
**LUDLUM MODEL 43-40 SERIES OF
ALPHA AIR PROPORTIONAL DETECTORS**

September 2010

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ALPHA AIR PROPORTIONAL DETECTORS**

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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

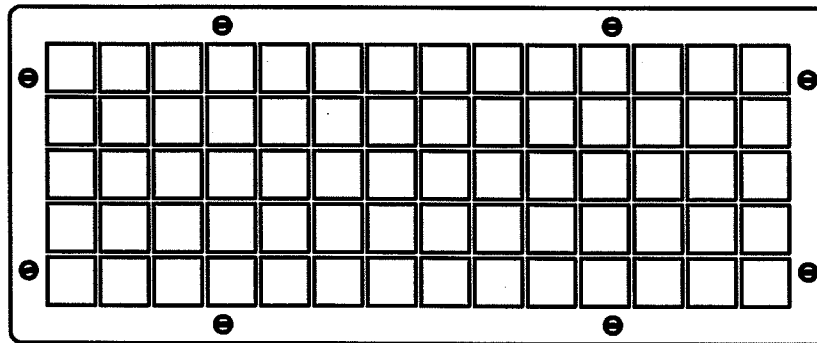
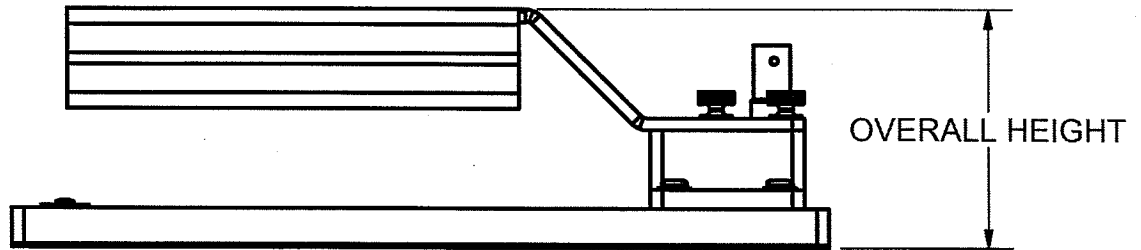
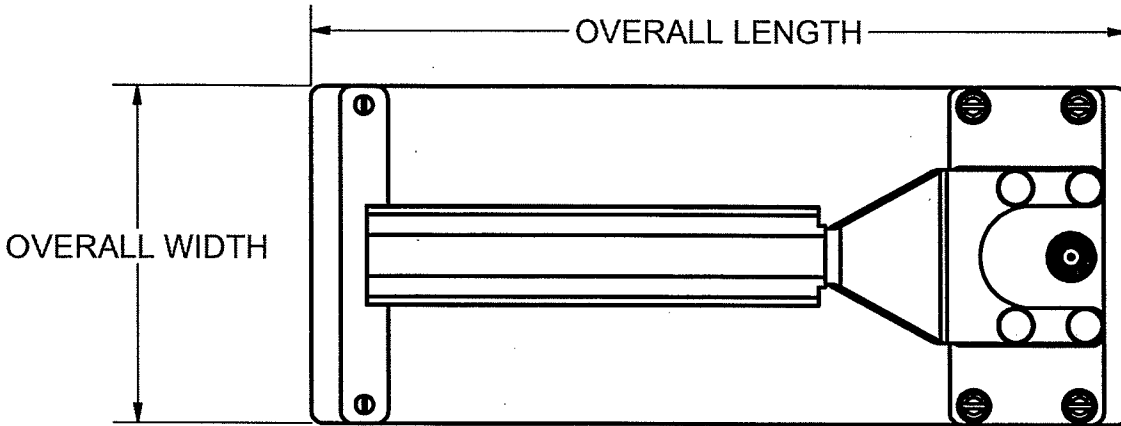
If equipment needs to be returned to Ludlum Measurements, Inc. for repair or calibration, please send to the address below. All shipments should include documentation containing return shipping address, customer name, telephone number, description of service requested, and all other necessary information.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

| REVISION HISTORY | | | |
|------------------|-------------|------------|----|
| REV | DESCRIPTION | DATE | BY |
| 1 | VALID | 11/30/2006 | PW |

TYPICAL MODEL 43-40 TYPE DETECTOR
 SEE SPECIFICATIONS FOR SPECIFIC DIMENSIONS BY MODEL



| | | | | |
|------------------------------------------------------------------------|------------|---------------|--------------|---------------------------------------------------------------------|
| DWN | DATE | CHK | DATE | DATE |
| PW | 12/01/2006 | | | 12/01/06 |
| DWG NUM: 4316-081 | | | | SCALE: FULL <input type="checkbox"/> OTHER <input type="checkbox"/> |
| TITLE M 43-40 SERIES DIMENSIONS | | | | |
| LUDLUM MEASUREMENTS, INC. 501 OAK STREET SWEETWATER, TEXAS 79556 | | SERIES 316 | SHEET 81A | |

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Section

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 |

Section
2

Specifications

Common
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% ²³⁹Pu

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

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

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

Section

3

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.