

Sound Track LxT – Instrument Software (PDF)

(1) SoundTrack LxT - System Software Features

The SoundTrack LxT System Software: is designed to run the instrument hardware including Display, Control, Memories and Accessory Devices such as Printers, Communications and PCs. The key features in the System Software design are to be user interactive without requiring complex operating procedures or long response time delays in taking measurements, displaying the data in an optimum format and being able to rapidly and accurately interpret the data. The Model SoundTrack LxT System Software is designed to enable the user to immediately access all of the optional features of this high quality, multi-capability instrument when the required firmware is installed in the instrument. Key features and principal characteristics are:

- Clear indication of measurement data via large graphic LCD display
- Pop-up menus with scroll bars
- Rapid transition between operating modes and display screens
- File management system stores multiple measurements
- Built-in optional firmware and integrated software
- Utility software to enhance setup, download, text production and display, recording and reporting
- Optional features to provide multi-instrument capabilities in a single Integrating Sound Level Meter

(2) SoundTrack LxT - Application Software

- **Application Software:** is used in the SoundTrack LxT design to introduce proven software programs, such as Digital Filters into vendors hardware (DSPs etc.) via low risk operating systems.
- **Integrating Sound Level Meter (ISM):** Types 1 & 2 SLM for Sound Pressure Level Measurements for Environmental Noise and Workplace Noise Analysis
- **1/1 Octave Band Analysis (OB1 - Optional):** Provides real-time single octave frequency analysis as a classification aid to Environmental Noise Monitoring
- **1/1 and 1/3 Octave Band Analysis (OB3 - Optional):** Provides real-time single and one-third octave frequency analysis as a classification aid to Environmental Noise Monitoring and Machinery Diagnostics
- **Automatic Data Storage:** With the optional Data Logging firmware installed, when in the Time History mode, the SoundTrack LxT can automatically log up to 16 acoustic and non-acoustic parameters, at time intervals from 1 second to 24 hours. The control of the time intervals is achieved via 6 user Run Control modes of the instrument:
- **Exceedance Event Data Measurement:** Events triggered by a number of threshold values being exceeded, display the number of exceedances that have occurred and the total duration of the exceedances for, two RMS and three Peak detector threshold values.
- **Industrial Hygiene:** Time Weighted Average data with two Dosimeter channels of exposure measurements and dose calculations
- **Digital Voice Annotation (DVA - Optional):** Sound and Voice Digital Recording and Playback
- **120MB Memory (Optional - MEM120):** A high density Flash Memory significantly increases the capacity for all storage and sound recording functions

(3) SoundTrack LxT - Integrating SLM

The SoundTrack LxT is an integrating sound level meter designed primarily for Industrial Hygiene applications. The SoundTrack LxT is available as Class 1 or Class 2 hand-held sound level meters. Options include, "1/1" or "1/1 & 1/3" Octave Band frequency analysis, Digital Voice Annotation and a data storage expansion capability with a 120 M Byte Flash Memory. In the standard form the SoundTrack LxT can perform the following measurements:

- **Sound Pressure Level (SPL):** Leq; Lmax; Lmin; SEL; Lpeak; Lpeak(max)
- **Two Individual Dosimeter Functions:** Lavg; TWA; Lep.d; Dose; and ProjDose; for the actual and calculated values for two projected times
- **Exceedance Events:** triggered from threshold excess sound level values providing two RMS and one Peak SPL
- **Statistical Measurements:** providing measurements for 6 Ln Values of n

(4) SoundTrack LxT Data Displays

The Instrument Software supports the organization and display of the measurement data such that the interpretation of that data is a logical and simple task for the end-user. The software provides multiple display choices through the use of simultaneous measurement parameters for frequency weightings and detector selection. The Data Displays show the following basic SLM measurements including the optional 1/1 Octave Band Data and/or the optional 1/1 & 1/2 Octave Band Data:

Live Page:

(1) The Live Data Display (1 second Leq), where the displayed measurements are always active, real-time data consisting of:

- **Bar Graph display:** showing 1 second Leq data over the last 120 seconds
- **Leq:** most recent measurement ... a numeric display with selectable A/C/Z frequency weighting and 1 second integration time
- **Instantaneous RMS Levels (L):** measurement from the RMS detector ... a numeric display with selected A/C/Z frequency weighting and Slow/Fast/Impulse detectors
- **Peak Level:** most recent measurement ... a numeric display with selected A/C/Z frequency weighting

(2) 1/1 Octave Band Analyzer Data Display, showing:

- **Bar Graph Displays** of Sound Levels in 1/1 Octave Bands and the Instantaneous RMS Sound Level for selected A/C/Z frequency weighting and Slow/Fast/Impulse detector as the Right-Hand Bar
- **Instantaneous RMS Sound Level (L) and Frequency:** numeric display for selected frequency band for Slow/Fast/Impulse detector at the frequency cursor
- **Instantaneous RMS Sound Level (L):** numeric display for selected frequency band for selected A/C/Z frequency weighting and Slow/Fast/Impulse detectors at the frequency cursor

(3) 1/1 & 1/3 Octave Band Analyzer Data Displays, showing:

- **Bar Graph Displays:** of Sound Levels in 1/1 and 1/3 Octave Bands and the Instantaneous RMS Sound Level for selected A/C/Z frequency weighting and Slow/Fast/Impulse detector as the Right-Hand Bar
- **Instantaneous RMS Sound Level (L) and Frequency:** numeric display for selected frequency band for Slow/Fast/Impulse detector at the frequency cursor
- **Instantaneous RMS Sound Level (L):** numeric display for selected frequency band for selected A/C/Z frequency weighting and Slow/Fast/Impulse detectors at the frequency cursor

(4) Triggering, showing:

- **Instantaneous RMS Levels (L):** with selectable Slow/Fast/Impulse detectors and A/C/Z selectable frequency weighting
- **Peak Level (Lpeak):** with selectable A/C/Z frequency weighting
- **Exceedance Trigger Points:** for L and Peak Levels and when exceedance has occurred

Overall Page:

(1) The Overall Data Display Page (Leq), where the displayed measurements are:

- **Bar Graph display:** showing 1second Leq data over the last 120seconds
- **Leq:** with selectable A/C/Z frequency weighting
Instantaneous RMS Level (L): for selected A/C/Z frequency weightings

(2) Maximum, Minimum and Peak Sound Levels, showing:

- **Leq:** with selectable A/C/Z frequency weighting
- **Instantaneous RMS Levels (L):** with selected A/C/Z frequency weighting and Slow/Fast/Impulse detectors
- **Peak Level (Lpeak):** with selected A/C/Z frequency weighting
- **Maximum Peak Level (Lpeak(max)):** highest level peak detector has measured during run time (*equivalent to Peak Hold*)
- **Lmax:** highest level RMS detector has measured during run time (*equivalent to Max RMS Hold*)
- **Lmin:** lowest level RMS detector has measured during run time

(3) 1/1 or (1/1 and 1/3) Octave Band Analyzer for OB1 or OB3 Firmware showing:

- **Bar Graph Display:** of Average Sound Levels (Leq) in a 1/1 or (1/1 and 1) Octave Bands and one bar of Leq data for A/C/Z and Slow/Fast/Impulse selected RMS detector selected frequency weighting for frequency band under cursor.
- **Leq:** averaged sound level for the selected frequency band over the duration of the measurement
- **Lmax:** for frequency band under cursor over the duration of the measurement. Note that the Lmax is also indicated by a "dash" above each frequency band bar on the display
- **Lmin:** for frequency band under cursor over the duration of the measurement. Note that the Lmin is also indicated by a "dash" on each frequency band bar on the display

(4) Dosimeter 1 Page, showing:

- **Selected Standard:** OSHA-1; OSHA-2; ACGIH; NIOSH; IEC
- **Time Weighted Average (TWA):** calculated for predetermined Criterion Time
- **Projected TWA (ProjTWA):** calculated from a small measurement run time as the value of TWA that would have been measured for the Criterion Time
- **Daily Personal Noise Exposure (Lep,d):** calculated for measurement run time
- **Dose:** calculated for predetermined Criterion Time and Level
- **Projected Dose:** calculated for run time and Criterion Level

(5) Dosimeter 2 Page:

- Same available settings as Dosimeter 1 page (can be set individually from Dosimeter 1)

(6) Sound Exposure, showing:

- **Instantaneous RMS Sound Exposure Level (Le):** with selectable Slow/Fast/Impulse detectors and A/C/Z selectable frequency weighting
- **Sound Exposure (Actual):** Pa²h and Pa²s
- **Sound Exposure (Two Extrapolated Values):** Pa²h and Pa²s

(7) Ln Percentiles, showing:

- **Lmin:** for A/C/Z and Slow/Fast/Impulse
- **Lmax:** for A/C/Z and Slow/Fast/Impulse
- **Six Sound Level Values:** that exceeded the value Ln "n" percent of the time

