AT1117M

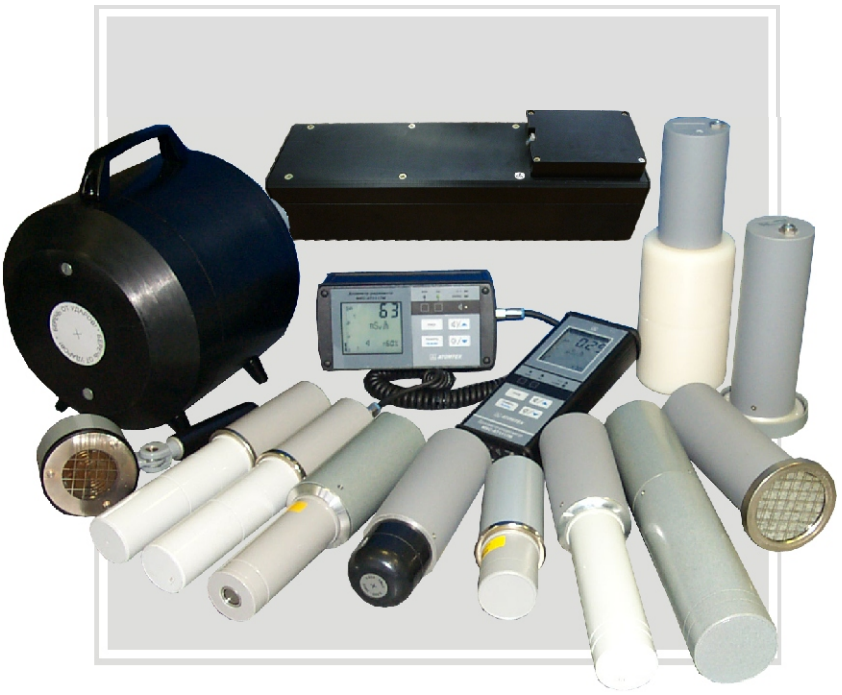
RADIATION MONITOR

alpha, beta, x-ray, gamma and neutron radiation

Portable combined high-sensitive accurate instrument to measure ambient x-ray, gamma and neutron radiation dose equivalent and dose equivalent rate, alpha and beta radiation flux density from contaminated surfaces and alpha and beta radiation surface activity and neutron radiation flux density.

Features

- *Multifunctionality*
- *High sensitivity and wide measuring ranges*
- *Fast response to radiation field change*
- *Alpha, beta, gamma, x-ray and neutron radiation source search*
- *Smart probes (RS232 interface)*
- *Built-in LED stabilization system*
- *Audible and visual alarm at dose, dose rate and flux density threshold exceeding*
- *Field operation in a wide temperature range*
- *Large backlit LCD*
- *Logging and transfer to PC up to 100 measurement results*
- *Two alternative processing units: PU and PU2*



BDPA-01
BDPB-01

α,β

BDPS-02

α,β,x,γ

BDKN-01

n

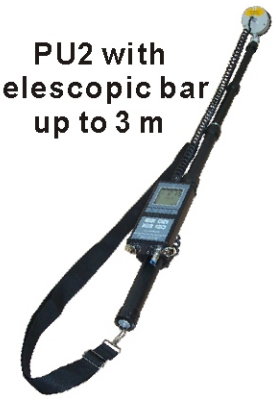
BDKN-03

n

BDKN-05

n

PU2 with telescopic bar up to 3 m



BDKR-01

x

BDKG-01

γ

BDKG-03

γ

BDKG-04

x,γ

BDKG-05

γ

BDKG-17

γ

The radiation monitor AT1117M is a multifunctional portable instrument with digital readout consisting of the processing unit (PU and/or PU2) with an internal Geiger-Muller tube and external smart probes BDPA-01, BDPB-01, BDPS-02, BDKN-01, BDKN-03, BDKN-05, BDKR-01, BDKG-01, BDKG-03, BDKG-04, BDKG-05 and BDKG-17. Smart probes BDKG-01, BDKG-03, BDKG-05, BDKG-17 can be placed in a hermetic container to be submerged.

