NTi AUDIO

NEW!

- Sound Level Meter
- Real Time Analyzer
- FFT Analyzer
- Audio Analyzer
- Distortion Analyzer

XL2
HANDHELD AUDIO AND ACOUSTIC ANALYZER

SLMeter XLR 48V

LZSmax 89.7dB 1/3 OCT
LZSlive 83.6dB 250Hz

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NTi AUDIO XL2

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EXEL LINE

INTRO

The EXEL Line XL2 analyzer is a state-of-the-art Acoustical Sound Analyzer as well as a powerful Audio Analyzer, covering challenging applications in installed Sound, Live and Studio Sound and Environmental Noise & Sound measurements. In addition to designing an analyzer with comprehensive functionality, the NTi Audio engineering team also created an exceptionally attractive and intuitive interface for the user, with added flexibility based upon specific user test habits.

The XL2 combines the functionality of the AL1 and ML1 analyzers into one unit. The instrument is powered either by the built-in, replaceable Li-Po battery, by ordinary dry cells as well as by an optional external power supply.

A comprehensive set of interfaces enables XL2 to communicate in the modern world via USB, serial programmable I/O*, as well as an optional wireless data link to the PC.

The XLR balanced signal input features a unique TEDS sensor identification via the XLR connector, allowing the XL2 to automatically recognize the type and accuracy of the NTi Audio measurement microphone promoting faster setup and error free measurements.

FLEXIBLE USER INTERFACE

A remarkable advantage of the XL2 is its flexible user interface. Accommodating both advanced and basic users and depending on the applications and needs of the customer, the available measurement screens can be customized according to user preferences or for special application. This allows the expert user to access all menus and settings. But for those applications where it is desirable to present a simplified operator interface, a specific or limited subset of functionality may be setup for presentation to the user. In this case, the XL2 is then configured to boot up with precisely and only those functions needed.

FUNCTIONS

The open nature of the user interface and the unit architecture itself, mean that the XL2 can and will grow in the future with additional standards and their requirements.

Sound Level Analyzer

The XL2 provides simultaneous acquisition and logging of over 60 levels including frequency weighting A, C or Z as well as time weighting F, S, I, Peak, Ieq*, E* and EQ. Timer control utilizing the built-in real-time clock enables continuous, single shot or timer repeat measurements.

The XL2 processes SPL levels with a linear operating range of up to 105dB with no the need to switch amplifiers settings. The accuracy of the measurements meets or exceeds IEC 61672-1, class 1. All implemented 1/1 octave-band or 1/3 octave-band filters comply with IEC 61260 class 1.

Correction factors for off-site measurements are supported as specified by DIN/IEC. The XL2 also measures statistical distribution as percentiles* and TaktMax* in parallel. All acquired level information or subsets may be logged onto a standard SD card and may be complemented by voice notes or ADPCM compressed wave file recordings*.

Audio Analyzer

XL2 is also a full Audio Analyzer with balanced XLR and unbalanced RCA inputs providing simultaneous display of the distortion (THD+N), level and frequency.

The extremely low noise and low distortion design – which is unmatched in handheld equipment – guarantees highest performance and level measurements down to -115 dBu and residual distortions lower than -100 dB typ. Advanced algorithms ensure stable and reliable frequency measurements even with extremely deteriorated signals with S/N ratios of 10 dB. The residual distortion signal can be routed to the internal loudspeaker and headphone for monitoring purposes.

FFT Analyzer

The fast real-time FFT supports LEQ functionality in two ranges over the entire Audio band with a high dynamic range. It is the ideal tool for visualization of comb filters and narrow band effects.

RT60 Reverberation time analyzer

The processing power of the XL2 provides simultaneous measurement and calculation of the energy decay in eight octaves bands in parallel ranging from 63 Hz up to 8 kHz. Automatic triggering and averaging of multiple measurements using gated noise simplify the operation and minimize measurement time.

Delay Time

Calculates the delay time between the electrical reference signal and the signal from built-in microphone. The automatic difference display simplifies the verification of delay line arrangements. A designated chirp is provided on the Test-CD or by the MR-PRO signal generator.

Speech Intelligibility STI-PA Analyzer (optional)

The STI-PA algorithm measures the speech intelligibility acc. the latest revisions of the IEC 60268-16:2003 standard. The measurement results are acquired from the NTi Audio STI-PA test signal distributed from the supplied CD, the MR-PRO generator or from the TalkBox available as an accessory.

Measurement results are displayed either as STI or as CIS results, accompanied by the individual levels and modulation indices in each of the seven audio bands.

