



PRODUCT INFORMATION

Elettromedia July 2017



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bit



PRODUCT INFORMATION

Elettromedia July 2017

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bit



With the introduction of the brand new **bit One HD**, **bit Ten** and **bit Ten D** processors, **Thesis**, **Voce** and the **Prima bit** amplifiers, Audison has been recognized by industry leaders, specialists and moreover by enthusiasts as the "reference" in the application of digital audio technologies to achieve unheard-of sound reproduction. The Audison spirit never ceases to be innovative and continues with our latest creation: the **bit Tune**. The Audison bit Tune is a revolutionary tool ensuring **automatic calibration for Audison bit processors, quickly providing maximum audio performance**. The bit Tune also includes an important set of tools useful in the everyday routine of the mobile electronics specialist, enabling the user to enhance creativity through instrumental experimentation. **Audison is proud to introduce the bit Drive technology** incorporated in all of its products featuring sound digital processing functions (DSP); with these products today, thanks to the bit Tune, you can implement the audio system you've always dreamt of: "Your Sound".

With bit Drive the Audison teams' vision has gone beyond the product; in fact, we developed the bit Drive portal (www.bitDrive.it) where future products with **bit Drive** technology can be registered. By registering your product you become part of a community where you can access information and support for all products with bit Drive technology and take advantage of exclusive materials and services!

BIT DRIVE, YOUR SOUND

Audison is proud to announce a revolutionary digital audio technology for automobiles: **bit Drive**. Audison has a tradition of innovation; each new project making a qualitative leap in high fidelity mobile sound.

Our "**no-compromise**" philosophy, our constant attention to new technologies and being plugged-in to rapid developments in the market have made it possible for this milestone: complete digital audio in the mobile environment.

Emidio Vagnoni, Technical Director and Audison co-founder, observes:

Over the past 10 years our research team has focused its efforts in the field of digital audio.

Our solid experience, consolidated over many years in analog topology, also highlighted the limitations of this technology to reproduce sound in a challenging environment such as the car. The study of digital technology is not limited to, as often happens, replicating traditional analog technology more efficiently, but primarily focuses on the new possibilities it could offer to improve the sound reproduction and ergonomic integration of car audio systems.

Highly innovative product solutions were introduced, such as Audison bit processors featuring DSP, AD Link and AC Link for the transmission and management of digital signals in each channel of amplification. This "wind of change" led to the emergence of the Audison bit Drive, immediately setting new sound reproduction standards in the mobile environment.

bit

Bit tune, perfect sound has never been so easy!

The **Audison bit Tune** is a revolutionary system of **automatic calibration** for Audison bit processors developed with bit Drive technology. **Bit Tune** also includes a multitude of additional features for **electro-acoustic verification and analysis of any car audio system**.

The Audison team's goal in developing the **bit Tune** was to speed up the setting of basic parameters for the calibration of the bit processors (time alignment, equalization, levels, etc.), ensuring an excellent level of acoustic performance. This phase also includes the diagnosis of common "errors" (channel inversion/phase, no signal on one channel/cable, etc.) to set the specialist free from his "routine" work and allow him to **focus** on the art of "fine-tuning". Only personal interpretation and experience can achieve what a machine could never do: create "**Your Sound**"!

Bit Tune can be registered in the **bit Drive** web portal to receive a free Pro license or to obtain a Full license (details in the data sheet). By registering, you also get an account to access the bit Tune users community and exclusive content dedicated to registered users.

Bit Tune can also be used to verify **Audison Full DA** systems. Thanks to the presence of digital optical inputs/outputs (TOSLINK), it provides the ability to read the bit rate and sampling frequency of the input signal.



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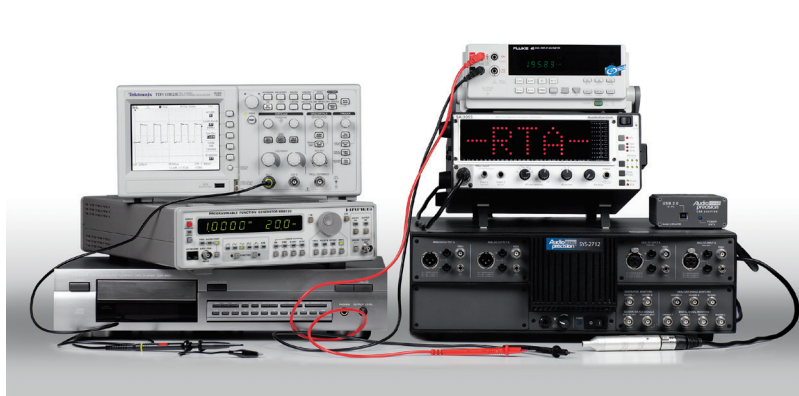
bit Tune

Bit tune, key features

To describe the bit Tune and its functions, it would be easier and faster to describe what is not possible to do, but this would not convey the breadth of possibilities..., so let's progress step by step.

