FlooGoo[™] FMA121 Bluetooth® Audio Source Adapter

User Guide v1.1

Flairmesh Technologies

PO Box 4086, Croydon Hills, Victoria 3136, Australia

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Introduction



LED status	Explanation	
Flash slowly	Idle	
Flash fast	Searching for pairing	
Flash 2 times in 2 seconds	Connected, audio idle	
Flash 3 times in 2 seconds	Audio or broadcast streaming	

The FlooGoo FMA121 is a Bluetooth® 5.4 audio transmitter that lets you stream sound from phones, laptops, TVs, and other devices. It supports both USB-C and 3.5 mm audio inputs, making it easy to connect to a wide range of devices.

It supports the advanced Bluetooth audio technology LE Audio, providing both unicast (music and voice) and Auracast™ broadcast audio. Thanks to its advanced design, the FMA121 offers broad compatibility with LE Audio headsets, speakers, earbuds, and hearing aids.

In addition, it supports aptX[™] Adaptive and aptX[™] Lossless codecs for high-fidelity music playback, compatible with both classic Bluetooth audio and LE Audio devices.

By default, the FMA121 receives audio through the 3.5 mm input (0.85 Vrms input level, matching most headphone output ports), while the USB-C port is used for power. The audio input source can be easily switched to USB-C using the FlooCast desktop app.

Designed as a universal solution, the device can be used for high-quality music listening, low-latency gaming, or as an infrastructure-grade Auracast transmitter for public or shared broadcast environments.

The FMA121 is officially listed by the Bluetooth SIG as an Auracast Transmitter.

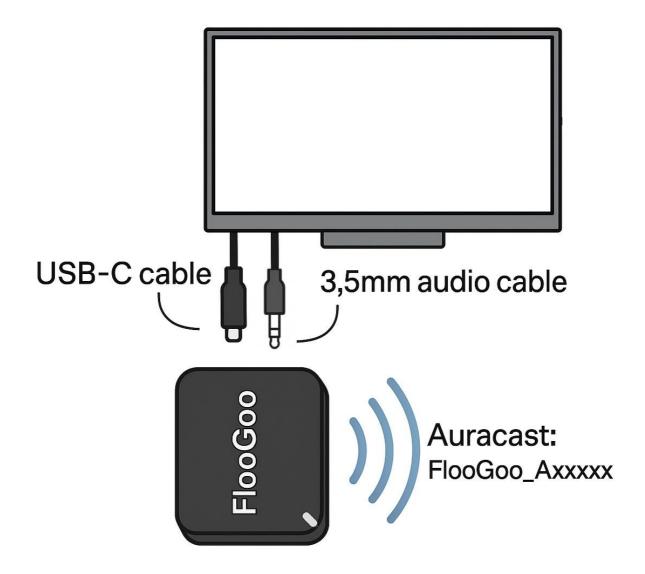
The FMA121 can also function as an **Auracast receiver**, allowing legacy phones, Bluetooth headphones, earbuds, or hearing aids to receive the latest Auracast broadcasts. For setup instructions, please refer to the dedicated manual for receiver mode:

FMA120 Auracast Receiver Mode User Manual

Trademarks

- The Bluetooth® word mark and logos, and the Auracast™ word mark, are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Flairmesh Technologies is under license.
- aptX[™] is a trademark of Qualcomm Technologies International, Ltd., registered in the United States and other countries.

Quick Start



Note: The FMA121 package includes the main adapter, a USB-C to USB-C cable, a 3.5mm male-to-male audio cable, and a USB-A male to USB-C female adapter.

The FMA121 defaults to Auracast mode, using the 3.5 mm jack as its audio source.

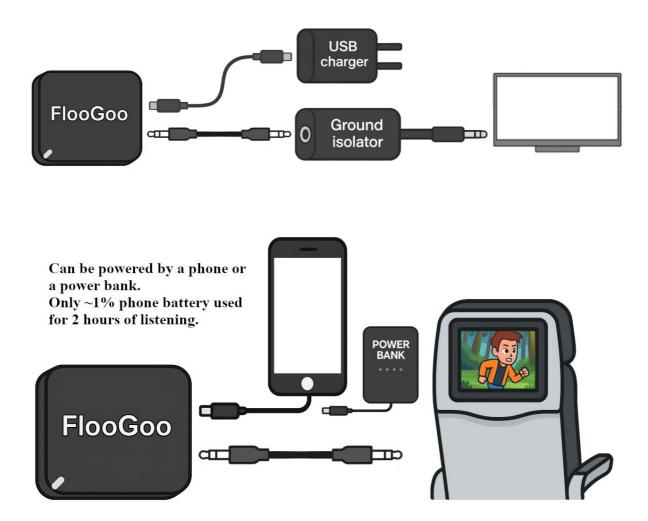
- 1. Connect both the USB-C and 3.5 mm cables to your TV or PC.
- 2. On your mobile device, search for the broadcast named "FlooGoo_A12121" (or similar) and connect.
- 3. To change the broadcast name or set an encryption key, refer to the section "Using FMA121 as an Auracast Transmitter."

