

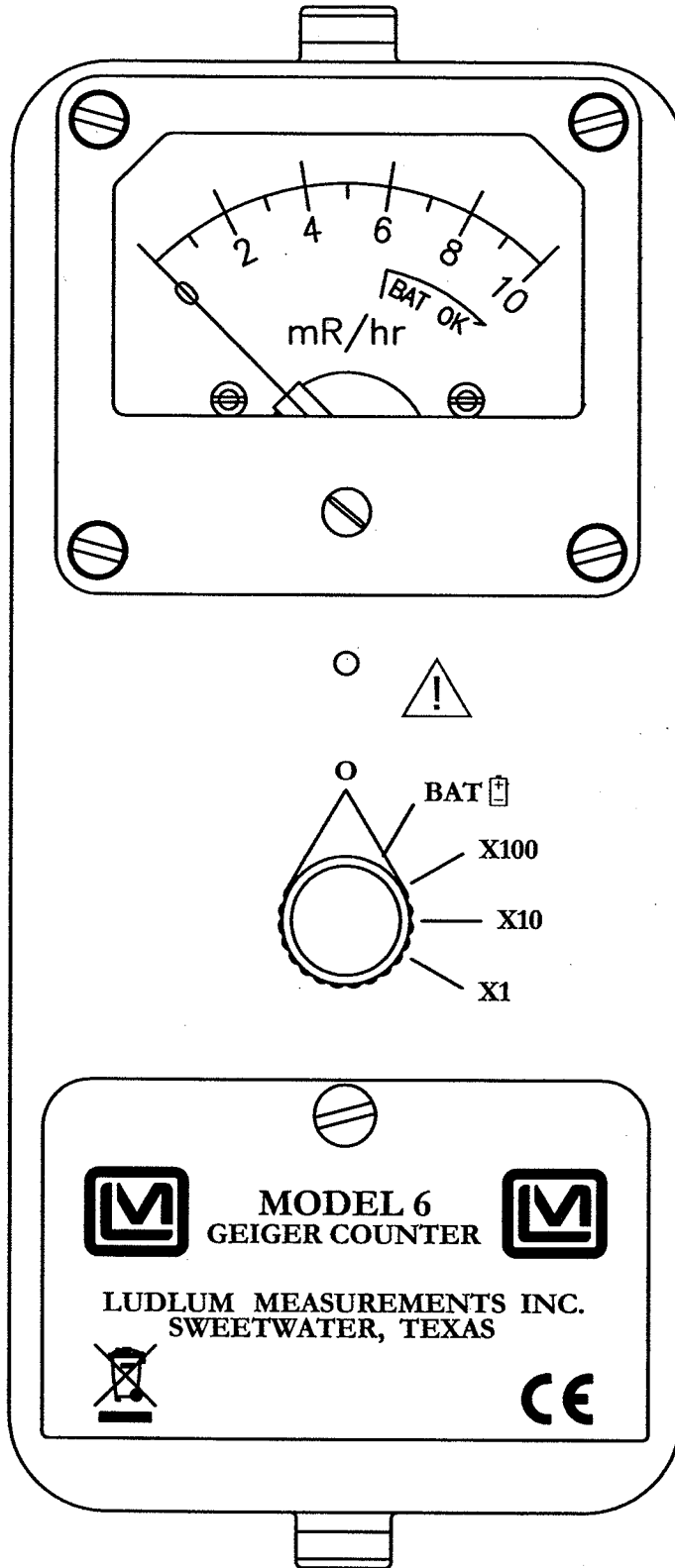
**LUDLUM MODEL 6
GEIGER COUNTER**

**Revised June 2007
Serial No. 170123 and Succeeding
Serial Numbers**



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

REV #	ALTERATIONS	DATE	BY
1	VALID	11/27/89	BK
2	UPDATED FRONT PANEL	4/22/06	CMC



DWN	DATE	CHK	DATE	APP	DATE
CMC	4-22-06			<i>[Signature]</i>	4-22-06
PART NUM: 4363-262				SCALE: FULL <input checked="" type="checkbox"/> OTHER <input type="checkbox"/>	
TITLE M 6 GEIGER COUNTER					
LUDLUM MEASUREMENTS, INC. 301 ONE STREET SWEETWATER, TEXAS 75586			SERIES	SHEET	
			363	262	

