



THE LUDLUM REPORT

MARCH 1986

VOLUME 1

NUMBER 1

A QUARTERLY NEWSLETTER FROM
LUDLUM MEASUREMENTS, INC.

501 OAK ST.

P.O. Box 810
Sweetwater, Texas 79556

march 1986

INSTRUCTIONS FOR RETURNING INSTRUMENTS TO LUDLUM MEASUREMENTS FOR REPAIR OR CALIBRATION.

1. Include all cables and probes used with the instrument.
2. Include your name, your company name, your phone number, along with the model and serial numbers of everything being sent in.
3. Pack as securely as you can.
4. Indicate repair or calibration.
5. Send to: Ludlum Measurements, Inc.
501 Oak Street
Sweetwater, Tx 79556

Repairs: Include a description of the problem, along with your name, and phone number. Our customer service department will call you so that we can determine the best way to resolve your problem. We will provide you with an estimate of repair and get a purchase order number from you at this time.

Calibrations: Annual calibration is recommend for all instruments. Regulatory requirements may require more frequent calibrations. Normal calibration fee for most Ludlum instruments is \$30.00 per instrument, and \$15.00 for each additional probe.

March 1986

PRODUCT OF THE MONTH

THE LUDLUM MODEL 2200-12

SINGLE CHANNEL ANALYZER WITH PROGRAMMABLE CALCULATOR

The Model 2200-12 is a self-contained counting instrument compatible with the Hewlett Packard Interface Loop (HP-IL). The unit is complete with a voltage-sensitive preamplifier, a linear amplifier, a timer, a detector high-voltage power supply, a single channel analyzer and HP-IL interface circuitry. All operating parameters are set via the HP-IL loop.

The minimum configuration is a Ludlum Model 2200-12 (\$2250.00), a detector (see our catalog for prices), and 1 set of the following: (Approximate Retail Price from Hewlett-Packard, unless otherwise noted.)

| | |
|---|------------|
| 1 ea. HP-41CV | \$225.00 |
| or HP-41CX and | 325.00 |
| 1 ea. HP 82160A HP-IL Interface module | 125.00 |
| OR | |
| 1 ea. HP-71B and | \$525.00 |
| 1 ea. HP 82401A HP-IL Interface | 125.00 |
| OR | |
| 1 ea. HP-75D and | \$1145.00 |
| 1 ea. 00075-15001 I/O ROM | 95.00 |
| OR | |
| 1 ea. IBM PC/XT computer* and | \$2800.00* |
| 1 ea. HP 82973A HP-IL Interfacecard and | 150.00 |
| 1 ea. Software Package providing interface between HP-IL card and BASIC programs for controlling the 2200-12. (Provided by LMI) | 35.00 |
| OR | |
| any computer that is capable of controlling the HP-IL loop.* | |

*See your local computer store.

The programmable calculator or computer is used to set count time, high voltage, threshold, window, and to start counting and input the count.

A typical system would be:

| | |
|-----------------|---------------|
| 1 ea. 2200-12 | \$2250.00 |
| 1 ea. 44-2 | 290.00 |
| 1 ea. HP-41CV | 225.00 |
| 1 ea. HP 82160A | <u>125.00</u> |
| | \$2890.00 |

We furnish programs to set the HV, threshold, window, count time, start counting, and read the counter contents. Additional programs could be created to run detector plateaus, automatically peak detectors, or provide process control.

There are many applications for a single channel analyzer connected to a computer. Programs can be written upon request for your application. Call 915-235-5494.

March 1984

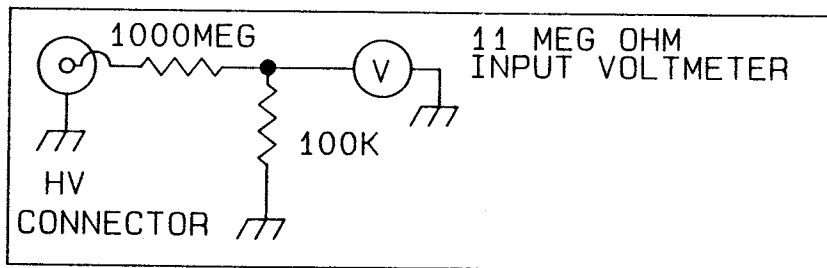
CASES

Carrying cases for LMI instruments are available by special order.

