

If you like this page, let Google know:



797

Like

24

1

Tweet

72

Email

Print

[Advertise Here](#)[The Art of Manliness](#)

Men's Interests and Lifestyle

- [Home](#)
- [A Man's Life](#)
- [Dress & Grooming](#)
- [Health & Sports](#)
- [Manly Skills](#)
- [Money & Career](#)
- [Relationships & Family](#)
- [Community](#)
- [Shop](#)
- [Man Knowledge](#)
- [Archives](#)

How to Turn an Old WWII Field Phone Into a Bluetooth Handset

by Brett on June 21, 2012 · [26 comments](#)in [Manly Skills](#), [Projects](#)*This post is sponsored by [Bing](#). [What's this?](#)*

The EE-8 Field Telephone was used by the Army's Signal Corps shortly before the beginning of World War II and up through Vietnam. Carried in a leather (and then canvas and eventually nylon) case by a strap slung over the shoulder, the portable ten pound phones replaced the telegraph and flag signals as a more effective and efficient way for commanders and troops to keep in touch on the battlefield. Two phones could be wired together directly, or several phones could be connected to a common operator, which could put any one phone in contact with any other in the group.



A hand-generated crank on the side of the phone was turned in order to signal another phone or the operator. The signal range between these rugged, self-contained phones varied according to the type of wire used to connect them, and the conditions in which the wire was situated (wet, dry, in the air, or on the ground), but generally averaged about 11-17 miles. However, a direct, point-to-point connection made with copper wire could extend the range up to an astounding 360 miles.

NOW—A LOW PRICE PRIVATE TELEPHONE
The Famous U. S. Army Signal Corps EE8 Field Phone
GOVERNMENT COST \$90.00—NOW ONLY \$16.88
ONLY 700 LEFT!

OUTDOORS TO HOME OR OFFICE
HOUSE TO GARAGE ETC.
MULTIPLE PRIVATE SYSTEM
CONFIDENTIAL INTERCOM

Almost immediately after the Government first ordered these EE8 Field Phones, they became a mainstay of the Signal Corps "in-the-field." Rugged, self-contained phones have a talking circuit that operates clearly up to 5 miles off only 2 ordinary flashlight batteries, the only batteries needed and one big reason for their great use. You need only turn side crank of built-in generator to ring another phone, and up to 10 phones can be connected together, and will ring. Expertly reconditioned, and in canvas carrying case, Signal Corps surplus phones have many uses in business, home, schools, clubs, institutions, on farms, ranches, yacht basins, anywhere wire can be laid down. A solid bargain!

A TWO-WAY RINGING TELEPHONE SYSTEM BUILT FOR RUGGED "IN-THE-FIELD-USE"—UP TO 5 MILES!

TELEPHONE SUPPLY CO.
 Dept. AR-10, 127 East 42nd St., New York 17

Enclosed is check or M.O. for \$—
 Pairs of Field Phones @ \$33.76
 Extra Field Phones @ \$16.88
 Feet of wire @ 4¢ per foot.

NAME _____
 ADDRESS _____
 CITY _____ STATE _____

After the war, the government's glut of surplus EE-8's were sold to civilian households as a way for mom to call dad out in the garage to tell him dinner was ready.

These days, there isn't much use for old field phones, unless you have a pair or more. While I love all things vintage, unless they're very rare, I'm not one for fetishizing antiques, insisting that they remain preserved on shelves or gathering dust in the attic. Rather than just looking at them, I love to find a way to put them to use again in my daily life. So with the help of my electrical engineer brother-in-law, [Ryan Davis](#), we decided to mod the EE-8 for the modern age, turning it into a Bluetooth headset that could be paired with a smartphone or even your computer for VoIP calls.

You might be asking yourself, "Is there a functional reason to do this, Brett?" No sir, there is not. This project is about the pure fun of tinkering.

But bear in mind that unlike the incredibly simple [shoe shine box](#) I showed you this week, this project is not for the faint of heart. It requires moderate soldering skills and some rudimentary knowledge of electronics. All-in-all, this project will probably take up to four hours to accomplish.

