

## 12. Technical Data XL2

Sound Level Meter	
Product Configurations	<ul style="list-style-type: none"> <li>• XL2 with M2210 microphone: Class 1 frequency response acc. to IEC 61672</li> <li>• XL2 with M4260 microphone: Class 2 acc. to IEC 61672</li> </ul>
Conforms with Standards	IEC 61672, IEC 60651, IEC 60804, ANSI S1.4, ANSI S1.43, DIN 15905-5, DIN 45645-2, SLV 2007, optional: DIN 45645-1
Measurements	<ul style="list-style-type: none"> <li>• SPL actual, <math>L_{eq}</math>, <math>L_{min}</math>, <math>L_{max}</math>, <math>L_{Cpeak}</math></li> <li>• Gliding <math>L_{Aeq}</math> with <math>t = 5', 10', 15'</math> and <math>60'</math></li> <li>• All measurement results are simultaneously available</li> <li>• Correction value measurement wizard</li> <li>• Logging all data or subsets in selectable intervals</li> <li>• Recording of WAV-files (ADPCM) and voice notes</li> <li>• Limit monitoring showing exceeding sound levels</li> <li>• Level resolution: 0.1 dB</li> <li>• Internal noise: 1.3 <math>\mu</math>V A-Weighted</li> </ul>
Functions Extended Acoustic Pack (optional)	<ul style="list-style-type: none"> <li>• Percentiles: 1%, 5%, 10%, 50%, 90%, 95%, 99%</li> <li>• Time weighting: Impulse</li> <li>• Sound Pressure Level <math>L_{Leq}</math></li> <li>• Sound Exposure Level <math>L_{AE}</math></li> <li>• Clock-Impulse Maximum Level (TaktMax) and values as specified in DIN 45645-1</li> <li>• Digital I/O interface</li> <li>• Recording of WAV-files (24 bit, 48 kHz)</li> <li>• High-resolution FFT, up to 0.4 Hz resolution in the range of 5 Hz - 20 kHz</li> <li>• Reverberation time RT60 in 1/3 octave resolution</li> </ul>

Weighting	<ul style="list-style-type: none"> <li>• Frequency Weighting: A, C, Z, X-Curve<sup>1</sup></li> <li>• Time Weighting: Fast, Slow, optional: Impulse</li> </ul>
Real Time Analyzer RTA	<ul style="list-style-type: none"> <li>• Frequency resolution: 1/3 octave, 1/1 octave, wide band</li> <li>• Frequency range: 6.3 Hz to 20 kHz, level resolution: 0.1 dB</li> <li>• Band pass filters conform IEC 61260 class 0, ANSI S1.11-2004, class 1</li> </ul>
Acoustic Analyzer	
FFT Analysis	<ul style="list-style-type: none"> <li>• Real time FFT with LZf and <math>L_{eq}</math></li> <li>• Level resolution: 0.1 dB</li> <li>• Ranges: 7 Hz - 215 Hz, 58 Hz - 1.72 kHz, 484 Hz - 20.5 kHz</li> <li>• Optional: High-resolution FFT in the range of 5 Hz - 20 kHz</li> </ul>
Reverberation Time RT60	<ul style="list-style-type: none"> <li>• 1/1 octave bands results from 63 Hz - 8 kHz, based on T20</li> <li>• Optional: 1/3 octave bands results from 50 Hz - 10 kHz, based on T20</li> <li>• Range: 10 ms - 14 seconds</li> <li>• Measurement according to ISO3382 by Schroeder-method</li> <li>• Test signal: Impulse source or gated pink noise generated by the MR-PRO, MR2 or the included NTi Audio Test CD</li> </ul>

Delay Time	<ul style="list-style-type: none"> <li>• Propagation delay between electrical reference signal and acoustical signal using the internal microphone</li> <li>• Range: 0 ms - 1 second (0 m - 344 m)</li> <li>• Resolution: 0.1 ms</li> <li>• Test signal: NTi Audio delay test signal generated by the MR-PRO, MR2 or the included NTi Audio Test CD</li> </ul>
Polarity	<ul style="list-style-type: none"> <li>• Checks polarity of speakers and line signals</li> <li>• Positive/Negative detection of wideband and individual 1/1 octave bands through internal microphone or XLR/RCA connector</li> <li>• Test signal: NTi Audio polarity test signal generated by the MR-PRO, MR2 or the included NTi Audio Test CD</li> </ul>
STI-PA Speech Intelligibility (optional)	<ul style="list-style-type: none"> <li>• Single value STI and CIS test result according to IEC 60268-16, 2003 release, DIN VDE 0833-4, IEC 60849, DIN VDE 0828-1</li> <li>• Modulation indices and individual band level results with error indicator, post processing with recorded spectra supported</li> <li>• Test signal: NTi Audio STI-PA signal generated by the MR-PRO, NTi Audio TalkBox or the STI-PA Test CD</li> </ul>