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Model 6 Geiger Counter

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1. GENERAL

The Model 6 is a portable battery operated Geiger Counter with an internal GM detector. The instrument features a regulated high-voltage supply, 5-position switch for selecting battery check or scale multiples of X1, X10, X100, and internal calibration controls for the range

multipliers and high-voltage. The meter scale reads 0 to 10 mR/hr, producing a range of 0 to 1 R/hr with the three linear range multipliers. The unit body is made of cast aluminum, including the meter housing. The instrument cover (can) is 0.090" thick aluminum.

2. SPECIFICATIONS

- **POWER:** two standard "D" size batteries
- **LINEAR RANGES:** 0-1 R/hr; meter presentation of 0-10 mR/hr with range multiples of X1, X10, and X100
- **DETECTED RADIATION:** gamma; x-ray
- **LINEARITY:** $\pm 10\%$ full scale
- **BATTERY LIFE:** exceeds 600 hours with a fresh set of alkaline "D" cell batteries
- **BATTERY DEPENDANCE:** instrument calibration change less than 3% within battery check limits on meter
- **OVERLOAD PROTECTION:** overload circuitry deflects meter pointer to full scale when the detector is exposed to radiation intensities greater than the upper operating limit (greater than 10 R/hr)
- **METER:** 1 milli-amp, 2-1/2 inch scale with pivot-and-jewel movement
- **RESPONSE TIME:** four seconds measured from 10% to 90% of full scale
- **DETECTOR:** internally-mounted 4G2500 tube
- **SIZE:** 4.2" (10.67 cm)H X 3.5" (8.9 cm)W X 8.5" (21.6 cm)L
- **WEIGHT:** 3 lbs. (1.36 kg), less detector and batteries
- **FINISH:** drawn-and-cast aluminum, with computer-beige polyurethane enamel and silk-screened nomenclature

3. DESCRIPTION OF CONTROLS AND FUNCTIONS

• **Range Multiplier Selector Switch:** A five-position switch marked OFF, BAT, X100, X10, and X1. Turning the range selector switch from OFF to BAT position provides the operator a battery check of the instrument. A BAT check scale on the meter provides a visual means of checking the battery status. Moving the range selector switch to one of the range multiplier positions (X1, X10, X100) provides the operator

with an overall range of 0-1R/hr. Multiplying the scale reading by the multiplier determines the actual reading.

• **Range Calibration Adjustments:** Internal potentiometers which allow individual calibration for each range multiplier. Removing the instrument housing will allow access to these controls.

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4. OPERATING PROCEDURES

✓ **Note:** To open the Battery Lid, twist the lid button counterclockwise 1/4 turn. To close, twist clockwise 1/4 turn.

- Open the Battery Lid and install two "D" size batteries. Note (+) (-) marks on the inside of the lid. Match the battery polarity to these marks.

✓ **Note:** Center post of flashlight battery is positive.

- Close the battery box lid.

- Switch the range switch to BAT. The meter should deflect to the battery check portion of the meter scale. If the meter does not respond, recheck that the batteries have proper polarity.

- Turn the range switch to X1. Expose the instrument to a radiation check source. The meter should respond.

- Check calibration and proceed to use the instrument.

5. CALIBRATION

- For detector operating point, remove the instrument housing and adjust R33 (Drawing 363 x 452) for 550 volts.

Note: Measure high voltage with a Model 500 Pulser or a High Impedance voltmeter with a high meg probe. If one of these instruments is not available, use a voltmeter with a minimum of 1000 megohm input resistance.

