

**LUDLUM MODEL 44-150-3  
GAMMA GM DETECTOR**

**September 2014**

**LUDLUM MODEL 44-150-3  
GAMMA GM DETECTOR**

**September 2014**



**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**



Model 44-150-3

## Table of Contents

---

<i>Introduction</i>	1
<i>Unpacking and Repacking</i>	2
<i>Specifications</i>	3
<i>Operating Procedures</i>	4
<i>Safety Considerations</i>	5
<i>Parts List</i>	6
<i>Energy Response Curve</i>	7

## Introduction

---

The Model 44-150-3 is a high-sensitivity Geiger-Mueller (GM) gamma survey detector that can be used with any portable ratemeter, scaler instrument, or area monitor that provides 900 Vdc with an input sensitivity of  $30 \pm 10$  mV.

Note:

The detector does not contain any consumable materials.

---

Note:

If the detector is used in a manner not intended by the manufacturer, the detector may not function properly.

---

## Unpacking and Repacking

---

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 44-150-3 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.

## Specifications

---

RECOMMENDED OPERATING VOLTAGE: 900 V

ENERGY RESPONSE (60 keV-1.3 MeV): within 30%

SENSITIVITY ( $^{137}\text{Cs}$  Gamma):  $\approx 13,500$  cpm/mR/hr

BACKGROUND:  $\approx 300$  cpm

INPUT SENSITIVITY: 30 mV  $\pm$ 10 mV

DEAD TIME: typically 50 microseconds

LINEARITY WITH DEAD TIME CORRECTION: 0.01 mR/hr to 80 mR/hr

LINEARITY WITHOUT DEAD TIME CORRECTION: 0.01 mR/hr to 8 mR/hr

TUBE: 30 mg/cm<sup>2</sup> stainless steel (Halogen quench) GM

TEMPERATURE RANGE: -15 to 50 °C (5 to 122 °F)

SIZE: 4.8 x 36.2 cm (1.9 x 14.3 in.) (Dia x L)

CONSTRUCTION:

WEIGHT: 0.9 kg (2 lb)

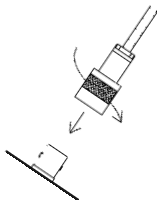
CONNECTOR: series "C"



## Operating Procedures

---

### 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. Ensure 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 ( $\approx$  300 cpm).
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, which meet these criteria, are ready for use. Failure to meet these criteria may indicate a malfunction in the detector.

## Safety Considerations

---

### ENVIRONMENTAL CONDITIONS FOR NORMAL USE

1. Indoor or outdoor use (in a dry environment)
2. No maximum altitude
3. Temperature range of -15 to 50 °C (5 to 122 °F); May be certified for operation from -40 to 65 °C (-40 to 150 °F).
4. Maximum relative humidity of less than 95% (non-condensing)
5. Pollution Degree 3 (Occurs when conductive pollution or dry nonconductive pollution becomes conductive due to condensation. This is typical of industrial or construction sites.)

### CLEANING INSTRUCTIONS AND PRECAUTIONS

The detector may be cleaned externally with a damp cloth, using only water as the wetting agent. Do not immerse the instrument in any liquid. Observe the following precautions when cleaning:

1. Turn the instrument electronics OFF.
2. Allow the instrument to sit for one minute.
3. Disconnect the detector cable before cleaning the detector.

## Parts List

---

<u>Reference</u>	<u>Description</u>	<u>Part Number</u>
UNIT	Completely Assembled Model 44-150-3 Gamma Detector	47-4039
3 EA	GM TUBE (LND 719/TGM)	01-5015
3 EA	SOCKET-AMPH 78-S3S	01-5024
3 EA	RES – 3.3 MEG ¼ W, 5% CR 25	10-7044
1 EA	0 RING-2-029	16-8317
1 EA	LUG-#14 N/L 1HL 1497	18-8766
1 EA	Model 44-150-3 BODY ASSY	2002-1130
25 IN.	WIRE-TEFLON WHT #22 HV	21-8993
24 IN.	WIRE #22 BLACK UL1430	21-9413
11.7 IN.	SHRINK-3/16 INCH BLACK	22-9504
1 EA	CONNECTOR SERIES “C”	4478-011
8 EA	Model 44-3, 44-2, 43-5 SPNG	7002-029-05
2 EA	Model 44-150-3 TIN SLEEVE	7002-1127

