

# DALI iO-12

## MANUAL

VERSION 1.0 - AUGUST 2023



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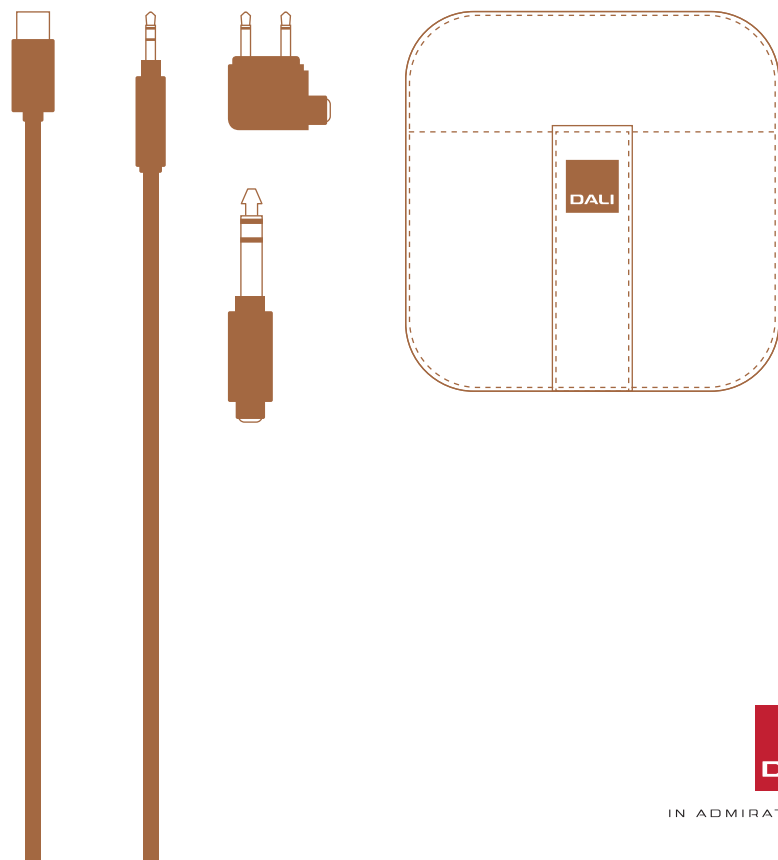
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# 1. INTRODUCTION

Thank you for choosing DALI IO-12 headphones. At DALI, we are driven by a raw passion for music and its honest reproduction. The development and refinement of new technologies to increase the realism of the sound experience is the main objective in our quest to create what we believe to be the finest audiophile wired and wireless headphones in the world.



Your **DALI IO-12** headphone packaging contains:

- 1.2 m USB-C cable (for charging and USB audio)
- 1.2 m long 3.5 mm mini jack stereo cable
- 3 m long 3.5 mm mini jack stereo cable
- 3.5 mm stereo mini jack to 6.3 mm jack adaptor
- Flight adaptor
- Luxury travel case

## NOTE

Please be careful not to damage any items while unpacking the carton. In the unlikely event that anything is missing, please contact your DALI retailer or distributor. You may wish to consider keeping the packaging for potential future use. Otherwise, please dispose of the packaging responsibly, recycling components as appropriate.

## 2. DALI IO-12 TECHNOLOGY AND SOUND QUALITY

Your DALI IO-12 headphones incorporate multiple technologies and engineering solutions designed to perfect their audio performance and ensure that their sound quality is among the best available.

### ■ SMC Drivers

DALI is acknowledged worldwide as a pioneer in the use of non-conducting magnetic materials, such as our unique Soft Magnetic Compound (SMC), in speaker drivers. Our DALI KORE flagship audiophile speaker, for example, owes its genre-defining performance partly to SMC. And now, with the IO-12, the same patented SMC technology has been incorporated in a pair of headphones for the first time.

