



## In-Ear Sound Level Analyzer User Guide



Thank you for purchasing the Sensaphonics dB Check Pro sound level analyzer. Much like a speedometer in a car does for the driver, dB Check Pro gives you the information you need to help you monitor more safely. With dB Check Pro, in-ear monitor (IEM) and headphone users can learn how loud they are listening, in real time, even with earphones inserted.

dB Check Pro is an in-line measurement device that calculates and displays the level of your monitor mix while wearing your IEMs or headphones. It provides readouts of both the average A-weighted Sound Pressure Level (dBA-SPL) and the safe exposure time limits ("Allowable Time") associated with that average level. In addition, its integral microphone simultaneously yields the same information for ambient room sound. The earphone and ambient data streams may be viewed separately or simultaneously.

Using dB Check Pro is easy. Power it up, select your IEM/headphone brand and model, then select measurement duration and which information to view on the display. Pressing the Start/Pause icon on the Home screen begins level averaging.

The display shows the current average level in dBA-SPL for earphones, ambient sound, or both, plus the associated Allowable Time under both NIOSH (National Institute of Occupational Safety and Health) and OSHA (Occupational Safety and Health Administration) guidelines. Real-time (1-second average) levels are also shown. Using this information, you can adjust your listening level (and/or your daily exposure time) to better protect your hearing.

dB Check Pro is a measurement device and does not affect the sound of your IEMs or headphones. In fact, you can listen normally with dB Check Pro turned off.

**IMPORTANT: dB Check Pro features a pressure-sensitive screen for all operational functions. You must physically press the screen surface to make selections.** There may be a slight delay for screen refresh.

**NOTE:** dB Check Pro works with audio input for cabled IEMs and headphones only. It does not work with Bluetooth audio sources.

This user manual has been written to help you make best use of the dB Check Pro to safely and efficiently maximize your earphone listening experience. Before operating this unit, please read this manual thoroughly.

**⚠ This device is programmed for the included earphone models based on manufacturer-supplied nominal electroacoustic sensitivity specifications. Small variations in effective calibration may be expected, based on differences in laboratory measurement technique and individual ear canal size variance.**

# Cautions

- ⚠ Use this device only as directed in this user manual. Read this manual in its entirety before using this device.
- ⚠ This is a measurement device only and predicts population-average hearing risk, not individual risk. Additional outside factors such as genetics, lifestyle choices and exposure to certain chemicals increase the risk of hearing damage. Consult your audiologist for additional information.
- ⚠ Hearing levels and exposure times are based on proper earphone insertion. Make sure your earphone sound ports are free of cerumen (earwax) and debris. Variations due to sound port blockage, poor insertion, or improper fit may cause a discrepancy between the level reading and the actual levels encountered.
- ⚠ Do not use this device to listen to levels and/or exposure times above what is indicated as safe.
- ⚠ This device uses a rechargeable Li-Ion (lithium ion) battery. Please consult the factory for replacement. To reduce the risk of fire and burns, do not disassemble, crush, puncture, or dispose of in fire or water.
- ⚠ Avoid dropping or other impacts to the device. Also, avoid excessive moisture, extreme temperatures, and prolonged exposure to sunlight or UV light. To clean, turn off device and use a soft, lint-free cloth.
- ⚠ dB Check Pro has no user serviceable parts inside. Disassembly, modification, or attempting repair will void your warranty.

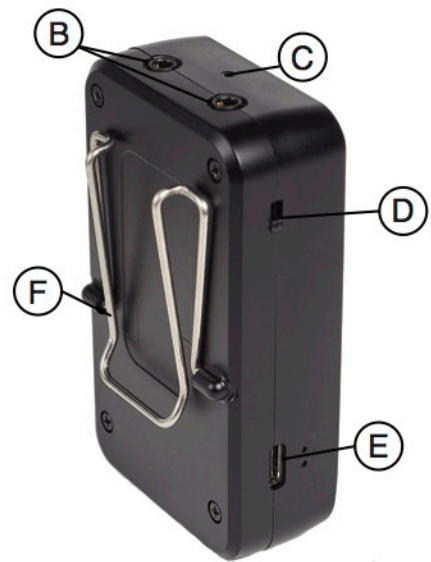
# Product Contents

The dB Check Pro includes the following items in its Crush-proof Pelican® case:

- dB Check Pro in-ear sound level analyzer
- USB-C cable for battery charging and firmware updates
- stereo interconnect audio cable
- Quick Start Guide (inside label of case)



# Connections and Controls



- A - Pressure-sensitive display screen (front panel)
- B - Audio input/output jacks (2) (top panel)
- C - Integral room microphone (top panel)
- D - Power switch (left panel)
- E - USB-C charging port (left panel)
- F - belt clip (back panel)

## Pressure-sensitive display screen

All controls other than Power (on/off) are accessed via the display screen. A pressure-sensitive screen was chosen to minimize accidental changes. This is NOT a capacitive touch screen (like your phone or tablet). Press the gear icon at the upper right for setup and adjustment of dB Check Pro. Full details are found in the Setup and Operation sections.

