

3M Occupational Health & Environmental Safety Division

3M™ SoundPro™ Sound Level Meters SE/DL Series



Easy to Use Functionality



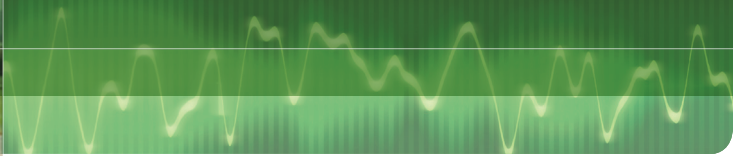
Advanced Sound Level Monitoring

The 3M™ SoundPro™ Sound Level Meters SE/DL provides advanced sound level monitoring and comprehensive data analysis. Available in Class/Type 1 and Class/Type 2 models, these instruments feature large screen displays that enable real-time frequency analysis, and data storing capabilities that make it easy to post-process and evaluate workplace noise levels.

The aerodynamic shape of the SoundPro is specifically designed to minimize disturbance to the sound fields being measured. From industrial and task noise sampling to hearing conservation, the SoundPro SE/DL series provides accuracy, ease-of-use and, if needed, data for professional follow-through.

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TECHNOLOGIES
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High Performance Area Sound Level Monitoring

The 3M™ SoundPro SE and DL's powerful feature set make it easy to document and measure noise exposures. These hand-held instruments include two virtual sound level meters to take full or third octave band real-time measurements while simultaneously measuring broadband sound. Features such as a menu driven user interface, quick keypad calibration, removable SD memory card and optional 3M™ Detection Management Software DMS allow users to simply and reliably perform advanced sound analysis.

The SoundPro series helps deliver the accurate sound measurement needed to support hearing conservation programs and can help companies comply with regulatory requirements for hearing protection.



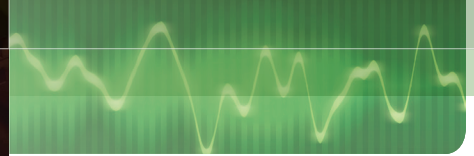
SoundPro SE/DL Features

- ANSI & IEC standards compliant
- Available in Class/Type 1 Precision or Class/Type 2 General Purpose models
- Two "virtual" sound level meters running simultaneously
- Concurrent A-weighted and C-weighted measurements
- Programmable and level-triggered start and stop
- A, C, and Z (flat) frequency weighting
- Fast, slow, and IEC impulse time response
- Selectable thresholds 10 dB – 140 dB
- 3, 4, 5, 6 dB exchange rates
- Luminescent keypad and backlit display
- SD memory card slot
- USB communications port and serial RS-232 output
- Multilingual display (English, French, Spanish, German, Italian, Portuguese)
- Time history data logging with 1 second to 60 minute intervals*
- Back erase function
- Noise dose calculation / dosimetry function

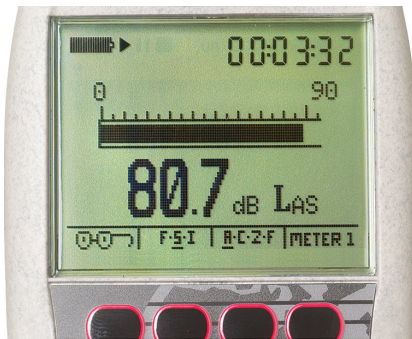
*DL only

Applications Include:

- Occupational noise evaluations
- Environmental noise assessments
- Noise ordinance enforcement and legal metrology
- General sound and frequency analysis
- Vehicle noise evaluations
- Building acoustics
- Mobile equipment evaluations



Easy-to-Read, Intuitive Displays

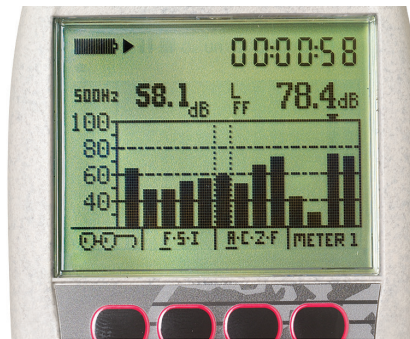


SPL Display

Quasi-Analogue and Numeric Screen

Analogue Display View

Displays the current Sound Pressure Level (SPL) with selected time response and filter weightings. The amplitude of the displayed measurement is shown both graphically by the length of the bar and numerically below the bar. The bar appears if the measured value is above the minimum value for the selected measurement range.

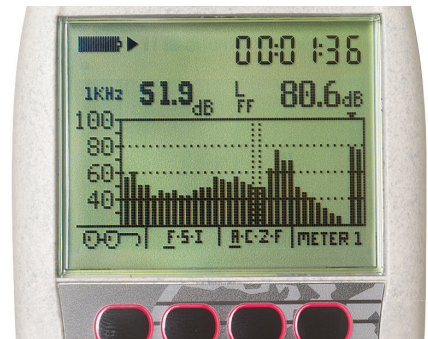


1/1 Octave

Band Bar Chart Measurement Screen

Broadband Bar Chart View

Displays 1/1 octave analysis measurements in filter band and broadband values for both meters 1 and 2. This screen contains 13 bars with 11 filter bands and two for broadband. Bars appear if the value for the measurement is above the minimum value for the selected measurement range.



