

Bettear

B-RTX | User Manual

Auracast™ Transceiver

Model: B-RTX

www.bettear.com

Firmware Version: 1.0.1



Highlights:

- Versatile Transceiver (Transmitter and Receiver)
- Low-Latency Audio Streaming (<40ms)
- Easy Connectivity: B-PASS and B-SmarHive
- Wide Area Coverage
- Fully Interoperable with Auracast™ Transmitters
- MP3 On-Demand Streaming and Playback (coming soon)

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OVERVIEW



Bettear's B-RTX is a versatile Auracast™ audio transceiver designed to enhance a wide range of auditory environments. It seamlessly switches between transmitter and receiver modes, making it ideal for both **tour guiding** and **assistive listening** applications.

In **transmitter mode**, the B-RTX functions as a powerful audio broadcasting tool. In **receiver mode**, it delivers a smart, user-friendly listening experience—even for users without Auracast™-enabled hearables.

Full compatibility with the **B-CASTER** series further expands its integration within larger audio systems.



Theaters

Tour Guiding

Museums

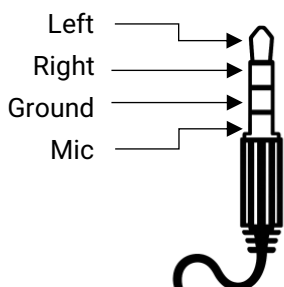
Classrooms

Legal Venues

INTRODUCING THE B-RTX



AUDIO INTERFACE



The B-RTX features a TRRS 3.5mm jack that supports headphones, headsets, neckloops and microphone connections.

*Ensure you connect an audio device that are compatible with this plug configuration.

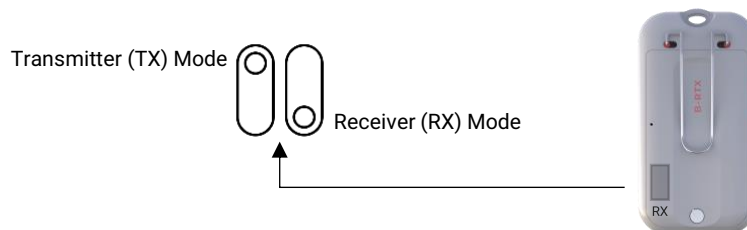
*Supports TRS or TRRS headphones.

OPERATION MODE SWITCHING

Switching between transmitter (TX) and Receiver (RX) modes is supported on **B-RTX DUPLEX and DUPLEX+** models.


To switch modes:

Remove the battery cover on the back of the device and use a pin to toggle the slide switch between TX and RX.



Note: This switch does non-functional on the **EXPERIENCE** model.

POWERING THE DEVICE ON / OFF

Press and hold the red circle button for 5 seconds to turn the B-RTX on/off 

CHARGING

The B-RTX supports two charging interfaces:

1. USB-C Charging
2. **B-SmartHive** charging via 4 pogo-pin contacts with magnetic latch.

*The **B-SmartHive** is used for both charging and programming B-RTX devices. By communicating directly with each unit, the **B-SmartHive** enables smart charging, engineered to maximize the battery lifespan.

B-RTX VARIANTS

B-RTX devices are available in multiple variants to support advanced features:

	RTX-EXPERIENCE	RTX-DUPLEX	RTX-DUPLEX+
Receiver Mode	✓	✓	✓
Transmitter Mode	x	✓	✓
Attach to Connect (NFC)	(Optional)	✓	✓
MP3 Streaming & Playback (coming soon)	x	x	✓

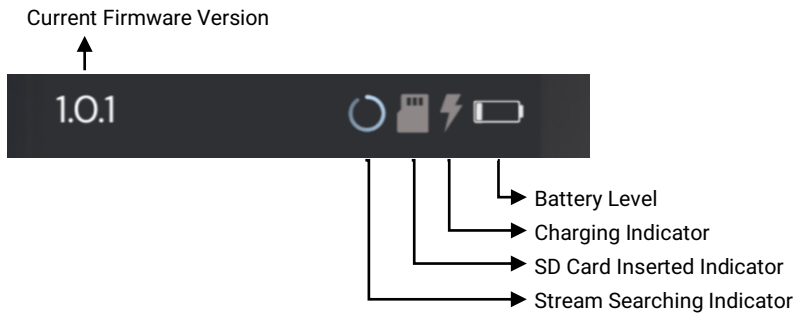
*Both **DUPLEX** and **DUPLEX+** variants can be supplied with a maximum TX Power of 10 dBm or 20 dBm, depending on local regulatory requirements.

