A/B STATION SELECTOR

Quick Start

Mount your A/B Station Selector in a convenient location. Connect 12 Vdc (nominal) and power supply ground to the terminal strip. Ground the Select A terminal to connect rf Input A (J1) to the Output (J3). Ground the Select B terminal to connect rf Input B (J2) to the Output (J3).

Contacting Top Ten

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Overview

The Top Ten Devices A/B Station Selector functions as two interlocked SPST normally open contact relays. One side of each "pole" is connected to a single SO-239 connector. Think of this as the "Output Connector." The other side of each pole is connected to a separate SO-239 connector. Think of these as "Input A" and "Input B." To connect Input A to the Output, Relay A must be energized. Likewise to connect Input B to the Output, Relay B must be energized. Circuitry is incorporated in the A/B Station Selector to allow only Relay A or Relay B to be closed, but not both at the same time. Whichever side is selected first will be activated.

The A/B Station Selector is rated for full legal amateur power to 30 MHz (1kW RTTY), and has low insertion loss and VSWR characteristics.

Updated June 8, 2008

Circuit Description

The A/B Station Selector circuit is shown in Figure 1. Each SPST function is implemented by use of two SPDT relays. Using two SPDT relays for each pole accomplishes the following:

1. Provides very high isolation between Input A and Input B, when used with low capacitance relays.

2. Provides a method to positively interlock the two poles, such that only one set of relays can be operated at a time.

The rf paths are shown in bold lines. To connect Input A to the Output, RY1 and RY2 are energized by grounding the Select A line. Similarly, RY3 and RY4 are energized to connect Input B to the Output by grounding the Select B line.

Note that the coil circuit for RY1 and RY2 pass through the normally closed contacts of RY3 and RY4, and vice versa for the other pole. Using this positive, non-electronic interlocking scheme, the first pole to close locks out the other pole. This is a very important feature of the A/B Station Selector, as shown in the typical applications described below.

C1-C4 provide rf bypassing on the control lines. D1-D2 provide a path for circulating currents created when the relay coils are deenergized.

RY1-RY4 coils are rated 12 Vdc, 275 ohm nominal coil resistance. Relay contacts are rated 10 Amperes. The printed circuit board is laid out in such a manner as to provide nominal 50 ohm rf paths and high isolation between Inputs A and B.

Typical Applications

Two-Station Automatic Antenna Alignment

The A/B Station Selector was designed with the competitive two-station multi-op in mind. In a typical two-station configuration, six feedlines will enter the shack from the antennas, one for each band 160 through 10 meters. For maximum flexibility, either of the two stations must have access to any band not in use. This is typically accomplished with two-position coax switches which the operator manually aligns as required. One manual switch is required for each feedline, for a total of six switches.

Replacement of the manual switches with A/B Station Selectors used in combination with Top Ten Devices Band Decoders on each of the stations provides for fully automatic alignment of the antenna to the station which moves to that band. No additional logic (other than blocking diodes, depending upon what else is being switched by the Band Decoders) is required. The on-board interlocking provided in the A/B

Station Selectors prevents the second station from "stealing" the antenna from the first station.

Figure 2a shows the rf connections for the six A/B Station Selectors. Figure 2b shows the control wiring of the two Band Decoders and the six A/B Station Selectors.

Reversing Relay

Two A/B Station Selectors may be configured as a DPDT reversing switch. Figure 3a shows the rf connections and Figure 3b shows the control wiring. Reversing relays are useful for switching two stations to two towers and switching two exciters to two amplifiers.

Single Pole Double Throw Relay

A single A/B Station Selector functions as a SPDT relay when controlled by a SPDT toggle or rotary control switch. Remember that in its deenergized state, neither input is connected to the output, which is why a SPDT control switch is required.

Limited Warrantee

Top Ten Devices warrants this unit to be free from defects in parts and workmanship for a period of one year. The unit will be either repaired or replaced, at our discretion. The only cost will be the cost of return shipping. If repairs are required during the warrantee period for other than manufacturing or parts defects, an estimate of the repair cost will be provided prior to repair.

Top Ten Devices is not responsible for any consequential damages to other equipment or personnel injury as a result of using this product, or any of the suggested uses.

If the terms of the above Warrantee and Limitation of Liability are not acceptable, please return the unit to Top Ten Devices for a full refund.

