

# Percussa AudioCubes: Reference Manual

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## 1 Percussa AudioCubes: Reference Manual

### 1.1 About this manual

This manual provides more details about the AudioCubes hardware and what you should know before using the hardware. This manual does not discuss AudioCubes software in detail.

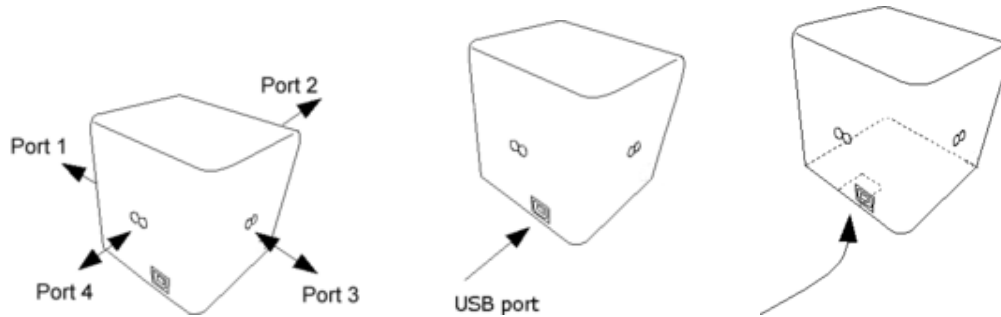
This manual is of particular importance since it includes safety instructions, and how to take care of your cubes and the built-in rechargeable batteries. It also contains information about the battery autonomy and instructions for charging the batteries over USB. Please take the time to read this manual in-depth to make sure you do not void the warranty on the AudioCubes.

### 1.2 About the AudioCubes software

AudioCubes hardware can be used with different software applications to achieve different creative results (perform live, design sounds, ...). If you are looking to start using the AudioCubes for the first time, refer to the page [what can I do with AudioCubes?](#)

We offer a suite of different applications for AudioCubes, all available through the [AudioCubes software downloads section](#). One of the simplest applications to start with is [MIDIBridge](#).

Using [MIDIBridge](#), you can send note triggers and continuous control changes, to trigger sounds and apply effects using AudioCubes. If you are using Ableton Live, there is a [HOWTO](#) that might be of interest to you: [using AudioCubes with Ableton Live](#).



### 1.3 About the AudioCubes Firmware

The AudioCubes hardware runs special software internally called "firmware". The AudioCubes applications that run on your computer work together with this firmware. This means you need to keep your AudioCubes hardware up to date with the latest firmware, to make sure they work perfectly with the latest AudioCubes software. Refer to the AudioCubes firmware upgrade tool manual for instructions on how to upgrade your AudioCubes firmware.

### 1.4 About the AudioCubes software development kit (SDK)

If you would like to build your own software that works with AudioCubes hardware, you can use the software development kit (SDK) that we created for AudioCubes. We maintain a C/C++ SDK, which allows you to use AudioCubes in almost any programming language you can imagine. Most programming languages have a way to use C/C++ libraries. If you'd like to download the C/C++ SDK, please contact us.

If you are using musical programming languages such as Max/MSP, PD or SuperCollider, you might be interested in the OSC bridge, which is a command line application that works with AudioCubes hardware and which sends open sound control (OSC) messages, allowing you to use AudioCubes very easily with these visual programming languages, without having to do any C/C++ programming. If you'd like to download OSC Bridge, please contact us.

### 1.5 About the AudioCubes

The AudioCubes are a collection of wireless battery-powered computers with built-in signal generating and processing capabilities, and full-colour light source.

They have a USB port for connecting to a computer, for charging their battery and exchanging data. Each side of the AudioCube except the bottom and top sides have a communication port capable of transmitting and receiving signals using infrared light, to and from

other cubes nearby. Notice that the orientation of the cube can be easily recognized by the location of the USB port.

Cubes can communicate with each other through this port and can exchange signals or data depending on the software running in the cube. The same infrared port can be used to sense distance to other objects nearby or to your hands and fingers. A computer can be connected to the USB port, and can control the AudioCubes hardware and change the colours of the cube.

To turn the cube on/off, press its pushbutton at the bottom side for a brief moment and release it. When the cube is turned on, it will enter a default mode and turn white.

If you press the pushbutton and hold it for a few seconds, the bootloader will start, and the light source will turn green, and then blue. This is used to download software upgrades into the cube. You should only start the bootloader if you need to upgrade the cube software, for normal operation you just press and release the pushbutton.

