Bluetooth Project (KSBB-BT04 -V2)

(Teacher's Guide)

Introduction for Teachers:

The objective of this document is to assist with showing how to assemble the components of a Bluetooth Receiver Module (our P/N "KSBB-BT04 – V2") as part of our Bluetooth Speaker Project kits.

Resources you will need:

- Kitstop Bluetooth Kit (P/N KSBB-BT04-V2)
- 6V DC to 12V DC power source.
- Soldering Iron
- Soldering Iron Stand with a damp cloth or sponge
- Diagonal Pliers ("Side-cutters")
- Long nose Pliers (aka "Needle nosed pliers")
- Small flat nose screwdriver (aka "Jeweler's screwdriver")
- Wire stripper (this is desirable but not essential).
- Solder sucker or Solder wick (for removing unwanted solder)

Fig. 1 : Key Components of the Project.

What we are building:

This instruction guide will show you how to assemble the KSBB-BT04-V2 "Bluetooth Lowest Cost Project", then how to connect it into a working audio amplifier system.

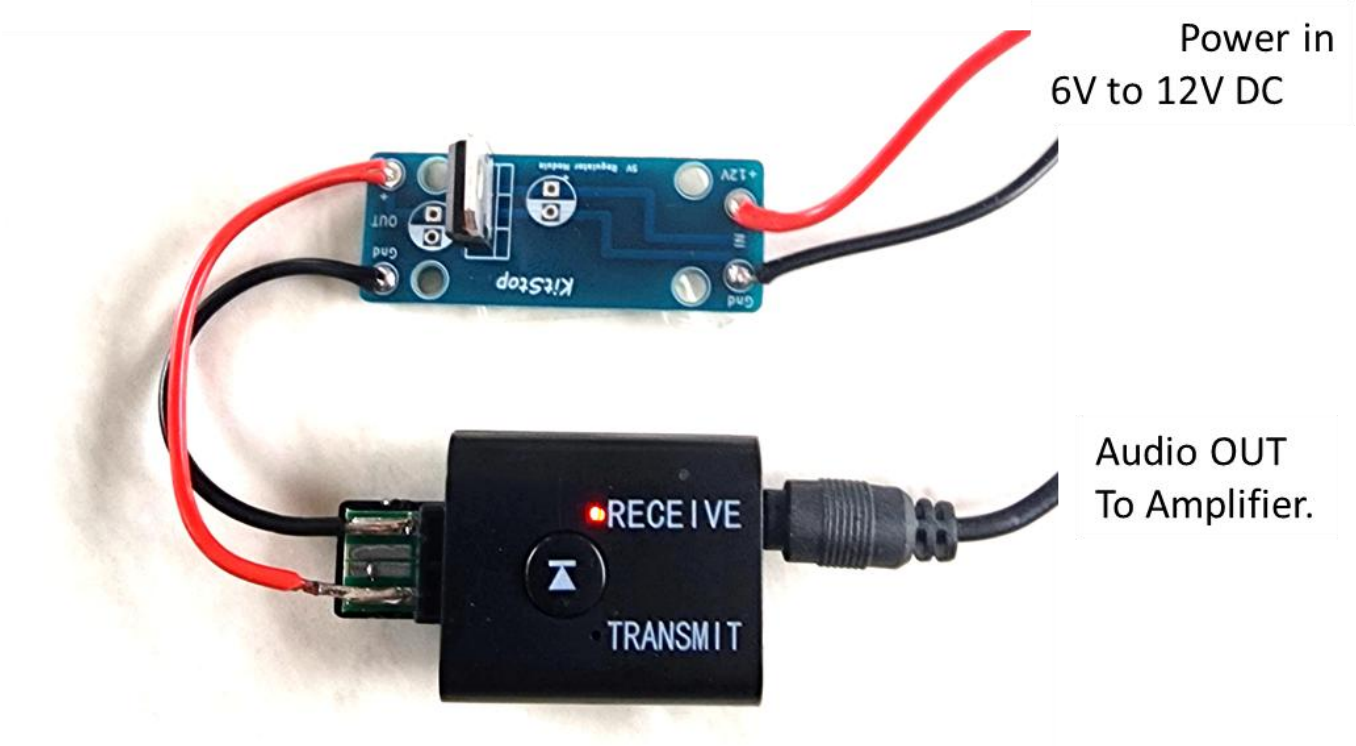


Fig. 2 : The finished Project.

