BEOTOOTH 5500

User Manual

V1.0 23/12/23

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1.   Assembly

Kit content :

- 1x PCB assembly
- 1x 3mm LED (red)
- 1x Plastic Enclosure with machined holes.
- 1x 80 cm of 4 conductor wire
- 1x 7 pin male DIN.
- 1x 3D printed cable holder
- 2x zip ties
- 4x PCB screws + 2x enclosure screws
- 2x heatshrink tube
- 1x adhesive label

1.1. Solder the connector

Strip about 12mm of external insulation from one end of the cable. Fold the shielding mesh over the external insulation. Strip the the end of each individual wire, and solder them to the connector according to the attached diagram (Fig. 2). Be aware that the plastic part holding the pins together melts at low temperature, so be sure to spend as little time as possible heating the pins, or risk having the heated pin move relative to the other pins.

If that happens, you can always re-heat the pin, and move to it put it back in the right position.

Once the 4 wires are soldered, crimp the connector metal shell to the cable to secure it in place. Make sure the shielding mesh wires are tight between the metal connector and the insulation of the cable. (See Fig. 1)

Figure 1: Open connector with all wires soldered

Use one piece of heat-shrink tubing to cover the crimped part, and prevent any shield wire from getting loose and shorting the pins.

Close the connector now, as it will later become impossible to slide the connector plastic shell from the other side of the cable.
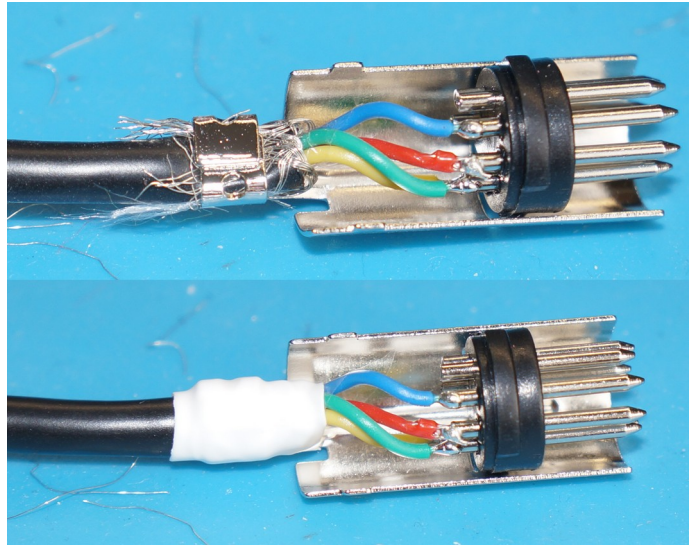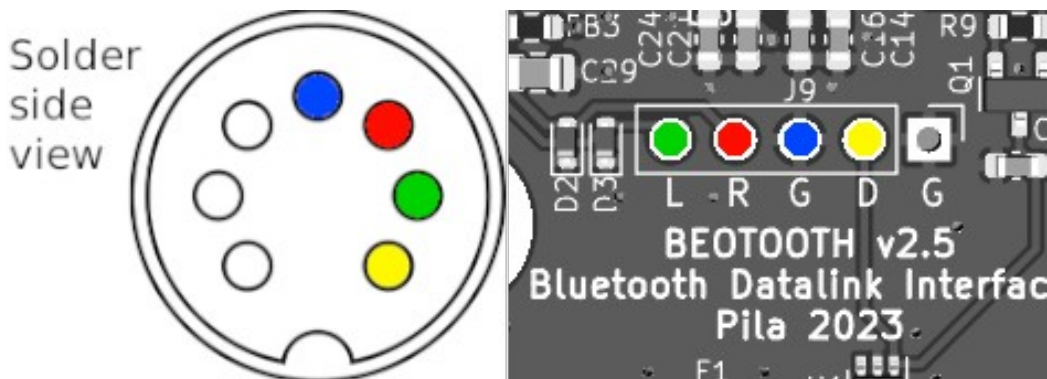

Figure 2: Connector / PCB wiring diagram, showing the color of each wire

1.2. Solder the cable to the PCB

Strip about 25mm of insulation from the other side of the cable. Cut all strands of shielding as short as possible, and use a piece of heat-shrink tubing to cover the remaining strands.

