



# Audio & Acoustic Test & Measurement Solutions



# MINIRATOR MR-PRO / MR2

## Analog Audio Generator and Impedance Meter



Sine, Sweeps, Noise

User Wav-files

Impedance Meter

Cable Tester

+18 dBu Max. Output

THD+N < -96 dB

The Minirator MR-PRO is a powerful analog audio generator for the professional engineer, providing a wide range of test signals like sine, pink noise, white noise, polarity, delay, chirp and sweep. Further, a set of wav-files, useful for system optimization, is stored in the internal flash memory. You may add your own personal favourites to this set.

The signal balance, phantom power and impedance of the connected load is monitored. Together with the integrated XLR cable tester, this simplifies troubleshooting.

The Minirator MR2 is the smaller version of the MR-PRO with reduced functionality.

[www.nti-audio.com/MRPRO](http://www.nti-audio.com/MRPRO)



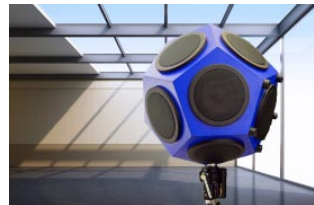
### Applications



Installed Sound



Live Sound

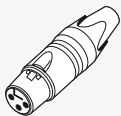


Building Acoustics

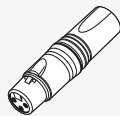


Research & Development

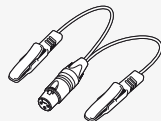
### Accessories



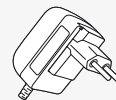
Remote Cable Test Plug (MR-PRO)  
# 600 000 311



Minirator -40dB Adapter  
# 600 000 312



MR-PRO 70V/100V Protective Adapter  
# 600 000 313



Mains Power Adapter  
International # 600 000 333  
Americas # 600 000 301



Ever-ready Pouch  
# 600 000 302



Calibration Certificate  
# 600 000 018

# NTI AUDIO TALKBOX

## Acoustic Generator (STIPA Reference)

The TalkBox is an acoustic signal generator for speech intelligibility measurements in evacuation and announcement systems, as well as for level alignment of teleconference or other audio systems. It allows performing the complete end-to-end evaluation of the speech intelligibility STIPA from the talker's microphone to the listener's ears.

The TalkBox simulates a human talker (60 dBA @ 1 meter according to IEC 60268-16) with the STIPA test signal and spoken messages. Further it provides a wide range of test signals like sine, pink noise, white noise and delay.



[www.nti-audio.com/TalkBox](http://www.nti-audio.com/TalkBox)



STIPA Reference

System Line-up

Excellent Flatness

Calibrated Output Level



## Applications

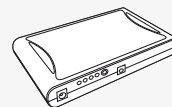


Installed Sound



Telepresence Systems

## Accessories



Battery Pack  
# 600 000 086



Calibration Certificate  
# 600 000 018

Sound Level Meter

Real Time Analyzer

FFT Analyzer

STIPA Analyzer

Audio Analyzer



## XL2

### Sound Level Meter - Audio and Acoustic Analyzer

The XL2 Analyzer forms the unique combination of a state-of-the-art Sound Level Meter, a comprehensive Acoustic Analyzer as well as a powerful Audio Analyzer. The wide range of functions are tailored for challenging applications in sound installations and evacuation systems, live sound events, noise monitoring, building acoustics, occupational health and manufacturing quality control.

Besides being an advanced, integrating Sound Level Meter, the XL2 measures RTA and FFT high-resolution spectra, RT60 Reverberation Time, Polarity, Delay, THD+N and, optionally, speech intelligibility STIPA.

Data and audio is logged onto the SD card for transfer to your PC. Free reporting tools are available for download.

[www.nti-audio.com/XL2](http://www.nti-audio.com/XL2)



Picture:  
XL2 Analyzer with M2211 Measurement Microphone

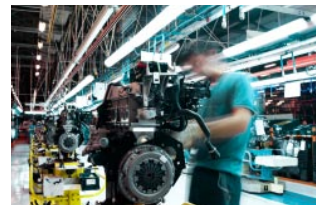
### Applications



Community Noise



Installed Sound



Industrial

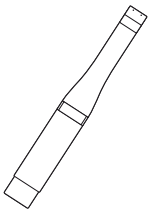


Live Sound

## Measurement Microphones

A range of measurement microphones are available to suit your requirements. The microphones include an electronic data sheet from which the ASD (Automatic Sensor Detection) of the XL2 recognizes the sensitivity and calibration data of the connected microphone. This promotes faster setup and ensures accurate measurements.

