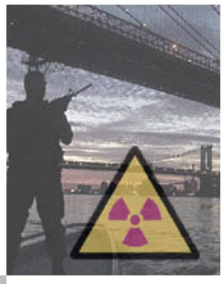
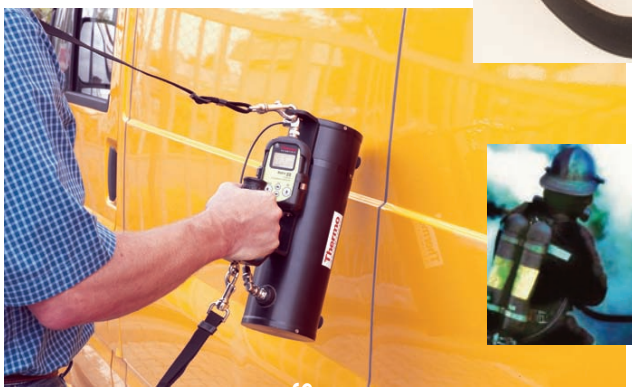
ADVANCED TECHNOLOGY FOR A SAFER WORLD

Thermo Scientific RadEye NBR

Portable high-sensitivity gamma radiation monitor



New highly sensitive Thermo Scientific radiation detector system for fast discrimination between natural and artificial gamma radiation.



Operational areas

- First responders / Fire brigades
- Security professionals
- Environmental monitoring
- Remediation

Key Features

- Alarm on small traces of artificial gamma radiation
- Ideal for detection of shielded sources
- Weighs approx. 3 kg only
- One hand operation

The RadEye™ NBR is a combination of the Thermo Scientific RadEye SX multi-purpose meter and the FHZ 674 NBR detector. Even in case of large variations of the natural background during the search, very small contributions of artificial gamma radiation can be detected by a NBR detector (Natural Background Rejection). Especially for shielded or remote gamma sources, the RadEye NBR system will generate unambiguous audible and visual alarm indication within seconds, even if the incremental dose rate is just in the order of 0,01 µSv/h or less.

Compared to the well-known system FHT 40 NBR, battery operation time has been increased by 5 times, weight has been reduced by 1 kg and, as an additional feature, the possible presence of artificial radiation is indicated on a 0 to 200 %-scaled bar graph (100 % = NBR alarm set point). This feature is extremely helpful during any active search mission. Furthermore, following multiple user suggestions, the audible indication for positive detection of artificial radiation is now well distinguished from the typically much more frequent gross gamma alarms that are caused by changing background conditions. Unlike the FHT 40 NBR, where the dose rate range is extended up to 1 Sv/h (FH 40 G-10 as control unit), the RadEye NBR dose rate range is limited to 100 µSv/h. For higher dose rates, the use of an additional gamma survey meter (e.g. the RadEye G-10) is recommended.

SPECIFICATIONS

The RadEye NBR system # 4250751 consists of RadEye and FHZ 674 NBR

RadEye SX Specifications

Order number	# **4250693**
Measured quantities (with FHZ 674 NBR)	Count rate (cps, cpm), dose rate (Sv/h, rem/h), NBR
Probe cables	RG 58, max. 1.5 m (59") – MHV connector.
High voltage range	300 V…1400 V with output impedance 2 MΩ, typically 600 V for FHZ 674 NBR
Probe library	16 different detectors with corresponding high voltage, calibration factor, dead time correction, overload threshold, detector area and timeout for detector failure.
Alarm threshold	Two alarm thresholds for count rate, dose and dose rate each, NBR
Audible alarm intensity	80 dB at a distance of 30 cm (11.8").
Working temperature	-20 °C ... + 50 °C (-4 °F ... 122 °F).
Scaler/Timer	Preset count, preset time.
EMC	Disturbance emission: EN 61000-6-3, Immunity: EN 61000-6-2.
Size	110 mm x 67 mm x 62 mm (4.3" x 2.6" x 2.4"), with rubber protection, without cable.
Weight	Around 160 g (5.6 oz) including 2 ea. AAA cells and protection sleeve.
Internal memory	The last 1600 measured values are saved and can be read out via PC program. Max and mean value of count rate and dose rate. The time interval is factory preset to 120 s by default. As well scaler measure ments and momentaneous readings can be stored manually. Logbook with 250 entries for changes of con figuration, occurring alarms and errors.
Battery life time	Typically 150 h with FHZ 674 NBR.

For detailed information about the Radeye SX and the connectivity options of further probes please ask for a separate data sheet.

FHZ 674 NBR Specifications

Order number	# **4250750**
Detection Sensitivity	approx. 4000 cps per µSv/h at 662 keV, highly sensitive from 15 keV (front), respectively 30 keV (side)
Energy response (H*(10))	Exceeds IEC 62533* requirements (+/- 30 % for Am-241, Cs-137, Co-60).
Dose rate range (Cs-137)	0.01 µSv/h to 100 µSv/h
Weight	2800 g excluding shoulder strap (200 g) and RadEye SX (160 g)
Dimensions	308 mm x 230 mm x 110 mm

*IEC 62533 Highly sensitive hand-held instruments for photon detection of radioactive material.

Recommended alternative test adapters for HV-fine adjustment and test indication of artificial (= non-background) gamma alarms.

Exempt check source Cs-137	3.7 kBq (0.1 µCi), sealed in a 1" resin chip	**# SM149479010**
Lutetium Test Adapter 50 g Lu_2O_3	approx. 50 Bq/g Lu-176, 62 mm dia. chip (aluminium housing)	**# 4254948**
Lutetium Test Adapter 36 g Lu_2O_3	approx. 50 Bq/g Lu-176; for use with Radeye PRD as well	**# 425067071**

NBR = Natural Background Rejection

The NBR measurement method has been developed by Thermo Fisher Scientific, for extremely fast discrimination between natural and artifical gamma radiation. More than 2,000 devices, based on this technology, are in use worldwide.