SoundPro™ Sound Level Meters

SE/DL Series

The TSI Quest™ SoundPro™ SE and DL series Sound Level Meters and Real-Time Analyzers help provide advanced sound level monitoring and comprehensive data analysis.

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. Available in Class/Type 1 and Class/Type 2 models..

Applications
- 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

Features and Benefits
- ANSI and IEC standards compliant
- Available in Class/Type 1 Precisions 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
- Display adjustable among multiple languages
- Time history data logging with 1 second to 60 minute intervals*
- Back erase function
- Noise dose calculation/dosimetry function

*DL only

Easy-To-Read Intuitive Displays

Sound Pressure Level 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

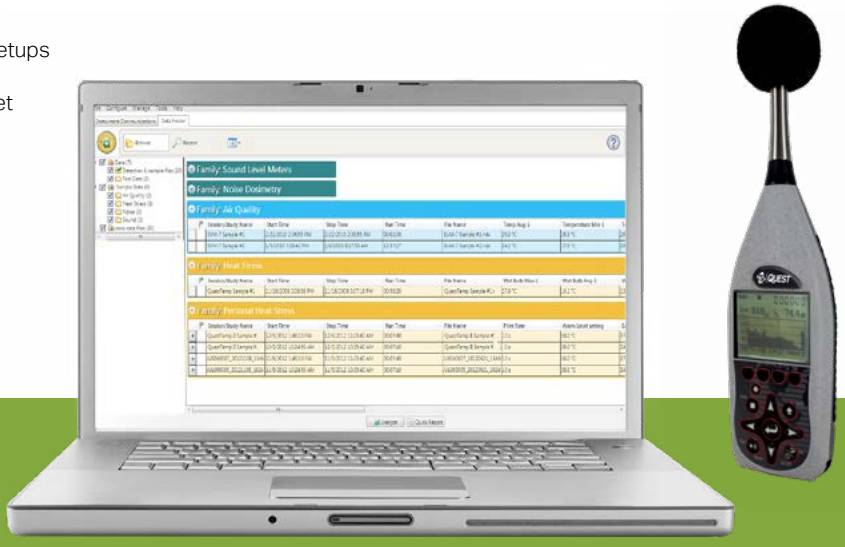
Broadband Bar Chart View

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 measurement is above the minimum value for the selected measurement range.

Detection Management Software

Designed for dosimetry, sound level measurements, heat stress assessments and environmental monitoring, this advanced software helps safety and occupational professionals:

- Configure instrumentation and save pre-configured setups
- Retrieve, download, share, and save instrument data
- Create charts, tables, and reports to intuitively interpret your measurements
- Export and share recorded results



The software integrates with TSI Quest Detection Solutions data logging instruments and will help you improve both operating efficiency

Optional Features and Expanded Capabilities

Quest 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)

Sensor specifications

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 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

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 -10ºC to +50ºC (<± 0.5 dB effect); Storage -25ºC to +70ºC
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

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

Specifications

SoundPro™ Sound Level Meters

SE/DL Series

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

Logging and Storage

Logging DL Models only. LMax, LMin, LPk(peak), LN, LEQ/LAVG may be logged at 11 selectable intervals from one second to 60 minutes to the included SD (secure digital) memory card. Use TSI Quest 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 TSI Quest 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)

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

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 Noise Criterion (NC) Curves, Preferred Noise

Spectral Curves 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

Calibration

History Complete calibration history with post study verification logged with calibration history

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