

STARLITE

DATASHEET



STARLITE REWRITES THE NEUTRON MONITOR ENERGY RESPONSE: FROM THERMAL TO 20 MeV

STARLITE is the innovative **NEUTRON MONITOR** made by **RAYLAB**: Designed for industrial, research and medical environments.

A silicon-based system. It runs an embedded software able to optimize the neutron response at all working energies.

LIGHT AND COMPACT

4 kg: easy to handle and move.

ESSENTIAL

Dosimetric values monitoring in real time with a history log for each measurement.

STRONG

Compact and bold design in a sleek black aluminum case.

ACCURATE

Ambient dose response linear at all working energies.

SMART

Wi-Fi or ethernet controlled: no app or external software needed.

DIRECTION

Real-time reconstruction of the main direction of the neutron field.



CONTACTS

REGISTERED OFFICE

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DATASHEET

SPECIFICATIONS

MEASURED QUANTITY	Ambient dose equivalent H*(10) according to ICRP-74 or Ambient dose H* according to ICRU-95 user settable
UNIT OF MEASURE	Sv or rem (Sv·h ⁻¹ or rem·h ⁻¹ for rate) user settable
NEUTRON ENERGY RANGE	From thermal neutron up to 20 MeV
H*, H*(10) RATE RANGE	10 nSv·h ⁻¹ – 100 mSv·h ⁻¹
NEUTRON SENSITIVITY	0.29 cps per uSv·h ⁻¹ (²⁴¹ Am-Be)
GAMMA SENSITIVITY	< 1 uSv·h at 10 mSv·h ⁻¹ (¹³⁷ Cs)
H*, H*(10) CALIBRATION FACTOR	3.4 uSv·h ⁻¹ per cps (²⁴¹ Am-Be)
H*, H*(10) RESPONSE	0.3 cps per uSv·h ⁻¹ (²⁴¹ Am-Be)
CALIBRATION	Unmoderated ²⁴¹ Am-Be neutron source with shadow cone technique*
TEMPERATURE RANGE	-10°C to 50°C

*On demand

RELATIVE H*(10) RESPONSE**

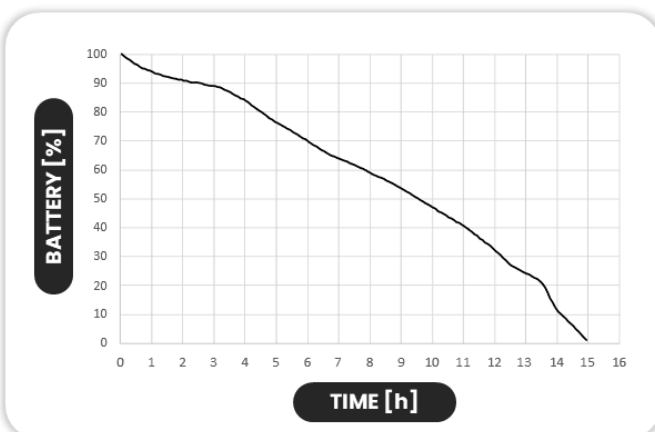
IRRADIATION FIELD	MAX ERROR
²⁴¹ AmBe source at 1 meter	< 2%
²⁵² Cf source at 1 meter	< 2%
Moderated ²⁵² Cf at 1 meter	< 12%
Thermal pile entrance position	< 10%

**Error with respect to CMI primary neutron facility in Prague

ANGULAR RESPONSE (over 4π)

IRRADIATION FIELD	VARIABILITY
Thermal neutron	< 8%
Neutrons from ²⁴¹ AmBe source	< 4%

BATTERY DISCHARGE



POWER SUPPLY

OPERATING VOLTAGE	5 V DC
MAXIMUM POWER CONSUMPTION	< 15 W
RECHARGE CONNECTOR	Micro USB type B
BATTERY CHARGER INPUT	100/240 V~ 50/60 Hz 0.8 A
BATTERY CHARGER OUTPUT	5.0 V= 3.0 A 15.0W
BATTERY	3.7 V LiPo, 6700 mAh

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DATASHEET

ADVANCED CONFIGURATION

PRESET TIME*

User can set a preset time after which the measure stops automatically

PRESET UNCERTAINTY*

User can set a preset data uncertainty after which the measure stops automatically

OUTPUT**

H*(10) or H* (ICRP-74 or ICRU-95)

UNIT OF MEASURE

Sv or rem

DOSE RATE ALARM**

A settable dose rate alarm (from 1 $\mu\text{Sv}\cdot\text{h}^{-1}$ to 10 $\text{mSv}\cdot\text{h}^{-1}$)

INTEGRAL DOSE ALARM**

A settable integral dose alarm (from 10 μSv to 10 Sv)

AUTOSTART

When enable, the device automatically start to measure when powered on.

