DAYTONAUDIO

KABT-250 User Guide

The KABT-250 is a versatile amplifier package that enables an incredible breadth of projects. The standout feature of the KABT-250 is support for TWS multi-point pairing. This enables many amplifiers to communicate with each other and play in sync for wireless audio systems. Creative projects such as a 2.1 system with a wireless sub, party speakers that wirelessly play in unison, or even a wireless stereo system are now within reach for professionals and hobbyists alike. In addition to the TWS feature, the KABT-250 features highly efficient 2x50 Watts or 1x100 Watts of class D power, a DSP engine configurable with a PC app, and convenient wiring harnesses for quick installation. The KABT-250 features the same form factor as previous KAB amplifiers, making it a compelling upgrade for many existing projects.

Table of Contents

What is New with the KABT-250?

The KABT-250 amplifier introduces a robust combination of True Wireless Stereo (TWS) functionality, impressive power output and DSP integration, making it a modern solution for audio projects of all kinds. The example projects at the end of this document demonstrate many new project types that can be created with the KABT-250.

- **True Wireless Stereo (TWS) Support**: The KABT-250 supports pairing two amplifiers for a seamless left-right stereo setup, eliminating the need for wires between speakers. In addition, its "Party Mode" allows up to 256 amplifiers to wirelessly sync together, delivering synchronized audio across a large space.

- **Flexible Power Output**: Delivers up to 2 x 50W or 1 x 100W of power at 4Ω with a 24V DC supply, providing ample headroom for driving stereo speakers or high-power mono configurations.

- **Integrated DSP Control**: The onboard DSP chip allows precise audio customization, including equalization, high and low pass filtering, bass effects, limiters, noise suppression and more.

These enhancements make the KABT-250 an excellent choice for building both wireless stereo speaker systems and large-scale, multi-unit audio setups with synchronized playback.

What do I need to know if I am upgrading from a previous KAB Board?

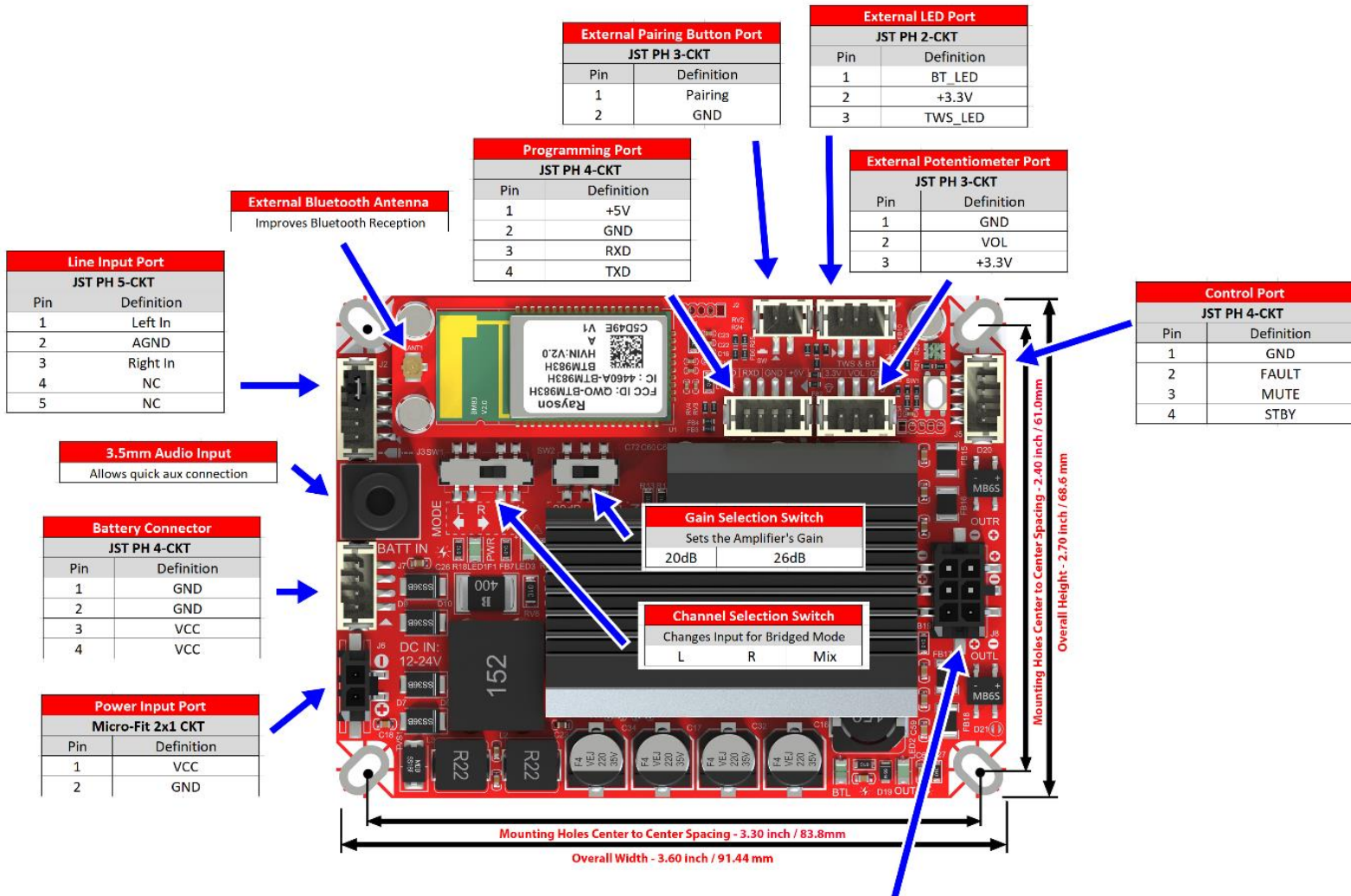## KAB-250v4, KAB-100Mv2 and legacy KAB

- The programming software, KABX/KPX remains the same as the KAB-250v4/100Mv2 without any firmware changes needed on your KPX programmer.
- The wire harness for the speakers has changed. It now includes a jumper to switch between stereo or bridged mono mode, which is also a new KABT feature.
- The KABT-250 does not have charging circuitry for batteries built onto it. It requires an independent battery board, such as the **Dayton Audio LBB-3v2.** Unlike the KAB-250v4 and other KAB amplifiers, it is NOT compatible with the KAB-BE battery board. You must charge your batteries with the battery board if using the KABT-250
- The KABT-250 Bluetooth chip is Bluetooth 5.0 and now supports TWS, but it does not support AptX HD like some other KAB amplifiers.
- Because of the need to indicate more Bluetooth statuses due to TWS, the BT LED port has changed from a 2-pin port to a 3-pin port to support an extra LED. The optional cable kit comes with 2 LEDs prewired for this.
- There is a 3.5mm aux port built onto the board for your convenience.

