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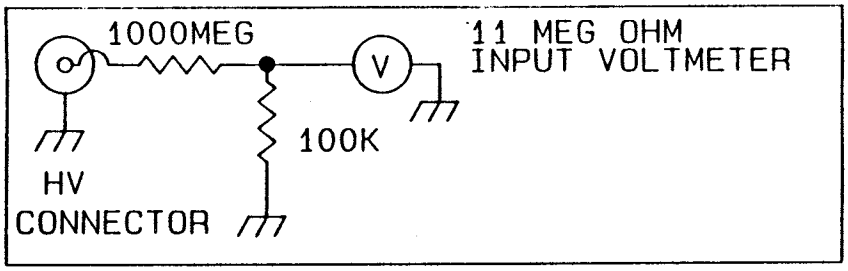
ADJUSTING THE HIGH VOLTAGE ON LMI INSTRUMENTS

One of the most common service problems is the maladjustment of the detector high voltage setting. We receive many calls from users who have attempted to trouble-shoot their instrument with a "high impedance" voltmeter. This usually results with the problem of not being able to adjust the high voltage above 450 volts. The reason for this problem is the "high impedance" voltmeter typically has an 11 megohm output impedance and will overload on resistive loads below 60 megohms.

To avoid this problem, you should either use a LMI Model 500 or an electrostatic voltmeter to measure high voltage. Also, high voltage probes are available such as the Fluke Model 80k-40 high voltage probe. We recommend this probe because it provides a 1000 megohm input impedance with a 1000:1 division ratio to connect directly to a high impedance (10 megohm) multimeter. If these alternatives are not possible, secure a 1000 megohm resistor rated at 2500 volts. Connect as follows:



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

MODEL 333-2 BETA AIR MONITOR

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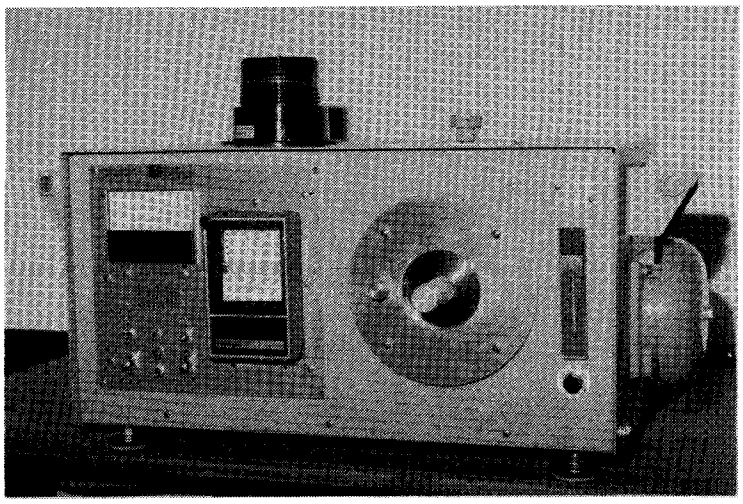

The LMI Model 333-2 is a complete air monitoring system. This instrument which includes a 1/4 HP oilless, carbon vane, standard air pump is configured for continuous sampling of airborne beta - emitters. The 32 pound air pump has an orifice to regulate the air flow. The detection system consists of a primary pancake detector facing the upstream side of the 47 mm filter paper and a second gamma subtract pancake detector located behind the primary detector. The sampling assembly is surrounded by 2 inches of lead shielding.

Its dual alarm set points provide independent setting of the ALERT level (strobe) and the ALARM level (bell). These set points are located conveniently on the front panel and a failure detection is provided for loss of count in the primary detector. Also located on the panel face are both a counts-per-minute meter and a Rustrak strip chart recorder which has a 30 day continuous charting capacity. A Lo/No air flow indicator flashes when the air flow drops below a preset rate. The critical air chamber components are constructed of stainless steel.

The Model 333-2 is operational in a temperature range from 20 to 200 degrees Fahrenheit. Both alarm set points are adjustable from 10 CPM to greater than full scale. A standard 105-125 VAC is required for power. The instrument weighs approximately 160 pounds without the regulated air pump and is approximately 27 3/4 inches wide by 13 inches long by 15 7/8 inches high. For more infromation, contact the LMI Sales Department.

CALIBRATION TIPS

LMI instruments with counts per minute (CPM) meter faces are usually calibrated with a pulse generator (pulser). The pulser should have a negative pulse, a 0.5 microsecond lead, a 1.5 microsecond width amd a 5 microsecond tail. The pulse size is similar to the size of the pulse the instrument is capable of recognizing. In our calibra-

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tion department at LMI, we use our Ludlum Model 500 pulser to calibrate instruments which require CPM readouts. The M500 supplies the correct pulse size and a digital readout in CPM with continuous adjustment from 10 to 9,000,000 CPM, plus it offers a high voltage readout from 0 to 2500 volts.

To begin calibration, connect the instrument to the pulser and determine the sensitivity of the instrument. For example, the Ludlum Model 2, 3, and 14C portables with fixed thresholds, should have a sensitivity of 35 mv ±15 mv. Simply multiply this sensitivity reading by 2 and set the pulser to that reading. Next, check the HV (high voltage) of your instrument. This can be achieved on the M500 by looking at the analog meter. The HV on our portables may vary depending on the probe used with that particular instrument. LMI instruments used with GM detectors should be operated at 900 volts. Also, the HV on instruments using scintillation detectors is determined by running a plateau.

To continue to calibrate the instrument, follow the ANSI 32-1978 guidelines, which states the instrument should be calibrated to 80% and 20% of the meter scale. Determine the 80% scale of your instrument and set pulser to same reading. If your instrument does not read the same as the reading on the pulser, adjust the potentiometer so your instrument reads the same as the pulser. Below is an example of the necessary steps to calibrate an instrument.

For example, we will use a LMI Model 3 Survey Meter with a 0-5K CPM meter face. 80% scale = 4K, 20% scale = 1K. The ranges on the Model 3 include X100, X10, X1, X0.1.

To calibrate this instrument, set the pulser to 400K CPM and calibrate the X100 range to equal this amount. To check the 20% scale, dial the pulser down to 100K CPM and make sure the instrument is within ±10%. If your instrument does not comply within these figures, consult your instrument manual for meter linearity. Continue to decrease both pulser and instrument down to next decade range and follow same procedure as above until you have calibrated each range.

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