



AN/UDR-13 – Military Pocket Radiac

Features

- The direct reading AN/UDR-13 detects and quantifies dose rate of residual radiation units from 0.01 cGy/hr to 999 cGy/hr. It also measures neutron and gamma dose from initial prompt and residual radiation from 10 cGy to 999 cGy. Models are available from 0.001 μ Gy/hr to 300 cGy/hr and with Sv or Rad units.
- Pre-settable audio and visual alarms
- Overall accuracy better than $\pm 15\%$ over entire dynamic range in severe military environments
- 150 hour battery life, increases to 1500 hours in SLEEP mode
- Not affected by EMP
- Nuclear hardened
- Meets MIL-STD-810E for military operational environments
- Operable/readable by personnel in Mission Oriented Protection Posture (MOPP IV) or arctic clothing
- Ultra small size, 10.5 in.³ and weight, 9.5 oz.
- Uses time tested "Time-To-Count"* technology
- Lowest life cycle costs due to calibration stability and automatic self calibration
- Infra Red Optical Port for computer control and data downloads
- Probes available for selective radiation/contamination monitoring
- Qualification tested and type classified by US Army

*US Patent # 4,605,859

Description

This small and lightweight Military Pocket Radiac is designed for reliability and performance.



For Use With...

Troops

The Pocket Radiac is suitable for both Tactical and non-Tactical radiation protection use. This simple to operate, small, rugged, and lightweight equipment combines unequaled performance and reliability. Features such as wide dynamic ranges for dose and dose rate, presettable alarms and the unique ability to measure not only Residual but also Prompt radiation, make this instrument clearly the instrument of choice for the foot soldier.



Vehicles and Helicopters

The Pocket Radiac is equally compatible with operation and use in all military vehicles and helicopters. Capable of operating on vehicular or aircraft power, the Pocket Radiac easily fits into the tightly cramped interiors of aircraft and fighting vehicles (see circled AN/UDR-13 below). Detection probes may be mounted outside the vehicle or helicopter and can operate in conjunction with the detector of the internally located AN/UDR-13 to provide complete radiation assessments. Additionally, when used with an onboard computer, the optical RS-232 port of the AN/UDR-13 enables real time data to be provided to the computer such that dose rate mapping or iso-dose curves can be provided.



For Additional Information Contact:



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Personnel Dose Management

Utilizing the included Infra Red RS-232 port and the AN/UDR-13's significant storage capability, the Pocket Radiac can greatly assist in the efficient



dose management of personnel in a field organization. The serial numbers of the users may be stored in the unit, then upon use and possible exposure the total accumulated daily or weekly dose can be "read" by a computer and with minimal operator attendance, assigned to the users Radiation Dose file. Various safeguards (such as control key function restrictions) against accidental erasing of accumulated dose or missetting of alarm levels can be installed by computer through the Infra Red Port.

Specifications

DATA PROVIDED

- RESIDUAL GAMMA RADIATION: 0.01 to 999 cGy/hr (dose rate) and 0.001 cGy to 999 cGy (total dose), neutron dose from initial radiation and gamma dose initial radiation 10 to 999 cGy.

FEATURES

- PRE-SETTABLE AUDIBLE AND VISUAL: Dose and dose rate alarms.
- SETUP TIME: Less than one minute for all checks and alarms.
- ACCURACY: $\pm 15\%$.
- ENHANCED BATTERY LIFE: Sleep mode provides 1500 hr battery life.
- CIRCUIT PROTECTION: AN/UDR-13 is nuclear and EMP hardened.
- EMI COMPATIBILITY: Will not be effected, or cause other equipment to be effected by its use.
- OPERABLE AND READABLE: By persons wearing Arctic and MOPP protective clothing.
- WEIGHT: 9.5 oz (270 g).
- VOLUME: 10.5 in.³ (172 cc).
- DIMENSIONS: 100 x 66 x 28 mm (3.9 x 2.6 x 1.1 in.).

DETECTORS

- Pin Diode (neutrons), PMOS-FET (prompt gammas) and GM detector (residual gammas).
- Separate detectors for neutrons and gammas are combined to provide a single dose reading.
- READS IN TISSUE: Dose centigray (cGy) other readout units available on request (Rads or Sieverts).
- GAMMA DOSE RATE: Independent to 10^8 cGy/s.
- NEUTRON DOSE RATE: Independent to 10^{18} neutrons/cm²/s.
- GAMMA ENERGY DEPENDENCE: $\pm 20\%$ 80 keV to 3 MeV.
- NEUTRON ENERGY: Thermal to 14 MeV neutrons.
- TOTAL (CUMULATIVE) DOSE READ OUT: Will not be erased when read, resettable to zero as desired.
- DOSE RATE: Minimum detectable level 0.001 cGy/hr.
- RESPONSE TIME: Within 10% of final reading in four seconds, returns to background within four seconds.

DISPLAY

- An auto ranging LCD that can be read at 3 ft, back lit for night use, updated every two seconds.
- Data downloadable via optical (IR) communications port.
- Provides data in units of cGy and cGy/hr.

ALARMS

- Has selectable Visual and Audible indicators for day or night use.
- Alarm levels are settable over entire dynamic range.

POWER

- Four AAA 1.5 V batteries.
- Minimum battery life of 150 hr during continuous monitoring and 1500 hr during inactive (sleep) mode.
- Low battery LCD indication with 5 hr of battery life remaining, a "Go/No Go" feature provides battery status.

