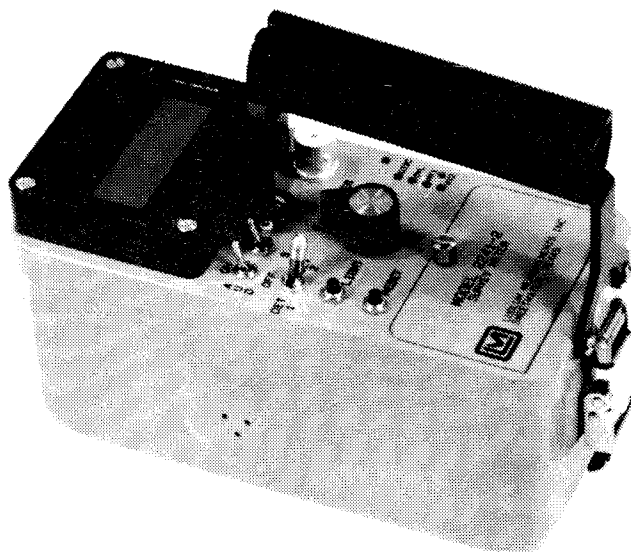


MODEL 2241-2 DIGITAL SCALER/RATE METER

The Ludlum Model 2241-2 Digital Scaler/Ratemeter is a microprocessor based dual detector portable instrument designed for use with G-M, scintillation, and proportional detectors. It incorporates a 4 digit LCD display with separate annunciators for preselected counting units, alert, alarm, overload, and counting (to indicate when a count is being taken by the scaler).

The dual detector capability allows for two configurations of a single detector, or operation of two different detectors. Other features include auto-ranging capability, dead time correction, an adjustable calibration constant, and a RS-232 port for connection to a computer. All parameters are stored in non-volatile memory allowing for removal of batteries without loss of memory.

PRICE: \$ 575.00



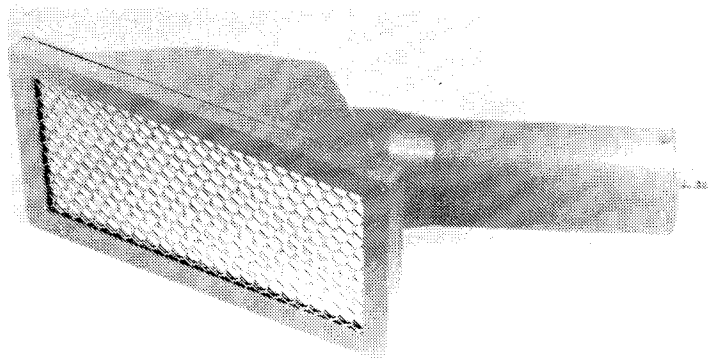
Model 2241-2

MODEL 44-116 100 cm² BETA SCINTILLATOR

The Model 44-116 is a large area beta scintillation detector. The open area is approx. 100 cm² and the active area is approximately 125 cm². The detector uses a thin layer of plastic scintillation material covered by 1.2 mg/cm² metalized mylar. The window is protected by a 79% open 0.25" stainless steel screen. The PM tube and crystal assembly may easily be removed for repair.

The detector may be used with any Ludlum counting instrument. Typical efficiency (2 pi geometry) for ⁹⁹Tc is 30%, ⁹⁰Sr/⁹⁰Y and ³⁶Cl is 45%, and ⁶⁰Co is 32%.

PRICE: \$ 750.00



Model 44-116

MODEL 44-118 COLLIMATED DETECTOR STAND

The Model 44-118 is a shielded detector stand that collimates the field of view of a detector. The stand will hold any of Ludlum's 1-7/8" diameter detectors such as Models 44-2 and 44-3. Features of the stand include a stainless steel outer liner and stand, adjustable probe depth, and a positioning rod with marks every centimeter for consistent geometry. The holder pivots in two directions for easy positioning.

Specifications:

Shielding: 3/4" thick lead

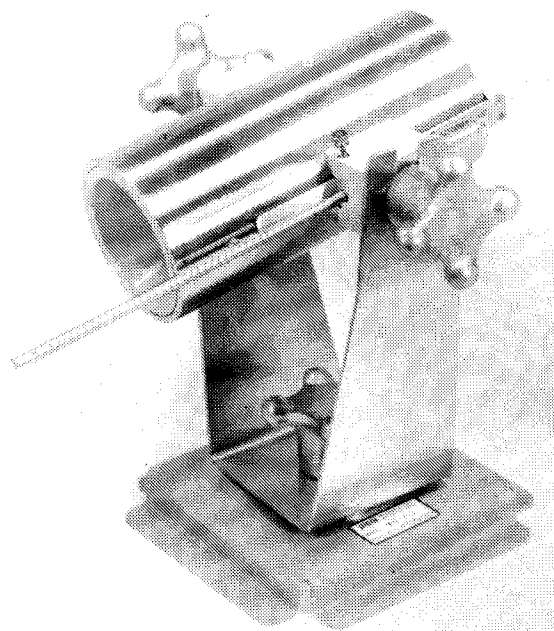
Viewing Cone: Max. diameter 2.89", 50 degrees to depth of 1.22", 1.75" diameter straight sided to 1.97" depth.

