

**LUDLUM MODEL 44-25  
ALPHA, BETA, GAMMA  
HAND DETECTOR**

**June 2016  
Serial Number 155835 and Succeeding  
Serial Numbers**



**LUDLUM MODEL 44-25  
ALPHA, BETA, GAMMA  
HAND DETECTOR**

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**LUDLUM MEASUREMENTS, INC.**  
501 OAK STREET, P.O. BOX 810  
SWEETWATER, TEXAS 79556  
325-235-5494, FAX: 325-235-4672

## **STATEMENT OF WARRANTY**

Ludlum Measurements, Inc. warrants the products covered in this manual to be free of defects due to workmanship, material, and design for a period of twelve months from the date of delivery. The calibration of a product is warranted to be within its specified accuracy limits at the time of shipment. In the event of instrument failure, notify Ludlum Measurements to determine if repair, recalibration, or replacement is required.

This warranty excludes the replacement of photomultiplier tubes, G-M and proportional tubes, and scintillation crystals which are broken due to excessive physical abuse or used for purposes other than intended.

There are no warranties, express or implied, including without limitation any implied warranty of merchantability or fitness, which extend beyond the description of the face there of. If the product does not perform as warranted herein, purchaser's sole remedy shall be repair or replacement, at the option of Ludlum Measurements. In no event will Ludlum Measurements be liable for damages, lost revenue, lost wages, or any other incidental or consequential damages, arising from the purchase, use, or inability to use product.

## **RETURN OF GOODS TO MANUFACTURER**

If equipment needs to be returned to Ludlum Measurements, Inc. for repair or calibration, please send to the address below. All shipments should include documentation containing return shipping address, customer name, telephone number, description of service requested, and all other necessary information. Your cooperation will expedite the return of your equipment.

**LUDLUM MEASUREMENTS, INC.  
ATTN: REPAIR DEPARTMENT  
501 OAK STREET  
SWEETWATER, TX 79556**

**800-622-0828 325-235-5494  
FAX 325-235-4672**

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## Introduction

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The Ludlum Model 44-25 GM (Geiger-Mueller) Hand Monitor detects alpha, beta, and gamma radiation. Its size and shape provide easy handling for surveying or personnel monitoring. The detector is energy dependant, over-responding by a factor of 6 in the 60-100 keV range when normalized to  $^{137}\text{Cs}$ .

This detector operates between 850-1000 volts, with a recommendation from the tube manufacturer of approximately 900 Vdc. Recommended instrument input sensitivity is approximately 80 mV or higher to prevent the detector from double pulsing (where the detector “counts” a single pulse from the instrument multiple times.)

### **Caution!**

The GM tube face can rupture above 2438 m (8000 ft) in altitude. When transporting this detector by air, use an airtight container in order to avoid sudden atmospheric changes resulting in tube failure.

The Ludlum Model 44-25 will operate with any Ludlum instruments or equivalent instruments that provide 900 Vdc and an input sensitivity of approximately 80 mV or higher.



*Model 44-25*



## **Unpacking and Repacking**

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Remove the calibration certificate or detector functional check certificate and place it in a secure location. Remove the detector(s) and accessories (if applicable) and ensure that all items listed on the packing list are in the carton. If multiple detectors are included, refer to the calibration certificates for serial number (SN) matches. The Model 44-25 serial number is located on the side of the detector.

To return an instrument or detector for repair or calibration, provide sufficient packing material to prevent damage during shipment and affix appropriate warning labels to promote careful handling.

Every returned instrument must be accompanied by an **Instrument Return Form**, which can be downloaded from the Ludlum website at [www.ludlums.com](http://www.ludlums.com). Find the form by clicking the “Support” tab and selecting “Repair and Calibration” from the drop-down menu. Then choose the appropriate Repair and Calibration division where you will find a link to the form.

### **Caution!**

When shipping a Model 44-25 by air, it is necessary to ship the tube in a sealed container to avoid sudden atmospheric changes, which could rupture the tube.

## Specifications

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**Detector:** 2 each pancake-type halogen quenched GM

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

**Window Area:** active is 31 cm<sup>2</sup>; open is 18 cm<sup>2</sup>

**Efficiency (4 $\pi$  geometry):** typically 5% for <sup>14</sup>C; 22% for <sup>90</sup>Sr/<sup>90</sup>Y; 19% for <sup>99</sup>Tc; 32% for <sup>32</sup>P; 15% for <sup>239</sup>Pu

**Sensitivity:** typically 6600 cpm/mR/hr (<sup>137</sup>Cs gamma)

**Energy Response:** energy dependant

**Dead Time:** typically 80  $\mu$ s

**Operating Voltage:** 900 volts

**Compatible Instruments:** general-purpose survey meters, ratemeters and scalars.

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

**Construction:** aluminum housing with beige powder-coat finish; stainless steel protective screen

**Temperature Range:** -15 to 50 °C (5 to 122 °F); may be certified for (-40 to 65 °C) -40 to 150 °F

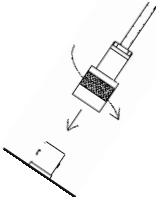
**Size:** 24.1 x 15.2 x 19.8 cm (9.5 x 6 x 7.8 in.) (H x W x L)

**Weight:** 1.5 kg (3.3 lb)

## **Operating Procedures**

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### **CONNECTING TO AN INSTRUMENT**



Connect one end of the cable provided to the detector by firmly pushing the connector together while twisting clockwise  $\frac{1}{4}$  turn until latched. Repeat the process in the same manner with the other end of the cable and the instrument.

### **TESTING THE DETECTOR**

1. Insure that the instrument high voltage (HV) is at the proper setting for the detector (900 volts).
2. Connect the detector to the instrument and check for a proper background reading (typically 25-50 cpm at 8-15  $\mu\text{R/hr}$ ).
3. Expose the detector to a check source and verify that the instrument indicates within 20% of the check source reading from the last calibration. Alternatively, expose the detector to a source of known value and verify that the detector detects greater than or equal to the efficiency listed in the specification section of this manual.
4. Instruments and detectors that meet these criteria are ready for use. Failure to meet these criteria may indicate a malfunction in the detector.

## Parts List

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### Model 44-25 Alpha-Beta-Gamma Hand Monitor

UNIT	Completely Assembled Model 44-25 Alpha-Beta-Gamma Hand Monitor	47-1508
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Quantity	Description	Part #
2EA	G-M TUBE (LND 7311)	01-5008
2EA	TUBE HOLDER	7073-037-02
1EA	LEFT MOUNTING BRACKET	7224-003-01
1EA	RIGHT MOUNTING BRACKET	7224-003-02
1EA	COVER	7224-004-01
1EA	BACK PANEL	7224-005-01
2EA	PENCIL CLIP	01-5237
2EA	RESISTOR, 3.3 MEG 1/4W 5%	10-7044
1EA	CONNECTOR, UG 706/U	13-7751
10IN.	HV WIRE	21-9312

