

# Ham 305 – AS3 Maker - Cables Made Simple

Dr. Marc & Rosemary © 240701 ♥

1. One of the secrets of a successful AllStar node is the construction of the crossover audio cable.
  - a. Our objective is to make the construction simple for anyone with a wire stripper.
  - b. Cable construction can be a frustration for even the most skilled maker.
  - c. It does not have to be. It no longer is. Solder not required.

2. A little out of the box thinking and using the wide array of available products makes construction straightforward. Tools needed are simple.
  - a. A wire stripper for AWG 26 or smaller wire plus an insulation cutter.
  - b. A small screwdriver usually comes with the connector. That is it.

3. Parts start with DB9 (D-sub) male non-solder breakout connector. Cost ~ \$7
  - a. Acquire a pre-manufactured cable having one end that fits the device.
  - b. From the pre-manufactured cable, cut off the unneeded end.
  - c. Strip wires. Tinning (solder coating) is beneficial, but not necessary.
  - d. Place under the terminals of the DB9 and tighten. You are now a maker. Congratulations.



4. Conventional microphones use RJ45 male with an 8Vdc power need. But, the available power from the board is 5V.
  - a. An Alinco EMS-57 style mic requires only 5V with a shielded cable and 8-pin round mic connector.
  - b. A TYT 7800 is also 5V with a RJ12 modular connector. We still have issues with making its tones work.



8pin	Alinco	mic
1	mic	white
2	PTT	red
3	down	yellow
4	up	green
5	5v	brown
6	rx	orange
7	mic E	shld
8	grnd	blue

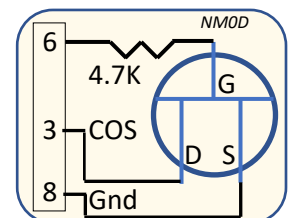
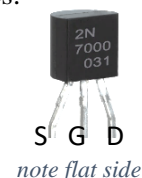
DB9	RL 20 Function	Speaker	8pin	Alinco	k/o	T568B
1		3.5T red				
2	audio out (Tx) to speak	3.5R wht				
3	COS in from mic PTT		2	red	orang	orange
4						
5	PTT out					
6	audio in (Rx) from mic		1	white	yello	wh-orang
7	5VDC solderpad to mic		5	brown	red	wh-blue
8	Grnd. bond to gnd lug	3.5S blk	8	blue	grey	brown
9						
gn	Gnd lug, bond to #8		7	shield	shield	wh-brwn

5. **RF-less Link** digital radio node.
  - a. Use a powered speaker.
  - b. Use a 5V mic with DTMF, shielded is preferred.
  - c. If mic is modular style, acquire a female Ethernet extension cable with RJ45 or phone extension with RJ12.
  - d. Get an audio repair cable with 3.5mm (1/8") female TRS (tip-ring-sleeve) stereo socket.
  - e. A DB9 solderless connector is the only other item.
  - f. Cut off the opposite end of the Alinco or extension. Look at pin numbers to decipher colors.
  - g. Strip wires, feed through strain relief of DB9. Screw down to pins.
  - h. Alinco pin 7, mic E, connects to cable shield and gnd lug.
  - i. Be sure to bond from pin 8-Ground to the gnd lug by pin 6.
  - j. Find an Elmer to solder one thing, a jumper on the board from 5VDC to terminal 7 pad.
  - k. Adjust mic volume. Set the pot screw. Adjust the software Rx.



6. **Simplex Link** node uses a radio which has a COS (carrier-on-switch) signal available.
  - a. Baofeng UV are common radios with the capability.
  - b. These radios have a K-head (K-1) connector.
  - c. Acquire an inexpensive Baofeng mic with the proper plugs.
  - d. Obtain a 2N7000 FET and a 4.7K resistor to make a COS switch and buffer.
  - e. A DB9 solderless connector is the next item.
  - f. Remove the cable from the mic. Dispose of the mic.
  - g. Strip wires, feed through strain relief of DB9. Screw down.
  - h. Add the FET - resistor combination under the same DB9 screws with the wires.
  - i. Cover bare wires with heat-shrink or tape to prevent touching.
  - j. The radio duty cycle is 100%. Lower power setting by half to reduce heating.
  - k. Adjust radio volume to low. Set the pot screw. Adjust the software RX.

DB9	RL 20 Function	Wire	Radio	FET
1	stereo not used			
2	audio out (Tx) to mic	red	3.5-R	
3	COS in from FET			Drain - D
4				
5	PTT out	black	3.5-S	
6	audio in (Rx) from speak	green	2.5-T	4.7K to gate
7	5VDC solder pad			
8	Ground. Bond to gnd lug	white	2.5-S	Source - S
9				



7. Your node is a digital extension of the repeater.
8. Life is good. Enjoy!

