XPT800

SOUND LEVEL METER AND FREQUENCY ANALYSER

INTRODUCTION

The XPT800 is the high-end model and the flagship of the Expert Line family of portable Class 1 sound level meters and spectrum analyzers.

It is based on a **scalable platform** that can be adapted to the growing requirements of acoustic professionals. The needs for accuracy, high performance and ease of use have been satisfied thanks to the use of the latest technologies and a careful evaluation of the suggestions of experts in the sector. Top quality and performance to provide the acoustic specialist with a complete and reliable tool for all the main sector applications, from environmental noise and building acoustics, to risk assessment in the workplace, up to laboratory and industrial products analyses.

FEATURES

Compact and lightweight
Ergonomic design for one-hand operation allows easy transport and use in various locations, facilitating on-site noise assessments.

High versatility
Interchangeable microphone sets with automatic identification and calibrated sensitivity (Sensor Digital Interface) – Wide range of applications in a single upgradable device.

Advanced audio processing functions
Spectral analysis in octave bands, third-octave bands, and fine resolution (FFT). Statistical analysis with probability distribution and percentile level calculations.

Automatic detectors of impulsiveness and tonality
Reverberation time calculation using both the interrupted source method and the impulse response method. – STI index calculation using the STIPA method.

Large Color Touch Screen Display
4.3” vivid color touchscreen, sunlight-readable.

Unyielding Durability
Rugged materials for harsh field conditions.

Versatile Storage Options
4 GB internal memory on eMMC or external USB stick.

Seamless Connectivity
Data transfer via integrated Wi-Fi, Ethernet, or 4G.

Wide dynamic range
Linear range of 123 dB for accurate measurements in both quiet and noisy environments. - Measurable peak level up to 140 dB, extendable to 178 dB with a dedicated microphone set for high sound levels.

Long-lasting Battery Life
Internal rechargeable battery with smart power management. - Supports more than 24 hours of continuous measurement campaigns

Automated Event Identification
Unattended noise monitoring with automatic audio recordings.

Advanced Trigger and Logging Capabilities
Unique logging features and advanced trigger logic with exceedances detection on broad levels and spectrum masks.

MARKET-LEADING METROLOGICAL PERFORMANCE
Excellent precision with a linear range of 123 dB, 0.01 dB resolution, and very low self-noise level.

CLASS 1 ACCORDING TO IEC 61672:2013
High precision and compliance with international standards ensure that the data collected is accurate and reliable, supporting compliance with regulations.

ENHANCED USER EXPERIENCE
User-friendly Interface
Intuitive user interaction through smartphone-like gestures; possibility to manage functionalities even with the use of 3 buttons keyboard.

EASY CONFIGURATION
Reduce significantly complex onsite configurations using internal customizable or factory apps.

AT-A-GLANCE INFORMATION
The status bar provides immediate visual feedback on essential device statuses, reducing the need for users to navigate through menus.

FIRMWARE UPGRADES
Enhances device performance and stability. Unlocks new features and functionalities. Over-the-air (OTA) updates of firmware and new options.

Environmental Noise Assessment

Urban Noise Monitoring: Evaluate noise pollution in city environments to support urban planning and noise control measures.
Construction Site Monitoring: Measure noise impact on surrounding areas and ensure compliance with noise regulations during construction projects.
Residential Noise Studies: Assess and mitigate noise levels in residential areas to improve living conditions and public health.

Building Acoustic

Professional Building Acoustics Assessments: Ideal for architects, engineers, and acousticians conducting noise assessments, sound insulation tests, and reverberation time measurements in buildings. Speech intelligibility in indoor environments; assessment of acoustic requirements for EVAC fire alarm systems.

