

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: PU1 and PU2



The radiation monitor AT1117M is a multifunctional portable instrument with digital readout consisting of the processing unit (PU1 and/or PU2) with an internal Geiger-Muller tube and external smart probes BDPA-01, BDPB-01, BDPS-02, BDKN-01, BDKN-03, BDKR-01, BDKG-01, BDKG-03, BDKG-04, BDKG-05, BDKG-09 and BDKG-17. Smart probes BDKG-01, BDKG-03, BDKG-05, BDKG-17 can be placed in a hermetic container to be submerged.

Specification

X-ray and gamma radiation ambient dose equivalent rate measuring range

PU1, PU2 (G-M counter)	10 µSv/h - 100 mSv/h
BDPS-02 (G-M counter)	0.1 µSv/h - 30 mSv/h
BDKR-01 (NaI(Tl) Ø9x2 mm)	0.05 - 100 µSv/h
BDKG-01 (G-M counter)	0.1 µSv/h - 10 Sv/h
BDKG-03 (NaI(Tl) Ø25x40 mm)	0.03 - 300 µSv/h
BDKG-04 (scintillation plastic Ø30x15 mm)	0.05 µSv/h - 10 Sv/h
BDKG-05 (NaI(Tl) Ø40x40 mm)	0.03 - 100 µSv/h
BDKG-09 (G-M counter)	0.1 µSv/h - 5 Sv/h
BDKG-17 (G-M counter)	1 mSv/h - 100 Sv/h

X-ray and gamma radiation ambient dose equivalent measuring range

PU1, PU2	10 µSv - 10 Sv
BDPS-02	0.1 µSv - 1 Sv
BDKR-01	0.05 µSv - 5 mSv
BDKG-01, BDKG-09	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 - 100 Sv

Flux density measuring range

alpha radiation from contaminated surface	
BDPA-01 (ZnS(Ag) Ø60 mm)	0.1-10 ⁵ part./(min·cm ²)
BDPS-02	5 - 10 ⁶ particle/(min·cm ²)
beta radiation from contaminated surface	
BDPB-01 (plastic Ø60 mm)	1 - 5·10 ⁵ part./(min·cm ²)
BDPS-02	6 - 10 ⁶ particle/(min·cm ²)

Neutron radiation ambient dose equivalent rate

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

Neutron radiation ambient dose equivalent

BDKN-01 (from Pu-Be sources)	0.1 µSv - 10 Sv
BDKN-03 (0.025 eV - 14 MeV)	0.1 µSv - 10 Sv

Neutron flux density measuring range

BDKN-01, BDKN-03	0.1 - 10 ⁴ neutron/(cm ² ·s)
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Energy range of detecting x-ray and gamma radiation

BDKR-01	5 - 160 keV
PU1, PU2, BDKG-01, BDKG-09, BDKG-17	60 keV - 3 MeV
BDPS-02, BDKG-04	20 keV - 3 MeV
BDKG-03, BDKG-05	50 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
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Energy range of detecting neutron radiation

BDKN-01, BDKN-03	0.025 eV - 14 MeV
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Intrinsic measurement error

dose rate	not more than ± 20 %
flux density	not more than ± 20 %

Sensitivity on ¹³⁷Cs

PU1, PU2	0.3 cps/µSv·h ⁻¹
BDPS-02	6.6 cps/mSv·h ⁻¹
BDKG-01	4.0 cps/mSv·h ⁻¹
BDKG-03	350 cps/mSv·h ⁻¹
BDKG-04	100 cps/mSv·h ⁻¹
BDKG-05	900 cps/mSv·h ⁻¹
BDKG-09	6.0 cps/mSv·h ⁻¹
BDKG-17	0.004 cps/mSv·h ⁻¹

Energy sensitivity response at dose rate measuring

respect to ¹³⁷ Cs	not more than +35 ÷ -25 %
respect to ⁹⁰ Sr+ ⁹⁰ Y	not more than ± 50 %

Operating temperature range

Relative air humidity at 35 °C	95 %
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Protection class

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

CEI/IEC CISPR 22 :1997

Electromagnetic compatibility

CEI/IEC 61000-4-2:1995
IEC 61000-4-3:1995

Weight, not more than

PU1	1.1 kg
PU2, BDPA-01, BDPB-01, BDKR-01, BDKG-04, BDKG-09	0.5 kg
BDPS-02, BDKG-17	0.3 kg
BDKN-01	2.0 kg
BDKN-03	7.8 kg
BDKG-01	0.4 kg
BDKG-03	0.6 kg
BDKG-05	1.2 kg

Dimensions, not more than

PU1	177 x 85 x 124 mm
PU2	92 x 62 x 52 mm
BDPS-02	138 x 86 x 60 mm
BDPA-01, BDPB-01	Ø80 x 196 mm
BDKN-01	Ø90 x 260 mm
BDKN-03	Ø220 x 312 mm
BDKR-01, BDKG-01, BDKG-09	Ø54 x 255 mm
BDKG-03	Ø60 x 295 mm
BDKG-04	Ø60 x 200 mm
BDKG-05	Ø60 x 320 mm
BDKG-17	Ø51 x 167 mm

Complete set: processing unit PU1 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 1.6 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**.

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