Specifications

Power	1500 W SSB/CW to 30 MHz
	1000 W RTTY to 30 MHz
VSWR	< 1.05 at 30 MHz
Load VSWR	< 2.0 at 30 MHz
Isolation	> 80 dB to unselected port at 30 MHz
Operating voltage	13.8 Vdc nominal
Current requirements	100 mA (approximate)

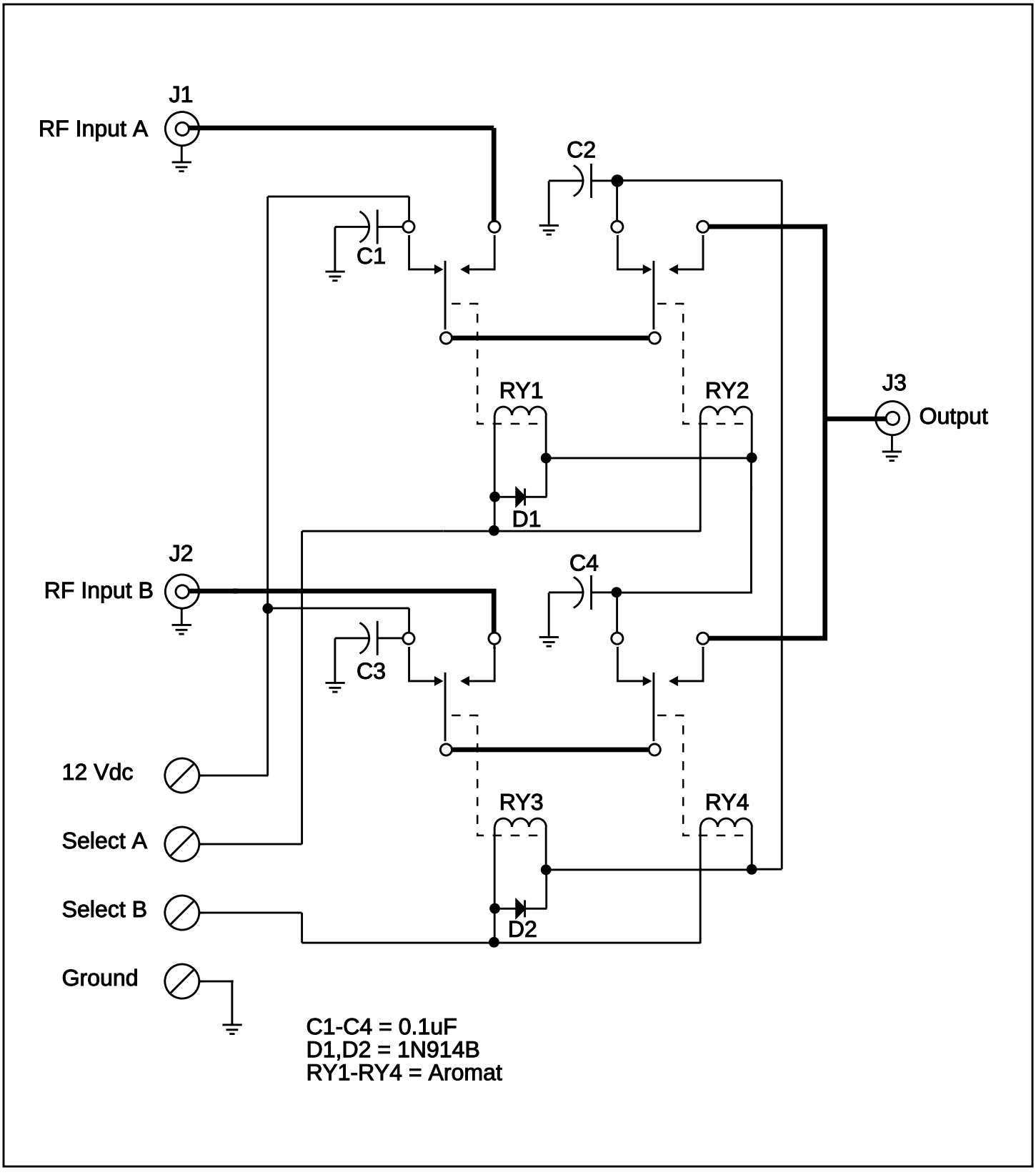

Figure 1 - A/B Station Selector Schematic Diagram. RF paths are shown in bold lines.

