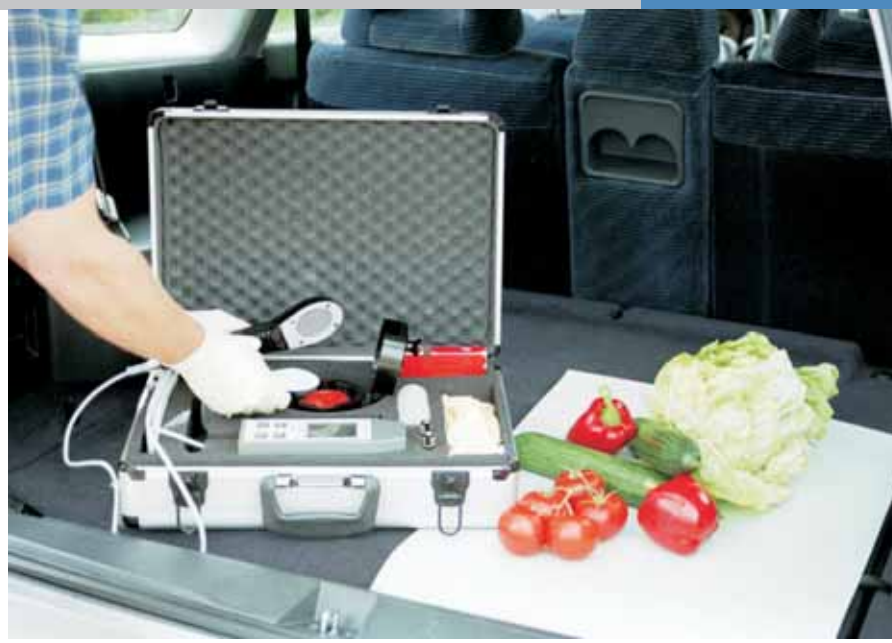
The FH 40 LAB-1 is an efficient supplement to the multipurpose radiameter FH 40 G for first responder task forces.

FH 40 LAB-1

Portable equipment for the detection of $\alpha + \beta$ radiation in samples in combination with the multipurpose Radiameter FH 40 G

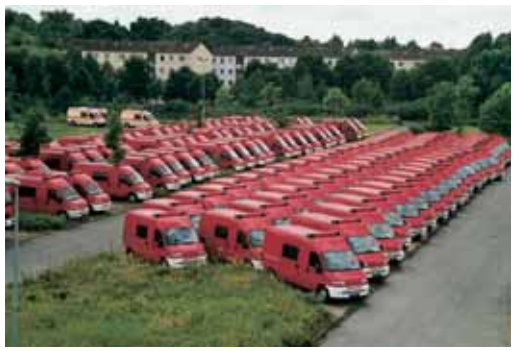


The FH 40 LAB-1 / FH 40 G is used for immediate in-situ measurements of alpha+beta contaminations, e.g.

- Filters and filter systems
- Smear tests
- Soil samples
- Foodstuff, milk, …
- Water etc.

The multipurpose radiameter FH 40 G itself is able to determine the actual gamma doserate.

The portable measuring equipment FH 40 LAB-1/ FH 40 G will strongly reduce the loss of time in cases of an emergency involving radioactive contaminations. It is an easy-to-handle mobile radiation laboratory configured specifically for on-site operation. In addition to offering a high degree of mobility, the FH 40 Lab-1 offers advantages in the reproducible sample geometry and comparability of measurements.



1. Sample planchet, flat
2. Sample holder FH 770 G
3. Filter papers and spatula
4. Sample planchet, high
5. Protective gloves
6. Operation manual
7. Contamination probe FH 732 GM
8. Radiameter FH 40 G (option)
9. Spare batteries

Specifications

FH 40 LAB-1

FHZ 732 GM Alpha-Beta-Gamma Probe for Radiameter FH 40 G	
Overall size:	245 mm x 68 mm (9.6" x 2.7")
Weight:	0.32 kg (0.7 lb)
Detector window:	~ 2 mg/cm², ∅ 44 mm (1.8")
Sensitive area:	15 cm²
Measuring range:	0.1 - 10,000 cps
Background:	~ 0.6 cps
Sensitivity (cps/Bq):	~ 15 % (Am-241)
(filters)	~ 25 % (Cs-137)
Gamma:	~ 4 cps/µSv/h (Cs-137)

Temperatures:	- 30 °C to +50 °C (-22 °F to 122 °F) operation
	- 40 °C to +70 °C (-40 °F to 158 °F) storage
Sample Holder FHT 770 G	
Dimensions:	base plate ∅160 x 10 mm (∅6.3" x 0.4")
	Sample holde 95 x 60 mm (3.7" x 2.4")
Weight:	3.7 kg (8.2 lb)
Material:	brass
Total height	~ 100 mm (3.9") incl. grip
Case	
Dimensions:	430 x 305 x 105 mm (16.9" x 12" x 4.1")

Operating Sequence for a Sample Measurement

1. The sample holder is opened and a sample planchet or sample cup is inserted.
2. With the FHZ 732 GM probe above the sample, the cover is closed.
3. A measurement with the radiameter FH 40 G, using preset time or preset count, can be executed.
4. The result can be stored in the internal memory of the survey meter.

With a measuring time of only 5 minutes, the detection limit is approximately 500 Bq/ kg for Cs-137. This allows the user to monitor limit values according to WHO intervention guidelines (e.g. fruits 7000 Bq/kg; milk 4500 Bq/kg; drinking water 7000 Bq/kg).

The radiological equipment for 371 special NBC detection vehicles was delivered by Thermo Fisher Scientific. The "Bundesamt für Zivilschutz" (German Federal Office for Civil Defense) chose the NBR radioactivity detection system because of the advanced technology offered by the Thermo Scientific radiation detection systems. The system is comprised of: the FH 40 G radiameter with an integrated proportional counter tube, and an FHZ 672-2 NBR scintillation probe. While driving, the high-sensitivity of the scintillation probe recognizes a minimum of artificial gamma radiation in the measurement range of nSv/h, even in a wide area. The measured track of radioactivity is automatically shown on a digital map sup-ported by GPS. As the main instrument of the radiological equipment, the Radiameter FH 40 G has the German PTB approval as well as the German Fire-Brigade-Approval.he patented NBR-technology has also been approved by the TÜV Hannover/ Sachsen-Anhalt.

NBR = Natural Background Rejection

The NBR measurement method was developed by Thermo Fisher Scientific, Erlangen (Germany) for extremely fast discrimination between natural and artificial gamma radiation. Worldwide, more than 1000 devices based on this technology are in use.

NBR has a rapid response time. Artificial gamma radiation sources are identified in seconds by operators with basic training levels.

Unlike conventional spectroscopy-based gamma identification systems, the systems using NBR do not require the presence and resolution of gamma spectral lines. Because of this flexibility, NBR can also definitively distinguish artificial high-energy beta sources, and heavily shielded gamma ray sources, from fluctuating natural background sources.

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