DIY PROJECT

CS520 Wireless Headset to 1/8" Mic & 1/8"Head Phone *Adapter Box*

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8/16/2017

Also Check Out the CS520 Resource Page

http://cs520hams.k5pa.com

Rationale for Using CS520 With 1/8" Plugs

- What is the Purpose for a Wireless Headset to a 1/8" Plugs?
  - MIC and Headphone most common connector is the 1/8" plug
  - Applications include connections to computer (Mic/HP) jacks, external sound cards, and RemoteHams ORB Control Device for remote radio control
  - CS520 is perfect and allows roaming within a 350 foot radius of computer or ORB Control Device
  - Headset provides comfort, great listening focus and transmit audio during ham radio contacts
  - Bonus feature of <u>simultaneously</u> conferencing of up to 3 additional headsets for Field Day, Contests or Show and Tell Demonstrations
- CS520 Cabling 1/8" Mic/HP Plugs is an Easy DIY Project

Connectivity

**CS520 Wireless Headset
Encrypted and 1900 GHz**
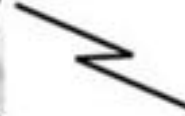
**Adapter Box
Wired Using
Drawing 4000-0030**

**Plugs Connects
To Sound Card with
1/8" Jacks**

**RJ45 to RJ45 Plugs
To Connect Base Unit
With Interface Box**

Schematic 4000-0030 Rev-A

NOTES /#\

1. Cut Item #2 cable to length 60 inches from phone plug end. Use both halves for plug cables.

2. Pin 1 wire printed circuit trace must be cut so capacitor can be soldered in series with Pin 1. Cut through the trace on upper AND lower side of PCBA!

3. Add 2 jumpers wires to connect grounds together on circuit board, Pins 2-4-S (Shield)

CHANGE HISTORY		
VERSION	DATE	DESCRIPTION
A	7/18/2017	Initial release
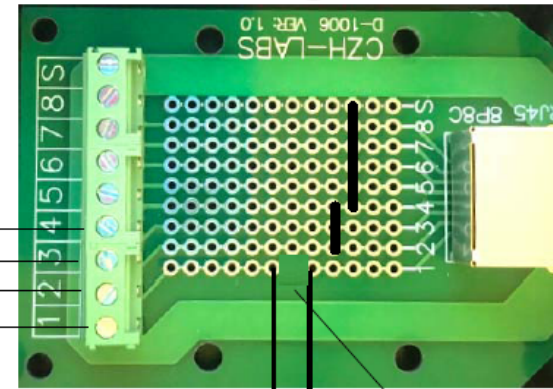
/3\ RJ45 Socket. Use RJ45 Male to RJ45 Male Cable to plug into CS520 Base Unit

MIC COMMON / Wire to Pin 4 on Terminal Post
SPKR OUT / Wire to Pin 3 on Terminal Post
SPKR COMMON / Wire to Pin 2 on Terminal Post
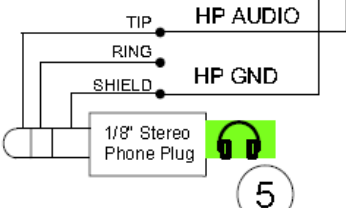MIC AUDIO / Wire to Pin 1 Terminal Post

If Polarized Capacitor Selected, Positive Lead Here (+)

BIAS BLOCK
0.47 uF, 50 VDC

TIP   MIC
RING
SHIELD   MIC GND

MIC PLUG

1/8" Stereo Phone Plug   (2) /1\ (5)

TIP   HP AUDIO
RING
SHIELD   HP GND

HEADPHONE PLUG

1/8" Stereo Phone Plug   (2) /1\ (5)

ITEM	QTY	DESCRIPTION
5	1	Heat Shrink Tubing, 1/4" D x 3/4" L. Gardner Bender HST-ASTA Thin Wall 2:1 Shrink Ratio. Green and Pink Color.
4	1	Case, ABS, Economical Type 3.3x2.2x0.9" Black Hammond 1591XXMSBK Mouser 546-1591XXMSBK
3	1	Capacitor, 0.47 uF 50V, X7R, 10% Source: Jameco 544948, AVX SR305C474KAA
2	2	1/8" Stereo Phone Plug - Plug, 10 Feet, Cut in Half. Source: Hosa, P/N CMM-110, Amazon
1	1	RJ45 Shielded Breakout Board. Electronics Salon P/N MD-D1006R-1, Amazon.