What is included?

The bit Tune system comes packaged in a professional carrying case, complete with all of the accessories required for its use. This case ensures safe transportation during events or trips outside of the installation center, and properly secures all materials, such as the microphones that requiring particular attention.



HSM - Hearing Simulation Mic. This is the most important component and is where the Audison research team focused most of its work, along with the acoustic analysis software. It is a **disc-shaped microphone with 5 high-quality microphone capsules** arranged around half of its circumference.

The most important design element of the HSM was to **simulate the "head" of the listener from the listening position**, hence the name **Hearing Simulation**. The simulation of human sound perception is accurate, thanks to precise design choices: the overall diameter of the disc shape approximates the distance between the two human ears; number and placement of the capsules are designed to reproduce the polar response of the human auditory system. Through the bit Drive algorithm integrated within the PC software, the signals acquired by the human hearing characteristics of HSM microphone are processed, setting configuration parameters for the processor, making the response of the audio system "natural." The unique mounting system provided places the microphone array in the perfect position.

LPM - Level and Polarity Mic. This is a single-capsule microphone, used for **setting system levels and for checking the acoustic phase of the speakers**.

The "strap-type" mounting system provided places the microphone perfectly between the two front headrests. This small microphone can easily be removed from the mounting system in order to check the phase of a speaker, making best use of the "polarity check" wizard in the software.

CMU - Central Measurement Unit. This is the "brains" of the system, acting as an **interface between the acquired/generated data and the PC based management software**.

It is equipped with a set of inputs and outputs to the car audio system and USB connection to control the Audison bit processor.

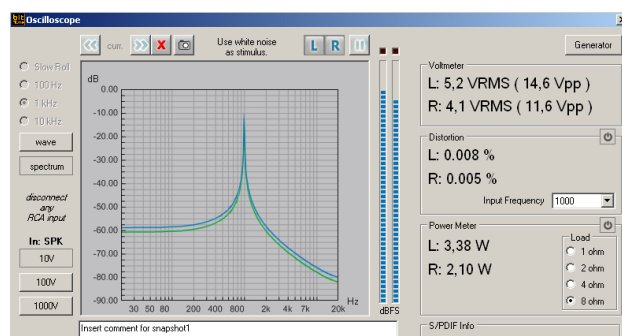
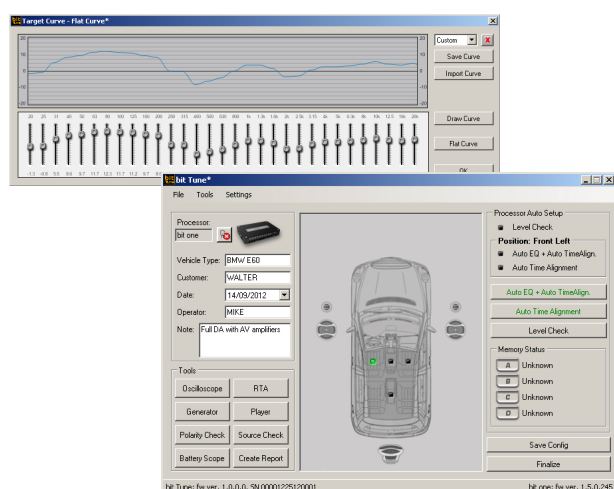
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EMS and Speaker Load Simulator: fundamental functions for the mobile electronics specialist!

EMS - Electro-Magnetic Sniffer. Using the supplied probe and built-in speaker, this function allows you to identify areas of the car where electro-magnetic (radiated) noise is present, which can turn into unwanted noise present in the audio system (alternator noise, interferences of electronic control units, etc.). Once the "noisy" area is detected, it is possible to avoid noise by locating cables and/or devices away from the affected area.

