Beta 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 Beta Module provides operational dosimetry for hospital personnel, first responders, and radiation workers where there is a Beta radiation risk.

The add-on Beta module plugged to the DMC 3000 dosimeter provides $H_p(0.07)$ and a wide range of beta radiation measurement.

The $H_p(0.07)$ and Beta measurement, display and alarms features are highly visible on the DMC 3000 high contrast and backlit LCD display, and LEDs.

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

The Beta Module provides a global coverage for operational dosimetry for personnel operating in hospitals, for first responders and any radiation worker from industrial facilities where there is a Beta radiation risk.

KEY FEATURES

- Dose and dose rate $H_p(0.07)$ displayed
- Connect and ready for use
- High efficiency beta measurement
- Superior $H_p(0.07)$ energy response
- Meets or exceeds applicable IEC and ANSI standards
- Excellent EMC Immunity
- Designed for ruggedness and durability
PHYSICAL CHARACTERISTICS

- Compliant with IEC 61526 Ed. 3, ANSI 42.20(*)
  (*) isotropy Am-241 and Cs-137 with ± 75° angle

- Hp(0.07) Measurement range (DMC3000 + module)
  - X and gamma energy range: 15 keV to 7 MeV at 0°
  - Beta E_{mean} > 60 keV (E_{max}: 0.22 MeV to 2.3 MeV)

- Accuracy Hp(0.07)
  - ≤ ± 5%* (Cs-137, ~ 24 mSv/h, 2.4 rem/h);
  - ≤ ± 10%*, (Am-241, ~ 23 mSv/h, 2.3 rem/h);
  - ≤ ± 10%** X-ray 16 keV
    (*without ± 5% extended uncertainty k=2);
    (**without ± 9% extended uncertainty k=2)

- Responses:
  - Relative Hp(0.07) Beta response of Pm-147, Kr-85
    and Sr-90/Y-90 within ± 20% (*)
  - Hp(0.07) X and gamma response within ± 20% (*)
    from 16 keV to 7 MeV
    (*) in reference to the typical curve given here below

- Hp(0.07) Dose Rate Linearity
  - < ± 20% up to 10 Sv/h, 1000 rem/h

- Display of Hp(0.07) measurement

ELECTRICAL CHARACTERISTICS

- Powered by DMC 3000
- 8 calendar month battery life for beta module and
  the DMC 3000 (typical, 8 h per day, 5 days per week in
  run mode, without excessive alarms*)
- 1800 h battery life for DMC 3000 with beta 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
- IP50 protection
- EMC: complies and exceeds standards by a large
  margin (compliant)
- MIL STD 461F RS103 (pulsed electric field): exceeds
  200 V/m from 10 kHz to 5 GHz
- MIL STD 461F RS101 (magnetic field 30 Hz to 100
  kHz)

PRODUCT CHARACTERISTIC

- Histogram Features
  - Additional Hp(0.07) measurement (dose, dose rate
    and maximum dose rate) saved on non volatile
    memory (EEPROM) at the same time as Hp(10)
    measurement in configurable steps (10 s, 60 s, 10
    min, 1 hour, 24 hours)

- Display Features
  - Additional Hp(0.07) measurement displayed on
    DMC 3000 high quality white backlighting
  - Blue top LED for Hp(0.07) dose increment
    indication

- Alarm Features and Communication
  - DMC 3000 alarming speaker, vibrator, high
    efficiency red flash LED, 3 top LEDs and display
    indicators
  - Hp(0.07) dose/rate alarms, adjustable over the
    display range
  - Hp(0.07) 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
    3000M 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)