## Audio input/output jacks

The two stereo mini-jacks on the top panel make it easy to insert the dB Check Pro in-line between the sound source and the IEMs or headphones, using the included audio jumper cable. The jacks are wired so that either can be used as input or output.

## Ambience microphone

The small port on the top panel houses an integrated microphone used to measure room ambience.

## Power switch

The on/off switch to power dB Check Pro is located near the top of the left side panel.

## USB-C charging port with LED indicators

The charging port can be used with any standard mobile phone wall charger or computer USB-A port, using the supplied USB-C cable. This port is also used for firmware updates.

# Setup and Operation

Before using dB Check Pro, make sure its battery is fully charged and all Setup selections have been made.

## Charging the Battery



dB Check Pro uses an internal lithium-ion rechargeable battery, which is partially charged when shipped. The battery should be fully charged prior to initial use, as follows:

1. Turn the Power switch to Off. (dB Check Pro does not operate while charging.)
2. Use the supplied charging cable to connect the USB-C port of the dB Check Pro to any standard (5V DC) mobile phone charging module, either via wall power or a standard USB-A port on a computer.



3. While charging, the green and red LEDs above the USB-C port will both light. When the red LED turns off, the dB Check Pro is fully charged.
4. When charging is complete, unplug and store the charging cable.

A full charge provides roughly 11 hours of operation. A 4-bar battery status display is found at the upper-left corner of the main screen.

## Mapping the HOME screen Views

When powered on, dB Check Pro displays its HOME screen, showing the View used most recently (see photos). This section will help familiarize you with its screen content, layout, and controls in each of the three Views.



The top row of the HOME screen functions as a status bar. It shows (left to right) the current battery status (1-4 bars), the IEM/headphone model selected (or ROOM MIC), and the Tool (gear) icon used to reach the Setup screen.

### IEM ONLY view:



### ROOM ONLY view:



For these View selections, the current average A-weighted level (Avg dBA) is centered below the top row and framed in a green outline, with the View mode to its left. Beneath those are Allowable Time (safe listening time) displays for the current Avg dBA under both NIOSH and OSHA safety standards.

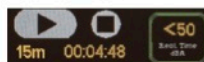
### For IEM and ROOM MIC view:



This is the factory default screen, displayed on initial power-up. All information for both IEM level and Room level are displayed separately and simultaneously, with Allowable Time figures to the left and Avg dBA to the right. The IEM data appears first, with the Room data immediately below it. There are also dual Real Time dBA displays located at the bottom right of the screen.



Beneath the Average dBA and Allowable Time displays are the operational controls: Start/Pause and Stop/Reset buttons. The alternating Start/Pause button starts (and pauses) audio level averaging for the duration selected during setup. Pressing the Stop button once ends the current session, displaying the final averages. Pressing Stop a second time clears the display.



Immediately below the start/stop buttons, the current Timer duration selection and running time for the current operation are displayed. Finally, at bottom right, you'll see the constantly-changing simultaneous (1-second average) audio levels (Real Time dBA).

**NOTE:** The only active controls on the HOME screen are the Tool button (upper right) and the Start/Pause and Stop/Reset buttons.

# Setup Screens

Before using dB Check Pro, you must go through a setup procedure to select your listening device, set the Timer duration, and choose your display View. dB Check Pro will always default to its most recent setup every time it is powered on.

To start Setup, press the Tool (gear) icon. This will take you to the Setup screen. After each selection, dB Check Pro will return you to the Setup screen.



## 1. Select Model

On the Setup screen, press Select Model, then navigate to your IEM or headphone model as follows: Use the PREV and NEXT buttons to find your Brand (manufacturer), then press Select. This takes you to another selection screen, where you repeat the process to find and select the IEM or headphone model being used.

Note: Each IEM model is programmed using its manufacturer sensitivity specifications. Using a different IEM than the model selected during Setup will yield inaccurate, potentially misleading results.