Here's how it's done.

Materials & Tools Needed



- **EE-8 Field Phone.** You can find these on eBay and flea markets. Price varies by age and condition.
- **Bluetooth headset chip.** We bought an [Earforce PBT Bluetooth headset by TurtleBeach](#) for \$10 at Bestbuy.
- **Boost converter.** Available at Radio Shack for a couple bucks.
- **Wire.** Just plain old copper electrical wire. We used a mixture of 26 and 30 gauge wire.
- **Screwdriver**
- **Soldering iron**
- **Peg board**

Remove the Field Phone from Its Case & Unscrew the Top



To remove the field phone from the case, you'll first need to remove the screws from the crank handle on the side.



See that receiver switch on the right? We're going to remove that from the top. Also, see that plate with the three wires coming off of it? We're going to remove that, too.



There are two screws on the underside of the receiver. Remove them and set them aside someplace safe. In this pic, we've already removed the left screw.



Here's the receiver detached from the top of the field phone.



Now it's time to take off the top plate. Unscrew that screw on the right.



There's a screw that looks like a pin. We need to remove that, too.

Mod the Receiver

If you've ever used a Bluetooth earpiece, you know that whenever you want to take or end a call, you press a small button on the earpiece. The receiver switch on our field phone will take on the functions that the button on the Bluetooth receiver had. To take a call on the field phone, we simply tap the receiver switch once; to end a call, we tap it again. Pretty cool, huh?

Ryan had to hack the receiver switch a bit in order for our Bluetooth mod to work. The field phone's receiver switch is spring loaded so that it is depressed when the weight of the handset is rested on it. In this state, the switch is open, and the EE-8 is offline. The EE-8 comes online when the handset is lifted and the switch closes.

For our Bluetooth mod to work, we needed the switch to be open only if the handset *wasn't* resting on the receiver switch. To do that, Ryan put a piece of electrical tape between the plates to keep them from making contact with each other when the handset was not resting on the switch. He soldered a ring around the plates so that they made contact when the handset was resting on the receiver switch. This turned a normally closed switch into an open switch.



To turn a normally closed switch into an open one, Ryan put a piece of duct tape between the plates and soldered a ring contact around them.



Here's a zoomed out picture of the ring soldered around the plates.



Top view of soldered switch plates.



We need to connect some new wire to the soldering terminals on the receiver switch. These wires will eventually lead to the button terminals on the Bluetooth headset.

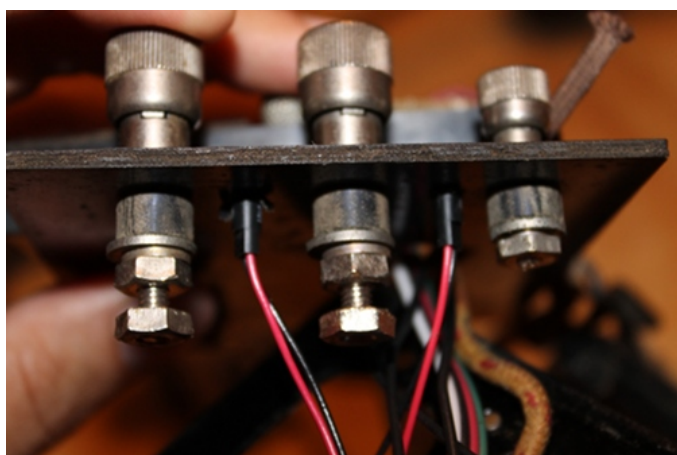


Another angle of the receiver switch terminals.