Speaker Load Simulator. In recent years some manufacturers of OEM audio systems have provided a fault detection function to check for any speaker faults or problems with connections. In these cases, if the speaker is disconnected from the source to connect the cables to a processor/amplifier input, the system marks a failure or, in the worst-case scenario, blocks the source. The Speaker Load Simulator function provides the flexibility to **simulate different types of loads** by connecting the speaker cables directly to the CMU Speaker-In inputs. The CMU will then check if the source is equipped with a fault detection system and, possibly, what type of diagnostic it performs. By selecting one of three available types of load (No Load, 47 ohm or Speaker Simulator), you can identify what type of dummy load must be connected in parallel to the processor/amplifier input.

The CMU also incorporates a chassis mounted speaker that lets you hear the signal from a given input (pre-amplified, speaker, optical digital, etc.) or from the EMS (Electro Magnetic Sniffer). In the case of unwanted noise in the audio system, listening to the signal between various devices allows you to identify where the noise is generated.



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The development of Audison **APM** is the result of years of research and development into a complex topic, the evaluation of in-car sound quality. Many people in the industry have been talking about measuring acoustic performance without ever having achieved a tangible result up to now.

Thanks to the capabilities of APM, sound quality evaluation is no longer influenced by the preferred music genre of the listener. The APM technology is able to replicate the auditory perception of humans and therefore to measure the system performance with a high level of precision.

The **bit Tune hardware platform** implements APM functionalities providing the market as well as industry specialists with a complete tool, enabling two innovative types of analysis which **objectively evaluate** customized and OEM car audio systems.



bit Tune Splash screen with APM tool



bit Tune + dummy head (optional)

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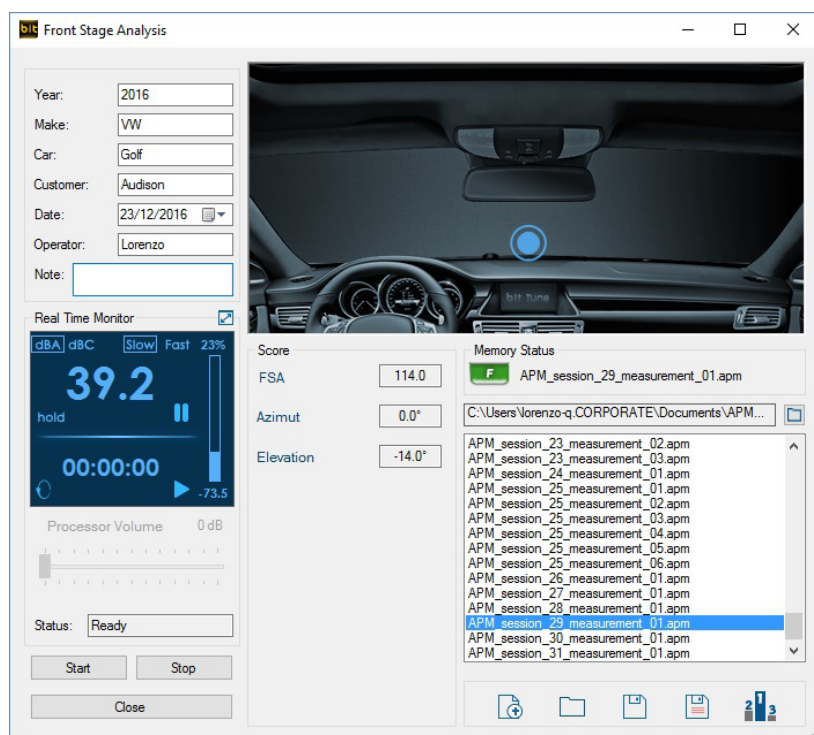
APM measurements

The APM software is composed by two measurement tools: the **FSA (Front Stage Analysis)** and **TMD (Total Music Distortion)**.

The asymmetric listening position affects the quality of in-car sound reproduction. Placing the front soundstage at the center of a car hi-fi system is the most critical and challenging element. For this reason, we have developed the FSA, a dedicated analysis tool for **the automatic localization of the virtual sound image generated by a stereophonic configuration**.

This technology has been made possible thanks to the dummy head, which allows the recreation of a HRTF (Head Related Transfer Function) and **a new approach, based on binaural and monaural cue** which was studied to simulate the human auditory perception of the sound image.