Despite their difference in size, headphone and speaker drivers share a very similar architecture. As is the case with DALI SMC speaker drivers, DALI SMC headphone driver components that would normally be made from iron based materials are manufactured in SMC. While it is intensely conductive to magnetic fields, SMC is electrically non-conducting, so its use ensures that distortion causing eddy currents set up by voice-coil movement in conductive motor components are prevented. SMC also minimises voice-coil inductance modulation, again significantly reducing distortion. SMC in the DALI IO-12 results in a significant increase in clarity and musical communication. SMC defines a ground-breaking advance in headphone audio quality, and it is unique to DALI.

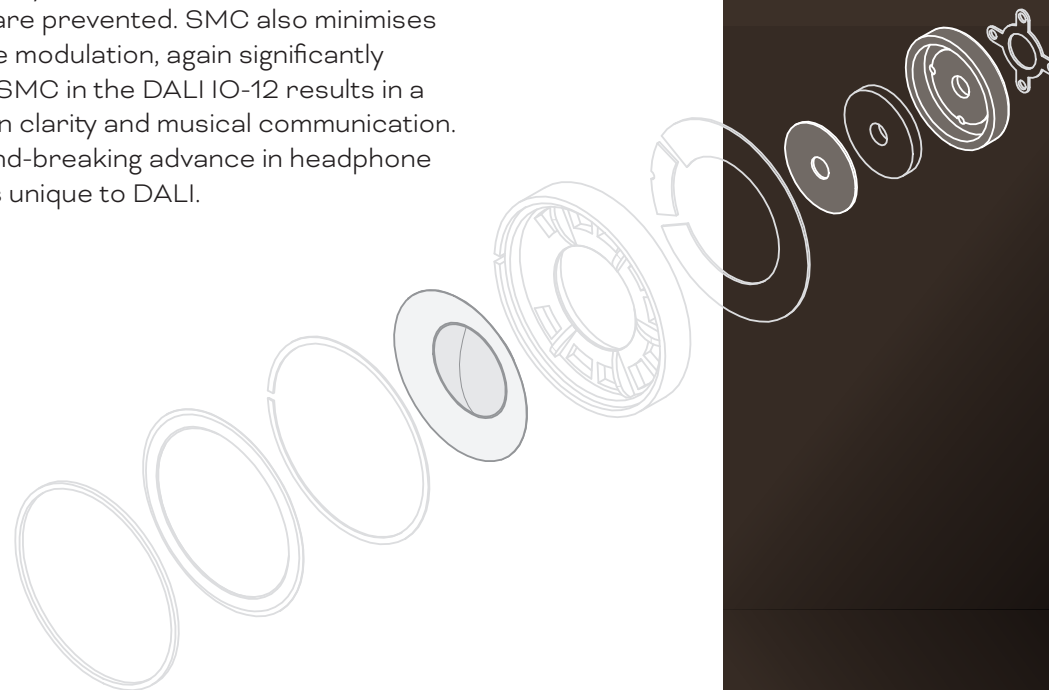
### NOTE

The top plate, bottom plate and pole piece of the magnet system is made entirely from SMC.

Along with the neodymium magnet disc, this means that the IO-12 is our very first driver to not use any iron in the magnet system.



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## 2. DALI IO-12 TECHNOLOGY AND SOUND QUALITY

### ■ Paper Fibre Driver Diaphragms

DALI speaker driver diaphragms are made exclusively from proprietary paper and wood fibre materials refined over decades of development. A closely related paper fibre material is used in the IO-12 drivers that employs randomly aligned fibres of variable length to create a light yet stiff diaphragm that offers optimal damping. The result is natural, relaxed sound quality brimming with detail.

### ■ Hi-Res Audio Certified

The IO-12 supports from 16 - 24 bit audio with sample rates from 32 – 96 kHz. The DALI IO-12 internal audio processing is based on 48kHz audio sampling – the same rate as most USB and Bluetooth aptX Adaptive streamed audio sources. This means that sample rate conversion, a process that often results in audible artefacts, is unnecessary. The result is clearer and more insightful sound quality. The IO-12 also supports up to 96kHz sample rate over USB, with full 48 kHz audio bandwidth and no down sampling applied, for ultimate sound quality.