Note: If you prefer not to use your mobile phone or the app to select the broadcast, please refer to the section "Direct Pairing and Managing Connections." Once your device is paired with the FMA121, it will automatically configure and start the broadcast on that device. Only additional listeners (for example, guest users) need to use their mobile phones to manually select the broadcast.

The 3.5mm jack supports 0.85 Vrms (typical headphone output). If connecting to a line-level source (1.23 Vrms), lower the source volume to avoid distortion.

Avoid Ground Loop

If you hear a **low hum or buzzing noise**, it may be caused by a **ground loop**, often resulting from powering the FMA121 and the audio source from different devices. This issue can be resolved by adding a **ground loop isolator**, or by powering the FMA121 with a **battery pack** instead of a mains-connected USB supply.



Advanced Functionalities

FlooCast Desktop App

To access the advanced functions of the adapter, please download the corresponding host app for your system.

For Windows, you can download the app from the Microsoft Store at the following link:

FlooCast on Microsoft Store

For Mac, we provide compiled app available for download at the following links. Alternatively, you can run it from the source code on GitHub.

AppleSilicon

Intel

For Linux, the app is available as an open-source GitHub repository provided below:

FlooCast on GitHub

Device Settings and Persistence

All configuration changes—including paired device information—are saved directly to the adapter, allowing you to switch it to other sources without needing to run the FlooCast app again.

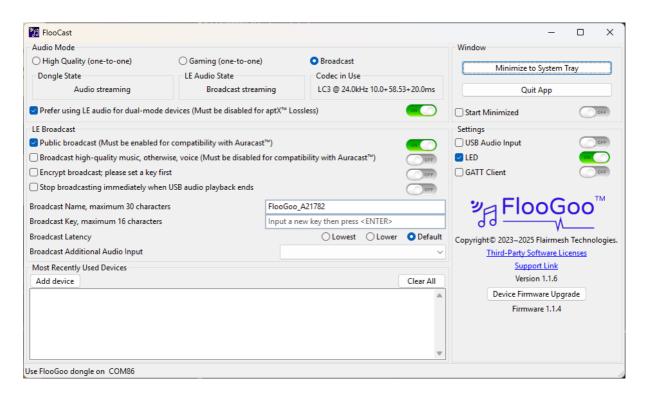
The FlooCast app is primarily used for initial pairing and configuration. Once setup is complete, the adapter will automatically reconnect to the most recently used device without requiring the app.

Using FMA121 as an Auracast Transmitter

The FMA121 operates by default as an open Auracast transmitter, using a factory-assigned broadcast name in the format "FlooGoo_xxxxxxx", where "xxxxxxx" is the same string as encoded in the QR code printed on the back of the device.

You can change this name to something more recognizable or relevant for public venues such as churches, museums, or exhibition halls.

Please note that an unencrypted (open) broadcast may not be suitable for personal or home use, such as TV audio streaming, since anyone nearby could connect. To secure your broadcast, use the FlooCast desktop app to configure the device. After setting a broadcast key, make sure to enable "Encrypt broadcast" to protect your stream.



Note: For LE Audio connections (including Broadcast), latency is displayed in the format 10.0+58.53+20 ms. These values represent three components:

- 1. 10.0ms Encoding latency at the transmitter.
- 2. 58.53ms Transport latency to compensate for potential packet loss over the air.
- 3. 20ms Decoding latency at the receiver.

For live applications such as voice broadcasts in churches, classrooms, or lecture cinemas, set "Broadcast Latency" to "Lowest." This ensures the audio remains closely synchronized with the speaker's live voice or on-screen movement, achieving near lip-sync performance.

For more information about the LE Audio broadcast settings, refer to the descriptions below.

