# Sound Level Meter and Real-time Analyzer

- Advanced Sound Level Measurements – Real-time 1/1, 1/3 Octave
- Building Acoustics Measurements
- Real-time FFT Analysis
- Environmental Noise Monitoring – Transient Event Measurements
- Audiometer Calibration


The Larson Davis System 824 combines advanced sound level meter and real-time analyzer capabilities into a rugged, user-friendly, ergonomic package. The base unit is an Integrating Sound Level Meter (ISM) that meets Type 1 Standards and offers simultaneous measurement of sound pressure levels using fast, slow, and impulse detectors, for A, C, and flat frequency weightings. This feature, termed ANY LEVEL™ measures 48 sound pressure parameters at once with a linear, 105 dB range. With firmware enhancements, the base unit expands as needed to accommodate multiple data processing requirements, including:

• Sound Spectrum Analyzer (SSA) with ANY LEVEL™ simultaneous sound pressure level measurement, real-time 1/3 octave frequency analysis, spectral Lns and multiple time histories. This is your "do everything at once" instrument.

• Real-time Frequency Analyzer (RTA) provides rapid storage of 1/3 octave spectra at rates to 400/second, advanced trigger functions and automated determination of reverberation time.

• Fast Fourier Transform Analyzer (FFT) with 400-line resolution from 1 Hz to 20 kHz for specific frequency investigations. Includes snapshot data storage, THD calculations, user definable linear units, and more.

• Logging Sound Level Meter (LOG) provides advanced time and data logging features, including automatic logging of data associated user-defined noise events.

As with all Larson Davis products, this equipment is complemented with toll free applications assistance, 24-hour customer service, and is backed by a no-risk policy that guarantees satisfaction or your money refunded.

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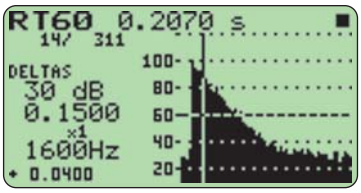
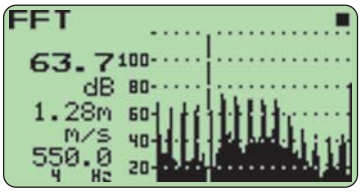
### High Speed Real-time Frequency Analysis (RTA)




Provides acquisition of 1/1 or 1/3 octave spectra at rates up to 400/sec. Use advanced triggering to initiate acquisition based on exceedance of a threshold sound level or, for room acoustics, based on impulse excitation or decay of broadband sound in a room. Automatically capture and average decay spectra for multiple measurement sequences. Use with DNA software to calculate RT-60 using Schroeder backwards integration and to determine building acoustics parameters such as transmission loss and impact isolation according to ISO and ASTM standards.

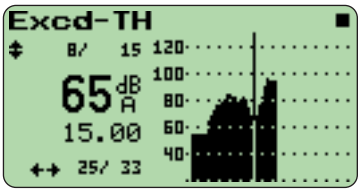
Easily determine speech interference level (SIL) and RC, NCB and HTL room criteria as defined by ANSI S12.2-1995 from single or averaged spectra.

### Fast Fourier Analyzer (FFT)




When greater frequency determination is required, this feature offers 400-line FFT analysis with upper frequency bands adjustable from 200 Hz to 20 kHz. With selectable time windows (Hanning, rectangular, and flat top), flexible averaging and user defined linear units showing the actual input voltage, the System 824 provides a lot of versatility in a hand held FFT analyzer. A full range of accessories allows you to quickly interface with accelerometers or direct signals to measure vibration levels, frequency or even total harmonic distortion (THD). Additionally, there are snapshot data storage and display zoom with a factor of 2, 4, or 8.

### Logging Sound Level Meter (LOG)




Ideal for unattended noise monitoring. Up to 39 ANY LEVEL™ parameters may be logged in time steps as short as 1/32 second. Log basic sound levels, Ln's, spectral Ln's and frequency spectra in intervals as short as 1 second. Log noise event data (levels exceeding user-defined thresholds) including date/time, duration, Leq, Lmax, Lmin, Lpeak along with event Time History. Log 24-hour community noise criteria Leq, Ldn, Lden and CNEL. Using external transducers, measure and log Wind Speed (average/maximum) and Wind Direction data with an inhibit feature to stop accumulation of sound level data during periods of high wind speed (user-defined).

