



Array Solutions Remote Antenna Switch



RATPak System

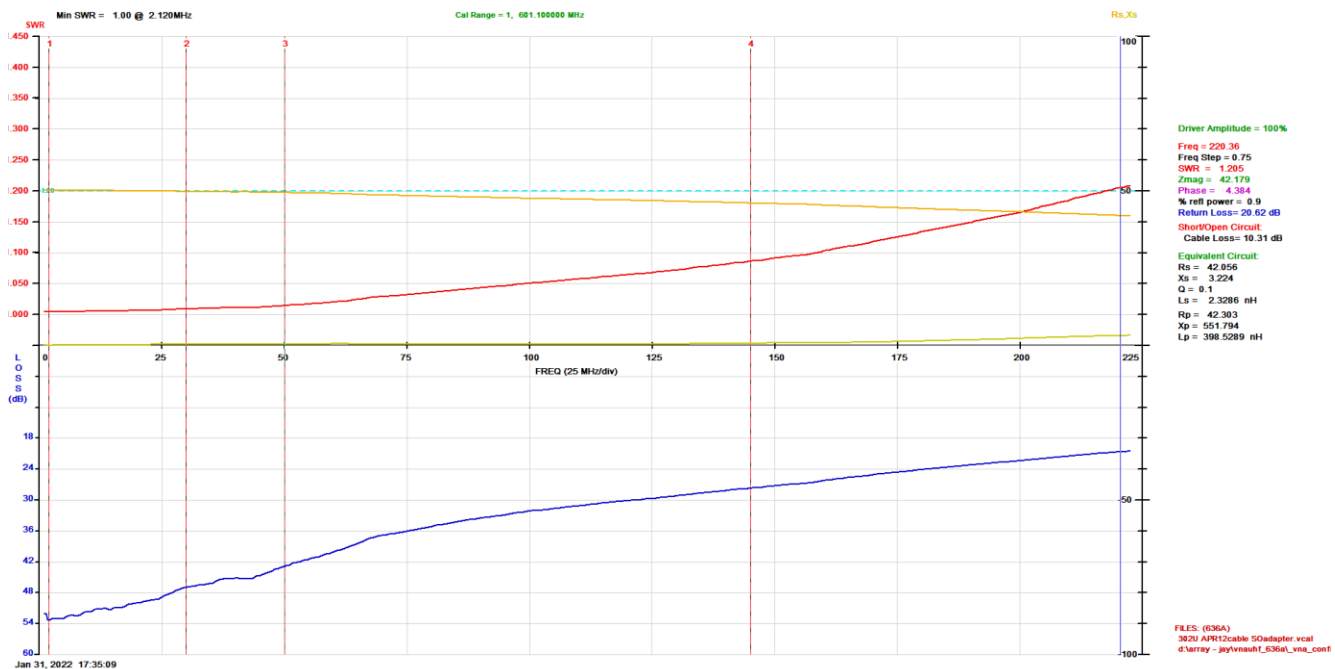
Thank you and congratulations for purchasing the Array Solutions RATPak remote antenna controller. We are proud to offer one of the finest, most reliable and fastest antenna switches on the market.

This switch is designed to give you reliable performance even at high power and SWR levels. This indeed should be the last antenna switch you should have to purchase. It is also designed so that in case of a failure of a relay or other device, it can be easily disassembled and repaired. This is not the least expensive switch on the market, but we believe you will appreciate the quality that went into its design.

Improvements include higher Isolation and operation from DC to the 220MHz band!

Specifications:

- 1X6 antennas or can be used backwards as in 6 radios to 1 antenna feedline
- 3kW Continuous carrier / 5 kW CW or PEP @ less than 3:1 SWR
- 12V DC operation
- SWR DC to 225 MHz operation under 1.2:1 @220MHz)(2m 1.08:1, 6m 1.03:1, HF 1.02:1)
- Insertion Loss – negligible
- Isolation 90 to 70dB+1 to 30 MHz, 65 dB 50 MHz
- Aluminum tray and Chassis, no plastic also WX proof
- Surge protected relays
- Can be used with Band Decoders with 12V DC source
- Supplied with Galvanized 1.5" U-bolt for tower leg mounting



RatPak SWR (red) and RL(blue) Rs (orange) and Xs green) vs Freq.