Thanks to the FSA, the front sound emission can be analysed as if your dashboard was the soundstage of a concert and this allows one to determine, with high level of accuracy, the centre stage on the two axis, providing the FSA score as result.



FSA (Front Stage Analysis)

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acoustic

performance

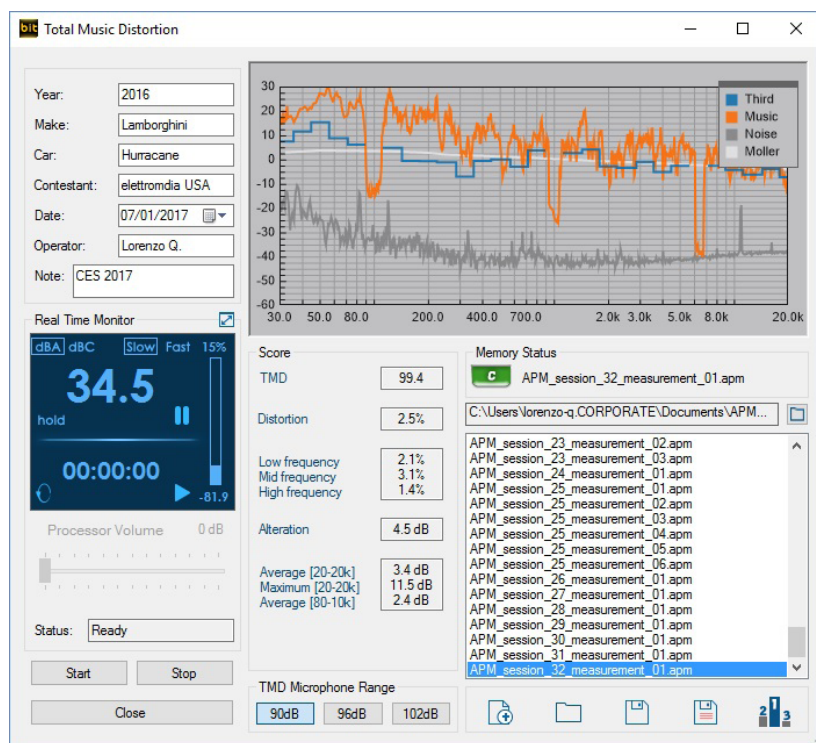
measurement

TMD (Total Music Distortion) is a tool that can measure the linear and non-linear distortions of the system's frequency response using a real musical track unlike conventional methods of measurement.

This analysis can be performed at different sound pressure levels, which is very significant for the system's performance identification when we push the system close to or over its distortion point, providing different TMD scores for different SPL categories.

This measurement in **official and online contests** is tested in specific system listening sound pressure categories that the contestant is free to choose.

The Specialized Centre will also offer the customer the possibility to post real time measurements online via the **internet portal dedicated to the Competition circuit**.



TMD (Total Music Distortion)

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Master Sound Quality Race Project

We are not looking to replace human presence with our technology; we rather see in the APM technology an opportunity to add further value to the judge's critical listening. The goal is to create an online worldwide network to let all the participants **compete, compare and share the APM results**, with the **Specialized Centre** back to occupying a key role.

APM Rank Calculator

APM Rank Calculator

File APM

Load Session

Load Measurement

Create Ranking

Save Ranking

Load Ranking

Measurement information

	RANK	pos	#	Mode	APM Score	FSA Score	Azmut [°]	Elevation [°]	TMD Score	Distortion [%]	Alteration [dB]
	1*	3	F	105.1	114.0	0.0	-14.0	96.3	2.8	5.9	
	3*	2	F	105.2	114.0	0.0	-14.0	96.3	2.8	5.8	
	2*	1	C	92.7	86.0	6.0	-34.0	99.4	2.5	4.5	



APM main software window

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bit Drive

Power Supply

Voltage	11 ÷ 15 VDC
Idling current	0.8 A
Internal fuse (Cylindrical fuse)	2 A delayed

Input Stage

	Sensitivity	Bandwith
RCA	max ± 100 V pp	20 kHz
BNC	max ± 100 V pp	20 kHz
Hi-Level	max ± 1000 V pp	20 kHz

HSM microphone	1
LPM microphone	1

Optical Input	S/PDIF Max 192 kHz / 24 bit
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Output Stage

2 x Analog Pre Out	4 V RMS
2 x Analog Hi-Level Out	5.5 V RMS
1 x Digital Optical Out	S/PDIF Max 192 kHz / 24 bit