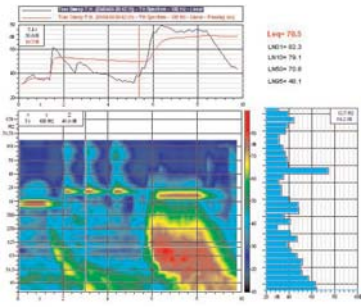
### Environmental Noise Monitoring Systems

Larson Davis provides an extensive range of accessories for short or long term noise monitoring including outdoor microphone systems with electrostatic calibration, microphone protective shrouds, modems, weatherproof cases with batteries and connections for computers, solar power systems, tripods of various sizes and tilt-down poles for permanent noise monitoring.

### Building Acoustics

The SRC20 Noise Source is a battery powered Digital Signal Generator that is ideal for building acoustics and electroacoustics testing, providing sine, swept sine, pink, and white noise signals.

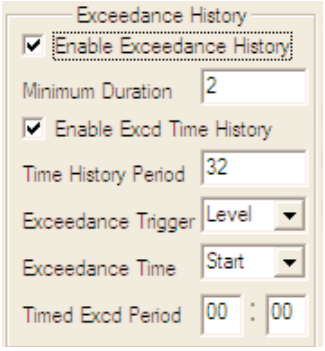
### Data, Navigation and Analysis Software



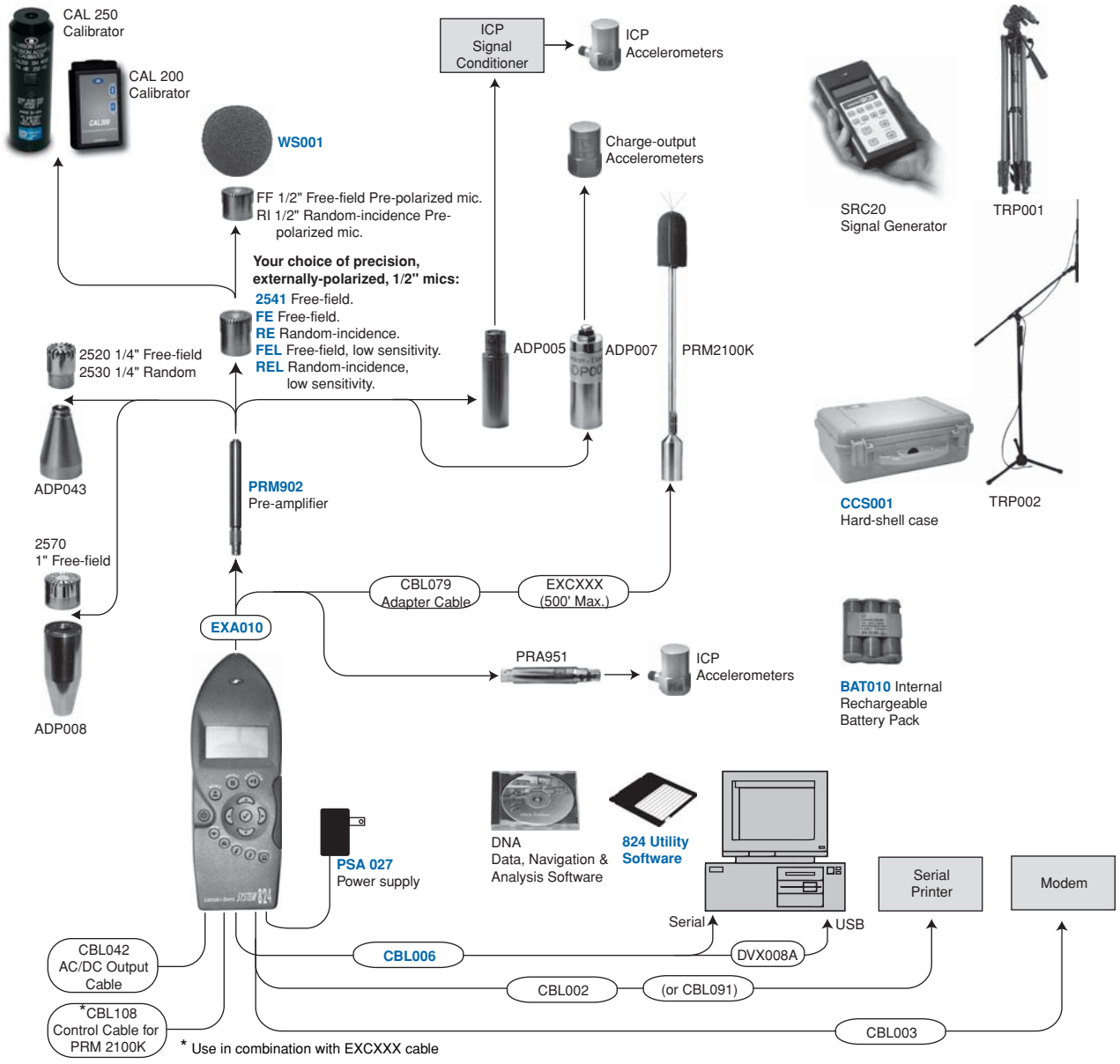
DNA-824 software provides communication with remote instruments, extensive analysis, and top notch presentation features. Linked cursors, live spectrograms, and event capture are all available. Drag and drop 824 data onto report templates customized with your logo and other information. Perform instantaneous, automatic capture of .wav files — an ideal way of annotating graphical data with an actual sound clip of the noise event! Data can also be streamed to a PC's hard disk for long term unattended measurements.

