

Neutron Module

For DMC 3000



Add-on Module for Personal Electronic Dosimeters

Mirion Technologies provides a complete line of hardware and software products targeted to Health Physics and Radiation Protection personnel, in order to meet current Nuclear Industry challenges. The Neutron Module provides operational dosimetry for Military, First Responders and radiation workers where there is a Neutron radiation risk.

The add-on Neutron Module attaches to the DMC 3000 dosimeter and is able to measure $Hp(10)$ radiation at a wide range of energy levels. The $Hp(10)$ Neutron measurements, display and alarms are highly visible on the DMC 3000's LEDs and high contrast backlit LCD display.

Powered by the DMC 3000, the add-on module does not require any supplementary battery and remains operational over 2000 hours in continuous use. Calibration and functional parameters are stored in the module.

KEY FEATURES

- Dose and dose rate Neutron $Hp(10)$ displayed
- Totalized dose for $Hp(10)$ Gamma + Neutron displayed
- Superior gamma rejection in Neutron channel
- Connect and ready for use
- Full Neutron energy range coverage
- Meets or exceeds applicable IEC and ANSI standards
- Designed for ruggedness and durability
- Excellent EMC Immunity
- Waterproof IP67

PHYSICAL CHARACTERISTICS

- **Compliant with IEC 61526 Ed. 3, ANSI 42.20(*)**
(*) isotropy ^{241}Am and ^{137}Cs with $\pm 75^\circ$ angle
- **Measurement range Hp(10) (DMC 3000 + module)**
 - X and gamma energy range: 15 keV to 7 MeV
 - Neutron energy range : 0.025 eV to 15 MeV
- **Display range Hp(10) Neutron**
 - Dose : from 1 μSv to 10 Sv (0.1 mrem to 1000 rem)
 - Dose rate : from 100 $\mu\text{Sv/h}$ to 10 Sv/h (10 mrem/h to 1000 rem/h)
- **Accuracy Hp(10) Neutron**
 - $\leq \pm 10\%$ (AmBe , 0.75 mSv/h, 75 mrem/h)
 - Hp(10) Typical Energy response from thermal to fast Neutron (see curve)
- **Dose Rate Linearity Hp(10)**
 - $< \pm 20\%$ up to 10 Sv/h, 1000 rem/h
- **Display Neutron measurement Hp(10)**



ELECTRICAL CHARACTERISTICS

- Powered by DMC 3000
 - 8 calendar month battery life for Neutron module and DMC 3000 (typical, 8 h per day, 5 days per week in run mode, without excessive alarms)*
 - 2000 h battery life for DMC 3000 with Neutron module and DMC 3000 in continuous run, without excessive alarms*
- *0.2% of the time in alarm

MECHANICAL CHARACTERISTICS

- Rugged, high impact polycarbonate-ABS case
- Dimensions with DMC 3000:
- 4.8 x 2.4 x 0.8 in (122 x 60 x 21 mm) max. without clip
- 4.8 x 2.4 x 1.1 in (122 x 60 x 28 mm) with standard clip
- Weight with DMC 3000: 3.9 oz (< 112 g) with clip
- Worn by a replaceable standard clip



ENVIRONMENTAL CHARACTERISTICS

- Temperature range: 14°F to 122°F (-10°C to 50°C)
- Storage: -4°F to 160°F (-20°C to 71°C)
- Shock, vibration and drop resistant
- IP67 protection
- EMC: complies and exceeds standards by a large margin (compliant)

PRODUCT CHARACTERISTIC

- **Histogram Features**
 - Additional Hp(10) Neutron measurement (dose, dose rate and maximum dose rate) saved on non volatile memory (EEPROM) at the same time as Hp(10) Gamma measurement in configurable steps (10 s, 60 s, 10 min, 1 hour, 24 hours)
- **Display Features**
 - Additional Hp(10) Neutron measurement displayed on DMC 3000 high quality white backlighting
 - Blue top LED for Neutron dose increment indication
- **Alarm Features and Communication**
 - DMC 3000 alarming speaker, vibrator, high efficiency red flash LED, 3 top LEDs and display indicators
 - Hp(10) Neutron dose/rate alarms, adjustable over the display range
 - Hp(10) Neutron dose/rate warnings, adjustable over the display range and acknowledgeable
- **Calibration**
 - Factory calibration in accordance with ISO/IEC 17025
 - Parameters saved into the module
- **Compatibility**
 - Backward compatibility with LDM 2000, LDM and LDM 3200 readers (requires reader firmware/software upgrade)
 - Compatible with LDM 320D/W readers
 - Compatible with DMC 3000 V7.x firmware (new communication protocol)