Recommended microphones for the following applications:

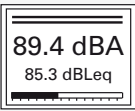
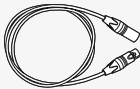

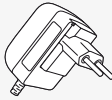
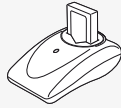
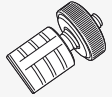


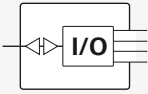





M2230	Certified class 1 according to IEC 61672, with metal diaphragm
M2211	General purpose measurement microphone, with metal diaphragm
M2215	For high acoustic levels (153 dB), with metal diaphragm
M4260	Cost-effective class 2 microphone for general sound level testing, commissioning and service

## Options

- Type Approval Option**  
 Upgrades the instrument to the XL2-TA, which forms, with the M2230 microphone, a type approved sound level meter.
- Speech Intelligibility STIPA**  
 Measures STIPA of public announcement and evacuation systems according to the IEC 60628-16 standard.
- Extended Acoustic Pack**  
 For acoustic consultants. Offers percentiles, linear wav-file and event recording, 1/3 octave RT60 and Zoom-FFT.
- Spectral Limits Option**  
 Includes 1/12th octave resolution, trace capturing, spectral limits definition and passed/failed visualization.
- Cinema Meter**  
 For efficient calibration and repetitive verification of cinema loudspeaker systems utilizing assistant guides.
- Remote Measurement Option**  
 Allows you to pull the live XL2 measurement data into a PC application via USB. Download free templates for evaluation.

## Accessories

 <p>XL2 Projector PC Application free download</p>	 <p>ASD Cable # 600 000 336</p>	 <p>Precision Calibrator # 600 000 390</p>	 <p>Mains Power Adapter International # 600 000 333 Americas # 600 000 301</p>	 <p>Battery Charger # 600 000 332</p>	 <p>Mounting Adapter # 600 000 372 Americas # 600 000 373</p>
 <p>Ever-ready Pouch # 600 000 335</p>	 <p>Exel Case # 600 000 334</p>	 <p>Digital I/O PCB # 600 000 380</p>	 <p>StackLight &amp; I/O Box # 600 000 381/382</p>	 <p>XL2 Input Keypad # 600 000 384</p>	 <p>Calibration Certificate # 600 000 018</p>



# DIGIRATOR DR2

## Digital Audio Signal Generator



Up to 192 kHz / 24 Bit

AES3, S/PDIF, TOSLINK & ADAT

Multi-Format Sync Input

Dolby & DTS Signals

Channel Transparency Check

Channel Delay Measurement

The Digirator DR2 is a reference-grade digital audio signal generator with transformer-balanced AES3, S/PDIF, TOSLINK and ADAT outputs. The generator offers a wide range of test signals like sine, pink noise, white noise, polarity, delay, chirp and sweep. Further, it offers a set of surround-sound test sequences for the verification and adjustment of professional digital environments including Dolby Digital, Dolby E and DTS installations.

The internal low-jitter clock generator can be synchronized to AES3, DARS, Word Clock and Video signals. Measurement of channel transparency, channel propagation delay and sample frequency is supported.

[www.nti-audio.com/DR2](http://www.nti-audio.com/DR2)



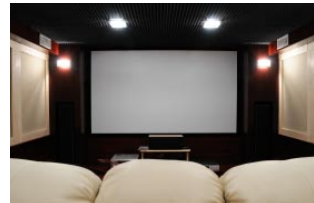
## Applications



Broadcast

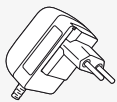


Installed Sound



Cinema

## Accessories



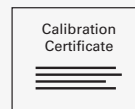
Mains Power Adapter  
International # 600 000 333  
Americas # 600 000 301



Ever-ready Pouch  
# 600 000 302



System Case  
# 600 000 020



Calibration Certificate  
# 600 000 018

# DIGILYZER DL1

## Digital Audio Analyzer

The Digilyzer DL1 is a powerful digital audio analyzer. Testing, monitoring and troubleshooting digital audio interfaces is straightforward using this compact tool. The digital audio formats AES3, S/PDIF, TOSLINK and ADAT with sampling frequencies up to 96 kHz are supported.

Digital audio becomes transparent and easy to debug with the unique integrity check, the integrated speaker, event logging and the audio lens.