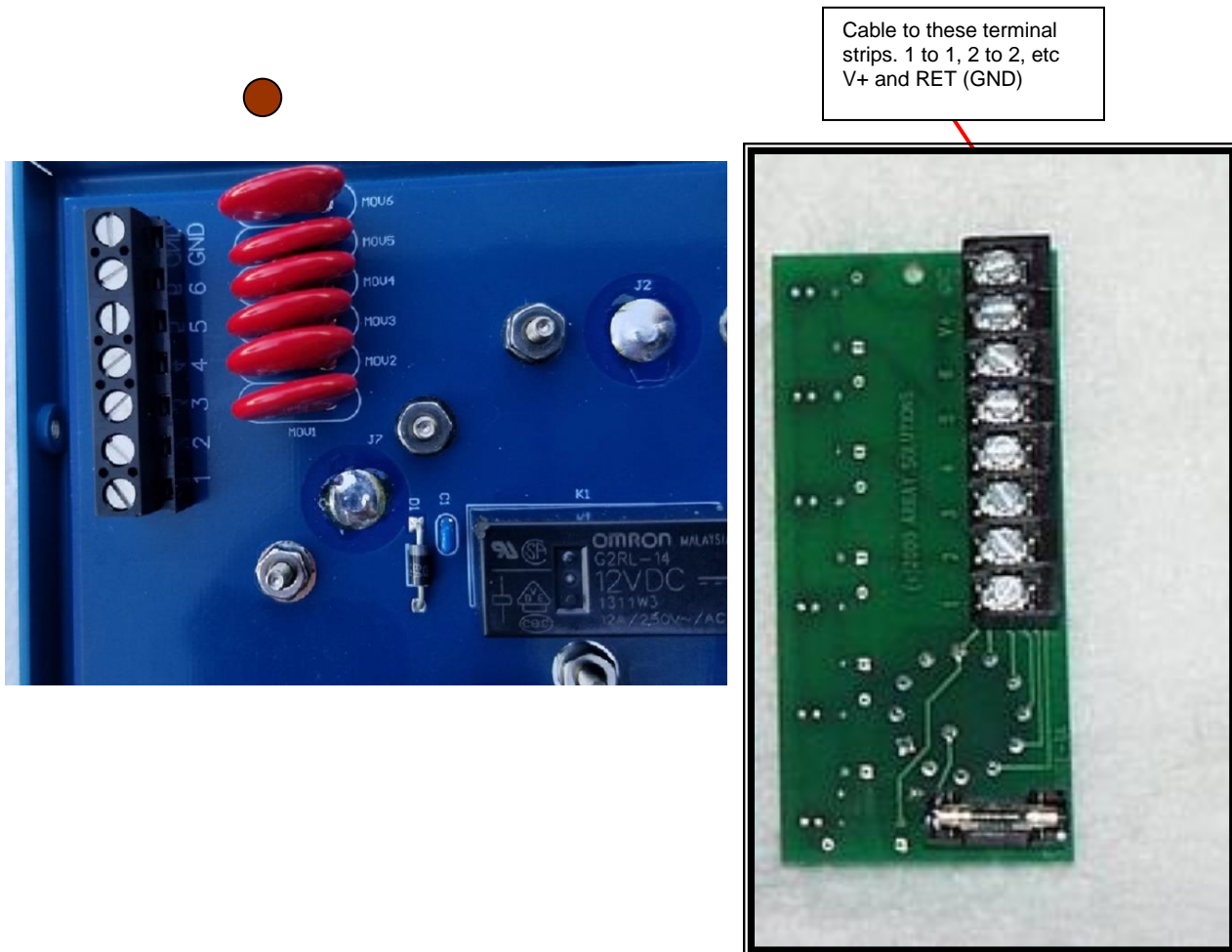
Wiring the System

The usual set-up has one Array Solutions Remote Antenna Switch control box, which is manually operated from the radio position. The control box for the system contains one rotary switch and 6 LEDs, so the operator can see which antennas are selected. You may write on the white paint to indicate your antennas or place a label in the area above the LED.