* Content of Extented Acoustics Pack

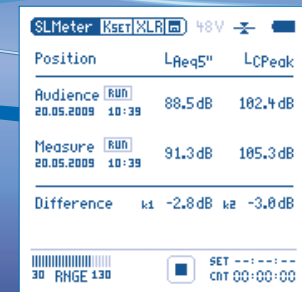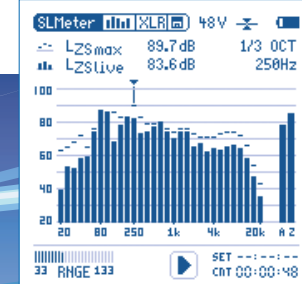# LIVE SOUND SOLUTIONS

SPL / LEQ

RTA

LOGGING

WAV REC

DELAY

POLARITY

The XL2 Audio- and Acoustic Analyzer offers all tools to optimize the performance of audio systems in one instrument. It complies with the most recent international standards for environmental noise monitoring. The acoustic analyzer XL2 fulfills class 1 requirements throughout the hardware and algorithms.

The broad list of functions compels:

- Sound Level Meter SPL / LEQ
- Displays up to 5 sound level results simultaneously
- Real Time Analyzer in 1/3 octave or 1/1 octave resolution
- Logging of all measurements to the internal Mini-SD-Card
- WAV file recording (compressed ADPCM to Mini-SD-Card)*
- Customized user screens using application profiles
- Correction factor measurement wizard for DIN 15905
- Built-in real time clock
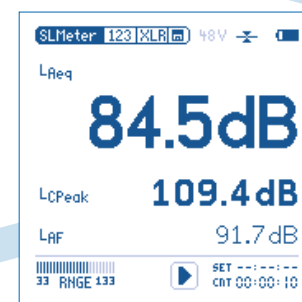
INSTALLED SOUND & STUDIO / BROADCAST SOLUTIONS

XL2's broad functionality has been carefully optimized for providing the contractor and audio engineer with a comprehensive set of diagnostic and measurements tools for installing, commissioning and trouble-shooting complex sound installations of all types.

The feature list includes:

- Analyzer for acoustic and electrical audio measurements
- Balanced signal input from -115 dBu (1.4 µV) up 30 dBu (25 V)
- Residual distortions of typ. < -100 dB (0.001 %)
- Real time FFT for narrowband analysis, 10 Hz to 20 kHz
- RT-60 measurements in octave resolution
- Delay measurements
- Polarity measurements
- Built-in loudspeaker with automatic gain control
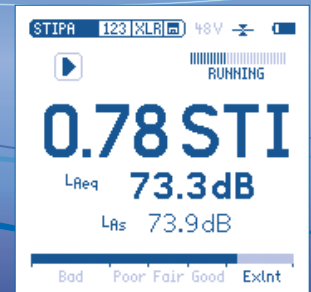- Speech intelligibility STI-PA acc. to IEC 60268-16 (optional)
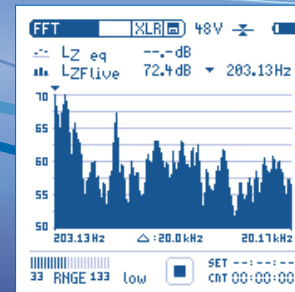
SPL / LEQ

RTA

FFT

RT-60

DELAY

POLARITY

LEVEL

THD

STI-PA

MEASUREMENT MICROPHONES

The new NTi Audio measurement microphones are all 48V phantom powered and equipped with TEDS sensor technology. TEDS enables the XL2 to automatically recognize the sensitivity, calibration and other TEDS-encoded characteristics of the connected microphone, even to activate the required phantom power. Your choice for the appropriate accuracy:

Microphone	M4260	M2210 - High performance
Transducer	¼" pre-polarized condenser	Detachable ½" pre-polarized microphone capsule with Titanium Diaphragm, PTFE Backplate Electrets and "0" Temperature Coefficient insulators and 60UNS2 thread.
Directivity	Omnidirectional	Omnidirectional
Flatness	Class 2 (DIN/IEC 61672)	Class 1 (DIN/IEC 61672)
Response	20 Hz to 20 kHz	3 Hz to 20 kHz
Sensitivity	-34 dBV/Pa (20 mV/Pa) typ.	-29 dBV/Pa (35 mV/Pa) typ.
Residual Noise floor	< 24 dBA typ.	< - 18 dBA typ.
Linear operating range	36 dBA to 130 dBA typ.	30 dBA to 136 dBA typ.
Temperature coefficient	0.05 dB/°C typ.	0.02 dB/°C typ.
NTi Audio #	600 040 025 M4260 **600 000 340 Set XL2 + M4260**	600 040 020 M2210 **600 000 350 Set XL2 + M2210**
	600 000 330 XL2 without Measurement Microphone 600 000 336 TEDS compatible XLR-Cable	