[www.nti-audio.com/DL1](http://www.nti-audio.com/DL1)



Digital Audio Monitoring

Channel Status Analysis

Carrier Measurements

Up to 96 kHz / 24 Bit

AES3, S/PDIF

TOSLINK & ADAT

## Applications

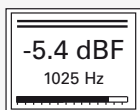


Broadcast

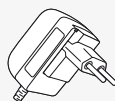


Installed Sound

## Accessories



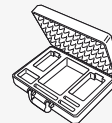
MiniLINK  
PC Interface  
# 600 000 033



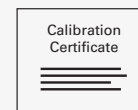
EU Mains Adapter  
# 600 000 210



Soft Pouch  
# 600 000 012



System Case  
# 600 000 020



Calibration Certificate  
# 600 000 018

# ACOUSTILYZER AL1

## Acoustic Analyzer

The Acoustilyzer is the predecessor of the XL2 Audio and Acoustic Analyzer. It is a handheld sound level meter and acoustic analyzer for measuring and monitoring sound pressure level, room acoustics and, optionally, speech intelligibility STIPA. Additionally it offers basic audio measurements. These acoustic and audio functions make the Acoustilyzer AL1 the ideal tool for measurement applications in Installations, Live Sound, Studio and Broadcast.

Real Time Analyzer

Reverberation Time RT60

Speech Intelligibility STIPA

Zoom FFT, Delay, THD+N, ...



Acoustilyzer AL1 with  
MiniSPL Microphone

## Options

- ML1 - AL1 Crossgrade  
enables all Minilyzer ML1 functions
- STIPA Speech Intelligibility

[www.nti-audio.com/AL1](http://www.nti-audio.com/AL1)



## Applications

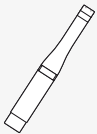


Installed Sound

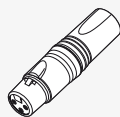


Live Sound

## Accessories



MiniSPL  
Measurement Mic  
# 600 000 022



Adapter - 20dB  
# 600 000 014



Soft Pouch  
# 600 000 012



System Case  
# 600 000 020



Calibration Certificate  
# 600 000 018



# MINILYZER ML1

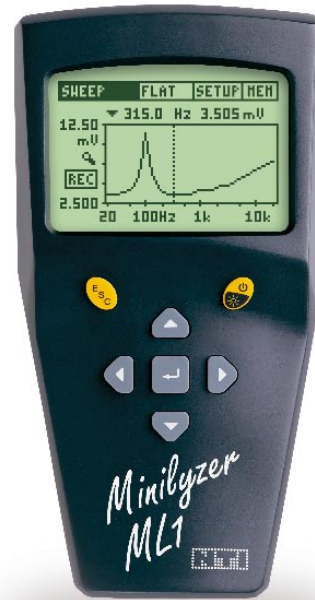
## Audio Analyzer

The Minilyzer ML1 is a handheld analyzer dedicated to analog audio measurements with elemental sound level functions. The Minilyzer ML1 simplifies the process of system verification, diagnostics and repairs to audio installations. The user interface aids operators of all skill levels by automatically setting all ranges and providing complete results on a single screen.

### Options

- **ML1 - AL1 Crossgrade**  
enables all Acoustilyzer AL1 functions
- **STIPA Speech Intelligibility**
- **AFILS Measurements**  
included with MiniLINK PC Interface

[www.nti-audio.com/ML1](http://www.nti-audio.com/ML1)



Level: RMS, Rel, SPL, Leq

THD+N, 2nd to 5th Harmonics

Frequency and Time Sweeps

Scope, vu+PPM, Polarity

Balanced & Unbalanced Input

High Accuracy (+/- 0.1dB)

### Applications



Installed Sound

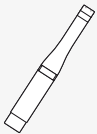


Live Sound

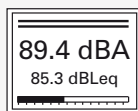


Research & Development

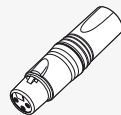
### Accessories



MiniSPL  
Measurement Mic  
# 600 000 022



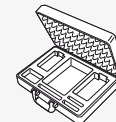
MiniLINK  
PC Interface  
# 600 000 033



Adapter - 20dB  
# 600 000 014



Soft Pouch  
# 600 000 012



System Case  
# 600 000 020



Calibration Certificate  
# 600 000 018

# FLEXUS FX100

Analog and Digital Audio Analyzer

R&D and Production

Fast Measurements

Accurate Results

Scalable Architecture

Superior Specifications

The FLEXUS FX100 is a professional audio analyzer & generator dedicated to research, design lab, end-of-line testing and service. The modular hardware architecture allows customizing the FX100 for two or four parallel channel operation, speaker impedance testing and digital audio measurements. Switcher modules provide additional outputs or inputs.