Public broadcast (Auracast™)

Enable this option to activate Auracast public broadcasting. When turned on, the adapter functions as a Public Broadcast Source (PBS), allowing it to transmit audio openly to nearby compatible devices without requiring pairing. When this option is disabled, the adapter operates as a Broadcast Media Sender (BMS), designed for private or shared listening with one or two paired devices such as friends or family members.

Broadcast high-quality music

When enabled, the adapter will use a 48 kHz sample rate for music content during broadcasting. When disabled, the adapter will utilize a 24 kHz sample rate for voice content.

For hearing aids, please disable this option, as these devices support a maximum sample rate of 24k.

Encrypt broadcast

If enabled, an encryption code is used to restrict access to the broadcast content, like a Wi-Fi access code, and only those receivers that know the code can access it.

Broadcast Name

This is a human-readable string for the receiver to distinguish between multiple nearby broadcasters.

Broadcast Key

This is the encryption key used for the broadcast. The key can contain up to 16 ASCII characters. Some Android phones may limit the key length to 4 characters. For these devices, please use a 4-character code.

Stop broadcasting immediately when USB audio playback ends

This option applies only when the USB-C port is used as the audio source. When the 3.5 mm input is selected, the broadcast starts automatically and remains active after power-on.

When using USB-C audio, and this option is disabled, the FMA121 will continue broadcasting for approximately 3 minutes after USB audio playback stops.

Broadcast Latency

Select your preferred latency setting:

- **Lowest** Recommended for live audio or microphone use; minimizes delay.
- Lower Balanced option between audio quality and latency.
- **Default** Provides higher audio quality, but with slightly more delay.

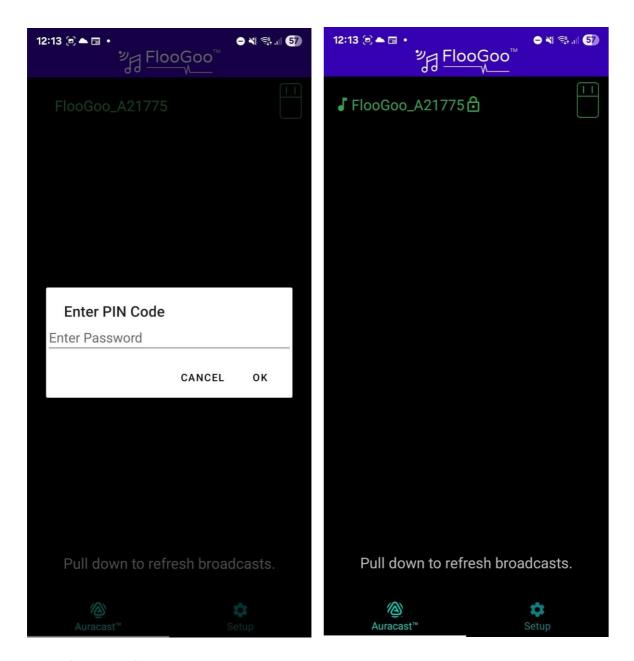
Broadcast Additional Audio Input

When the **"USB Audio Input"** option is enabled, an additional audio source can be selected to mix with the main audio in the broadcast.

To set up Auracast reception, you have three options:

- 1. Use a compatible Android device A newer Android phone that supports Auracast natively.
- 2. Use a companion app Some device manufacturers offer apps that assist with Auracast setup.
- 3. Use another FMA120/FMA121 Configure a second <u>FMA121 in Auracast</u> receiver mode.

The following screenshots show a typical setup using option 3 on a Samsung Galaxy S23.

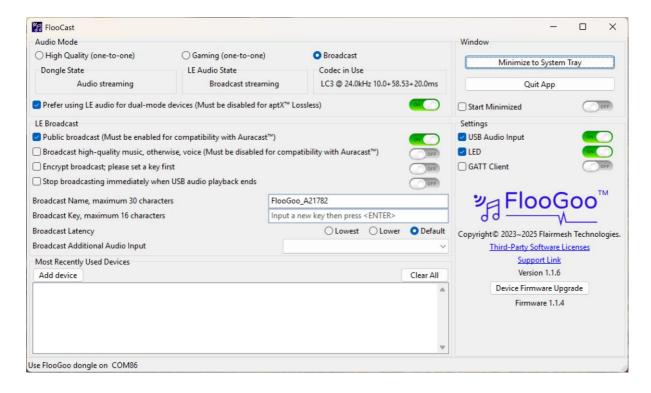


Switching Audio Input Source

When connecting the FMA121 to a device that supports USB audio (such as most smartphones), you can switch the input to USB-C, enabling both power and audio transmission through a single cable.