### ■ Wired or Wireless

Our aim with the new IO-12 is simple – to produce a headphone model that covers both wired or wireless use, equally brilliantly. The IO-12 is among the highest performing conventional, passive analogue headphones available, yet it can also play the wireless, noise-cancelling, on-the-go convenience role to perfection.

### ■ Bluetooth aptX Adaptive

DALI IO-12 headphones are compatible with the latest and highest performance iteration of the Bluetooth wireless audio streaming protocol: aptX Adaptive. It offers all the sound quality of previous iterations but incorporates both a significantly more effective low-latency codec and adaptive features that intelligently optimises the streaming bit rate for different media types and wireless environments.

More detailed and comprehensive information about IO-12 technologies can be found in the IO-12 White Paper available for download from the DALI website.



### 3. GETTING TO KNOW YOUR DALI IO-12 HEADPHONES



DALI IO-12 are rechargeable, Bluetooth wireless, noise-cancelling (ANC) headphones that can also be used with either a USB or a conventional wired connection with the same outstanding performance, no matter the connection type.

The control buttons, connection sockets and indicators of the IO-12 headphones are illustrated in the diagram to the left. They are described in the next sections.

#### NOTE

Your IO-12 headphones will play messages to guide and alert you to their operational status.

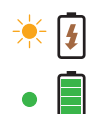
No complex and smart phone battery draining app is required for the enjoyment of your DALI IO-12 headphones. All the controls you need are on the right ear cup.

IO-12 headphones boast a remarkable 35 hour typical battery life. You should only need to charge your IO-12 headphones occasionally.



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## 4. USING YOUR DALI IO-12 HEADPHONES



### 4.1 Getting started

Your IO-12 headphones are shipped with adequate battery charge for initial use so they can be switched on and enjoyed immediately.

- To switch on your IO-12 headphones press the power button so that the green indicator illuminates. When switched on and disconnected from a battery charger, the remaining battery charge level will be displayed by the battery indicator. The battery indicator will change colour from green (>50% charge) via orange to red to indicate decreasing charge. The indicator will flash red when battery charge is critically low.
- Even though your IO-12 headphones will have battery charge when first switched on, it is recommended that you connect them to a charger using the USB cable supplied. A standard USB mobile phone charger or a computer USB socket that incorporates an appropriate power supply can be used. When connected to a charger, the headphone battery indicator will flash amber while charging and illuminate in solid green when fully charged.

### NOTE

Battery charge level is reported audibly by a headphone voice prompt at switch on and when critically low.

If your IO-12 headphones are left switched on with no audio source playing, with no mini jack connection, and with noise-cancelling disengaged, they will switch off automatically after 20 minutes.



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# 4. USING YOUR DALI IO-12 HEADPHONES

## 4.2 Connection Modes

Your IO-12 headphones incorporate four different connection modes. Each mode offers features suited to different needs and scenarios. The table on the following page illustrates the features of each connection mode described in the paragraphs below.

### Wireless Active Mode

Switch on and connect your headphones via Bluetooth to a source device such as a smart phone, tablet or computer. All the IO-12 active noise-cancelling, DSP and sound mode functions will be available. This is the best connection mode for headphone use on-the-go when travelling, for freedom of movement and for avoiding cables.

### Wired Active USB Mode

Switch on and connect your headphones using the supplied USB cable to a computer with a USB audio output socket. All the IO-12 active noise-cancelling, DSP and sound mode functions will be available.

### Analogue Wired Active Mode

Switch on and connect your headphones via the supplied 3.5 mm mini jack cable to a source device with an analogue jack output. All the IO-12 active noise-cancelling, DSP and sound mode functions will be available. This is the best connection mode to use with a source device fitted with a conventional analogue headphone output. For instance, use this mode when flying/connected to in-flight entertainment systems.