[www.nti-audio.com/FX100](http://www.nti-audio.com/FX100)



## Applications



Pro Audio Device Testing



Transducer Testing



R & D



Broadcast

State-of-the art measurement technologies offer fast glide sweeps, detailed stepped sweeps, a continuous meter mode and FFT analysis.

### Fast Measurements

The FX100 is ideally suited for accurate and fast testing of audio and acoustic devices. Powerful on-board DSPs in combination with sophisticated calculation algorithms ensure real-time acquisition of all measurements in parallel.



FX100 with Channel Extension and Speaker Impedance Module

### Pro Audio Device Testing

The performance, speed and flexible architecture make the FX100 ideally suited for single or parallel tests on Pro Audio devices with single or multiple I/O channels. You may create sequential, repeatable and verifiable test procedures according to your specifications.

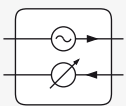
### Audio and Acoustic Testing

Quality control of audio products is an essential component of the manufacturing process and the service lab. Based on your requirements, the FX100 is configured for basic functional tests or complete performance tests, including documentation of results. Use the same configuration in your lab and on your production floor.

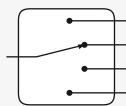
### Multi-Channel Applications

The FX100 supports automated testing of professional audio products with multiple inputs and outputs. Switcher modules extend the FX100 for simultaneous connection to 14 input or output channels. Larger test requirements are supported by cascading external 10-port switchers, up to additional 80 channels.

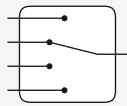
### Modular Extensions of the Base Unit



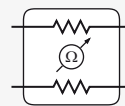
Channel Extension  
2 CH -> 4 CH  
# 600 060 010



