

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 scalers

WINDOW: 1.7 ± 0.3 mg/cm² mica

WINDOW AREA: Active - 15.51 cm² (2.4 in²); Open - 12.26 cm² (1.9 in²)

EFFICIENCY (4 π): ¹⁴C - 5%; ⁹⁰Sr/⁹⁰Y - 22%; ⁹⁹Tc - 19%; ³²P - 32%; ²³⁹Pu - 15%; ^{99m}Tc - $\leq 1\%$; ¹²⁵I - 0.2%

SENSITIVITY: typically 3300 cpm per mR/hr (¹³⁷Cs 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 ¹³⁷Cs (662 keV) over an energy range of 20 keV
to 1.2 MeV. (Part Number: 2002-1050)