- Do not use a vacuum tube-type voltmeter for this adjustment unless an external high voltage multiplier probe is used.

- Switch the instrument range multiplier switch to X100 position. Place detector on calibration range center line with detector perpendicular to the radiation source. Expose the detector to a calibrated gamma radiation field which corresponds to approximately 80% of full meter scale. Adjust the X100 range calibration control for the proper reading. Position instrument in the field which corresponds to approximately 20% of meter scale. Confirm meter indicates within \pm 10% of reading. Repeat the calibration procedure for the X10 and X1 range positions.

- Replace the instrument housing.

6. MAINTENANCE

- Instrument maintenance consists of keeping the instrument clean and periodically checking the batteries and the calibration.

- An instrument operational check should be performed prior to each use by exposing the detector to a known source and confirming the proper reading on each scale.

- Recalibration should be accomplished after any maintenance or adjustment of any kind has been performed on the instrument. Battery replacements are not considered to be maintenance and do not normally require the instrument to be recalibrated.

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- Ludlum Measurements recommends recalibration at intervals no greater than one year. Check the appropriate regulatory agencies regulations to determine required recalibration intervals.

- The batteries should be removed and the battery contacts cleaned of any corrosion at least

every three months. If the instrument has been exposed to a very dusty or corrosive atmosphere, more frequent battery servicing should be used.

- Use a spanner wrench to unscrew the battery contact insulators, exposing the internal contacts and battery springs. Removing the handle will facilitate access to these contacts.

 **NOTE**

NEVER STORE THE INSTRUMENT OVER 30 DAYS WITHOUT REMOVING BATTERIES. ALTHOUGH THIS INSTRUMENT WILL OPERATE AT VERY HIGH AMBIENT TEMPERATURES, BATTERY SEAL FAILURE CAN OCCUR AT TEMPERATURES AS LOW AS 100° FAHRENHEIT.

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PARTS LIST

Ref. No.	Description	Part No.	Ref. No.	Description	Part No.
Model 6 Geiger Counter			• RESISTORS		
UNIT	Completely Assembled Model 6 Geiger Counter	48-1676	R1-R2	10k	10-7016
	Circuit Board, Drawing 363 X 452		R3	2.2k	10-7012
			R4	1 MEG	10-7028
			R5	10k	10-7016
			R6	SAT (2.37k TYP.)	12-7648
BOARD	Assembled Circuit	5363-610	R7	1k	10-7009
			R8	47k	10-7020
			R9	10k	10-7016
			R10	1 MEG	10-7028
			R11	330k	10-7051
			R12	10k	10-7016
			R13	200 OHM	10-7006
			R14	220k	10-7066
			R15	18k	10-7018
			R16	82k	10-7022
			R17	33k	10-7019
			R18	10k	10-7016
			R19	1k	10-7009
			R20	100k	10-7023
			R21	180k	10-7068
			R22	100k	10-7023
			R23	10 MEG	10-7031
			R24	4.7k	10-7014
			R25	1.5 MEG	10-7038
			R26	2.2 MEG	10-7052
			R27	22k	10-7070
			R28	100 OHM	10-7004
			R29-R30	100k	10-7023
			R31	1 G	12-7686
			R32	634R, 1/3W, 1%	12-7808
			R33	100k TRIMMER	09-6823
			R34- R35	1 MEG TRIMMER	09-6828
			R36	100k TRIMMER	09-6823
			• INDUCTOR		
			L1	470UHY	21-9600
			• TRANSFORMERS		
			T1	L8050	40-0902
			• DETECTORS		
			V1	GM TUBE-LND 71412	01-5306
R37-R38	RL1006-98	07-6332			

