

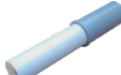









AT1117M Radiation Monitor

Processing units

| Illustration | Detector | Ambient radiation dose rate equivalent measurement range | Ambient radiation dose equivalent measurement range | Energy range | Energy dependence relative to 662 keV (¹³⁷ Cs) | Sensitivity to ¹³⁷ Cs source gamma radiation (cps/μSv·h ⁻¹) | Response time for dose rate measurement (dose rate ≥10 μSv/h) | Overall dimensions, weight |
|---|----------------------------|--|---|--------------|--|--|---|----------------------------|
| | | Limits of intrinsic relative measurement error | | | | | | Protection class |
|  | Geiger-Muller counter tube | 1 μSv/h ... 10 mSv/h | 1 μSv ... 1 Sv | 60 keV | -25% | 1 | ≤2 s | 177x85x124 mm 1.1 kg |
| | | ±20% | | 3 MeV | +35% | | | IP64 |
|  | Geiger-Muller counter tube | 1 μSv/h ... 10 mSv/h | 1 μSv ... 1 Sv | 60 keV | -25% | 1 | ≤2 s | 200x85x36 mm 0.5 kg |
| | | ±20% | | 3 MeV | +35% | | | IP64 |

X and gamma radiation smart probes

| Illustration | Detector | Ambient radiation dose rate equivalent measurement range | Ambient radiation dose equivalent measurement range | Energy range | Energy dependence relative to 662 keV (¹³⁷ Cs) | Sensitivity to ¹³⁷ Cs source, (cps/μSv·h ⁻¹) | Response time for dose rate measurement (dose rate ≥1 μSv/h) | Overall dimensions, weight |
|--|----------------------------------|---|---|--------------|--|---|--|----------------------------|
| | | Limits of intrinsic relative measurement error | | | | | | Protection class |
|  | Geiger-Muller counter tube | 0.1 μSv/h ... 10 Sv/h | 0.1 μSv ... 10 Sv | 60 keV | -25% | 4 | ≤3 s | Ø54x255 mm, 0.42 kg |
| | | ±20% | | 3 MeV | +35% | | | IP64 |
|  | Scintillation NaI(Tl), Ø25x40 mm | 0.03 ... 300 μSv/h | 0.03 μSv ... 1 Sv | 50 keV ... | ±20% | 350 | ≤2 s | Ø60x295 mm, 0.6 kg |
| | | ±20% | | 3 MeV | | | | IP64 |
|  | Scintillation plastic, Ø30x15 mm | 0.05 μSv/h ... 10 Sv/h | 0.05 μSv ... 10 Sv | 15 keV ... | ±35% (15...60 keV) ±20% (60 keV...3 MeV) | 70 | ≤3 s | Ø60x200 mm, 0.45 kg |
| | | ±20% | | 3 MeV | | | | IP64 |
|  | Scintillation NaI(Tl), Ø40x40 mm | 0.03 ... 300 μSv/h | 0.03 μSv ... 0,3 Sv | 50 keV ... | ±20% | 760 | <2 s | Ø60x320 mm, 1.2 kg |
| | | ±20% | | 3 MeV | | | | IP64 |
|  | Scintillation NaI(Tl), Ø63x63 mm | 0.01 ... 100 μSv/h | 0.01 μSv ... 10 mSv | 50 keV ... | ±20% | 2200 | <2 s | Ø78x350 mm, 1.9 kg |
| | | ±20% | | 3 MeV | | | | IP64 |
|  | Geiger-Muller counter tube | 1 mSv/h ... 100 Sv/h | 1 mSv ... 100 Sv | 60 keV ... | -25% ... +35% | 0,005 | | Ø54x167 mm, 0.27 kg |
| | | ±20% | | 3 MeV | | | | IP64 |
|  | Scintillation plastic, Ø50x40 mm | 20 nSv/h ... 1 Sv/h | 1 nSv ... 100 Sv | 25 keV ... | ±25% | 530 | ≤3 s | Ø60x200 mm, 0.5 kg |
| | | ±20% | | 3 MeV | | | | IP64 |
|  | Scintillation plastic, Ø50x40 mm | 20 nGy/h ... 1 Gy/h (Absorbed dose rate measurement range) | 1 nGy ... 100 Gy (Absorbed dose measurement range) | 50 keV ... | ±25% | 600 (cps/μGy·h ⁻¹) | ≤3 s (dose rate ≥1 μGy/h) | Ø60x200 mm, 0.6 kg |
| | | ±20% | | 3 MeV | | | | IP64 |
|  | Scintillation NaI(Tl), Ø9x2 mm | 0.05 ... 100 μSv/h | 0.05 μSv ... 5 mSv | 5 keV ... | ±35% (5...60 keV) ±20% (60...160 keV) | 400 (to ²⁴¹ Am source gamma radiation) | ≤2 s | Ø60x260 mm, 0.55 kg |
| | | ±20% | | 160 keV | | | | IP64 |
|  | Geiger-Muller counter tube | 0.1 μSv/h ... 30 mSv/h | 0.1 μSv ... 1 Sv | 20 keV ... | ±30% | 6.6 | ≤3 s | 138x86x60 mm 0.3 kg |
| | | ±20% | | 3 MeV | | | | IP64 |