Add LEDs

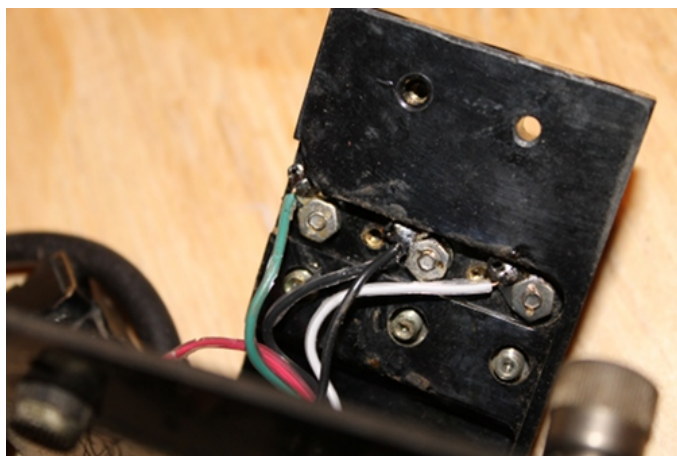


We added some red and green panel LEDs to the top of the field phone. Not only do they look cool, but they serve an actual function. They'll alternate on and off whenever the bluetooth chip is in sync mode and the green light will flash whenever you receive a phone call. To add the LEDs, simply drill two 5/32" size holes and insert lights.



The panel LEDs come with the wires pre-soldered. You should have one black wire and one red wire connected to each light. These wires will eventually connect to the Bluetooth chip.

Connect New Wires to Terminals on Top Plate



On the underside of the top plate that we removed earlier, there are three terminals. There were some old wires that were worn out, so we replaced them with new ones. The terminal on the left is for the handset's speaker. Attach a green wire to it. The middle terminal is the common terminal. Attach this wire to ground (the negative battery terminal). The terminal on the right is for the handset's microphone. Attach a white wire to it.



There's a terminal on top of the field phone that connects to the batteries. Connect a new red wire to it.

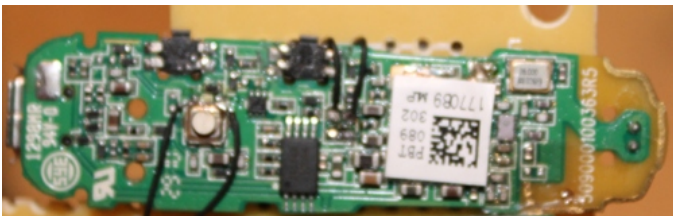


Here's a pic of all the new wires we just added. Thread them through the hole on top of the field phone as shown above.

Dismantle Bluetooth Headset



Take your Bluetooth earpiece and remove the chip.



Here's what our Bluetooth chip looked like out of the earpiece.

Connect Boost Converter to Bluetooth Chip



See that green rectangle next the to the Bluetooth chip? That's a boost converter.

The Bluetooth chip requires a range of 3.7 to 4.2 volts of electricity to power up. However, the two DD batteries that power the field phone only put out three volts. What to do about this power gap? Answer: boost converter. A boost converter takes the three volts from the battery and “boosts” it up a voltage level so the chip gets the four volts that it needs.

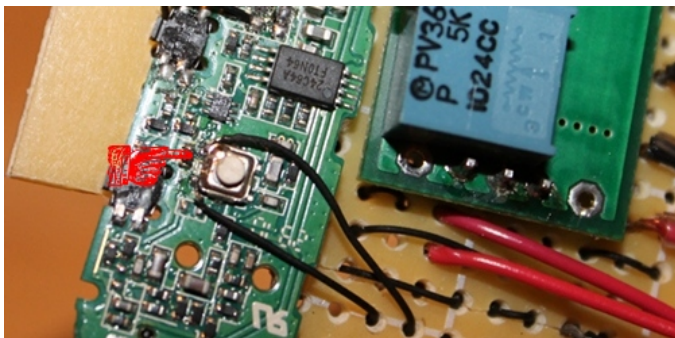
We placed the Bluetooth chip and boost converter on a pegboard and connected the boost converter to the Bluetooth's power source with wires behind the pegboard. Because the soldering terminals on the Bluetooth chip are so small, we used 30 gauge wire.

Connect Wires to Bluetooth Chip

Now comes the tricky part. We need to connect all the wires from the field phone to different parts of the Bluetooth chip. Every Bluetooth chip is different, so what we show you here might not work on other Bluetooth chips. You may have to use a scope to figure out which terminals on your Bluetooth chip are responsible for the microphone/LEDs/speaker/etc.