Using With Pc

PC connections	USB 1.0 / 2.0
Software / PC requirements	Windows XP, Vista, 7 (32 bit or 64 bit)
Graphic card min. resolution	1024 x 600 pixel
Temperature range Operating:	0°C to 55°C (32°F to 131°F)

Size

Case:	
W x H x D (mm / in.)	490 x 390 x 160 / 19.21 x 14.92 x 6.29
Weight (kg / lb.)	4,1 / 9.03
bit Tune unit:	
W x H x D (mm / in.)	232 x 165 x 51 / 9.13 x 6.49 x 2
Weight (kg / lb.)	1,24 / 2.73

Audison bit Tune is a suite of electronic and acoustic test instruments used for the automatic calibration of Audison bit processors. This "single-chassis" solution offers a complete tuning process, improving the ease of installation and sound quality of car audio systems.

The heart of this device is the CMU Central Measurement Unit, packaged with two microphone systems, various connections as well as PC based software used to manage and analyse the audio system.

AUTO PROCESSOR SETUP: the automatic calibration function includes: Auto EQ, Auto Time Alignment, and Level Check. Automatic setting of: time alignment, equalization curve and output levels of an Audison bit processor connected to the bit Tune. The Processor Auto Setup tool is used with an on-screen wizard, and can be used independently to carry out specific measurements.

SOURCE CHECK: takes electrical measurements of the Pre Out or Hi-Level outputs of the connected source, displaying signal level. Using the spectrum analyser function (Spectrum), the user can graphically assess if the source signal is equalized or not.

RTA - REAL TIME ANALYZER: measures the acoustic response of the audio system, considering the characteristics of the vehicle acoustics. Measurements are taken using the HSM microphone.

POLARITY CHECK: with this tool you can check the electrical phase of the speakers installed in the audio system.

OSCILLOSCOPE: includes the following tools: Voltmeter, Power Meter, Distortion and Spectrum. Thanks to these tools, it is possible to perform electrical measurements of the signal level and distortion of an inputted audio signal as well as the power of amplifiers. The result of the measurements is available in graphic and numeric formats.

GENERATOR: creates sinusoidal signals adjustable in frequency (20Hz-20KHz) and amplitude. A bandwidth limited, adjustable time sweep can also be generated. It also features a generator of Pink and White Noise used to measure acoustic response.

PLAYER: a software tool used for the playback of music formats *.wav, *.Wma, *.mp3, *.flv, *.flac. Capable of handling up to 24bit/192kHz resolution files.

BATTERY SCOPE: implements an oscilloscope in DC, specifically calibrated to measure the vehicles' battery voltage found during vehicle start-up or audio system demands. This tool can detect immediate voltage drops which a common volt meter can't detect.

OPTICAL CABLE TEST: checks if signal is present on sources with S/PDIF optical output and provides the ability to analyse the digital bit rate and sampling frequency of the signal; audio can be heard through the built-in speaker of the bit Tune.

CREATE REPORT: automatically creates a report (in PDF format) with information concerning: the technician, the client, the vehicle, obtained measurements and the adjustments made through the Processor Auto Setup.

LOAD SIMULATOR: allows the user to check if the OEM source unit or amplifier requires a load (speaker connected) on the speaker leads to output audio. The check is performed by the bit Tune by applying a resistive or inductive load. Once the check has been performed, a similar load has to be connected to the OEM source outputs, to then connect an amplifier or a processor to the source.

HI-LEVEL ART TEST: checks if the Hi-Level outputs of the OEM source are compatible and capable of working with ART (Automatic Remote Turn On) equipped processors and/or amplifiers.

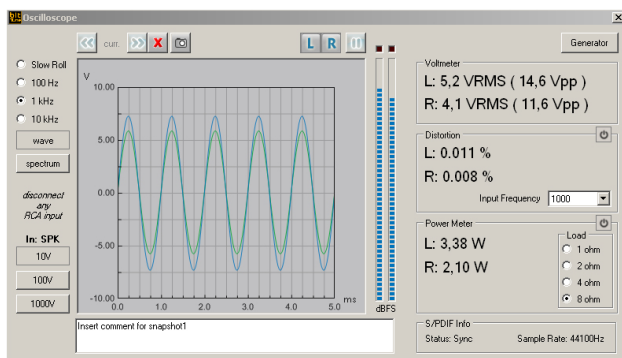
LINE NOISE ANALYZER: checks if there is audio signal and possible noise disturbances along the analogue or optical digital audio line. The check is confirmed by listening to the signal on the built-in speaker of the bit Tune.

