



Erika Microphone System User Manual



Convergent Design

4525 Northpark Drive

Colorado Springs, Colorado 80918

www.convergent-design.com

++720-221-3861

Contents

Quick Steps to Use Erika	2
Operation of the Erika Mic System	3
How to Wear the Erika Mic.....	4
How do I charge the Erika Microphone?	4
Erika Transmission information	4
Music and Speech Modes	5
WiFi	7
Receiver Positioning	7
LED Indicators.....	8
Technical Specifications.....	9
Warranty Information	10
Customer Support	11
Regulatory Information	11
Online Resources.....	12
How do I survey my location for 2.4GHz WiFi to check for heavily used channels?	12
Safety	13



Quick Steps to Use Erika

1. The Erika Mic is black, and the Erika Receiver is white.
Plug the cable into the Erika Mic (Black) into your computer for 1 second, then remove the Erika Mic from the cable and plug in the Receiver.
2. Assemble the two-piece receiver stand (white); route the cable so that the Erika Receiver is in a vertical position. This vital step elevates the Receiver from your table.
3. Ensure that the Erika Mic is not face down. The Mic port, if facing down, turns off the Mic. The Green LED on the Receiver should be on, indicating that the Erika Mic is powered up, is in range, is paired and is unmuted.
If the Receiver LED is Red, then most likely the Erika Mic is face down, is out of range, or needs recharging. In unusual cases, it may mean that the Mic needs to be paired with the Receiver. Our factory pairs the Mic and Receiver before shipping.
4. You may now attach Erika using one of the supplied magnets.
5. In most situations, your Windows 10 computer will recognize your Erika Mic, and your software, such as Zoom, Microsoft Teams, and Google Meet, will immediately use your new Erika Mic.
6. Erika should be ready for you, so you may now speak naturally, with the full freedom to move around in your area.
7. When finished using Erika, you may set the Erika face-down to power it off.
Or you may use the USB cable and a USB power source or a USB computer port to recharge your Erika. A flashing Blue LED indicates that it is still charging. A solid Blue LED indicates that the charge is complete.
The Erika Mic is muted when charging.
8. After using Erika for the first time or testing, please recharge the Erika Mic.
The Erika Receiver (white) never needs to be charged.
9. We encourage you to read the rest of our User Manual to get the most out of your Erika.



Operation of the Erika Mic System

When you first receive the Erika, please plug the Erika Mic into a USB power source using the supplied cable. To prevent battery drain, the Erika Mic ships in a special low-power mode. Plugging the Erika Mic into a USB power source the first time prepares it for use. You only need to perform this step once.

Erika Mic's LED flashes Blue when charging and solid Blue when fully charged. It will take less than 3 hours to complete a full charge. If you wish to use it right away, there will probably be enough battery power for many hours of operation or testing. Then charge it after using or testing it for the first time.

Powering On – When the Erika Mic is in a face-down position, it is muted and powered off. To power it on, pick it up or set it in any position other than face-down.

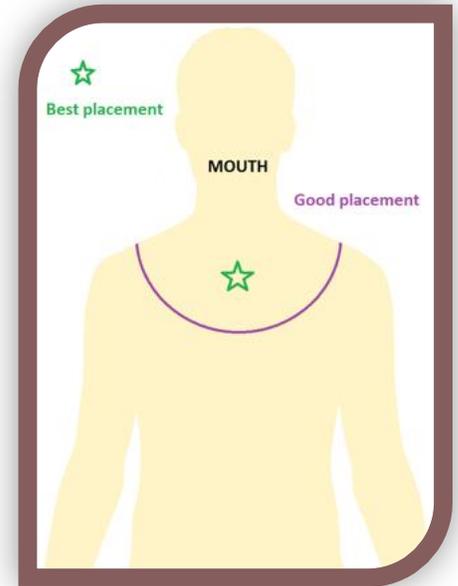
With Erika, muting and powering off is the same thing as this saves battery power. When Erika powers on, it connects (pairs) to the Erika Receiver and unmutes in less than 1/10th of a second.

If Erika is plugged into a USB power source, it will be muted and powered down, and as it is charging, the Blue LED will flash. When fully charged, the Blue LED will be on solid. Note that the Erika Mic cannot be over-charged or over-discharged. Thus, you can leave the Erika Mic on a USB power source, such as a computer or AC powered USB Power Supply. Most USB battery banks will not charge Erika, as they will shut off prematurely.

To use Erika Mic, first plug the white Erika Receiver into your computer's USB port via the supplied cable. If your computer is powered up, the Erika Receiver has USB power, the Erika Mic is in range and not in a face-down position, then the Erika Mic will power on automatically. If you power down your computer or remove the Receiver from the USB port, your Erika Mic will automatically power down.

