

RADON MONITORING SYSTEMS

Model # FR-32
Model # FR-42
Model # FR-52

FEATURES:

- SENSITIVE 0.03 pCi/liter/week
- NO ELECTRONICS
- FIELD, MILL, BASEMENT, BUILDING, OR MINE USE
- UNATTENDED OPERATION UP TO 30 DAYS
- OVER ONE YEAR BATTERY LIFE
- MEETS NRC ALARA RECOMMENDATIONS
- INCLUDED TLDs FOR GAMMA BACKGROUND MEASUREMENT

RADON DETECTION SYSTEM:

The FR Series is designed primarily for field, mill, and mine use, and are excellent for measuring Radon in basements and well sealed buildings. The simplest of these, the **FR-32**, contains no electronics. Radon diffuses into a counting chamber where the daughter recoils are concentrated by electrostatic attraction and deposited adjacent to a TLD which is normally read on regular TLD reader (available separately).

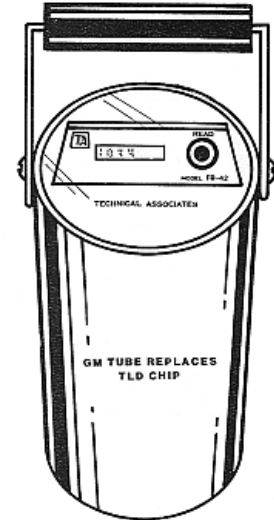


Figure 1: FR-42 Readout

A one week exposure gives a lower limit of detection of 0.03 pCi/l of Radon. This instrument is primarily used for establishing baseline levels and for assuring compliance with the Nuclear Regulatory Commission ALARA guides.

The same instrument when furnished with miniature Thin-Window GM tube and an internal scaler type readout, which may be read in a few minutes, is the **FR-42**. Sensitivity increases as accumulation time is increased until it also achieves 0.03 pCi/l on a one week exposure.

The Third version of the FR series, the **FR-52**, has, in addition to a self-readout, a blower so that it can draw air from as far as 30 ft away and furnish real time Radon concentrations.

APPLICATION: To check Radon content of air for establishment of background and baseline records or to determine and record operating levels for personnel safety and/or ALARA needs.

DESCRIPTION: Model FR-32, Ambient Radon Monitor achieves high sensitivity by attracting the daughters recoiling from Radon Alpha emission directly to the detector by electrostatic attraction. The detector, a 3mm x 1/2mm TLD chip, accumulates and integrates the Alphas for subsequent readout. Radon diffuses into the 7.5 liter chamber through a filter and drying agent to remove radon daughters, moisture, dust and other artifacts from the surrounding air. No pump is used or necessary. No service is necessary other than replacement of the bias supply battery once each year and the indicating drying agent as needed (usually 2-8 weeks, depending on weather).

To read Radon content, the TLD electrode assembly (Figure 1) is lifted from the chamber and the TLD's removed at the lab and read in any standard TLD reader (available separately). The TLD's are reusable. Two snap-on cartridges of drying agent are included. One can be dried (in oven) to be ready for replacing operating cartridge.

TA **TECHNICAL ASSOCIATES**
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\$Revision: 1.2 \$

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The **FR-32** differs from its predecessor, FR-3:

1. The **FR-32** incorporates three TLD detection chips in a single holder. The assembly is securely plugged into place to prevent its being dislodged in transit or in use.
2. Two side chips measure background; the end chip measures deposited alpha energy. The incorporation of the two background chips allows more accurate determination of the Radon content of the ambient air and also is accepted by the NRC as a determinant as to average gamma background for the period that the **FR-32** is in the field.
3. The dessicant is incorporated into a removable cartridge which clips onto the bottom of the instrument. Two such cartridges are furnished with each instrument as well as two TLD holders. At the end of the period in the field, the dessicant cartridge and TLD electrode assembly are taken from the instrument and replaced with fresh ones. The TLD assembly is inserted via the bottom of the instrument and becomes accessible by removing the dessicant cartridge. Thus, in a single operation, the TLD holder and the cartridge may be replaced. The two background TLD chips and the sample TLD chip are incorporated into a single holder to ease exchange and to ensure that they do not become separated in transit or in process.
4. The batteries in the **FR-32**, plug into place and are firmly positioned so that rough handling in the field will not dislodge them. Overall, the **FR-32** is designed for field handling and rough usage in wide temperature range and field conditions.