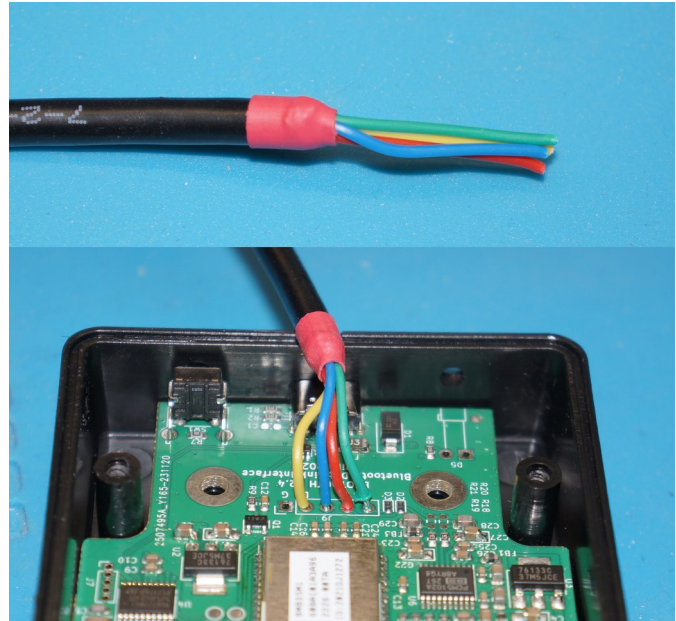Solder the wires to the PCB, according to the diagram. (see also Fig 3).

1.3. Install the PCB

Place the PCB in the upper (larger) half of the enclosure, and make sure the USB-C port and push button line up with their respective holes in the enclosure. Secure the PCB to the enclosure using the 4 silver screws provided. Once all the screws are tight, confirm that the pushbutton operates properly without rubbing

Figure 3: PCB with cable soldered

against the enclosure. If necessary, loosen the screws and adjust the PCB position until the pushbutton operates smoothly.

1.4. Solder the LED

Install the LED like shown in the Fig 4. This will require cutting and bending its legs. Make sure the short leg (cathode) is the closest to the outline of the PCB. If you don't remember which one is the shortest, it can be identified by a small flat section on the plastic part of the LED. If the LED is install backward, it will not illuminate. Once satisfied with the position of the LED, solder it the the PCB. I advice the solder the short leg (cathode) last, as it is connected to the ground plane of the PCB, and therefore require more efforts to bring to soldering temperature.

Figure 4: LED soldered to the PCB

1.5. Install the cable holder

The cable is secured to the cable holder using 2 zip-ties. Insert both zip-ties in the matching holes in the cable holder. With the cable inserted, tighten each zip-tie until the cable cannot move independently of the cable holder. Make sure the locking head is sitting as flat as possible against the cable holder, as there is minimal clearance with the USB-C port.
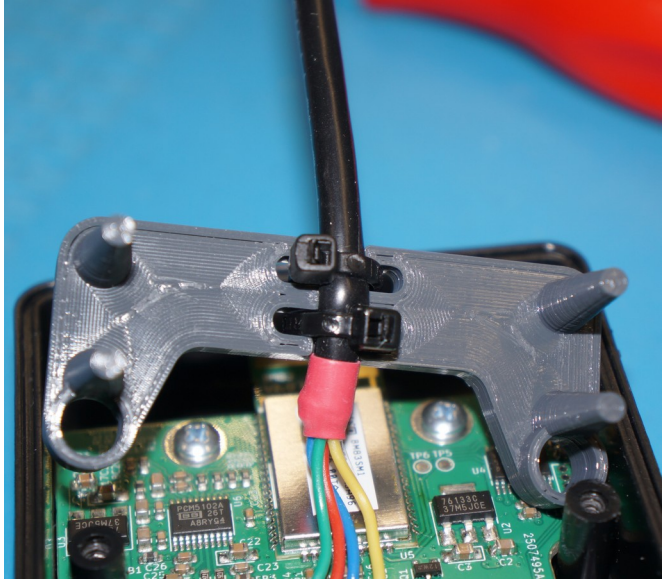

Figure 5: Cable zip-tied to the holder

1.6. Close the enclosure

Place the cable holder in its resting position : both plastic columns from the enclosure inserted in the corresponding holes and all 4 plastic feets of the cable holder resting against the enclosure.