When the Erika Mic is powered up (unmuted), paired, and in range, the Receiver's LED will be solid Green. The Receiver's LED will be solid Red when the Erika Mic is powered off (when it is in a face-down position), out of range, or unpaired with the Receiver. The Erika Mic and matching Receiver are pre-paired at our factory.

A slowly flashing yellow LED on the Receiver indicates that the Erika Mic's battery is low, with less than two hours remaining. If the Yellow LED flashes faster, it is time to recharge the Erika Mic now. You may have less than 15 minutes of runtime left.



How to Wear the Erika Mic

When wearing Erika, we suggest keeping the microphone in a vertical orientation with the mic port facing forward and the USB port pointing down, as this helps prevent rain from entering the USB port.

Erika is typically worn in the center of the chest, over the sternum 4 to 5 inches down from the wearer's chin. Other positions can work well also. If you have an implanted medical device, observe all recommendations concerning these devices. For example, since the Erika Mic has an embedded magnet and a backing magnet, keep the magnets at least 6 inches from your implanted devices.

You may also use Erika as a conference room mic; just set it face-up on the table.

After using Erika, you may set the Erika Mic face-down. Or you may disconnect the Erika Receiver from the USB port. Either way, the Erika Mic will power off. When appropriate, you may use the supplied cable to recharge Erika.

You may hide Erika behind a lapel, in a pocket, under clothing, or covered with a piece of matching fabric, with minimal effect on audio quality.

How do I charge the Erika Microphone?

You may use a computer USB port, or an AC Powered USB power supply/charger. Most USB power banks/batteries will not charge the Erika Mic, as Erika requires so little power that the power bank/battery will turn off the USB port. Note that attaching an Erika to a laptop, then closing the laptop will STOP the charging. The Blue LED will flash while charging, and a solid Blue LED indicates a full charge. While charging, the Erika microphone is muted.

Erika Transmission information

Erika uses 2.4 GHz radio spectrum to communicate between transmitter and Receiver. Erika utilizes random frequency hopping. This technique improves security and helps Erika to coexist with other 2.4 GHz devices. If interference does occur, Erika then avoids using frequencies with interference.

AutoMute

AutoMute is an Erika feature designed to help reduce “Hot Mic” moments. The goal is to help prevent private conversations and embarrassing moments from becoming public. Our AutoMute feature is not a guarantee that “Hot Mic” moments will never occur, as it requires some action on your part to set up correctly.

AutoMute is a benefit of Erika’s multiple radio power levels. With Erika, you may select an appropriate power level for your needs. The power levels are numbered 1 to 5, with 1 being the lowest power level, thus the shortest range. 5 is the highest power level, for the longest range, approximately 300 feet or 91 meters.

We recommend using the lowest power level that suits your needs. For example, many videos are created with a camera close to the subject. Thus, the distance is relatively short. In this case, the power level of 1 may be very appropriate. In other cases, Level 2 or 3 may be best. Levels 4 and 5 are the highest power levels and use more battery power.



With Power Levels 1, 2, and 3, you can expect about 24 hours of battery runtime in Speech Mode, which we will cover later, and less in Music Mode. With Power Levels 3, and 4, expect about 16 hours of runtime in Speech Mode. Thus, a side benefit of choosing a lower power level is additional runtime.

Ideally, you will experiment, in your environment, to determine the lowest power level that gives you perfect audio transmission.

With the lowest power level determined, your Erika Mic will automatically mute when you leave your approximate area or room. It may not immediately mute when you leave the room, but as you walk further away, it will. AutoMute is a considerable advantage, as when you leave the room and have a private conversation or use the facilities, your Erika Mic will probably be muted. Of course, this depends on two things: you set the power level to the lowest workable power level and left the area. We highly recommend that you test this feature in your environment.

You may be in a room in many cases, and others may be using Erika in an adjacent room. In these cases, it is best to set your power level to the lowest acceptable level so that the two Erika systems do not interfere with each other. Of course, Erika is designed to avoid interference, but it helps when the minimum acceptable power levels are used.

Firmware Updates

Erika contains firmware, which is fully upgradeable in the field. This function enables us to add features over time and to fix problems that might occur. While most computers can be used with Erika, a Windows 10 computer is needed for the firmware update process.

The firmware update process is easy.

1. Download the latest firmware update app from www.convergent-design.com to a Windows 10 computer.
2. Install the app on the computer.
3. Open the app.
4. Connect the Erika Mic to your computer using the supplied USB cable.
5. Click on Update Firmware. The process will take approximately 10 seconds.
6. Connect the Erika Receiver to your computer using the same USB cable.
7. Click on Update Firmware. The process will take approximately 10 seconds.

