1 rem/h)

$\pm 20\%$  max.

### X and gamma radiation energy range

50 keV...3 MeV

### Sensitivity to $^{137}\text{Cs}$ gamma radiation

2.8 cps/ $\mu\text{Sv}\cdot\text{h}^{-1}$

### Response time for dose rate change from 1 to 10 $\mu\text{Sv/h}$

$\leq 7\text{s}$   
(accuracy error  $\leq \pm 10\%$ )

### Energy dependence relative to 662 keV ( $^{137}\text{Cs}$ )

$\pm 30\%$

### Radiation overloading

Radiation monitors can withstand 100-fold rise of dose rate measurement upper range limit for 5 minutes with readings not lower than maximum

### Burn-up life

$\geq 100\text{ Sv}$

### Continuous run time

$\geq 500\text{ h}$

### Working temperature range

AT6130A	-40°C...+55°C (-40°C...-20°C w/o measurement value indication)
AT6130D	-20°C...+55°C

### Relative humidity with air temperature $\leq 35^\circ\text{C}$ without condensation

$\leq 95\%$

### Drop protection

From  $\leq 1.5\text{ m}$  to hard surface

### Protection class

IP57

### Power supply

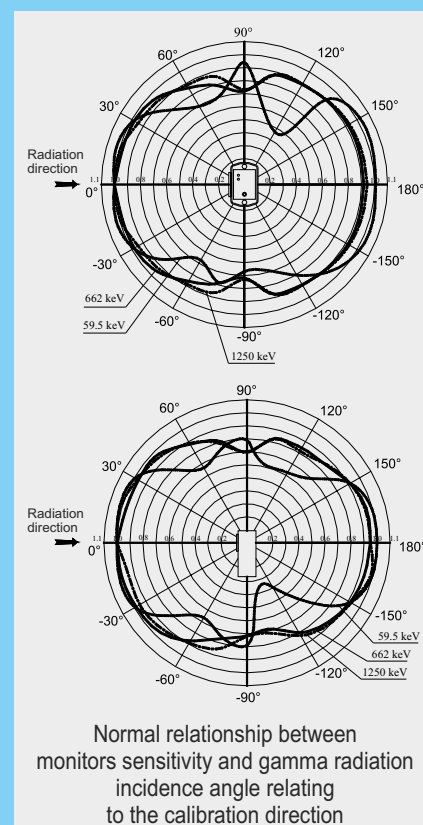
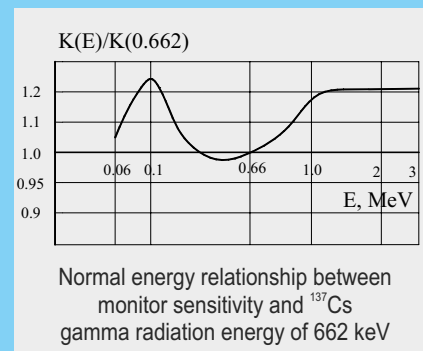
2 x AAA-size batteries (LR 03)  
or 2 x AAA-size rechargeable cells with nominal voltage 1.2 V

### Overall dimensions, weight

110x60x38 mm, 0.25 kg

\* Units of measure are chosen during ordering procedure and cannot be altered later

Design and specifications are subject to change without notice



The radiation monitors AT6130A and AT6130D meet International standard requirements:

- IEC 60846-1:2009
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The radiation monitors AT6130A and AT6130D have the pattern approval certificates of Republic of Belarus, Russian Federation, Ukraine, Kazakhstan and Lithuania.



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