

Houston Tracker 2: TI-82 Stats Power Socket Modification

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Instead of four AAA batteries, the TI-82 calculator may also run on a constant 5V power supply, as provided by ubiquitous USB power banks or wall power plugs. This guide will demonstrate how to install a standard 2.1mm barrel plug socket for this purpose.



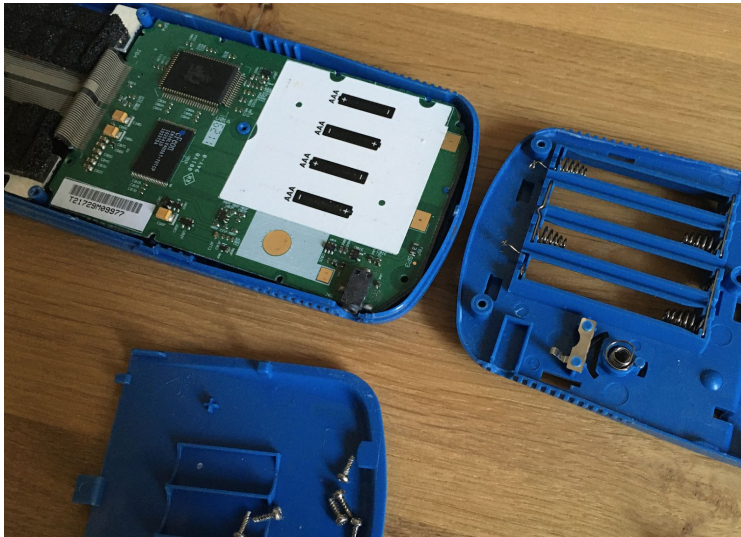
WARNING: Anything you do, you do at your own risk. While the modification is very straightforward, there will be some drilling, cutting, soldering and interfering with electricity. I cannot be held responsible for your actions when following this guide.

I chose a 2.1mm barrel plug socket over a mini- or micro-USB port, because of easier installation and its robustness. Accidentally unplugging the power cable from the TI-82 while it's running Houston Tracker 2 might clear its entire memory, wiping not only your songs, but also your shell and Houston Tracker 2 installation, so I did not want to rely on a flimsy USB socket.

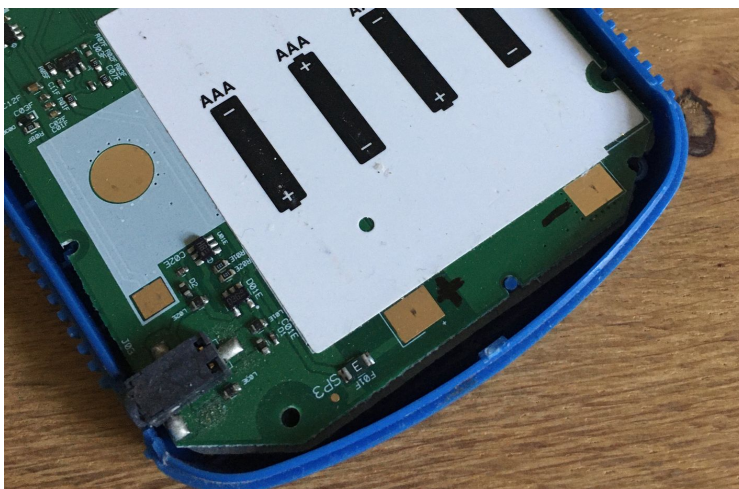
Please read the guide in its entirety at least once before you start working on your calculator.

Installation procedure:

1. Remove all batteries, including the backup battery. This will wipe your calculator's memory, so backup your data beforehand if you need to.
2. Unscrew the back of the TI-82 and carefully disassemble it.



3. At the bottom of the white battery compartment sticker there are two golden plates, the left being the + terminal and the right being - or ground. I marked them with a permanent marker below.