Music and Speech Modes

Erika supports high-quality audio optimized for either Speech or Music, your choice. Many will use Erika for speech, so Erika comes from the factory optimized for speech.

But, for those that want to use Erika for music, we have a Music Mode. Enabling Music Mode is accomplished via a quick firmware update.



Every firmware update will come in two versions: one for Speech Mode and one for Music Mode.

Speech mode is the default. Note that with Speech mode, the battery life is longer, and the Erika range is longer. Speech mode handles audio frequencies up to 11 KHz, which is more than adequate for Speech. In Speech Mode, up to 4 sets of Erika's may be used together. Thus, you can have up to four Erika Mics and four Erika receivers going into a USB 2.0 Hub, then into your computer. Using a USB 2.0 Hub as opposed to a USB 3.0 Hub is essential.

Music Mode handles audio frequencies up to 22 KHz. The battery life will be shorter, and the maximum range, with Level 5 (maximum power level), will be about 70 feet. Music Mode is also limited to two Erika Mics and two Erika Receivers in use in one area.

Music Mode is great for Music, but since there are the tradeoffs listed above, we ship the Erika in Speech Mode. Note that it takes less than a minute to load the Music Firmware version into an Erika Mic and Erika Receiver (after downloading the Music Firmware update.) You may then reload the Speech Mode whenever you desire.

Using a different firmware version for Speech and Music, we eliminate the possibility of activating Music Mode accidentally.

Using Erika with Various Programs

With Windows 10, most programs, such as Zoom, Google Meet, and Microsoft Teams, will immediately recognize and use Erika as your audio source.

Specific advanced audio programs require you to select the Erika Mic as your audio source manually. One example is Audacity.

You may change your audio source in Windows 10 by typing "Sound Settings" in "Type Here to Search." Scroll Down to "Input," and then use the drop-down box: "Choose Your Input Device."

In Mac's, you may have to select Erika as your audio source manually.

Using Multiple Erikas

Multiple Erikas may be used in the same area or with the same computer system.

1. In Speech Mode, you may use up to four sets of Erikas (4 Erika Mics with 4 Erika Receivers). You will need a USB 2.0 Hub (do not use a USB 3.0 Hub). You will need longer USB-C to USB-A cables or a USB 2.0 Male to Female Extension Cable for each Receiver. Each Receiver must be at least 1 foot, 1/3 meter, from each other.
2. You may use various programs, including OBS Studio that supports multiple microphones.
3. Many programs, such as Zoom, Google Meet, and Microsoft Teams, will only support one audio source. You may use a program, such as VB-Audio's VoiceMeeter, Banana, or Potato, to combine



multiple Erika Mics into one audio stream. We do not recommend using Virtual Audio Cable, as in our testing, we detected problems. Of course, these problems may be corrected with later versions, or we were doing something wrong. We have tested VoiceMeeter, and it worked fine with Erika.

4. In Music Mode, you may use up to two sets of Erikas (2 Erika Mics with 2 Erika Receivers).
5. For multiple Erika setups, we always recommend testing your setup in advance.
6. If you see that the ordinarily solid Green LED on the Receiver is blinking or flashing quickly, there are dropouts caused by a less than perfect signal from the Mic to the Receiver.

Please follow all of the steps in this manual, and reorient your Receivers, if possible. Determine there are obstructions in the signal path. Please refer to the topics below.

WiFi

Erika coexists well with WiFi and other 2.4 GHz devices.

In some cases, we will recommend taking the following steps:

1. Switch from using 2.4 GHz to using 5 GHz WiFi.
Switching has a side benefit as 5 GHz WiFi is much faster than 2.4 GHz WiFi.
Your download and upload speeds should be faster with 5.0 GHz unless your service is the limiting factor. Note that the range of 5 GHz WiFi is shorter than 2.4 GHz WiFi
2. Ensure that the Erika Receiver is not located close to a WiFi Router or Extender.
3. Set your 2.4 GHz WiFi Bandwidth to 20 MHz versus 40 MHz.
4. If you have multiple WiFi routers/access points, you need to assign them to the same WiFi channel. Otherwise, the RF spectrum may be consumed with WiFi traffic.

Receiver Positioning

A clear line-of-sight path from the Erika Mic to the Erika Receiver is ideal. However, this is not always possible.