KABD-250

- The KABD series uses an ADAU1701 DSP chip for programming. If you are used to SigmaStudio, the KABT-250 does not support it. You must use the KABX software.
- The KABD series has optional potentiometer ports which can be programmed for all kinds of functions. The KABT-250 has a single volume control port that is not programmable.

- The wire harness for the speakers has changed. It now includes a jumper to switch between stereo or bridged mode, which is also a new feature. They are the same port that is used on the KABD-430.
- The KABT-250 Bluetooth chip is Bluetooth 5.0 and now supports TWS, but it does not support AptX HD.
- Because of the need to indicate more Bluetooth statuses due to TWS, there is an additional external BT status LED needed. The port has changed from a 2-pin port to a 3-pin port, with pins for each LED and a GND pin. The optional cable kit comes with 2 LEDs prewired for this.
- There is a 3.5mm aux port built onto the board for your convenience.

KABT-250 Visual Tour

External Pairing Button Port

Pin	Definition
	JST PH 3-CKT
1	Pairing
2	GND

External LED Port

Pin	Definition
	JST PH 2-CKT
1	BT_LED
2	+3.3V
3	TWS_LED

Programming Port

Pin	Definition
	JST PH 4-CKT
1	+5V
2	GND
3	RXD
4	TXD

External Potentiometer Port

Pin	Definition
	JST PH 3-CKT
1	GND
2	VOL
3	+3.3V

External Bluetooth Antenna
Improves Bluetooth Reception

Line Input Port

Pin	Definition
	JST PH 5-CKT
1	Left In
2	AGND
3	Right In
4	NC
5	NC

Control Port

Pin	Definition
	JST PH 4-CKT
1	GND
2	FAULT
3	MUTE
4	STBY

3.5mm Audio Input
Allows quick aux connection

Battery Connector

Pin	Definition
	JST PH 4-CKT
1	GND
2	GND
3	VCC
4	VCC

Gain Selection Switch
Sets the Amplifier's Gain

20dB	26dB

Channel Selection Switch
Changes Input for Bridged Mode

L	R	Mix

Power Input Port

Pin	Definition
	Micro-Fit 2x1 CKT
1	VCC
2	GND

Mounting Holes Center to Center Spacing - 2.40 inch / 61.0mm

Overall Height - 2.70 inch / 68.6 mm

Mounting Holes Center to Center Spacing - 3.30 inch / 83.8mm

Overall Width - 3.60 inch / 91.44 mm

Speaker Output Connection 2x50W /1x100W

Pin	Stereo	Mono
1	MODE	MODE
2	OUTL+	MONO-
3	OUTR-	MONO+
4	GND	GND
5	OUTL-	MONO-
6	OUTR+	MONO+

STEREO (BTL) MODE
CONNECT MODE TO GND
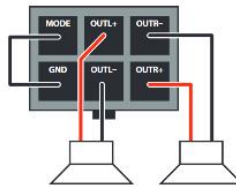
MONO (PBTL) MODE
DISCONNECT MODE FROM GND
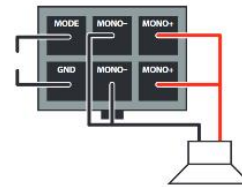
Quick Start and Wiring Guide

Before You Start

Switches

There are two switches on the top of the KABT-250. It is important to set these switches for proper operation.

Note: Only change these switches if the device is powered off.

- **Input Mode Switch** – If using bridged mono mode (PBTL), this switch will change which input is use for the mono output. **If using the amplifier in stereo mode, this switch is ignored**. This does not change the audio output sent wirelessly via TWS (it will always be stereo L and R). If unsure, set this to MIX.

| Input Mode Switch	L	R	MIX
	ONLY Left Input Audio to if bridged	ONLY Right Audio if bridged	The left and right audio inputs will be mixed together if bridged

- **Gain Switch** – This switch will change the amplifier gain level. If set to 26dB amplifier will amplify the input audio signal more than it would if set to 20dB. If unsure, set this to 26dB.

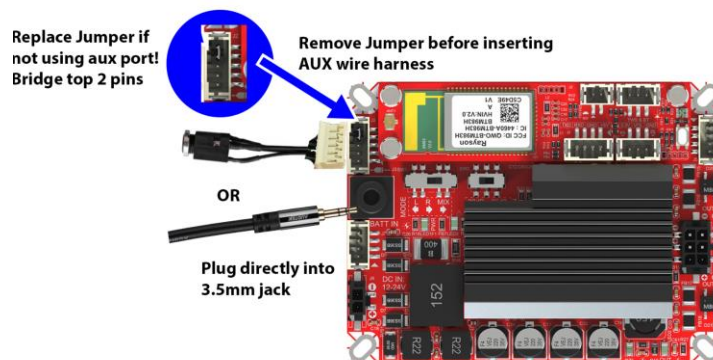| Gain Switch	20dB	26dB
	The amplifier output will be lower	The amplifier output will be higher
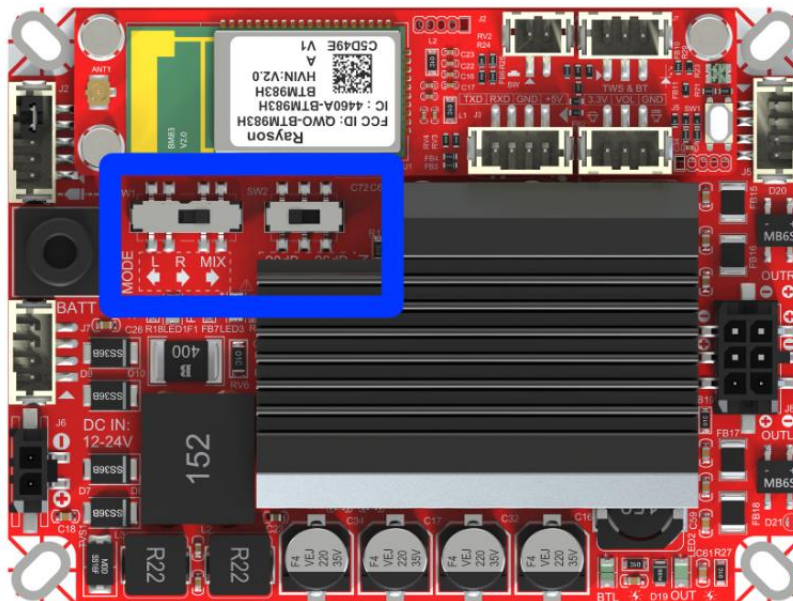
Power Supplies