To activate this feature, open the FlooCast app, go to Settings, and turn on "USB Audio Input."

Note: The FMA121 uses the same firmware as the FMA120, so when the USB audio interface is enabled, it appears as "FMA120" on your device.



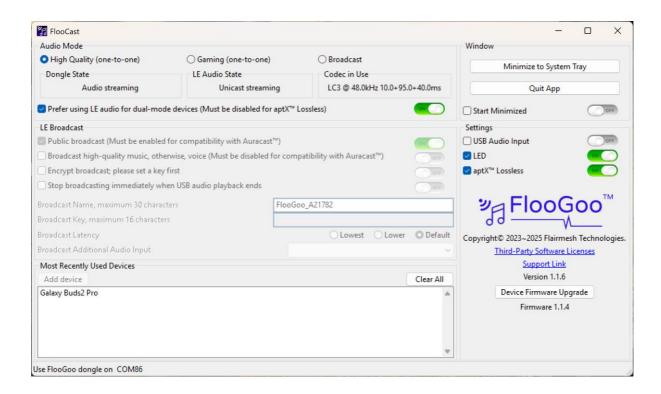
Direct Pairing and Managing Connections

To use the FMA121 in direct pairing mode with Bluetooth headsets, earbuds, or hearing aids (rather than broadcast mode), switch the operating mode to "High Quality" and pair it with your desired device.

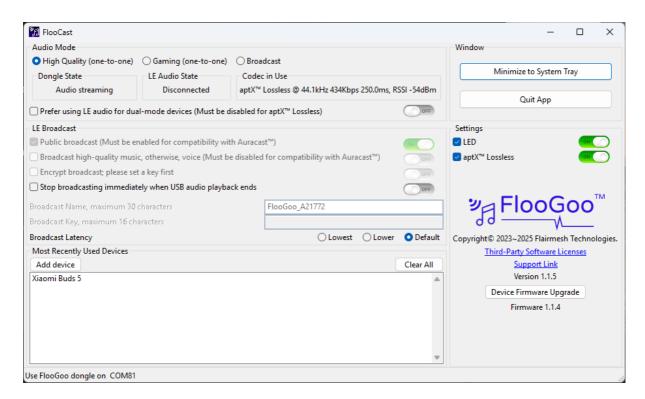
To initiate pairing, click the "Add Device" button under the "Most Recently Used Devices" section. The adapter will begin scanning for nearby Bluetooth devices that are in pairing mode and will automatically connect to the closest compatible one.

Once successfully connected, the device name will appear in the list alongside any previously used devices.

- For classic Bluetooth audio devices, do not enable the "Prefer using LE
 Audio for dual-mode devices" option. This setting is also recommended
 for most devices that support aptX™ Lossless.
- For LE Audio devices—including hearing aids—or to use the LC3 codec for lower latency gaming and improved voice call quality compared to classic A2DP/SBC, please refer to the section "<u>Using FMA121 in Unicast</u> Mode with LE audio devices."



Using FMA121 in different modes



The adapter supports three modes: High Quality, Gaming, and Broadcast.

• **High Quality**: Prioritizes the best available audio codec supported by the connected device to deliver the highest sound fidelity.

- **Gaming**: Optimized for low latency by selecting codecs and parameters that reduce audio delay—ideal for gaming or real-time applications.
- Broadcast: This is the default operating mode of the FMA121, as described in the section "Using FMA121 as an Auracast Transmitter."

The "Codec in Use" panel displays the active codec and sample rates for both the speaker and microphone. When available, the app also shows the bitrate, latency, and RSSI. For The overall status of the adapter is displayed in the "Dongle State" panel, while the "LE Audio State" panel reflects the status of the LE audio connection.

Dongle State	Description		
Idle	The adapter is not connected to any device and is in		
	standby mode.		
Pairing	The adapter is actively searching for nearby devices to		
	pair with.		
Connecting	The adapter is attempting to establish a connection with a		
	paired device.		
Connected	The adapter is connected, but no audio is currently being		
	transmitted.		
Audio Starting	The adapter is initiating a playback (audio streaming)		
	session.		
Audio Streaming	The adapter is actively streaming audio.		
	Note: In gaming mode, this state is shown even when the		
	microphone is also active.		
Audio Stopping	The adapter is terminating the current audio stream.		
Voice Starting	The adapter is setting up a voice communication session,		
	including microphone input.		
Voice Streaming	The adapter is streaming two-way voice communication		
	(e.g., for calls or meetings).		
Voice Stopping	The adapter is terminating the current voice		
	communication session.		