DNA is loaded with analysis tools for building acoustics, sound power, environmental noise measurement, noise mapping, etc. After using DNA, you will agree that it is the single most powerful software available for any sound level meter.

### 824-Utility: Free, powerful software for the 824




Create, store and upload instrument setups. Download measurement files and view text and numerical data collected on the 824. Export history, event and spectral data to spreadsheets and text files. Connect using serial or USB (adaptor DVX008A required).




**NOTE: Items in blue type are included accessories**

## The 824 is available in the following configurations:

| Model | Description | ISM | LOG | SSA | ACC |
|---|---|---|---|---|---|
| 824S | Type 1 SLM with 1/2" Mic, PRM902, WS001 | ✔ | | | |
| 824L | Type 1 SLM with 1/2" Mic, PRM902, WS001, includes accessories | ✔ | ✔ | | ✔ |
| 824A | Type 1 SLM with 1/2" Mic, PRM902, WS001, includes accessories | ✔ | | ✔ | ✔ |
| 824 | Type 1 SLM with 1/2" Mic, PRM902, WS001, includes accessories | ✔ | ✔ | ✔ | ✔ |

## At any time, your 824 can be upgraded with these options:

| Options | Description | 824S | 824L | 824A | 824 |
|---|---|---|---|---|---|
| 824-LOG | Logging capability | ✔ | | ✔ | |
| 824-SSA | Sound spectrum analysis capability | ✔ | ✔ | | |
| 824-ACC | Accessories: CCS001, CBL002, CBL006,CBL042, BAT010, EXA010, PSA026, 824-Util | ✔ | | | |
| 824-RTA | Real-time analysis capability option with fast autostore, RT60, noise criteria | ✔ | ✔ | ✔ | ✔ |
| 824-FFT | Narrow band, 400-line FFT option | ✔ | ✔ | ✔ | ✔ |

# System 824 Features and Specifications

| General | |
|---|---|
| Time weighting: | Slow, Fast, Impulse, TWA, peak (in parallel with all frequency weightings) |
| Frequency weighting: | A, C, Flat (in parallel with all time weightings) |
| Linearity range: | >105 dBA (ISM & LOG), >80 dB (SSA) |
| RMS noise floor: | <16 dBA (2541 microphone), typical |
| RMS overload level: | 157 dBA (2540 microphone), typical |
| Peak range: | >65 dB |
| Peak level: | 160 dB (2540 microphone) |
| Octave band frequencies: | 1/3 octave: 12.5 Hz to 20 kHz<br>1/1 octave: 16.0 Hz to 16 Hz |
| 400-line FFT: | 1 Hz to 20 kHz |

| Measurements | |
|---|---|
| SPL: | A, C, Flat for Slow, Fast and Impulse |
| Lmin: | A, C, Flat for Slow, Fast and Impulse |
| Lmax: | A, C, Flat for Slow, Fast and Impulse |
| Lpeak: | A, C, Flat |
| Leq : | A, C, Flat |
| SEL: | A, C, Flat |
| TAKT3 & TAKT5: | A, C, Flat for Slow, Fast |
| Additional metrics: | TWA, SE, Dose, Projected Dose, C minus A |
| Real-time 1/3 octave frequency analysis: | Six Ln values (user selectable), Leq, @max, Lmin spectra with 1/3 or 1/1 display, six spectral Ln's (overall or interval) |

**Memory**

2 Megabytes of memory sufficient to store any one of the following:

- 2 million point time history (1.0 dB resolution)
- 1 million point time history (0.1 dB resolution)
- 70,000 RTA 1/1 octave spectra
- 60,000 LOG intervals without Ln's
- 35,000 LOG intervals with Ln's
- 28,000 point 1/3 octave SSA Leq time history
- 28,000 RTA 1/3 octave spectra
- 20,000 intervals with 1/3 octave Leq spectrum
- 12,300 SSA intervals with Leq and Max 1/3 octave spectra
- 2,400 FFT 400-line snapshots