Introducing the 4 key items to completing a working system:

For this system to work well and reliably, there are 2 key sub-systems plus 2 key processes which need to be assembled and completed correctly. *(Refer to Fig 1).* These 4 items are:

1) The 5V Regulator module
2) The Bluetooth Audio Dongle.
3) Testing the completed Bluetooth Receiver before installing it.
4) Connecting your Bluetooth enabled devices successfully.
   (Usually a "smart" phone or other MP3 device, and the KSBT module attached to your Audio Amplifier.)

Preparing the 5V Regulator module (Key Item # 1):

Step 1: Identify the Blank PCB as shown in figure 3.

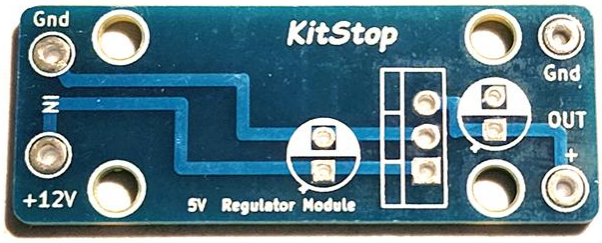


Fig. 3 : Close up of the Blank PCB

Step 2: Insert the 5 Volt Regulator (Marked “7805”) correctly.

- Refer to figures 4a and 4b.

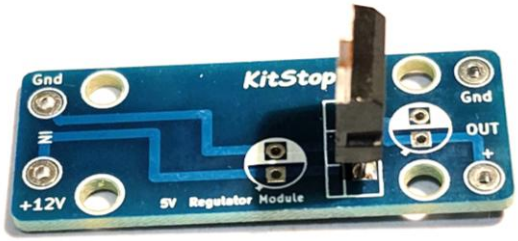


Fig. 4.a: Top view of the PCB.

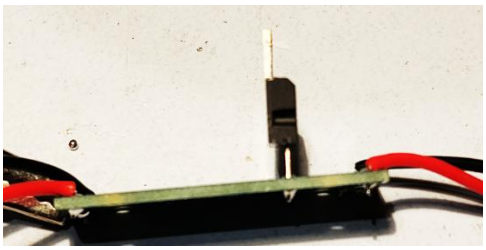


Figure 4.b: Side view of the PCB.

Take note of the orientation of the Voltage Regulator IC.

Step 3: Identify the INPUT and OUTPUT side of the Regulator Module.
Attach the red and black wires to the marked terminals.
Refer to Figure 5 to identify the wires.

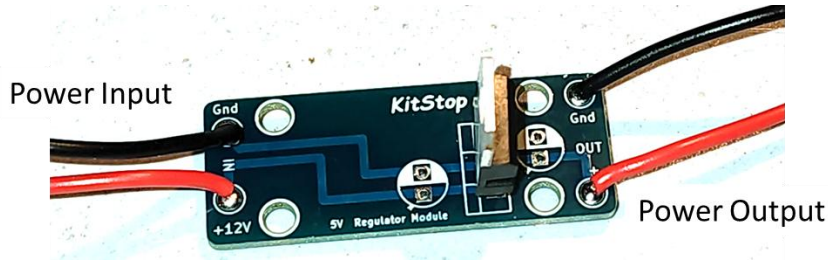


Fig. 5: Showing the red and black wire connections to the Voltage Regulator Module.

The USB Bluetooth Dongle preparation (Key Item # 2):

Step 4:a Prepare the Bluetooth Dongle as shown in Figures 6 to 8.
We recommend using a small flat nose screwdriver to start separating the case body, and a pair of “needle nose pliers” to grip the metal shroud (in Figures 6 to 8).

Fig. 6: Starting to separate the Bluetooth Dongle’s casing.

