

KSBTS-05 Mono Bluetooth Speaker Project Teacher's Guide

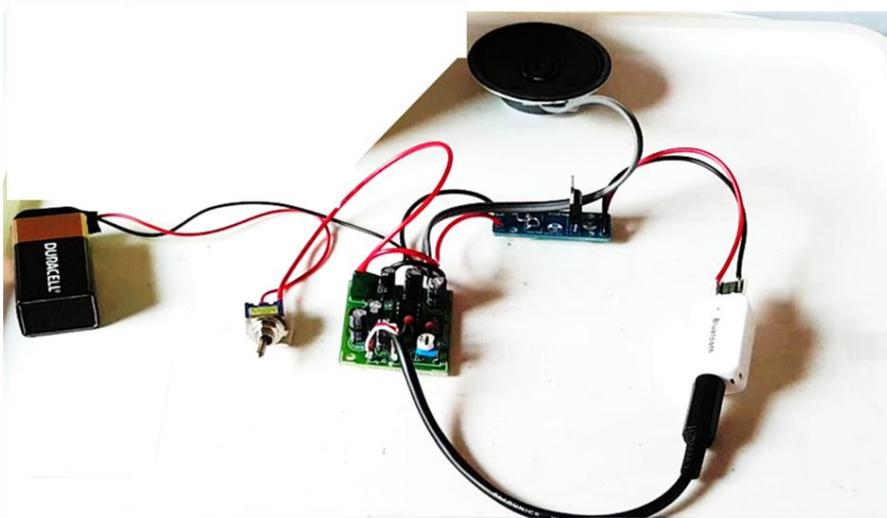


Fig 1: Bluetooth Speaker Project – Electronics only

This document is intended as a Teachers Resource Guide.

The objective of this document is to assist with showing how to assemble the components and Modules which are used as part of our “KSBTS-05 Bluetooth Speaker Project”. *(This project shows how to assemble the Electronics Modules, wires, switch and loud speaker, it does not include design of the housing.)*

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We anticipate that most teachers will have made themselves familiar with our other documents which relate to the various modules and sub-assemblies of this project. The most important of these other documents are:

- **FK602 Student instructions-Ver 2.pdf**
- **KSBB-BT04 Bluetooth Receiver Project**
- **Wiring a TRS Audio Plug Teachers guide.pdf**
- **A self-paced guide to Wiring the ON-OFF switch and a 2.1mm Power Inlet socket.pdf**

Resources you will need:

- **Recommended Teacher tools** (one set per class):
 - o Demonstration modules which has been tested and proven to be working.
- **Recommended Student Tools (one set per student):**
- KSBTS-05 “Components” for the Boom-Box Speaker Project
- Assembled FK602 (Mono Audio Amplifier)
- Assembled KSBB-BT04 Bluetooth Receiver Module
- Speaker (1 piece)
- Power Supply 6V to 12V DC.
 - o *(We recommend using 6XAA Battery Holder for cost-effectivity and long life.)*
- Soldering Iron
- Soldering Iron Stand with a damp cloth or sponge
- Diagonal Pliers (“Side-cutters”)
- Long nose Pliers
- Solder sucker or Solder wick (for removing unwanted solder)
- Two short pieces of “Heat-shrink” for insulation purposes (not mandatory).

What we are building:

This instruction guide will show you how to assemble the “components” used in this “Bluetooth Speaker Project”.

This guide does not include directions on building a housing, nor installing the modules inside the chosen housing.

Introducing the 6 key “Components” of the system:

For this system to work well and reliably, there are 6 key parts which need to be considered and assembled correctly. (Refer to Fig 2). These 6 parts are:

- 1) Mono Audio Amplifier (FK602 Kit)
- 2) Bluetooth Receiver Module (Our Part Number is KSBB-BT04)
- 3) Audio “AUX” input cable
- 4) Power Supply (e.g. 9V battery)
- 5) The “Power Switch”.
- 6) The Speaker (and mounting it properly).