SPECIFICATIONS:

Weight:	13 lbs.
Shipping Weight:	16 lbs.
Dimensions:	8 3/4" d x 16 1/2".
Chamber Volume:	462 cubic inches, 7.5 liters.
Detectors:	3 each TLD 3mm x 3mm x 0.5mm.
Batteries:	4 each 300V in series, EverReady 493 or equivalent.
Battery Life:	"Shelf Life" - greater than one year.
Filter:	7 1/2" diameter Whatmen 41 or equivalent.
Drying Agent:	7 1/2" x 1" Drierite or Silica-Gel cartridge, reusable after oven drying; 2 drying agent cartridges are furnished.

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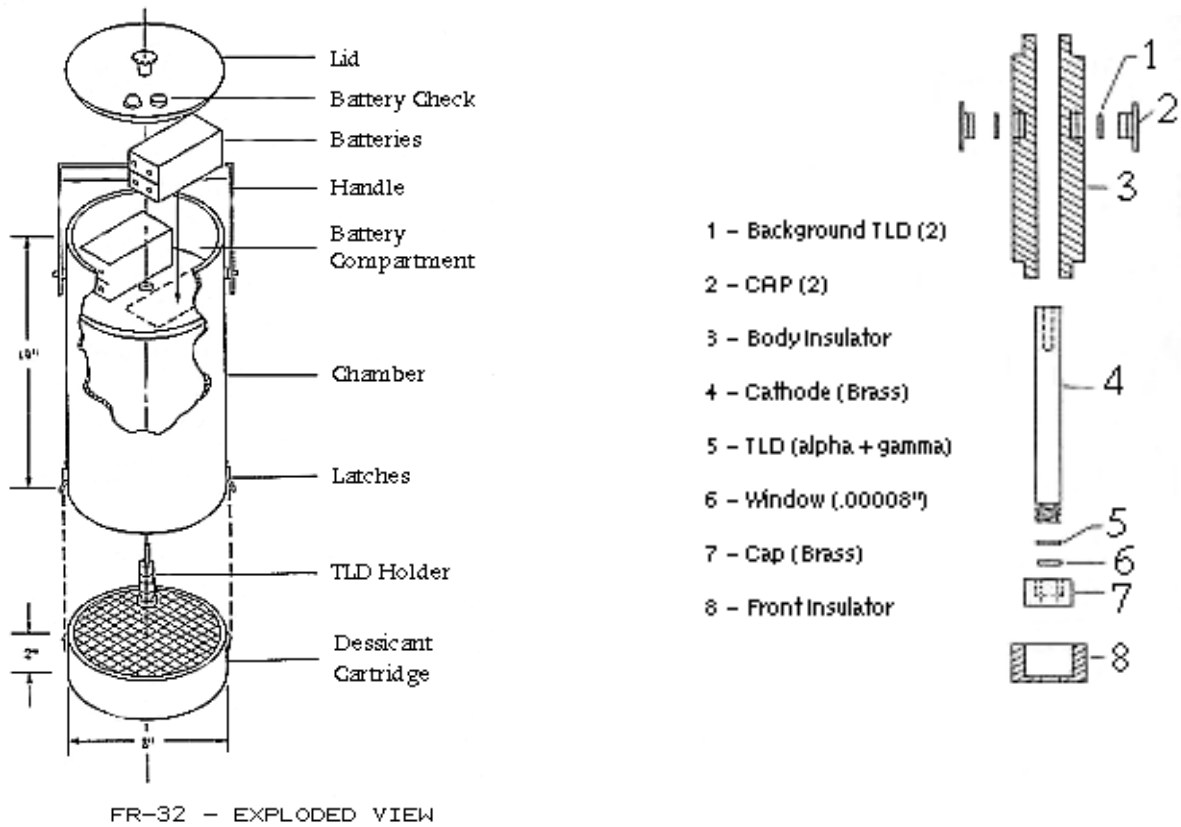


Figure 2: FR-32 Exploded View (Right); Detector Assembly (Left)