### Analogue Wired Passive Mode

With your IO-12 headphones switched-off, connect them using the supplied 3.5 mm mini jack cable to a source device with an analogue jack output. In this passive connection mode none of the IO-12 active noise-cancelling, DSP and sound mode functions will be available. Use this connection mode if your IO-12 battery is exhausted or simply if you prefer the inherent sound of a particular source device or headphone amplifier. Headphone volume control in passive, and wired active mode will default to the source device.



# 4. USING YOUR DALI IO-12 HEADPHONES

## 4.2 Connection Modes

The IO-12 connection modes described on the previous page are illustrated in the table below.

|                           | Wireless Active Mode | Wired Active USB Mode | Analogue Wired Active Mode | Analogue Wired Passive Mode |
|---------------------------|----------------------|-----------------------|----------------------------|-----------------------------|
| Internal Amplification    | ●                    | ●                     | ●                          | –                           |
| Digital Signal Processing | ●                    | ●                     | ●                          | –                           |
| D to A Conversion         | ●                    | ●                     | –                          | –                           |
| Active Noise Cancellation | ●                    | ●                     | ●                          | –                           |
| Control Buttons           | ●                    | ●                     | –                          | –                           |
| Voice Assistance          | ●                    | –                     | –                          | –                           |
| Sound Modes               | ●                    | ●                     | ●                          | –                           |
| Hands-free Telephony      | ●                    | –                     | –                          | –                           |



## 4. USING YOUR DALI IO-12 HEADPHONES

### 4.3 Bluetooth Connection

To connect your IO-12 headphones to a Bluetooth audio source such as a smart phone, the headphones must be switched to Bluetooth pairing mode.



- To engage Bluetooth pairing mode, press and hold the Power button for 1 second. The headphone Bluetooth indicator will pulse blue to indicate pairing mode.
- Now, open the Bluetooth setup menu on the device you wish to pair with your IO-12 headphones and select “DALI IO-12” in the list of available connections.

The Bluetooth indicator on the headphones will illuminate continuously blue when connected to a Bluetooth device. When you subsequently play music or make and receive calls from the Bluetooth device, its audio stream will be routed through the headphones.

Your IO-12 headphones will remember a total of four previously connected Bluetooth devices and will automatically attempt to connect to the most recently used device when switched on. If the most recently used device is not available, the headphones will work down the list of previously used devices.

The IO-12 additionally supports Bluetooth Dual Mode that enables simultaneous connection of two sources to the same headphones, – a smartphone and a computer for example.

### NOTE

If no device is paired within 3 minutes, your IO-12 headphones will automatically disengage Bluetooth pairing mode.

You may need specifically to select your IO-12 headphones as the playback device in some audio apps.

If required, you can rename your IO-12 headphones via the Bluetooth setup menu of a paired audio device.

If your IO-12 headphones are playing audio via a USB connection when a Bluetooth connection is made, the Bluetooth connection will take priority.

## 4. USING YOUR DALI IO-12 HEADPHONES



### 4.4 Wired Connections

#### Analogue Audio Connections

You can use a mini jack cable to connect your IO-12 headphones to a device with a conventional headphone output.

- Simply connect the supplied cable to the socket in the left headphone cup and to the source device's headphone socket.

Your IO-12 headphones don't need to be switched on to play audio via a mini jack cable connection so they can be used in this passive mode even if their battery is exhausted, and with no loss of sound quality either.

### NOTE

Active noise-cancelling will not function when IO-12 headphones are used in passive mode.

If your IO-12 headphones are playing audio via a Bluetooth or USB connection when a mini jack plug is inserted, the mini jack connection will take priority.

## 4. USING YOUR DALI IO-12 HEADPHONES



### 4.4 Wired Connections

#### USB Connections

You can play audio on your IO-12 headphones via a USB connection to a laptop or desktop computer.

- Simply connect an appropriate USB cable to the socket on the right headphone cup and to a computer USB socket.

The headphones will become available to the computer as a USB audio output device.