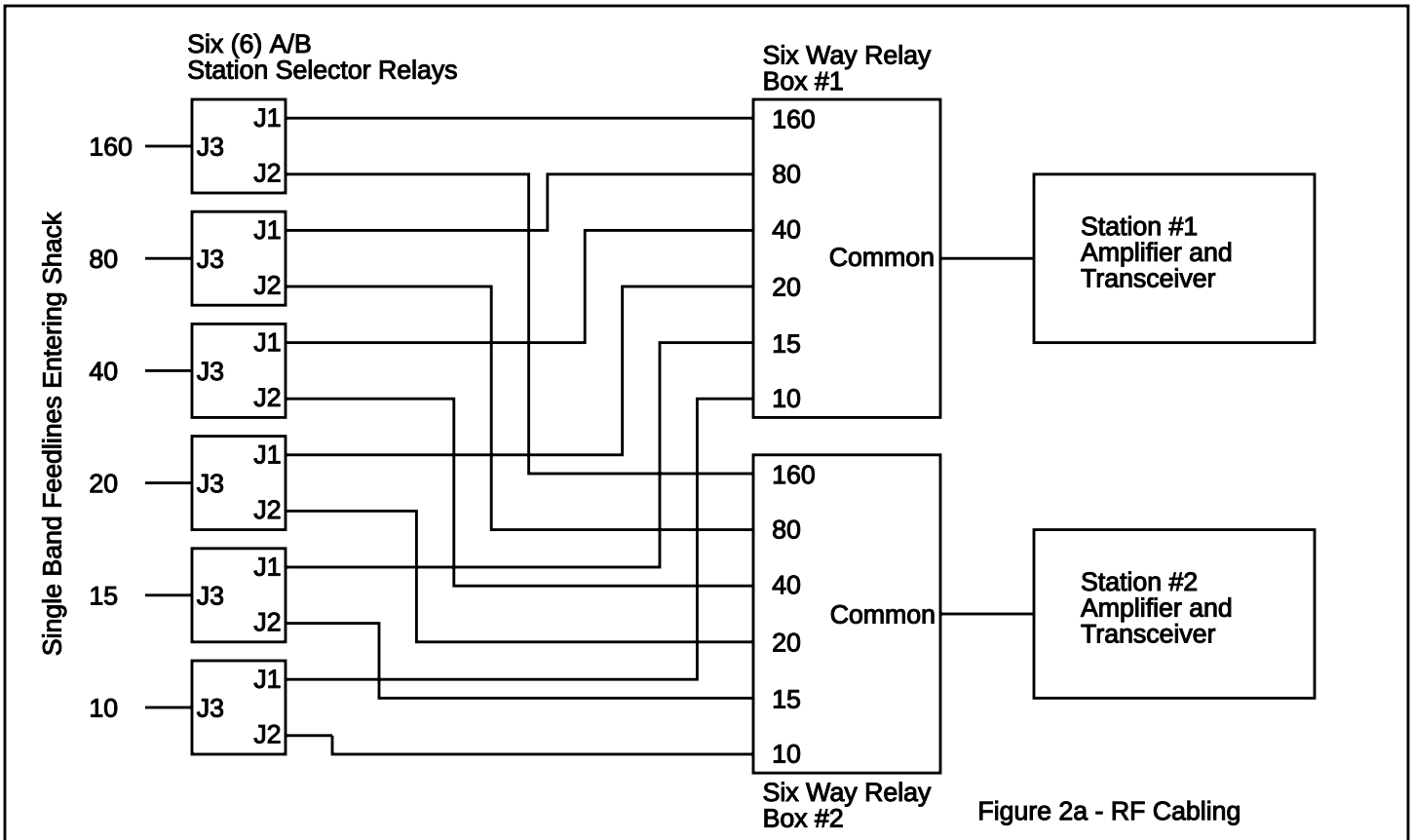

Figure 2a - RF Cabling

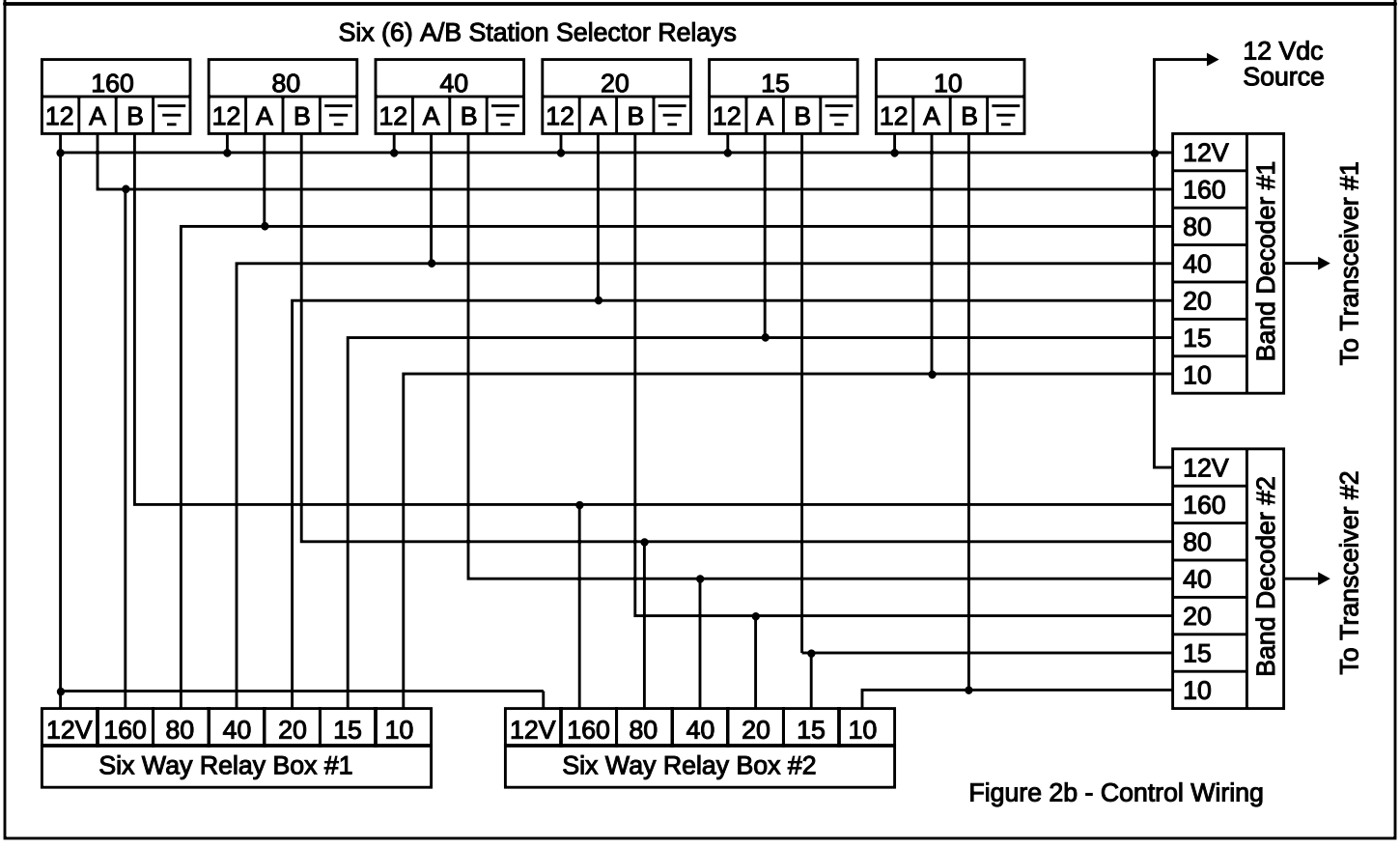

Figure 2b - Control Wiring

Figure 2 - Wiring for automatic antenna selection in a two-transmitter configuration where either station has automatic access to any band not currently in use. A single 12 Vdc (nominal) power supply is used for all Band Decoders, Six Way Relay Boxes, and A/B Station Selector Relays. Chassis or ground terminals of all equipment are connected together.

