

A DIY Emergency Disaster Recovery Radio Data Terminal On The Cheap

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What if I told you you could build your own radio data terminal for under \$100? And what if I told you its actually a lot simpler than you might think at first glance? Crazy? Nah. It's actually pretty simple.

As the students in the [Course](#) learn, breaking information down into one of several report formats is once way transmit information quickly and efficiently- that way you don't forget anything. And during the course we practice sending them via voice as a way to make sure everyone gets over any sort of mic shyness while also getting the proper procedure down pat.



But that said, voice has some issues. First and foremost, [in keeping with the basic principles of DIY radio communications](#), we've got to keep our time on the mic short and transmitting power low, and if at all possible, using a directional antenna such as [my small UHF Yagi](#) on a [simple camera tripod](#). Transmitting a long message can take some serious time, is susceptible to interference and/or jamming, and also might not be understood on the other end. But most importantly, the largest drawback of using your own voice over the radio is that if a sophisticated opponent is monitoring you, they now have a voice to record and exploit. Students in my [Signals course](#) have learned exactly how dangerous that can be, creating a massive amount of confusion in a short period of time.

So that points us in the direction of digital communications. For most, one of two things will come to mind here. Either a digital handheld radio, normally a DMR, D-Star or Fusion, or one of the many modes found in a free program called [FLDigi](#). FLDigi is normally thought of only for HF radio, but it has a lot of uses on VHF and UHF as well. And because it gets very little use in these bands, most folks won't know what it is if/when they hear it. Not only that, with some of the wider band modes available, its transmission time is incredibly fast. A long message, such as a detailed report, can be sent in just over four seconds.



The APRS cable makes interfacing with the audio jack fast and simple.

Let's talk about how to set the system up. What you'll need is a [Baofeng, Quansheng](#) or similar type handheld with the standard kenwood two prong microphone plug. The next thing you'll need is an audio interface cable, like the [Baofeng APRS K-1 cable](#). What this does is send the transmitted audio from FLdigi to the radio instead of using the microphone. The most common use for this cable, as the name suggests, is for Automatic Position Reporting System (APRS) which is useful for hams aiding in search and rescue (SAR), but obviously for our purposes we won't be transmitting position data. The cable plugs into any audio jack found on laptops and mobile devices, and is nearly dummy-proof. Together the total cost is ~\$40. Not too shabby.



Light and tight digital data terminal.

Next you'll need a laptop or mobile device with FLDigi. The install is pretty straightforward, and there's a [distro of FLDigi for the Android OS](#). I don't advise using a phone for this- even if service has long since been disconnected, the phone itself will still ping the closest towers. Unless you disassemble it and remove the transmitter, which might be more trouble than its worth, using it is a liability. But what you can do is either build your own mobile device using a [Raspberry Pi](#), or pick up an Android Tablet specifically marked for wifi-only. But if you're like me you've probably got a few extra devices and older laptops laying around, and there's no reason not to have one set up for field comms duty. Throw in the cost of the mobile device if you're buying on the cheap and you're still under \$100.

One thing to note is that the mobile version of FLDigi is a bit different than the full version- its missing several specific modes, including CW (morse code). So its something to keep in mind during your own planning phase. There's a learning curve to this, and don't expect it to work exactly right off the bat. It takes a bit of patience and experimentation, but the reward is certainly worth it.

Having a dirt-cheap data terminal is a must-have for emergency disaster recovery communications. Typing out a message ([and even encoding it further](#) via a [brevity matrix](#) or [One Time Pad](#)) and sending it within a few seconds greatly increases security. We've used less power to get greater range, ensured a solid copy of the message by the robustness of the modes over voice, and the best part, you're doing it with a tiny amount of money and common-off the shelf (COTS) equipment.