The table below displays the preferred audio codec when supported by the remote device under high-quality and gaming mode. If the preferred codec is not supported by the remote device, SBC is the default for classic Bluetooth devices, while LC3 is the default for LE audio devices.

	Music Unicast		Bi-directional Voice	
	Classic BT	LE Audio	Classic BT	LE Audio
High- quality	aptX™, HD, Adaptive/Lossless*/SBC	aptX Adaptive/Lossless*/LC3*	aptX Voice mSBC/CVSD	LC3*
Gaming	aptX Adaptive/SBC	aptX Lite/LC3*	aptX Voice mSBC/CVSD	aptX Lite/LC3*

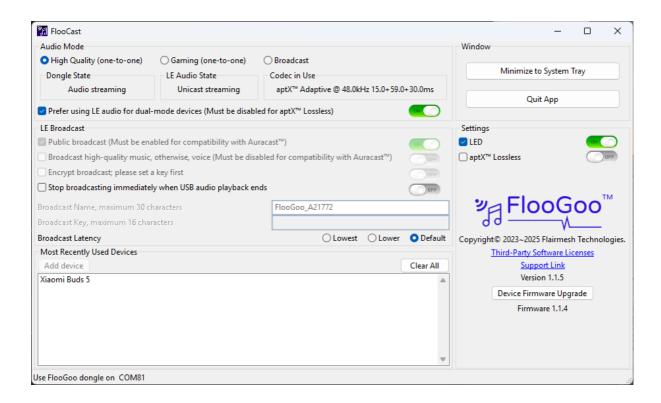
^{*} aptX™ Lossless will be activated automatically when connected to a compatible device. To ensure proper operation, please check that the audio output sample rate on your host operating system is set to **44.1 kHz** or **48 kHz** in the sound settings. Confirmed compatible devices (not a complete list) include:

Bose QuietComfort Ultra, Bowers & Wilkins Pi8, Cambridge Melomania P100, Creative Aurvana Ace 2, Denon PerL Pro, Earfun Air Pro 4, NuraTrue Pro, Sennheiser MOMENTUM True Wireless 4, Sonos Ace, and Xiaomi Buds 5.

Using FMA121 in Unicast Mode with LE audio devices (hearing aids)

When the FMA121 is used in "High Quality" or "Gaming" mode, it supports direct pairing with both classic Bluetooth and LE Audio earbuds, headphones, and speakers. In these modes, the built-in microphone channel is also enabled, allowing the device to be used for online meetings or voice chats in applications such as Microsoft Teams, Zoom, and other similar platforms.

^{*} For supported LE audio device with LC3 codec, please refer to section titled "LE Audio Compatibility and Supported Devices".



To pair LE audio, please follow these steps:

1. Disable Competing Connections

If your device has previously been paired with a mobile phone, tablet, PC, or accessories such as ConnectClip or a TV adapter, please temporarily turn off those devices or disable their Bluetooth. These devices may automatically reconnect when the device enter pairing mode, which can interfere with the FMA121 pairing process.

2. Clear Previous Connections

Open the FlooCast app and click the "Clear All" button to remove any existing paired devices.

3. Enable LE Audio Mode

Turn on the "Prefer using LE audio for dual-mode devices" option in the FlooCast app.

4. Put Device into Pairing Mode

Make sure the target device is in Bluetooth pairing mode. Refer to the manufacturer's instructions for your specific model. For many hearing aids, pairing mode automatically activates when they are removed from the charger and remain unconnected to any paired device for a short period. This behavior is also why the steps outlined in "Disable Competing Connections" are important.

5. Maintain Close Proximity (if required)

Some hearing aids, such as the Oticon Intent and Philips HearLink 9050, must be placed within 20 cm of the FMA121 to pair successfully due to manufacturer-imposed restrictions. Most Bluetooth headsets, earbuds, and speakers support a typical pairing range of 1–2 meters.

6. Start Pairing

When powered on, the adapter automatically enters pairing mode if it is not already paired with a device. It will remain in pairing mode for several minutes before returning to "Idle". If the automatic pairing period has expired, you can manually start pairing by clicking the "Add Device" button in the FlooCast app.