ATOMTEX

INSTRUMENTS AND TECHNOLOGIES FOR NUCLEAR MEASUREMENTS AND RADIATION MONITORING

Specification

Dose rate measuring range
ambient dose equivalent rate
X-ray and gamma radiation
PU, PU2 (G-M counter) ..... 10 μSv/h 100 mSv/h
BDKR-01 (NaI(Tl) ∅9x2 mm) ..... 0.05 - 100 μSv/h
BDKG-01 (G-M counter) ..... 0.1 μSv/h - 10 Sv/h
BDKG-03 (NaI(Tl) ∅25x40 mm) ..... 0.03 - 300 μSv/h
BDKG-04 (scintillation plastic ∅30x15 mm) ..... 0.05 μSv/h - 10 Sv/h
BDKG-05 (NaI(Tl) ∅40x40 mm) ..... 0.03 - 100 μSv/h
BDKG-17 (G-M counter) ..... 1 mSv/h - 100 Sv/h
BDPS-02 (G-M counter) ..... 0.1 μSv/h - 30 mSv/h
neutron radiation
BDKN-01 (from Pu-Be sources) ..... 0.1 μSv/h - 10 mSv/h
BDKN-03 (0.025 eV - 14 MeV) ..... 0.1 μSv/h - 10 mSv/h
exposure dose rate *X-ray and gamma radiation*
BDKG-03 (NaI(Tl) ∅25x40 mm) ..... 3 μR/h - 10 mR/h

Dose measuring range
ambient dose equivalent
X-ray and gamma radiation
PU, PU2 ..... 10 μSv 1 Sv
BDKR-01 ..... 0.05 μSv - 5 mSv
BDKG-01 ..... 0.1 μSv - 10 Sv
BDKG-03 ..... 0.03 μSv - 1 Sv
BDKG-04 ..... 0.05 μSv - 10 Sv
BDKG-05 ..... 0.03 μSv - 0.3 mSv
BDKG-17 ..... 1 μSv - 1 Sv
BDPS-02 ..... 0.1 μSv - 10 Sv
neutron radiation
BDKN-01 (from Pu-Be sources) ..... 0.1 μSv - 10 Sv
BDKN-03 (0.025 eV - 14 MeV) ..... 0.1 μSv - 10 Sv
exposure dose rate *X-ray and gamma radiation*
BDKG-03 ..... 3 μR - 100 R

Neutron flux density measuring range
BDKN-01, BDKN-03 (He-3 counter) . 0.1 - 10^4 neutron/(s·cm^2)
BDKN-05 (2 He-3 counters) ..... 0.1 - $5 \cdot 10^3$ neutron/(s·cm^2)

Flux density measuring range
alpha radiation from contaminated surface
BDPA-01 (ZnS(Ag) ∅60 mm) ..... 0.1-10^5 part./(min·cm^2)
BDPS-02 ..... 2.4 - 10^6 particle/(min·cm^2)
beta radiation from contaminated surface
BDPB-01 (plastic ∅60 mm) ..... 1 - $5 \cdot 10^5$ part./(min·cm^2)
BDPS-02 ..... 6 - 10^6 particle/(min·cm^2)

Surface activity measuring range
alpha radiation (^{239}Pu) BDPA-01 ..... $3.4 \cdot 10^{-3}$ - $3.4 \cdot 10^3$ Bq·cm^{-2}
beta radiation (^{90}Sr+^{90}Y) BDPB-01 .... $4.4 \cdot 10^{-2}$ - $2.2 \cdot 10^4$ Bq·cm^{-2}

Energy range of detecting x-ray and gamma radiation
BDKR-01 ..... 5 - 160 keV
PU, PU2, BDKG-01, BDKG-17 ..... 60 keV - 3 MeV
BDKG-04 ..... 15 keV - 3 MeV
BDKG-03, BDKG-05 ..... 50 keV - 3 MeV
BDPS-02 ..... 20 keV - 3 MeV

Energy range of detecting alpha radiation
BDPS-02 ..... 4 - 7 MeV
BDPA-01 ..... 3 - 7 MeV

Energy range of detecting beta radiation
BDPS-02, BDPB-01 ..... 155 keV - 3,5 MeV

Energy range of detecting neutron radiation
BDKN-01, BDKN-03, BDKN-05 ..... 0.025 eV - 14 MeV