QUESTION AND ANSWER: ADJUSTING THE HIGH VOLTAGE

Detector high voltage maladjustment is our most common service problem. We receive many calls from users who have attempted to trouble shoot their instrument with a "high impedance" voltmeter. The usual observation is that the high voltage will not adjust above 450 volts. The problem is that the "high impedance" voltmeter typically has an 11 megohm input impedance. The model 3 high voltage supply has a 1 megohm output impedance and will over load on resistive loads below 60 megohms.

To avoid this problem, you should use a model 500 pulser or an electrostatic voltmeter to measure high voltage. If this is not possible, secure a 1,000 megohm resistor rated at 1500 volts. Connect as follows:



Multiply voltmeter reading by 10,000 for actual high voltage output.

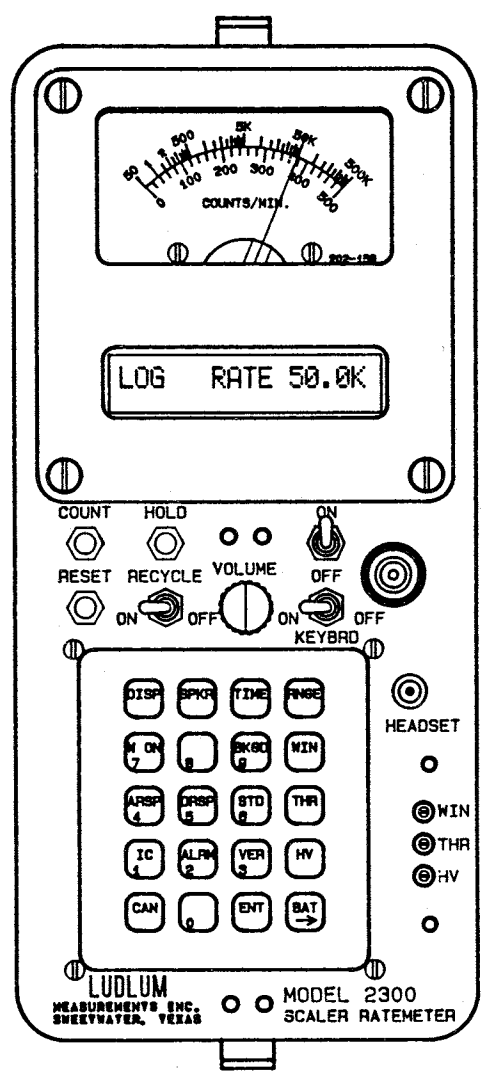
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**NEW PRODUCT:
A TALKING SCALER-RATEMETER**

Ludlum Measurements, Inc.'s newest product on the market is our Model 2300 portable Scaler-Ratemeter with a single channel analyzer, analog and digital ratemeters and voice synthesizer output. The Model 2300 can operate as a digital ratemeter, scaler, or isotope activity counter. Each mode has a separate programable alarm point. Operating parameters are entered via a 20-key keypad.

Voice synthesizer output is available via a speaker on the side of the Model 2300 or through a headset connector. The voice synthesizer speaks the count rate or the isotope concentration, depending on the mode.

The price of the model 2300 is \$1945.00. Headsets are \$35.00 each.



IT TALKS!

LUDLUM MEASUREMENTS, INC.
501 OAK STREET
P.O. BOX 810
SWEETWATER, TX 79556

RETURN POSTAGE GUARANTEED

| | |
|---|---------------|
| — | BULK RATE |
| — | U.S. POSTAGE |
| — | PAID |
| — | Permit No.170 |

For more information on
Ludlum Measurements line
of radiation detection
instruments, or
to place an order by phone
Call LMI Sales Dept,
Sweetwater 915\235-5494,