INTRODUCING RX MODE

When operating in Receiver (RX) mode, the B-RTX can seamlessly search for and connect to Auracast™ streams.

ON-SCREEN INTERFACE OVERVIEW

At the very top of the screen is a status bar displaying:



Below the status bar is a list of available Auracast™ streams to connect.



LISTEN TO BROADCAST AUDIO (RX MODE)

1. **Connect headphones / neckloop**
2. **Turn on the B-RTX**
3. Use the up and down buttons to **scroll through available streams**
4. Press the red circle button to **join the selected stream**
5. Use the volume buttons to **adjust the audio as needed**



Notes:

***The B-RTX scans for new Auracast™ streams when not playing.**

Click the active stream again to stop streaming and resume scanning.

***A lock icon replaces the Auracast™ symbol if the stream is secure (encrypted).**

***Secure streams cannot be accessed directly from the list.**

Use a **B-PASS**, or **B-SmartHive** to access secure streams.

***An X icon replaces the Auracast™ symbol if the connection to a stream fails.**

***If no audio is playing and there is no user interaction, the device will automatically turn off after 3 minutes.**

ON-DEMAND MP3 PLAYBACK

Four files containing MP3 audio and configuration data can be created using the **SmartHive Manager** software. These files can then be loaded onto micro-SD cards inserted into B-RTX devices. This enriches the visitors experience by allowing them to listen to on-demand audio content alongside the guide's broadcast voice with automatic ducking to prioritize speech.

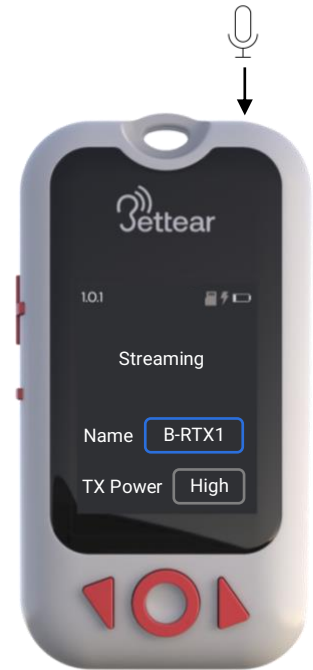
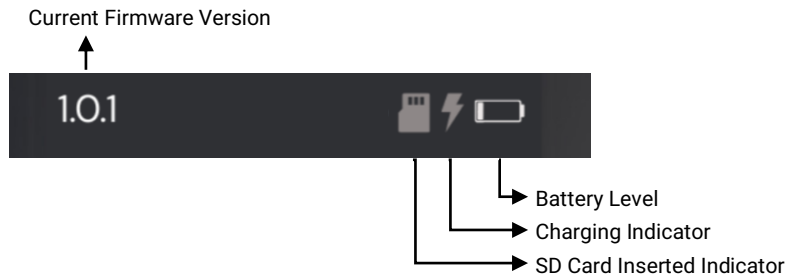
*This feature will be available in an upcoming firmware update.

INTRODUCING TX MODE

When operating in Transmitter (TX) mode, the B-RTX seamlessly samples the signal from the connected audio input or microphone and broadcasts it as an Auracast™ stream.

ON-SCREEN INTERFACE OVERVIEW

At the very top of the screen is a status bar displaying:



Below the status bar are the broadcast settings:

- **Streaming** – Indicates the device is currently broadcasting audio.
- **Name** – View and select the device's broadcast name.
- **TX Power** – Adjust the device's transmission power level.

BROADCASTING AUDIO (TX MODE)

1. **Connect a microphone or headset**
*Ensure the device is compatible. See the [AUDIO INTERFACE](#) section for more information
2. **Turn on the B-RTX**
3. **Modify the broadcast name** if needed (default: **B-RTX1**)
*See the [ADVANCED BROADCAST SETTINGS](#) section for more information
4. Seamlessly **stream your voice** to nearby Auracast™-compatible devices connected to your broadcast

ADVANCED BROADCAST SETTINGS

Select broadcast name:

1. Use the up and down buttons to navigate to **Name**, then press the red circle button to select.
2. Use the up and down buttons to select a broadcast name from the list (B-RTX1...B-RTX50), then press the red circle button to confirm.

Note: Customized broadcast name can be set using the **B-SmarHive** *

Adjust the TX Power:

In some cases, you may need to adjust the transmission power of your broadcast device. To do so:

1. Use the up and down buttons to navigate to **TX Power**, then press the red circle button to select.
2. Use the up and down buttons to choose a **TX Power** level (**Low**, **Mid**, or **High**).

