

ICOM R10 Receiver Modification to Provide S-Meter Output

A Technical Application Note from Doppler Systems Inc.

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This application note was submitted by Lt. J.G. Peter Arts from USCG Boston and was based on instructions originally received from Phil Godbold of Adur Communications in England.

1.0 Introduction

The purpose of this application note is to describe the modification of an ICOM IC-R10 receiver to provide received signal strength indication (RSSI) through the 'ring' terminal of the external CIV jack for use with various Doppler radio direction finders. The modification consists of soldering a resistor between two internal contacts on the radio IC board. The note also gives directions for making up the cables for connecting both Audio output and RSSI output to the direction finder.

Note

Icom appears to have changed the design of this receiver since this application note was first published. This revision covers the latest models being sold. The new models provide a CIV signal on the ring of the external speaker jack and on the tip of the CIV jack. The ring connection on the CIV jack is available for use as the RSSI output.

2.0 Procedure

2.1 Items Required

- (2) Mouser 172-2306 Stereo Cable
- (2) Switchcraft 750 Mono Plug (do not substitute 3.5 mm plugs) for audio and RSSI connection on all model direction finders
- (1) Additional Switchcraft 750 Mono Plug for CIV connection with Series 6000/6100 direction finders
- #20 or 22 AWG Tubing Insulation
- (1) 1/4 watt 1.00K ohm resistor

2.2 Case Disassembly

Note - There are two different size screws used to connect the R10 Receiver. When removing screws, keep the one short, and four long screws separate.

1. Remove the battery cover and batteries.
2. Using a small Phillips head screwdriver, remove the 6 screws that hold the upper and lower halves of the receiver case together. See the first photo.



3. Carefully open the receiver case to expose electronic circuitry (see second photo).

2.3 1K Ω Resistor Installation

1. Place the insulated tubing over the leads on the 1K ohm resistor. Leave a very small amount of exposed lead on each end and tin it prior to installation.

2. Using soldering tools, apply a small amount of solder (tin) to the two test points (square copper areas shown in the second figure).

3. Solder the resistor as shown between these two test points, forming the leads as shown. ***Avoid excessive or prolonged heating.***

2.4 Case Reassembly

1. Carefully mate the R10 receiver case together, taking care not to jam the rubber plugs or the flex circuit.

2. Re-install the seven (6) screws in the same locations which they were removed from, i.e. 1 short and 5 long screws (see figure). ***Do not over-tighten these screws.***

3. Manually install batteries and battery cover to the receiver.

2.5 Audio Output Cable

1. Solder the white lead on one of the stereo cable to the center contact (tip) of the Switchcraft plug and the bare (shield) lead to the outer contact (sleeve) on this connector. Cut off the red lead.

2. Using an ohmmeter, verify that the tip on the stereo plug is connected to the tip on the mono plug and the sleeve of the stereo plug is connected to the sleeve of the mono plug.

3. Mark this cable as the "Audio Cable".

2.6 RSSI/CIV Output Cable

1. Solder the red lead on the second stereo cable to the center contact (tip) of the Switchcraft plug and the bare (shield) lead to the outer contact (sleeve) on this connector. Mark this connector "RSSI". If you do not need to use the CIV signal, as for example when connecting to the Series 5900 direction finder, cut off the white lead. If the CIV signal is to be used as with the Series 6000 or 6100 direction finders, connect the white lead to the center contact (tip) of another Switchcraft plug and label it "CIV".

2. Using an ohmmeter, verify that the ring of the stereo plug is connected to the tip of the mono plug and the sleeve of the stereo plug is connected to the sleeve of the mono plug. If used, verify that the tip of the CIV mono plug is connected to the ring on the stereo plug.

3. Mark this cable as the "RSSI/CIV Cable".

2.7 Connection to Direction Finder

1. Connect the Audio Cable between the External Speaker jack on the R10 and the Audio Input jack on the direction finder. The stereo connector goes to the R10 and the mono to the direction finder.

2. Connect the RSSI/CIV Cable between the CIV jack on the R10 and the RSSI Input jack on the direction finder. If used, the other mono plug connects to the CIV jack on the direction finder.