or call your area representative

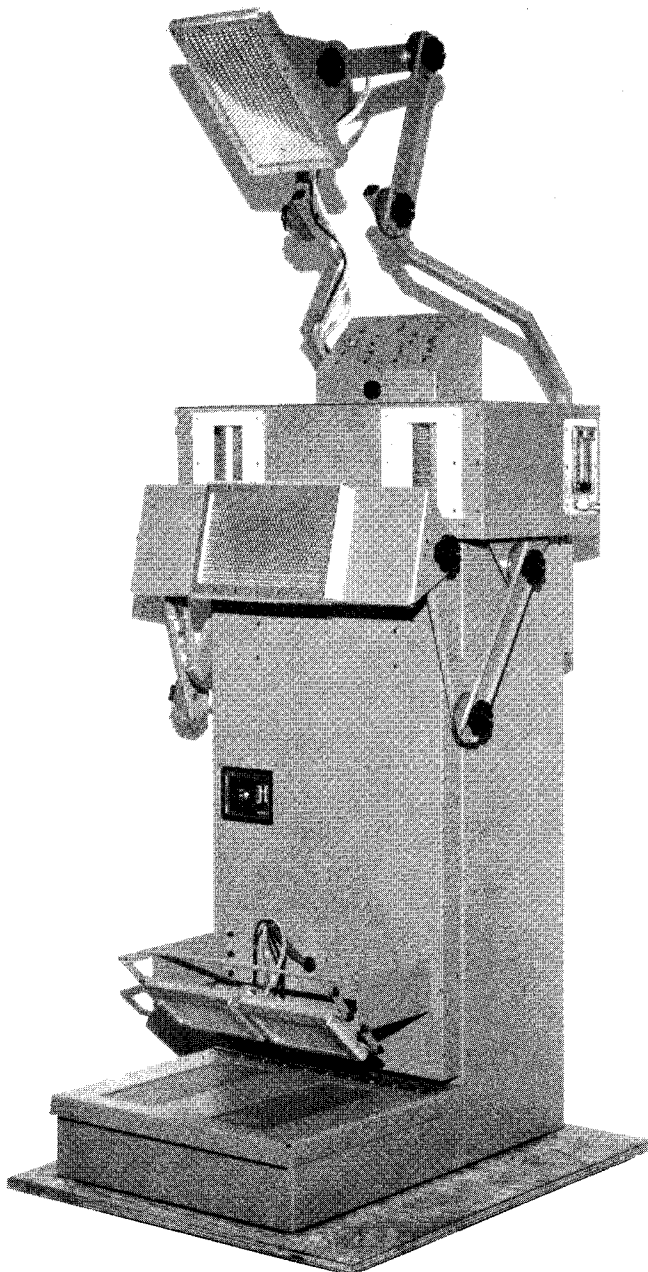
PRODUCT OF THE MONTH
MODEL 49-8 HAND AND SHOE MONITOR

The Ludlum Model 49-8 is a beta-gamma hand and shoe monitor with additional gas proportional detectors which may be positioned for head/forehead/face, waist/stomach/thigh, and right/left cuff monitoring. All instrument functions and indications are controlled by a microprocessor.

Count, background, and status messages are displayed internally on an LCD diagnostics display. The user display consists of LED lamps indicating instrument function, and type and location of contamination.

Background information is obtained from each individual detector during periods of non-use. Under normal operating conditions this background data is subtracted from the user count.

Contamination levels, count interrogation time, and background functions are selected via thumbwheel switches. High voltage power supplies are adjusted via 10-turn controls. Final amplifier outputs are available through BNC connectors on the front panel of the amplifier chassis. A standby battery maintains timing and all preset parameters for a period of up to 300 hours.



Q AND A; HIGH VOLTAGE CHARACTERISTICS OF SCINTILLATION DETECTORS

Photomultipliers used in scintillation detectors have a very broad gain spectrum at a given operating voltage. If a typical scintillation detector is set up to operate at 900 volts and the photomultiplier is changed, the replacement tube may require a significant change in operating voltage. If the original tube was of median characteristics, the replacement tube voltage may require any value between 650 and 1200 volts. This represents a gain change of 60.

If a scintillator and GM detector are used interchangeably, the GM detector may be operated anywhere on its plateau, typically 850 through 1150 volts. Calibrate the scintillator first, then the GM detector. For multiple scintillator use, start with the detector with the narrowest plateau. All detectors must be plateaued before the "best fit" high voltage setting can be selected.

If an operating voltage can not be found to fit the whole array of scintillators, a gain potentiometer can be added to each scintillator, allowing matched gain. This is available at extra cost.

For small changes, a 1% change in operating voltage will give a 6% change in gain. Therefore, a well regulated high voltage supply is needed.

For very critical applications such as pulse height analyzers, the photomultiplier tube must be left on continuously. During the first 40 hours of ON time, the tube gain may fluctuate as much as 25%. A very short interruption of high voltage will require another 40 hours to stabilize.

For survey applications with at least a 50 volt plateau, the stabilization time is not required.