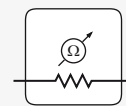
Output Switcher FX-OS  
# 600 060 016



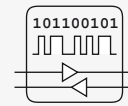
Input Switcher  
FX-IS  
# 600 060 013



Speaker Impedance  
FX-SIL (50uA - 1A)  
# 600 060 019



Speaker Impedance  
FX-SIH (25mA - 10A)  
# 600 060 021



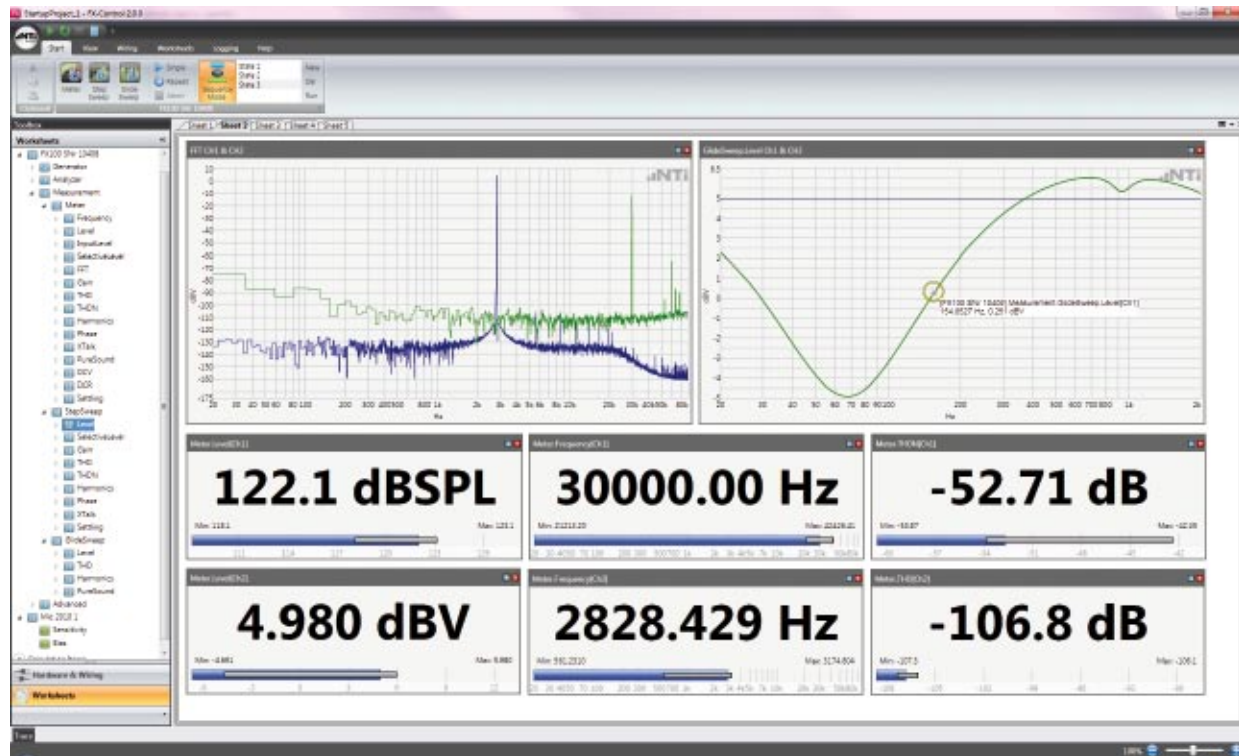
Digital Audio  
FX-AES  
# 600 060 024

# FX-CONTROL

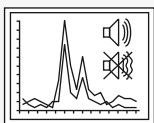
## PC Suite for the FX100 Audio Analyzer

The FX100 is shipped with the FX-Control PC software for online access to all audio analyzer & generator features. Customized configuration and result panels are simultaneously displayed on

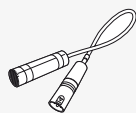
various worksheets. Individual measurements may be combined into test sequences, including limit handling and Pass/Fail result, thus creating a clear visualization.



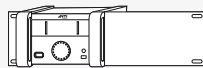
## Options and Accessories



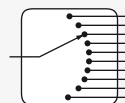
PureSound™  
Defects Analysis  
# 830 000 220



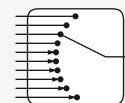
Meas. Microphones  
M2010: # 600 040 010  
M2015: # 600 040 015



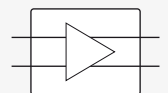
FX100 Rack Mounting  
1x FX100 # 600 061 005  
2x FX100 # 600 061 006



OS-0210  
Output Switcher  
# 600 010 430



IS-1002  
Input Switcher  
# 600 010 425



Power Amplifier FA400  
(2 channel)  
# 600 061 000

# TURNKEY SOLUTIONS

Production Test Solutions from the FX100 Analyzer & Generator

## PureSound™ Measurements

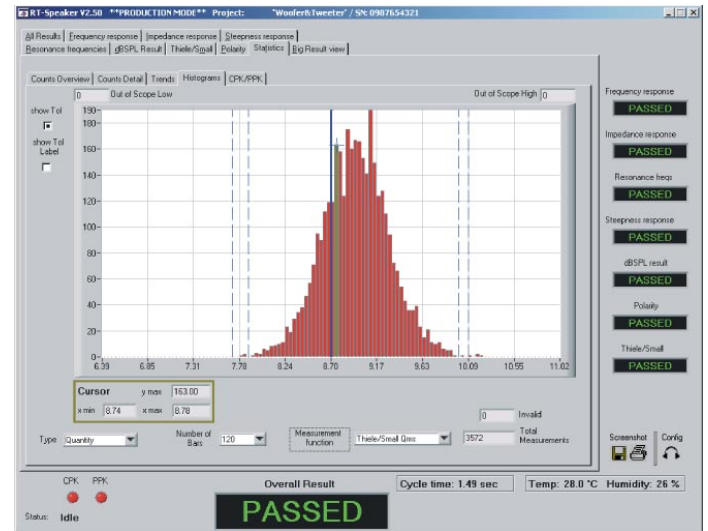
PureSound™ is an option for the FX100. It detects Rub&Buzz defects of speakers or transducers with a very high correlation to human hearing. It replaces the subjective human ear perception with an objective, reliable and repeatable test. The analysis can be executed in parallel with conventional measurements such as level or distortion, and it allows you to qualify the nature of these defects even with high levels of factory environmental noise. The PureSound™ option is compatible with FX-Control and all Turnkey Test solutions.