1. If people are blocking the path, please elevate the Receiver above the height of the people. You may use a USB 2.0 Extension Cable to do so.
2. Other obstructions may interfere with transmission.
Attempt to locate the Receiver in such a location that the obstructions are avoided.
Note that this may not be a problem in many buildings since the 2.4 GHz signal bounces off objects.
3. If people wearing the Erika Mic will be turning around, so their back is to the Receiver, you may need to increase the Erika Power Level. Power Level 3, as opposed to Power Level 1 or 2, may solve this problem. Use the lowest Power Level that eliminates the problem.
4. If you are using multiple Erikas, keep each Erika Mic at least one foot or 1/3 of a meter from each other.
Keep every Receiver at least 1 foot or 1/3 of a meter from each other. You will need longer USB-C to USB-A cables, which are widely available from many sources. Or you may use USB 2.0 Male to Female Extension cables.
Always use the Receiver Stand or some other method to elevate the Erika Receiver off the table.



LED Indicators

Microphone - Blue

Flashing Blue: Erika Mic's battery is charging.

Solid Blue LED: Erika Mic's battery is fully charged.

Receiver - Green

Solid Green: The Erika Mic is powered on, unmuted, paired, and within range of the Receiver.

Audio from the Erika Mic is being sent to the Erika Receiver successfully.

The Erika Mic and Receiver are operating normally, and the Erika Mic is unmuted.

Receiver - Red

Solid Red: The paired Erika Mic is powered off, muted, or out-of-range of the Receiver.

In unusual cases, it may be that the Erika Mic is not paired with your Erika Receiver.

No audio is being sent to the Receiver.

Receiver - Yellow

Slow Flashing Yellow: The Receiver starts flashing Yellow slowly when less than approximately two hours of Mic battery runtime remains.

As conditions permit, maybe during a break, recharge the Erika Mic.

Fifteen minutes of recharging provides two hours of runtime.

Fast Flashing Yellow: The Erika Mic's battery is nearly empty.

Recharge your Erika Mic as soon as possible.

You may have less than 15 minutes of runtime left.



Technical Specifications

Size and Weight

Microphone: Black Plastic Enclosure (1.49 x 0.84 x 0.42 inches) or (37.79 x 21.44 x 10.56 mm)

Microphone: 0.56 ounce or 16 grams

Receiver: White Plastic Enclosure (1.49 x 0.84 x 0.32 inches) or (37.79 x 21.44 x 8.20 mm)

Receiver: 0.18 ounces or 5 grams

Microphone type: Digital MEMS (Micro Electrical-Mechanical System) Microphone

Polar Pattern – Omnidirectional, SNR (Signal to Noise Ratio) - 65dB

Audio Transmission: 100% Digital End-to-End, Full Uncompressed Audio for the highest quality

Music Mode: 44.1K, 16-Bit CD-Quality Audio, maximum audio frequency is 22 KHz

Speech Mode: 22.05K, 16-Bit Audio optimized for Speech, maximum audio frequency is 11 KHz

Battery Voltage: 3.7 volts nominal

Battery Runtime: Power Levels 1, 2, 3 = 24 hours (Speech Mode, Music Mode is less)

Power Levels 4 and 5, 16 Hours (Speech Mode, Music Mode is less)

Power Levels 1, 2, and 3 are for short to normal range, and 4 and 5 are for long-range operation.

Battery Standby Time: Mic Powered Off = 60 Days (Speech or Music Mode)

Max Distance between Mic and Receiver: Values are for a clear line-of-sight from Mic to Receiver

**Outdoors: Approximately 300 feet (91 meters) in Speech Mode,
Approximately 70 feet (21 Meters) in Music Mode**

Indoors: Up to 75 feet (23 meters)

Latency – 30 ms

About 1/33rd of a second or less than one frame of 1080p29.97 or 1080i59.97 video

Firmware Updates: Erika's firmware (internal software) is field updatable.

Speech Mode and Music Modes are enabled via separate and distinct firmware versions.

Firmware Update takes about 10 seconds to load into Erika.

Computer Operating System Requirements

Android: OS Android 10 or higher and the Android device must have a USB-C port

Older Android Devices without a USB-C port do not accept digital audio.

PC: Windows 10 or newer

Mac: Mac OS 10.10.5 (Yosemite) or higher

Chromebook: 86 or higher



Warranty Information

Convergent Design warrants Erika and all included accessories against defects in material and quality for one year, provided the Erika is register. Without registration, the warranty period is 90 days.

Convergent Design disclaims all other warranties.

Convergent Design will not be liable for damages of any kind, including, but not limited to, compensation or reimbursement on account of the failure of the Erika Mic, Receiver, or any of its accessories, or external storage systems, or any other media or storage systems to record or playback content of any type. Convergent Design's total liability, in all cases, is limited to the actual purchase price.