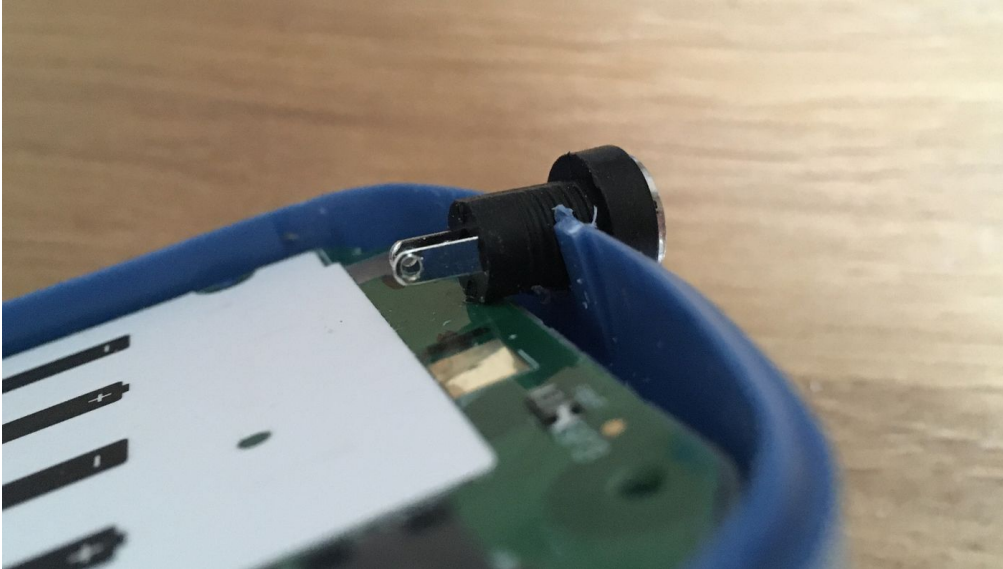
4. Now it's time to decide where to put the barrel plug socket. The exact placement depends on your chosen socket, so look how big of a hole you will need and where to fit it above or next to the PCB.

Carefully lift the calculator's screen then and remove it together with the PCB and buttons. Put the TI-82's shell back together (no need to use the screws) and check where to best drill a hole for the barrel plug socket. I chose this area, just between the two golden plates on the PCB:



5. The socket may be a little too thick to fit together with the PCB, so you might have to cut parts of the socket away. A plastic socket is cut easily by a sharp knife. Of course, be careful.

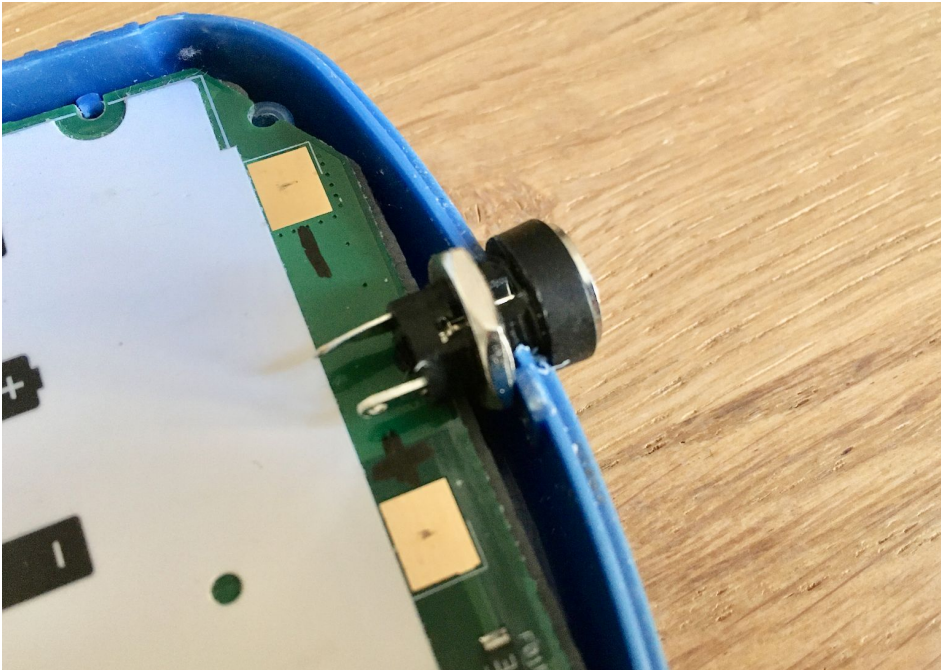
Socket not fitting very well above the PCB:



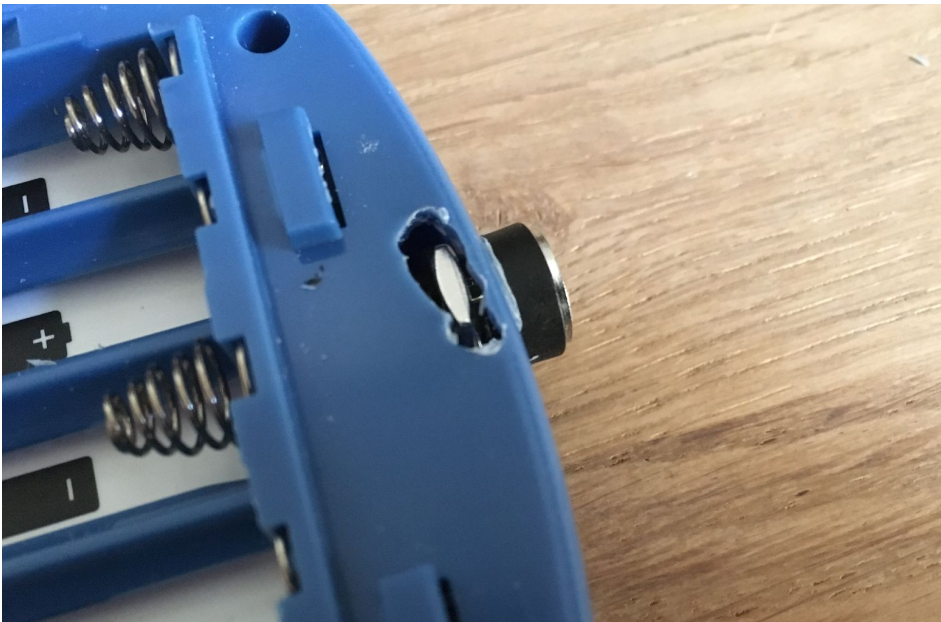
Socket cut thinner with a sharp knife:



6. Depending on how you need to secure the socket in place, another modification of the calculator shell might be required.



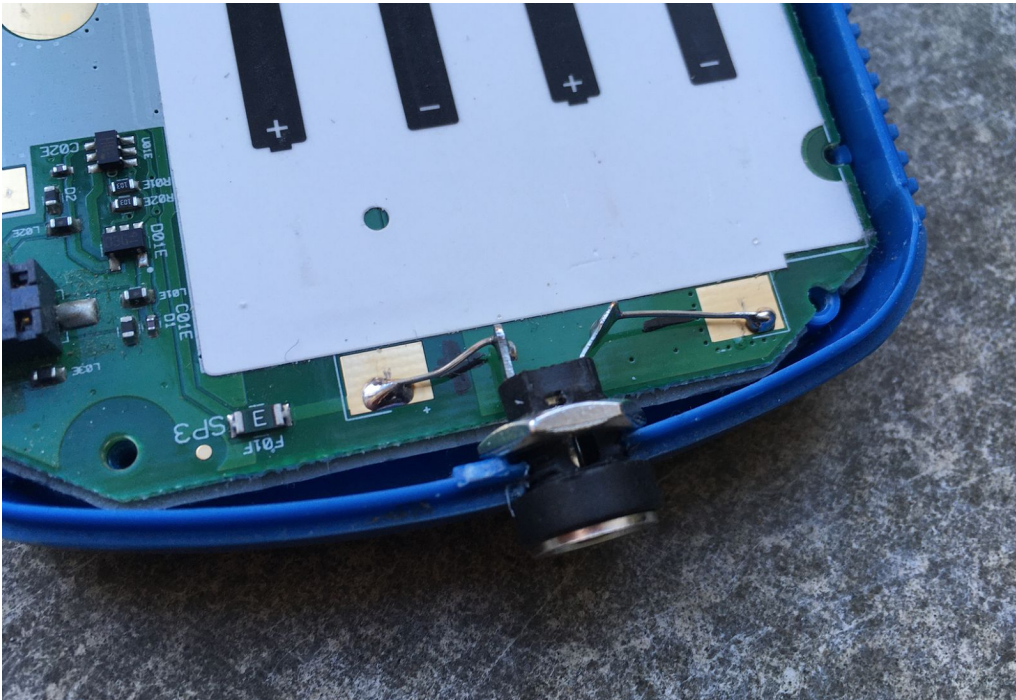
Drilled hole in the back of the TI-82 case to give some space to the screw nut:



7. Test if everything fits.



8. Keeping the polarity of the socket in mind, solder it to the golden plates. A common polarity of barrel plugs is center positive.



9. Place the backup battery into the calculator and leave the AAA batteries away, to test your modification. Again, make sure to use a 2.1mm barrel plug of the correct polarity, attached to a 5V power supply. The calculator should work normally, but its memory will be wiped.



10. Congratulations! That's it! Now you just need a USB to 2.1mm barrel plug cable (again, watch the polarity) and you can make chiptune music with Houston Tracker 2 without the need for AAA batteries.



ATTENTION:

- Do not attach the power cord to the calculator while AAA batteries are inside! This might damage not only the device, but also risks literally blowing up the batteries.
- When connecting the calculator to your computer via the link cable, do so with AAA batteries and without the external power supply, to avoid possible grounding issues.
- Detaching the power cord while the TI-82 is running might wipe its entire memory, requiring you to reinstall the shell and HoustonTracker 2. Your songs will also have been lost. Always shut down the calculator properly via the operating system.