## Turnkey Speaker Test Solution

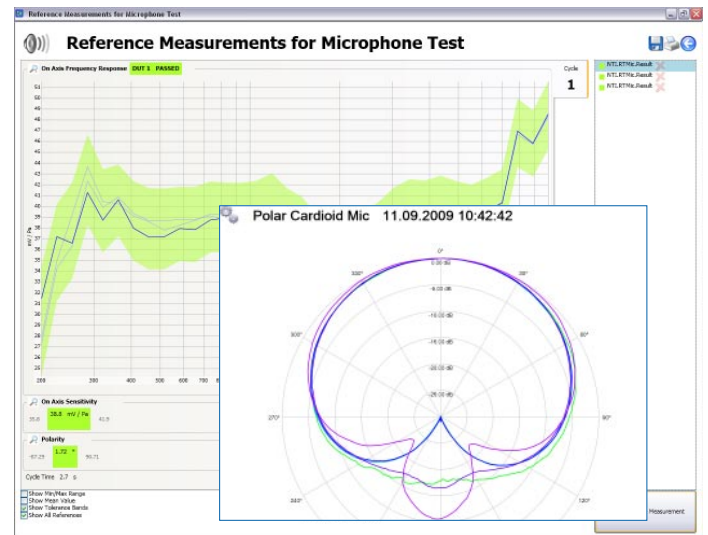
Key features for a modern test system are speed, simplicity, reproducibility and automation in a factory environment. The PureSound™ speaker test system addresses these requirements. The turnkey speaker test solution is provided by the FX100 and operated via the RT-Speaker PC software. It is optimized for high-volume quality control of single speaker components, pre-assembled parts or finished products.

## Turnkey Microphone Test Solution

The turnkey microphone test solution provides an extensive test with short test cycle times. The solution is provided by the FX100 and operated via the RT-Microphone PC software. The solution provides a comprehensive set of measurements for the quality control of microphone components or assembled products, such as mobile phone microphones, headsets or Pro Audio microphones.



Measurement Statistics



Frequency Response and Polar Pattern



# MEASUREMENT MICROPHONES

## Microphones for the XL2 Analyzer

Choose the microphone that fits your requirements from the table below. All microphones are 48V phantom powered and include an electronic data sheet. The Automated Sensor Detection (ASD) of the XL2 Analyzer automatically reads this data sheet, and recognizes the microphone model, sensitivity and calibration data. This ensures accurate measurement results.

High Dynamic Range

Flat Freq. Response

48V Phantom Powered

Electronic Data Sheet



Type	Description
M2230	Certified class 1 measurement microphone according to IEC 61672 with metal diaphragm
M2211	General purpose microphone, with class 1 frequency response and metal diaphragm
M2215	For high acoustic levels (153 dB), with class 1 frequency response and metal diaphragm
M4260	Cost-effective class 2 measurement microphone for general sound level testing, commissioning and service of audio-acoustic installations.
MA220	1/2" microphone preamplifier without capsule

High Dynamic Range

Flat Freq. Response

48V Phantom Powered

Compact Design

Detachable Cable



## Microphones for the FX100 Analyzer

The M2010 and M2015 are compact, high-performance measurement microphones dedicated to research, design lab, end-of-line testing and service. They are particularly suited for applications with restricted available space.

Type	Description
M2010	Extended performance microphone, with metal diaphragm
M2015	For high acoustic levels (155 dB), with metal diaphragm

[www.nti-audio.com/mic](http://www.nti-audio.com/mic)



## WORLDWIDE SERVICE

Our mission is to provide quality and affordable audio measurement devices. We are proud to offer you innovative and practical solutions.

NTi Audio maintains a network with sales and service partners in more than 70 countries around the globe. The strategic arrangement of four NTi Audio offices spread over all time zones guarantees prompt response to your inquiries as well as short distances for your worldwide after sales service.



## CALIBRATION SERVICE

NTi Audio calibration services provide documented and traceable verification that your NTi Audio instrument meets the published specifications. Annual calibration and adjustment cycles ensure highest accuracy and follow the requirements of the EN ISO/IEC 17025 standard. Detailed service guidelines are listed at [www.nti-audio.com/service](http://www.nti-audio.com/service).

## ABOUT NTI AUDIO

NTi Audio AG develops and manufactures professional audio and acoustic solutions and test instruments with a know-how heritage of more than 30 years. The headquarters are located in the Principality of Liechtenstein (Europe). Subsidiaries are located in Portland (US), Suzhou (China), Tokyo (Japan), Seoul (Korea) and in Prague (Czech).

NTi Audio AG is an ISO 9001:2008 certified company.





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[www.nti-audio.com](http://www.nti-audio.com)

All information is subject to change without notice.

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