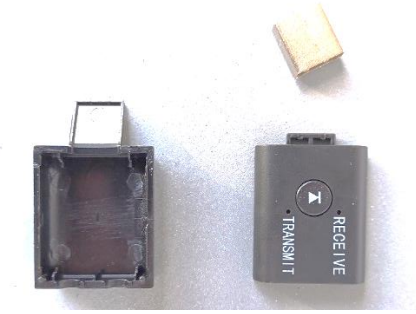


Fig. 7: The casing is now separated and we are removing the metal shroud

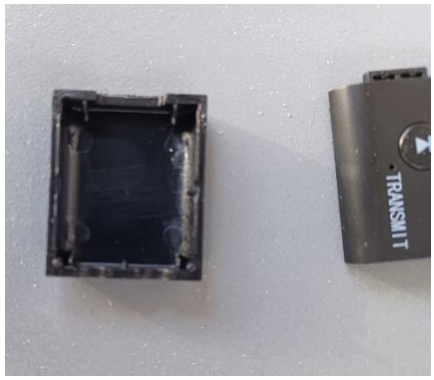


Fig. 8: Metal shroud now removed and the base of the casing has been trimmed to remove the unwanted part of the casing.

Step 4:b Remove the top plastic housing from the Bluetooth Dongle, then identify the terminals for +5V and Ground of the module. Refer Figure 9.

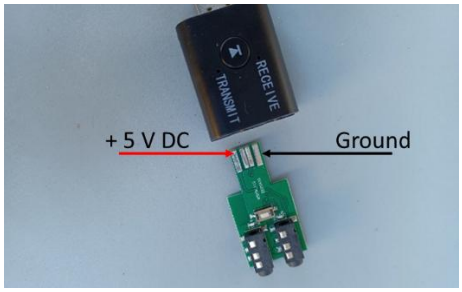


Fig. 9: Top plastic housing removed and +5V and Ground terminals identified.

Step 4:c Solder the Output wires from the 5V Regulator Module onto the USB Bluetooth Dongle. (Refer to Figure 10 and 11.)

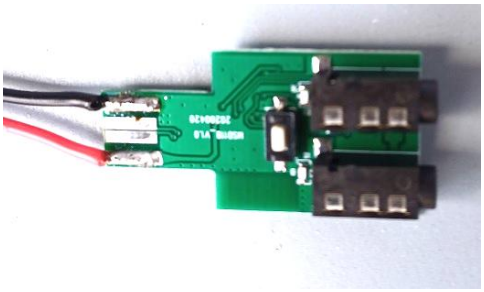


Fig. 10: Showing the correct connection of the wires.

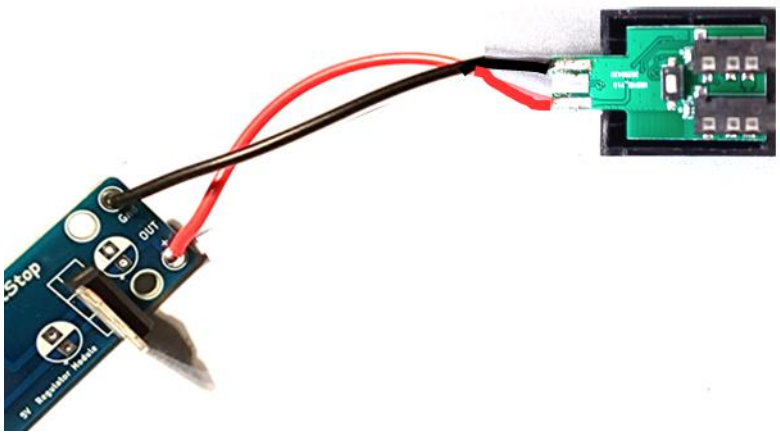


Fig. 11: Showing the wires from the Regulator Module now connected to the USB Bluetooth Dongle, and half the casing reapplied to the Dongle's PCB..

Testing the Bluetooth Dongle:

Step 5:a Connect the 9V DC or 12V DC to the input of the Voltage Regulator Module.

Step 5:b The red LED on the Bluetooth Dongle should start to flash. (Refer to figure 12.)