K5PA DESIGN CONCEPTS

TITLE: CS520 to Two 1/8" Plugs for Sound Card

	SIZE A2	CAGE CODE	DWG NO 4000-0030	REV A
gh 7/18/2017	SCALE			SHEET 1 of 1

Notice: There is no implied warranty that the information present is free from error and the user of this information should validate it's accuracy and usage in their intended applications.

Date: 8/16/2017

Bill of Materials CS520 to Mic/HP 1/8" Plugs

| Item	Part Description	Mfgr	Part No.	Vendor	Vendor P/N	Item Cost	Qty
1	Case, ABS, Economical Type 3.3x2.2x0.9" Black	Hammond	1591XXMSBK	Mouser	546-1591XXMSBK	$ 3.47	1
2	C2G/Cables to Go 28690 Cat5E Molded Shielded (STP) Network Patch Cable, Black (3 Feet/0.91 Meters)	C2G/Cables to Go	28690	Amazon	28690	$ 8.99	1
	ALTERNATE SOURCE: Cable Matters 5 Pack, Cat6a Snagless Shielded (SSTP/SFTP) Ethernet Patch Cable in Black 3 Feet	Cable Matters	160012-BLK-3x5	Amazon	160012-BLK-3x5	$ 3.00	1
3	RJ45 8P8C Right Angle Shielded Jack Breakout Board, Terminal Block Connector.	Electronics-Salon	MD-D1006R-1	Amazon	MD-D1006R-1	$ 8.79	1
4	3.5 mm TRS to 3.5 mm TRS Stereo Interconnect Cable, 10 feet. Cut in half to use for Mic and Head Phone (HP) Cables	Hosa	CMM-110	Amazon	CMM-110	$ 5.80	1
5	0.47 uF 50V, X7R, 10%	AVX	SR305C474KAA	Mouser	581-SR305C474KAA		
	ALTERNATE SOURCE: 0.47 uF 50V, X7R, 10%	JVP	SR305C474KAA	Jameco	544948	$ 0.39	1

Board Construction

(Shielded Breakout With Terminals)

Notes:

1) This is an RJ45 SHIELDED cable breakout to
circuit board with screw terminals. It has holes to solder components.

**Jumpers Added
To Connect Grounds and
Shield Lines Together**
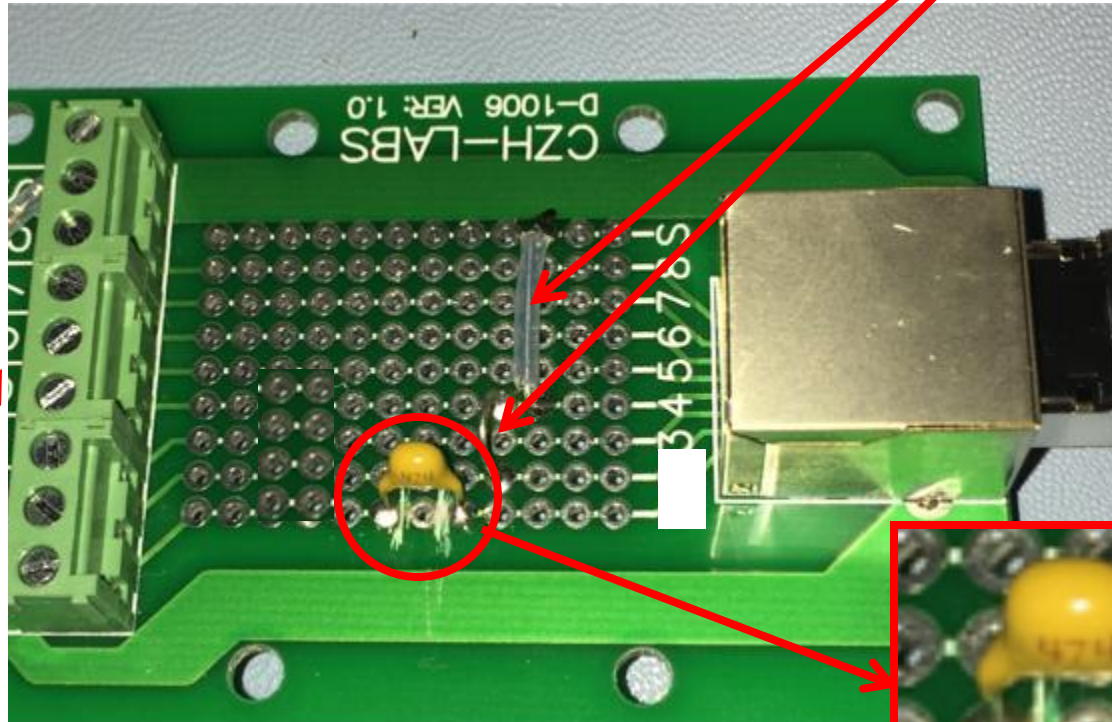
**Terminal Block Connects
to 1/8" Phone Plug Wires**