Probe Depth: Adjustable from a min. of 1.97" to 3.97"

Size: 9.25" D (with M44-3) x 11.24" T x 11" W

Weight: 31 lbs

PRICE: \$ 985.00



Model 44-118

DETERMINING RATEMETER TIME CONSTANTS FOR MDA EQUATIONS

Note: This is the final part of a three part series covering MDA time constants. Part 1 addressed linear ratemeters controlled by conventional resistor-capacitor (RC) integration components. Part 2 covered discrete component logarithmic ratemeters. Part 3 will address microprocessor controlled instruments.

This article will cover response times for microprocessor (μ P) controlled ratemeters. A variable time constant is produced by the μ P to keep the ratemeter readout within a prescribed standard deviation based on the count interaction rate. LMI models which incorporate the μ P ratemeter response variables listed, in the table below, are the Model 2350, 306, 375, 2224, 2240, 2241, and Model 2221. The Model 2240 and 2241 also incorporate a selectable fixed response time mode (refer to the Instruction Manual). The Model 2221 uses the Fast or Slow fixed response when the X1-X1k ratemeter multipliers are selected (analog meter only). The Model 375 Area Monitor has fixed response time of 1 second when in the monitoring mode. When in the calibration mode, the Fast Time Constant variables below are used. Consult the instrument Instruction Manual for ratemeter response specifications.

The Time Constant variables listed in the table below are in seconds. Recall from Part 1 that "one time constant is the length of time required to reach 63% of the full charge or discharge"; therefore, it will take 3-5 time constants for the ratemeter to reach its final value. Example: if the incoming counts are between 0 and 1.20k counts per minute (cpm), then the ratemeter time constant will equal 10 seconds for the fast mode. The ratemeter will reach the count rate final value in 30 to 50 seconds. The majority of LMI instruments with digital ratemeters update the digital display every two seconds. The display update time is independent of the ratemeter response time; therefore, a ratemeter time constant of 1 second may require 4-6 seconds (2-3 display updates) before the final count rate value is reached.

Since the ratemeter uses a variable time constant, the rise time from zero may take longer than the predicted 4 or 5 time constants. This longer time is due to the time constant starting out high and continuing to the desired time constant.

For example, if the incoming counts are 2700 cpm and the ratemeter is zeroed, the M2350 will start out with a time constant of 10 (Fast Response). As the incoming counts continue to accumulate, the time constant will be adjusted down to a time constant of 4. After the ratemeter settles at 2700 cpm and the counts change within ± 300 , then the ratemeter will respond as predicted (within 3 or 5 time constant).

<u>Slow Time Constant</u>	<u>CPM</u>	<u>Slow Time Constant</u>	<u>CPM</u>
30	1.11k	15	2.22k
29	1.15k	14	4.60k
28	1.19k	13	2.56k
27	1.23k	12	2.78k
26	1.28k	11	3.03k
25	1.33k	10	3.33k
24	1.39k	9	3.70k
23	1.45k	8	4.17k
22	1.52k	7	4.76k
21	1.59k	6	5.56k
20	1.67k	5	6.67k
19	1.75k	4	8.33k
18	1.85k	3	11.1k
17	1.96k	2	16.7k
16	2.08k	1	-----

<u>Fast Time Constant</u>	<u>CPM</u>	<u>Fast Time Constant</u>	<u>CPM</u>
10	1.20k	5	2.40k
9	1.33k	4	3.00k
8	1.50k	3	4.00k
7	1.71k	2	6.00k
6	2.00k	1	-----

If you missed Parts 1 or 2 of this series, please call and we will send you a copy!