Again, because the soldering terminals are so small on the Bluetooth chip, we soldered 30 gauge wire to the soldering points first and then soldered the big wires running from the phone to the 30 gauge wires.

Connect Receiver Switch Wires to Bluetooth Button



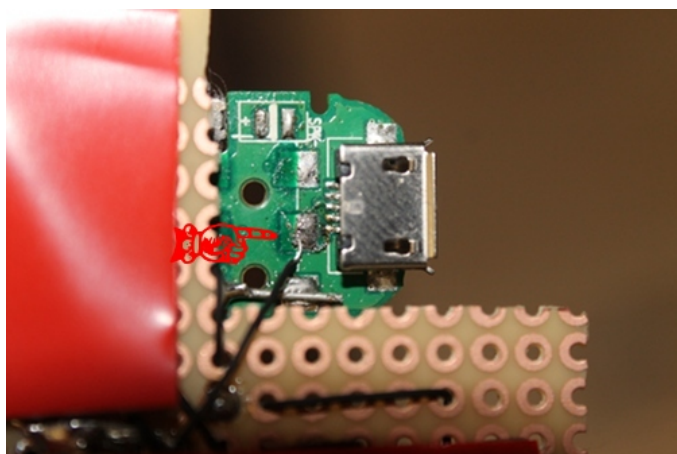
Remember those new wires we connected to the field phone's receiver switch terminals? We need to wire them in parallel to the Bluetooth button. Now the field phone's receiver switch will do everything the Bluetooth earpiece button did.

Connect LED Wires to Bluetooth



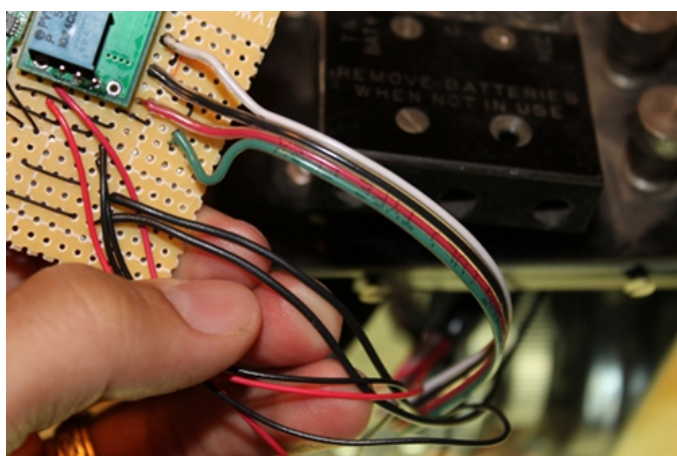
We need to connect the two black status LED wires to the Bluetooth chips. The red wires will be connected to the boost converter.

Connect the Microphone Wire to Bluetooth

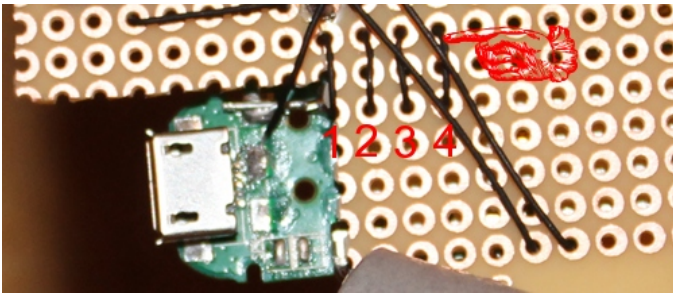


Earlier, we connected a white wire to the terminal on the field phone responsible for the microphone. We need to connect that wire to the microphone-in terminal on the Bluetooth chip. On our Bluetooth chip, the microphone-in terminal is on the back of the chip. Again, because the soldering terminals on the chip are so small, Ryan soldered 30 gauge wire to the chip terminal and soldered the 30 gauge wire to the larger, white wire.

