

**LUDLUM MODEL 44-1
BETA SCINTILLATOR**

**Serial Number PR134493
and Succeeding Serial Numbers
July 2015**

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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**

M44-1 Beta Scintillator
July 2015



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TABLE OF CONTENTS

1. GENERAL.....1

2. SPECIFICATIONS:.....1

REPLACEMENT PARTS LIST.....1

 Model 44-1 Beta Scintillator1

 Assembly View, Drawing 2 X 1551

 3.8 cm (1.5 in.) Tube Socket Board, Drawing 2 x 3171

 Adjustable Gain Circuit Board, Drawing 209 x 18.....3

DRAWINGS AND DIAGRAMS4

**M44-1 Beta Scintillator
July 2015**

M44-1 Beta Scintillator

July 2015

1. GENERAL

The Model 44-1 detector 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.) in diameter with a window area of 11.6 cm². The window is covered by 1.2 mg/cm² metalized polyester to reduce light response. (Light response can cause excessive background counts.)

The Model 44-1 may be used with any of the Ludlum instruments or equivalent instruments with a voltage range of 500-1200 volts and an input sensitivity of 2-50 mV.

An adjustable gain control mounted on the connector cap provides a means to bring the operating voltage up to 900 volts and thus be compatible with most Geiger-Mueller (GM) tube operating voltages.

2. SPECIFICATIONS:

Photomultiplier Tube: 3.8 cm (1.5 in.) diameter, 10-stage, head-on type, magnetically shielded

Scintillator: plastic, 4.3 cm (1.7 in.) diameter, 0.03 cm (0.01 in.) thick

Window: 1.2 mg/cm² metalized polyester

Window Area: 9.7 cm² active and open

Efficiency (4 π): 7% for ¹⁴C

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: 5.1 x 18.5 cm (2 x 7.3 in.) (Dia x L)

Weight: 0.3 kg (0.6 lb)

Construction: aluminum housing with beige powder coating

**M44-1 Beta Scintillator
July 2015**

REPLACEMENT PARTS LIST

Ref. No.	Description	Part No.
Model 44-1 Beta Scintillator		
UNIT	Completely Assembled Model 44-1 Beta Scintillator	47- 1531
 <u>Assembly View, Drawing 2 X 155</u>		
*	PM Tube/Socket Assembly	4002-510
*	Plastic Scintillator	01-5150
*	Adjustable Gain End Cap	40-4049
*	Connector, Series "C"	13-7751
*	Window Assembly	40-4375
*	Light Pipe	7002-321
*	Tube Shield	40-4006
2 EA.	Sponge	7002-029-05
(Optional)	End Cap - plain	7002-029-02
 <u>3.8 cm (1.5 in.) Tube Socket Board, Drawing 2 x 317</u>		
*	Assembled Tube Socket Board	5002-502
 CAPACITORS		
C1	0.01 μ F, 2kV, C	04-5525
 RESISTORS		
R1	10 MEG, ¼ W, 2%	10-7106
R2	1 MEG, ¼ W, 1%	12-7964
R3-R6	10 MEG, ¼ W, 2%	10-7106
R11	10 MEG, ¼ W, 2%	10-7106
R101-R104	10 MEG, ¼ W, 2%	10-7106
R111	10 MEG, ¼ W, 2%	10-7106
 MISCELLANEOUS		
*	CONTACT	18-9124
*	JACK-TEST	18-8806
*	CONN-640442-3 MTA100	13-8135

**M44-1 Beta Scintillator
July 2015**

Adjustable Gain Circuit Board, Drawing 209 x 18

UNIT	Assembled Adjustable Gain Board	5209-019
CAPACITORS		
C1	0.0047 μ F, 3kV, C	04-5547
RESISTORS		
R1	TRMR, 100k	09-6813
MISCELLANEOUS		
*	CLOVERLEAF	18-8771

