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Radiation Safety

RS

# Bleeper mR Radiation Monitor

## Model 05-106

- **Continuously monitors radiation exposure and provides instant, accurate readings**
- **Measures “x” and gamma radiation**
- **Display can be easily read with the instrument in-pocket**
- **Sturdy casing with pocket clip protects against damage**
- **Features visible and audible “battery low” indicators**
- **Good energy and polar response…reliable readings match those from TLDs and film badges**
- **Recessed switch ensures the Bleeper mR cannot be turned off accidentally**

### Introduction

The slim, compact Bleeper mR is the ideal personal monitoring device for alerting personnel to the presence of radiation in medical, industrial or research settings. It accurately measures and displays the radiation dose received.

### Applications

The only control is a switch to turnoff and reset the instrument, making Bleeper mR extremely easy to use. For added safety, the switch is recessed. An easy-to-read LCD display provides a continuous indication of accumulated dose. The loud “bleep” sounds every 15 to 30 minutes on background and becomes more frequent as dose rate increases, becoming a continuous sound in high radiation fields. A series of quiet “clicks” indicates it is properly functioning. Bleeper mR is an enhanced version of the highly popular Bleeper III and utilizes the same proven technology.

### Specifications

**Bleep rates for background radiation**
Approx. 1 bleep every 15 to 30 minutes.
*1 mR/h:* approx. 1 bleep every 20 seconds.
*100 mR/h and above:* continuous signal to at least 60 Sv/h (6000 R/h)
**Energy range** 45 keV to 6 MeV (± 25%)
**Doserate response** Linear to 5 R/h (± 20%)
**Display** LCD 0.1 mR to 999,999.9 mR
**Battery** Three alkaline batteries, size AAA. Typical battery life is 1 year
**Temp. range** - 4º to + 122ºF (- 20° to + 50°C)
**Dimensions** 1.4 (w) x 6 in (d) (3.56 x 15.24 cm)
**Display area** 0.6 x 0.9 in (1.52 x 2.29 cm)
**Weight** 0.25 lb (0.11 kg)
**Available model(s)**
**05-106** Bleeper mR Radiation Monitor
**05-106-2200** Bleeper µSv Radiation Monitor

# Bleeper III Personal Radiation Monitor

## Models 05-104

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- **Provides a continuous indication of gamma or x-ray dose rate**
- **Pocket-size... lightweight**

Here is a simple, convenient instrument for alerting personnel to the presence of ionizing radiation. It provides a clear, audible indication of gamma and x-ray dose rates. No controls or adjustments are required.

The instrument operates continuously, giving a bleep every 15 minutes for normal background radiation, increasing with the dose rate to a continuous tone when high radiation doses are present. This compact unit slips easily into the pocket, where it is firmly held by a clip.

### Specifications

**Sensitivity to background radiation** Approx. 1 bleep per 15 minutes. 1 mR/hr: approx. 1 bleep per 20 seconds. 100 mR/hr and up: continuous signal (to at least 6000 R/hr)
**Energy range** 30 keV to 10 MeV
**Temperature range** - 4º to 122ºF (- 20° to + 50°C)
**Batteries** Two alkaline AAA. Battery life approx. 1 year
**Construction** Plastic case with clip
**Dimensions** 1 (w) x 5.5 (d) x 0.63 in (t) (2.54 x 13.97 x 1.60 cm)
**Weight** 0.17 lb (0.08 kg)
**Available model(s)**
**05-104** Bleeper III Personal Radiation Monitor

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05-106-ds rev 2 04 mar 05

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# Direct Reading Pocket Dosimeters

Models 06-007 to 06-686

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## Introduction

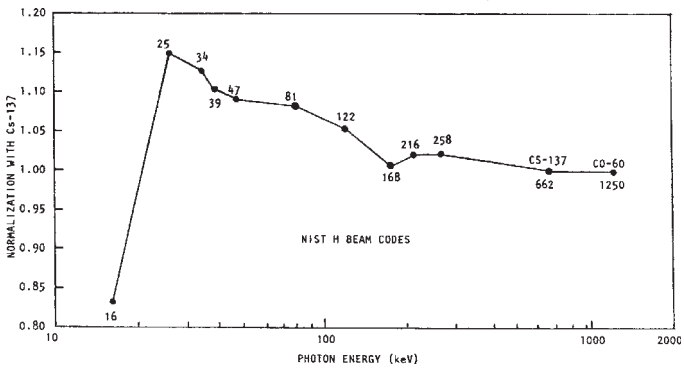
Direct-Reading Pocket Dosimeters are rugged, precision instruments designed specifically for measuring accumulated quantities of gamma and x radiation. In use, the dosimeter is normally clipped to a pocket or to the outside of a lead apron. By checking the dosimeter reading periodically, the wearer is able to determine the exposure received during specific procedures. By knowing where and when greater-than-normal exposures occur, the wearer can identify the source and take quick, corrective action. We currently offers five dosimeters. Each dosimeter has a color-coded clip that signifies its range. This will help the user to identify the dosimeter (i.e. black clip = 0 to 200 mR, blue clip = 0 to 5 R, etc.), and ensure that the intended dosimeter is utilized.