Occupational Noise

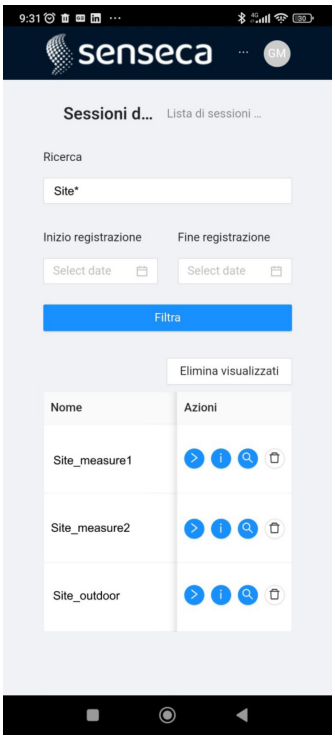
Exposure Assessment: Helps in assessing noise exposure levels to protect public health and safety, particularly in workplaces and residential areas. Robust body design and operation even via keyboard in harsh environments.
Industrial Noise Assessment: Monitor and manage noise levels in industrial settings to protect worker health and comply with regulations.

Product Noise Testing

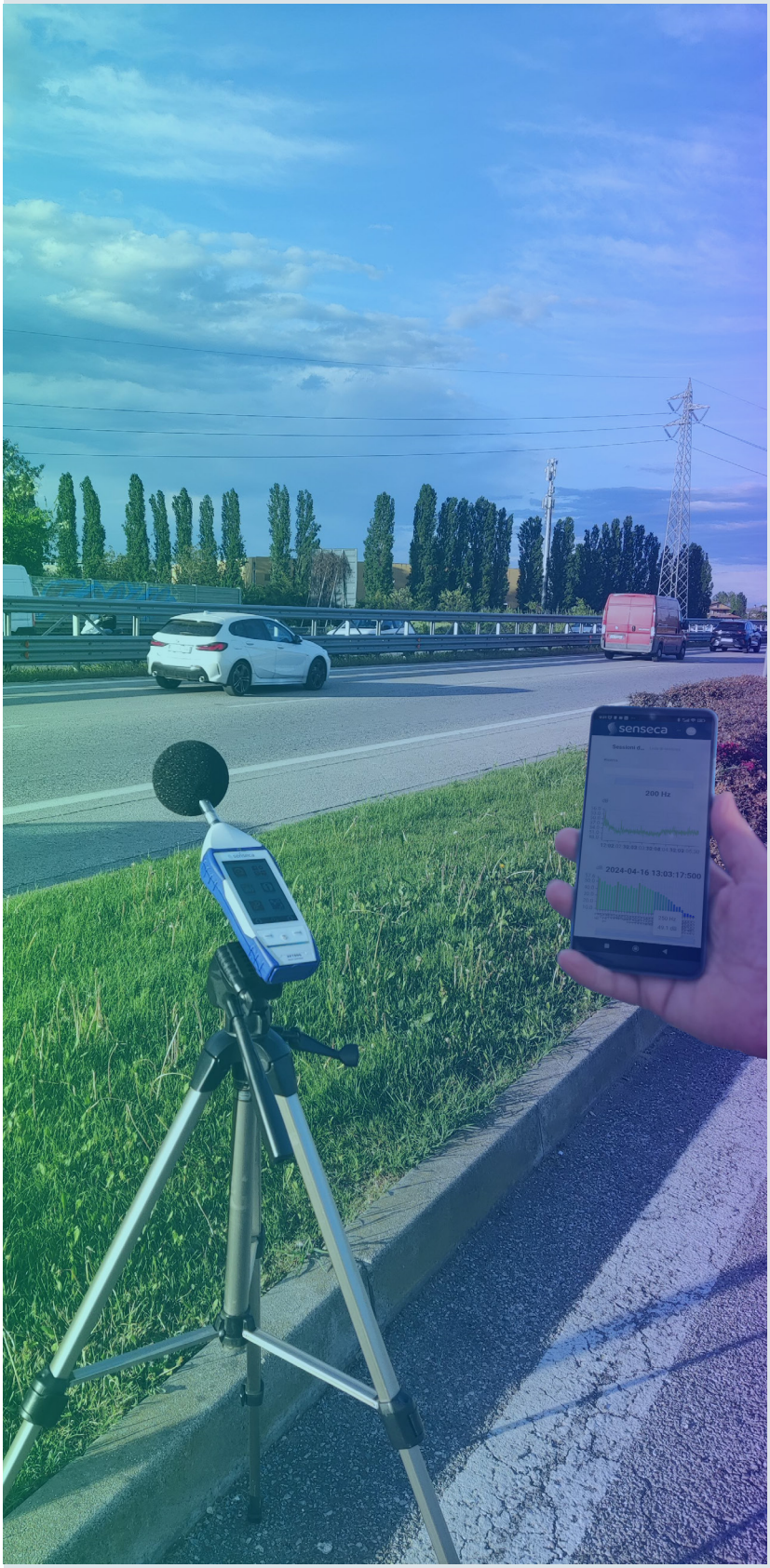
Enhanced Product Quality: Ensures that products meet noise level standards, improving customer satisfaction and product quality.
Regulatory Compliance: Helps manufacturers comply with noise regulations ensuring smooth market entry.
Efficient Testing Process: Streamlines the noise testing process with real-time data, continuous monitoring, and comprehensive analysis tools.
Versatile Applications: Suitable for a wide range of products and testing environments, offering flexibility and adaptability.

