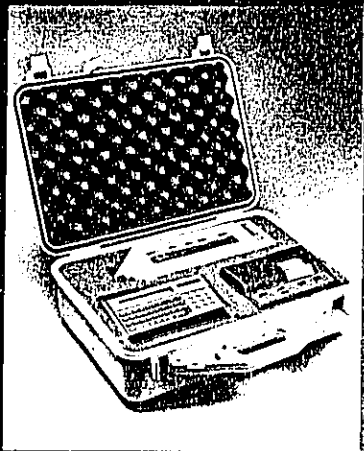


ONE PRECISION SOUND LEVEL METER YOU CAN COUNT ON

1-96-01
II-A-804

One ruggedized three pound instrument will measure a vast majority of the acoustic parameters required in research and industry. As a hand-held and self contained instrument the 800B has no equal as a versatile Sound Level Meter.

In addition, inexpensive computers can be used to make the 800B fully automatic with your choice of interface options (RS-232, IEEE-488 or HP-IL). A weather-tight carry case holds the 800B analyzer, computer, printer and mass memory unit. This fully portable system can automatically measure 1/1 or 1/3 octave spectra (1Hz-20KHz), SEL, Leg, Lmin, Lmax, Ldn, Lcqn, Lpk, and L_n for any n. With user selectable ex-



complete 15 lb. system

change rates of 3, 4 and 5dB, the dose and projected dose as well as the equivalent level is provided to meet ISO, European, DOD, or OSHA requirements. Environmental noise surveys of airports, neighborhoods and industrial areas are easily performed with automatic ranging from -10 to 140dB.

Plug in the Model 801 accessory and perform building and architectural acoustic measurements with computer control of four microphone channels. Measure noise criterion, RT60, STC, transmission loss and conducted vibration. Equalize sound and noise masking systems, count the frequency of room resonance modes and measure acoustic time delays. One low cost system will perform these measurements and more to precision accuracy.

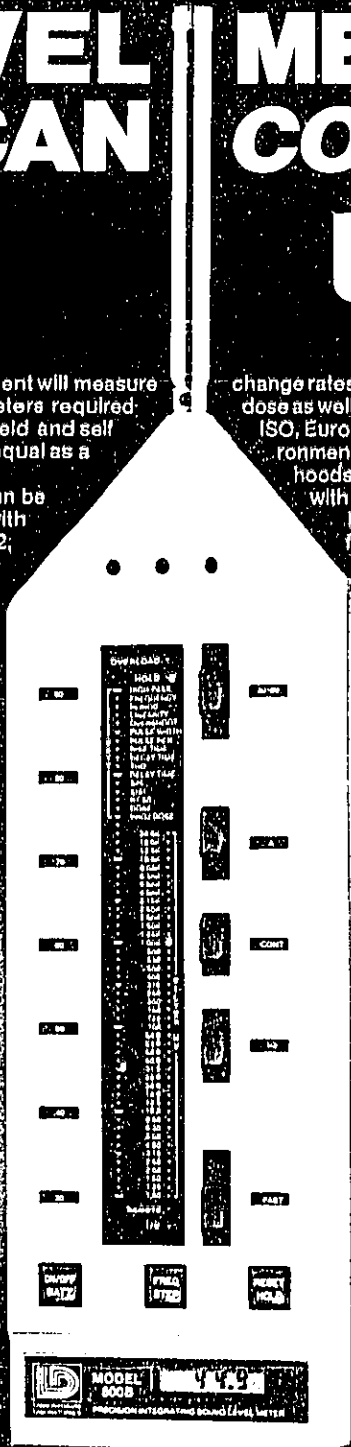
Not only does the 800B have the best price and the highest technology in the industry, product performance is assured with a 2-year warranty.

BUILT-IN ANALYSIS:

- Frequency Counter
- 1/1 and 1/3 Octave Filters
- Partial Harmonic Distortion
- Reverberation Time
- DOSE - Projected DOSE
- LEQ, DOD, PLOSHA, SEL

LD LARSON-DAVIS LABORATORIES
1681 West 820 North
Provo, UT. 84601
801-375-0177
TELEX 705560

Larson-Davis has just introduced a complete series of computer compatible data-logging personal dosimeters. All products are available on GSA.



