



NIM 201K

Neutron Irradiation Dose Rate Monitor



Nuclear
Power



Healthcare



Homeland
Security
& Defense



Labs and
Education



Industrial and
Manufacturing

OVERVIEW

The NIM 201K forms part of the RAMSYS product line. It has been developed to monitor in real time the ambient dose equivalent rate.

It provides operational dose rate in units of $H^*(10)$ derived from neutron fluence according to ICRU 57 recommendations. The helium-3 proportional counter (cylindrical tube) placed inside a polyethylene sphere facilitates detection of thermal and fast neutrons. Its large energy range, associated with modular design makes it efficient, reliable and very sensitive. It is used effectively in nuclear reactors, subcritical stacks, neutron generators and irradiators, and in accelerator facilities.

KEY FEATURES

- Detector for indoor and outdoor applications
- $H^*(10)$ measurement
- Available with or without display and local signaling
- Wide and high neutron energy range ($2.5 \cdot 10^{-8}$ to 16 MeV)
- Compact and reliable

RELATED MONITORS

- Complement to the entire GIM range

PHYSICAL CHARACTERISTICS

- Radiation detected: neutron
- Detector: He3 proportional counter
- Energy range: 2.5 10⁻⁸ (thermal) to 16 MeV
- Typical measurement range: 10⁻⁶ to 0.1 Sv/h (10⁻⁴ to 10 rem/h)
- Measurement capability: 10⁻⁷ to 0.3 Sv/h (10⁻⁵ to 30 rem/h)

ENVIRONMENTAL CHARACTERISTICS

- Long term temperature: +10°C to +40°C (+50°F to +104°F)
- Periodic temperature (processing unit): -5°C to +55°C (+23°F to +131°F)
- Periodic temperature (detector): -5°C to +70°C (+23°F to +158°F)
- MTBF: > 20 000 hours
- TID (processing unit): 100 Gy (10⁺⁴ rad)
- TID (detector): 5 10⁺³ Gy (5 10⁺⁵ rad)
- Protection index: IP65 and IK07

MECHANICAL CHARACTERISTICS

- Dimensions:
 - Processing unit: 390 mm x 196 mm x 187 mm (15.3 in x 7.7 in x 7.3 in)
 - Detector: 817 mm x 312 mm x 310 mm (32.2 in x 12.3 in x 12.2 in)
- Weight:
 - Processing unit: 8.5 kg (18.7 lb)
 - Detector: ~ 31 kg (~ 68.3 lb)
- Color: gray RAL 7030 (decontaminable paint)

ELECTRICAL CHARACTERISTICS

- Power supply: 230 Vac – 50 Hz or 120 Vac – 60 Hz
- Data link outputs: 1 RS232 and 2 isolated RS485
- Alarm relays: 3 SPDT relays
- I/O: 2 isolated analog outputs and 1 isolated analog input (0/4-20 mA)

SIGNALING (Applicable to LPDU only)

- Alphanumeric display: measurement, status...
- Sound alarm: buzzer 90 dBA at 1 meter
- Visual alarm: 3 lights (red, yellow, green)

REFERENCE STANDARDS

- Nuclear: IEC61005 and IEC61322, ICRU 57
- EMC: 2006/95/CE and 2004/108/CE, IEC61000-6-2 and IEC61000-6-4

VERSIONS

- 230 Vac or 120 Vac
- LPDU or LPU
- With or without RS485 junction box
- Detector cable length: 2 m (6.5 ft) to 5 m (16.4 ft)
- Junction box cable length: 2 m (6.56 ft), 5 m (16.4 ft) or 10 m (32.8 ft)

ACCESSORIES

- Calibration tools
- Software
- USB converters

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