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Ref. No.	Description	Part No.	Ref. No.	Description	Part No.
	• MISCELLANEOUS			• MISCELLANEOUS	
P2	CONN-640456-9 MTA100	13-8094	M1	PORT BEZEL W/MOVEMENT	4363-188
			*	PORT BEZEL W/GLASS	4363-352
7 EA.	CLOVERLEAF 011-6809-000-599	18-8771	*	PORT METERFACE	7363-136
			*	METER MOVEMENT	15-8030
			*	PORTABLE KNOB	08-6613
			*	MAIN HARNESS Model 6	8363-622
	<u>Wiring Diagram, Drawing 363 x 466</u>		*	BATTERY CONTACT SET	
	• CONNECTORS		*	CASTING SCREENED	
J1	CONN-640442-9 MTA100	13-8169	*	Model 6	9363-324
			*	CAN ASSY. Model 6	4363-321
	• SWITCHES		*	BATT LID W/LATCHSET Model 6	9363-325
S1	D3G0402N	08-6501	*	PORT HANDLE (ROLLED) W/SCREWS	7363-139
	• BATTERY				
B1-B2	DURACELL "D"	21-9313			

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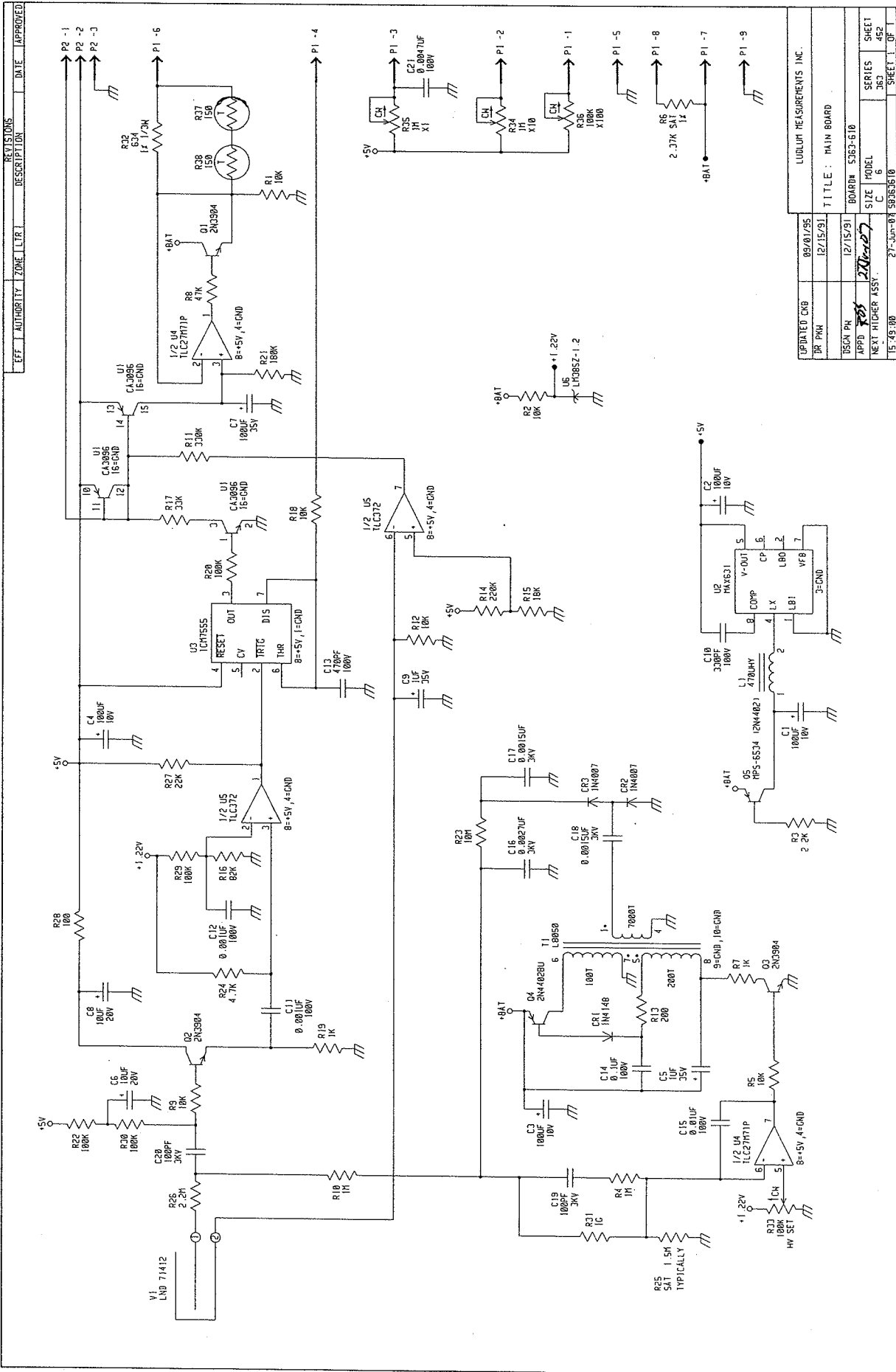
DRAWINGS AND DIAGRAMS

