

**LUDLUM MODEL 44-215
ANGLED 20 cm² BETA SCINTILLATOR**

August 2019

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ANGLED 20 cm² BETA SCINTILLATOR**

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

Model 44-215 Angled 20 cm² Beta Scintillator
August 2019

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

Background: Exposed indoors and to a radiation field of 10 μ R/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

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REPLACEMENT PARTS LIST

Ref. No.	Description	Part No.
Model 44-215 Angled 20 cm² Beta Scintillator		
UNIT	Completely Assembled Model 44-215 Beta Scintillator	47- 4143
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		
C1-C3	0.01μF, 200V, C	04-5725
C4	0.0047μF, 3KV	04-5498
RESISTORS		
R1	10M, 1/8 W, 1%	12-7996
R2	7.5M, 1/8 W, 5%	12-7971
R3-R10	10M, 1/8 W, 1%	12-7996

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R11	2.21M, 1/8 W, 1%	12-7002
R12-R13	6.04M, 1/8 W, 1%	12-7071

MISCELLANEOUS

W1	#22 AWG WHITE 9 65/40 MICA SILICONE	21-8543
W4	#22 AWG BLACK 0 65/40 MICA SILICONE	21-8552

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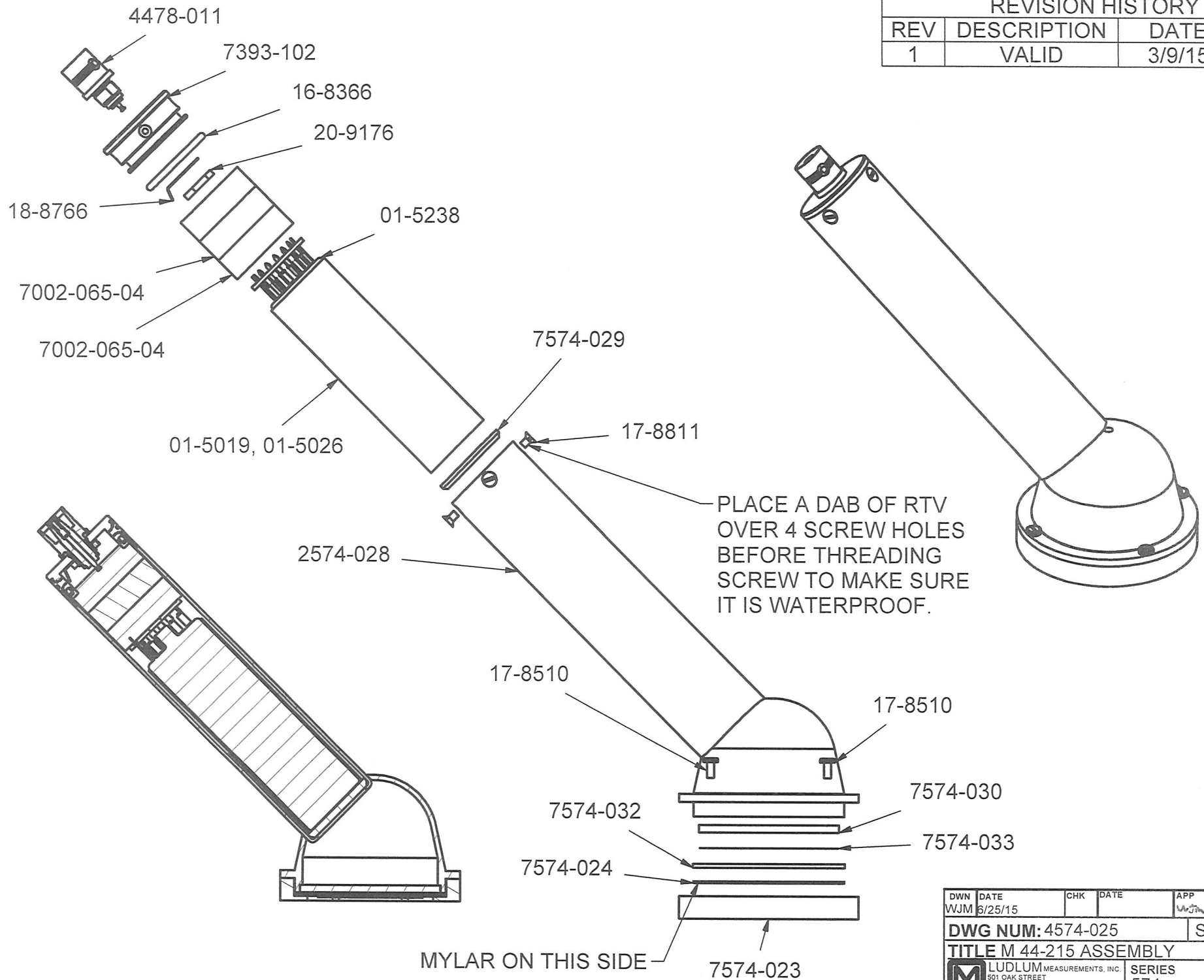
DRAWINGS AND DIAGRAMS