Data management

Data stored in the new sound level meters XPT800 and XPT801 are manually archived* or automatically synchronized (only with Push option for XPT80x via Wi-Fi, Lan or 4G device) in the cloud service through the NS Storage web application.
Data stored and organized in workspaces protected by access credentials can be viewed by the workspace owner as graphs and tables through any device equipped with a web browser connected to the Internet and can be exported in text format.
Workspace owners can share their data with any user by assigning, for example to a collaborator, specific (revocable) permissions for the use of one or more workspaces.
The data stored in the workspaces is directly accessible through the NS, NS-ENS and NS-SIS software modules and can be downloaded and stored locally for analysis.
**Limited free storage space.*



NS Storage for mobile



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Technical specifications

Inputs	MS800 microphone set	• **MC800:** ½" free-field measurement microphone, 50 mV/Pa; 0 V; IEC 61094-4 WS2F, 3.15 Hz–20 kHz.
		• **MP800**: preamplifier with SDI (Sensor Digital Interface):
		  • Automatic detection of model and calibration data
		  • Automatic electrical CTC calibration
		  • Heater
		• **Dynamic range:** from 15 dBA to 140 dBpeak

	MS802 microphone set	• **MC802:** ¼" pressure measurement microphone, 0.56 mV/Pa; 0 V; IEC 61094-4 WS4P, 10 Hz–20 kHz. • **MP802**: preamplifier with SDI (Sensor Digital Interface). • **Dynamic range:** from 65 dBA to 178 dBpeak
Linear range with MS800 microphone set		A (1kHz) 15 dB – 137 dB (140 dBpk) C 18 dB – 137 dB (140 dBpk) Z 23 dB – 137 dB (140dBpk)
Frequency weightings		A, C + B or Z (user selection). 3 simultaneous
Time constants		Fast, Slow, Impulse, Peak simultaneous
Averaging		Linear, exponential, moving, max, min
Parameters*		Lp, Leq, Lleq, SEL, Leq_{mov} (Sliding), $L_{min/max}$, L_{peak}, Level diff. (*i.e. LCeq-LAeq*), LUp, LUeq (*User between two sel. bands*), LAFT, LAFTeq (*TaktMax*) , L_{PER}($L_{den,}$ L_{dn}, L_{day}, $L_{evening}$, L_{night}), $Lp^{1/1}$, $Lp^{1/3}$, $Leq^{1/1}$, $Leq^{1/3}$, $Leq_{mov}{}^{1/1}$, $Leq_{mov}{}^{1/3}$, Ln (*0.1%-99.9%*), Ln_{mov}, $Ln^{1/1}$, $Ln^{1/3}$, pL, $pL^{1/3}$ **For more details about measurement parameters see user manual*
Spectral Analysis	Octave	Real time, 1/1 octave, 8 Hz to 16 kHz, IEC 61260-1:2014 Real time, 1/3 octave 6.3 Hz to 20 kHz, IEC 61260-1:2014
	FFT	Real-time FFT simultaneous with octave or third-octave band spectral analysis: • Span: 1200 Hz, 6000 Hz, or 24000 Hz • Lines: 2000, 4000, 8000, or 16000 • Analysis interval starting from 100 ms
Noise Criteria		NC, NR, RNC, RC
Reverberation time		T60 calculation (ISO3382)
Intelligibility		STI (STIPA method) calculation (IEC 60268-16)
Statistical Analysis		Broad band and Spectral: 7xLn (Lin and Mov) selectable percentile levels (0.1%-99.9%). Probability/Cumulative distribution.
Audio	Recording	Mode: continuous, manual or event triggered. Resolution 16, 24, 32-bit. Audio-band: 10, 20 KHz. Format: Wave
	Playback	Embedded codec for signal generation. Playback channels: Generator, Trace (.wav) or Measurement (Mic input). Playback Mic or Mic-filtered (Wide Band A, C, Aux or 1/3 band selectable) for Audio playback of microphone input.
Measurement Control		Start, stop, pause, reset, back-erase, continue, event marking, manual audio recording. Measure timer from 1 s to 23:59:59 hr
Calibration	Acoustic	Manual or automatic (tone detection). Calibrations history: date/time, dB correction. Free Field, Random Incidence, environmental and shield corrections
Triggers	Broad band	Single or multiple (OR/AND) on broad-band levels, levels difference, Ln, L_{mov}
	Spectra	On 1/1 or 1/3 oct. masks. Single - All bands mode. Max, min thresholds editable (man or json file)
Detectors	Tonality	Automatic identification in accordance with DM 16/03/1998 and ISO1996-2
	Impulsivity	Automatic identification in accordance with DM 16/03/1998 and ISO/PAS 1996-3:2022
Storage	Physical	Embedded 4GB eMMC; USB memory stick.
	Cloud	Upload to cloud storage service (NS-Storage). Manual or automatic (Push)
	Archive	List, preview and plot with zoom function of stored data. Manual data upload on NS-Storage cloud service.
Datalogging		Time history: independent Short, Standard, Report steps. Short: 10 ms. Standard: 100/200/500 ms / 1 s. Reports: 10/20/30 s,1/2/5/10/20/30/60 m Events: triggered broad-band, octave, Ln values Globals: Continuous, Daily integrations

