



Make your own set of Break-Out Boxes

What the heck are break-out boxes?

Break-out boxes are commonly used by electronics technicians as a means of connecting to circuits within a cable or connector. They simply give access to the wires inside of a cable. As negotiators, we commonly use RJ11 and RJ14 modular cables to establish a telephone line connection. Break-out boxes can be used to gain access to these otherwise inaccessible wires.

When would I need to use Break-Out boxes?

Any time you need to connect your NOC (Command Post/MOC) to a residential or business land line. The Break-out boxes allow you to plug into any standard RJ11/RJ14 plug then use any 2, 4 or 8 conductor (as long as you have 2) hook-up wire to make the long run in between.

The idea is to simply create a way to easily place RJ11 modular ends onto any 2 (or more) conductor cable.

Standard RJ11 Cable:

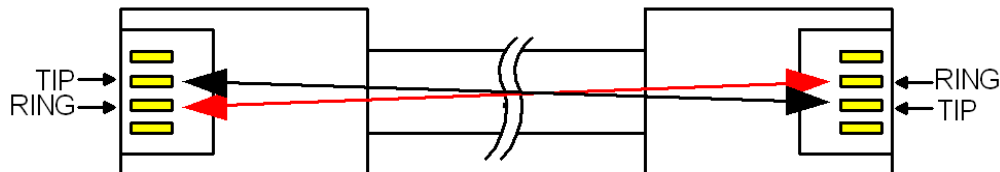


Figure 1: Standard 2 conductor RJ11 Modular telephone wire.

Connecting your Break-Out Boxes to a landline:

One of the Break-out boxes goes inside the residence or business whose telephone line will be used. Simply plug the modular plug into any phone jack. The other end will plug into the command post (MOC) or negotiations equipment to be used (CINT Commander COMMBox for example). Between the two boxes you will connect 2 (or more) conductor hook-up wire:

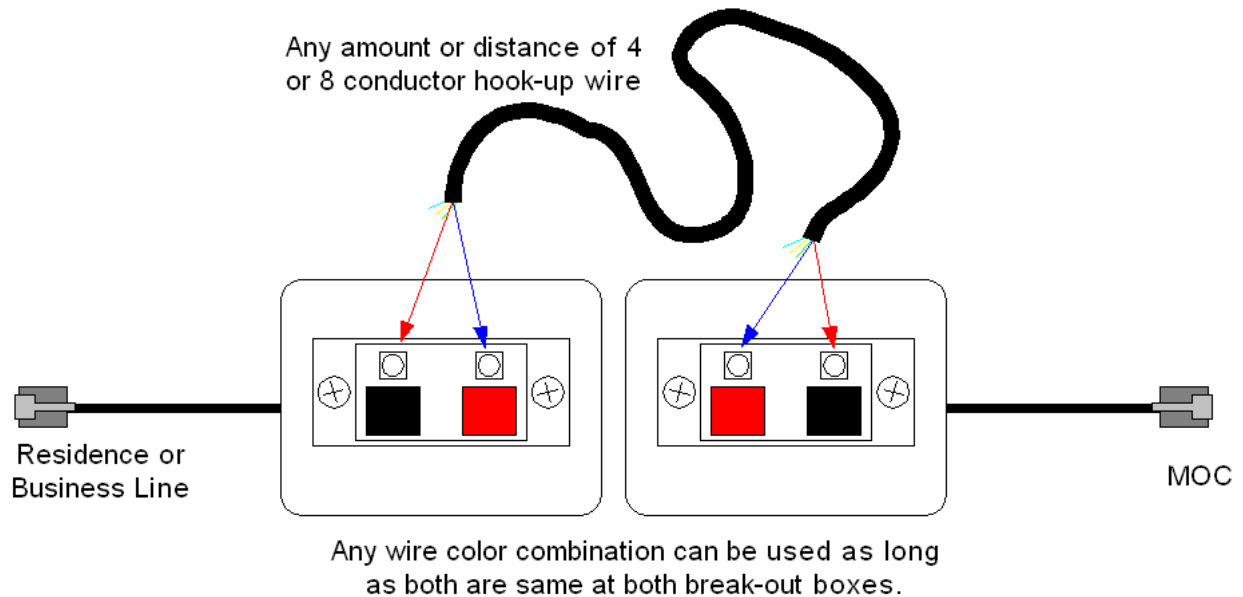


Figure 2: Connecting the Break-out Boxes.

When using the Break-Out boxes, you will be able to connect to a phone line > 1000' away, without the need of expensive modular telephone line, yet each end will have a standard modular plug.

NOTE: When connecting telephone wires, it is VERY important to be sure that a good connection is made. Telephone systems convert line current (current flowing through the two wires) into sound. A bad connection interferes with current flow in the line and the phone turns that interference (resistance) into sound. This is the most common cause of static during telephone conversations. Solid connections are imperative in telephone lines. A poor connection will result in a noisy connection.

Recommended Tools:

This project will require (recommend you have) a Dremel tool, with a saw blade and grinding bit. You'll need a Soldering Iron; Wire cutters; hand drill with a 1/8" drill bit and a Phillips head screwdriver.