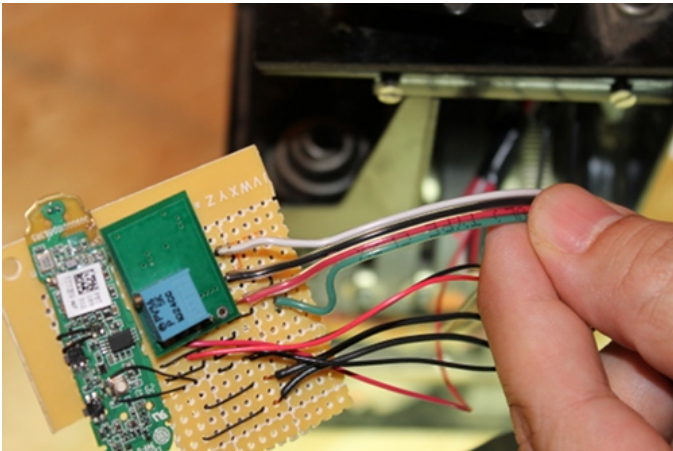
Connect Speaker Wire to Bluetooth & Connect Power Wire to Boost Converter



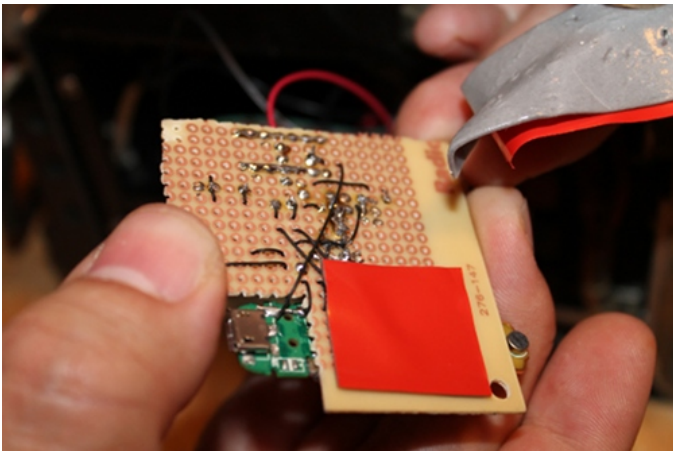
Connect the speaker cable (green) to the speaker out terminal on the Bluetooth chip. On our chip, it was on the opposite side of the button's side. Our power wire (red) connects to the boost converter. The ground wire (black) connects to the chip. Again, we connected 30 gauge wire to these wires before soldering to the Bluetooth terminals. We've already connected the microphone wire (white) to the Bluetooth microphone terminal.



Wire #1: Ground. Wire #2 (Green wire): Attaches to Bluetooth speaker terminal.
Wire #3: Ground. Wire #4: Connects boost converter Output to Bluetooth power Input.



Here's what all the wires look like on the front.



And here's what they look like from behind. "I used the pegboard as scaffolding for the two chips and weaved and soldered wire to keep things in place," Ryan said. "It's kinda messy, but it got the job done." Ryan covered the wires with double stick tape (that's the red rectangles) to protect them from unconnecting and also to stick the finished board to the inside of the EE-8 housing.

Insert Double D Batteries and Put Field Phone Back in Case



Place DDs into battery respectable. The positive ends need to both point up. Put the field phone back in its case. You're done!

How to Use Your WWII Field Phone Bluetooth Handset



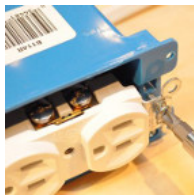
Pick up the phone! It's the general calling!

Here's how to use your Bluetooth WWII field phone:

- Put field phone into sync mode by holding down receiver until red and green LEDs begin alternating on and off.
- Select bluetooth device on your smartphone.
- When you get a call, green LED will light up.
- To answer call, tap receiver once.
- To speak, push and hold switch on handset.
- To end call, tap receiver twice.
- If you want to make a call out, you'll have to tap receiver once and dial number on your smartphone.

Here's a video of it in action:



[Like](#)797 people like this. [Sign Up](#) to see what your friends like.**Related Posts**1. [How to Wire an Outlet](#)2. [How to Use a \[BUSTED\] Cell Phone to Meet 5 Basic Survival Needs](#)3. [How to Tear a Phone Book in Half](#)4. [How To Jump Start a Car](#)**• Share:**• [Like](#) 797• [Tweet](#)• [Email Story to a Friend](#)

• +24 Recommend this on Google

• [Print](#)

Subscribe! *Master the Art of Manliness.*

Enter your email address.