Energy sensitivity response
at dose rate measuring
respect to ^{137}Cs ..... not less than +35 ÷ -25 %
at flux density measuring
respect to ^{90}Sr+^{90}Y ..... not less than ±50%

Intrisic measurement error
dose rate and flux density ..... not less than ±20 %

Sensitivity
to gamma radiation on ^{137}Cs
PU, PU2 ..... 0.3 cps/ μSv·h^{-1}
BDKG-01 ..... 4.0 cps/ μSv·h^{-1}
BDKG-03 ..... 350 cps/ μSv·h^{-1}
BDKG-04 ..... 70 cps/ μSv·h^{-1}
BDKG-05 ..... 900 cps/ μSv·h^{-1}
BDKG-17 ..... 1.1 cps/ mSv·h^{-1}
BDPS-02 ..... 6.6 cps/ μSv·h^{-1}
to gamma radiation on ^{241}Am
BDKR-01 ..... 400 cps/ μSv·h^{-1}
to alpha radiation on ^{239}Pu
BDPA-01 ..... 0.15 cps/(particle·min^{-1}·cm^{-2})
BDPS-02 ..... 0.015 cps/(particle·min^{-1}·cm^{-2})
to beta radiation on ^{90}Sr+^{90}Y
BDPB-01 ..... 0.3 cps/(particle·min^{-1}·cm^{-2})
BDPS-02 ..... 0.12 cps/(particle·min^{-1}·cm^{-2})
to alpha radiation on Pu-Be sources
BDKN-01 ..... 1.15 cps/(neutron·s^{-1}·cm^{-2})
BDKN-03 ..... 1.5 cps/(neutron·s^{-1}·cm^{-2})
BDKN-05 ..... 9 cps/(neutron·s^{-1}·cm^{-2})

Operating temperature range ..... -30 ÷ +50°C

Relative air humidity at 35°C ..... 95 %

Protection class IP64

Power requirements
internal Ni-Mh accumulator unit ..... 6 V
AC mains, frequency 50 Hz ..... 220 V
DC supply ..... 12 V

Continuous operation time
from AC mains or DC supply ..... not less than 24 h
from one fully charged accumulator unit ..... not less than 24 h

Radio disturbance
EN 55022:2006

Electromagnetic compatibility
EN 61000-4-2:1995
EN 61000-4-3:2002

Weight, not more than
PU ..... 1.1 kg
PU2, BDPA-01, BDPB-01, BDKR-01, BDKG-04 ..... 0.5 kg
BDPS-02, BDKG-17 ..... 0.3 kg
BDKG-01 ..... 0.4 kg
BDKG-03 ..... 0.6 kg
BDKG-05 ..... 1.2 kg
BDKN-01 ..... 2.0 kg
BDKN-03 ..... 7.8 kg
BDKN-05 ..... 3.4 kg

Dimensions, not more than
PU ..... 177x85x124 mm
PU2 ..... 200x85x36 mm
BDPS-02 ..... 138x86x60 mm
BDPA-01, BDPB-01 ..... ∅80x196 mm
BDKG-01 ..... ∅54x255 mm
BDKR-01 ..... ∅60x260 mm
BDKG-03 ..... ∅60x295 mm
BDKG-04 ..... ∅60x200 mm
BDKG-05 ..... ∅60x320 mm
BDKG-17 ..... ∅54x167 mm
BDKN-01 ..... ∅90x290 mm
BDKN-03 ..... 314x220x263 mm
BDKN-05 ..... 375x110x100 mm

Complete set: processing unit PU or/and PU2, smart probes (the number is on customer's order), AC adapter, shoulder strap, waist belt, manual and packing case.
The set of cables and applied software to connect PU to PC; telescopic bar 1.1 m or 3 m with an internal cable, head-phones, kit of accessories to connect smart probes to PC and applied software are options and they are supplied on **additional order.**

The radiation monitor AT1117M has pattern approval certificates of Republic of Belarus, Russian Federation, Ukraine and Kazakhstan. It complies with IEC 60846, IEC 60325 and IEC 61005 International standard requirements.

5, Gikalo st., 220005 Minsk,
Republic of Belarus
tel. +375 17 2928142
tel. / fax +375 17 2928142, 2882988
e-mail: info@atomtex.com
http://www.atomtex.com

ATOMTEX