

## Model 44-9 Alpha, Beta, Gamma Radiation Detector



### Introduction

The Ludlum Model 44-9 GM (Geiger-Mueller) Detector is a conveniently shaped detector designed for monitoring alpha, beta, and gamma radiation on personnel, objects, and surfaces. It will operate with any Ludlum instrument (or equivalent instrument) that provides 900 Vdc and an input sensitivity of approximately 30 mV or higher. A slip-resistant grip, powder-coated metal housing, and protective stainless steel screen make this a rugged detector that can be used in a wide variety of applications.

### Using the Model 44-9 for Dose Measurements

The GM pancake detector used in the Model 44-9 has a significant over-response at lower energies between approximately 20 to 160 keV. Any dose measurements taken with an unfiltered GM pancake detector would thus have unacceptable errors at these lower energies. A snap-on energy compensation filter is available (see below) that will flatten the energy response when dose measurements are required.

### Specifications

Part Number: 47-1539

**INDICATED USE:** alpha, beta, and gamma survey; frisking, sample counting

**DETECTOR:** pancake-type, halogen-quenched GM

**COMPATIBLE INSTRUMENTS:** general purpose survey meters, ratemeters, and scalars

**WINDOW:**  $1.7 \pm 0.3$  mg/cm<sup>2</sup> mica

**WINDOW AREA:** Active - 15.51 cm<sup>2</sup> (2.4 in<sup>2</sup>); Open - 12.26 cm<sup>2</sup> (1.9 in<sup>2</sup>)

**EFFICIENCY (4 $\pi$ ):** <sup>14</sup>C - 5%; <sup>90</sup>Sr/<sup>90</sup>Y - 22%; <sup>99</sup>Tc - 19%; <sup>32</sup>P - 32%; <sup>239</sup>Pu - 15%; <sup>99m</sup>Tc -  $\leq 1\%$ ; <sup>125</sup>I - 0.2%

**SENSITIVITY:** typically 3300 cpm per mR/hr (<sup>137</sup>Cs gamma)

**ENERGY RESPONSE:** energy dependent (see optional energy filter for dose measurements below)

**BACKGROUND:** 60 cpm

**DEAD TIME:** typically 80 microseconds

**OPERATING VOLTAGE:** 900 Vdc

**CONNECTOR:** series "C" (others available)

**CONSTRUCTION:** aluminum housing with beige powder-coat finish, and stainless steel protective screen (79% open)

**TEMPERATURE RANGE:** -15 to 50 °C (5 to 122 °F); may be certified to operate from -40 to 65 °C (-40 to 150 °F)

**SIZE (H x W x L):** 4.6 x 6.9 x 27.2 cm (1.8 x 2.7 x 10.7 in.)

**WEIGHT:** 0.5 kg (1 lb)

**ENVIRONMENTAL RATING:** IP (Ingress Protection) rating of 53

Model 44-9 with  
optional dose filter  
(see below)



### Also Available

**Model 44-9DOSE:** A Model 44-9 with Dose Filter installed  
(Part Number: 47-3789)

**Model 44-9-18:** Extended Reach GM detector mounted on  
gooseneck-type handle provides up to 0.9 m (36 in.) extension  
(Part Number 47-2940)

**Model 180-2 Sample Holder:** Provides repeatable geometry for  
counting wipes, filter paper, or slides, for samples up to 4.7 cm  
(1.8 in.) diameter. (Part Number 47-1665)

**Ambient Dose Equivalent Filter:** The Model 44-9 GM pancake  
detector has a significant over response at low energies which can  
be corrected using this snap-on filter. It flattens response to within  
 $\pm 20\%$  referenced to <sup>137</sup>Cs (662 keV) over an energy range of 20 keV  
to 1.2 MeV. (Part Number: 2002-1050)