**Communications Interface**

USB (with DVX008A USB to DB9M Serial Adaptor) RS-422/RS-232 serial interface; modem mode

**Display/Keypad**

Large backlit true bit-mapped graphic display (64 x 128 pixels)

14 backlit silicone rubber sealed keys with icons and silent operation

**Power**

Internal:

- Battery power: NiMH pack (provided) or 3 AA cells (NiMH, Photo Lithium or Alkaline)
- Operating Time: up to 7 hours of operation (battery type and mode dependent)
- Internal smart charger

External:

- Voltage range: 6 to 15 Vdc
- Typical current: 150 mA@12 Vdc

| Physical Characteristics | |
|---|---|
| Dimensions (length x width x depth): | 9.9 x 3.4 x 1.6 in<br>(251 x 86 x 41 mm) excluding preamplifier |
| Weight (excluding microphone and preamplifier): | 1.1 lb (0.53 kg) |

| Environmental | |
|---|---|
| Operating Temperature: | +14 to +122 °F (-10 to +50 °C) |
| Storage Temperature: | +14 to +140 °F (-10 to +60 °C) |

**Standards Compliance**

IEC61672-1 (2002) Class 1
IEC60804 (1985) Type 1
IEC60651 (1993)
IEC61260 (1995) Class 1
ANSI S1.4 – 1983
ANSI S1.11 – 1985 – Type 1D
CE Indicates compliance with EMC Directive and Low Voltage Directive

| 824 Optional System Configurations | |
|---|---|
| 824-SSA: | Upgrades 824 S or 824L to sound spectrum analysis capability |
| 824-LOG: | Upgrades 824S or 824A to logging capability |
| 824-FFT: | Adds 400-line FFT analysis to any 824 |
| 824-RTA: | Adds RTA module for spectra autostore, RT60's, NC and RC to any 824 |
| 824-AUD: | Firmware for audiometer calibration and total harmonic distortion measurement |
| 824-WND: | Firmware to enable logging of wind speed and direction (or tachometer reading) |
| 824-RTA/FFT: | Adds both RTA and FFT modules to any 824 |
| 824-ACC: | Adds standard accessories package to 824S (CCS001, CBL006, CBL042, BAT010, EXA010, PSA026, 824-UTIL) |

| 824 Accessories (included with 824L, 824A and 824) | |
|---|---|
| Documentation: | Users and Training Manual |
| Choice of 1/2" microphone: | 2540, 377B41, 377A60, 377A01 |
| PRM902: | Microphone preamplifier |
| *CBL06: | Serial computer interface cable |
| *WS001: | 3-1/2" windscreen |
| *PSA027: | Universal AC power adaptor, 12 volt output |
| *BAT010: | NiMH rechargeable battery pack |
| *CCS001: | Hard shell carrying case |
| *EXA010: | Ten foot microphone extension cable |
| *824 UTIL: | Windows based software for instrument setup, data download and data export |

* Not included with 824S

| 824 Accessories (optional) | |
|---|---|
| SRC20: | Stand-alone hand-held signal and noise generator |
| PSA024: | External battery charger for BAT010 |
| Software: | DNA Data, Navigation and Analysis software |
| DVX008A: | USB to DB9 Serial Adaptor |
| CBL002: | Serial printer cable with 25 pin male 'D" connector |
| CBL003: | Serial modem cable with 25 pin male 'D' connector |
| CBL091: | HP serial printer cable with 9 pin male 'D' connector |
| MDM001: | Battery powered telephone modem |
| MDM012: | AC powered telephone modem |
| MDM010: | Radio frequency modem |
| Acoustic calibrators: | CAL200, CAL250 |
| Outdoor environmental cases: | EPS024, EPS026, and EPS028 |
| Environmental protection for microphones and preamplifiers: | EPS2106, 2107 and 2108 |
| Outdoor preamplifier for long-term noise monitoring with electrostatic actuator: | PRM2100K |
| Tripod/Microphone Boom: | TRP001/TRP002 |
| Microphone extension cables: | EXAxxx (where "xxx" is length in feet; standard cable lengths, in feet, include: 1.5, 6, 10, 20, 25, 35, 50, 66, 100 and 200) |

***Total Customer Satisfaction Guaranteed***

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**Larson Davis** provides a complete line of acoustic and vibration measurement tools including dosimeters, sound level meters, real time analyzers, pre-amplifiers, calibrators, and microphones.