Audio Analyzer	
Level RMS	<ul style="list-style-type: none"> <li>• True RMS detection in V, dBu, dBV and dB SPL</li> <li>• Range XLR/RCA input: 2 <math>\mu</math>V - 25 V (-112 dBu to +30 dBu)</li> <li>• Accuracy: <math>\pm 0.5\%</math> @ 1 kHz,</li> <li>• Flatness: <math>\pm 0.1</math> dB @ 12 Hz to 21.3 kHz</li> <li>• Bandwidth (-3 dB): 2 Hz to 23.6 kHz</li> <li>• Resolution: 3 digits (dB scale), 5 digits (linear scale) or 6 digits (x1 scale)</li> </ul>
Frequency	<ul style="list-style-type: none"> <li>• Range: 9 Hz to 21.3 kHz, resolution: 6 digits</li> <li>• Accuracy: <math>&lt; \pm 0.003\%</math></li> </ul>
THD+N (Total Harmonic Distortion + Noise)	<ul style="list-style-type: none"> <li>• Range: -100 dB to 0 dB (0.001% to 100%)</li> <li>• Minimum level: <math>&gt; -90</math> dBu</li> <li>• Fundamental bandwidth: 10 Hz to 21.3 kHz</li> <li>• Measurement bandwidth: 2 Hz to 23.6 kHz</li> <li>• Resolution: 3 digits (dB scale) or 4 digits (linear scale)</li> <li>• Residual THD+N @ XLR/RCA input: <math>&lt; 2 \mu</math>V</li> </ul>
Scope	Auto ranging, auto scaling
Filter	<ul style="list-style-type: none"> <li>• Frequency weighting: A, C, Z</li> <li>• Highpass 400 Hz, Highpass 19 kHz,</li> <li>• Bandpass 22.4 Hz - 22.4 kHz according IEC468-4</li> </ul>

Input / Output Interfaces	
Audio Inputs	<ul style="list-style-type: none"> <li>• XLR balanced with input impedance = 200 kOhm, phantom power: +48 V switchable, automated sensor detection for M4260/M2210</li> <li>• RCA unbalanced with input impedance &gt;30 kOhm</li> <li>• Built-in condenser microphone for polarity testing, delay measurements and voice note recording</li> </ul>
Audio Outputs	<ul style="list-style-type: none"> <li>• Built-in speaker</li> <li>• Headphone connector 3.5 mm Minijack Stereo</li> </ul>
USB Interface	USB mini connector for data transfer to PC and charging of Li-Po battery
Digital I/O	Optional 1-wire interface for control of external peripherals
TOSLink	24 bit linear PCM audio signal output (prepared for later firmware extension)
Memory	Mini-SD card, 2 GByte, removable, storing ASCII data, screenshots, voice notes and wav-files
Power Supply	<ul style="list-style-type: none"> <li>• Rechargeable Li-Po battery included, type 3.7 V / 2260 mAh, typical battery lifetime &gt; 4 hours</li> <li>• Dry cell batteries type AA, 4 x 1.5 V, typical battery lifetime &gt; 4 hours</li> <li>• Linear external power supply 9 VDC (charges Li-Po battery in operation)</li> </ul>

General	
Clock	Real time clock with lithium backup battery
Calibration	<ul style="list-style-type: none"> <li>• Recommended calibration interval: one year</li> <li>• Microphone calibration supported with external calibrator</li> <li>• Calibration certificate for new instruments optional available</li> </ul>
Mechanics	<ul style="list-style-type: none"> <li>• Tripod or microphone stand mount</li> <li>• Wire stand mounted on rear side</li> <li>• Display: 160 x 160 pixels grey scale with LED back light</li> <li>• Dimensions: 180 mm x 90 mm x 45 mm (7.1" x 3.5" x 1.8")</li> <li>• Weight: 480 g (1 lbs) including built-in Li-Po battery</li> </ul>
Temperature	-10 °C to +50 °C (14° to 122°F)
Humidity	5% to 90% RH, non condensing
Electromagnetic Compatibility	CE compliant: EN 61326-1 Class B, EN 55011 class B EN 61000-4-2 to -6 & -11

## 13. Technical Data Microphones

	<b>M4260</b>	<b>M2210 - Enhanced Performance</b>
Microphone Type	Omni-directional, pre-polarized condenser, free field microphone	
Capsule / Transducer	1/4" permanently installed capsule	1/2" detachable capsule with 60UNS2 thread
Flatness	Class 2 (IEC61672-1) ±1.5 dB @ 20 Hz - 4 kHz ±2.5 dB @ 5 Hz - 20 Hz ±4.5 dB @ 4 kHz - 20 kHz	Class 1 (IEC61672-1) ±1 dB @ 20 Hz - 4 kHz +1/-1.5 dB @ 5 Hz - 20 Hz ±2 dB @ 4 kHz - 20 kHz
Frequency Range	5 Hz - 20 kHz	5 Hz - 20 kHz
Residual Noise Floor typical	29 dB(A)	19 dB(A)
Linear Measurement Range with XL2 acc. IEC 60804	35 dB(A) - 144 dB	28 dB(A) - 144 dB
Maximum SPL @ THD 3%, 1 kHz	144 dB SPL	144 dB SPL
Sensitivity typical	31.7 dBV/Pa ±3 dB (26 mV/Pa) @ 1kHz	-34 dBV/Pa ±3 dB (20 mV/Pa) @ 1kHz
Temperature Coefficient	±0.02 dB / °C @ -10°C to +50°C (14°F to 122°F)	-0.01 dB / °C @ -10°C to +50°C (14°F to 122°F)
Long Term Stability	not defined	> 250 years / dB
Environmental Behavior	not defined	very stable at changes in air pressure and humidity
Temperature Range	-10°C to +50°C (14°F to 122°F)	
Humidity	5% to 90% RH, non condensing	
Electronic Data Sheet	NTi Audio ASD according IEEE P1451.4 V1.0, Class 2, Template 27	

	M4260	M2210 - Enhanced Performance
Output Impedance	100 Ohm balanced	
Power Supply	48 VDC phantom power, 3 mA typical	
Dimensions	Length 150 mm (5.9"), diameter 20.5 mm (0.8")	
Connector	Balanced 3-pole XLR	

## Typical Frequency Response

