

ECO-0018 – Ground Loop Prevention on Microphone Circuit – February 24, 2005

Applies To: 100W radios mounted in SDR1K-ENC enclosures and shipped from the factory prior to February 24, 2005. This modification is not likely to be required for QRP operation. THIS MODIFICATION IS NOT NECESSARY UNLESS A MICROPHONE GROUND LOOP PROBLEM IS ACTUALLY CONFIRMED ON YOUR RADIO.

Purpose:

Some customers have reported an echo or reverb effect on voice transmissions when using the 100W version of the SDR-1000. In some cases, the problem has been traced to problems with setup of the sound card. Sound card echo can be caused by concert hall effects being turned on or an incorrect setting on the mixer control, where the microphone is not muted on the Windows Volume Control panel. Incorrect settings on the sound card will sound like reverb. Please refer to the SDR-1000 Operating Manual for sound card configuration.

It is also possible that a ground loop exists on the microphone circuit that may in turn cause RF feedback into the microphone input of the sound card. Radios shipped on or after February 24, 2005 include a new microphone wiring scheme that eliminates the potential for microphone ground loops to occur inside the radio. If the problem is confirmed on an SDR-1000 shipped prior to February 24, 2005, the following options are available to eliminate the microphone ground loop.

Option 1

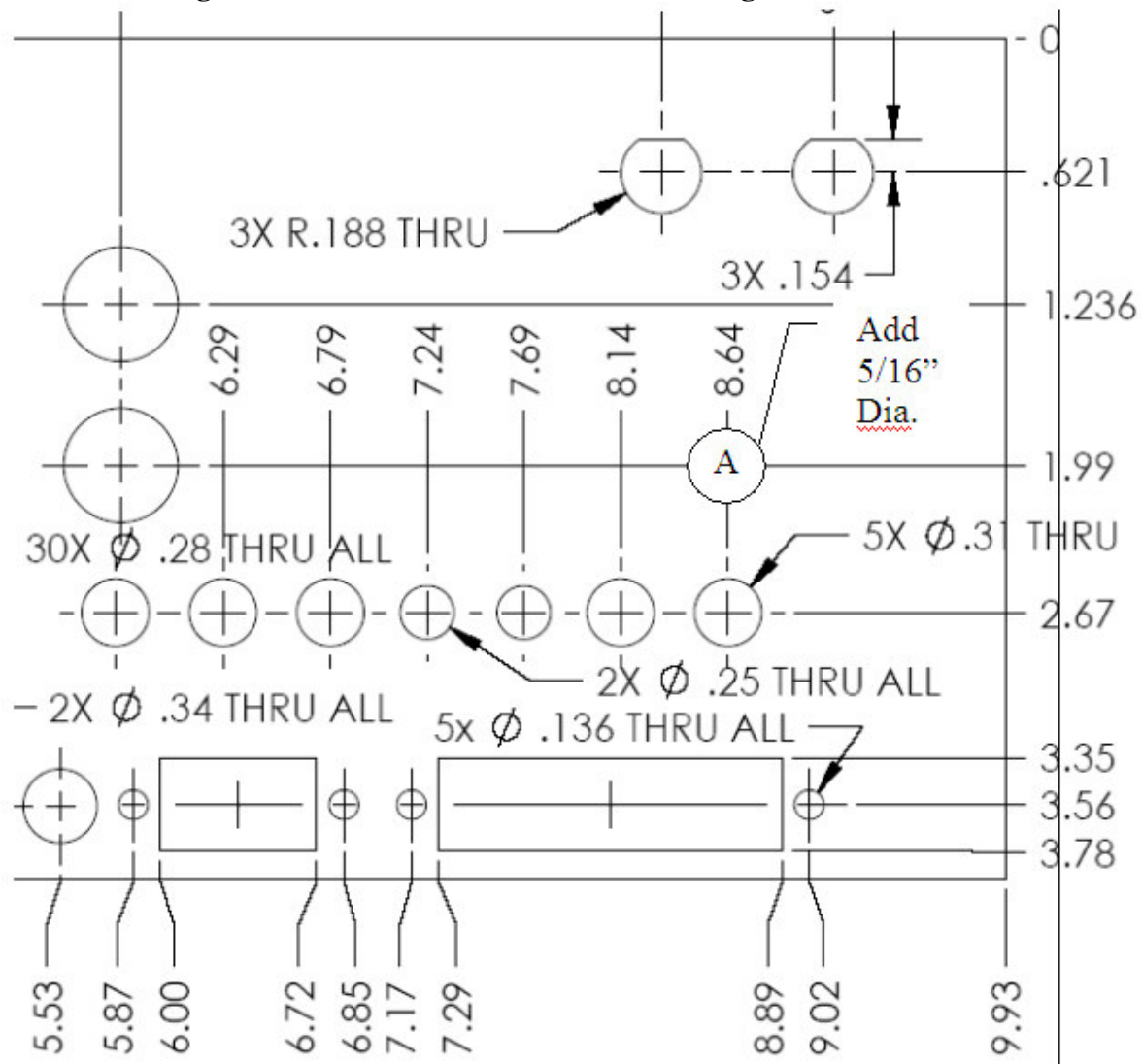
Connect the microphone directly to the microphone input on the sound card. This is the simplest solution that will eliminate the possibility of a ground loop occurring inside the radio enclosure. The PTT control may be connected either to the front panel microphone connector or to the External Control (X2) connector on the back of the radio according to the pin out diagram in the SDR-1000 Operating Manual.