Ingredients:

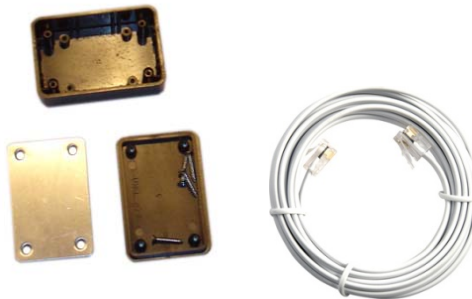
There are only 3 parts you need to purchase per box. All three parts can be purchased at Radio Shack:



Required Parts (& some Radio Shack Part #'s):

2 Wire Speaker Terminal Connectors: **274-632**

Project Enclosure: **270-1801** (3x2x1 ABS Plastic) You can discard the metal plate.



You'll also need a 3' RJ11 or RJ14 cable. Sorry, I don't have the Radio Shack part number for this.

(Note: These are parts we regularly use at 836 Technologies; you can use whatever you'd like)

Building the Boxes:

Step #1) Mark the position you want to place a connector onto a lid by pressing the connectors against it and moving back & forth (score a mark). Use a Dremel saw to cut a straight line in the lid for the connectors to slide through:



Step #2) Mount a connector to the lid using a drill with a 1/8" bit to drill screw holes. If you don't have two screws, you can use two of the box top's screws, as the lid only needs two to be secure:



Step #3) You need to make an area for the wire to exit the box. You must grind away a spot on the inner lip of the lid and also make a corresponding notch in the box:



Step #4) Cut your telephone cable into two equal lengths. I usually make each end about 18” long:



After stripping the insulation, you’ll find two (RJ11) or four (RJ14) small wires inside the jacket.

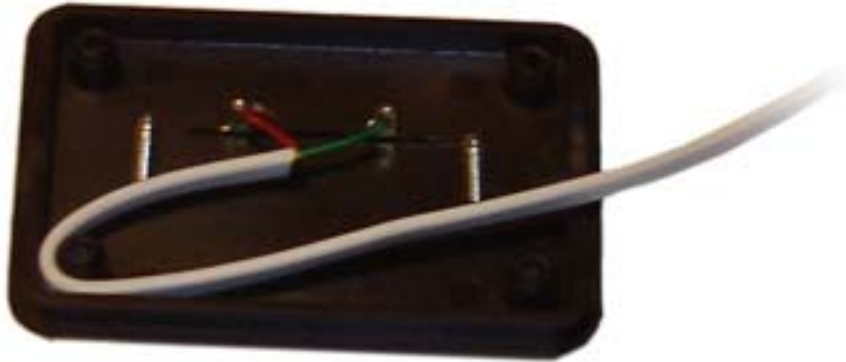


A standard RJ14 telephone cable is capable of carrying two lines. The inner two wires (Red & Green) are Line #1. The outer two wires (Yellow & Black) are Line #2.

Step #5) You need to trim away line #2 (if you’re using a 4 conductor cable). You want the RED and GREEN wires only. You can cut off the Yellow and Black wires.

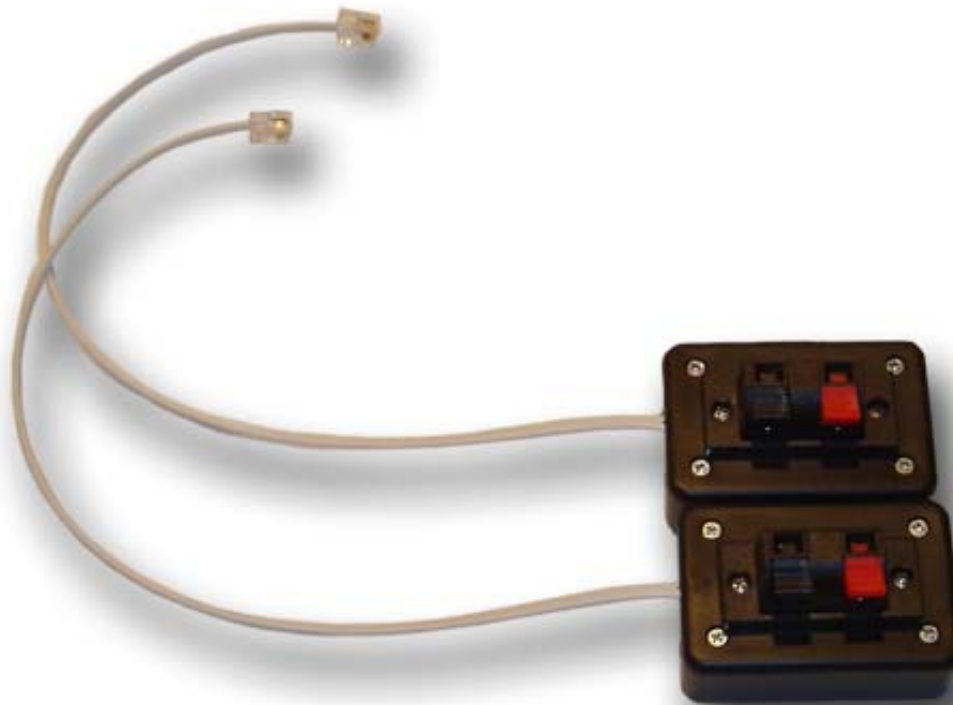


Step #6) Solder the wires to the connector mounted in the lid of the enclosure box. Be sure that both boxes match: that is, red wire to red connector on both boxes:



Wrap the cable around the screw post inside the box to provide strain relief. Otherwise the wires will eventually be pulled away from their soldered connections.

Step #7) Screw down the lids, being careful not to pinch the wires and you're done!



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