## 2. Set Timer

dB Check Pro averages sound levels over time. The timer can be set to run for 1 minute, 15 minutes, 60 minutes, or Continuous (open-ended). Selecting one will return you to the Setup screen.



## 3. Select View

This choice selects the display view for the HOME screen during use. You have three options: IEM ONLY (in-ear levels), ROOM MIC ONLY (room ambience levels), or IEM and ROOM MIC (both) as your display view.

After all selections are made, go to the bottom of the Setup screen and press HOME.




# Operation




After setup, you're ready to use dB Check Pro. First, use the supplied audio jumper cable to insert the device in-line between the sound source and your IEMs or headphones, using the input/output jacks on the top panel. Note: Either jack can be used for the sound source input or IEM/headphone output. Once connected, turn the Power on. This will take you to the HOME screen.

To begin, simply press the triangular Start/Pause button.  This begins averaging your levels for the duration chosen.

Note that this changes the alternating button graphic to two vertical bars (Pause).  Pressing this button pauses averaging (and the timer) during breaks. To resume averaging, press the Start button again.

Once started, dB Check Pro displays its calculated estimate of the actual average sound levels being delivered to your ears for the View selected. Use this information to assess your risk level and adjust your listening levels in accordance with the typical length of your rehearsal or performance.

Pressing the Stop button (square icon)  ends the current Timer period, turning the icon orange. This freezes the current display, showing current average level in dBA and its associated Allowable Times. Pressing the Stop button a second time clears the display, ready to start again.

**NOTE:** Starting, pausing, or stopping only applies to level averaging. It does not affect sound levels or sound quality in any way. In fact, you can listen normally even with dB Check Pro turned off.

# Using Measurement Results to Protect Your Hearing

In general, hearing health professionals recommend keeping listening levels at 85 dBA or lower. When listening at higher levels, daily exposure time becomes the critical factor in minimizing the long-term risk to your hearing health.

Along with Average dBA, dB Check Pro displays two Allowable Time figures, showing the daily safe exposure time for the current Average Level in hours and minutes, under NIOSH and OSHA standards. NIOSH is more conservative (stricter), while OSHA is less restrictive but still useful as a guideline. Sensaphonics strongly recommends using NIOSH standards as your guide. See the chart below for an overview of the differences. Of course, dB Check Pro shows the results more precisely and in real time.

## SAFE EXPOSURE TIME

Level, dBA	85	88	90	91	94	95	97	100	105	110	115
NIOSH	8 hr	4 hr		2 hr	1 hr		0:30	0:15			
OSHA	16 hr		8 hr			4 hr	3 hr	2 hr	1 hr	0:30	0:15

According to the National Institutes of Health, approximately 28 million Americans have a hearing impairment. Musicians are especially at risk, and incidence increases with age. Yet noise-induced hearing loss (NIHL) is preventable. Since most victims of NIHL do not experience tinnitus or other warning symptoms, it is important to have your hearing checked annually.

A note on NIOSH and OSHA guidelines: Both systems predict average risk across the population, not individual risk. According to the U.S. Dept of Health and Human Services, the excess risk of developing occupational noise-induced hearing loss (NIHL) is only 8% when following the NIOSH guideline, and 25% with the OSHA guideline (source: NIOSH Publication No. 980126). For this reason, Sensaphonics strongly recommends using the NIOSH scale as your guide.

For additional information on hearing conservation techniques for performing artists, we recommend these websites:

[www.sensaphonics.com](http://www.sensaphonics.com)  
[www.nhca.org](http://www.nhca.org)  
[www.niosh.gov](http://www.niosh.gov)  
[www.osha.gov](http://www.osha.gov)



# Brands and Models Library

dB Check Pro is a professional device, designed to serve the needs of musicians and sound engineers, on stage, rehearsing, and in the studio. It is programmed to work with the listed products below, comprising over 130 professional models from 12 major manufacturers on its initial release (Version 1.0). Using dB Check Pro with any other models will result in unpredictable and inaccurate readings.