**M44-1 Beta Scintillator
July 2015**

DRAWINGS AND DIAGRAMS

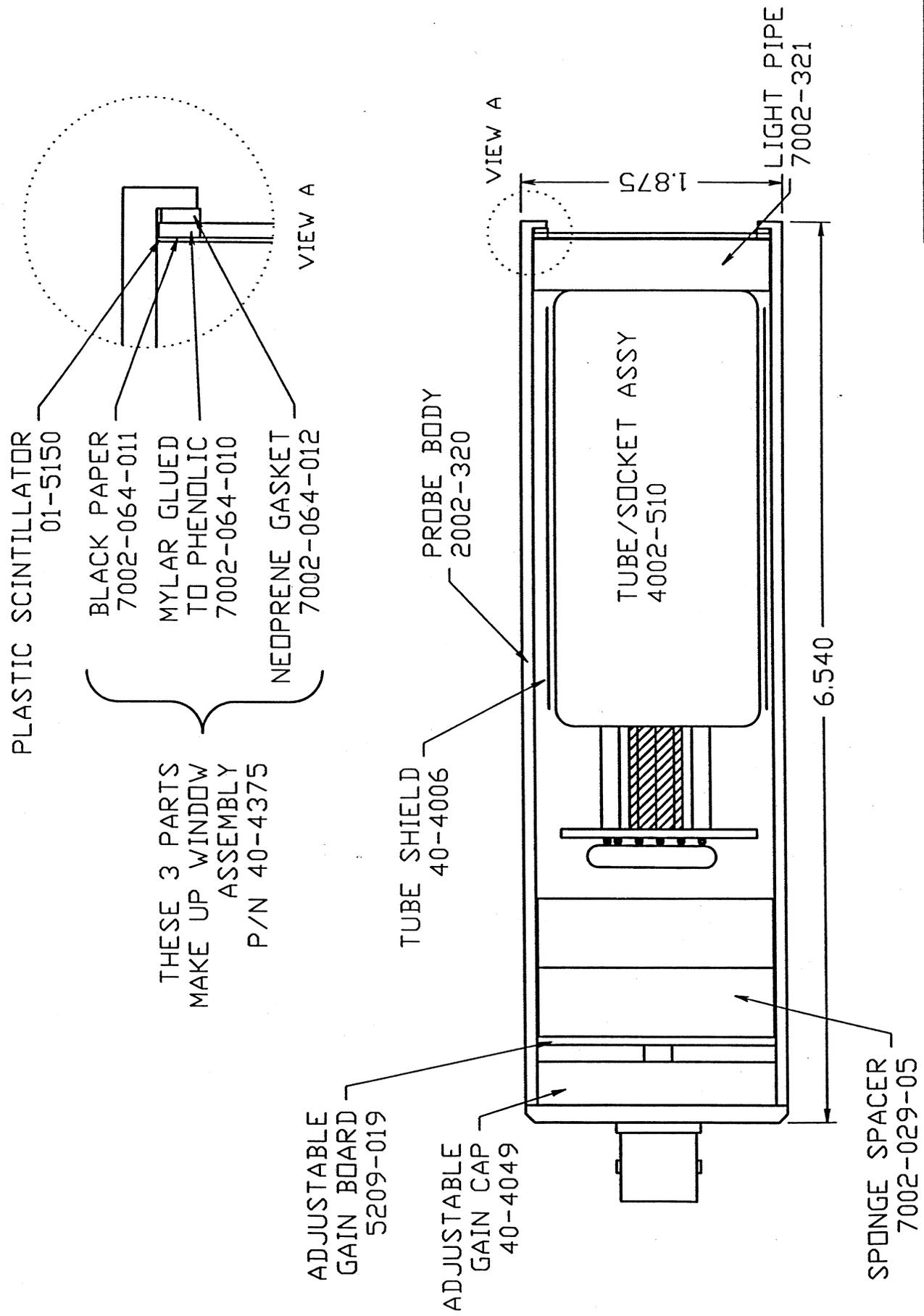
Assembly View, Drawing 2 x 155

3.8 cm (1.5 in.) Tube Socket Board, Drawing 2 x 317

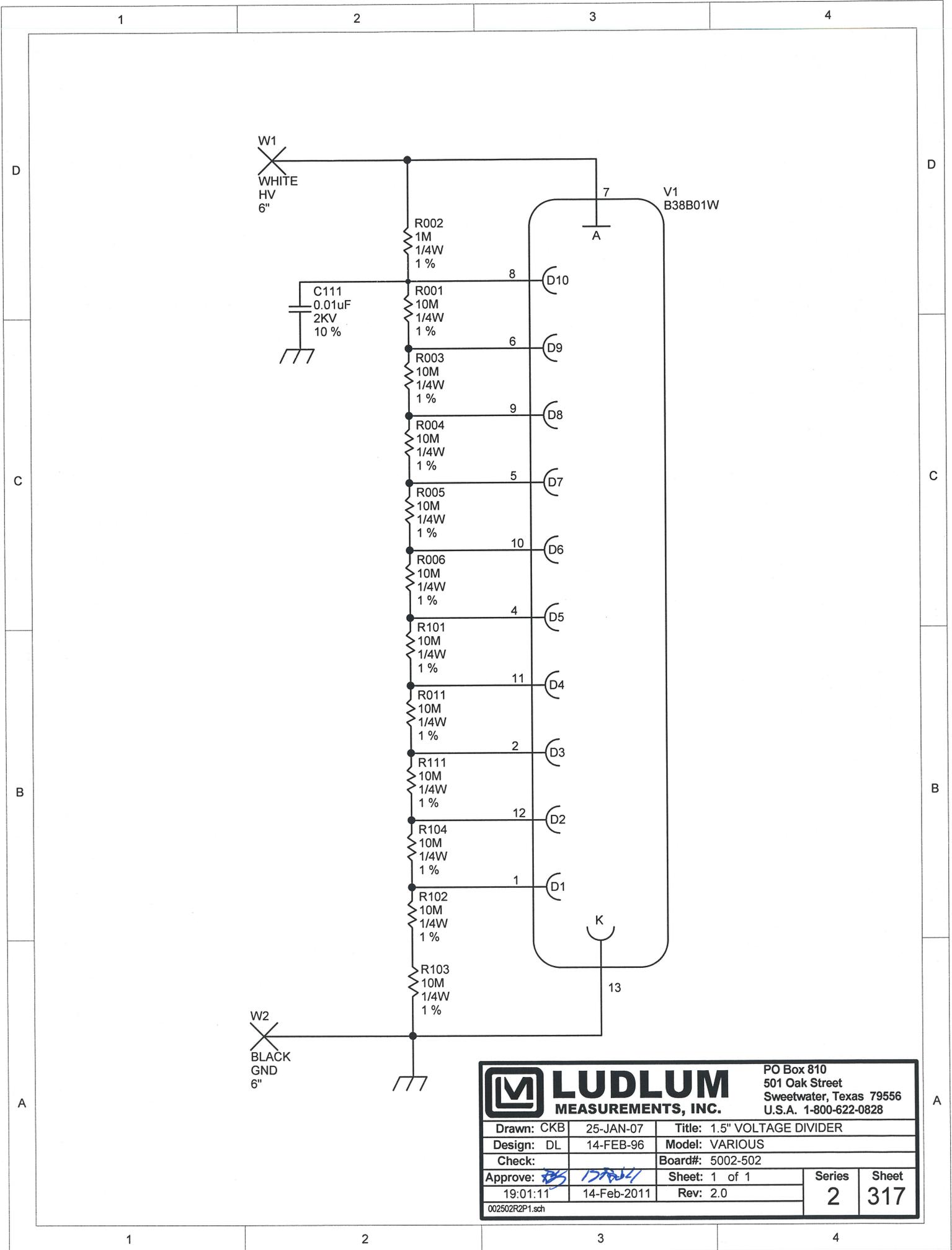
3.8 cm (1.5 in.) Tube Socket Component Layout, Drawing 2 x 318

Adjustable Gain Board, Drawing 209 x 18

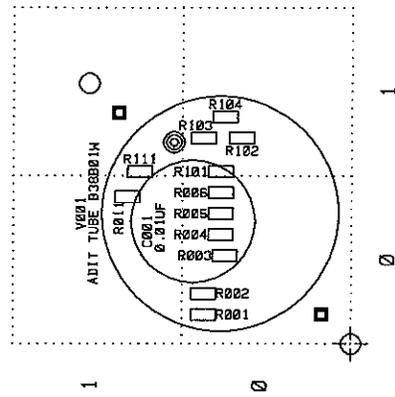
REV #	ALTERATIONS	DATE	BY
	VALID	2-11-97	JGV



DWN DATE JGV 2-11-97	CHECKED BH 2-13-97	APPROVED R.C. 2-13-97
TITLE: MODEL 44-1 ASSEMBLY		
LUDLUM INSTRUMENTS, INC. 30 ONE STREET ROCKFORD, ILL. 61106		
SHEET	SERIES	155
	2	

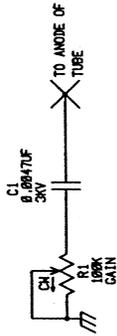


		PO Box 810 501 Oak Street Sweetwater, Texas 79556 U.S.A. 1-800-622-0828	
		Drawn: CKB Design: DL Check:	25-JAN-07 14-FEB-96 19:01:11
002502R2P1.sch			



M LUDLUM MEASUREMENTS INC. SHEETMETER, TX.	
DR	CKB
DATE	02/14/96
TITLE	VOLTAGE DIVIDER BOARD
BOARD	5002-S02
MODEL	1 1/2"
FILENAME	BS002502
APP JWS	10-24-07
DATE	11-59-95
REVISION	1
SERIES	0
SHEET	2
318	

REV. NO.	REVISIONS	DATE	APPROVED
1	EFF AUTHORITY ZONE LTR		



UPDATED	BY	DATE	TITLE
	CRB	07-FEB-97	LUDLUM MEASUREMENTS INC.
	CHK	2-10-97	TITLE: MOUNTING-ADJUST GAIN/CAP BOARD
	ISSN		BOARD: S209-019
	APP	2-10-97	SIZE: C
			MODEL: VARIOUS
			SERIES: 209
			SHEET: 18
			SHEET 1 OF 1

7833122 18-FEB-97 S209019