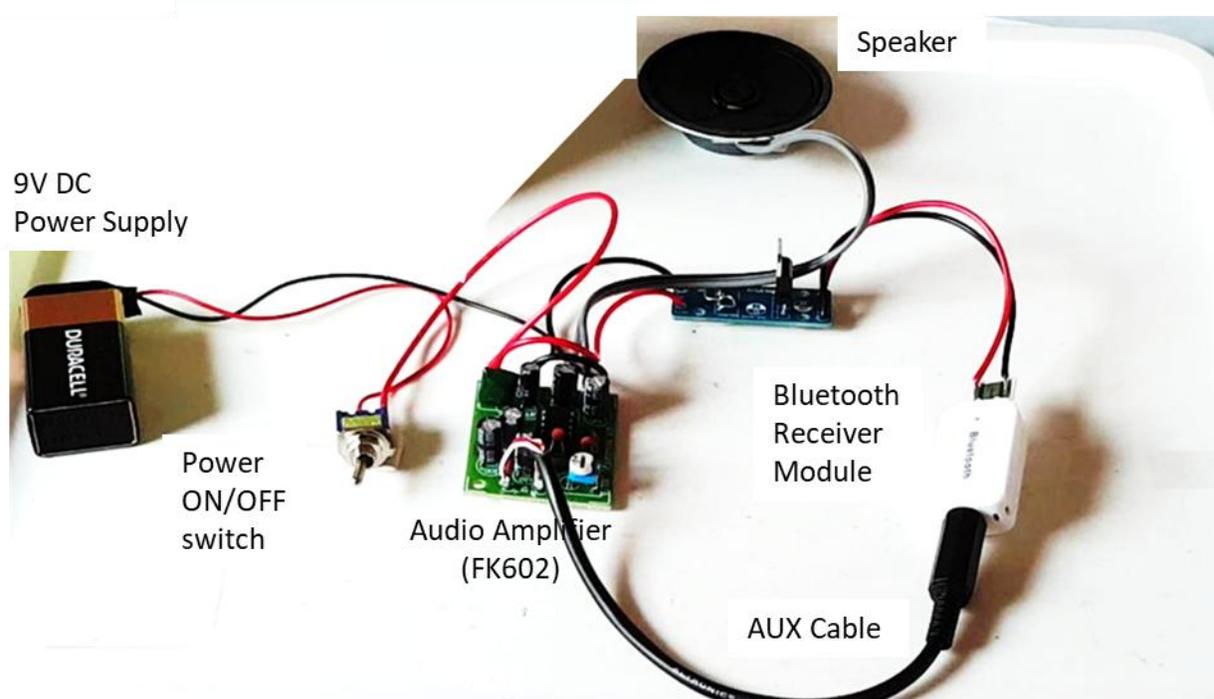


Figure 2: The 6 major components within the Bluetooth Speaker System

Preparing and testing the separate modules:

Module 1: The FK602 Audio Amplifier.

- Please refer to our separate detailed construction guide for this Module. The document is titled “FK602 Student instructions-Ver 2.pdf” .

- Refer to Figure 1. which shows a completed Audio Amplifier about to be tested.
- We recommend that you test this module using a reliable audio source.
- If the Amplifier is not working properly at this point, it is MUCH easier to fix it now, rather than after it has been installed into the Boom-Box case.

Module 2: The Bluetooth Receiver Module.

- Please refer to our separate detailed construction guide for this Module. The document is titled “Bluetooth Project KSBB-BT04 revised 2023 Version Teachers guide - Ver 1.pdf” .
- Refer to Figure 2. which shows a completed Bluetooth Receiver Module
- We recommend that you test this module using a reliable amplifier and speaker.

Component 3: Audio “AUX” input cable

- It is IMPORTANT that you correctly identify the different wires inside the supplied AUX cable, and that they are connected to the Amplifier Inputs correctly.
- Please refer to our Video Tutorial on YouTube for a detailed Guide on correctly identifying the wires within this cable. The YouTube link is https://youtu.be/zdlxs_E-QVg
- Refer to Figure 3 which shows some examples of different completed cable and plug assemblies.
- When connecting the AUX wires to your Audio Amplifier, the “Sleeve” wire MUST connect to the “Ground” input pin.

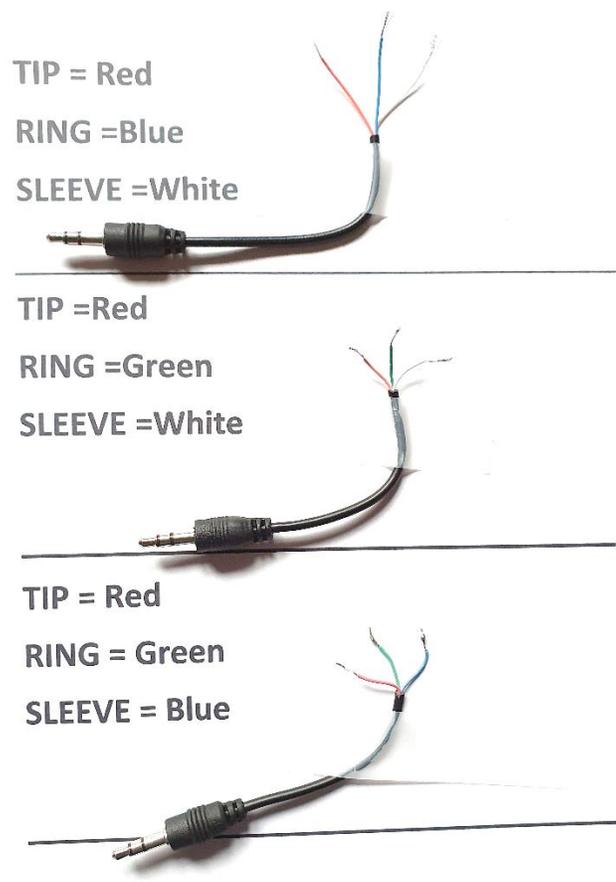


Figure 3: Examples of three different completed cable and “AUX” plug.