Of all the IO-12 headphones connection modes, USB is likely to provide the best sound quality. This is because a USB connection avoids the extra digital signal processing and potential for transmission errors of wireless connection.



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### NOTE

If the computer USB socket incorporates an appropriate power supply, the headphone battery will charge while connected.

Mini jack and Bluetooth audio have priority over USB audio. USB audio will mute when a headphone Mini jack connection is made or Bluetooth audio is played.

## 4. USING YOUR DALI IO-12 HEADPHONES



### 4.5 Controlling Your DALI IO-12 Headphones

When your IO-12 headphones are connected to an audio device via Bluetooth you can control audio playback via a button built into the centre panel of the right headphone cup. If the Bluetooth audio device is a smart phone, the button can also be used to answer and end phone calls.

- Press the button once to play or pause audio, or to take or end a phone call.
- Press the button twice in quick succession to skip audio playback to the next track.
- Press the button three times in quick succession to skip audio playback to the previous track.
- Press and hold the button to engage a smart phone virtual assistant (Siri, Google Assistant for example). Press the button once to disengage the virtual assistant.

Headphone volume for Bluetooth and USB audio sources is controlled via buttons built into the outer ring of the right headphone cup.

- Press the upper side of the outer ring to increase headphone volume.
- Press the lower side of the outer ring to decrease headphone volume.

### NOTE

IO-12 noise-cancelling will not function when the headphones are used in passive mode.



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## 4. USING YOUR DALI IO-12 HEADPHONES

### 4.6 Noise-Cancelling

IO-12 headphones incorporate active noise-cancelling technology (ANC) that can significantly reduce the disturbance of ambient noises – for example, general city noise or aircraft cabin noise.

IO-12 active noise-cancelling technology also incorporates a transparency option that enables ambient sounds to pass through the headphones unimpeded. Transparency can enable you to hear conversations or important ambient sounds without the need to remove your IO-12 headphones. Noise-cancelling is controlled from a push button on the edge of the right headphone cup.

- Press the button once to engage noise-cancelling and a second time to select the transparency option
- Press the button once again to disengage noise-cancelling and transparency.



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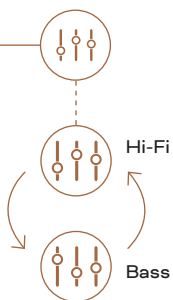
## 4. USING YOUR DALI IO-12 HEADPHONES

### 4.7 Sound Modes

IO-12 headphones incorporate two sound mode options that offer alternative audio equalisation profiles; Hi-Fi and Bass mode.

In Hi-Fi sound mode, IO-12 sound quality will reflect the frequency balance of the incoming audio signal. In Bass sound mode, IO-12 sound quality will be enhanced at low frequencies to emphasise bass instruments and musical elements. Sound Modes are selected using a push button on the edge of the right headphone cup.

- Press the Sound Mode button to toggle between Hi-Fi mode and Bass mode.



### NOTE

Bass sound mode can be useful for those who wear glasses by compensating for the bass reduction that may result from the arms of the glasses disturbing the headphone ear pad seal.

IO-12 Sound Modes options are not available when the headphones are used in passive mode.



## 5. MAINTAINING YOUR DALI IO-12 HEADPHONES



### 5.1 Ear Pads

IO-12 headphone ear pads can be removed for cleaning or replacement. The ear pads attach via a bayonet fitting.

- To remove an ear pad, simply turn it anti-clockwise and lift it away from the headphone cup.

Replacement ear pads can be ordered through your local DALI retailer or distributor, or directly from DALI at [www.dali-speakers.com](http://www.dali-speakers.com)

### 5.2 Cleaning

If your IO-12 headphones need cleaning, wipe their surfaces with a soft, lint-free cloth. A slightly damp cloth may be used for stubborn marks, but it is important that your IO-12 headphones do not get wet. The use of abrasive or solvent based cleaning fluids is not recommended.