When the cube has been switched on, you can connect it to your computer by plugging in the USB cable on both ends. You don't need any drivers, the cubes are standard USB HID devices.

The cube's battery normally lasts a few hours, but will drain faster or last longer depending on how much light the cube is emitting. Each cube has 4 communication ports which are essentially light sources (and thus consume power), as well as a full colour light source (which consumes even more power).

If you want to recharge the cube's battery, it is recommended to connect it to a USB hub. The hub should have its own power adapter such that it can supply enough current for the battery charger inside the cube. If you need to recharge the cube's battery using your computer's USB ports, make sure the power adapter or cable is plugged into your computer, as the cubes might drain the battery of your computer (in case of a laptop).

When the cubes are connected to a hub or computer which is not connected to mains power, the battery will charge about 5 times slower than normally, and the charging may draw power from your computer's battery in the case of a laptop. We recommend you always charge the cubes from a USB port on a computer or hub which is connected to mains power. Fully charging the cubes takes about 3 hours, and they keep working without requiring a recharge for 3 to 5 hours depending on how they are used.

If you need to store your AudioCubes for longer than a few weeks without using them, discharge them completely, charge them during approximately 30 minutes, disconnect them and switch them off, prior to storing them. This prolongs the life of the batteries in the AudioCubes. Storing the AudioCubes completely discharged for more than three months may void your warranty on the batteries.

## 1.6 Technical Support

If you have any difficulties to get the cubes working or in using them, don't hesitate to contact us. Include as much information as possible, like:

- what operating system you were using (Win XP Home or Pro, service packs, etc)
- what you did with the cubes and in what order
- what software you were using
- whether your computer has detected the cubes (see the device manager, system log, etc)
- screenshots
- ...

## 1.7 Updates

Visit this website on a regular basis to check for new software for the AudioCubes and your computer. There is also a firmware upgrade tool available to update the software inside the cubes, using USB, giving you access to the latest features. See the beginning of this manual for more info on that.

## 1.8 Legal Declarations

### 1.8.1 Warranty, repairs and refunds

We cover all defects in material and labour for a period of 24 months from the original date of purchase. This warranty does not cover defects due to abuse, faulty connections or operation under other than specified conditions.

This warranty covers defects in the rechargeable batteries in the product up to a period of 12 months, and only if the user has strictly followed safety and battery charging procedures as outlined in this document.

Warranty coverage is also voided when the device is repaired by unauthorized persons, opened, or tampered with in any way. We reserve the right to refuse warranty claims, if we did not originally sell the product directly to you, the end user.

This warranty is limited to replacement or repair of the product. It does not limit the consumers' rights according to the current product liability regulations of the country where the product was purchased.

The warranty is only valid if the customer has registered on this website in the download section (visit the percussa AudioCubes software downloads section to do so). If a defect occurs during the warranty period, contact us (see percussa AudioCubes homepage for contact info).

The product can only be returned in its original packaging and with no visible wear. Before returning the unit, contact us so we know you are sending your cubes back. Make sure you package your cubes properly and insure them for the full amount you bought them for and make sure you use a shipping carrier that gives you a tracking number that works INTERNATIONALLY (this rules out regular mail because this typically does not give you a tracking number).

Also include a detailed description of the defect and a copy of your original purchase receipt. After receiving your returned product, we will contact you with next steps in the refund or repair process. There is a 15% restocking fee for returned products that are not dead on arrival.

Shipping costs for returns are carried by you, the end-user, unless the product returned has a defect and is within the warranty period.

### 1.8.2 Disposal

The following marking shown on the product indicates that it should not be disposed of as household waste. Please take the product to a waste collection point for recycling of electronic items. This notice is of particular importance when living in the European Union or a country or state with a waste collection program for electronic equipment. For further questions on an ecological friendly disposal of this product, please contact your local government office.



### 1.8.3 FCC ID: 2AHFJPWA Compliance statement (FCC)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- this device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation.

### 1.8.4 Declaration of Conformity (CE)

Percussa AudioCubes conforms to the essential requirements of the Council EMC Directive 89/336/EEC essential requirements, the essential requirements of the RoHS European Directive 2002/95/EU and the Waste European Directive 2002/96/EU. Standards applied for EMC: EN 61000-6-3, EN 55013 and EN 55022 for EMC emission. EN 61000-6-1 for EMC immunity.

