LUDLUM MODEL 44-215
ANGLED 20 cm² BETA SCINTILLATOR

August 2019
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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 thereof. 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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1. GENERAL

The Model 44-215 angled 20 cm² beta scintillation detector is similar to the Ludlum Model 44-1 beta scintillator detector, but with a larger window area of 20 cm² (16.65 cm² open) and an ergonomically angled handle. It contains a cylindrical, 0.025 cm (0.010 in.) thick plastic scintillator for the detection of beta radiation with minimal contribution from background gamma radiation. The plastic scintillator is 4.3 cm (1.7 in.).

The window is covered by 1.2 mg/cm² metalized polyester to reduce light response. (Light response can cause excessive background counts.)

The Model 44-215 may be used with any of the Ludlum instruments or equivalent instruments with a voltage range of 500-1200 V and an input sensitivity of 2-50 mV.

2. SPECIFICATIONS:

**Photomultiplier Tube:** 2.88 cm (1.125 in.) diameter, 10-stage, head-on type, magnetically shielded

**Scintillator:** plastic, 4.3 cm (1.7 in.) diameter, 0.025 cm (0.010 in.) thick

**Window:** 1.2 mg/cm² metalized polyester

**Window Area:** 20 cm² active; 16.65 cm² open

**Efficiency (4π):** 10% for ¹⁴C; 33% for ⁹⁹Tc; 33% for ³⁶Cl

**Background:** Exposed indoors and to a radiation field of 10 µR/hr, it is less than 100 cpm. Exposed to daylight, it is less than 150 cpm.

**Detector Operating Voltage:** 500-1200 V

**Connector:** standard series "C", other types available upon request

**Temperature Range:** -20 to 50 °C (-4 to 122 °F)

**Size:** 7.3 x 21.6 cm (2.9 x 8.5 in.) (Dia x L)

**Weight:** 0.3 kg (0.6 lb)

**Construction:** aluminum housing with beige powder coating
REPLACEMENT PARTS LIST

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>Part No.</th>
</tr>
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<tbody>
<tr>
<td><strong>UNIT</strong></td>
<td>Completely Assembled Model 44-215 Beta Scintillator</td>
<td>47-4143</td>
</tr>
</tbody>
</table>

**Assembly View, Drawing 574 x 25**

* Connector, Series "C"                                      4478-011
* PM Tube 1.125 R6094                                         01-5238
* Foil-Netic (Dark Outside Layers)                           01-5019
* Foil-Co-Netic (Shiny Inside Layer)                         01-5026
* O-Ring 2-120                                               16-8366
* Lug #14 N/L 1HL                                            18-8766
* Nut-3/8 32x1/2 PNL UG706                                   20-9176
* Welded Body                                               2574-028
* Model 43-93 Connector Cap                                  7393-102
* Model 44-215 Face                                          7574-023
* Mylar Ring                                                7574-024
* PMT Retainer                                              7574-029
* Scintillator Support                                       7574-030
* Gasket                                                    7574-032
* Plastic Scintillator                                       7574-033
2 EA. Sponge                                                7002-065-04

**1 1/8 inch. Voltage Divider, Drawing 435 x 1700**

* Completely Assembled Circuit Board                        5435-533

**CAPACITORS**

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<tr>
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<th>Part No.</th>
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<tbody>
<tr>
<td>C1-C3</td>
<td>0.01µF, 200V, C</td>
<td>04-5725</td>
</tr>
<tr>
<td>C4</td>
<td>0.0047µF, 3KV</td>
<td>04-5498</td>
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**RESISTORS**

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<tr>
<td>R1</td>
<td>10M, 1/8 W, 1%</td>
<td>12-7996</td>
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<tr>
<td>R2</td>
<td>7.5M, 1/8 W, 5%</td>
<td>12-7971</td>
</tr>
<tr>
<td>R3-R10</td>
<td>10M, 1/8 W, 1%</td>
<td>12-7996</td>
</tr>
<tr>
<td>Part</td>
<td>Description</td>
<td>Code</td>
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<td>-------------</td>
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<td>R11</td>
<td>2.21M, 1/8 W, 1%</td>
<td>12-7002</td>
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<tr>
<td>R12-R13</td>
<td>6.04M, 1/8 W, 1%</td>
<td>12-7071</td>
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**MISCELLANEOUS**

<table>
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<th>Part</th>
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<tbody>
<tr>
<td>W1</td>
<td>#22 AWG WHITE 9 65/40 MICA SILICONE</td>
<td>21-8543</td>
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<tr>
<td>W4</td>
<td>#22 AWG BLACK 0 65/40 MICA SILICONE</td>
<td>21-8552</td>
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</table>
DRAWDNGS AND DIAGRAMS

Assembly View, Drawing 574 x 25

1 1/8 inch Voltage Divider Board Schematic, Drawing 435 x 1700
1 1/8 inch Voltage Divider Board Component Layout, Drawing 435 x 1701 (2 sheets)
PLACE A DAB OF RTV OVER 4 SCREW HOLES BEFORE THREADING SCREW TO MAKE SURE IT IS WATERPROOF.

MYLAR ON THIS SIDE