

Alinco DR-138/438 in Allstar Service



The Alinco DR-138 and DR438 are mono-band two and $\frac{3}{4}$ meter amateur transceivers currently available from retailers like HRO for around \$200. They replace the DR135 and DR-435 radios which apparently Alinco has now discontinued as well as the DR-235 with 222 mhz coverage which also seems to be dropped from the Alinco line with no apparent replacement. The external design and form factor are almost exactly the same as the old radios but internally they are very different. It appears they mimic the TYT mono-band radios or more likely the TYT's mimic these. The TYT's are less expensive but have generally not been very reliable especially in higher TX duty factor use. It remains to be seen what the reliability of the Alincos will be. One good reason to spend the extra money for the Alinco radios is that there is US repair service via Remtronics in California.

These radios, like the TYT's come without the DB9 connector on the back for use with external equipment like Allstar but also like the TYT's the 6 pin inline micro connector on the PC board and the plugged cutout for the DB9 on the back panel exists so it is rather easy to add that capability.

There are differences between the DR-x35 series and the DR-138 and DR-438. There are many more menu options on the newer radios as well as an analog squelch verses the

digital step squelch on the old units. They are also FCC type accepted radios and can also be used outside of the amateur bands like GRMS using special programming software. It is important to note that the PL seems to be much more responsive on the newer radios BUT I noticed random keyups (COS assertion) if the squelch is left open when using CTCSS. You can however set the squelch with more accuracy with the analog knob then the digital step method. This does leave the possibility that you could accidentally move the squelch though since it is concentric to the volume. In normal Allstar node operation the squelch would be set to just closed, ctcss set with the proper tone, and the volume would normally be left at minimum.

Installing the DB9 rear panel connector

Alinco does not supply the connector as an accessory so you are on your own to acquire the parts and make the modification, but it is easy to do. First you need to order a wired 6 pin inline micro connector. They are used in LED lighting applications so many suppliers offer them. The easiest for small quantities is Digikey. The Digikey part number is A100196-ND and as of this writing the URL is -

<https://www.digikey.com/en/products/detail/te-connectivity-amp-connectors/2058943-5/2136140>

This is the 6 pin connector with color coded wires attached that are longer than needed to reach the rear panel DB9.

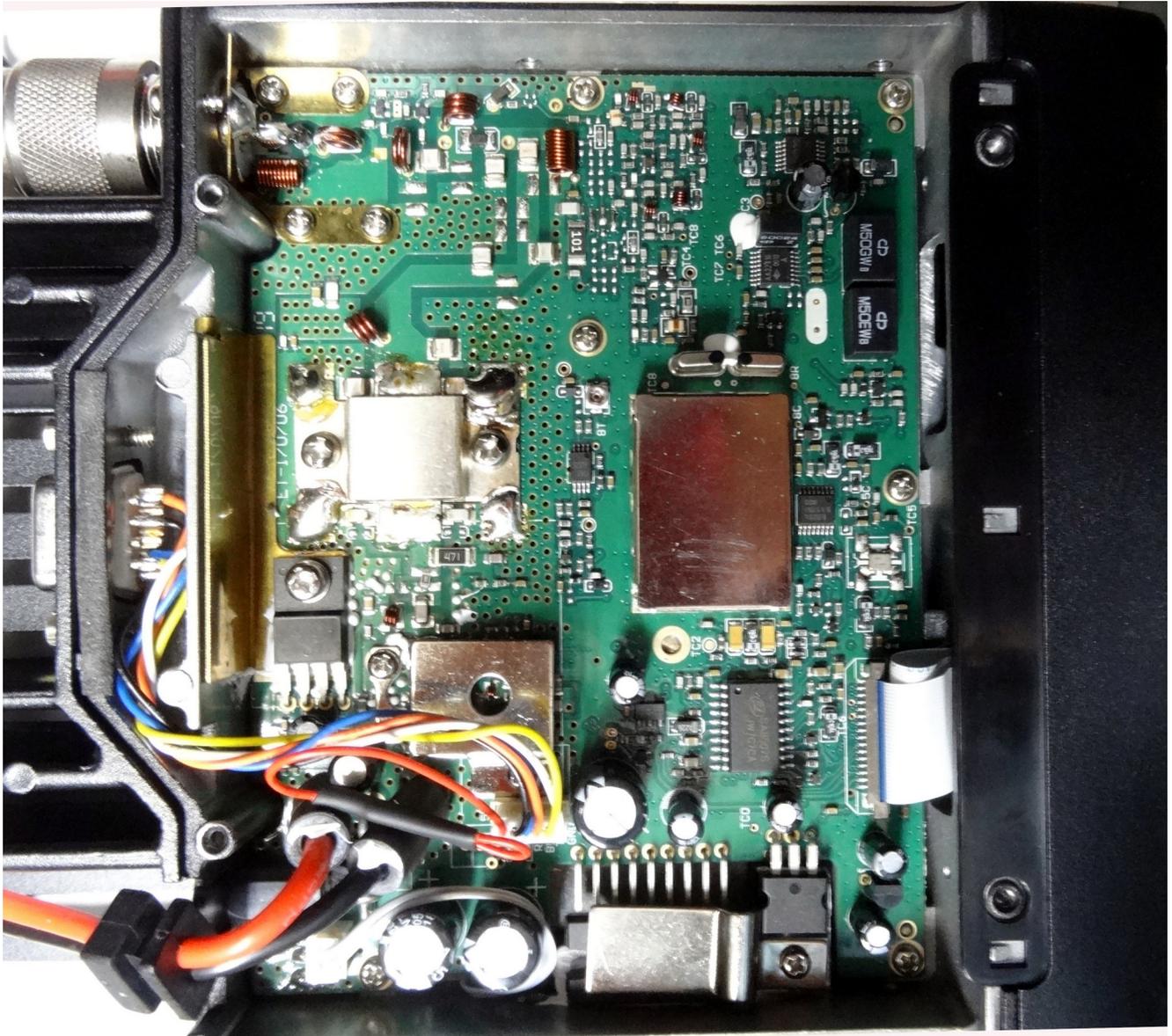
The assembly can be fabricated on the bench soldering five of the wires to the DB9 as shown below. The 6th red wire which is +5V is not used and should be either cutoff or folded over at the end and a piece of heat shrink placed over it.

