

Large Alpha/Beta Scintillation Detectors Model 43-93, 43-147, 43-203 & 43-204



Model 43-93

Introduction

Ludlum Measurements Inc. alpha/beta scintillation detectors were designed for alpha/beta surveying when coupled with compatible instruments. Discriminating between alpha and beta radiation simultaneously requires the counting instrument to have either separate power supplies or window/threshold controls for each channel.

The four alpha/beta scintillation detectors are the Model 43-93, Model 43-147, Model 43-203, and Model 43-204. Each detector has its unique size and specifications for different applications, but are similar in design. See below for comparison.

Common Specifications

DETECTOR TYPE: ZnS(Ag) scintillator adhered to 0.03 cm (0.01 in.) thick scintillation material

CONNECTOR: "C" unless otherwise specified

TEMPERATURE RANGE: -20 to 50 °C (-4 to 122 °F)

CONSTRUCTION: aluminium housing with beige powder-coat finish

Model 43-93 100 cm² Alpha-Beta Frisker

Part Number: 47-3232

WINDOW AREA: Active: 100 cm² (15.5 in²), Open: 88 cm² (13.6 in²)

EFFICIENCY (4π): 239Pu - 20%, 99Tc - 15%, 90Sr/90Y - 20%

TYPICAL BACKGROUND (10 μR/hr fi eld): Alpha: ≤ 3 cpm; Beta: ≤ 300 cpm

CROSS-TALK: Alpha to Beta: < 10%, Beta to Alpha: < 1%

SIZE (H x W x D): 6.4 x 9.5 x 31 cm (2.5 x 3.8 x 12.3 in.)

WEIGHT: 0.5 kg (1.0 lb)

RESPONSE UNIFORMITY: 90%

Model 43-203 302 cm² Hand Detector

Part Number: 47-4343

WINDOW: active: 301 cm² (46.8 in²)

EFFICIENCY (4π): 239Pu - 20% alpha, Tc99 - 15% beta

TYPICAL BACKGROUND: alpha: ≤ 3 cpm; beta: 700 cpm

CROSS-TALK: alpha to beta: ≤ 10%, beta-alpha: ≤ 1%

SIZE (H x W x D): 9.8 x 15.2 x 34.6 cm (3.9 x 6.0 x 13.6 in.)

RESPONSE UNIFORMITY: 80%

Model 43-204 540 cm² Foot Detector

Part Number: 47-4344

WINDOW: active: 537.8 cm² (83.8 in²)

EFFICIENCY (4π): 239Pu - 15% alpha, Tc99 - 10% beta

TYPICAL BACKGROUND: alpha: ≤ 7 cpm; beta: 1000 cpm

CROSS-TALK: alpha to beta: ≤ 20%, beta to alpha: ≤ 1%

SIZE (H x W x D): 21.6 x 18.8 x 37.4 cm (2.5 x 3.8 x 12.3 in.)

RESPONSE UNIFORMITY: 80%

Model 43-147 200 cm² Alpha-Beta Frisker

Part Number: 47-4314

WINDOW AREA: Active: 100 cm² (15.5 in²), Open: 88 cm² (13.6 in²)

EFFICIENCY (4π): 239Pu - 20%, 99Tc - 15%, 90Sr/90Y - 20%

TYPICAL BACKGROUND (10 μR/hr fi eld): Alpha: ≤ 3 cpm; Beta: ≤ 300 cpm

CROSS-TALK: Alpha to Beta: < 10%, Beta to Alpha: < 1%

SIZE (H x W x D): 10.7 x 12.1 x 35.6 cm (4.2 x 4.8 x 14 in.)

RESPONSE UNIFORMITY: 90%



Model 93-147