**Cut Trace by Scribing Circuit Board
With EXACTO Type Knife.
YOU MUST CUT TOP AND BOTTOM OF BOARD!**

Helpful Tool: Xacto X75300 Razor Saw Set
(Available at All Hobby Stores and Amazon)

https://www.amazon.com/Xacto-X75300-Precision-Razor-Saw/dp/B00004Z2U4/ref=sr_1_1?ie=UTF8&qid=1502015797&sr=8-1&keywords=xacto+x75300

Click Picture for Link

Must Notch Board Edges
To Allow Fit Within Width of Box

• Place Ink Lines Where Cut is to Occur

• Mark Front and Back Side

• Where Eye Protection! Cut Fiberglass Can Get Into Eyes!

• Use the Razor Saw to Saw a Line Across the Ink Guide Marks, Both Front and Back Side
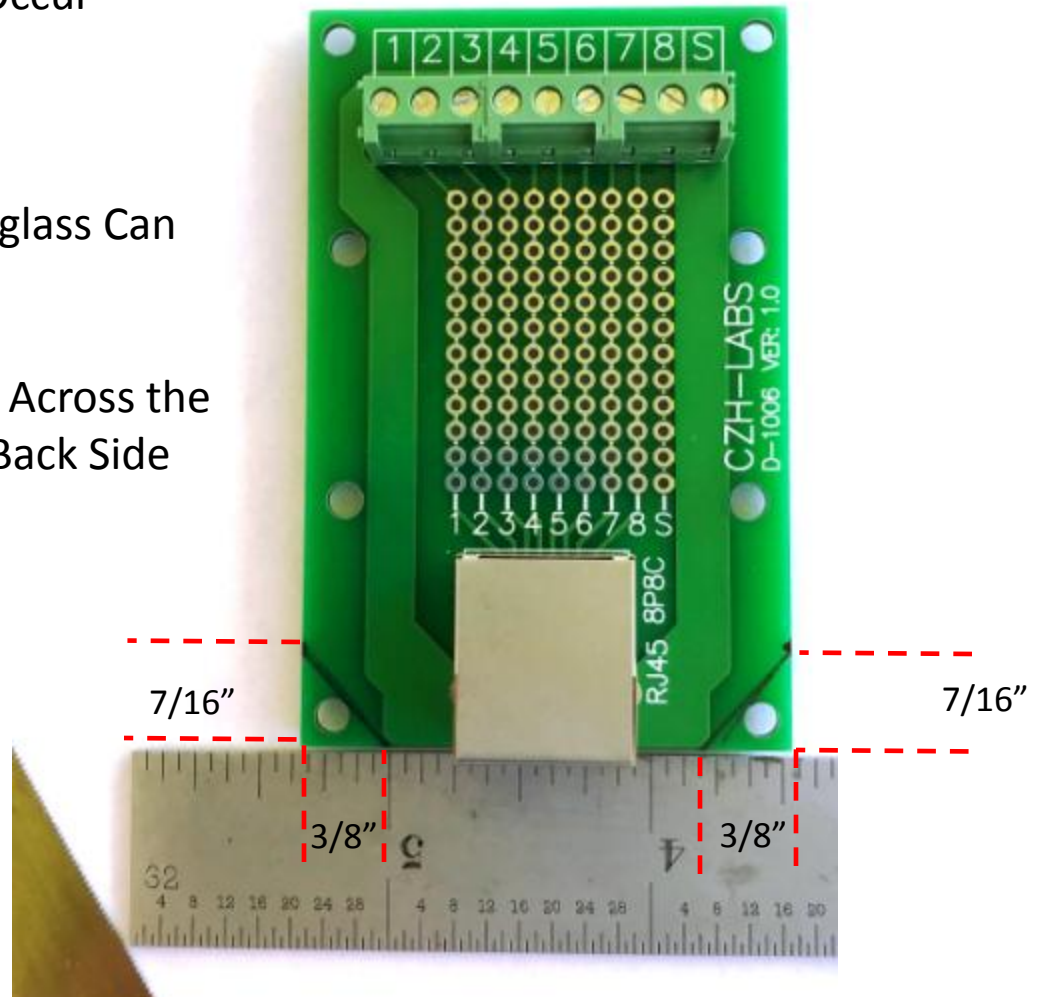
Snap Off at Saw-Grooved Lines

