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
TYPICAL MODEL 43-40 TYPE DETECTOR
SEE SPECIFICATIONS FOR SPECIFIC DIMENSIONS BY MODEL
# Table of Contents

**Introduction**  

1

**Specifications**  

2
- Common Specifications  
  2-1
- Specifications by Model Number  
  2-2

**Safety Considerations**  

3
- Environmental Conditions for Normal Use  
  3-1
- Cleaning Instructions and Precautions  
  3-1
Introduction

The Ludlum Model 43-40 Series of proportional probes are designed to be used in detecting alpha radiation. The probes require an instrument with input sensitivity of 2 millivolts or less and a minimum voltage of 2500 volts. Probe operating voltage is altitude sensitive. Ludlum Measurements suggests any of the following instruments for use with these probes: Models 12, 16, 18, 2000, 2200, 2221, 2241, or 2350. Connection to the counting instrument is made through a Series “C” or “MHV” connector (others are available).

The Models covered in this manual are listed below with their associated part number.

- Model 43-40      PN: 47-1150
- Model 43-40-1    PN: 47-1366
- Model 43-40-2    PN: 47-3434
- Model 43-40-3    PN: 47-3435
- Model 43-40-4    PN: 47-3436
- Model 43-40-5    PN: 47-3541
- Model 43-40-6    PN: 47-3542
- Model 43-40-7    PN: 47-3544
Specifications

**Indicated Use:** alpha survey

**Suggested Instruments:** Ludlum Models 12, 16, 18, 2000, 2200, 2221, 2241 or 2350

**Working Environment:** splash-proof shields and desiccant vented chamber for outdoor use

**Window:** 0.4mg/cm² aluminized Mylar

**Efficiency (4pi geometry):** typically 10% \(^{239}\text{Pu}\)

**Background:** typically 3 cpm or less

**Operating Voltage:** altitude sensitive

- Sea level – 2050 volts
- 2000 feet – 2000 volts
- 5000 feet – 1925 volts
- 7000 feet – 1875 volts

**Counter Threshold Setting:** typically 2 mV

**Connector:** Series “C” or “MHV” (others available)

**Temperature Range:** -20 to 50 °C (-4 to 122 °F). May be certified for operation from -40 to 65 °C (-40 to 150 °F).
### Specifications by Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Active Window, area cm$^2$ (in$^2$)</th>
<th>Open Window, area cm$^2$ (in$^2$)</th>
<th>Chamber Depth, cm (in.)</th>
<th>Screen % Open</th>
</tr>
</thead>
<tbody>
<tr>
<td>43-40</td>
<td>79 (12.2)</td>
<td>52.4 (8.1)</td>
<td>0.64 (0.25)</td>
<td>66.0</td>
</tr>
<tr>
<td>43-40-1</td>
<td>144.8 (22.4)</td>
<td>110.8 (17.2)</td>
<td>0.64 (0.25)</td>
<td>76.5</td>
</tr>
<tr>
<td>43-40-2</td>
<td>239 (37.0)</td>
<td>188 (29.1)</td>
<td>0.64 (0.25)</td>
<td>79.1</td>
</tr>
<tr>
<td>43-40-3</td>
<td>320 (49.6)</td>
<td>253 (39.2)</td>
<td>0.64 (0.25)</td>
<td>65.0</td>
</tr>
<tr>
<td>43-40-4</td>
<td>805 (124.8)</td>
<td>625.7 (97.0)</td>
<td>0.64 (0.25)</td>
<td>77.7</td>
</tr>
<tr>
<td>43-40-5</td>
<td>132.3 (20.5)</td>
<td>128.9 (20.0)</td>
<td>0.64 (0.25)</td>
<td>97.5</td>
</tr>
<tr>
<td>43-40-6</td>
<td>88.9 (13.8)</td>
<td>87.6 (13.6)</td>
<td>0.64 (0.25)</td>
<td>98.5</td>
</tr>
<tr>
<td>43-40-7</td>
<td>135.3 (21.0)</td>
<td>112.9 (17.5)</td>
<td>0.64 (0.25)</td>
<td>83.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Overall Height cm (in)</th>
<th>Overall Width cm (in)</th>
<th>Overall Length cm (in)</th>
<th>Overall Weight kg (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>43-40</td>
<td>1.1 (0.44)</td>
<td>6.4 (2.5)</td>
<td>22.9 (9.0)</td>
<td>0.38 (0.83)</td>
</tr>
<tr>
<td>43-40-1</td>
<td>1.1 (0.44)</td>
<td>8.9 (3.5)</td>
<td>23.6 (9.3)</td>
<td>0.6 (1.4)</td>
</tr>
<tr>
<td>43-40-2</td>
<td>10.2 (4.0)</td>
<td>10.7 (4.2)</td>
<td>22.9 (9.0)</td>
<td>1.1 (2.5)</td>
</tr>
<tr>
<td>43-40-3</td>
<td>10.2 (4.0)</td>
<td>14.0 (5.5)</td>
<td>22.9 (9.0)</td>
<td>1.6 (3.5)</td>
</tr>
<tr>
<td>43-40-4</td>
<td>3.1 (1.2)</td>
<td>24.8 (9.8)</td>
<td>33.1 (13.0)</td>
<td>3.2 (7.1)</td>
</tr>
<tr>
<td>43-40-5</td>
<td>2.4 (0.95)</td>
<td>12.8 (5.0)</td>
<td>33.1 (13.0)</td>
<td>0.68 (1.5)</td>
</tr>
<tr>
<td>43-40-6</td>
<td>0.97 (0.38)</td>
<td>12.8 (5.0)</td>
<td>22.9 (9.0)</td>
<td>0.39 (0.85)</td>
</tr>
<tr>
<td>43-40-7</td>
<td>6.4 (2.5)</td>
<td>8.9 (3.5)</td>
<td>21.6 (8.5)</td>
<td>0.54 (1.2)</td>
</tr>
</tbody>
</table>
Safety Considerations

Environmental Conditions for Normal Use

Indoor or outdoor use

No maximum altitude (operating voltage sensitive to altitude)

Temperature range of -20 to 50 °C (-4 to 122 °F)

Maximum relative humidity of less than 95% (non-condensing)

Cleaning Instructions and Precautions

The detectors specified in this manual may be cleaned externally with a damp cloth, using only water as the wetting agent. Do not immerse the detector in any liquid. Do not attempt to clean a detector that is attached to an instrument providing high voltage. Disconnect the detector cable before cleaning.