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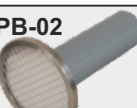

INSTRUMENTS AND TECHNOLOGIES FOR NUCLEAR
MEASUREMENTS AND RADIATION MONITORING

AT117M Radiation Monitor



Alpha radiation smart probes

| Illustration | Detector | Alpha particles flux density measurement range | ²³⁹ Pu surface activity measurement range | ²³⁹ Pu alpha particle fluence measurement range | Energy range | Sensitivity to ²³⁹ Pu source, (cps/particle·min ⁻¹ ·cm ⁻²) | | Overall dimensions, weight |
|--|--|--|--|--|-----------------|--|--|----------------------------|
| | | Limits of intrinsic relative measurement error | | | | | | Protection class |
|  | Scintillation ZnS(Ag), 30 cm ² | 0.1 ... 10 ⁵ particle·min ⁻¹ ·cm ⁻² | 3.4·10 ⁻³ ... 3.4·10 ³ Bq·cm ⁻² | 1 ... 3·10 ⁶ particle·cm ⁻² | 4 MeV ... 7 MeV | 0.15 | | Ø80x196 mm, 0.5 kg |
| | | ±20% | | | IP64 | | | |
|  | Scintillation ZnS(Ag), 100 cm ² | 0.05 ... 5·10 ⁴ particle·min ⁻¹ ·cm ⁻² | 1.7·10 ⁻³ ... 1.7·10 ³ Bq·cm ⁻² | 1 ... 3·10 ⁶ particle·cm ⁻² | 4 MeV ... 7 MeV | 0.7 | | Ø137x230 mm, 0.7 kg |
| | | ±20% | | | IP64 | | | |
|  | Geiger-Muller counter tube | 2.4...30 particle·min ⁻¹ ·cm ⁻² 30...10 ⁶ particle·min ⁻¹ ·cm ⁻² | – | 1 ... 3·10 ⁶ particle·cm ⁻² | 4 MeV ... 7 MeV | 0.045 | | 138x86x60 mm, 0.3 kg |
| | | ±30% ±20% | – | ±20% | IP64 | | | |

Beta radiation smart probes

| Illustration | Detector | Beta particles flux density measurement range | ⁹⁰ Sr + ⁹⁰ Y surface activity measurement range | Beta particle fluence measurement range | Energy range | Sensitivity to ⁹⁰ Sr + ⁹⁰ Y source, (cps/particle·min ⁻¹ ·cm ⁻²) | | Overall dimensions, weight |
|--|--|--|---|---|---------------------|---|--|----------------------------|
| | | Limits of intrinsic relative measurement error | | | | | | Protection class |
|  | Scintillation plastic, 30 cm ² | 1 ... 5·10 ⁵ particle·min ⁻¹ ·cm ⁻² | 4.4·10 ⁻² ... 2.2·10 ⁴ Bq·cm ⁻² | 1 ... 3·10 ⁶ particle·cm ⁻² | 155 keV ... 3.5 MeV | 0.3 | | Ø80x196 mm, 0.5 kg |
| | | ±20% | | | IP64 | | | |
|  | Scintillation plastic, 100 cm ² | 0.5 ... 1.5·10 ⁵ particle·min ⁻¹ ·cm ⁻² | 2.2·10 ⁻² ... 0.66·10 ⁴ Bq·cm ⁻² | 1 ... 3·10 ⁶ particle·cm ⁻² | 155 keV ... 3.5 MeV | 0.9 | | Ø137x230 mm, 0.7 kg |
| | | ±20% | | | IP64 | | | |
|  | Geiger-Muller counter tube | 6 ... 10 ⁶ particle·min ⁻¹ ·cm ⁻² | – | 1 ... 3·10 ⁶ particle·cm ⁻² | 155 keV ... 3.5 MeV | 0.12 | | 138x86x60 mm, 0.3 kg |
| | | ±20% | – | ±20% | IP64 | | | |