Model 6 Front Panel, Drawing No. 363 x 262 (before page 1)

Main Circuit Board, Drawing No. 363 x 452

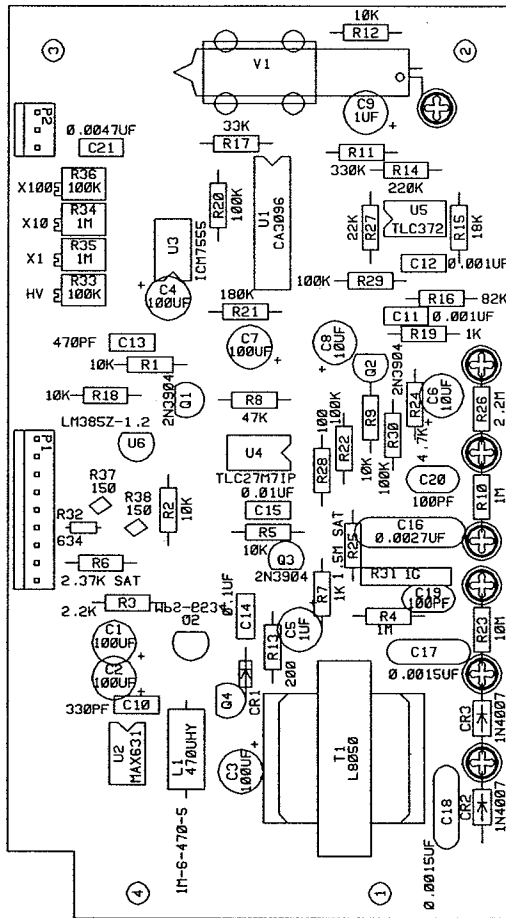
Main Circuit Board Layouts, Drawing No. 363 x 464

Wiring Diagram, Drawing No. 363 x 466



REV	AUTHORITY	ZONE	DATE	DESCRIPTION	DATE	APPROVED

UPDATED CNO	89/01/95	LUDLUM MEASUREMENTS INC.
DR P/N	12/15/91	TITLE : MAIN BOARD
BSCN P/N	12/15/91	BOARD 5353-610
APPD	<i>[Signature]</i>	SIZE MODEL C 6
NEXT HIGHER ASSY		SHEET 452
15 49 000	27-Jun-87	SHEET 5353610



LUDLUM MEASUREMENTS INC. SHEETWATER, TX.	
DR: CKB 10/08/92	TITLE: MAIN BOARD
CHK: P.W. 11/14/92	BOARD#: 5363-610
DSGN: 855 1-9-92	MODEL: 6
APP: 13:18:23	1-Nov-91
COMP: PASTE	SLDR PASTE
SLDR: MASK	SLDR: MASK
BS363610	SHEET 464
SERIES 363	464
OUTLINE	OUTLINE

