



Application Note 4

Subject: Make a High Isolation Coax Reversing Switch

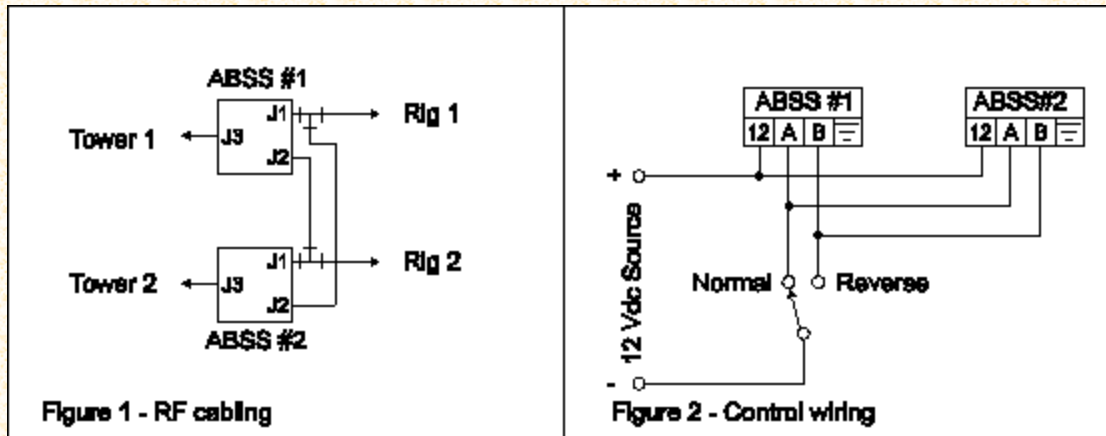
Background:

There are many applications for coaxial reversing switches. For example, it is very commonplace for Single Op Two Radio (SO2R) contesters to employ a low tribander or vertical antenna for the multiplier hunting station. In the event that the secondary antenna is not being successful at working the multiplier, it is useful to be able to throw a switch and put the main antenna system onto the multiplier station to help work the mult as quickly as possible. The switch is then thrown back to return the configuration to normal.

A necessary attribute of a reversing switch is very high isolation between the two rf circuits passing through the switch. In either the Normal or Reverse position, both receivers must be protected from potentially damaging levels of rf voltage.

Circuit Description

Two Top Ten Devices A/B Station Selector (A/BSS) relays can be configured to provide a reversing switch with 70 dB of isolation between the two rf circuits passing through the switch. The rf cabling and 12 Vdc control wiring for this configuration are shown below in Figures 1 and 2:



Building the Reversing Switch

The two A/BSS relays are connected together with coax adapters. Two "elbow" and two "tee" adapters are required, as can be seen in Figure 1. Top Ten Devices recommends that only high quality adapters be used, such as those available from Amphenol. Inexpensive imported adapters have generally not been found to be satisfactory. The resultant assembly is semi-rigid by virtue of the close-coupled adapters, and can be mounted to a convenient flat surface using the mounting holes on the lower A/BSS.

A conveniently located toggle or other control switch needs to be wired as shown in Figure 2.

Operation of the Reversing Switch

In the Normal position of the control switch, Rig 1 is connected to Tower (or Antenna) 1, while Rig 2 is connected to Tower (or Antenna) 2. In the Reverse position, the outputs are interchanged. As with any other rf switching device, users are advised to never operate the reversing switch while either rig is transmitting, as damage to the switching relays may result.

Notes

1. Due to the internal configuration of the A/BSS, with no power connected to the control circuitry, both sides of the switch are open, and NEITHER rig is connected to an antenna.
2. Power consumption is approximately 160 mA for the Reversing Switch assembly.

3. As a precaution, it is recommended that a Type 43 ferrite bead be placed on the control wiring as close to the reversing switch as possible. As many turns as possible should be placed on the ferrite.