Close the enclosure, and tighten the 2 black screws.

Congratulations, your Beotooth 5500 is now fully assembled.

Figure 6: Cable holder in place

2.   Usage

2.1. Features

Bluetooth related features :

- Support AAC audio codec for proper quality sound restitution.
- Can be paired with up to 6 Bluetooth devices (Only 1 connected at the same time).

Datalink related features :

- Connects to a B&O system using the usual 7-pin DIN Datalink connector.
- Provides audio signals at the same level as other B&O devices.
- Communicates using the Datalink-80 protocol.
- Converts the Datalink commands from the B&O system to AVRCP (1.0) commands for the Bluetooth device.
- Notify the B&O system of link status (Bluetooth disconnected shows as "NO SOURCE")
- Turns off the system after 5 minutes without Bluetooth link, or 15 minutes without audio activity on the Bluetooth link (Usually means no sound on a mobile device, but means another audio output selected on my Linux PC).

When paired with an AVRCP 1.3 Bluetooth device :

- Notify the B&O system of current playback state (Playing / Paused / Seeking)
- Shows the current track number and live elapsed time on the MCP5500.
- Automatically turns on the B&O system when playbacks begins (AVRCP Status shows "playing". I did not want the system to turn on as soon as sound is available on Bluetooth, to prevent it happening for every notification my phone receives, and waking up the whole house by the same occasion).

Misc features :

- Powered through a standard USB-C connector (5V 100mA).
- Enumerates as USB serial port for configuration.
- Red LED at the back to show its status (Not connected / Pairing / Paired).
- Small form factor, making it easily concealable.

Possible future features :

- Select track by entering track number. At the time being, it seems my phone does not support the AVRCP version (1.6) required to select tracks from their track number, despite claiming otherwise, so I was no able to implement that feature yet.
- Trigger pairing from a special code on the remote

2.2. Quick start

Plug the Beotooth 5500 7-pin DIN connector to a Datalink-compatible system. Use a USB-C cable to connect the Beotooth 5500 to an suitable power supply (any device providing 5V, 100mA min).

The red LED lights up after a few seconds. The Beotooth 5500 is operational. To pair a bluetooth device, press shortly on the "pairing" button. The LED blinks fast, the Beotooth 5500 can now be connected via Bluetooth for a few minutes. Once the connection is established, the red LED blinks slowly.

2.3. Pairing button

The "pairing" button has 2 functions : a short press enters the pairing mode, making the Beotooth 5500 visible to nearby Bluetooth devices, and making it accept connection from a new device. A long press (10 secs) clears any paired device. This will prevent any previously paired device from connecting to the Beotooth 5500.

2.4. LED meanings

Pattern	Meaning
Steady On	The Beotooth 5500 is in standby, Bluetooth is disconnected
Slow Blink	Bluetooth connected
Fast Blink	Pairing mode, new Bluetooth devices can be connected.
Steady Off	Unpowered, or unexpected error. The Beotooth 5500 will not operate.

2.5. USB configuration

Once connected to a computer, the Beotooth 5500 enumerates as USB / Serial interface, providing a simple command prompt that allows some settings to be changed. Use a terminal emulator software (such a Putty on Microsoft Windows) to connect to it (the actual port configuration, such as the baudrate, do not matter). Each command must be followed by a line return character. The supported commands are :

Command	Typical answer	
VER?	OK,BEOTOOTH 5500 v1.0	Query current firmware version
NAME?	OK,BEOTOOTH 5500	Query the actual Bluetooth name of the device.
NAME=XXX	OK,XXX	Set the Bluetooth name (here to XXX). If name empty, default name used (BEOTOOTH 5500)

2.6. Firmware Upgrade

The firmware can be upgraded through USB. Procedure TBD.