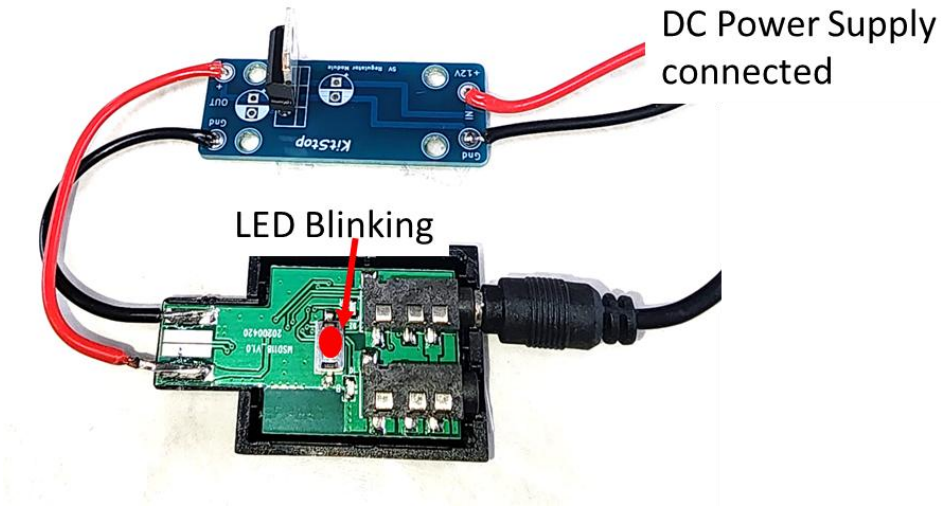


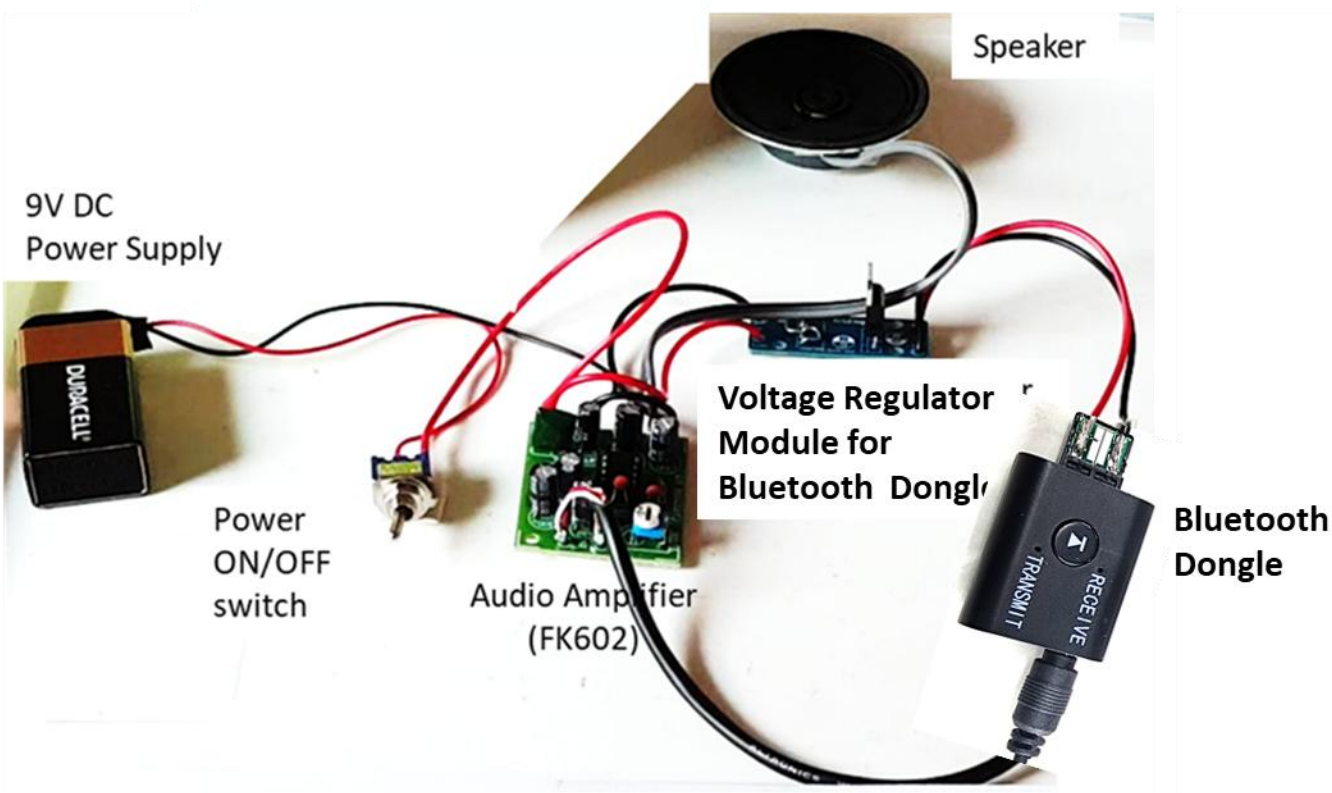
Fig. 12: Testing the USB Bluetooth Dongle and showing the red LED is working.