[Subscribe](#)

AD BY FEDERATED MEDIA

MIX IN A LITTLE OF YOU

· This post is sponsored by Target.

[CLICK TO VIEW](#)

A new line for house and home
Welcome to Threshold.

[Shop Threshold.](#){ 26 comments... read them below or [add one](#) }

1 [Chris Butterworth](#) June 21, 2012 at 1:02 pm

totally unnecessary. yet one of the coolest ideas ever – I love it! This even one-ups the retro hipster with the old “brick” cell phone..!

2 Andy Delhorn June 21, 2012 at 1:29 pm

That is really cool! Totally above my pay grade, but really cool. I think there’s really something to be said for tinkering and simply seeing if something can be done. I’d love to use that phone!

3 Grant June 21, 2012 at 1:35 pm

Coolest thing I’ve seen in a while. Art of Manliness never ceases to amaze me.

4 Andy June 21, 2012 at 2:10 pm

Very cool! I think I’m going to do this! Seems like a great way to upcycle old phones.

5 Helen June 21, 2012 at 2:26 pm

So agree..very cool! You remind me of your grandpa re-purposing old things to more modern items. He made an old handcrank wall phone into a radio. Had that in our house for a long time. It was cool too!!

6 Mark June 21, 2012 at 3:13 pm

Can you figure out how to do this with one of the old Westinghouse home/office phones from the 50s and 60s?

7 Matt Parrish June 21, 2012 at 6:27 pm

Very cool. I have a WWI field phone that worked by wire rather than radio. Would it be a candidate for this conversion as well?

8 Brett McKay June 21, 2012 at 9:54 pm

@Matt-

This field phone worked by wire too. It’s not a radio. For some reason I kept calling it a radio in the video. I think I had our last mod project on the mind!

<http://artofmanliness.com/2011/09/19/how-to-make-an-old-time-radio-into-an-mp3-player-speaker/>

9 Travis G June 22, 2012 at 1:07 am

I’ve been thinking about a similar modification with a field phone, though I want to just make a house phone. Somehow I love the idea of modifying military things to make home furniture and appliances.

10 Jackson June 22, 2012 at 2:45 am

Pretty sweet. And yeah, like Helen, reminds me of my grandpa too. He was always taking old stuff and finding a way to use it again.

11 Darren Bush June 22, 2012 at 7:46 am

I’m building one of these for the Shack. Perfect.

12 SD Roberts June 22, 2012 at 10:24 am

Very cool, does anyone know a guy would sell me one of these?

13 Cameron June 22, 2012 at 10:35 am

LOL. As totally and completely unnecessary as this might be, it is definitely one of the coolest things I’ve ever seen. Whomever thought to do this in the first place deserves the Nobel Prize for science.

14 [Erik](#) June 22, 2012 at 10:59 am

No way! I had this exact idea a couple of years ago, but never really pursued it. My idea was with one of these: <http://find-vintage-radios.com/wp-content/uploads/-60941208344197371.jpg> but maybe I’ll try this version first. Thanks!

15 Arnold Kelly June 22, 2012 at 11:05 am

Well...I *WAS* excited to try and build one of these. Until I saw how much the field phones were selling for. OUCH! I guess I’ll have to pass on it for now. :(

16 Joshua June 22, 2012 at 11:49 am

This is an awesome idea, but I had one question. It appears as though you have to see the green light in order to know you have an incoming call. Could a guy install a small buzzer in series with the wire running to the green LED? This is assuming I guess that your phone is not located in the same room as your field phone.

17 [Brad](#) June 22, 2012 at 12:07 pm

Chip, did you ever own a brick phone? They were great. The reception beats anything they have today.

18 [Dominick](#) June 22, 2012 at 12:54 pm

I did this 2 years ago with a Star Trek Communicator Toy. It still works, but alas I never use it anymore because you can't see whose calling you from the toy.