The Array Solutions Remote Antenna Switch can be set up inside or outside the shack. Wiring of your switch is accomplished by wiring a 7 or 8-wire cable (rotor cable will work) with or without a shield from the terminal strip of the controller to the terminal strips in the control box. A shielded cable is not necessary. Wire the control box before you assemble the circuit board to the box. It will be much easier this way.

The controller also requires 12 to 14 V DC to be wired to the V+ and GND terminals. Use your station 12 V DC supply and try to avoid using wall warts. Some of them are not certified for use near radios and they may be prone to RF interference. Please use a well-grounded DC source.

Figure 1: RATPak relay box and rotary controller board connections



REW REV 3 PCB

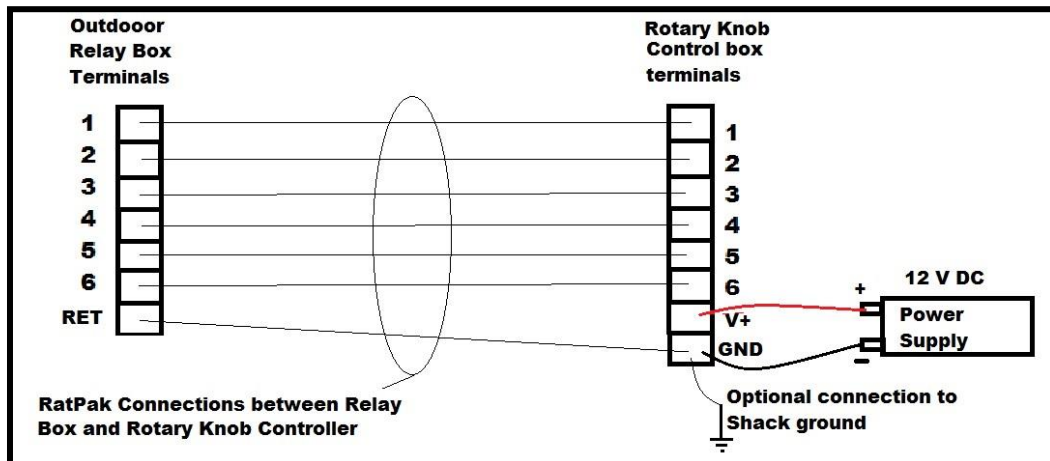
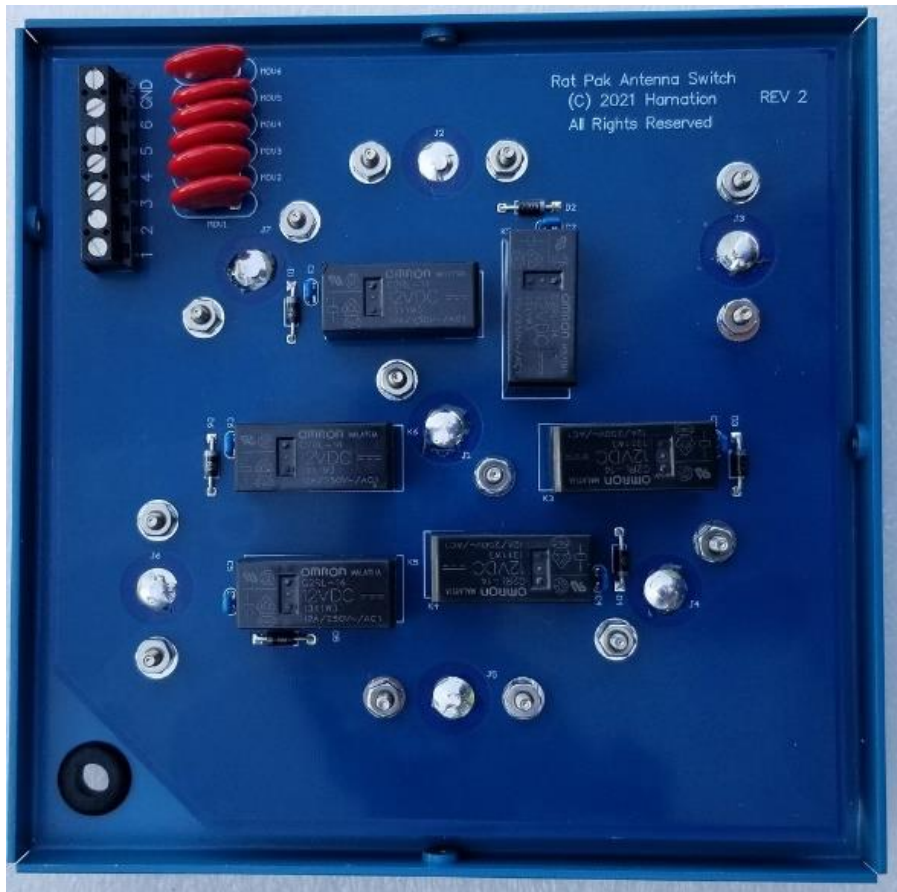