RELIABILITY AND MAINTAINABILITY

- MEAN TIME BETWEEN FAILURE (MTBF): Greater than 2000 hr.
- MEAN TIME TO REPAIR (MTTR): 15 min.

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ENVIRONMENTAL PARAMETERS

- OPERATING TEMPERATURE:
-51 °C to +50 °C (-59.8 °F to 122 °F).
- STORAGE/TRANSPORT TEMPERATURE:
-60 °C to +70 °C (-76 °F to 158 °F).
- HUMIDITY:
0-95% RH.
- IMMERSION:
3 ft for at least 2 hr.
- SAND/DUST:
Operates in winds to 1750 ft/min with exposure to fine dust and to 5700 ft/min to sand particles.
- FUNGUS:
Built from inherently fungus resistant materials.
- VIBRATION AND SHOCK:
Withstands vibration associated with transport and shocks of dropping in use.
- ALTITUDE:
12 192 m (40 000 ft).
- EXPLOSIVE ATMOSPHERES:
Will not cause ignition of explosive gas mixtures.

Qualification Testing Conducted on AN/UDR-13

The AN/UDR-13 Radiac Set (Pocket Radiac) was developed by Aptec-NRC, now Canberra, under contract to the US Army. The Radiac Set was designed and constructed to meet the requirements of the US Army Performance Specification A3252105 dated 19 July 1995 and MIL-STD-810E (Environmental requirements). Upon completion of development and fabrication, the AN/UDR-13 was evaluated by White Sands Missile Range, (US Army) and type classified as standard for US Army service.

The following list includes the testing and related test documents conducted during the Radiac Set evaluation.

Test Performed	Specification
1. RADIATION DOSE/DOSE RATE ACCURACY	CECOM SPEC. A3252105
2. GAMMA DOSE ACCURACY	CECOM SPEC. A3252105
3. NEUTRON DOSE ACCURACY	CECOM SPEC. A3252105
4. MIXED GAMMA/NEUTRON DOSE ACCURACY	CECOM SPEC. A3252105
5. PRECISION	CECOM SPEC. A3252105
6. RESPONSE	CECOM SPEC. A3252105
7. SECURE LIGHTING	CECOM SPEC. A3252105
8. WEIGHT AND SIZE	CECOM SPEC. A3252105
9. INTERCHANGEABILITY	CECOM SPEC. A3252105
10. CALIBRATION COMPATIBILITY	CECOM SPEC. A3252105
11. BATTERY LIFE	CECOM SPEC. A3252105
12. LOW BATTERY INDICATION	CECOM SPEC. A3252105
13. SECURE LIGHTING	CECOM SPEC. A3252105 RATE/DOSE ALARM LIGHTS
14. ALTITUDE	MIL-STD 810 METHOD 500.3, PROCEDURE II
15. LOW TEMPERATURE	MIL-STD 810 METHOD 502.3 PROCEDURE I/II

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Test Performed	Specification
16. HIGH TEMPERATURE	MIL-STD 810 METHOD 501.3, PROCEDURE II
17. ELECTROMAGNETIC INTERFERENCE	CECOM SPEC. A3252105
18. SAND AND DUST	MIL-STD 810 METHOD 510.3, PROCEDURE I
19. EXPLOSIVE ATMOSPHERE	MIL-STD 810 METHOD 511.3, PROCEDURE I
20. RAIN (REF. 4.9.8)	MIL-STD 810 METHOD 506.3, PROCEDURE II
21. SALT FOG	MIL-STD 810 METHOD 509.3, PROCEDURE I
22. IMMERSION	MIL-STD 810 METHOD 512.3, PROCEDURE I
23. VIBRATION AND SHOCK	MIL-STD 810 METHOD 514.3, CATEGORY I
24. VIBRATION, LOOSE CARGO	MIL-STD 810 METHOD 514.3, PROCEDURE II
25. TRANSIT DROP TEST	MIL-STD 810 METHOD 516.3, PROCEDURE- II/IV
26. SYSTEM SAFETY DESIGN CHECKLIST	CECOM SPEC. A3252105
27. HUMIDITY MIL-STD 810	METHOD 507.3, PROCEDURE III
28. FUNGUS	MIL-STD 810 METHOD 507.3, PROCEDURE III
29. CALIBRATION COMPATIBILITY	CECOM SPEC. A3252105
30. BATTERY LIFE	CECOM SPEC. A3252105
31. RATE DEPENDENCE	CECOM SPEC. A3252105
32. RESPONSE	CECOM SPEC. A3252105
33. GAMMA ENERGY DEPENDENCE	CECOM SPEC. A3252105
34. ALARMS	CECOM SPEC. A3252105
35. DECONTAMINATION	CECOM SPEC. A3252105
36. ELECTROMAGNETIC-PULSE	USANCA CRITERIA FOR NUCLEAR HARDNESS
37. THERMAL RADIATION	USANCA CRITERIA FOR NUCLEAR HARDNESS
38. AIR BLAST	USANCA CRITERIA FOR NUCLEAR HARDNESS
39. PROMPT NEUTRON AND GAMMA RADIATION	USANCA CRITERIA FOR NUCLEAR HARDNESS
40. BURN-IN RADIAC SET AN/UDR-13	CECOM SPEC. A3252105
41. WORKMANSHIP	CECOM SPEC. A3252105
42. FINISH	CECOM SPEC. A3252105
43. MARKING	CECOM SPEC. A3252105
44. TESTABILITY (BIT)	CECOM SPEC. A3252105