- Use only power supplies rated between **12V and 24V DC**.
- A 24V, 5A supply is recommended for maximum power output, providing the most headroom for driving demanding speakers without distortion.
- Use a minimum current rating of at least 3A to ensure stable performance under load.
- The KABT-250 is compatible with external battery boards such as the Dayton Audio LBB-3v2, which include built-in charging and protection circuits for safe operation, but is not compatible with KAB-BE battery boards due to the lack of a built-in charging circuit.
- Ensure that the power supply is regulated and wired correctly to the wiring harness or a DC jack to prevent damage.
- This amplifier does not contain the charging circuitry necessary for safe battery charging. An independent battery board must be used. Do not try to charge a battery board via the KABT-250.
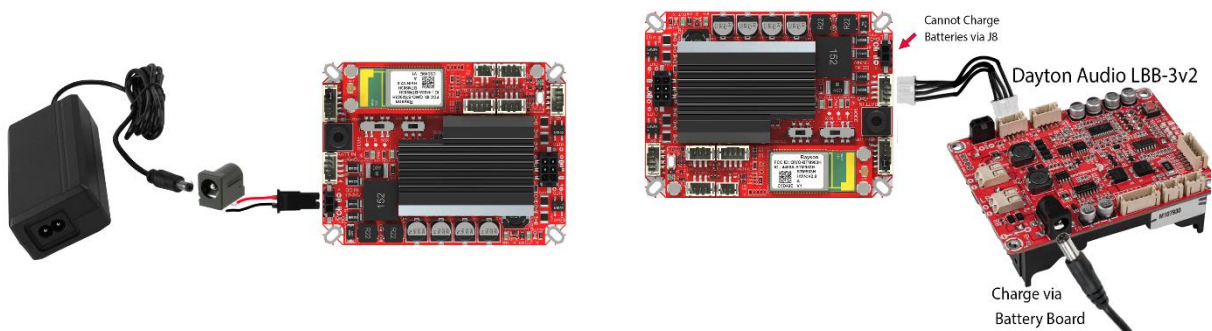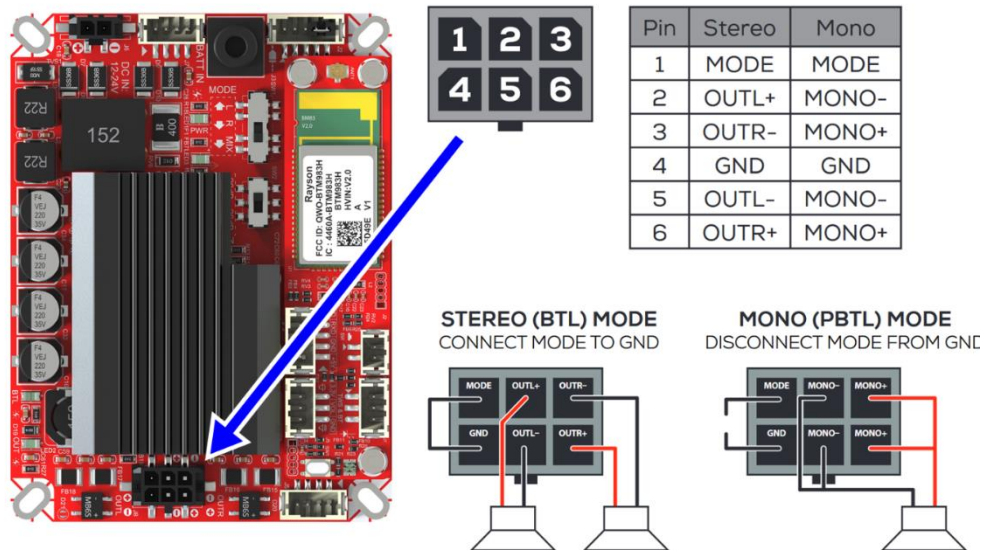

Input Devices

The KABT-250 offers a variety of inputs to suit different needs. Even in true wireless stereo (TWS) mode, the device supports streaming either an incoming Bluetooth signal, or an analog signal wirelessly to other paired KABT-250 amplifiers.

- **Bluetooth**: Supports Bluetooth 5.0 for high-quality wireless audio streaming. It also accepts wireless audio via a TWS master amplifier for synchronized wireless audio
- **Auxiliary Input**: Connect analog audio sources via the built in 3.5mm jack, or by connecting a 3.5mm or RCA jacks to J2.
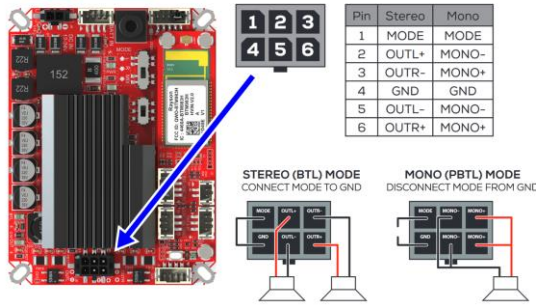
Speaker Output

Pin	Stereo	Mono
1	MODE	MODE
2	OUTL+	MONO-
3	OUTR-	MONO+
4	GND	GND
5	OUTL-	MONO-
6	OUTR+	MONO+

STEREO (BTL) MODE
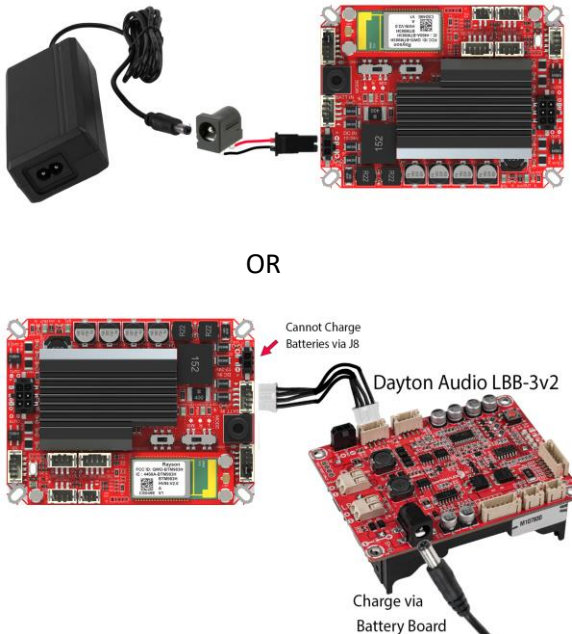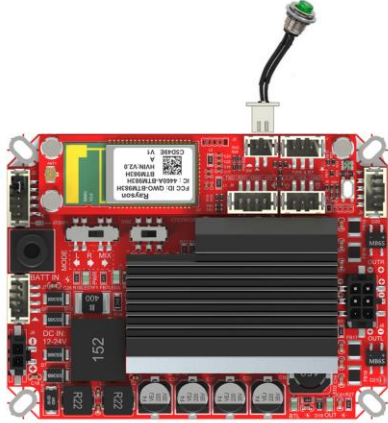CONNECT MODE TO GND
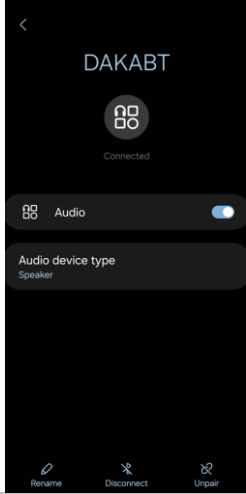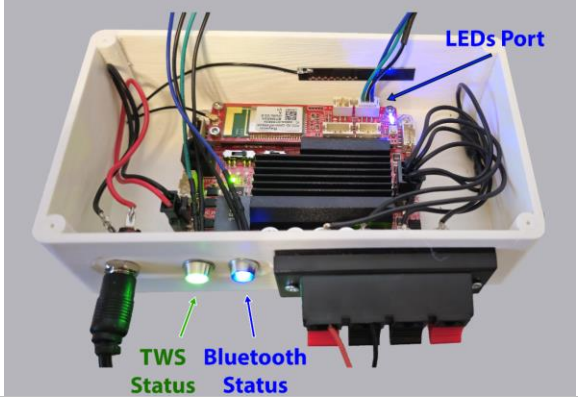
MONO (PBTL) MODE
DISCONNECT MODE FROM GND