### NOTE

When replacing ear pads ensure that they are rotated fully clockwise and click twice into position. Incorrectly fitted ear pads will impact on headphone bass reproduction and noise-cancelling performance.



## 5. MAINTAINING YOUR DALI IO-12 HEADPHONES

### 5.3 Restart and Reset

If at any time your IO-12 headphones behave erratically they may need to be restarted or, in some cases, reset to their factory configuration.

- To restart your IO-12 headphones, use a small pin, (e.g. a paper clip) to press and hold the restart button located on the right ear cup for three seconds.

The headphones will retain their Bluetooth device memory when they restart.

- To reset your IO-12 headphones to their factory configuration, press and hold both the volume up and down buttons while at the same time briefly pressing the power button while the headphones are switched on.

The headphones will restart in factory (unused) condition with no Bluetooth devices memorised.

### NOTE

If you have any questions concerning the operation or performance of your IO-12 headphones you can contact DALI support at: [www.dalispeakers.com](http://www.dalispeakers.com)



## 6. DALI IO-12 TECHNICAL SPECIFICATIONS

| IO-12                         |                                                                                                                                                               |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency range               | 10 - 48,000 Hz ±3 dB                                                                                                                                          |
| Analogue input sensitivity    |                                                                                                                                                               |
| Passive mode                  | 91 dB SPL, 1 mW @ 1 kHz                                                                                                                                       |
| Active mode                   | 300 mV rms, 94 dB SPL @ 1 kHz                                                                                                                                 |
| Impedance (Passive mode)      | 25 Ohm                                                                                                                                                        |
| Maximum SPL                   | 100 dBA                                                                                                                                                       |
| Headphone principle           | Closed back circumaural (over ear)                                                                                                                            |
| Full range driver             | 50 mm with SMC based magnet system                                                                                                                            |
| Driver diaphragm              | Free edge paper fibre cone                                                                                                                                    |
| Amplifier principle           | Fully bridged (BTL) Class D output stage                                                                                                                      |
| Connection input(s)           | Bluetooth 5.2 (wireless)<br>3.5 mm mini jack stereo<br>USB-C                                                                                                  |
| Wireless input audio codecs   | AAC<br>aptX<br>aptX HD<br>aptX Adaptive                                                                                                                       |
| Supported input audio formats | 16 - 24 bit audio<br>32 / 44.1 / 48 / 96 kHz sample rate                                                                                                      |
| Functions                     | Power ON/OFF<br>Bluetooth pair/release<br>Volume up/down<br>Play/pause/skip track<br>Take call<br>ANC modes (ON/Transparency/OFF)<br>Sound modes (Hi-Fi/Bass) |

| IO-12                             |                                                                                                                                                                                                    |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Other features                    | Wind Noise Suppression<br>Hi-Res Audio Certified                                                                                                                                                   |
| Noise reduction                   | Active Noise Cancellation (ANC)                                                                                                                                                                    |
| Hands-free calls and voice assist | Updated Clear Voice Communication (CVC)                                                                                                                                                            |
| Battery - playback time           | Up to 35 hours                                                                                                                                                                                     |
| Battery - charge time             | 1 hour and 50 minutes                                                                                                                                                                              |
| Replaceable earpads               | Yes                                                                                                                                                                                                |
| Compact storage                   | One-way foldable                                                                                                                                                                                   |
| IP rating                         | IP52                                                                                                                                                                                               |
| Weight                            | 0.37 kg / 0.82 lb                                                                                                                                                                                  |
| Shipping weight                   | 2.25 kg / 4.96 lb                                                                                                                                                                                  |
| Finish                            | Dark Chocolate                                                                                                                                                                                     |
| Accessories included              | 1.2 m USB-C cable (charging + USB audio)<br>1.2 m stereo mini jack cable<br>3.0 m stereo mini jack cable<br>3.5 mm stereo mini jack to 6.3 mm jack adaptor<br>Flight adaptor<br>Luxury travel case |

All technical specifications are subject to change without notice.