Step 5:c **NOTE TO TEACHERS:**
The Bluetooth Dongle may take up to 3 seconds for the LED to start to flash. This is normal.

Testing the completed Bluetooth Receiver before installing it (Key Item # 3).

Step 6: Refer to Figure 13 for a finished system.

- Connect the audio output of the Bluetooth Dongle into a known good amplifier which has speaker(s) attached.
  (In this case we have connected to a previously tested and proven to be working Amplifier. This total system is known as our P/N KSBTS-05)
- Apply power to the input of the Voltage Regulator Module.
- "Pair" the Bluetooth dongle to a known good Audio source.
  (Refer to next section for advice on this process.)
- Play an audio track and confirm the system is working OK .



KSBTS-05 – using the KSBB-BT04

Fig. 13 : Testing the system is working correctly.

How to "pair" the Bluetooth wireless data connection (Key Item # 4):

- We recommend connecting the 3.5 mm audio plug *(often known as an "AUX" plug)* from your Bluetooth Audio Dongle into your Audio Amplifier before you start. *(The supplied Dongle will give some audible outputs via the Audio Amplifier which can prove helpful during the initial phases of connecting.)*
- When power is first applied to the Bluetooth Audio Dongle, it will normally take approximately 3 seconds to go through its internal start-up routine and then start to rapidly flash a LED.
- With your "Smart" phone, set the Bluetooth mode to "Scan".
- Most of the supplied Dongles will have an Identity like "H-163" or "BT360".
- The code for the supplied Dongles is 0000, however most phones will automatically try this code at first contact.
- Once "paired" and connected successfully, the LED will flash slowly.
- The Bluetooth Audio Dongle is now ready to receive music.

NOTES TO TEACHERS WHEN INTRODUCING BLUETOOTH:

1) Although all the supplied Dongles will likely have the same one or two "Names" (Such as "BT360"), this does NOT mean that all Dongles called "BT360" can play from the one transmitter!
2) Every Bluetooth device has its own unique 48-bit address.
    a. This is far too many "bits" for humans to get correct reliably.
    b. Therefore, they allow us to give them easier to understand "names".
    c. Many devices can share the same "name".
    d. BUT they will not have the same unique 48-bit address!
3) This may have implications in the following scenario:
    a. Teacher "A" completes a demonstration of connecting to one known Bluetooth Dongle with a "name" of "BT360".
    b. Now the class full of students switch ON their Bluetooth dongles.
    c. They ALL have Dongles using the name "BT360".
    d. Students rush to "pair" to the "BT360" shown on their phone.

e. When the students go to play their own music… chaos reigns as various “wrong” Boom Boxes are playing unexpected music!

4) Suggestions:
   a. When students are “pairing” to their Bluetooth Dongles, they do so in an orderly manner.
      i. Start with only ONE student to have their Dongle ON at a time, until that student is successfully “paired” to their correct “Dongle”.
      ii. Once this student is “paired” correctly, allow the next student to turn ON their dongle and “pair” to it.
      iii. Repeat this process for the entire class.
   b. Once all students are correctly “paired” they can connect and disconnect as they wish.
5) Tip on avoiding a common problem for demonstrators and Teachers:
   Having “paired” your own phone to one dongle named “BT360”, it is very confusing trying to pair to another one with the same name. (This is permissible within the Bluetooth protocols!)
      - We have found it beneficial for ourselves to “Unpair” from specific dongles if we have finished our connection to that specific dongle. This is particularly useful when wishing to continue doing demonstrations with other dongles of the same “name”!
      - Several Teachers have reported this “Challenge” when helping Students to test their systems.
6) Connecting to an iPhone can sometimes be difficult. We have written a separate document titled “iPhone Connection Guide .pdf” to assist with overcoming this issue.
7) Support for correctly identifying the wires inside the Audio Cable.
   Please view our short tutorial on YouTube which demonstrates how to correctly identify the wires inside the Audio Cable. YouTube link is https://youtu.be/zdlxs_E-QVg