- * If you are unable to pair a supported device, please check whether the FMA121 is plugged into a USB port near another USB 3.0 device (such as an external HDD or SSD). USB 3.0 devices are known to emit interference in the Bluetooth frequency range, which can disrupt pairing. If this is the case, try connecting the FMA121 to a different USB port—preferably one farther from other USB 3.0 devices.
- * Some docking stations may interfere with pairing due to the limited signal strength of hearing aids. Please try plugging the FMA121 directly into a USB port on the PC for pairing. Once paired, you can use the FMA121 with the docking station for streaming.

For most LE Audio devices, including hearing aids, start pairing in **High Quality** mode. Some hearing aids also support low-latency connections, which can be enabled by selecting **Gaming** mode. If the device supports Auracast, it will automatically activate when switching to **Broadcast** mode.

For Sony Linkbuds S, WF-1000XM5 and WH-1000XM6, please use Sony's "SoundConnect" app to switch them from classic Bluetooth to LE Audio mode before pairing.

Due to current firmware limitations, the FMA121 supports only one pair of LE Audio true wireless (TWS) earbuds or hearing aids at a time when used with non-Qualcomm devices—such as those from Samsung, Sony, and most hearing aid manufacturers.

LE Audio Compatibility and Supported Devices

Supported Earbuds and Headsets

The FMA121 has been tested and confirmed to work with the following LE Audio—enabled devices (this is not a complete list):

Creative

- Aurvana Ace 2 (aptX Lite)
- o Zen Air Pro

Samsung

- Galaxy Buds 2/3 Pro
- Galaxy Buds 3

Sony

- LinkBuds S
- INZONE Buds
- o WF-1000XM5
- o WH-1000XM6

Technics

- EAH-AZ100
- Xiaomi
 - Redmi Buds 6 Pro

Supported Hearing Aids

The FMA121 also supports many LE Audio hearing aids, making it a versatile option for both streaming and voice communication:

- Beltone Serene
- Jabra Enhance Pro 20/30
- Oticon Intent

- Philips HearLink 9050
- ReSound Enzo IA, Nexia, Vivia and Savi
- Rexton Reach
- Starkey Edge AI 24
- TruHearing 7 Advanced, TH 7 Premium
- Signia 5IX, 7IX

Notes:

• For the best experience, ensure your hearing aids are updated to the latest firmware version.

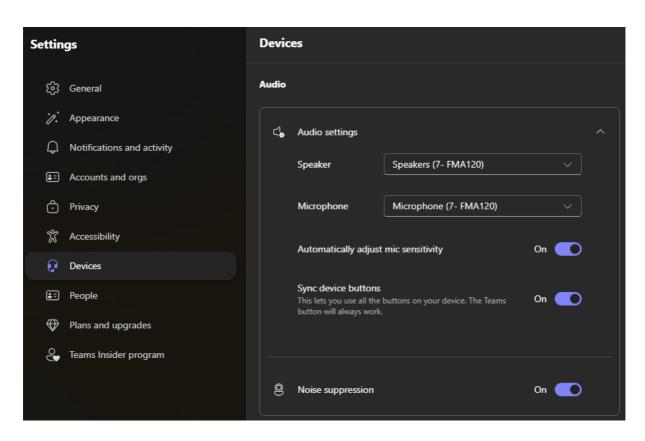
Using FMA121 with Voice Call Applications (Zoom, Teams, etc.)

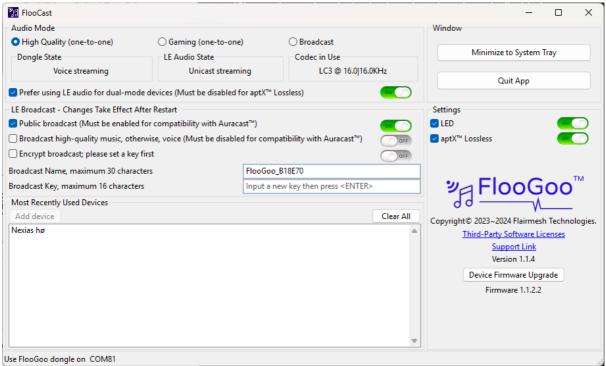
When using the FMA121 with voice call applications such as Zoom or Microsoft Teams, please follow these steps:

- Open the audio or microphone settings in the application.
- Ensure that **"FMA120"** is selected as the microphone input device. (Note: The FMA121 uses the same firmware as the FMA120, so when the USB audio interface is enabled, it appears as "FMA120" on your device.)