ELECTROMAGNETIC SNIFFER TEST: with the EMS probe placed on or near electrical parts or wiring of the vehicle, you can acoustically identify the source of electromagnetic (radiated noise) disturbance using the built-in speaker of the bit Tune.

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bit Tune: Software licenses

STANDARD. Default software version found in every bit Tune; making it possible to automatically calibrate any product featuring the Audison bit Drive technology (the Audison bit processors as well as future products).

PRO. This version has all the functionality of the Standard version, with the added benefit of fully enabling all of the analysis and measurement instruments (oscilloscope, RTA, etc.) that the bit Tune is capable of, only when connected to a product featuring the Audison bit Drive technology (the Audison bit processors as well as future products). To activate the PRO version, simply register the product by logging onto the Audison bit Drive portal.

FULL. This version has been designed for professional installation technicians performing extensive in-car and test bench measurements and experimentations. In fact, it offers all the functions found in the PRO version, enabling the analysis and measurement instruments (oscilloscope, RTA, etc.) even without being connected to a device featuring the Audison bit Drive technology.

bit Tune Instruments	with PC	bit Tune status					
		T	S	SP	P	PP	F
PROCESSOR AUTO SETUP	✓	✓	✓	✓	✓	✓	✓
SOURCE CHECK	✓	✓	✓	✓	✓	✓	✓
RTA	✓	✓	✓	✓	✓	✓	✓
POLARITY CHECK	✓	✓	✓	✓	✓	✓	✓
OSCILLOSCOPE	✓	✓	✓	✓	✓	✓	✓
POWER METER	✓	✓	✓	✓	✓	✓	✓
DISTORTION METER	✓	✓	✓	✓	✓	✓	✓
GENERATOR	✓	✓	✓	✓	✓	✓	✓
PLAYER	✓	✓	✓	✓	✓	✓	✓
BATTERY SCOPE	✓	✓	✓	✓	✓	✓	✓
OPTICAL CABLE TEST	✓	✓	✓	✓	✓	✓	✓
CREATE REPORT	✓	✓	✓	✓	✓	✓	✓
LOAD SIMULATOR SPEAKER IN	-	✓	✓	✓	✓	✓	✓
HI-LEVEL ART TEST	-	✓	✓	✓	✓	✓	✓
SOURCE LINE ANALYZER	-	✓	✓	✓	✓	✓	✓
ELETTROMAGNETIC SNIFFER TEST	-	✓	✓	✓	✓	✓	✓

