



DIY Amped Blackout Comms Communicator

Build Instructions

This build is experimental, using the AirBuddy 1 Watt Amp. It should result in greater reach/penetration of your signal. I am currently testing it.

Check your laws/regulations. This build may not be legal where you are!

Blackout Comms firmware allows you to **communicate securely off-grid**. It runs on Lilygo T-Deck and looks similar to a texting app.

Instead of internet & cell service, it uses LoRa, meshing, encryption, and digital signatures for local communication and **does not require service or infrastructure** and works during a grid outage.



Blackout Comms Firmware

DOWNLOAD

After assembling this device, download the firmware for free from chatters.io.



User Guide

How to use the T-Deck with Blackout Comms



How it Works

How messaging works in Blackout Comms



Firmware

T-Deck firmware flash page



Compatible with Blackout Comms Clusters

If you have (or build) your own private Blackout Comms cluster, this amped communicator will be *fully compatible*! Learn more at: <https://chatters.io>



Notice: Assemble at Your Own Risk

You should be familiar with electronics and soldering before attempting this project. This document *may* contain mistakes. Often there is variation in components, such as polarity being reversed, so you need to understand this thoroughly. **Mistakes or faulty/incorrect hardware could result in injury, fire, or other damage.**





Sources used for this build:

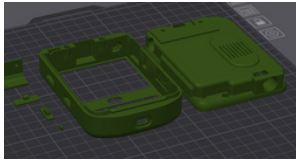
Soldering Tools

You will need some basic soldering supplies for connecting wires to one another and to the T-Deck. Heat shrink wrap is also recommended.

Other Supplies

There may be other miscellaneous supplies/tools not mentioned here.

TDeck	Rokland , Amazon	Dev board (not complete)
T-Deck Battery	Amazon	3.7 LiPo, 5000 mAh. You may want smaller as stated later.
Amp Battery	Amazon	3.7 LiPo, 2000 mAh
AirBuddy Amp	Amazon or Ali Express	1 Watt 915 / 5v Amp
Charge Controller	Adafruit	Adafruit PowerBoost 1000c
Realtime Clock	Adafruit	DS3231 (Stemma QT)
GNSS/GPS	DFRobot 1103 , DFRobot TEL0157	Either option works, often available at Digikey
Antenna & Connector	Rubber Ducky Antenna , IPEX to SMA Male	Antenna + pigtail connector between T-Deck & Amp
Micro SD Card	Amazon	Check compatability list
Wires	Qwiic , Battery Connector Grove Stemma to Qwiic	<i>Check your battery polarity to get correct connector!</i>
Nuts/Bolts	M3 Heat Inset Nuts , M3 Screws , M2 Heat Inset Nuts , M2 Screws	You may use other options, these are what we use
USB Cables	Amazon (Magnetic)	Linked one is an example. Need USB-C & Micro
Toggle Switch	Amazon	Small PCB-Type Toggle



Print Your Case

[Download printable enclosure](#) files (includes 3MF and STL formats).

I use Black ABS for the front and colored PLA for everything else.



Install Amp On-Off Switch

Clip one of the pins from the toggle switch completely.

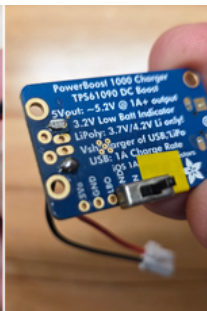
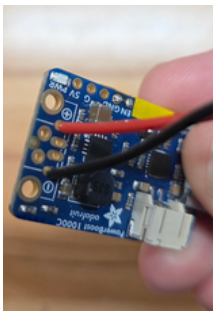
We want to wire the toggle switch to EN and GND on the charge 5v boost / controller.



Insulate the connections next to EN with electrical tape, as shown, so no other connections can come into contact with the switch.



Solder the toggle switch onto the underside of the boost board as shown.



Connect Amp Power Cable

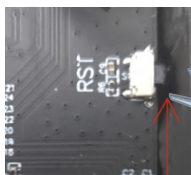
The amp needs 5 volts, so we connect its included cable to the Adafruit Boost's 5v / Gnd connections, as shown.



Add Case Nuts / Switches

Use a soldering iron tip or other heating method to heat sink the nuts into the locations on the case. 2 M2s will connect the case halves, while all the other nuts shown are M2s.

Add the T-Deck reset & power switch covers.