LD MODEL 800B
PRECISION INTEGRATING SOUND LEVEL METER



Model 800B Precision Integrating Sound Level Meter

WEB at LARSON-DAVIS Laboratories are very excited about our Model 800B Precision Integrating Sound Level Meter. The following features demonstrate why we feel this way and why we consider it to be the best instrument of its type that can be purchased today.

Unique Features

- **Low Noise Floor.** The 800B has the lowest noise floor of any sound level meter in the industry. Five 60 dB measurement ranges are possible from -10 to 140 dB (to 180 dB with attenuators).
- **Two Data Displays.** For easy reading, an LCD digital display shows the signal level to $\frac{1}{10}$ dB. For visualizing signal level dynamics, a thermometer style display shows the signal's pattern of change as it continuously moves.
- **RMS and Peak Detectors.** The rms and peak detectors operate in parallel. The rms detector provides fast, slow, impulse, and integrate. Integrate has three exchange rates: 3 dB for L_{eq} , 4 dB for L_{DOD} , and 5 dB for $LOSHA$.
- **Choice of Measurements.** Measurement of L_{eq} , L_{DOD} , or $LOSHA$ with L_{max} , L_{min} , L_{pk} , SEL, and elapsed time. All dynamic signal characteristics are measured and stored simultaneously. All data are in the correct unit values of dB, time, displacement, velocity, power, etc., therefore eliminating the need for correction factors, conversion charts, or tedious manual calculations.
- **Programmable.** The 800B is programmable through the following computer interfaces: RS-232 (Opt. 50) and HP-IL (Opt. 40).
- **Extended Functions.** Option 25 provides the following measurement routines for the acoustical engineer and audiologist: dose, projected dose, RT60, frequency, period, delay time, rise time, fall time, THD, SISI, linearity, pulse width, pulse period, and overshoot.
- **High Speed Integrator.** A high speed digital integrator can acquire up to 256 samples/s for high accuracy measurements of short duration events.
- **Peak Detector.** A peak detector has a response time of less than 20 μ s for high accuracy measurements of short duration impulses.

- **Large Frequency Range.** The frequency range extends from 1.0 Hz to 35 kHz for the measurement of vibration and acoustic data (1.0 Hz to 70 kHz optional).
- **Full Spectrum Analysis.** The programmable filter bank (Opt. 30) provides forty-four $\frac{1}{3}$ and forty-four $\frac{1}{2}$ octave filters spanning a frequency range of 1.0 Hz to 20 kHz. The filters can be operated manually or automatically under program control as a stand-alone filter bank with ac inputs and outputs. In addition to measuring the spectrum peaks and rms values, each individual $\frac{1}{3}$ and $\frac{1}{2}$ octave band can be integrated.

Computerized Features

As a manually operated instrument, the Model 800B is easy to use. The mechanically displayed parameter for each front panel control makes it easy to determine the analyzer's status at a glance.

As a computer controlled instrument, it is even easier to use. The computer handles all system setup tasks automatically. Just plug the computer cable into the 800B, and touch a button to activate a desired measurement routine. Because of its fully automatic features, engineers and scientists are allowed to perform other productive tasks while data is being gathered. Following are some of these automated features:

- **Automatic Data Printout.** Data tables, histograms, charts, and graphs are printed automatically.
- **Autorange Capabilities.** Using the HP-IL loop and a Hewlett Packard computer, the effective dynamic range of the 800B can be made equal to the dynamic range of the microphone. For example, a 12 mV, $\frac{1}{2}$ in microphone cartridge will measure from 30 to 150 dB. The computer will automatically change the range of the 800B to span the 120 dB range of the microphone.
- **Precision Time/Date Intervals.** The quartz timers and the clock/calendar enable turning the system on and off at any time, on any day, in any month, in any year and as often as desired. Single or multiple event intervals can be measured to $\frac{1}{100}$ s, all under computer control.
- **Extended Sample Storage.** With the HP Model 82161A digital cassette drive (100,000 + samples), the HP Model 9114B microfloppy disc drive (720,000 +

Model 800B

samples), or any compatible computer, sample storage is greatly extended.