- Supports speaker impedances of **4Ω or higher** in stereo mode, and **2Ω or higher** in bridged mode.
- Delivers **2 x 50W** at 4Ω in stereo mode and **1 x 100W at 2Ω** in bridged mono mode with a 24V, 5A power supply.
- Use the provided wiring harness for secure and reliable connections.
- **Stereo Mode**: Keep the jumper on the harness connected to drive two speakers, one for each channel (left and right) (**4Ω or higher**).
- **Bridged Mono Mode**: Disconnect the jumper on the harness to combine both channels for a single higher-power speaker output. Use all wires of the harness (2 positive wires, 2 negative wires) (**2Ω or higher**).
- Follow the wiring guide closely to avoid phase issues, which can significantly degrade sound quality and cancel low frequencies (bass).
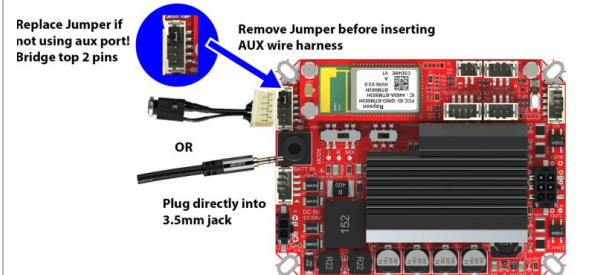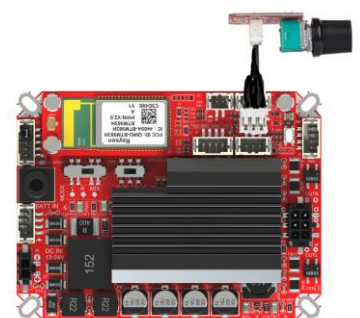
Additional Tip: Ensure that speaker wires are tightly secured and insulated to prevent short circuits during operation. Check all solder connections

Quick Start Steps

1. **Speaker Connection**	Connect speakers to the included 6-pin wire harness according to the wiring diagram or by following the labels on the back side of the board. The ends of included wiring harness come pre-loaded with solder to quickly connect to your driver / speaker, but they can be easily trimmed for a neater installation. If using the board for bridged mono mode, it is critical to leave the jumper cable **disconnected** (it can be removed if needed)**.** Do not let wires touch while the amplifier is on. Attach the wiring harness to your speakers before connecting power to your KABT-250 The KABT-250 supports speakers of 4Ω or higher in stereo mode, and 2Ω or higher in bridged mode	 See the project examples section of this guide for specific examples and diagrams for various configurations

2.
Power Options
	Connect power through either J6 if using a power adapter or J7 if using a Dayton Audio battery board.
	   a. Use a power supply of **at least 12V but less than or equal to 24V.** The higher the voltage input (with adequate current capabilities), the more power the amplifier can supply to your speakers. Power supplies out of this range can damage the amplifier.
	   b. The KABT-250 does not have a built-in battery charging circuit, so **a battery board such as LBB-3v2 (12V) or LBB-5Sv2 (21V) that has a charging protection circuit built in is required to use the amplifier with batteries**. Other KAB
	   c. Connect a 2.5mm or 2.1mm DC jack to J9 to allow a variety of power supplies to be attached to the KABD-250.
		
		OR
		
		Cannot Charge Batteries via J8
		
		Dayton Audio LBB-3v2
		
		Charge via Battery Board
		
		| Battery Connector		

JST PH 4-CKT		
Pin	Definition	
1	GND	
2	GND	
3	VCC	
4	VCC	| | Power Input Port	
---	---
Micro-Fit 2x1 CKT	
Pin	Definition
1	VCC
2	GND	

3. **Bluetooth** **Pairing** **Switch**	A Bluetooth pairing switch (green) that comes in the box should be added to the KABT by attaching its 2-pin connector to the corresponding port (J6). Hold this button to reset the Bluetooth Status of the amplifier, erasing connections to source devices and TWS connections. Press this button twice on the master to enter TWS master mode. Press the button once on slave devices to pair them to the master device. **See the TWS section below for detailed usage.** Only use momentary switches for the BT pairing port.	
4. **Bluetooth** **Connection**	Once powered on, the board's Bluetooth connection will be available on your phone, tablet, laptop, etc and will show as "DAKABT" in your Bluetooth menu. Once connected and music is playing on the source device, audio should begin playing through your connected speakers. If it does not, re-read this guide carefully and see the troubleshooting section of this guide. Only the TWS Master device needs to connect to a Bluetooth source. Additional amplifiers communicate as TWS Slaves to the TWS Master amplifier.	
5. **External** **Bluetooth** **LEDs** **Connection** (Optional)	External Bluetooth and TWS status LEDs can be added to your KABT-250. These LEDs mimic the onboard LEDs found next to the onboard pairing button. The optional cable pack for the KABT-250 wires two LEDs to the same 3-pin wiring harness. **Note:** The LEDs themselves can be easily pulled out of the back of their metal housing. This can be important when assembling a project with the LEDs.	

6. **Audio Input Jacks** (Optional)	AUX sources can be connected directly to the 3.5mm jack built onto the board. An external 3.5mm jack comes included in the optional functional cable pack, which can be plugged into J2 to function as a line input for external audio sources. If you are not using an external aux port, make sure the included jumper is placed as shown in the image (it is preinstalled by the factory). This wiring harness could be modified by snipping off the 3.5mm jack, and soldering stereo RCA jacks to the cables according to the labels on the back of the board instead.	 Replace Jumper if not using aux port! Bridge top 2 pins Remove Jumper before inserting AUX wire harness OR Plug directly into 3.5mm jack
7. External Volume Control via Potentiometer (Optional)	An external potentiometer volume control and wiring harness comes in the optional functional cable pack. This can be used to easily add volume control to the cabinet / case of your project.	

External Potentiometer Port	
JST PH 3-CKT	
Pin	Definition
1	GND
2	VOL
3	+3.3V

8. Set Up TWS (Optional)	The following section of this document describes the TWS function. Before attempting this, ensure you have followed the quick start steps above and your desired master amplifier is working as you expect.
9. DSP Programming (Optional)	Following the TWS section of this guide is a dedicated DSP programming section. This will allow you to use filters, PEQ, bass enhancements and more to tweak the sound of your audio project. The filters and other tweaks made in the DSP software will not be applied to any amplifiers paired to it via TWS.