Assembly View, Drawing 574 x 25

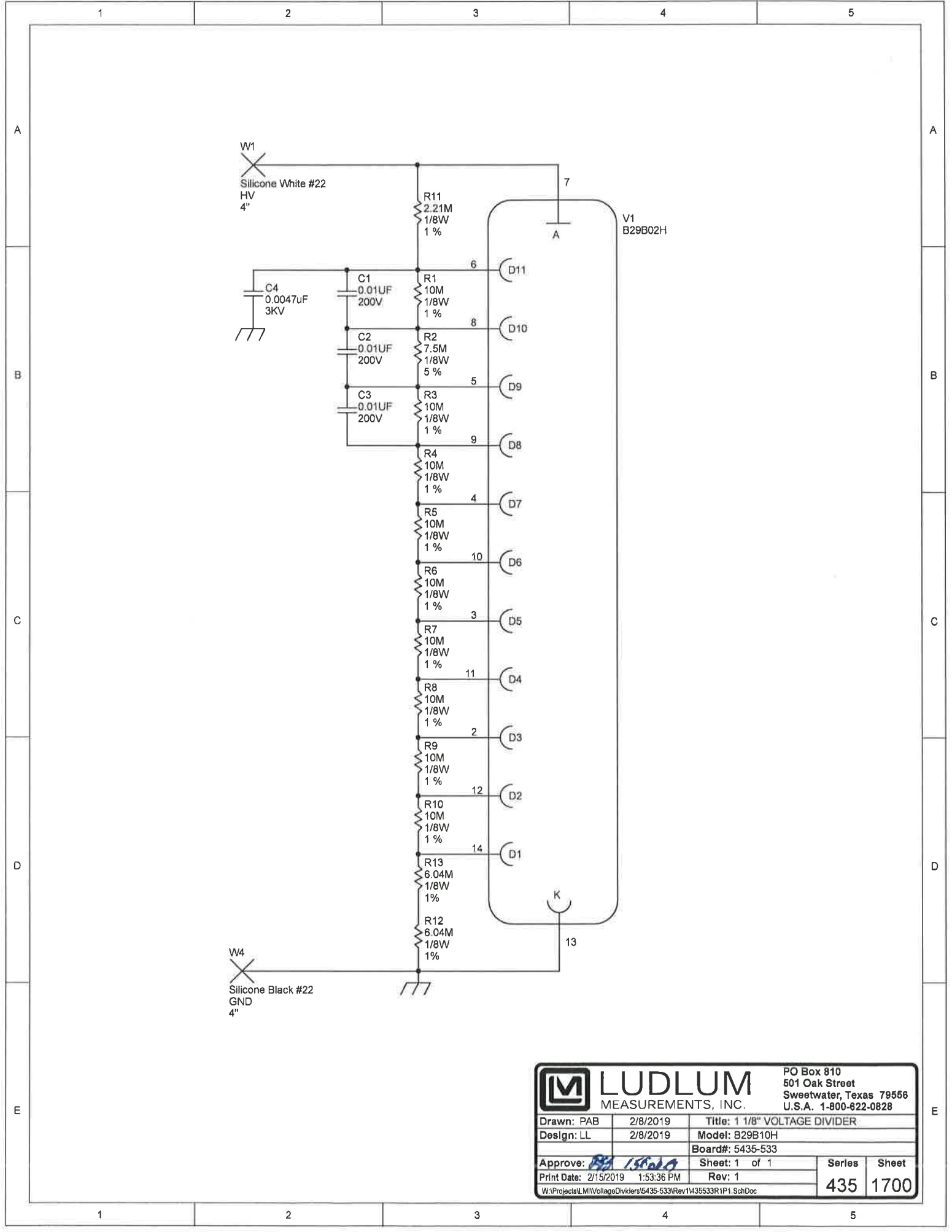
1 1/8 inch Voltage Divider Board Schematic, Drawing 435 x 1700

1 1/8 inch Voltage Divider Board Component Layout, Drawing 435 x 1701 (2 sheets)

REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
1	VALID	3/9/15	WJM



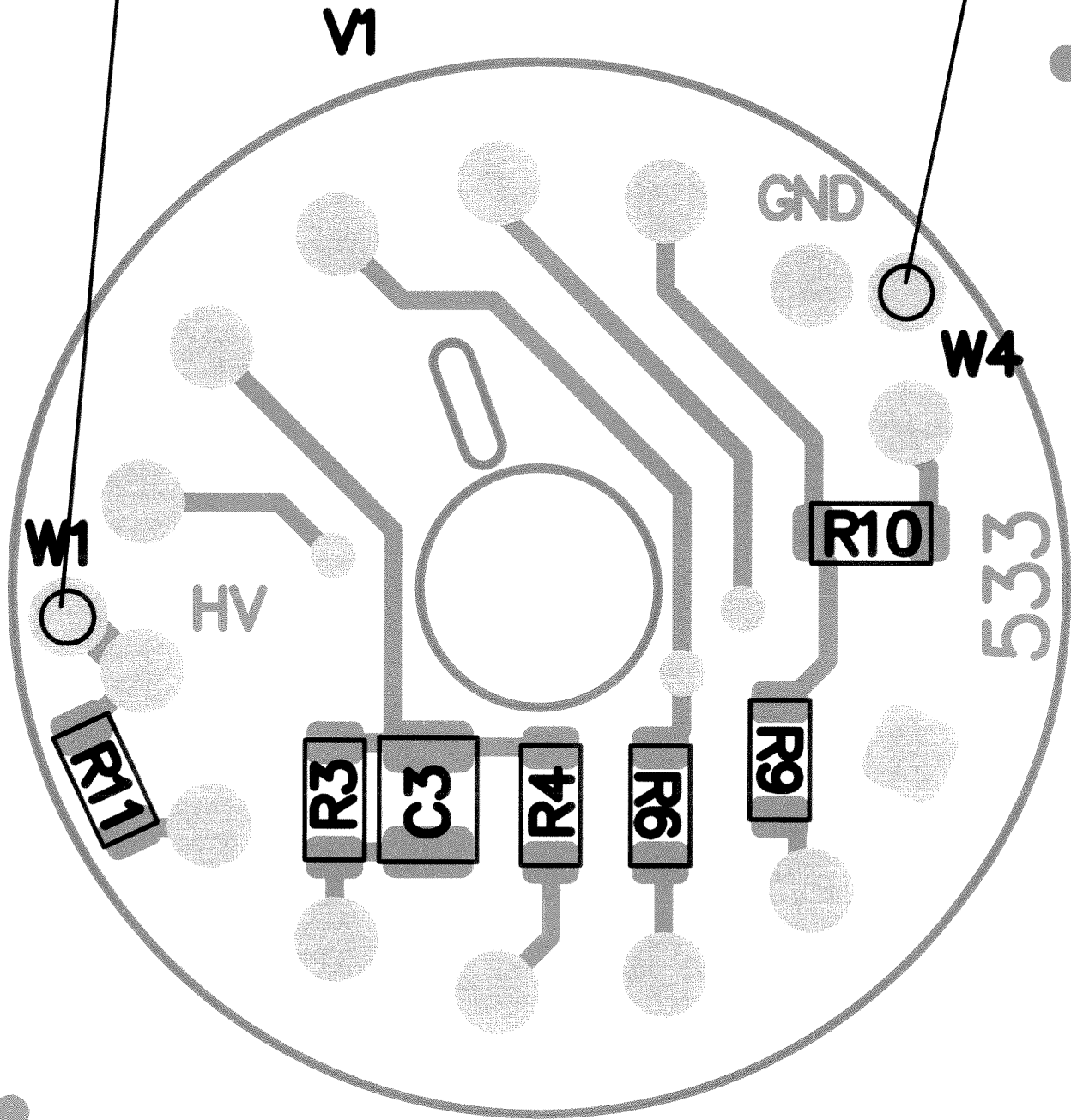
DWN	DATE	CHK	DATE	APP	DATE
WJM	6/25/15			WJM	6-29-15
DWG NUM: 4574-025				SCALE: 1/2	
TITLE M 44-215 ASSEMBLY					
LUDLUM MEASUREMENTS, INC. 501 OAK STREET SWEETWATER, TEXAS 79556		SERIES	SHEET		
		574	25		