BRAND	MODELS				
Sensaphonics	3D AARO	3MAX	2MAX	2X-S	D2
ASI Audio	3DME ( <i>applies to 3DME Custom Tour as well as universal-fit</i> )				
Etymotic Research	ER3SE/XR	ER4SR/XR	ER4B,ER4S	ER4PT	MK5
	HD5	Ety-kids	ER2SE/XR	HF3	EVO
Shure	SE112	SE215	SE315	SE425	SE535
	SE846	SRH144	SRH145	SRH240A	SRH440
	SRH550DJ	SRH750DJ	SRH840	SRH840A	SRH940
	SRH1440	SRH1540	SRH1840		
JH Audio	Roxanne	16v2 Pro	JH11 Pro	Sharona	Sheena
	Layla	Jolene	Contour XO	JH7	JH11
	JH13 V2	JH16 V2	Ambient Pro		
Ultimate Ears	UE 5	UE 11	UE 18+	UE Live CSX	UE 11 Pro
	UE 7 Pro	UE Reference	UE 7	UE 5 Pro	UE 6 Pro
	UE RR				
Sony	MDR-7506	MDR-1AM2	MDR-Z7M2	MDR-Z1R	IER-M7
	IER-M9	IER-Z1R			
Sennheiser	HD 280 Pro	IE 500 Pro	HD200 Pro	HD 300 Pro	HD 400 Pro
Beyerdynamic	DT 770 Pro-32	DT 770 Pro-80	DT 770 Pro-250	DT880 Pro	DT 990 Pro
	DT 150	DT 240 Pro	DT 700 Pro X	DT 770 M	DT 797 PV
	DT990 Pro X	DT 1770 Pro	DT 1990 Pro	Creator 24	Creator Pro
Audio-Technica	ATH-M50x	ATH-E40	ATH-E50	ATH-E70	ATH-IEX1
	ATH-CK2000TI	ATH-CM2000TI	ATH-M20X	ATH-M30X	ATHM40X
	ATH-M60X	ATH-M70X	ATH-R70X		
Westone	Mach 10	Mach 20	Mach 30	Mach 40	Mach 50
	Mach 60	Mach 70	Mach 80	Pro X10	Pro X20
	Pro X30	Pro X50	AC10	AC20	EAS10
	EAS20	EAS30	ES10	ES20	ES30
	ES40	ES50	ES60	ES70	ES80
64 Audio	A2e	A3e	A3t	A4s	A6t
	N8	A12t	A18t	A18s	Duo
	U6t	Nio	U12t	Trio	U18t
	U18s	Fourte	Fourte Blanc		

If your specific IEMs or headphones are not listed, that means dB Check Pro has not been programmed for them. Sensaphonics does plan to issue occasional firmware updates to add new and in-demand brands and models as needed. Firmware updates will be downloadable from our website to your dB Check Pro via its USB-C charging cable.

# Technical Notes

- The View selection only changes the display. When powered on, data for both the IEMs and Room Mic is always being collected, independent of the View selection.
- Earpiece dBA-SPL figures are determined by the manufacturer-specified sensitivity of the selected listening device and measurement of the in-use driving voltage. The averages of these dBA-SPL numbers over the measurement interval are then translated into Allowable Time under NIOSH and OSHA protocols.
- Levels and Allowable Times are only as accurate as the manufacturer's published specifications. Sensaphonics has used these specifications in good faith, and assumes no liability for any technical or typographical errors caused by inaccurate information.
- Actual levels experienced may vary from dB Check Pro calculations due to various independent variables, including but not limited to: ambient noise leakage, malfunctioning drivers, bone conduction, etc.
- dB Check Pro uses the level of the louder earpiece for both its average and real-time calculations and displays.
- dB Check Pro uses population-average ear canal resonance in its calculations. Individual differences in ear canals may affect the actual levels experienced.
- Both the real-time and average dBA figures assume full and proper insertion of IEM earpieces, and IEM sound ports unobstructed by cerumen (ear wax) or other debris.

For these reasons, all results should be considered estimates. Based on internal testing of dB Check Pro with our own IEMs, Sensaphonics is confident in its efficacy for the specific purpose of setting safer listening levels.

# Specifications

Model	dB Check Pro
Weight	94 grams (3.3 oz.)
Size	85.5(H) x 49.3mm(W) x 24.4mm(D; 32mm w/battery clip)
Frequency Response	A-weighting
Dynamic Range	
- Microphone	50 to 130 dBA-SPL
- IEM	50 to ~130 dBA-SPL (dependent on IEM model)
Battery	Li-Ion, USB-C rechargeable
Battery Life	~11 hours per full charge Minimum 500 charge cycles

dB Check Pro is covered by U.S. patent # US 8,218,784 in cooperation with Tension Labs. Sensaphonics warrants dB Check Pro against defects in materials and workmanship for one year in normal use. For repairs or questions, please contact Sensaphonics directly.

*Sensaphonics*  
Respect Your Ears™



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