[19 James Sherron](#) June 24, 2012 at 12:23 am

Long time lurker, first time poster. I love the sight. While it is a fine piece of engineering, I'm somewhat sorry to see a very nice original early (leather cased, by '44 the EE8 and EE8-B's were being made with canvas cases due to the leather cases rotting, particularly in the Pacific) WW2 field phone. Perhaps I'm just too much into WW2 and preserving integrity of historical items though, lol.

[20 Curzen](#) June 25, 2012 at 12:02 am

have to agree with james. at some point you got to ask yourself if destroying an artifact of increasing scarcity to create a gimmick of limited use is really worth it in the end.

[21 me](#) June 25, 2012 at 10:35 am

How about using the hand generator to do something like charge usb phones – i always thought that would be useful in a black out.

[22 HardlyNeutral](#) July 8, 2012 at 10:07 am

I stopped by Radio Shack to pick up all the parts. I got just about everything I need but was unable to find a boost converter. The employees there couldn't find it in their inventory or online. Am I looking for the right thing? Where else could I find it? My Google-Fu appears to be weak when looking for component electronics :)

[23 Yith](#) July 20, 2012 at 5:56 pm

Or just use one of these: <http://www.thinkgeek.com/product/8928/?cpg=froogle>

With that there's no need to mess up the field phone... which are yes getting expensive.

I had one of those with a fake cable to a WWII british army field phone.

[24 Gadget](#) November 5, 2012 at 1:10 am

Cool idea, but you'd get a similar result with less effort building a small audio interface which plugs into the headset jack on the smart phone. You'd be going old-school hardwired instead of Bluetooth wireless. Or for 15 bucks, the retro Bluetooth handset in the link above is hard to beat.

[25 Christopher Carlsson](#) November 12, 2012 at 10:04 pm

I'm going to use an old West German field phone that even has a rotary dialer on it . Already use one for my landline they work great and are extremely easy to hook up to a regular telephone line so should be relatively easy. I'd recommend them or some of the other military field phone from other countries out there as they cost a LOT less than an EE 8

[26 Christopher Tobin](#) February 20, 2013 at 1:14 am

I was thinking of doing this to an old payphone though i beleave this is cooler. just not sure exactly how the hell to do it

Leave a Comment

Name *

E-mail *

Website

Previous post: [How to Get Free Accommodations When You Travel](#)

Next post: [Dim & Dash: Getting Ready to Go Out](#)



Enter your email address.

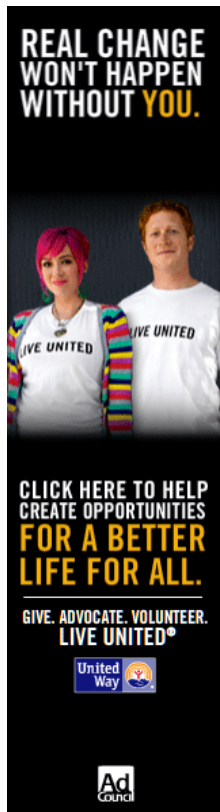
Join 160,505 subscribers!

◦ [RSS - Or subscribe in your reader!](#)

[Art of Manliness on Facebook](#)[Art of Manliness on Twitter](#)[Advertise Here](#)

Popular Articles

[100 Must Read Books: The Man's Essential Library](#)[How to Shave Like Your Grandpa](#)[100 Must See Movies: The Essential Men's Movie Library](#)[How to Tie a Tie](#)[How to Carve a Turkey](#)[9 Ways to Start a Fire Without Matches](#)[Bringing Back the Hat](#)[Stop Hanging Out With Women and Start Dating Them](#)[10 Worst Products For Men Ever Created](#)[Do More Than One Stinking Pull-up](#)[Rediscovering the Barbershop](#)



[Advertise Here](#)

- [About](#)
- [Advertise](#)
- [Archives](#)
- [Comment Policy](#)
- [Contact](#)
- [Legal](#)

Copyright © 2010 The Art of Manliness | [Thesis theme by DIYthemes.com](#) | Customized by [Eric Granata](#)