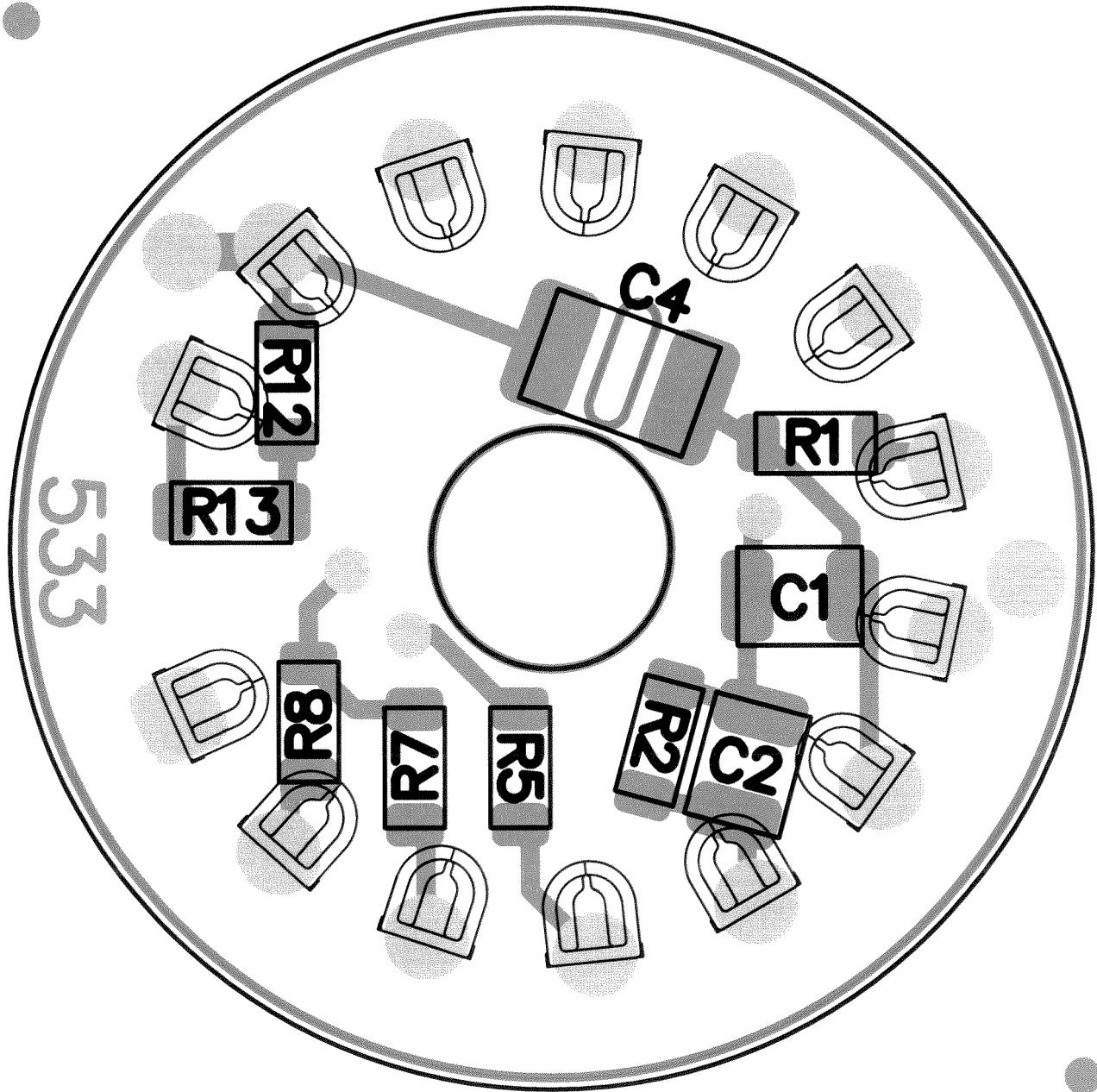
		PO Box 810 501 Oak Street Sweetwater, Texas 79556 U.S.A. 1-800-622-0828	
		Title: 1 1/8" VOLTAGE DIVIDER	
Drawn: PAB	2/8/2019	Model: B29B10H	
Design: LL	2/8/2019	Board#: 5435-533	
Approve: <i>[Signature]</i>	Sheet: 1 of 1	Series	Sheet
Print Date: 2/15/2019 1:53:36 PM	Rev: 1	435	1700
W:\Projects\LM\VoltageDividers\5435-533\Rev1\435533R1P1 SchDoc			


4" WHITE SILICONE WIRE

4" BLACK SILICONE WIRE



		PO Box 810 501 Oak Street Sweetwater, TX 79556 U.S.A. 1-800-622-0828	
Title: 1 1/8" VOLTAGE DIVIDER			
Drawn: PAB	2/8/2019	Model: B29B10H	
Design: LL	2/8/2019	Board#: 5435-533	
Approve: <i>[Signature]</i>	<i>[Signature]</i>	Rev: 1	
PCBA Drawing		SCALE: 1.08	Series Sheet
Print Date: 4/5/2019 8:17:11 AM		Top Overlay	435 1701
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 LUDLUM MEASUREMENTS, INC.		PO Box 810 501 Oak Street Sweetwater, TX 79556 U.S.A. 1-800-622-0828	
Title: 1 1/8" VOLTAGE DIVIDER			
Drawn: PAB	2/8/2019	Model: B29B10H	
Design: LL	2/8/2019	Board#: 5435-533	
Approve: <i>PAB</i>	<i>J. B. W. 9</i>	Rev: 1	
PCBA Drawing		SCALE: 1.08	Series Sheet
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