*Refer to the [TX POWER LEVELS](#) section for more information about TX Power levels.

Pre-Loaded MP3 Streaming (coming soon):

Tour files containing MP3 audio and configuration data can be created using the **SmartHive Manager** software. These files can then be loaded onto micro-SD cards inserted into B-RTX devices. This enables tour guides to enrich the visitor experience by streaming audio content alongside their voice with automatic ducking to prioritize speech.

TX POWER LEVELS

To comply with regional regulations, the B-RTX is supplied in two configurations with different maximum transmission power levels: **10 dBm** and **20 dBm**. The table below shows the transmission power values for each setting (**Low, Mid, High**) when the device is operating in TX mode.

	Max 10 dBm Device	Max 20 dBm Device
High	10 dBm	20 dBm
Mid	7 dBm	15 dBm
Low	4 dBm	10 dBm

Warning: It is the user's sole responsibility to comply with local regulations. Betttear will not be held liable for any regulatory violations.

DEVICE RESET

Device Reset

To force a hardware reboot, use a pin to press the **Reset** button.



Settings Reset

To restore the device settings to factory defaults:

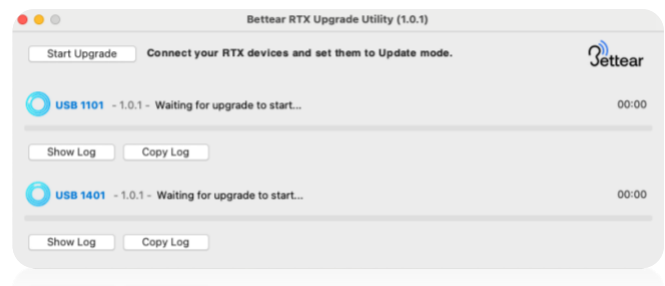
1. Turn on the device.
2. Press and hold both **Up** and **Down** volume buttons for 5 seconds, then wait for the device to restart.

FIRMWARE UPGRADE

To upgrade the B-RTX device:

1. Visit the Betttear website at: www.betttear.com and download the **RTX Upgrade Tool** (Available for **Windows** and **macOS**).

2. Launch the **RTX Upgrade Tool**



3. Turn off the B-RTX and connect it to your computer using a USB cable.

4. Turn on the device and wait for it to be detected by the **Upgrade Tool**.

Note: The **Upgrade Tool** supports simultaneous upgrades of multiple B-RTX devices (up-to 10 devices). Repeat steps 3-4 as needed to upgrade multiple devices.

5. Click **Start Upgrade** and wait for the process to complete.

SPECIFICATIONS

Audio

Connection	3.5mm TRRS jack for wired headset, headphones, neckloops, or microphone. Supports TRS or TRRS headphones
Maximum Input Voltage	0.707 Vrms
ADC Signal-to-Noise Ratio	91dB
DAC Signal-to-Noise ratio	95dB
ADC THD+N	-85dB
DAC THD+N	-82dB
Frequency Response	10Hz-22kHz
Input Gain	0 dB to 59.5 dB
Sample Rate	48kHz
Playback Codec	MP3
Ducking	MP3 playback is automatically attenuated (side-chained) when an Auracast™ stream is active
AGC	Support for Automatic Gain Control
Impedance	16 Ω

Radio

Bluetooth Version	5.3
Broadcast Frequency	2400 – 2482 MHz
Codec	LC3 (48kHz, 24kHz, 16kHz)
Max TX Power	B-RTX-10: 10 dBm B-RTX-20: 20 dBm
Controllable TX Power	Yes (configurable via the built-in menu or through the SmartHive)
Operating Mode	RTX EXPERIENCE: Auracast™ receiver only RTX DUPLEX / DUPLEX+: Auracast™ receiver / transmitter (switchable)
Secure Broadcast	Yes (4–16-character password, AES128 encryption) *Supported via B-SmartHive or B-PASS only

Controls

Buttons	Navigation Buttons (up, down, select/power), volume up/down, reset button
Display	2" TFT RGB display (240x320)
Status LED	RGB LED indicator

Environmental

Operating Temperature	-10 °C (14 °F) to 43 °C (+109.4°F)
Storage Temperature	-30 °C (-22 °F) to 70 °C (+158 °F)