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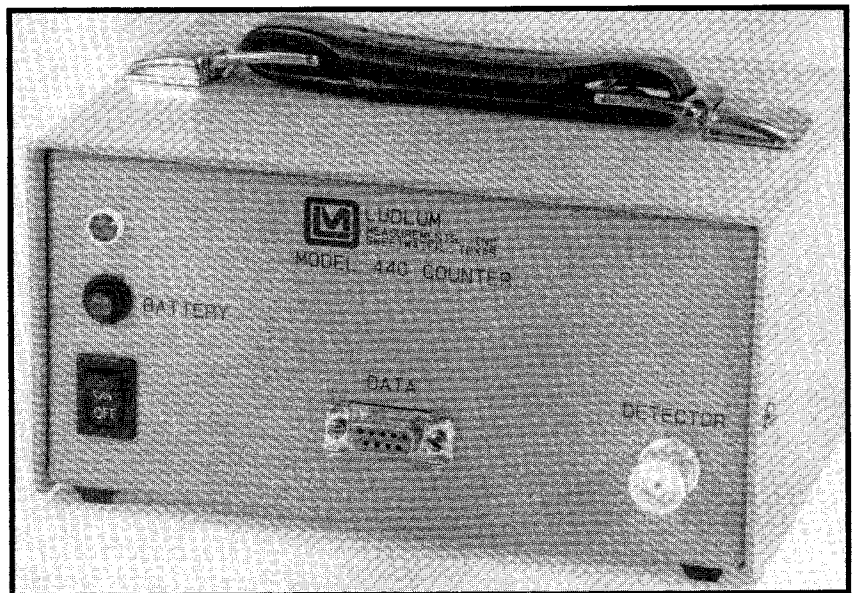
MODEL 440 SERIES COUNTERS

March 1995

The Ludlum Model 440 Series counters are designed to provide the link between radiation detectors and computers. These counters provide 400-2500 Vdc and 2mV to 100 mV thresholds, making these units compatible with most LMI alpha, beta, gamma and neutron detectors. The Model 440's are not equipped with visual readouts; they have outputs suitable for logging via computers, remote meters, or analog recorders. Output is in the form of pulses per radiation event and a linear 0-3 Vdc voltage output.

The Model 440 is complete with a power supply, detector HV power supply, high sensitivity amplifier, and detector overload circuitry. This unit operates on AC power, but features a battery backup that will last approximately 25 hours. The 440 provides a built-in trickle charger, which continuously charges the battery, when the power is ON. Output is in 0-5 Vdc pulses per radiation event, or a linear 0-3 Vdc analog recorder signal. Additional outputs are a 0-5 Vdc detector overload signal and a high voltage analog readout signal. There are two control signals available to disable the high voltage and to turn the instrument ON/OFF.

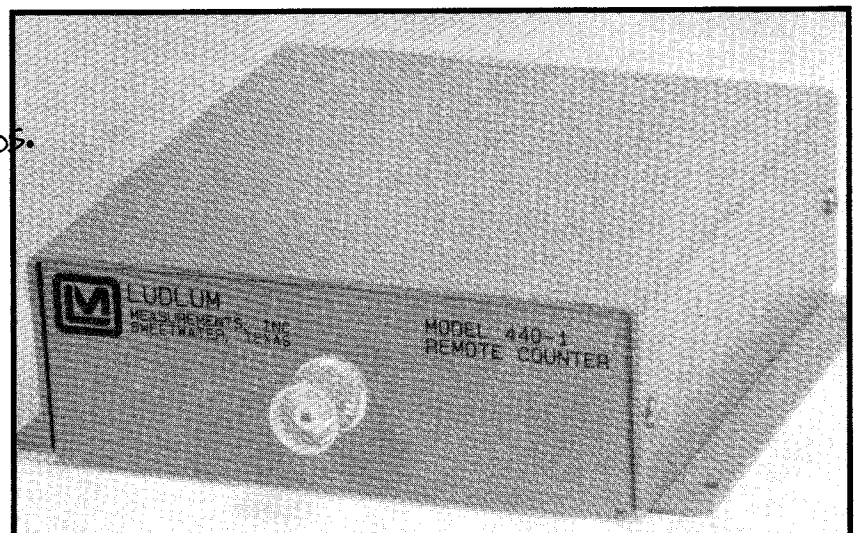
Price: \$275.00



Model 440 COUNTER

Model 440-1 has the same specifications as Model 440, except this counter does not have a transformer and is configured in a smaller package. An internal compartment contains a 9 Vdc alkaline battery. An alternative to using the internal battery is to supply 6 to 12 Vdc through a pin on the input connector. *6 mos.*

Price: \$195.00



Model 440-1 COUNTER

Model 440-2 is a two channel counter with threshold and window controls. High voltage is remotely adjustable. Pulse output is available via RS-485 differential signals. Cable lengths up to 4000' may be used with this unit.

Price: \$195.00