If you discover a defect, please contact Convergent Design, CDSupport@convergent-design.com

During the warranty period, Convergent Design, at its option, will repair or replace the product or product components, which in its opinion prove defective, provided the unit is returned, freight charges prepaid, to Convergent Design. Parts and components used in the repair process may be recycled or repaired at Convergent Design's sole discretion. Convergent Design will perform this warranty service at no charge to the registered owner, provided the product is shipped prepaid to Convergent Design.

Convergent Design reserves the right to determine whether a needed repair is subject to the warranty as per its provisions stated herein. Transit damage caused by inadequate packing voids the warranty. The warranty will be void if, in Convergent Design's opinion, the product exhibits damage through accident, misuse, misapplication, or as a result of service or modification not authorized in writing by Convergent Design.

Opening Erika voids the warranty unless specifically authorized in advance by Convergent Design.

THE FOLLOWING ARE NOT COVERED UNDER WARRANTY, AND ARE ITEMS FOR WHICH CONVERGENT DESIGN DOES NOT ACCEPT ANY RESPONSIBILITY:

Damage due to overheating conditions

Damage due to exposure to water, other liquids, or excessive dust or sand

Damage caused by dropping or other rough handling

Damage caused by any over-voltage or reverse-voltage conditions

Physical damage caused to the Mic or Receiver, including damaged caused by cable connections

Damage to any connector by using excessive force or rough handling



Customer Support

Customer support for the Erika Microphone system is available during business hours from 8:00 AM to 5:00 PM Mountain Time

You may also email cdsupport@convergent-design.com with any questions, and our technical support team will do their best to answer them promptly during business hours.

Regulatory Information

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

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate Erika
- Increase the separation between affected equipment and Erika
- Consult the dealer or an experienced Radio/Television technician for assistance.



Online Resources

How do I survey my location for 2.4GHz WiFi to check for heavily used channels?

A WiFi Analyzer is used to survey a location's WiFi channel usage. One example is the FREE Net Spot application, available here (<https://www.netspotapp.com/wlan-wifi-analyzer.html>). Net Spot has a beautiful, easy-to-use interface and is suitable for both beginners and experienced network administrators.

The Net Spot app runs on Windows, Mac, Android, iOS, providing you with a visual representation of what WiFi channels are in use, and each signal's relative strength. The more sources that send a WiFi signal out over a single channel, the less desirable it is for use because the other signals will cause interference with Erika. Erika will automatically block out channels with heavy interference. It is preferred to have as many channels available for Erika.

Another option to provide more channels for Erika is to move your local WiFi network up to the 5GHz band, turning off the 2.4GHz transmission. The Net Spot application does operate on the 5GHz channels as well, so you can see how populated those channels are.

Some other WiFi analyzers available (found through an Internet search, Apple App, or Google Play stores) include

InSSIDer – <https://www.metageek.com>

NetCut – <https://arcai.com>

Vistumbler – <https://www.vistumbler.net> – Windows only

WiFi Commander – <https://wifi3d.app>

Wireshark – <https://www.wireshark.org>

Intel's whitepaper on USB3.0 RF interference on 2.4 GHz Wireless devices – found here - <https://www.intel.com/content/www/us/en/products/docs/io/universal-serial-bus/usb3-frequency-interference-paper.html>



Safety

CHOKING HAZARD

The Erika Microphone/Receiver are small devices capable of being swallowed by unsupervised children. Not suitable for children under age 3.

The Erika Microphone/Receiver is not a toy and should not be used by any child except under direct adult supervision.

MEDICAL DEVICE HAZARD

Implantable Cardioverter Defibrillators (ICD) and Pacemakers can be adversely affected by a magnetic field. The American Heart Association, Inc. recommends keeping all magnets at least 6 inches from these devices. Thus the Erika Microphone and magnet should be kept away from these medical devices. The Erika mic will still work when placed over 6 inches from these devices.

Do not insert anything into the Erika Mic port, which is the opening on the front of the Erika Mic.

Do not immerse Erika in any liquid or allow any liquid to enter the Erika case.

Do not make unauthorized alterations to Erika or open the case.

Do not expose Erika to excessive heat

Examples are extended periods in direct sunlight, hot vehicles, or other heat.

Please dispose of it correctly, following local regulations.

The Erika mic contains a small Lithium-Polymer battery. Do not incinerate.



This symbol means the product must not be discarded as household waste and delivered to an appropriate collection facility for recycling. Proper disposal and recycling help protect natural resources, human health, and the environment. For more information on the disposal and recycling of this product, contact your local municipality, disposal service, or the location where you purchased this product. The battery in this product is not removable or replaceable.