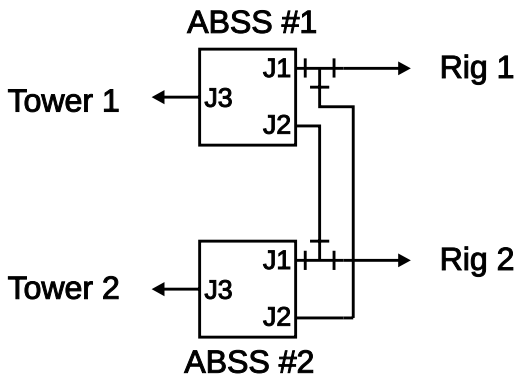

Figure 3a - RF cabling

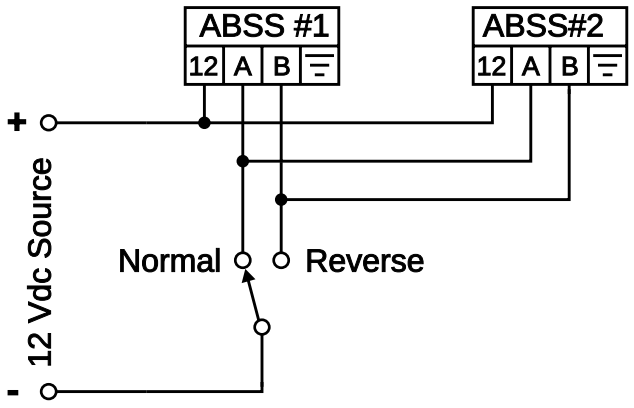

Figure 3b - Control wiring

Figure 3 - Two A/B Station Selector Relays used as a reversing switch. Note that 12 Vdc control power must be applied for an rf circuit to exist. Without control power, all relay contacts are open. In "Normal," Rig 1 is connected to Tower 1, and Rig 2 connected to Tower 2. In "Reverse," Rig 1 is connected to Tower 2, and vice versa for Rig 2.