1/3 Octave

Band Bar Chart Measurement Screen

Broadband Bar Chart View

Displays 1/3 octave-band analysis measurements in filter band and broadband values for both meters 1 and 2. This screen contains 35 bars with 33 filter bands and two for broadband. Bars appear if the value for the bar is above the minimum value for the selected measurement range.

Real-Time Analysis



Optional Features and Expanded Capabilities

3M™ SoundPro Outdoor Measuring System (SP-OMS)

The SoundPro Outdoor Measuring System helps protect the instrument from exposure to wind, rain, snow, chemicals, particulates, animals, vandalism and theft. It is also used for extended battery life with up to one week of continuous monitoring (two weeks with optional second battery). The weatherproof case holds the meter and battery pack with room for accessories and storage of the system components while not in use.

Exposed components are made of stainless steel, ABS and engineered polymers. The OMS kit contains all necessary masts, windscreens, cables, battery packs and adapters required for use with the SoundPro SE and DL instruments. Provisions in the case design allow customer-supplied padlocks and cables to be used to lock the case and secure it to a stationary object.

Other Options Include:

- Full (1/1) octave band real-time analysis
- Third (1/3) octave band real-time analysis
- Acoustic spectral curves option
- Speech intelligibility option
- Audiometric calibration kit configurations
- GPS data incorporation (using compatible GPS receiver)
- Optional microphones in 1/4", 1/2", and 1" sizes
- Reverberation Time (RT-60 option)



Specifications for the SoundPro

GENERAL:	
DISPLAY LANGUAGES	English, French, Spanish, German, Italian and Portuguese
USER INTERFACE	10 pushbuttons and 4 soft keys, menu driven
DISPLAY TYPE	Transflective 128 X 64 Dot Matrix LCD with additional fiber optic backlighting
CONFORMANCE TO STANDARDS:	
EMC REQUIREMENTS	EN/IEC 61326-1(2005) Group 1, Class B Emissions / Industrial Location Immunity. CFR:47 (2008) Part 15 - Meets FCC Class B Emissions
PERFORMANCE REQUIREMENTS	EN/IEC 61672-1(2002), ANSI S1.4 (R2006), ANSI S1.43(R2007), EN/IEC 61260 (2001), ANSI S1.11 (R2009), (also meets requirements of former standards IEC 60651 and 60804) IEC60268-16 (2003) with Speech Intelligibility option
SAFETY REQUIREMENTS	IEC61010-1 (2010)
CERTIFICATIONS	CE Mark, WEEE, RoHS
MEASUREMENTS:	
PARAMETERS	SPL, L _{Max} , L _{Min} , L _{Pk} (peak), L _{EQ} /L _{AVG} , SEL, LN (selectable L1 to L99), TWA, Taktm, Taktmx, Dose, PDose, Exposure (Pa2H/Pa2S), LDN, CNEL, PTWA, L C-A
RANGES	120 dB+ (A-weighted) total dynamic measurement range over 8 individual ranges of 90 dB (A-weighted) each (with filters - 80 dB ranges); overall measurement range 0 dB to 140 dB
PEAK RANGE	Up to 143 dB using standard BK4936 microphone; higher with optional microphones and preamps
FREQUENCY WEIGHTING	A, C, Z and F (Flat)
RESPONSE TIME	Fast, Slow, IEC Impulse
EXCHANGE RATES	3, 4, 5, and 6 dB
CRITERION LEVEL	40 to 100 dB
UPPER LIMIT TIME LOGGING	10 to 140 dB selectable
RUN MODES	Level triggered run/pause, clock/date triggered power on and run for programmed duration, external logic input run/pause, and keypad initiated run/pause for programmed duration
MEASUREMENT REFERENCES	SPL: 114 dB Frequency: 1 kHz Direction: 0 degrees using free-field response microphone
OCTAVE AND THIRD OCTAVE FILTERS (OPTIONAL):	(base-10 bands, as recommended by IEC61260 [2001])
FULL OCTAVE FILTERS	11 bands with center frequencies from 16 Hz to 16 kHz
THIRD OCTAVE FILTERS	33 bands with center frequencies from 12.5 Hz to 20 kHz
CALIBRATION:	
HISTORY	Complete calibration history with post study verification logged with calibration history
LOGGING AND STORAGE:	
LOGGING	DL Models only. L _{Max} , L _{Min} , L _{Pk} (peak), LN, L _{EQ} /L _{AVG} may be logged at 11 selectable intervals from one second to 60 minutes to the included SD (secure digital) memory card. Use 3M™ QuestSuite™ Professional II or 3M™ Detection Management Software DMS to interpret data files
SUMMARY DATA	All session/study data is stored to the SD card. Summary data may be interpreted with 3M™ QuestSuite™ Professional II or 3M™ Detection Management Software DMS, or exported to spreadsheet or XML file with an available utility
MEMORY	Accepts 32 MB to 32 GB SD memory cards. Card included with all models and stores multiple summary sessions/studies and for setup storage (Contact factory for preferred SD card manufacturers)
SPECIAL FUNCTIONS:	
BACK ERASE	Selectable 1 to 20 seconds removal of measurement data (data removed by back erasing and retained in session file)
SECURITY	4 digit code protection for Runs and Setups available
OPTIONAL ACOUSTIC SPECTRAL CURVES	Noise Criterion (NC) Curves, Preferred Noise Criterion (PNC) Curves, Room Criterion (RC) Curves, Balanced Noise Criterion (NCB) Curves, Noise Rating (NR) Curves, Audiometric Room Curves (per ANSI S3.1, per OSHA Hearing Conservation Amendment, and per ISO Hearing Screen for Audiology Booths)
OPTIONAL SPEECH INTELLIGIBILITY FUNCTION	Firmware can be installed in the SoundPro™ series to allow the testing and evaluation of intelligibility of human speech through public address (PA), fire alarm and mass notification systems (MNS), the STI-PA method in accordance with IEC 60268-16 and NFPA 72 National Fire Alarm Code. Results are in STI or CIS. On meter post-processing available
OPTIONAL REVERBERATION TIME (RT-60)	Used to measure decay time or acoustic decay performance of a room or closed space

