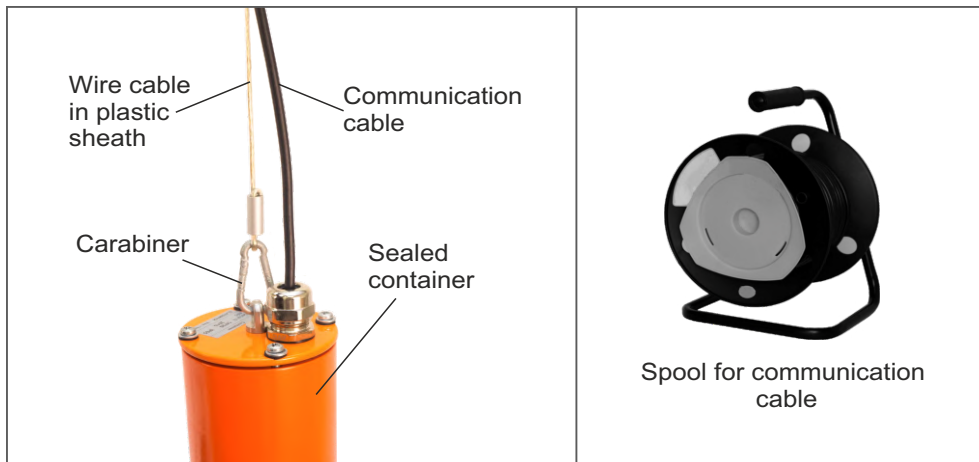


AT1117M Radiation Monitor

(Gamma radiation detection units in sealed container)



Components:

- Gamma radiation detection unit (DU) in sealed container
- PU / PU2 / PU4 processing units
- Communication cable (up to 30 m) for DU-to-PU connection
- Wire cable in plastic sheath
- Spool for communication and wire cable (measurement depth over 10 meters)
- Dust- and splash-proof case (storing and transportation)

Application

- Nuclear industry
- Radioactive waste monitoring
- Emergency situations
- Radioecology
- Geologic works

Features

- High sensitivity and wide measurement range
- Quick accommodation to changes in radiation level
- Polymer coat of sealed container
- Plastic cable markers for depth of immersion reading
- Operation in harsh weather conditions

This configuration of the Radiation monitor is an immersion-type measurement instrument designed to measure gamma radiation ambient dose equivalent and ambient dose equivalent rate in fluid media, wells, underground storage and other inaccessible areas, as well as to simultaneously monitor gamma radiation ambient dose equivalent rate and ambient dose equivalent at system operator's location.

Measurement is possible at depths up to 30 m. The operator lowers and raises the detection unit in sealed container directly by the communication cable, which is strengthened by a plastic-sheathed wire cable. This cable has plastic markers at 1-metre increments to read the immersion depth.

Processing unit (PU / PU2 / PU4) or desktop computer can be used for operation and indication.

1) PU / PU2

Detection unit sends data over dedicated communication cable to processing unit, where the data is displayed on LCD screen.

PU and PU2 has recording and memory option for up to 999 measurement results, which can further be uploaded to a PC via dedicated application software. Sound and visual alarms activate in case user-adjustable threshold levels are exceeded.

Operation algorithm provides measurement continuity and real-time statistical processing of measurement results. PU and PU2 units feature integrated detection modules, allowing in situ dose and dose rate measurement of gamma radiation.



2) PU4 is a hand-held PC (HPC) with integrated detection module, providing in situ measurement of gamma radiation dose and dose rate. Operation algorithm provides measurement continuity and real time statistical processing of measurement results.

Data from detection unit into PU4 can transferred in two ways:

- Bluetooth interface by BT-DU4 adapter
- Direct cable connection to PU4

PU4 has the following functions:

- Processing and display of measurement data
- GPS referencing of measurement results
- Automatic recording and storing over 10,000 measurements with GPS referencing
- Sound and visual alarm when threshold level are exceeded
- Indication of battery charge level in PU4 and BT-DU4 adapter
- Loading data to PC for further analysis and processing in professional "GARM" software (Option)
- Automatic data transfer to a remote server by "ARMS" software [over FTP server; integrated 3G modem or connection to a Wi-Fi network shall be available] (Option).