- Grab the Corners with Needle Nose Pliers and Snap Off
- Use File to Clean Edges and Check for Fit
- File Additional Amount if Needed for Perfect Fit
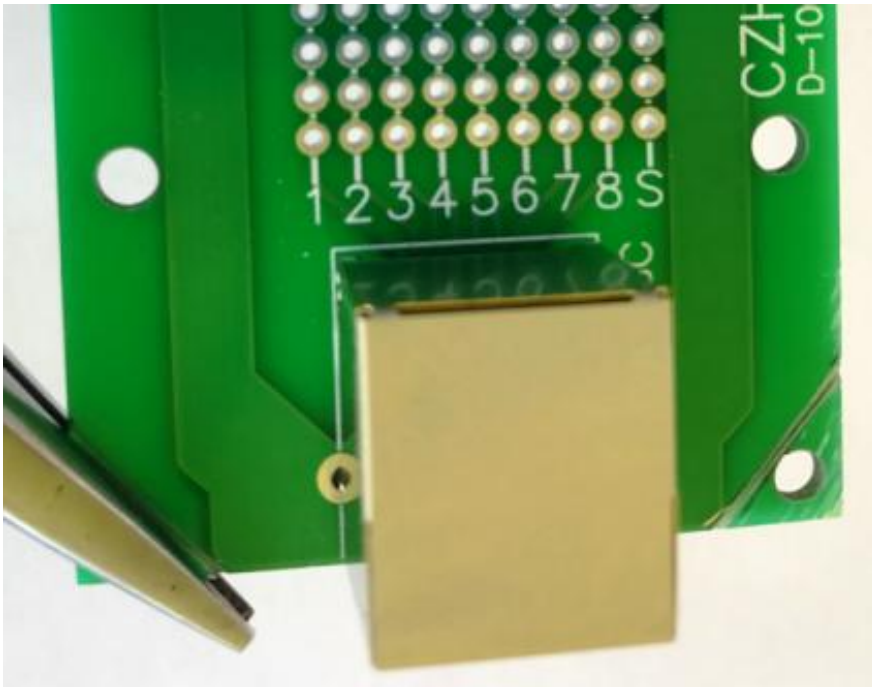
RJ45 Square Cut Out
(5/8" Square)

Overview

- Horizontally Center the Area to Be Cut, 5/8" <u>Width</u> Total. Observe Vertical Cut Out Begins at <u>Top Edge</u> of Box (Not the Lid).

- Xacto Brand Saw Used to Cut Vertical Lines for RJ45, 5/8" Depth (see next page)

- Scribe Used to Mark Horizontal Line

- Pliers Used to Wiggle Free the Plastic

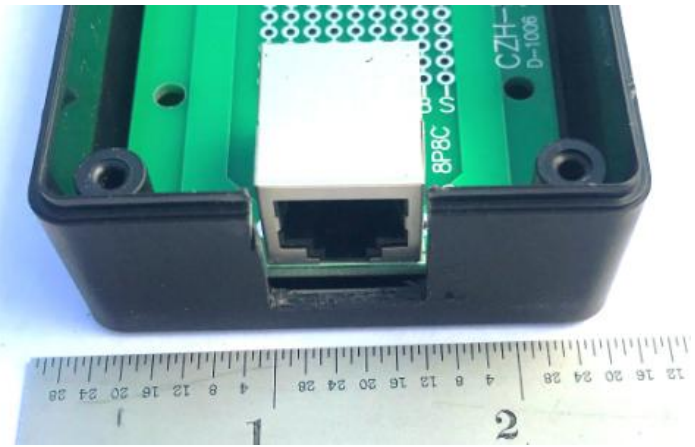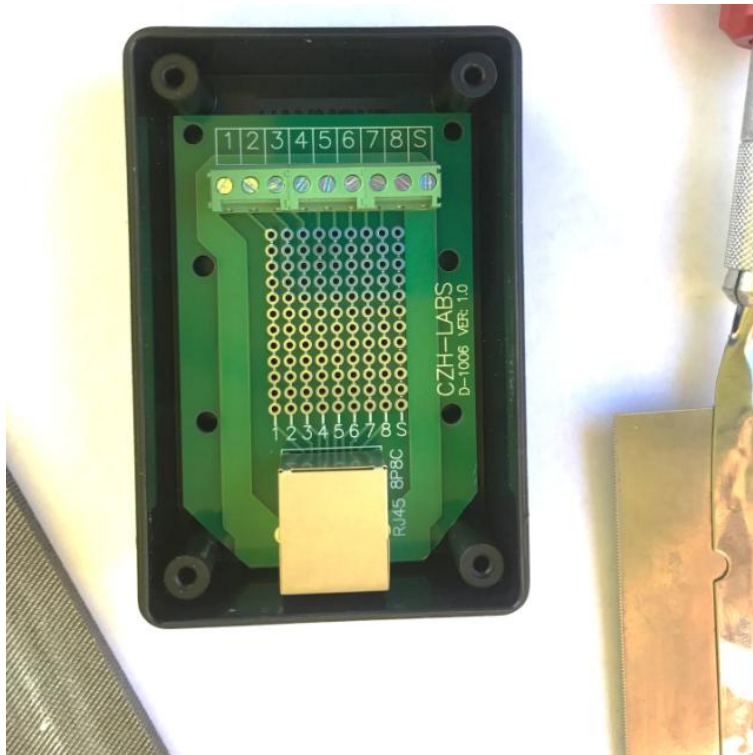- Make a Small Notch for Cable Exit at the Rear of Box Also