TWS, Multi-room, Party Mode

The KABT-250 amplifier supports **TWS multi-pairing**, allowing a master KABT-250 to connect wirelessly with one or many slave units. This enables stereo sound, multi-room audio, and party speaker setups. Follow the simple steps below to pair your amplifiers together.

LED Status Description

There are two status LEDs on the KABT-250. The Blue LED indicates Bluetooth Master status, and the yellow (on board) and green (external) display TWS status.

Blue LEDs (on board and external) – Indicates Bluetooth source connection status. If your phone or other audio source is paired to the amplifier, this LED will be solid blue. If it is looking for a source, it will be blinking. If it is in slave mode, this LED will be off.

Yellow (on board) or **Green** (external) **LEDs –** These LEDs indicate TWS pairing status. The yellow LED is built onto the board, the green LED is found in the optional external LED harness. If the master is in TWS pairing mode, this LED will be solid. If the slave device is looking for the master device, it will blink. Once found and connected, it will be solid on the slave.

TWS Pairing Steps

Summary Of Steps: Hold the pairing button on both the master device and then the slave units until only the Blue LED blinks. This resets their BT status. Connect your phone or other Bluetooth source to the master amplifier. Press the master's pairing button twice. Press the slave's pairing button once. After some time, if they are in range, the slave will pair to the master. **Tip:** Choose your most centrally located KABT-250 to be the master, and do not forget to attach the Bluetooth antennas.

1. **Prepare the Amplifiers and Check LED Statuses:**

   o To start the process, your amplifiers must be in the correct state. If unsure, long press the pairing button on each amplifier until only the Blue LED blinks. You can then pair your audio source to the master, and it will be solid blue. The slave units must be blinking blue to begin the process, meaning they are totally unpaired and reset.

Master LEDs	On Board LEDs	Blue LED - Solid or Blinking	Yellow - Off
	External LEDs	Blue LED - Solid or Blinking	Green LED - Off

Slave(s) LEDs	On Board LED	Blue LED - Solid or Blinking	Yellow - Off
	External LEDs	Blue LED - Blinking	Green LED - Off

2. **Prepare the Master Amplifier for TWS pairing:**

   o **Double-tap** the master's pairing button. The yellow LED on the board will become solid, indicating it is ready for slave devices to be paired to it. (The external LED harness has a green LED instead of the yellow). The blue LED will be either solid or blinking.

Master LEDs	On Board LED	Blue LED - Solid or Blinking	Yellow - Solid
	External LEDs	Blue LED – Solid or Blinking	Green LED - Solid

3. **Connect Slave Units:**

   o **Tap** the slave's pairing button once. The yellow/green LED will blink while it is trying to pair, but will be solid once paired. The Blue LED should be OFF in this mode.

   o Connect as many slaves as desired.

Slave(s)	On Board LED	Blue LED - OFF	Yellow – Blinking while pairing, solid when paired
	External LEDs	Blue LED – OFF	Green LED – Blinking while pairing, solid when paired

4. **Re-Pairing After Power Cycle:**

   o The system **reconnects automatically** if the devices were previously paired and the Bluetooth status was not reset. If it does not reconnect, **press the master's pairing button once**. If your slave's TWS indicator light stays blinking yellow, you must repair the devices.

DSP Programming via KPX Programmer

The KABT-250 can be programmed with a Windows PC and the KABX/KPX software to activate various DSP features such as filters, PEQ, bass enhancement and more. This requires the optional Dayton Audio KPX Programmer, which acts as the bridge between your computer and the DSP chip that is on each KABT-250. The DSP profile can be saved and the programmer can be removed after tuning.
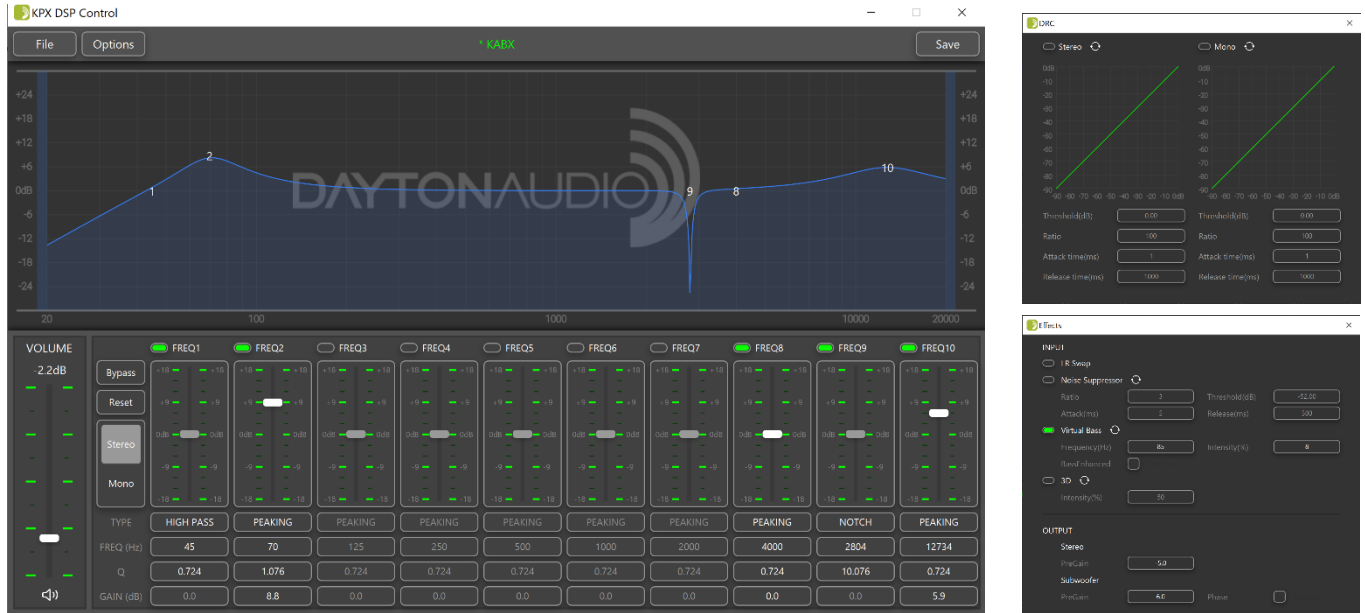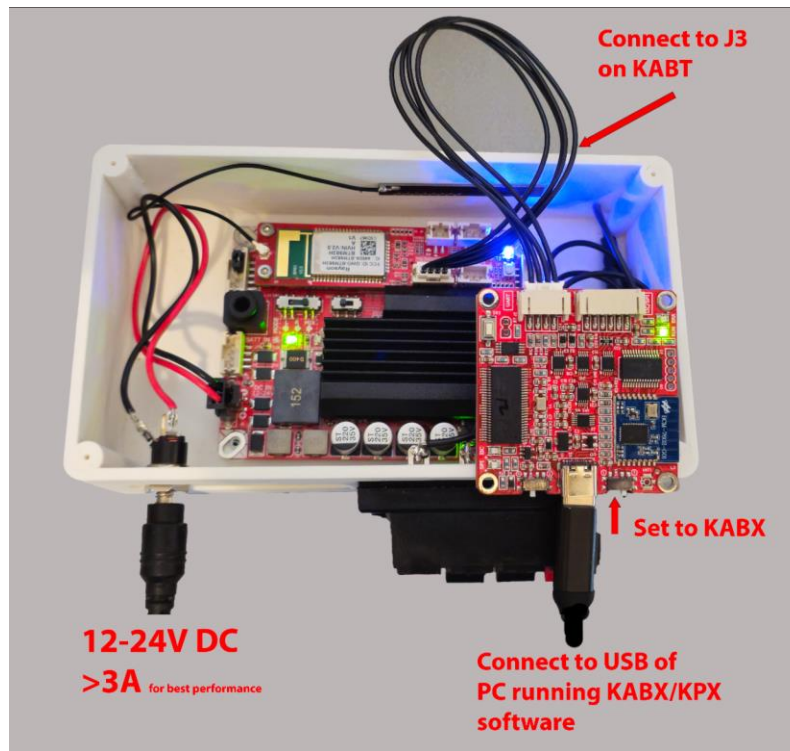