Clip the T-Deck's Reset Button

The T-Deck's reset button is too long for the enclosure. If you don't clip it to be flush with the side of the T-Deck, the case will hold the reset button down, and the T-Deck will appear to be dead.

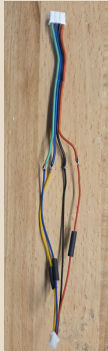


Prepare the T-Deck

- Attach Grove / Qwiic Connector to T-Deck
- Attach pigtail antenna connector
- Move T-Deck speaker out of the way
- Add battery adapter/connector (not the battery yet)
- Remove the screen protective film

**** Carefully press the T-Deck into the case, USB port end first ****

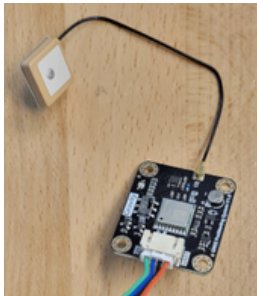
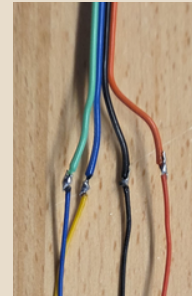
You'll need to spread the case open a little and gently work the T-Deck into place.



Create a DFRobot / Qwiic Adapter

Create an adapter wire that will allow the DFR cables to attach directly to any Stemma/Qwiic plug. I heat-shrink wrap the connections (they must be insulated). This one there is no pre-made adapter I could find with correct wiring. Beware of any you *do* find as *one* I found has ground/VCC reversed!

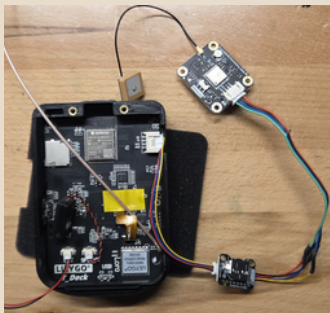
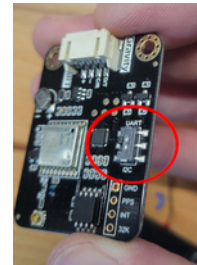
Qwiic Yellow/Clock → DFR Blue/Clock
 Qwiic Blue/Data → DFR Green/Data
 Qwiic Red → DFR Red
 Qwiic Black → DFR Black



Prepare the DFRobot GNSS

Move the DFR's switch to **IIC**, and then use a wire cutter/clipper to clip the long plastic switch much shorter. It will just be in the way later on if you don't.

Also, attach the GPS antenna, as well as the cable you just made.



Plug in GPS & RTC

GPS and DS3231 clock are plugged together and to the T-Deck via the Grove/Qwiic connector as shown.

Add the RTC battery

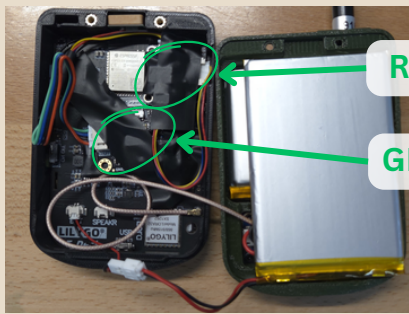
Insulate metal surfaces of both components with electrical tape so they don't create a short when we mash it all together.



Assemble Amp Components

- Insert the powerboost charge controller with M2 screws
- Connect the 5v plug to the Amp as shown
- Screw the SMA connector into place as shown
- Connect the amp battery and insert into the case
- Install the amp to the case as shown, with M2 screws
- I chose to clip the retainer from the amp's dc connector plug, you may or may not want to do that





Install the T-Deck Battery & Everything Else

**** Double-check polarity - yours may be different! ****

Plug the battery into the T-Deck when you're sure the polarity is correct.

The T-Deck and amp should both be able to take a charge and power on at this point, verifiable by on-board LEDs.

The next part is very tricky. Arrange the components in such a way they fit into the enclosure. It is a very tight fit, you may even want to consider getting smaller than a 5000 mAh battery. I wanted that large of a battery, but you could get by with less.



Add the Antenna + SD Card

Attach the enclosure's back using a couple of M3 screws.

Insert a compatible SD card.

Now you are ready to flash the firmware.

Notice the USB-C port on the bottom is for charging and flashing the firmware, while the USB micro port on the side is only for charging the amp.

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Firmware Download Mirrors

<https://chatters.io/firmware>

<https://www.offgridcomms.club/firmware/esp32/>

<https://www.meshcomms.club/firmware/esp32/>

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