OPERATIONAL MODE

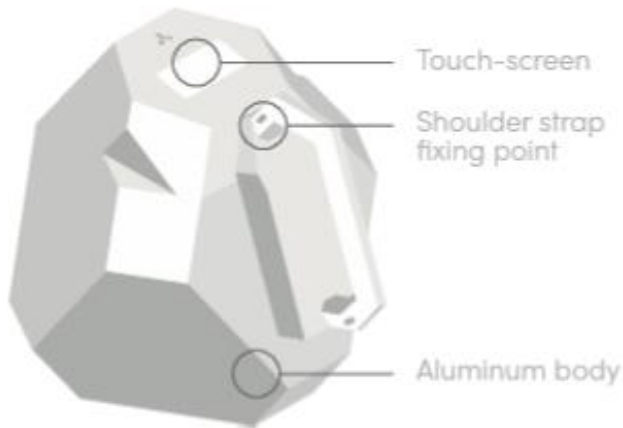
Can be used as standard neutron monitor or in a cumulative mode

CALIBRATION FACTOR

Advanced user can set a calibration factor to adjust the output in an easy way

* Only in cumulative mode

**Protected by password (configurable)

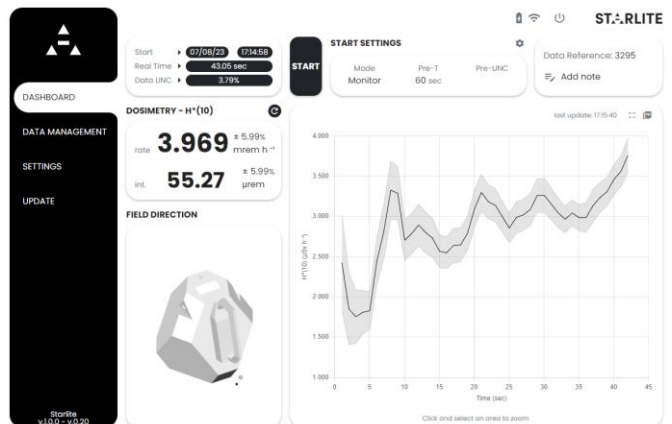


OUTPUT

- Ambient dose rate
- Integral dose rate
- Plot of the ambient dose rate during time
- Main neutron field direction

MEMORY

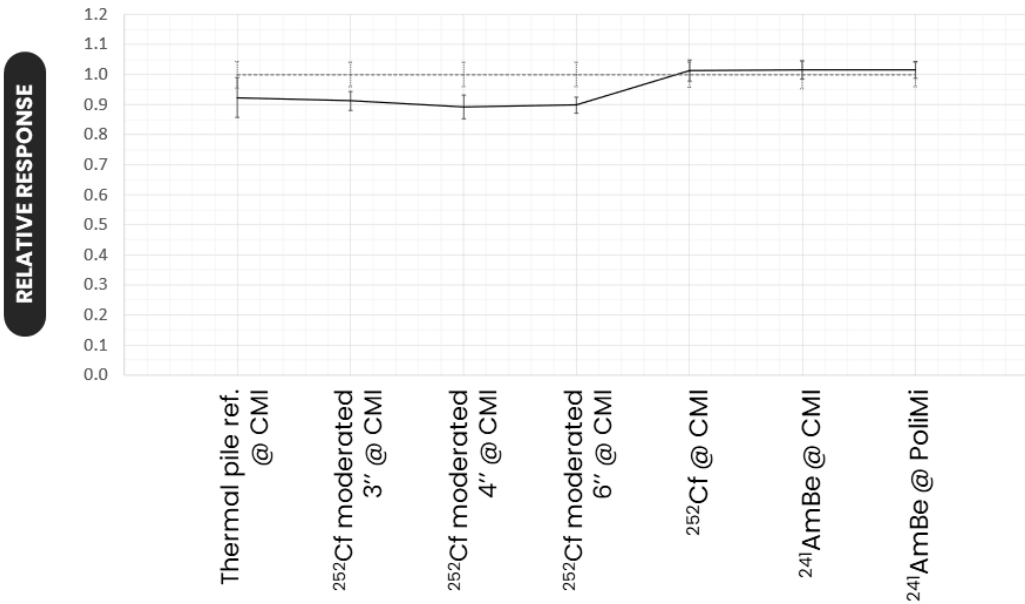
- Up to 9999 measures saved on the device
- Ability to add notes for each measurement
- Ability to download locally the saved data
- Ability to check previous measurements



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DATASHEET

RELATIVE H*(10) RESPONSE



Starlite response in reference neutron fields. Characterization performed at the Czech primary metrology facility (CMI, Prague) and at the neutron facility of Politecnico di Milano (PoliMi).

H*(10) INTERCOMPARISON

NEUTRON FIELD	STARLITE	REFERENCE
Thermal pile @ CMI	287.3 uSv·h ⁻¹ (±4.1%)	311.2 uSv·h ⁻¹ (±4.1%)
²⁵² Cf moderated 6'' @ CMI	29.3 uSv·h ⁻¹ (±3.1%)	32.1 uSv·h ⁻¹ (±4.1%)
²⁵² Cf moderated 4'' @ CMI	42.9 uSv·h ⁻¹ (±4.0%)	48.1 uSv·h ⁻¹ (±4.1%)
²⁵² Cf moderated 3'' @ CMI	52.1 uSv·h ⁻¹ (±2.7%)	58.0 uSv·h ⁻¹ (±4.1%)
²⁵² Cf CMI	90.7 uSv·h ⁻¹ (±3.5%)	89.5 uSv·h ⁻¹ (±4.2%)
²⁴¹ AmBe @ CMI	283.7 uSv·h ⁻¹ (±3.1%)	279.4 uSv·h ⁻¹ (±4.1%)
²⁴¹ AmBe @ PoliMi	24.8 uSv·h ⁻¹ (±2.8%)	24.4 uSv·h ⁻¹ (±4.1%)