Required Items for Programming

1) KPX Programmer with the included 4-pin to 4-pin JST cable
2) A KABT-250 amplifier board
3) A USB Type C cable (Not included)
   a. USB Type C is required for the end that connects to the KPX Programmer, but the other end can be either USB A or USB C depending on your Windows computer.
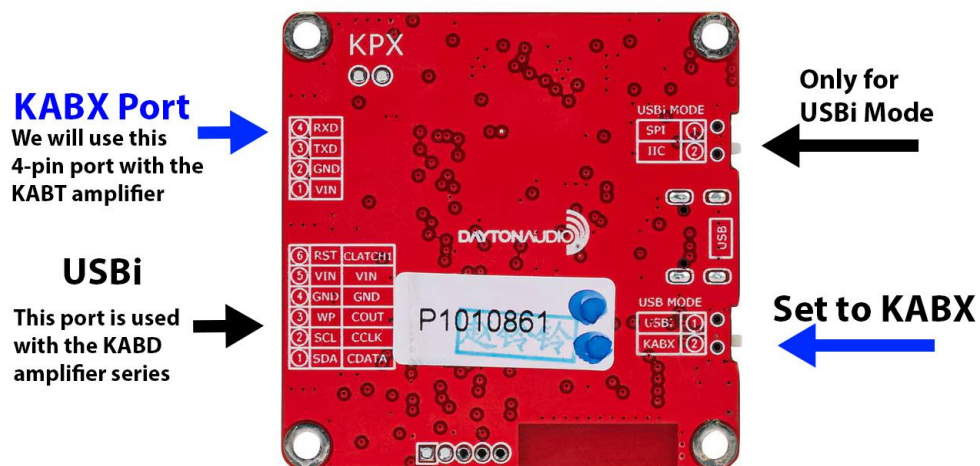4) A Windows desktop or laptop running the Dayton Audio KABX Software.

Quick Start

Connect to J3 on KABT

Set to KABX

12-24V DC
>3A for best performance

**Connect to USB of PC running KABX/KPX software**

Detailed Steps

1) Download and install the latest version of the KABX/KPX software from the KPX programmer product page or the KABT-250 product page. The link to the software should be found in the exact same spot as this guide was found. Follow the instructions in the installer.

2) Before connecting to the DSP software, it is recommended to connect power, speakers and a Bluetooth source to your KAB amplifier first. Play some music to ensure all connections are correct, and the amplifier is working properly (start with the volume set to low).

3) Once all of the amplifier connections are made (speakers, power, audio source), you must **set the "USB Mode" switch on your KPX Programmer to "KABX" mode** (see back of board).

KABX Port
We will use this 4-pin port with the KABT amplifier

USBi
This port is used with the KABD amplifier series

Only for USBi Mode

Set to KABX

4) Connect your KPX programmer to your PC. You will see the "RUN" led on your programmer light up. **Note:** Make sure your USB C cable is capable of transferring data. Some are only wired to transfer power! A cable that will only transmit power will still make the LEDs on the KPX to light up, but it will not connect to the software.

5) Connect your KPX programmer to your KABT-250 via J3. This port is labelled TXD,RXD,GND,+5V, which matches the 4-pin port of the KPX programmer.

   a. Make sure that your amplifier is powered for this step.

6) Open the KABX/KPX DSP software on your PC. If everything is completed correctly, you should find that you are connected immediately and can start making real time DSP changes.
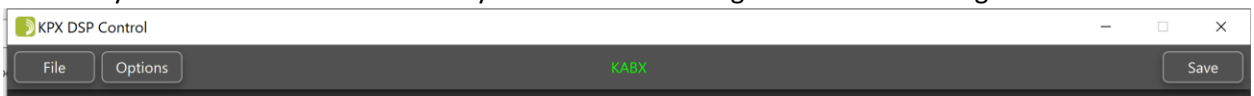
   a. If connected, the "KABX" label at the top of your screen will display green. If there is an asterisk * in front of the KABX logo, that means your changes have not been saved to non-volatile memory, which means your changes will be lost when your KAB loses power. To resolve this, simply hit the save button.

7) **Important Note** – The software has a stereo/mono switch that allows different settings to be employed for the stereo output vs. the mono output. On the KABT-250, you will need to modify your EQ differently depending on how you wired your speakers.

   a. **Stereo Speaker Wiring (jumper connected) –** You will always EQ your speakers with 'stereo' selected in the image below.

   b. **Bridged Mode Wiring (jumper disconnected) -** If using your KABT-250 in bridged mode, you first need to set the 'input mode' switch (marked mode on the board with options L, R, MIX). If the input is set to L or R, you will need to eq with the switch in the software set to 'stereo'. If your input is set to 'mixed', select the 'mono' in the software.
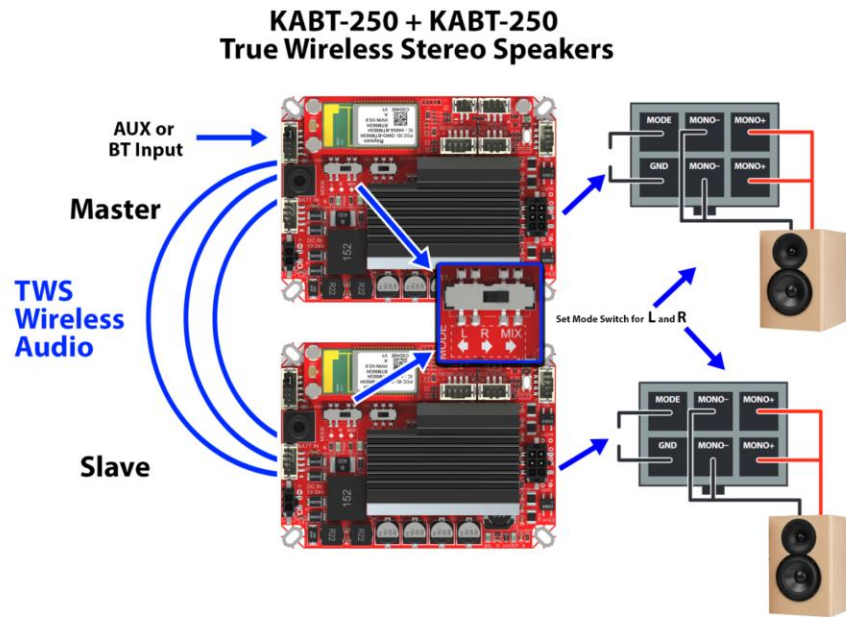
Example Projects / Use Cases for KABT-250