Square Cut Out For RJ45
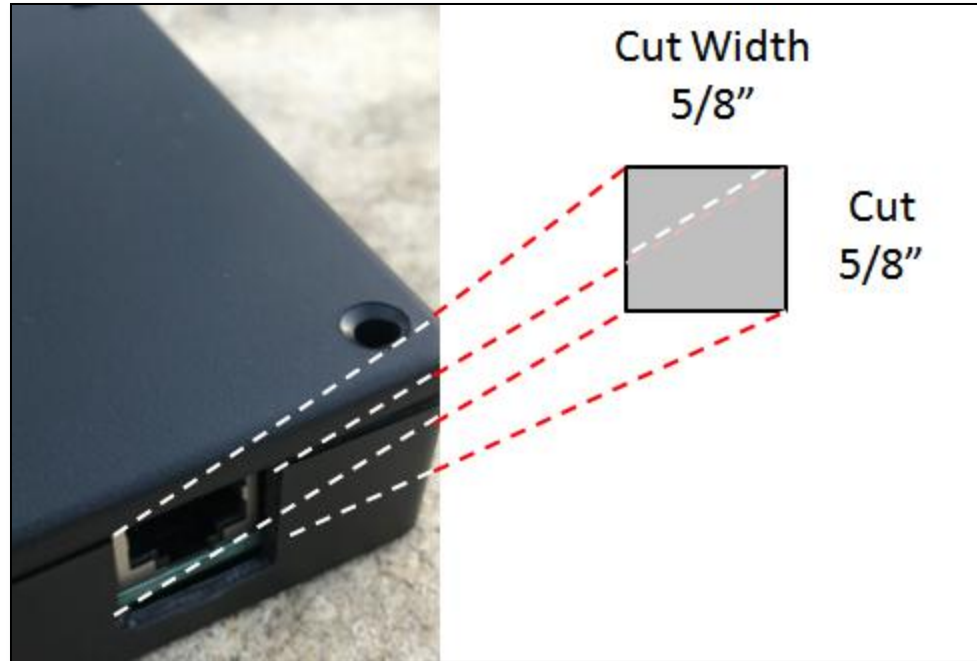
Horizontally Center the Area to Be Cut, 5/8" Width Total. Observe Vertical Cut Out Begins at Top Edge of Box (Not the Lid).

Mark Lines Where Square Notch
Is Needed for RJ45 and Saw Downward

DIY Project Completion

- Populate the Circuit Board with Components and Wiring Per Schematic

- Prior to Connecting 1/8" plugs, Slip Green and Pink Heat Shrink Tubing Over Cables to Indicate Headphone and Microphone Plugs, Respectively

- Connect the Two 1/8" Cables to the Terminal Strip Per the Schematic

- Once the Interface Box is Complete
  - Connect CS520 to Interface Box using an RJ45 plug to RJ45 plug
  - Connect the two 1/8" TRS phone plugs to your sound card device

- DIY Project is Complete!

Completed Box with 1/8" Phone Plugs

RJ45 Jack
to CS520

MIC Plug
(PINK)

HEADPHONE Plug
(GREEN)