Component 4: The Power Supply (this example is a 9V Battery Snap)

- You may find students need to strip the ends a little to give extra length for connecting to the Switch and the PCB.
- Tin the ends before soldering onto the Switch and the PCB stake.

Module 5: The “Power Switch”

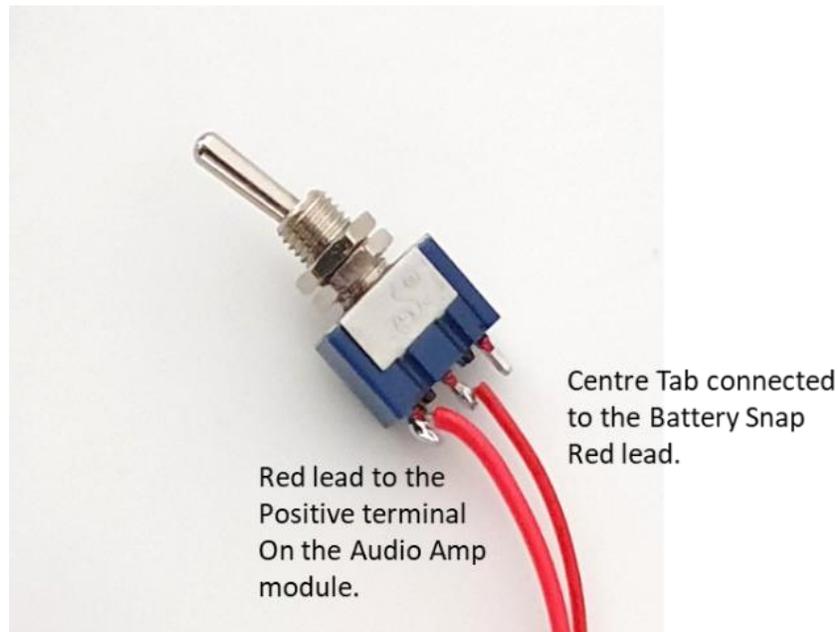


Figure 4: Wiring for the ON/OFF Power Switch

Module 6: The Speaker.

- Identify the Mounting tabs on the speaker and attach the wires to them.
- Attach the wires to the output of the Audio Amplifier.
- Consider how you wish to mount the speakers into the Mini-Boom Box. Refer to Figure 5 for a suggestion which is using hot-melt wax.

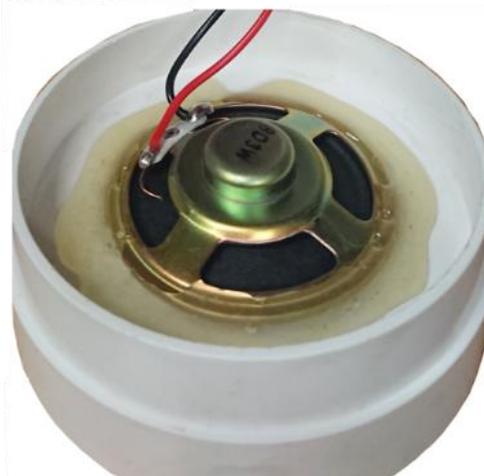


Figure 5: A study showing a speaker connected to wires and with hot-melt wax holding it in place.

Assembling the full system:

Suggested connections for complete system:

- Power Input pins:
 - Battery Ground
 - Red (switched) +ve Supply from the “Power Switch”
 - Connect the Bluetooth Voltage Regulator inputs (usually connected to the Amplifier Power Inputs).
- Audio Input
- Speakers
- Refer Figure 2 for an example.

For further assistance on this stage, refer to our step-by-step pictorial guide titled “A self-paced guide to wiring a Bluetooth Speaker system together - in photos.pdf”

Testing the full System:

- Install the battery
- Switch the system ON.
- Listen for any unexpected noise and also check the PCB and leads for any “hot Spots”.
 - If there are any hot spots, immediately turn OFF and disconnect the battery.
- Connect the 3.5 mm “AUX” plug into the Bluetooth Receiver Dongle.
- Connect the Bluetooth Dongle to your Smart Bluetooth transmitter and play an audio file to and ensure the system is working.
- Switch the “Power Switch” to OFF and ensure the amplifier does go OFF.