### 1.8.5 Safety warnings and recommendations

The AudioCubes transmit communication signals to each other using infrared light. This light is not visible with human eyes because it is outside the range of human vision. However, the human eye is sensitive to such light, and can be damaged if exposed to very high levels of infrared light (similarly to staring into the sun when it is very intense, at noon time, for example).

Although we take great importance in your safety when using the AudioCubes, and the AudioCubes contain no dangerous electronics or harmful optical components as far as we, and the research labs we consulted, know, we want to stress here that you should never look into or bring up to eye level, the sensors/emitters which are visible at the side faces of the AudioCube.

Also, you should never point these sensors/emitters or the AudioCubes at someone else, or at your pet, or any other living being. If you cannot avoid staring into the AudioCubes sensors for any reason, we explicitly ask that you wear protective eyewear that will block infrared light. Consult with your local eye physician or optometrist, they will recommend the correct eyewear.

Do not expose the cubes to moisture, dust or dirt. Do not pour liquids into the cubes, place open containers of glasses with liquids nearby or on the cubes themselves. Do not drop or

throw the cubes, and do not damage their external housing. Do not open the cubes, there are no parts in there that you can re-use, and opening the cubes will void your warranty.

The cubes have a rechargeable battery in them which can be potentially dangerous if tampered with. Always use the cables supplied with the cubes in the packaging. Do not use long USB cables between your computer and the cubes (max. recommended length 1.8m).

Never leave your cubes charging their battery unattended. We have designed the cubes to be as safe and reliable as possible, but no battery should ever be left charging unattended. Any time you connect cubes to a USB hub or computer the built in charger of the cube will use the remaining power from your computer or hub to charge the cube's battery.

Don't open the cube, damage the battery, puncture it, apply pressure to it or set the battery or cube on fire, for your own safety. Do not put the cube into a microwave oven and do not heat the cube, its plastic housing, electronics or battery in any way. Do not leave the cubes in your car when your car is parked in the sun. Generally, avoid all heat and do not leave your cubes in the sun or heat for long periods of time.

Do not disconnect the battery, short its wires, connect the battery to other electronic systems, or attempt to recharge it using a third-party charger. If you suspect the battery is defect, contact us to obtain a replacement battery and have it installed by a qualified service technician, which we need to personally interview and approve before being allowed to open and repair the cubes. Never attempt to service or replace batteries yourself.

Do not apply pressure to the plastic enclosure, insert objects into the gaps around the connectors or push button, pour liquids into the cube, or push against the communication ports which are inserted through the holes in the plastic on the four side faces.

Do not apply excessive vibration forces to the cubes, don't drop them and always transport them in their original packaging including all protection and buffering materials.

Some parts of the cubes are fragile (such as the housing and some electronic components), so dropping them might damage your cubes and require repair. Repair work resulting from dropped cubes is not covered by the normal warranty on the product.

Keep the cubes away from high temperatures (e.g. 30 degrees C), direct sunlight and moisture. Only use a soft, dry cloth to clean the product. Do not apply any liquids or alcohol. Avoid using abrasives on the cubes housing.

Since the cubes are powered by internal rechargeable batteries, do not leave your cubes in your car on hot days for prolonged periods, as the heat might build up inside the car beyond safe levels, potentially damaging the cubes or setting the cubes on fire. You should never leave any consumer electronic device that is powered by rechargeable batteries in direct sunlight.

Do not leave kids alone with the AudioCubes, and do not let kids use the AudioCubes if they are too young to read and understand the safety warnings and recommendations in this manual. The AudioCubes are not a toy, and are intended to be a professional electronic musical instrument and computer interface, to be used by adults, or under close adult supervision.

If you need to transport AudioCubes, keep them with you in your hand luggage and make sure they are turned off, and that they cannot easily turn on by themselves in flight (pay attention to the on/off switches when you pack your AudioCubes).

Never open the product yourself, there are no user-servicable parts inside. If you think your AudioCubes need repair, contact us through this website.

## 1.9 Conclusion

In this manual we gave a quick tour of AudioCubes hardware, and covered in particular warranty, safety and the technology behind AudioCubes. We also referred you to more info about using AudioCubes, as well as AudioCubes software and what you need to do to keep your AudioCubes up to date. We also covered disposing of AudioCubes and procedures for returns, refunds and repair. Finally we listed conformity for the AudioCubes hardware (CE) and compliance statement (FCC).

This website is a great source for information about the cubes. Be sure to register with your email address in the downloads section to receive the latest updates about the software using the cubes and more.

Visit Percussa AudioCubes Software Downloads to download the latest software for AudioCubes.