Figure 2. Schematic for Rotary Controller, PS and Relay box connections

Once the control board is wired, secure it into place in the metal enclosure by using the hardware supplied on the rotary switch. The LEDs should just peek through their holes in the box.

The other end of the cable should be connected to the terminal strip on the relay matrix circuit board. Its terminal strips are labeled to coincide with the same numbers of the controller. It also has a return (RET) for the GND wire.

To access the relay board, take the relay matrix box apart. **To remove the “tray” tip the tray so one edge is lower and it will clear the rivets.** Once the tray is out you will see the PCB as mounted in the picture of Fig.1. Push your control cable through the grommet in the “tray”, and the hole in the PCB.

Use the plastic ties supplied to secure the cable from being pulled out of the boxes.

TIP - put a plug like a Cinch™ Jones Plug or a DB9 connector on your cable so you may disconnect them during thunderstorms. You may do this on both ends of your cable to allow you to do a quick disconnect from the tower as well. You also should route the cable through a bulkhead in your shack that has proper lightning protection. There are lightning surge protection devices sold by various companies, such as Array Solutions and ICE.

The Array Solutions Remote Antenna Switch and the control switch box have No. 6 hardware to fasten the covers to the chassis. Just remove the screws to access the insides of the boxes.

The relay box is to mount cover up, on your tower leg with the supplied galvanized U-bolt.

Before final mounting take a look at the corners of the Antenna Switch cover. Verify the paint has sealed the corners of the cover. If not, a dab of RTV, silicon rubber, or paint on the inside will seal it. Do not seal the seams between the cover and the inside tray. This is so any condensation may escape and not build up inside your switch.

Antenna and Feedline Setup

Attach the feed-lines from the corresponding RF connectors of your choice and weather-proof them.

Also tape the coax cables to a tower rung or leg to strain relief them. Do not use the switch cover as a foot step while on the tower.

Use of Automatic Band Decoders

Alpha Power™ DAS , Top Ten, RF Applications and Array Solutions band decoders may be used to drive the Array Solutions Remote Antenna Switch directly. Just wire these outputs in parallel with the corresponding terminals in the switch box. The Top Ten decoder needs the source driver option or the level converter sold by Array Solutions.

The manual rotary switch can be switched out of line by turning the knob to one of the unused 6 positions of the control box. If you have a failure in your decoder you can always go back to manual control with the rotary switch.

Controller Options

Please look in www.arrayolutions.com for the RatMaster and RatPak Push-Button controllers and its use with our Band Decoders like BandMaster III and BandMaster IV.



RatMaster, switch controller with integrated band decoder.



Push-button controller.

RATPak Specifications

Frequency Range	DC to 225 MHz 1.2:1 SWR at 225 MHz
SWR	DC-30MHz 1.05:1 55 MHz 1.08:1 220 MHz 1.2:1
Isolation	80+ dB under 30 MHz 50 dB 50MHz band
Power	3 kW CCS 0.1 to 30 MHz, 2 kW CCS at 50 MHz 1.5 kW CCS 2m and 220
Lighting surge protection	MOVs in the relay box
Design architecture	50 ohm strip line Input to output connectors
Enclosures	Metal switch and relay box. WX proof
Weight	4 lb.
Size	6" x 3" x 3" (152.4 mm x 76.1 mm x 76.1 mm) switch and 7" x 7" x 3.5" (177.8 mm x 177.8 mm x 88.9 mm) relay box
Connectors	SO-239 standard Type-N optional, replaceable in the field

The manufacturer reserves the right to modify the design and specifications.