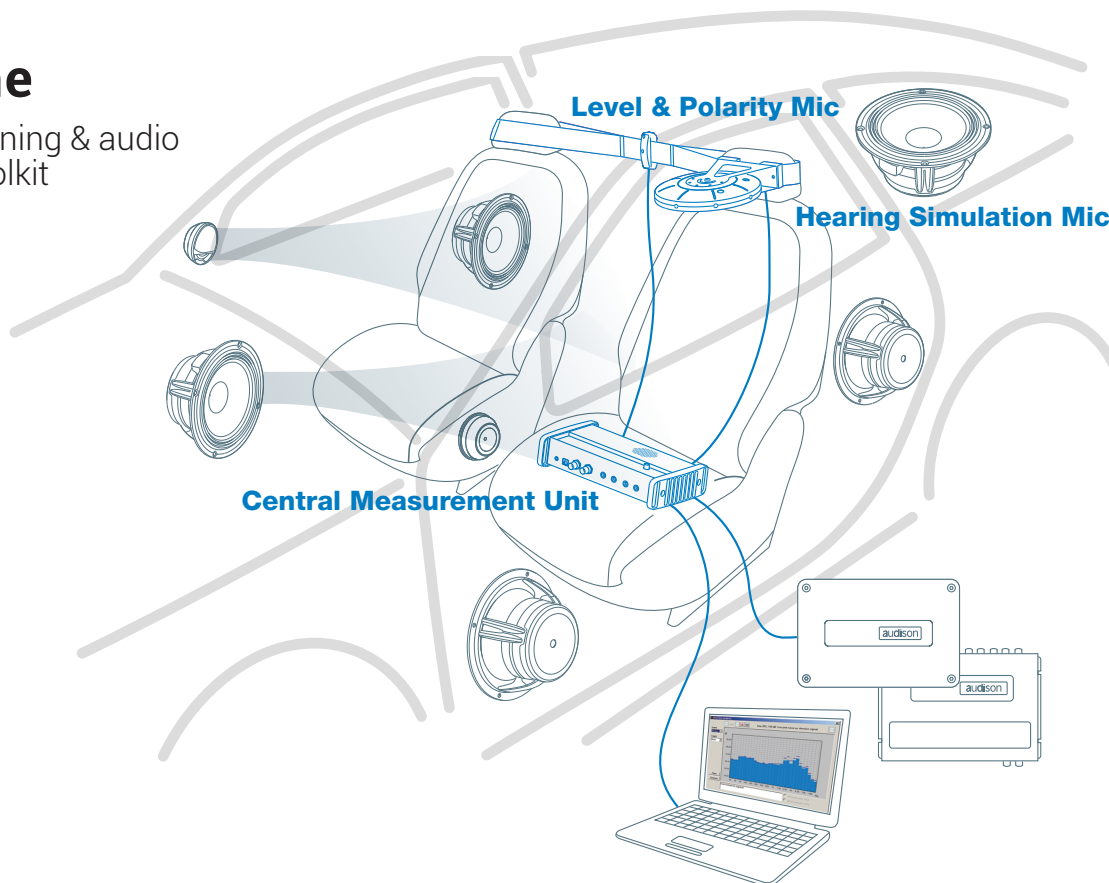
Legend

TRIAL 90 days	T
STANDARD	S
STANDARD + PROCESSOR	SP
PRO	P
PRO + PROCESSOR	PP
FULL	F

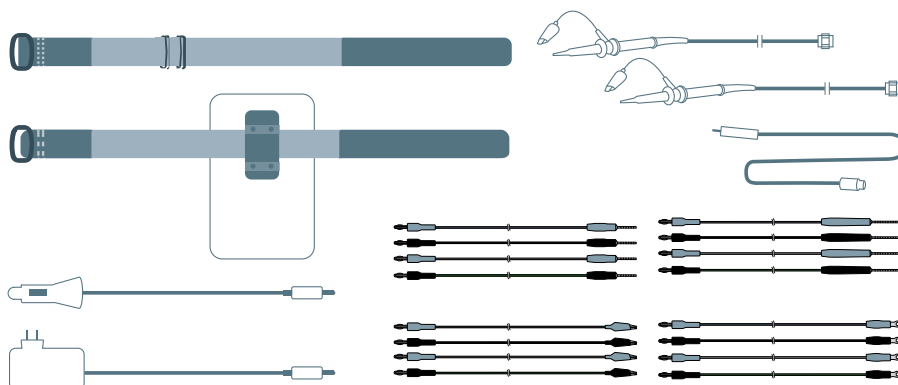
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Accessories



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elettromedia



ABOUT US

Elettromedia, an Italian company, is a leader within the world-wide car Hi-Fi market. Born in 1987 in Potenza Picena by a group of friends who shared the same passion for in-car high fidelity, throughout the past years Elettromedia has been walking the path of excellence: its products are distributed in more than 60 countries; the company has received many awards and acknowledgements from the most authoritative leaders within the car audio industry; it also can boast reviews of more than 3000 pages published in 30 different languages (www.elettromedia.com, Reserved Area). The Elettromedia brands are Audison, Hertz, Connection and AZaudiocomp. Through a co-branding strategy, the company offers all of the components required for a complete, top-level car audio system.

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AWARDS



bit

Press Kit

(www.elettromedia.com, Reserved Area)

bit Product Information

(PDF version, 150 dpi resolution)

Logos: Audison, bit One HD, Full DA HD

(Adobe Illustrator version, 300 dpi resolution)

Photo (JPG version, 300 dpi resolution)



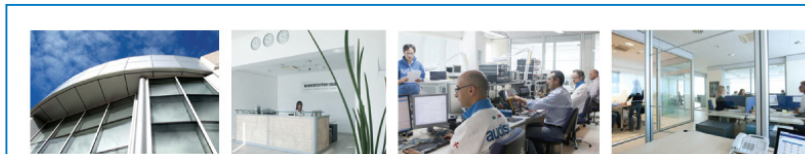
bit Tune



APM



Technologies



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