# Silicon User Manual

## INTRODUCTION

Congrats on your choice of the Best and Smallest USB DAC/amp ever made.  Seriously.  You're clearly a person of culture and intelligence to select Silicon as your portable DAC/amp.

This manual is small.  Almost as small as Silicon.  It fits a tiny product with two connectors and no buttons, lights, or other user interface.  How hard can it be to use it?  Even the marketing people were able to figure it out, after 15 minutes.

In this manual, we'll cover the basics –how to use it, what are the specifications, and what kind of warranty you get.

Now enough of the fluff, let's get going…

## SYSTEM DESCRIPTION

Silicon is a USB-based DAC/amplifier.  It plugs into just about any USB port (type C, or type A with the supplied adapter) and most Lightning ports (yes, we support <shudder> Apple, for many of their Lightning devices but by no means do we guarantee all of them).

Silicon has a custom USB-to-I²S interface chip (what is I²S? It's a format used for high resolution audio between chips).  It appears to all OSes we've tried (Android, iOS, iPadOS, Windows, macOS, Linux) as a USB2.0 audio device.  All PCM formats from 8 kHz to 768 kHz, and bit depths from 8 to 32 bit are converted.  It also accepts DSD formats: DSD64, DSD128, and DSD256.  Just about any high resolution file you can buy or find today, we'll handle it.

This custom chip feeds a professional-grade DAC (Digital to Analog Converter).  We use the AK4377ECB from the renowned Japanese brand Asahi Kasei – AKM.  The 4377 handles the full range of output options from our interface chip, natively.  There is NO downsampling needed for any sampling rate; it's why we chose this DAC, it's one of the few that can handle all the PCM and DSD goodness we can decode.

The 4377 is DC coupled to our big power amplifier, a Semtech RT6863.  A full 150+ mW of output power into 32Ω loads (2.2Vrms output level), continuous.  Yes, BIG power.  The circuit around the 6863 was specially designed to ensure nearly zero offset voltage, so we can DC couple the amp to the headphones.

The result?  DC coupled performance from the DAC to the headphones.  Meaning extension down to 0 Hz (we can only measure to 0.5 Hz, though, so we claim that as the bottom end).  And the upper end is limited to 80 kHz by choice, not by sampling rate.  We keep extraneous high ultrasonic energy out of the signal path.

Silicon is almost too small.  It's the size of a 3.5mm TRS jack and USB C jack, back to back.  That's on purpose.  You should never have to think "do I want to bring my DAC with me?"   Chances are, Silicon is smaller than the 3.5mm plug on your headphones!

Silicon comes packed with all the accessories you'd expect or need:

- A short USB-C to USB-C cable
- A USB-C to type A adapter
- Our Electron adapter: USB-C to Lightning
- A sturdy metal tin, the same we use for our IEMs

## HOW TO USE

OK, hang on, this is where it gets tricky…

| | | |
|---|---|---|
| *USB C CABLE GOES HERE* | *HEAPHONES GO HERE* | *END RESULT* |

Yes, it is that easy.  Plug a USB C cable into one side, a headphone into the other, and you're done.  If you're not able to determine which is which, please return the Silicon before you hurt yourself.

Plug in, and it will just work.  Audio output will be routed automatically to the Silicon.  Use the volume controls on whatever device you've connected Silicon to.  Laptop or phone or tablet, use those volume controls.  Use whatever app you want to use to play your music.  That includes normal music players, high resolution players, dedicated apps like Tidal, Spotify, Pandora, and even websites like YouTube and TikTok.

It really IS that easy.

## SPECIFICATIONS

| | | | |
|---|---|---|---|
| **PCM** | 8 kHz to 768 kHz<br>8 bit to 32 bit | **DSD** | DSD1X to DSD4X<br>(DSD64, DSD128, DSD256) |
| **FR** | 0.5 Hz to 20 kHz, +0 / -0.1 dB<br>0.5 Hz to 80 kHz +0 / -3 dB | **Power** | 153 mW RMS @ 32 Ohms<br>2.2Vrms, 100 mA |
| **THD** | 0.0009% @ 2 mW output | **SNR** | 108 dB @ 2 mW output |
| **Weight** | 3.8 grams | **Size** | 27.7mm x 10.1mm x 12.4mm |

## WARRANTY

Two year warranty against manufacturing defects and parts failure.  Wear and tear or misuse is not covered.  See our website for more details.