OPTIONS AND ACCESSORIES

Ever-ready Pouch
NTi Audio # 600 000 335

Exel System Case
NTi Audio # 600 000 334

Mains Power Adapter
NTi Audio # 600 000 333

Battery Charger
NTi Audio # 600 000 332

XL2 STI-PA Option
NTi Audio # 600 000 338

TECHNICAL SPECIFICATIONS

Audio channels	
Inputs	XLR balanced with 200 kOhm, Phantom power: +48 V switchable RCA unbalanced with >30 kOhm
	Built-in condenser type; used for voice notes, polarity or delay
Outputs	Built-in loudspeaker / Headphone output

Measurement & Analysis functions	
Sound Level Meter	Frequency weighted: A, C, Z (simultaneously)
	Time weighted: F, S, I*, Ieq*, E*, EQ and Peak (simultaneously), Gliding LEQ on LA with t= 5", 60" and 60'
	Min / Max of S, F, I* weighted values
	Ranges @ 20mV/Pa: Low Mid High Self Gen. Noise: 6.7 dB 24.7 dB 48.8 dB Linear Op. Range: 19.6 – 114.8 33.5 – 139.2 57.8–156.9 dB
	Logging: all data or subsets in selectable intervals
	Voice note recording
Statistics (Option)	Statistics Percentiles: 1%, 5%, 10%, 50%, 90%, 95%, 99% Accuracy IEC 61672-1, Resolution 0.1 dB, Dynamic: 140 dB
	Values as specified in DIN 45645-1 (option)
RTA	With octave and 1/3 octave plus wide band resolution
	Time weighted: F or C additionally E* and EQ simultaneously
	Frequency weighted: A, C, Z in all bands from 6.3 Hz to 20 kHz
	Accuracy: IEC 61260 class 1, IEC 60651 type 0 and IEC 61672, Bandpass filters conform to ANSI S1.11-2004, class 1.
FFT	Real time FFT with 2 ranges: 10 Hz - 400 Hz with 2.9 Hz resolution and 200 Hz to 20 kHz. Measures LZF and LEQ.
RT-60	8 octave bands results, based on T20, according to ISO3382. Automatic averaging with individual result readout and storage.
	Measurement range: 100 ms to 10 s
	Stimulus: Gated pink noise, auto triggering (CD-included)
Delay Time	Propagation delay between electrical and acoustical signal input
	Resolution < 0.1 ms, Range: 0.1 ms to 1s (0.03 m to 344 m)
	Stimulus: Dedicated NTi Audio Chirp test signal (CD included)
Polarity	Positive/Negative detection through microphone or XLR/RCA connector. Checks polarity of midrange-speakers, woofers and cables. Test signal from MR2, MR-PRO or test CD.

Measurement & Analysis functions	
RMS	True RMS detection in units V, dBu and dBV
	1.4 µV to 25 V (-115 dBu to +30 dBu), A-weighted
	Frequency 9 Hz to 20 kHz with < 0.003% measurement error
THD	-100 dB to 0 dB (0.001% to 100%), min. level > -90 dBu
	Residuals: <-100 dB (0.001%)
	Residual Noise floor: < 2.0 µV
STI-PA	Single value STI and CIS test result. Modulation indices and individual band level results accessible. Error indicator. Post processing with recorded spectra supported.
	According to IEC 60268-16, 2003 release. TNO verified algorithm
	Measurement signal: NTi Audio STI-PA signal or TalkBox

Interfaces and I/O	
USB interface	Mini-USB connector.
Serial I/O	Programmable, serial 1 Bit I/O interface. (Option)
Calibration	Microphone calibration supported using external calibrator.
Real time clock	Built- in, with Lithium backup battery
Data Storage	Sets of ASCII data, screen shots, WAV files (option)
Memory	Mini-SD-Card removable
Display	160 x 160 pixels grey scale with LED back light

Power Management	
Battery	3.7 V / 2640 mAh Li-Po Battery (included) or
	4 x 1.5 V AA dry cell batteries or
Power supply	9 V DC linear external power supply (charges Li-Po battery)
USB	Operation and battery charging supported

Environmental conditions	
Calibration	Recommend instruments calibration interval: one year
	Microphone sensitivity calibration with calibrator supported
Dimensions	180 mm x 90 mm x 45 mm (7.1" x 3.5" x 1.8")
	480 g (1 lbs) including built-in Li-Po battery
Temperature	Operation / Storage: +5 °C to +45 °C / -10 °C to +60 °C
Humidity	5% to 90% RH, non condensing
Electromag. compatibility	CE compliant: EN 61326-1 Class B, EN 55011 class B, EN 61000-4-2 to -6 and -11

* Content of Extented Acoustics Pack
All information are subject to change without notice.
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