

Neutron Dose Rate Meters



The MDN-01 and SND-01 meters are designed for the measurement of ambient dose equivalent rate $\dot{H}^*(10)$ in neutron fields in environments, such as nuclear facilities, hospitals, workplaces with particle accelerators, etc.

Purpose

The MDN-01 and SND-01 meters are designed for the measurement of ambient dose equivalent rate $\dot{H}^*(10)$ in neutron fields in different environments, such as spent fuel storage facilities in nuclear power plants, PET centres with cyclotrons, workplaces with particle accelerators, radioactive waste repositories, neutron calibration laboratories, etc.

The installed MDN-01 can be utilised as part of a large monitoring system with a remote centralized indication, or, in connection with the local display unit, as an autonomous monitor, which provides the data indication locally at the place of measurement with possibility to also remotely transfer data. The SND-01 meter when coupled with suitable display unit can serve as a portable neutron monitor.

Description

The detection section of the MDN-01 and SND-01 consists of a proportional ^3He detector tube, sensitive to low energy neutrons, and a moderator Bonner sphere, made from polyethylene, dia. 25 cm (10"). The sphere is intended to moderate (thermalize) the higher energy neutrons to neutrons with detectable energies.

The signals coming from the detector are processed in the controller, converted into measured values, and compared with programmable alarm levels. The values measured are transferred via a standard RS-485 interface into a host system or to a connected display unit and the exceeding of alarm levels is signalized.

Main Advantages

- Various designs optimized for installation (MDN-01) and for portable monitors (SND-01)
- High reliability and durability
- Useful in variable applications
- Two programmable alarm levels
- Possibility of direct alarm slave unit connection and direct connection to host system (MDN-01)
- Both indoor or outdoor use
- Serial line and relay outputs (MDN-01)

Standards and Certification

Type Approval Certificate TCM 441/10-4751 issued by the Czech Metrology Institute

EN 60325 – Radiation protection instrumentation - Neutron ambient dose equivalent (rate) meters

ISO 8529 Reference neutron radiations (Part 1, 2, 3)

Electromagnetic Compatibility (EMC)
EN 55011, EN 61000-4-26, EN 61000-4-8



MDN-01 Neutron Equivalent Dose Rate Meter

The Neutron Equivalent Dose Rate Meter MDN-01 is designed for stationary monitoring with the possibility of radiation monitoring system connection. It is also possible to connect an external signalization unit to MDN-01 by means of the RS-485 interface or by potential-free switch contacts (relay).

SND-01 Smart Neutron Detector

The Smart Neutron Detector SND-01 is optimized for connection to Radcount-2S display unit. This set may also be used as a portable monitor of neutron equivalent dose rate.

Common Specification

Meter	MDN-01	SND-01
Detector type	proportional, ^3He	
Measuring range	1E-7 ~ 1 Sv/h (1E-5 ~ 1E2 rem/h)	
Effective measuring range	1E-7 ~ 1E-1 Sv/h (1E-5 ~ 1E1 rem/h)	
Energy range	0.025 eV ~ 16 MeV	
Detector sensitivity (^{252}Cf)	app. 4 cps/ $\mu\text{Sv/h}$ (2400 cpm/mrem/h)	
Response to gamma radiation (^{137}Cs)	app 2 cps/Sv/h (1.2 cpm/rem/h)	
Connector	ECTA 1332 E 212 MZ	T01-0580-S07
Communication interface	RS-485	
Signal relays	output 4x, input 1x	-
Power supply	24 VDC, 5 W	5 VDC, 0.25 W
Ambient temperature	-10 ~ +45 °C (50 ~ 113 °F)	
Dimensions ($\varnothing \times \text{V}$)	250 x 348 mm (10 x 13.7 in)	
Weight	app. 10 kg (22 lb)	
Electric protection	IP 65	IP 20
Recommended display unit	 LZJ-22	 Radcount-2S



Models and Accessories

Type	Description
K0917	MDN-01 Neutron Equivalent Dose Rate Meter
K1419	SND-01 Smart Neutron Detector
Optional Accessories	
<ul style="list-style-type: none"> Holder for MDN-01 wall mounting Blind flange connector (ECTA 1332-2-BE; for storage; MDN-01) Cable with connector for serial communication (for SND-01) Another communication protocol, another interface (customized solution) 	
Related products	
K0743	LZJ-22 Local Display Unit
K0830	ASU-50 Alarm Slave Unit
K1130	Radcount-2S Display Unit



Portable neutron monitor

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