In "High Quality" mode, once the microphone channel is successfully enabled, the "Dongle State" on the FlooCast app will display "Voice Streaming", if it shows "Audio Streaming", it means only playback is active and the microphone is not yet in use.

In "Gaming" mode, the "Dongle State" will remain "Audio Streaming" regardless of whether the microphone is in use.





Update the FMA121's firmware

Please refer to the <u>FMA120 User Guide</u>. The FMA120 and FMA121 share the same firmware and follow the same update procedure.

Specification & Features

- Bluetooth V5.4, Class 1 Bluetooth v5.4, +15dBm BR/LE TX power, -97dBm BR and -100.5dBm BLE 1M sensitivity
- Dual-mode, compatible with Bluetooth Classic HFP/A2DP headsets/speakers and future LE audio hearables
- Qualified design, supporting A2DP, AVRCP, TMAP, PBP (Auracast)
- Optimized with Qualcomm® Snapdragon® Sound for robust connectivity and ultra-low latency
- Supports aptX[™], aptX HD, aptX Adaptive, and aptX Adaptive Lossless audio codecs
- USB-C connector with composite device capabilities, including HID and virtual COM port, allowing audio playback and voice call control from Bluetooth headsets and earbuds
- Firmware upgrade via USB for easy updates
- LE Audio Gaming mode with Voice back Channel for ultra-low latency
- LE Audio Unicast Music with media control (MCP)
- LE Audio Unicast Voice with call control (CCP)
- LE Broadcast source supports Telephony and Media Audio Profile (TMAP) and Public Broadcast Profile (PBP)
- Volume control using VCP (Virtual COM Port)
- Microsoft Teams compatibility
- CE/FCC/RCM
- Contains FCC ID 2A22WFMB120
- USB-C port, 5V
- Power consumption LE Audio Unicast: 10 mA (48 kHz) / 8 mA (24 kHz); Auracast: 18 mA
- 3.5 mm stereo input jack, supports up to 0.85 Vrms input level
- Operational Temperature: -40°C to +70°C
- Dimensions: 38.6mm x 19.5mm x 6.8mm
- Item weight: 3.8g
- Package weight: 6.8g
- Package size: 10cm x 6.2cm x 0.8 cm

Troubleshooting Q&A and Support

Q: I can't pair my device with the FMA121.

A: Please follow these steps:

In the FlooCast app, check the option "Prefer using LE Audio for dual-mode devices." Set it according to your device's Bluetooth audio specification — enable it only when pairing with LE Audio devices (including hearing aids).

Make sure the dongle's firmware is up to date.

Before pairing, turn off Bluetooth on your phone and disconnect other wireless or competing connections.

Check for USB interference — remove other USB devices temporarily to test. Faulty USB hubs or docks can sometimes cause pairing or connection issues.

Q: How can I improve the working range with my headset/earbuds?

A: You may try using a USB extension cable to relocate FMA121 to a higher and better position.

Q: Will a USB 3.0 device—such as an external HDD or SSD—interfere with the adapter?

A: Yes, this is a known issue. USB 3.0 devices can generate electromagnetic interference in the 2.4 GHz range, which may affect Bluetooth audio streaming performance.

Q: Can I use the adapter with a Raspberry Pi, smart TV, projector, or gaming console like Nintendo Switch or Steam Deck?

A: Yes. The FMA121 works as a standard USB audio device. You can complete pairing on a PC using the FlooCast app, then plug it into any device that supports USB audio.

Raspberry Pi: With the latest version of Raspbian, it is detected automatically. You can verify recognition by running the command:

aplay -l

Android-based smart TVs or projectors: Enable **Developer Mode** and make sure the **Disable USB audio routing** option is *turned off*.

Q: Do I need to keep the FlooCast app running to use the adapter?

A: No, you don't need to keep the FlooCast app running to use the adapter. The adapter retains its settings, allowing you to set it up on one host and use it on another.

Q: How do I enable the aptX codec, including aptX HD and Adaptive, when using a compatible headset?

A: The adapter will automatically select the best codec when connecting to a compatible headset, you can confirm the chosen codec in the "Codec in Use" panel in the desktop app.

Q: How do I enable the aptX Adaptive Lossless codec when using a compatible headset?

A: It will be enabled automatically when connected with a compatible headset. Please also confirm if the sample rate is 44100Hz or 48000Hz in the "Default Format" in the Windows sound device properties. You can find this setting by navigating to "Settings->Sound->Device properties->Additional device properties->Advanced". If the sample rate is set to 96000Hz, aptX Adaptive will be used instead.