1. Wireless Bookshelf Speakers

The **KABT-250 amplifier board** can be used to create a pair of **wireless bookshelf speakers**, offering a true stereo listening experience without the need for speaker wires—only power connections are required.

KABT-250 + KABT-250
True Wireless Stereo Speakers

How It Works

- **Left and Right Configuration**:

  o Each speaker houses a KABT-250 board.

  o Each speaker is configured in bridged mode, with up to 100 Watts of output power.

  o One speaker is set to **Left (L)**, and the other to **Right (R)** using the input mode switch on the board.

- **TWS Pairing**:

  o The two amplifiers are paired in **True Wireless Stereo (TWS)** mode.

  o The **master amplifier** connects to the input source (Bluetooth or analog) and transmits the respective channel wirelessly to the **slave amplifier**.

Tips

- Bookshelf speakers can be easily modified to house a KABT amplifier, allowing an upgrade for an existing pair of speakers. Not only would be they be powered and wireless, but their original sound can be upgraded with DSP!

2. Bluetooth Party Speakers

The **KABT-250 amplifier board** can be used to build **Bluetooth party speakers** that can pair wirelessly with multiple other KABT-250-based speakers, forming a synchronized audio network. This requires just a single audio source for many speakers.

Bluetooth Party Speakers

How It Works

- **TWS Master/Slave Setup**:

  - One speaker serves as the **master** by connecting it to the Bluetooth input source.

  - Additional speakers are configured as **slaves**, receiving audio wirelessly from the master. See the TWS section above for more information.

- **Flexible Speaker Design**:

  - Speakers in the system can be designed differently, and do not require a similar design to be paired together.

  - Each KABT-250 can be configured to output **Left (L), Right (R), or Mixed (MIX)** audio, allowing versatility in the setup.

Benefits

1. **Wireless DSP Subwoofer**: A single subwoofer can be made and paired wirelessly to all of the other speakers, enhancing bass feedback through the whole venue.

2. **Flexible Placement**: Position the speakers anywhere without the need to connect each speaker together or even turn every speaker on.

3. **Limitless:** The theoretical limit of devices in this mode is 256, which is more than enough for all kinds of setups.

4. **House Filling Sound without huge power:** Fill a whole venue with audio without the need for giant, high powered speakers.
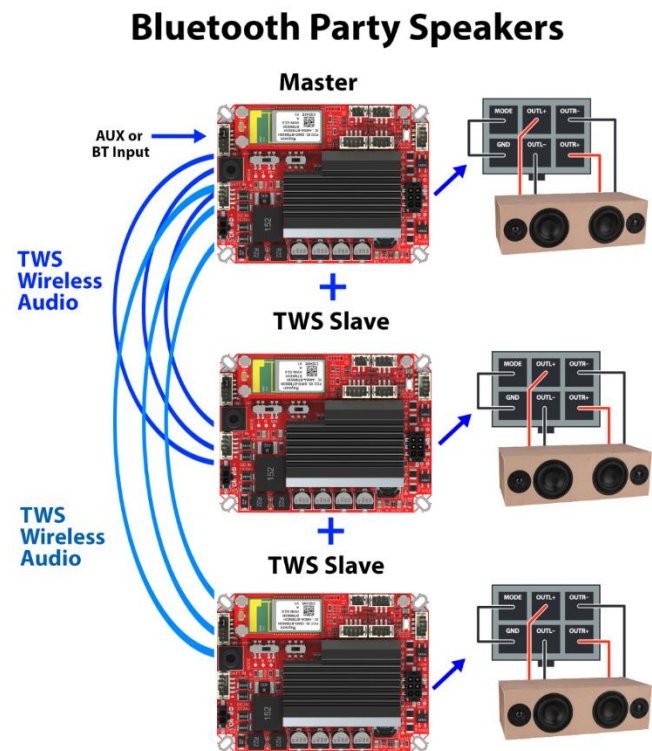
3. 2.1 System with Wireless Subwoofer

The **KABT-250 amplifier boards** can be paired wirelessly to create a **2.1 audio system with a wireless subwoofer**, utilizing **True Wireless Stereo (TWS)** functionality.

How It Works

- **Master Amplifier**: Connects to stereo speakers and manages the input source (Bluetooth or analog).

- **Slave Amplifier**: Powers the subwoofer and receives low-frequency signals wirelessly.
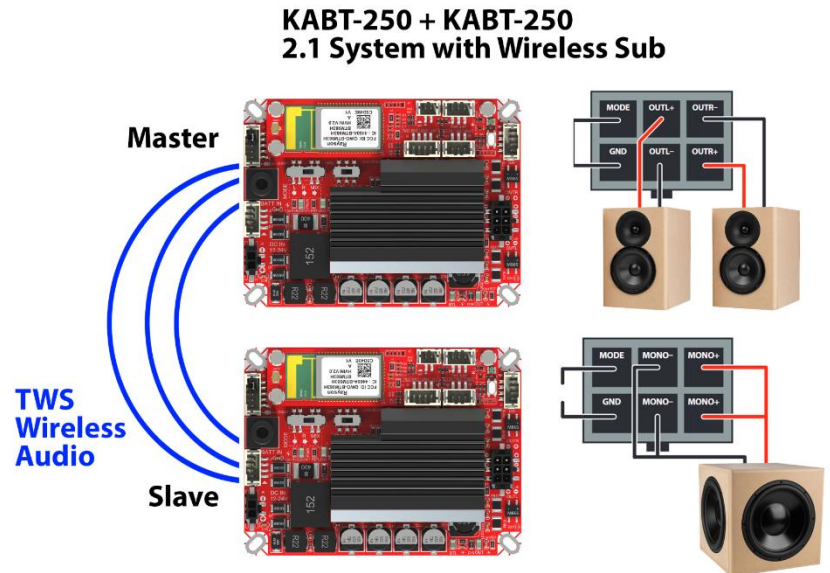
Setup Highlights

1. Pair the amplifiers in **TWS mode** (refer to pairing instructions above).

2. The **master** has 2 speakers attached to it for stereo sound, and the **slave** is set to mono bridged mode to power a subwoofer.