Other Features

- **Range of 60 dB.** The large, linear 60 dB SPL range minimizes range changes. For example, SPL from 30 to 90 dB can be viewed with a single range setting.
- **Hand-Held.** The hand-held, light-weight instrument weighs approximately 3.8 lbs, including batteries, $\frac{1}{2}$ and $\frac{1}{3}$ octave filters, extended functions, and computer interface.
- **Varied Cable Lengths.** The plug-in microphone/pre-amplifier system can be used with any extension cable length. Recalibration of the 800B is not required for cable lengths under 300 ft.
- **AC Signal Output.** An ac signal output, preconditioned to the 800B's current configuration, is available to drive earphones, tape recorders, analyzers, and data acquisition systems.
- **DC Signal Output.** A dc signal output, proportional to the detected signal, is available to drive level recorders and other devices.
- **Choice of Power Sources.** Power is provided using internal or external batteries or an ac adapter.
- **Accurate in Most Environments.** The accuracy and stability is excellent over wide temperature ranges (-10 to 50 °C) and in high humidity (90%).
- **Meets All Standards.** The 800B meets or exceeds worldwide standards for Type 1, precision integrating instruments, including ANSI S1.4 (1983), IEC 651 (1979), and IEC 804 (1984).
- **EMI and RFI protected.**
- **Two Year Warranty.**

Measurement Accessories

- **Multi-channel Microphone Signal Processor.** The Model 801-10 (for the HP-IL) and the Model 801-15 (for the RS-232) units contain the capabilities to control four microphone channels to allow spatial averaging of data or multiple position tests, such as STC or transmission loss. Complete signal generation capabilities are provided for sine waves and pink or white noise. Optoisolated switches are available for the remote control of external devices such as microphone booms, floor tappers, and alarms.
- **Multi-channel Vibration Processor.** The model 802-10 (for the HP-IL) and the Model 802-15 (for the RS-232) are three channel vibration processors. Three

channels are provided, each with the capability to accept either charge coupled or low impedance accelerometers as well as direct signal inputs. Two stages of integration are provided so that acceleration, velocity, or displacement can be measured.

Applications

- Calibration and certification of audiometers, audiometric booths, evoked potential systems, and other hearing instruments.
- Statistical analysis of noise and vibration levels with L_{eq} , L_{max} , L_{min} , L_{pk} , SEL, and elapsed time.
- Determination of the risk of hearing loss with L_{eq} , LOSHA, dose and projected dose.
- Environmental and community noise analysis with time history, L_{eq} , L_n , L_{dn} , etc.
- Manual or fully automatic $\frac{1}{3}$ and $\frac{1}{2}$ octave analysis in the 1.0 Hz to 20 kHz range.
- Architectural acoustic measurements of frequency response, room noise criteria, transmission loss, RT60, absorption, STC, and impact noise.
- Vibration monitoring of rotating machines for maintenance applications.
- Traffic noise analysis.
- Aircraft and airport noise analysis.
- Product design and production line noise emission characteristics.
- Vibration testing using the Model 802 accelerometer.

Specifications

Amplitude Ranges

- 10 to 50 dB
- 10 to 70 dB
- 30 to 90 dB
- 50 to 110 dB
- 80 to 140 dB

The analyzer is capable of measurement over the entire operating range when used with suitable microphones.

Frequency Response (preamp input)

- 20 Hz to 20 kHz: ± 0.3 dB
- 1 Hz to 30 kHz: ± 3.0 dB

The analyzer frequency response may be limited by the frequency response of the input transducer used.

