

## LMI REPAIR DEPARTMENT TIPS *Sept 1990*

Scenario: Your Ludlum Model 9 Ion Chamber has been operating correctly since it was bought. After not being used for a couple of months, you need to use it. Batteries are placed in the instrument and it is turned ON. After the normal warmup period, the lowest range selection reads approximately 2 mR/hr. You depress the RESET button and the meter deflects to zero. When the button is released, the meter still remains at 2 mR/hr. The background radiation is known to be much lower than 2 mR/hr.

Question: What has happened? Why is the instrument not functioning correctly?

The above scenario and questions are common to our Repair Dept. Most of the time the problem with this instrument is the desiccant located within the housing is saturated. These desiccants which are blue or pink cylindrical shaped objects located inside the housing of the instrument are positioned to keep moisture from affecting the ion chamber and related electrometer components. The ion chamber produces extremely low currents in radiation fields, therefore everything has to be kept at an extremely high resistance ( $10^{12}$  to  $10^{13}$  ohm). If any moisture is collected inside of the chamber, the overall resistance is reduced enabling a "false" current to be produced indicating a "false" radiation field.

The equivalent problem may also occur in the Air Proportional Detector. A loss of efficiency or premature detector breakdown can occur if moisture is allowed to enter the detector. Desiccant replacement will increase as the humidity increases.

Ludlum instruments are equipped with "indicating" desiccants. These type desiccants have a dark bluish color when new, and as they absorb moisture will change from blue to a pink color. Ion chamber desiccants should be changed if there is a color change or if there is an offset on instrument's meter dial. The Air Proportional Detector desiccants should be changed in the case of color change or if there is a drop in efficiency.

Indicating desiccants can be purchased from LMI or the old desiccants can be dried by placing them in a warm oven on  $150^{\circ}$  F. until they return to the bluish color. Improvements have been made in current Ludlum Ion Chambers for high humidity conditions. A new desiccant box which holds four desiccants instead of two and a new improved seal between the box and chamber has been utilized in the design of recent LMI ion chambers. Also, the mylar window frame has been strengthened to improve contact between the window and the chamber. These improvements can be incorporated into old-style LMI ion chambers if possible humidity problems continue to be encountered. For more information, contact the LMI Repair Department at 915/235-5494.

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## NEW SURVEY METER AVAILABLE *Sept 1990*

LMI has just introduced a new survey meter that includes functions that were previously only available by special order. The new Ludlum Model 4 possesses discrimination capability of 2 - 40 millivolts with a high voltage setting which is adjustable to 2500 volts allowing operation with proportional, scintillation or G-M detectors. Features that are now featured as standard items which were previously optional include as follows:

**OVERRANGE** - a control allowing servicing of detector current for abnormal levels. This function is useful to avoid overrange paralysis of the detector and to respond to light leaks. When the overrange feature is activated, the meter will go full scale and an overrange LED will illuminate.

**DEAD TIME CORRECTION** - a feature that will allow linear meter scales thus permitting automatic correction for dead time loss. This function also includes a front panel-mounted ON/OFF switch which capacitates the instrument to be accurately calibrated with a linear pulser.

**PULSE WIDTH DISCRIMINATING** - a feature that is useful for discrimination of gamma counts when the instrument is used with an alpha scintillator. This function is usually deactivated when used with a proportional counter and makes no difference when used with a G-M. The LMI Model 4 may be ordered with or without pulse width discrimination.

### LMI MODEL 4 SURVEY METER SPECIFICATIONS

**POWER:** 2 each Standard "D" cell batteries. Mercury or rechargeable cells directly interchangeable.

**HIGH VOLTAGE:** Adjustable from 200 - 2500 volts; electronically regulated to 1%; HV support of scintillation loads to 1500 volts, proportional to 2500 volts. High voltage test indicated on meter.

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**SENSITIVITY:** Adjustable from 2 - 40 millivolts. Control located under cal cover.

**INPUT IMPEDANCE:** 0.1 megohm

**METER:** 1 mA, 2.5 inch scale, pivot and jewel suspension.

**RANGE:** 0 - 500,000 counts per minute.

**LINEARITY:**  $\pm 5$  % full scale.

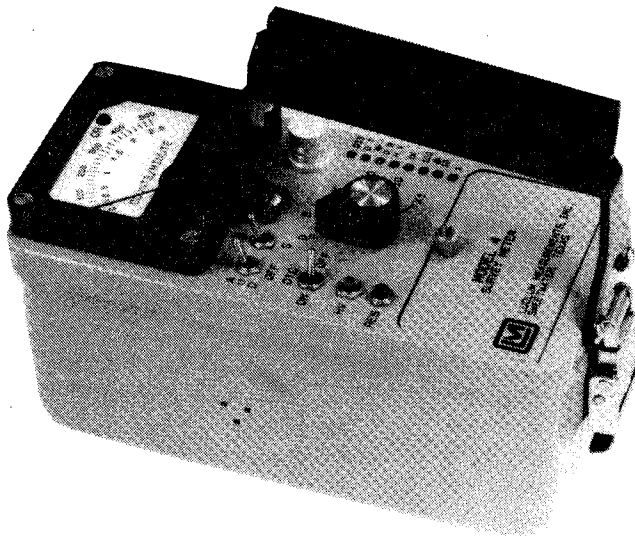
**CALIBRATION STABILITY:** Less than 5 % variance to battery endpoint.

**CALIBRATION CONTROLS:** Individual potentiometers for each range; accessible from the front cover while in operational status.

**OVERRANGE:** Response to high radiation or scintillation light leaks is indicated by overrange lamp and full scale meter.

**DEAD TIME COMPENSATION:** Compensation for detector and ratemeter dead time may be selected by toggle switch. Calibration of the detector dead time is located under the calibration cover.

For more information, contact the LMI Sales Department.



**LMI MODEL 4**

## **LMI 800 TELEPHONE NUMBER**

Ludlum Measurements has added a 1-800 telephone number for your convenience. The next time you need to call us, dial 1-800-622-0828.

### **LUDLUM MEASUREMENTS, INC.**

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