3. Configure **DSP settings** to optimize crossover frequencies, EQ, and bass enhancement. The stereo speakers can be high passed and the subwoofer low passed to create a smooth frequency transfer.

Benefits

- **Wireless DSP Subwoofer**: No physical connection between subwoofer and stereo speakers. Correct the response of your subwoofer with Room EQ.

- **Flexible Placement**: Position the subwoofer anywhere within Bluetooth range.

- **High-Quality Sound**: Clean stereo output with deep, configurable bass.

- **Flexibility in Power Supplies:** Put the power where you need it. If you need more power from your subwoofer than your mains, you can use a bigger power supply along with the independent amplification and DSP control.

KABT-250 Specifications

Electrical Specifications

Parameter	Conditions	Min.	Typ.	Max.	Unit
Power Supply	-	12	-	24	V
Idle Power	No Audio Input	-	1.92	-	W
Mute Power	-	-	0.96	-	W
Standby Current	SD short to GND	-	3	-	mA
Maximum Current	2x50W @ 4Ohm	-	5	-	A
Minimum Load Impedance	-	2 (PBTL)	4	8	Ohm
Output Power (BTL, Stereo Mode)	@4Ohm	-	2x50	-	W
Output Power (PBTL, Mono Mode)	@2Ohm	-	1x100	-	W

Audio Specifications

Parameter	Conditions	Min.	Typ.	Max.	Unit
AMP Gain	SW2 at 20dB, 1W @4Ohm, 1kHz	-	22.3	-	dB
AMP Gain	SW2 at 26dB, 1W @4Ohm, 1kHz	-	28.2	-	dB
DSP Gain	Controlled by PC UI	-72.3	-	12	dB
SNR	Gain = 20dB, 2x50W @4Ohm, A-weighting	-	101.4	-	dB
SNR	Gain = 26dB, 2x50W @4Ohm A-weighting	-	100	-	dB
THD	Gain = 20dB, 1W @4Ohm, 1kHz, A-weighting	-	0.09	-	%
THD	Gain = 26dB, 1W @4Ohm, 1kHz, A-weighting	-	0.17	-	%
Output Noise Level	Gain = 20dB, A-weighting, Input Connected to GND	-	84.3	-	uV
Output Noise Level	Gain = 26dB, A-weighting, Input Connected to GND	-	140.4	-	uV
Bandwidth @ ±3dB	@4Ohm	20	-	20k	Hz

Troubleshooting

1. No Audio Output, but LEDs are lit

This indicates that the board is getting power, but something is wrong with the audio output.

Possible Causes:

- Input mode switch set incorrectly.

- Bad input source or connection

- Your mute pin is shorted to GND on J5

- Loose or otherwise incorrect speaker connections or wiring (check wiring diagram)

- Broken speaker

- Low volume (source or volume knob).

- DSP misconfiguration, make sure the gain is set to a reasonable level in the software.

- Restart the amp after making changes to switches/speakers

2. Amplifier Will Not Power On, no LEDs are lit

This indicates that the board is not getting power.

Possible Causes:

- Power supply issue, use only 12-24V power supplies

- Loose or incorrect power connection. Check your wiring harness is connected properly to your power supply or DC jack. Check that your power is not wired backwards.

- Protection mode triggered (overheat/overcurrent). Wait and try again.

- Damaged PCB.

3. DSP Software Connection Issue (via KPX Programmer)

Carefully reread the section about DSP programming above. Follow all instructions closely.

Possible Causes:

- Faulty KPX programmer or USB cable. Make sure your USB cable is not a 'power only' cable. Some cables included with devices for charging do not have data lines.

- Conflicting drivers from another software or device. The KPX uses generic drivers, you do not need to download them from the web.

- Make sure you are using the KPX/KABX software. Not KABM.

- Try a different USB port and a different computer, if possible

- Disconnect other USB devices and restart the software or PC
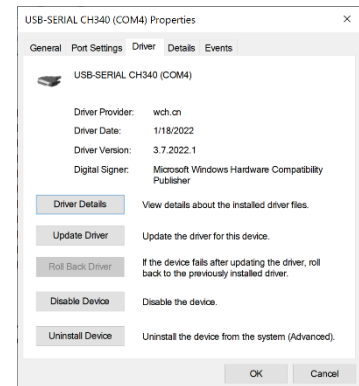
4. TWS / Party Mode Pairing Issue

Read carefully the section on TWS pairing above, taking note of the order of button presses, and what the LED statuses are. If unsure, start fresh by holding the button on each board so it is blinking blue and only blue.

Possible Causes:

- Bluetooth interference or boards out of range issue. **Make sure to connect the Bluetooth antenna**

- Incorrect TWS pairing steps.

- Boards connected to other devices.

- Faulty Pairing Button (use only momentary style switches, do NOT use latching switches)

5. Analog Input (AUX) Not Working

Possible Causes:

- Faulty AUX cable or audio source

- Damaged AUX port.

- Incorrect input mode.

- Speaker connection issue

- Volume set too low in the DSP software
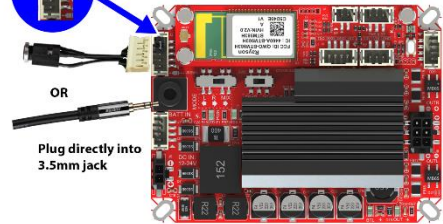
6. Bluetooth Not Broadcasting / Not Connectable

Possible Causes**:**

- Jumper not inserted into audio input connector

- Board in slave mode (hold pairing button until the LED blinks blue).

- Already connected to another device.

- Bluetooth interference

7. Poor Bass Response

Possible Causes

- Stereo speakers are wired out of phase from each other. This will result in the sum of the sound of each speaker producing very little bass, and poor sound quality overall.
- You are testing a speaker outside of its enclosure. Most loudspeaker drivers are designed to be used inside of a cabinet or some kind of enclosure. Without this enclosure, the speaker will not provide as much bass.
- The DSP software is configured with a high pass that cuts out the bass
- The speakers you are using might not be designed for much bass response, or you might be used to the sound of a bass boost function from other electronics. If this is the case, you can boost the bass with the DSP software.

8. Other Common Issues

Issue	Possible Cause	Solution
Distorted sound	Gain set too high or insufficient power supply. Bad Audio Source Damaged Speaker Bad connections	Lower DSP gain, check power supply, and test your speaker with another amplifier to ensure it is not damaged. Check your audio source
Shuts down at high volume	Insufficient power supply. Loose metal on the amplifier board Bad connections	Use a 24V, 3A or greater rated supply and check all connections
No stereo in TWS	Incorrect mode settings. Check the 'mode' switch on the board and appropriately set your amplifier to L, R or MIX (this is only relevant if you amplifier is in bridged mono mode)	Check master/slave configuration.

Version History

- V1.0 Released March 12, 2025