

## **LNМ-1 Line Noise Meter and Scope Interface Application Notes**

These brief notes are not intended as a full set of operating instructions for connecting and using this instrument with an oscilloscope, spectrum analyzer, or data logger. Specialized training is required for that. The notes only describe unique features of this device.

1. Plug the instrument into a standard wall receptacle. Connect to 120 Volts AC only!  
A 240 Volt version is available by special order.
2. The LINE NOISE output is a unity gain representation of the line noise from 1.7 kHz to 2 MHz for display on an oscilloscope or spectrum analyzer. The maximum output amplitude is +/- 13.0 Volts.
3. The H-N / N-G switch allows viewing the signal present on Hot to Neutral (normal mode) or Neutral to Ground.
4. The meter reading on PEAK setting is peak, not peak-to-peak.
5. PEAK reading calibration is optimized for noise spikes and pulses. It will read about 10% high on sine wave signals.
6. True RMS readings are performed on the full noise waveform within the passband of the instrument. This will usually differ from the calculated value of a scope measurement function, which is applied only to the displayed waveform.
7. When the level displayed on the meter approaches 1,000 mV, the range will automatically switch to display Volts. (1.00 V = 1,000 mV)
8. The 60 Hz output from the TRIG REF connector is a reconstructed waveform used to:  
(1) provide a stable trigger reference, and (2) observe the position in the 60 Hz cycle where noise impulses actually occur (+/- 100 uS). It is not a true representation of the line voltage waveform.
9. The proper scope probe settings for connection to LINE NOISE and TRIG REF are X1 (not X10).
10. The signal from the DC OUT connector is a DC representation of the voltage displayed on the digital panel meter, but it is a fast responding signal that is time constrained only by the passband limitation of the instrument. It will allow the display of switching transients that are much too fast to show up on a digital meter. The output varies from approximately 3 mV to 900 mV DC, and the proper scope probe setting is X10. Minimum input impedance of the scope or other datalogger is 1 M ohm.
11. The metal case of the Line Noise Meter is connected to AC line ground for safety reasons but the BNC output connectors are isolated from AC line ground.
12. For full accuracy when the Line Noise Meter is connected to a scope or other instrument, that instrument should be battery powered and not connected to the AC line, although no harm will occur if this is not done.