Q: aptX Lossless is still not enabled after checking all the settings on the Windows/host PC.

A: Please disable "Spatio Audio" and "Multipoint" in the headset's app if lossless mode cannot be enabled.

Q: Why isn't the FMA121 listed on www.aptx.com?

A: When we release the product, we expect it to primarily appeal to users interested in the new LE audio features, such as Auracast. The FMA121 is officially listed by the Bluetooth SIG as an Auracast Transmitter. We are committed to using the latest codec from the chip vendor and regularly updating the FMA121's firmware to ensure it supports the most up-to-date features.

Q: I already have a standard Bluetooth adapter, will FMA121 conflict with it?

A: No, the FMA121 runs all its functions, including the Bluetooth stack, within the embedded high-performance processors inside. It doesn't require additional drivers on the host, so it won't conflict with other Bluetooth adapters.

Q: The FlooCast app keeps switching between "Connected" and "Disconnected."

A: Please update FlooCast to the latest version from the Microsoft Store, or download the newest Mac version from our <u>support page</u>.

Q: Where can I find the latest firmware for the adapter?

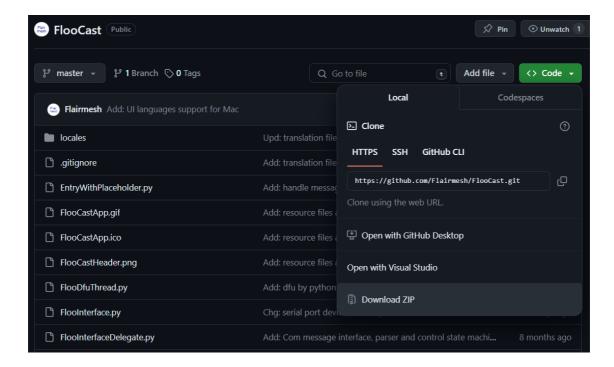
A: You can find the latest firmware through the <u>Support Link</u>, which is also accessible from the desktop app.

Q: What if I encounter other issues?

A: You can contact us via email at support@flairmesh.com.

Installation Instructions for FlooCast (Linux Users)

- If you are familiar with Git and Github, you can use the following command to download the source codes of the app: # git clone https://github.com/Flairmesh/FlooCast.git
- 2. Alternatively, you can click "Download ZIP" to get a copy of the source codes. The button can be accessed in the drop-down menu under "<> Code", shown as the green button in the following picture.



- 3. Install Python if you haven't already. The latest version can be downloaded from here.
- 4. Open a Terminal (on Mac, you can use Spotlight to search for "Terminal") window, and enter the following commands to install required modules:
 - # python3 -m pip install wxPython
 - # python3 -m pip install pyserial
 - # python3 -m pip install serial-tool
 - # python3 -m pip install certify
 - # python3 -m pip install PIL
 - # python3 -m pip install urllib
- 5. In the Terminal window, change the current directory to where the FlooCast app is downloaded (on Mac, it might be downloaded to the User's Download folder), then run the application:
 - # cd Downloads/FlooCast-master
 - # python3 main.py

Regulatory Compliance Information

Product Model: FMA121

FCC ID (module): 2A22WFMB120 GITEKI ID (module): 204-B01105 Manufacturer: Flairmesh Technologies

Address: PO Box 4086, Croydon Hills, VIC 3136, Australia

Support Contact: support@flairmesh.com

FCC Compliance — Supplier's Declaration of Conformity (SDoC)

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.

Responsible Party (U.S.): INOVACOMM INC. 245 EAST MAIN STREET SUITE 107, ALHAMBRA, CA 91801 +61434514758

The full Supplier's Declaration of Conformity (SDoC) is available at: FMA121 FCC sDoc

CE (European Union)

This product complies with the essential requirements and other relevant provisions of the following directives:

- Radio Equipment Directive (RED) 2014/53/EU
- EMC Directive 2014/30/EU
- RoHS Directive 2011/65/EU (EU RoHS)

A copy of the **EU Declaration of Conformity** is available on request at: support@flairmesh.com

RCM (Australia/New Zealand)

This product complies with:

- AS/NZS 4268 Radio equipment and systems
- AS/NZS CISPR 32 Electromagnetic compatibility
- ACMA EMC and Radiocommunications Labelling Notices

Safety and Disposal

- Do not modify this product.
- Do not expose to excessive heat or moisture.
- Dispose of this product according to local electronic waste regulations.