Option 2

Modify the internal wiring to the new factory configuration as follows:

1. Carefully drill a 5/16 inch (8mm) diameter hole at location “A” above the existing microphone connector as shown in Figure 1 below.

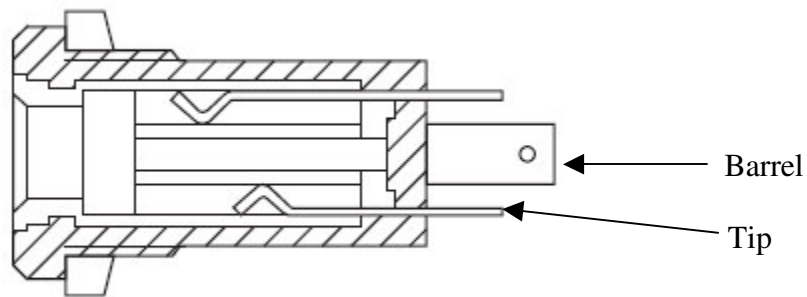
Figure 1 – Rear Panel Audio Jack Mounting Hole Location



2. Mount an insulated 1/8-inch (3.5mm) audio jack (Mouser P/N 161-7300) on the rear panel just above the existing microphone connector. This connector must be insulated from the chassis in order to prevent a microphone ground from existing inside the radio. The original connector can no longer be used because its barrel is connected to the ground plane on the PC board.
3. Disconnect the existing wires from Pin-1 and Pin-2 of the front panel microphone connector.
4. Solder the Black wire/shield connection that was soldered to Pin-1 to its new location on Pin-4 of the front panel microphone connector.

5. Cut off the White wire that was previously connected to Pin-2 of the front panel microphone connector.
6. Solder a 0.1uF ceramic disc capacitor across pins 3 and 4 (PTT circuit) of the front panel microphone connector.
7. No changes are required on the other end of the existing cable that is connected to the TRX board.
8. Cut a 9-inch (22.9cm) length of shielded cable that will connect between the front panel microphone connector and the newly installed jack on the rear panel.
9. Solder the shield of the audio cable to Pin-2 on the front panel microphone connector.
10. Solder the center conductor of the new cable to Pin-1 on the front panel microphone connector.

Figure 2 – Stereo Jack



11. Solder the shield of the audio cable to the barrel lead of the new audio jack mounted on the rear panel as shown in Figure 2 above.
12. Solder the center conductor of the audio cable to the tip lead on the new audio jack mounted on the rear panel as shown in Figure 2 above.
13. The new wiring is illustrated in the Table 1 below.

Table 1 – Connector Wiring

Signal	MTA Connector to J12 on TRX Board	Front Panel Microphone Connector	New Rear Panel Jack
Microphone (+)		1	Tip
Microphone (-)		2	Barrel
PTT (+) Red	1	3	
PTT (-) Black	3	4	