(8) Exceedances, showing the number of exceedances that have occurred during the measurement run time and the total duration of exceedances for two RMS detector thresholds and one Peak detector threshold, showing:

- **LRMS (two values):** for A/C/Z selected frequency weighting and selected Slow/Fast/Impulse detectors
- **Lpeak:** for A/C/Z frequency weighting

(9) S.E.A showing:

- **SEA Value:** dB for Z frequency weighting and 1 second integration peaks that exceed 120dB

(5) SoundTrack LxT - Time History

With the optional Data Logging firmware installed, when in the Time History mode, the SoundTrack LxT can automatically log up to 16 acoustic and non-acoustic parameters, at time intervals from 1 second to 24 hours. The control of the time intervals is achieved via the following 6 Run Control modes of the instrument:

- **Manual Stop:** initiated and stopped manually
- **Timed Stop:** initiated manually and automatically stopped after a user-defined period.
- **Stop When Stable:** initiated manually and automatically stopped after a user-defined period and when the measured level has remained within a user-defined band.
- **Continuous:** initiated and stopped manually as in the Manual Stop mode. The exception being that the Continuous mode has a user-selected capability of a 24 hour, user time set, auto-store.
- **Single Block Timer:** initiated and stopped manually, when measurement have been made in the time interval defined by the single block timer.
- **Daily Timer:** initiated and stopped manually, when measurement have been made during the separate time blocks defined in the instrument setup.

The 16 measurement parameters are:

- **RMS Levels:** Leq; Lmax; Lmin (with predefined A/C/Z frequency weightings and Slow/Fast/Impulse detectors)
- **Peak Level:** Lpeak (with predefined A/C/Z frequency weighting)
- **Specialized Acoustic Parameters:**
 - LAFTM5 Tacktmaksimal 5 (used in Germany)
 - Ltwa1 and Ltwa2 time-weighted averages (associated with Dose 1 and Dose 2 exchange rates and thresholds for Dosimeters 1 & 2)
 - (LCSeq – LASeq)
- **1/1 and 1/3 Octave Spectra:** the following frequency spectra can be logged as 1/1 Octave Bands (OB1 firmware) or 1/1 & 1/3 Octave Bands (OB3 firmware):
 - OBA 1/1 Leq
 - OBA 1/1 Lmax
 - OBA 1/1 Lmin
 - OBA 1/3 Leq
 - OBA 1/3 Lmax
 - OBA 1/3 Lmin
- **Non-Acoustic Parameters:** (from LxT)
 - Battery Level
 - Internal Temperature

(6) SoundTrack LxT - 1/1 Octave Band Analyzer

The 1/1 Octave Band Analyzer Data measures and displays the following data on the Live or the Overall displays.

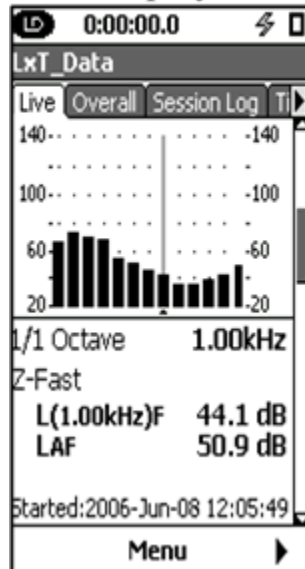
Live Displays:

- **Bar Graph Displays** of Averaged Sound Levels (Leq) in 1/1 Octave Bands and the Instantaneous RMS Sound Level for selected A/C/Z frequency weighting and Slow/Fast/Impulse detector as the Right-Hand Bar
- **Octave Band:** numeric display of 1/1 Octave Band mode
- **Settings:** numeric display of selected frequency weighting A, C, or Z and selected RMS detector Slow, Fast or Impulse
- **Instantaneous RMS Sound Level (L) and Frequency:** numeric display for selected frequency band for Slow/Fast/Impulse detector at the frequency cursor
- **Instantaneous RMS Sound Level (L):** numeric display for selected frequency band for selected A/C/Z frequency weighting and Slow/Fast/Impulse detectors at the frequency cursor
- **Start Time:** Date (m:y) and Time (hh:mm:ss)

Overall Displays:

- **Bar Graph Displays** of Averaged Sound Levels (Leq) in 1/1 Octave Bands and the Instantaneous RMS Sound Level for selected A/C/Z frequency weighting and Slow/Fast/Impulse detector as the Right-Hand Bar
- **Octave Band:** numeric display of 1/1 Octave Band mode
- **Settings:** numeric display of selected frequency weighting A, C, or Z and selected RMS detector Slow, Fast or Impulse
- **Lmax:** for frequency band under cursor over the duration of the measurement. Note that the Lmax is also indicated by a "dash" above each frequency band bar on the display
- **Lmin:** for frequency band under cursor over the duration of the measurement. Note that the Lmin is also indicated by a "dash" on each frequency band bar on the display

1/1 Octave Band Displays



(7) SoundTrack LxT - 1/1 and 1/3 Octave Band Analyzer

The 1/1 and 1/3 Octave Band Analyzer Data measures and displays the following data on the Live or the Overall displays:

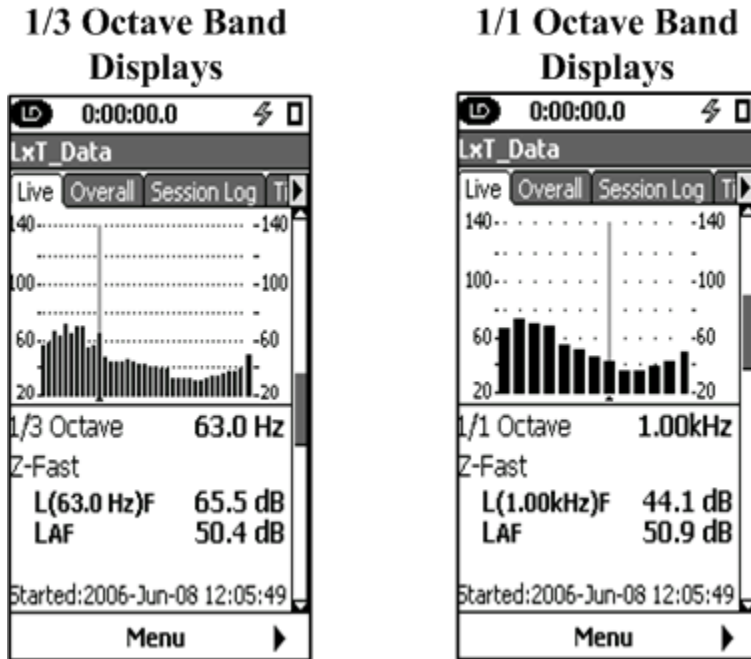
Live Displays:

- **Bar Graph Displays** of Sound Levels in 1/1 and 1/3 Octave Bands and the Instantaneous RMS Sound Levels for selected A/C/Z frequency weighting and Slow/Fast/Impulse detector as the Right-Hand Bar
- **Octave Band:** numeric display of 1/1 and 1/3 Octave Band mode
- **Settings:** numeric display of selected frequency weighting A, C, or Z and selected RMS detector Slow, Fast or Impulse
- **Instantaneous RMS Sound Level (L) and Frequency:** numeric display for selected frequency band for Slow/Fast/Impulse detector at the frequency cursor
- **Instantaneous RMS Sound Level (L):** numeric display for selected frequency band for selected A/C/Z frequency weighting and Slow/Fast/Impulse detectors at the frequency cursor
- **Start Time:** Date (m:y) and Time (hh:mm:ss)

Overall Displays:

- **Bar Graph Displays** of Averaged Sound Levels (Leq) in 1/1 and 1/3 Octave Bands and the Instantaneous RMS Sound Level for selected A/C/Z frequency weighting and Slow/Fast/Impulse detector as the Right-Hand Bar
- **Octave Band:** numeric display of 1/1 and 1/3 Octave Band mode
- **Settings:** numeric display of selected frequency weighting A, C, or Z and selected RMS detector Slow, Fast or Impulse

- **Lmax:** for frequency band under cursor over the duration of the measurement. Note that the Lmax is also indicated by a "dash" above each frequency band bar on the display
- **Lmin:** for frequency band under cursor over the duration of the measurement. Note that the Lmin is also indicated by a "dash" on each frequency band bar on the display



(8) SoundTrack LxT - Digital Voice Annotation

The Voice Recorder is activated from the "Tools" menu when the Digital Voice Annotation firmware is installed. In the RECORD mode, the display shows an analogue sound level meter and an elapsed time bar. The recorded data can be stored via a SAVE PROMPT function. A PLAYBACK mode will show the elapsed time and the sound level of the recorded sound.

(9) SoundTrack LxT - 120 MB Memory

A 'State-of-the Art' high density Flash Memory, offered as a firmware option, to increase the capacity for:

- Storage capacity
- Voice Recording capacity