Once the assembly is complete simply remove the rear panel adhesive plug on the DB9 opening and thread the small 6 pin connector through the DB9 opening from the back, position the DB9 for mounting and route the wires over to the chassis 6 pin connector and insert the plug oriented properly, white wire towards the front, into the connector.

The DB9 is a female connector mounts with two 4-40 screws on the back panel. You can use ¼ inch screws or the DB style screw down stems that would allow you to secure the male connector. I have the screw down stems so I used them but I never actually screw in the male end. The connector stays in well unless you are pulling on it. The chassis DB9 screw holes are threaded so using nuts on the inside is optional.



Original DR-435 showing multi-pin inline connector with all pins wired to the rear panel DB9. Note that the internals are very different than the newer DR-x38's shown below. Unfortunately the DR-x35 radios used 9 pins of an 11 pin inline connector so you cannot just remove it and use it in the newer radios.

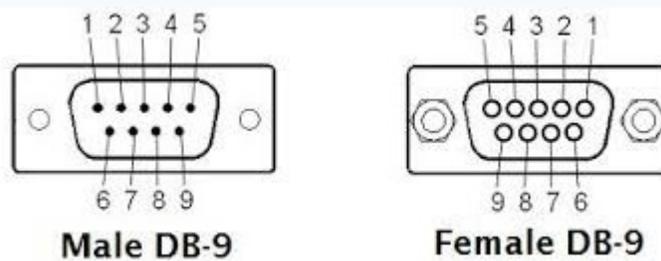


Alinco DR-x38 showing the 6 pin inline to DB9 modification as describe in this article.

DB9 connections to mimic original Alinco wiring

Wiring connections for the 6 pin inline mini connector wires to the DB9 mimics the original DR-x35 DB9 wiring connections. The only difference is that the DR-x35 used all the pins and offered both raw and de/pre-emphasized audio. The audio lines on the DR-x38 radios offer only de-emphasized RX and pre-emphasized TX so neither should be enabled in the simpleusb menu.

<u>Inline pin</u>	<u>Wire Color</u>	<u>DB9 pin</u>	<u>Use</u>
3	Orange	1	COS
4	Blue	4	RX Audio
1	White	5	Ground
5	Black	7	PTT
2	Yellow	9	TX Audio
6	Red	NC	+5V



Looking into the front of the connector



6 pin inline connector

Do NOT use any of the Alinco radios on high power in Allstar use unless it is known that the TX time will be limited. Since you really never know how much use a node will get when it is made public it is good practice to not use high power. I have successfully run any of the Alincos at medium power (20-25 watts) with fan cooling on the heatsink without any issues when using high TX duty cycles.

Although the DR-x35 and DR-x38 radios are very different surprisingly the RX/TX audio settings in simpleusb did not change between them. PTT and COS settings also remained the same so it was a simple switch between the radios. I believe the audio quality and reduction in PL feed through is much better on the DR-x38's than the older radios.

As of 2022 very few new amateur VHF/UHF radios offer the auxiliary connectors required for easy interfacing to Allstar and other external devices so it is a welcome sign that Alinco has maintained at least the capability for this feature. Hopefully they will continue to do so in the future.