Neutron radiation smart probes

| Illustration | Detector | Ambient radiation dose rate equivalent measurement range | Ambient radiation dose equivalent measurement range | Neutron flux density measurement range | Energy range | Sensitivity to Pu-Be source | | Overall dimensions, weight |
|--|---|--|---|---|---------------------|---|-------------------------------|----------------------------|
| | | Limits of intrinsic relative measurement error | | | | | | Protection class |
|  | He-3 proportional counter in a polyethylene moderator | 0.1 µSv/h ... 10 mSv/h | 0.1 µSv ... 10 Sv | 0.1 ... 10 ⁴ neutron·s ⁻¹ ·cm ⁻² | 0.025 eV ... 14 MeV | 0.5 cps/neutron·s ⁻¹ ·cm ⁻² | 0.355 cps/µSv·h ⁻¹ | Ø90x290 mm, 2.0 kg |
| | | ±35%* | ±35%* | ±20%* | IP64 | | | |
|  | He-3 proportional counter in a polyethylene moderator | 0.1 µSv/h ... 10 mSv/h | 0.1 µSv ... 10 Sv | 0.1 ... 10 ⁴ neutron·s ⁻¹ ·cm ⁻² | 0.025 eV ... 14 MeV | 0.5 cps/neutron·s ⁻¹ ·cm ⁻² | 0.355 cps/µSv·h ⁻¹ | 314x220x263 mm, 7.8 kg |
| | | ±20%* | ±20%* | ±30%* | IP64 | | | |

* - for Pu-Be sources

AT117M Radiation monitor: General parameters

| | | |
|--|---|---|
| Power supply - Smart probe - PU/PU2, Handheld PC, Interface adapter | 1) By PU/PU2 2) By Interface adapter 3) By PC 1) By integrated rechargeable battery pack 2) By external 12 VDC power source 3) By external +230 VAC 50 Hz power source 4) By external battery | Interface - Smart probe to PU/PU2 - Smart probe to PC - Smart probe to Handheld PC RS232 USB, RS232 Bluetooth (via interface adapter), RS232 |
| Continuous run time | ≥24 h | Working temperature range -40°C ... +50°C 0 ... +40°C (BDKR-01) |
| | | Relative humidity with air temperature ≤35°C without condensation ≤95% |

AT117M Radiation Monitor

TYPICAL SOLUTIONS

Remote measurements

Components:

- Smart probe (BDKG-01, BDKG-03, BDKG-04, BDKG-05, BDKG-17, BDKG-24, BDKG-30, BDKR-01, BDPA-01, BDPA-02, BDPB-01, BDPB-02)
- PU/PU2
- Telescopic bar (1.7/3 m)
- Holder (For attaching smart probe to telescopic bar; different shapes for different probes)
- Cable



Monitoring of hand and coat contamination by alpha/beta particles



Components:

- BDPA-02 or BDPB-02
- PU2
- Wall bracket
- Cable

Measurements with GPS-mapping



Components:

- Handheld PC
- Smart probe (any)
- BT-DU4 Interface adapter
- Handle

Transportable dosimetric monitoring station



Components:

- Smart probes (BDKG-03, BDKG-04, BDKG-05, BDKG-11, BDKG-24, BDKG-30, BDKN-01)
- PU2/Handheld PC
- BT-DU4 Interface adapter (if Handheld PC is used)
- Cable
- Tripod
- Mounting bracket (For mounting smart probe and PU2/Handheld PC on the bar)



Handle for ease of measurement

Components:

- Smart probe (BDKG-05, BDKG-11, BDKN-01)
- PU2
- Handle (For attaching PU2 to smart probe)
- Cable



Neutron dosimeter



Components:

- BDKN-03
- PU2
- Cable

General control of radioactive contamination in impulse count rate mode

Components:

- BDPS-02
- PU
- Cable



Measurements in water, wells, etc.



Components:

- Smart probes (BDKG-01, BDKG-03, BDKG-04, BDKG-05, BDKG-17, BDKG-24, BDKG-30)
- PU/PU2
- Communication cable (up to 30 m; for connecting smart probe to PU or PU2)
- Wire cable
- Spool (for storing communication and wire cables and measurement at depth over 10 meters)



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