Regulatory

Standards	CE, RoHS, REACH, WEEE, FCC, ISED, TELEC, UKCA, RCM, MSDS
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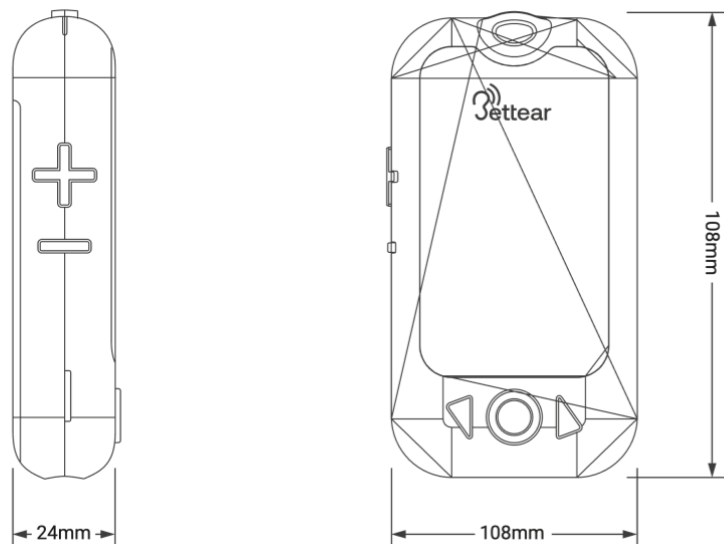
Power and Charging

Power Supply	B-SmartHive cradle or USB-C - 5V, 500mA
SmartHive Cradle Connection	4 pogo-pin contacts with magnetic latch for charging and programming
Battery Type	Lithium Polymer
Battery Size	3.7 VDC, 1,400 mAh
Battery Life	Receiver Mode: > 20 hours Transmitter Mode: >10 hours (may vary depending on TX power level)
Battery Charge Time	Fully charged in under 5 hours
Power Save Modes	Auto Off: <ul style="list-style-type: none"> - Powers down after 3 minutes of audio inactivity (Receiver mode only) - Powers off automatically when charging*

PHYSICAL

Weight	B-RTX – 120 g (0.264 lbs)
Shipping Weight	210 g (0.462 lbs)
Colors	Light Gray, Dark Gray, Blue
Belt Clip	Removable (not included)
Battery Cover	Removable for battery replacement

Dimensions



ACCESSORIES AND COMPATIBLE ADD-ONS

USB-C to USB-A Charging Cable	Included
Belt Clip	Supported (Not Included)
B-PASS An add-on that enables connection to secure streams using attach-to-connect logic	Supported (not included)
B-SmarHive Cradle and SmarHive Manager A smart charger for programming and charging up to 10 RTX devices. *Multiple SmarHive units can be linked together for mass control and programming	Supported (not included)

SAFETY PRECAUTIONS

WARNING

- 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.
- Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- Note: 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 the receiving antenna.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technician for help.
- The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.
- Always observe standard safety precautions during installation, operation, and maintenance of this product. Only qualified and authorized service personnel should carry out adjustment, maintenance, or repairs to this product. No installation, adjustment, maintenance, or repairs should be performed by either the operator or the user.

Respectez toujours les standards de sécurité durant l'installation, l'opération et la maintenance de ce produit. Seul le personnel de service qualifié et autorisé devrait effectuer l'ajustage, la maintenance ou les réparations de ce produit. Aucune opération d'installation, d'ajustage, de maintenance ou de réparation ne devrait être effectuée par un opérateur ou l'utilisateur.

- This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:
(1) This device may not cause interference. (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radioexempts de licence. L'exploitation est autorisée aux deux conditions suivantes:(1) l'appareil ne doit pas produire de brouillage, et(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.



HEARING SAFETY

This product is designed to amplify audio to a high-volume level which could potentially cause hearing damage if used improperly. To protect your hearing make sure the volume is turned down before using your B-RTX, then adjust the volume up to the minimum setting required to hear clearly. Do not allow children or other unauthorized individuals to have access to this product without supervision.

*This device is equipped with Automatic Gain Control AGC to prevent the sensation of intense noise bursts.

MEDICAL DEVICE SAFETY

Before using the B-RTX with an implantable or other medical device, consult your physician or implant manufacturer or other medical device manufacturer. Always make sure you are using this product in accordance with the safety guidelines established by your physician or the implantable device manufacturer.

WARRANTY

Please visit www.bettear.com for warranty and service information.

WARNING: Electrical Shock Hazard. No user serviceable parts inside. To reduce the risk of electrical shock, do not remove or open the cover. Please contact Bettear for assistance.

PRIVACY POLICY

Please visit www.bettear.com for privacy policy and service information.

SUPPORT

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