- **Low leakage: measures background**
- **Superior energy response: 20 keV to 2 MeV**
- **Rugged: meets ANSI specifications N13.5 and N322**
- **Highly resistant to shock and vibration**
- **Available in a wide selection of ranges to meet all of your requirements**

## Applications

Direct-Reading Pocket Dosimeters are extremely easy-to-use. To read the integrated exposure, the user looks through the dosimeter eyepiece while pointing the unit toward any external light source. The exposure is determined by the position of a hairline fiber against a graduated scale. A Dosimeter Charger (Model 06-912) is used to re-zero the dosimeter.

The 0 to 200 mR Low-Energy Dosimeter is the most popular type for measuring personal radiation doses in hospital applications including fluoroscopy, portable radiography and angiography. Our dosimeters are ideal for nuclear medicine and health physics applications. All Direct-Reading Pocket Dosimeters are hermetically-sealed using state-of-the-art plastics and epoxy resins. These reliable, high-quality devices meet ANSI specifications N13.5 and N322, as well as military requirements.




**Model 06-007**

## Specifications

**Radiation detected** Gamma and x-radiation from 20 keV to 2 MeV

**Ranges** 0-200 mR to 600 R

**Energy response** See response curve:

*160 keV to 2 MeV:* ± 10%

*40 keV to 160 keV:* + 20%, - 10%

*20 keV to 40 keV:* + 20%, - 30%

**Accuracy** Within ± 10% of true exposure

**Rate response** Dose rate independent for gamma and x-radiation

**Electrical leakage** Less than 0.5% of full scale for 24 hours at 50°C

**Relative humidity** Up to 90%

**Detector** Fiber electrometer mounted in an electrically-conducting plastic ion chamber

**Material**

**Detector housing** Very low permeability plastics; hermetically-sealed

**Clip** Glass fiber-filled, high-strength plastic

**Dimensions** 0.6 in Ø x 4.5 (l) (1.5 x 12.4 cm)

**Weight** 0.06 lb (0.03 kg)

**Available model(s)**

**06-007** Direct-Reading Pocket Dosimeter, 0 to 200 mR; Black Clip

**06-007-2200** Direct-Reading Pocket Dosimeter, 0 to 2 mSv; Black Clip

**06-611** Direct-Reading Pocket Dosimeter, 0 to 5 R; Blue Clip

**06-622** Direct-Reading Pocket Dosimeter, 0 to 20 R; Green Clip

**06-638** Direct-Reading Pocket Dosimeter, 0 to 200 R; Yellow Clip

**06-686** Direct-Reading Pocket Dosimeter, 0 to 600 R; Red Clip

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# Dosimeter Accessories

Models 06-201 to 06-912

## Multi-Dosimeter Checker

- **Allows simultaneous testing of up to five or six direct-reading pocket dosimeters**
- **$^{137}$Cs source requires no license. The Multi-Dosimeter Checkers consist of a plastic cylinder containing either five or six holes surrounding a central, hermetically-sealed, 9 µCi $^{137}$Cs source**

This device makes checking dosimeters easy. Properly charged and zeroed dosimeters are placed in the cylinder and exposed for the required period of time, depending on their range. Typically, a six-hour exposure of a properly-calibrated dosimeter will yield a reading from 25 to 35 mR.

### Specifications

**Radioactive source** 9 µCi $^{137}$Cs source
**Cylinder materials** Cylinder material is PVC
**Dimensions**
**Checker** 2.5 in Ø x 2.5 (h)
**Hole** 0.6 in Ø x 2.5 in (d) (1.6 x 6.4 cm) Model 06-201
**Hole** 0.807 in Ø x 2.5 (d) (2.1 x 6.4 cm) Model 06-201-5000
**Weight** 0.5 lb (0.22 kg)
**Available model(s)**
**06-201** Multi-Dosimeter Checker, six holes
**06-201-5000** Multi-Dosimeter Checker, five holes

## Dosimeter Charger and Storage Case Kit

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- **Convenient and cost-effective**

Here you get the standard Dosimeter Charger (Model 06-912) in a rugged leatherette-covered case that holds up to 12 dosimeters. A chart conveniently affixed inside the case permits quick identification of each dosimeter and its user. The charger can be easily removed for battery change.

### Specifications

**Dimensions** 5.25 (w) x 9.5 (d) x 5 in (h) (13.34 x 24.13 x 12.7 cm)
**Weight** 5 lb (2.3 kg)
**Available model(s)**
**06-907** Dosimeter Charger and Storage Case Kit
**06-907-1000** Dosimeter Storage Case without Charger

## Dosimeter Charger

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- **For zeroing direct-reading dosimeters**

This transistorized power supply zeroes all direct-reading dosimeters. A safety spring in the charging socket prevents damage from excessive pressure on the dosimeter. A protective cap keeps the socket free of dust and moisture when charger is not in use. One standard 1.5 V “D” cell battery (not included) permits thousands of chargings.

### Specifications

**Dimensions** 4 (w) x 4 (d) x 3 in (h) (10 x 10 x 7.6 cm)
**Weight** 1 lb (0.45 kg)
**Available model(s)**
**06-912** Dosimeter Charger

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 06-201-ds rev 2 15 jun 05