Technical specifications are subject to change without notice as part of a continuous improvement process.

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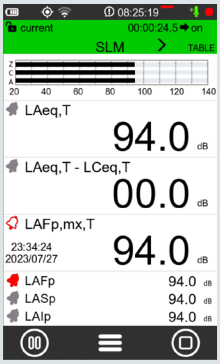
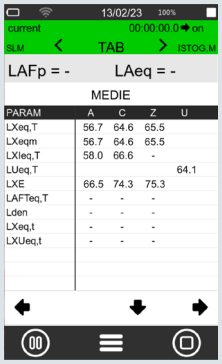
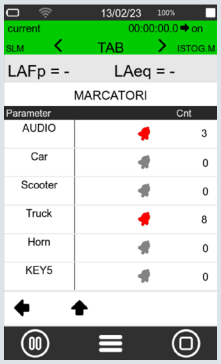
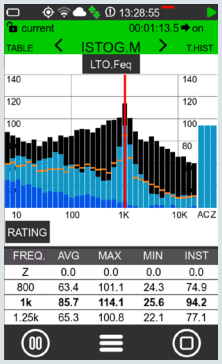
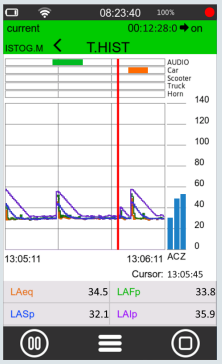
Views	SLM	6 user selectable parameters with easy-to-read numbers - Levels difference (selectable) - Bar graph of 3 broadband levels - Alarms display on exceedances
	Numerical tables	Broad-band parameters, weightings & time const. all in parallel: Inst., Average, Max-Min. 7xLn percentiles broad-band, Ln moving, 7xLn of 1/1 or 1/3 octave frequency bands. Spectrum: Inst, Min, Max, Avg, Mov, Ln Exceedances: ongoing exceedances; n° of occurrences (SLM, Markers, audio.)
	Frequency spectrum	Histograms: up to 4 selectable. Values @cursor position. Overall A, C, Z, User 1/1 or 1/3 octave; Spectrum ponderation: A, C, or Z; Time constants: Lin, Fast or Slow Type: Inst, Mov, Avg, Max, Min, Rep-Avg, Rep-Max, Rep-Min, Evn-Avg, Evn-Max, Evn-Min
	Time history	Simultaneous display of up to 4 selectable parameters with display/hide feature. 1xAudio and 4xEvent-Marker as presence-coloured bars. 3xBroad-band values bars. Cursor with inst. level and time display.
	Statistics	Probability/cumulative distributions plots. Ln vs frequency bands (histogram)