Frequency Weighting Filters

- A-weight
- C-weight
- Flat
- $\frac{1}{2}$ Octave (optional)
- $\frac{1}{3}$ Octave (optional)

The optional internal filter bank provides forty-four $\frac{1}{2}$ octave and forty-four $\frac{1}{3}$ octave bandpass filters with center frequencies from 1 Hz to 20 kHz.

Detectors/Response (True rms)

- Fast
- Slow
- Impulse
- True Peak (rise time $< 20 \mu\text{s}$)
- Continuous & Peak Reading LEQ
- Dynamic range: 70 dB
- Crest factor: up to 73 dB
- Max hold can be used with any detector response.
- Overload indicator triggers if range is exceeded.

Display Characteristics

- Liquid Crystal Display
 - Height: 5.0 mm (0.2 in)
 - $3\frac{1}{2}$ digits (first digit 0 or 1) with annunciator
 - 0.1 dB resolution
 - Constant display intensity.
- Light Emitting Diode thermometer type scale
 - Height: 15.5 cm (6.2 in)
 - 60 dB linear display range
 - 0.25 dB resolution

Light sensor automatically adjusts display intensity.

AC Output

- Output Impedance: 600 Ω
- Output Voltage: 1.0 Vac full scale

DC Output

- Output Impedance: 5 k Ω
- Output Voltage: $50 \text{ mV}/\Delta\text{dB}$
- 3.2 V full scale

The Model 800B has very elaborate capabilities for interfacing to computers, recording devices, accelerometers, microphone booms, tappers, and wind sensors.

System Electrical Noise Floor (18 pF input)

- A-weighting: 16 dB(A)
- C-weighting: 24 dB(C)

Microphones

- Option 10
 - $\frac{1}{2}$ in random-incidence condenser microphone
- Option 20
 - $\frac{1}{2}$ in free-field condenser microphone

Dynamic Range

- 29 to 160 dBA
- Noise floor to 3% THD

Sensitivity

- $17 \text{ mV}/\text{Pa}$

Temperature Coefficient

- 0.01 dB/°C

Temperature Range

- 50 to 60 °C

Stability

- 1 dB/300 yr @ 27 °C
- 0.5 dB/hr @ 150 °C

Polarization Voltage

- 200 Vdc

Response

- Microphones individually calibrated (curve supplied)

Power Source

- Internal
 - Four alkaline "C" cells
- Remote
 - Battery input range 4 to 15 Vdc
- Battery Life

Model 800B

Continuous operation with alkaline cells

Manual Operation: = 20 hr

Programmable System: = 14 hr

International Standards Met

800B Analyzer

ANSI Standard Specifications for Sound-Level Meters S1.4-1983, Type 1 (Precision).

IEC Standard 651-1979, Sound Level Meters, Type 1, Peak

IEC Standard 804-1984, Integrating-averaging Sound Level Meter

BS4197-1967, DIN 45633 B1.1, and B1.2

Optional Filters

ANSI Standard Specifications for Octave, Half-Octave, and Third-Octave Band Filter Sets (S1.11-1966)

Octave Class III, 1/1 octave Class II

BX 2475-1964, DIN 45652, and IEC 225-1966

Physical

Dimensions

2.36 x 3.85 x 17.0 in

Weight

3.8 lb includes batteries, internal filter bank, and computer interface.

Environmental

Operating Temperature

-10 to 50 °C

Operating Humidity

0 to 90%

Electrostatic Effects

Negligible

Model 826 Preamplifier

Input Impedance

10 GΩ || 2.0 GΩ and 0.7 pF

Gain

0.9

Warranty

LARSON·DAVIS warrants this product to be free from defects in material and workmanship for two years from the date of original purchase.

During the first year warranty period, LARSON·DAVIS will repair or, at its option, replace any defective component(s) without charge for parts or labor if the unit is returned freight prepaid to an authorized service center. The product will be returned freight prepaid.

During the second year warranty period, there will be no charge for replacement parts provided the product is returned to a LARSON·DAVIS repair facility.

Product defects caused by misuse, accidents, or user modification are not covered by this warranty.

No other warranties are expressed or implied. LARSON·DAVIS is not responsible for consequential damages.