SoundPro Specifications (cont.)



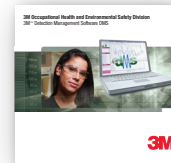
PORTS AND CONNECTIONS:	
POWER JACK	External power supply 9-16 VDC
AC/DC OUTPUT	3.5 mm stereo (tip-AC, Ring-DC, Ring2-Ground)
10 PIN AUXILIARY CONNECTOR	RS-232, 3 digital outputs, 1 digital input
USB	Conforms to USB 2.0, mini-USB connector
ELECTRICAL CHARACTERISTICS:	
BATTERIES	4 disposable AA alkaline cells, typically >10 hours continuous use without backlight (SLM only without filters activated); optional nickel metal hydride (NiMH) cells, typically 10+ hours (SLM only)
EXTERNAL DC POWER INPUT	100 – 240 VAC, 47-63 Hz transformed to 9 VDC
STANDARD MICROPHONES	Class/Type 1 Precision – BK4936; Class/Type 2 General Purpose – QE7052; other optional types and sizes available from ¼" to 1" prepolarized or standard condenser types
MICROPHONE POLARIZATION	Selectable 0 volts or 200 volts (Class/Type 1 models only)
MICROPHONE SENSITIVITY	Selectable nominal values in decibels relevant to 1 Volt/Pa
METER INPUT IMPEDANCE	20 kΩ in series with 11 μF capacitance, with 100 pF capacitance to ground
REMOTE CABLE	Will drive up to 15 meters of cable with negligible signal loss
PREAMPLIFIER	Removable preamp directly accepts ½" (0.52" or 13.2 mm) microphone; other sizes require adapter
PREAMPLIFIER INPUT IMPEDANCE	Greater than 1 GΩ; less than 2pF
PHYSICAL CHARACTERISTICS:	
SIZE	3.1"W X 11.1"H X 1.6" thick (with preamp & microphone); 7.9 cm X 28.2 cm X 4.1 cm
WEIGHT	0.54 kg or 1.2 lbs. (including batteries)
HOUSING	Stainless fiber filled ABS polycarbonate with additional internal EM/RFI shielding
TRIPOD MOUNT	Standard photographic mount on rear accepts ¼"- 20 screw threads
ENVIRONMENTAL:	
TEMPERATURE	Operating -10 °C to +50 °C (<± 0.5 dB effect); Storage -25 °C to +70 °C
HUMIDITY	10% to 90% RH, non-condensing
EXTERNAL FIELDS	Electric – 10 V/meter, 1 kHz modulated, 30 MHz – 1 GHz, <55 dBC; magnetic – 80 A/m, 50/60 Hz, no significant effect

All Specifications Subject to Change

DMS Software: Data Management Made Easy

New 3M™ Detection Management Software DMS makes it easy to record, report, chart and analyze data collected for assessment of select occupational health hazards in the workplace.

- Retrieve, download, share and save instrument data
- Generate charts and reports
- Export and share recorded data
- Perform advanced calculations
- The software integrates with 3M Quest instruments, and will help improve both efficiency and reporting of environmental data.



Occupational Health & Environmental Safety Division
 Quest Technologies, a 3M Company
 ISO 9001 Registered Company
 ISO 17025 Accredited Calibration Lab
 1060 Corporate Center Drive
 Oconomowoc, WI 53066

Customer Service: 262-567-9157
 Toll Free: 800-245-0779
www.3M.com/detection

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