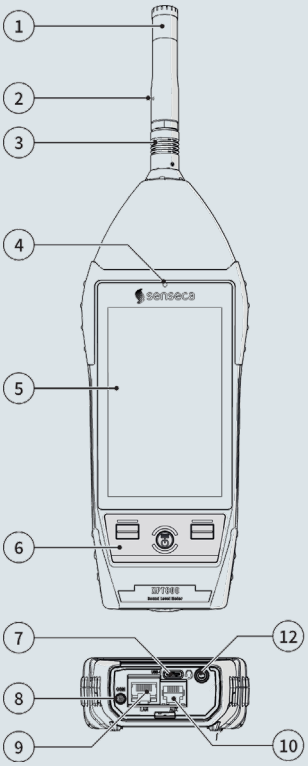




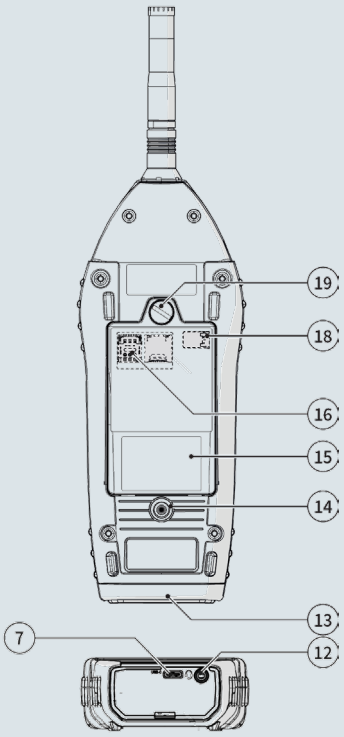




Display		4.3” touch, 480 x 800 px, colour TFT, high brightness, sunlight readability. Auto brightness.
Keyboard		ON/OFF/MENU key with RGB backlight; Function keys (2x); Multi-colour Status Indicator.
Battery	Type	Rechargeable battery pack, Li-Ion polymer, 9000 mAh. PCM circuit for battery protection
	Operating time	> 24 h
Wireless	Wi-Fi	Embedded Wi-Fi module (IEEE 802.11 b/g/n), for web communication and time sync
	GSM	Embedded 4G-LTE modem module for web communication and time sync
Hardware interface	USB-C	OTG 2.0. MS (Mass Storage) and CD (Communication Device)
	Ethernet	RJ45 10/100 Ethernet for web communication and time sync
	Aux	RJ12: Auxiliary connector for external battery power supply and for powering peripherals
	Audio I/O	3.5 mm 4-pin audio jack: audio I/O and trigger I/O
Physical		Dimensions: 304 x 86 x 38 mm. Weight: 505 g (incl. batteries). Dust and water-resistant case (IP54). Standard ¼” tripod mount thread.
Operating conditions		Temperature: from -10 °C to 50 °C / Humidity: from 25 %RH to 90 %RH
Language		English, Italian *(Expandable to other languages)*
System	Status bar	Battery, Wi-Fi/Lan/4G conn., Cloud conn.level, uload/dload, notifications, date/time, active storage media, remaining storage, overload/underload, audio recording, active measurement mode
	Monitor	Battery level [%], device temp [°C], pressure [hPa], charge voltage, pre temp [°C]
	Fw/Options upgrade	Via USB connection or Over-the-air (OTA) updates of firmware and new options.
Acoustic standards	IEC	*Sound Level Meter:* IEC 61672-1 (2013) classe 1 - IEC 60651 (1979) plus Amendment 1 (1993-02) and Amendment 2 (2000-10), type 1 - IEC 60804 (2000-10) type 1 *Octave and fractional octave band filters:* IEC 61260-1 (2014)
	ANSI	*Sound Level Meter:* ANSI S1.4-1983 plus ANSI S1.4A-1985 Amendment type 1 (sound level meter) ANSI/ASA S1.4-2014 class 1 - ANSI S1.43-1997 type 1 *Octave and fractional octave band filters:* ANSI/ASA S1.11-2014 Part 1
Software	Desktop	Noise Studio NS1: Noise and vibration analysis in the workplace Noise Studio NS-ENS: environmental noise analysis Noise Studio NS-SIS: buildings acoustic performance analysis
	Web applications	Noise Studio NS-Storage: storage and display of measurement data Noise Studio NS-Manager: Management of XPT instruments (updates, options, notifications)