ATOMTEX[®]

INSTRUMENTS AND TECHNOLOGIES FOR NUCLEAR
MEASUREMENTS AND RADIATION MONITORING

Specification	PU / PU2	PU4	BDKG-01	BDKG-03	BDKG-04	BDKG-05	BDKG-17	BDKG-24	BDKG-30
Detector	Geiger-Muller counter tube	Geiger-Muller counter tube	Geiger-Muller counter tube	Scintillator NaI(Tl), Ø25x40 mm	Scintillation plastic, Ø30x15 mm	Scintillator NaI(Tl), Ø40x40 mm	Geiger-Muller counter tube	Scintillation plastic, Ø50x40 mm	Scintillation plastic, Ø50x40 mm
Energy range	60 keV – 3 MeV	60 keV – 3 MeV	60 keV – 3 MeV	50 keV – 3 MeV	15 keV – 10 MeV	50 keV – 3 MeV	60 keV – 3 MeV	25 keV – 10 MeV	50 keV – 10 MeV
Measurement range of ambient radiation dose rate equivalent	1 µSv/h – 10 mSv/h	1 µSv/h – 100 mSv/h	0.1 µSv/h – 10 Sv/h	0.03 – 300 µSv/h	0.05 µSv/h – 10 Sv/h	0.03 – 300 µSv/h	1 mSv/h – 100 Sv/h	30 nSv/h – 1 Sv/h	30 nGy/h – 1 Gy/h (Measurement range of air kerma rate)
Measurement range of ambient radiation dose equivalent	1 µSv – 1 Sv	1 µSv – 100 Sv	0.1 µSv – 10 Sv	0.03 – 100 Sv	0.7 nSv – 100 Sv	0.03 µSv – 0.3 Sv	1 mSv – 100 Sv	0.1 nSv – 100 Sv	0.1 nGy – 100 Gy (Measurement range of air kerma)
Limit of intrinsic relative measurement error	±20%								
Typical sensitivity to ¹³⁷ Cs gamma radiation	1 cps/(µSv·h ⁻¹)	0.33 cps/(µSv·h ⁻¹)	4 cps/(µSv·h ⁻¹)	350 cps/(µSv·h ⁻¹)	70 cps/(µSv·h ⁻¹)	760 cps/(µSv·h ⁻¹)	0.005 cps/(µSv·h ⁻¹)	530 cps/(µSv·h ⁻¹)	600 cps/(µGy·h ⁻¹)
Response time for dose rate change [accuracy error ≤±10%]	≤2 s (for dose rate change from 1 to 10 µSv/h)	≤≤7 s (for dose rate change from 10 to 100µSv/h)	≤≤3 s (for dose rate change from 1 to 10 µSv/h)	≤≤2 s (for dose rate change from 0.1 to 1 µSv/h)	≤≤2 s (for dose rate change from 0.1 to 1 µSv/h)	<2 s (for dose rate change from 0.1 to 1 µSv/h)		≤2 s (for dose rate change from 0.1 to 1 µSv/h)	≤2 s (for dose rate change from 0.1 to 1 µGy/h)
Energy dependence relative to 662 keV (¹³⁷ Cs)	-25% to +35%	-25% to +35%	-25% to +35%	±20%	±25% (15 keV – 3 MeV) ±40% (3 – 10 MeV)	±20%	-25% to +35%	±25% (50 keV – 3 MeV) ±40% (3 – 10 MeV)	±25% (50 keV – 3 MeV) ±40% (3 – 10 MeV)
Burn-up life	≥100 Sv								≥100 Gy
Protection class	IP64	IP67	IP68 (Sealed container)						
Interface	RS232								
Immersion depth	–	–	Up to 30 m						
Operation temperature range	-40°C to +50°C / -30°C to +50°C (PU4)								
Overall dimensions	177x85x124 mm/ 210x88x36 mm	265x90x40 mm	Ø54x256 mm	Ø60x299 mm	Ø60x200 mm	Ø60x290 mm	Ø54x167 mm	Ø60x205 mm	Ø60x207 mm
Weight	1.2 kg / 0.6 kg	0.6 kg	0.5 kg	0.6 kg	0.46 kg	1.2 kg	0.28 kg	0.5 kg	0.6 kg
The radiation monitor complies with: GOST 27451-87, Safety requirements of IEC 61010-1:2010, EMC requirements of EN 55011:2009, IEC 61000-4-2:2008, IEC 61000-4-3:2008									

Design and specifications are subject to change without notice