XPT800 with hardware option connector panel



XPT800 base version connector panel

1 Microphone capsule
2 Preamplifier
3 Push-pull connector
4 Light sensor
5 Touch Display
6 Keyboard
7 USB-C connector
8 GSM external antenna connector (optional)
9 LAN socket (optional): RJ45 type connector
10 AUX (optional): connector RJ12 type, for connection to external devices
12 Connector for audio audio output / filtered audio / trigger I/O: Ø 3.5 mm jack socket
13 Rubber protection for connectors
14 1/4" threaded hole for stand
15 Battery compartment
16 SIM slot
18 Battery connection
19 Battery compartment opening/closing screw

Ordering codes

XPT800 Sound Level Meter can be ordered as base model and additional functionalities can be added later as retrofit.

XPT800	Class 1 sound level meter, MP800 preamplifier, ½" MC800 microphone (50 mV/Pa), WS90 windscreen, carrying case, USB-C cable, certificate of conformity. Dynamic range from 15 dBA to 140 dBpeak.
XPT800-H	Class 1 sound level meter, MP802 preamplifier, ¼" MC802 microphone (0.56 mV/Pa), WS18 windscreen, carrying case, USB-C cable, certificate of conformity. Dynamic range from 65 dBA to 178 dBpeak.

Included in base model

XPT800-OH5	Trace/Signal generator (playback + measuring)
XPT800-OF3	Statistic analyzer
XPT800-OF8A	Event Detector
XPT800-OF8B	Fast data logging
XPT800-OF8C	Moving average calculations
XPT800-OF8D	Noise Assessment Periods levels
XPT800-OF13B	Advanced datalogger
XPT800-OF15	Extended dynamic range
NS-CLOUD	NS-Storage and NS-Manager cloud services

Additional hardware options

XPT800-OH3A	Monitor module with Ethernet and Aux connectors
XPT800-OH3H	Network module with 4G modem

Additional firmware options

XPT800-OF1E	1/1 + 1/3 Octave bands Advanced Spectrum analyzer
XPT800-OF1AE	1/1 Octave bands Advanced Spectrum analyzer
XPT800-OF2	FFT spectrum analyzer
XPT800-OF3S	Advanced statistic analyzer
XPT800-OF4	Audio Recording
XPT800-OF6	STI (STIPA method) analyzer
XPT800-OF9	Noise Ratings calculation
XPT800-OF11A	Tonality and impulsivity detectors (ISO1996)
XPT800-OF11B	Tonality and impulsivity detectors (DM16/03/98)
XPT800-OF12	Reverberation time calculation

Desktop / web application

NS1	"Workers Protection": software module
NS-ENS	"Environmental Noise Studio" desktop application module
NS-SIS	"Sound Insulation Studio" desktop application module

Accessories

HD2020	Class 1 sound calibrator
CPL-4.5	Microphone extension cable, 5 m
CPL-4.10	Microphone extension cable, 10 m
XPT800/SA	Support for attaching the preamplifier to the tripod
VTRAP	Tripod, maximum height 1310 mm
Vtrap4m	Tripod, maximum height 4 m
HDWME	Microphone protection for outdoor measurements. Includes windscreen, rain protection, and bird deterrent
BAG-8K	Rigid, airtight (IP65), protective carrying case
HD2020AD4	Adapter for ¼" microphones

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