

Portable Rotation 12PR1A Ultra-Portable DC Antenna Rotator

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One of the greatest joys of Amateur Radio is being able to operate outdoors. Whether it's on a mountaintop, on the beach, or on the top level of a high-rise parking garage, getting away from the shack allows us to find new ways to enjoy our hobby. For some of us, operating portable is the only way we can get on the air because of our housing arrangements.

When I operate portable, I've found myself in several situations where I could have brought a directional antenna with me, such as a small Yagi for HF or VHF. If it's light enough, rotating a Yagi can be done with the Armstrong method, but it is often very inconvenient to do so. Perhaps you don't want to leave the rig behind while you go outside to adjust the antenna toward that weak station, or perhaps you're in a tent and it's dark out there.

A Battery Powered Rotator

Portable Rotation has developed a solution to these problems. The 12PR1A is

an antenna rotator (Figure 6) that functions on 9 to 14 V dc. At 12 V, the unit is specified to draw 40 mA idle current and 200 mA or less while the antenna is turning. It can be powered from the battery used to run a typical portable station. While the control head (Figure 7) will function with as little as 6 V, a minimum of 9 V is required to activate the rotator motor. The rotator is designed for 12 V and will turn only very small antennas with a 9 V power source.

The manual indicates that the rotator can handle antennas that weigh up to 8 pounds (the Portable Rotation website says 10 pounds), which covers portable antennas such as the Buddipole or Super Antennas portable dipoles, or most small VHF/UHF Yagis. The website also says the rotator will handle a Super Antennas YP3 portable Yagi, which is specified to weigh 12 pounds.

The package includes the rotator with a built-in 6-inch mast for attaching antennas, 50 feet of control cable, and a small controller. It has a USB interface (so it can be controlled with your PC) and the entire package weighs just under 4 pounds. Options include an adapter for Buddipole antennas, a carrying bag, and a 50-foot control cable extension.

The 12PR1A does have some limitations. It's not designed for permanent installations in harsh or extremely wet conditions. Although the 12PR1A is weather resistant, the manufacturer recommends not turning the antenna if it is raining because water might pass by the seals and get into the rotator. The manual informs us that the built-in 6-inch antenna mast is not to be extended, or it could damage the rotator bearings. The manual also advises us to make sure the antennas are well balanced at the

rotator attachment point.

Setting Up in the Field

I took the 12PR1A rotator out to one of my favorite portable operating sites, a field behind a grade school about a half mile from my West Hartford, Connecticut apartment, and used it in one of my standard portable operating configurations: an all-mode QRP transceiver with a 7 Ah (amp-hour) sealed lead-acid battery, a 20-foot telescoping aluminum mast with tripod, and a foldable two-element 6 meter Yagi. Figure 8 shows my gear. With the exception of the mast, everything fit easily into my 3-day backpack, with room to spare. I didn't notice the extra weight of the rotator.

Setting up this configuration usually takes me about 20 minutes; the inclusion of the rotator added fewer than 5 additional minutes of setup time. It was incredibly straightforward and easy right out of the box. The rotator-to-mast brackets can ac-

Figure 6 — The rotator motor unit has a 6-inch stub mast for attaching the antenna.



Figure 7 — The control box has buttons for clockwise and counterclockwise rotation and displays beam heading on an LCD. You can program your call sign in the top line.



Bottom Line

The Portable Rotation 12PR1A offers a convenient way to rotate small antennas in the field without draining a portable battery supply.



Figure 8 — The author's portable station fits in a backpack.

commodate a mast up to 1.5 inches, and the mast clamps have wing nuts to secure the rotator. No tools are needed. The bottom of the rotator falls flush on the top of the mast and locks down smoothly. The four-conductor control cable can be attached to the bottom of the rotator easily, and it attaches to the control box in a similar fashion.

I unfolded my two-element 6 meter Yagi, attached it to the built-in rotator mast, and raised the mast up section by section. I was on the air in less than half an hour. Figure 9 shows the antenna, mast, and rotator.

Using the Rotator

One of the nice features of the 12PR1A is “Any-Direction Calibration.” You can erect your beam without trying to get it oriented to true north immediately. After the antenna is in the air, you can tell the 12PR1A what direction the antenna is pointing and calibrate the controller from there, which saves a lot of time.

The 12PR1A is designed to rotate through north (0 degrees), meaning that it will stop when oriented to 180 degrees (due south). If you are pointed west at 270 degrees and want to change the antenna to beam southeast, say 130 degrees, the antenna will rotate clockwise, passing through north. If you keep turning the antenna clockwise past 130 degrees, when you reach 180 degrees the control head will display a MAX TURN message. An arrow will appear on the display, indicating counterclockwise as the only direction in which you may turn the antenna.

As with many other antenna rotators, the 12PR1A allows you to rotate the antenna manually by holding down the CW (clockwise) or CCW (counterclockwise) buttons.

You can also use AUTO TURN MODE to enter a numeric beam heading and having the rotator automatically adjust to the desired direction. You enter the heading by repeated pressings of the CW, CCW, and MODE buttons to scroll to the desired setting. When you are done turning the antenna, you can turn off the controller to save battery power.

In either manual or automatic mode, after you stop turning the antenna, there is a pause of 3 seconds before you can start turning again. This allows the antenna to come to a full stop.

Once I had the antenna and rotator in the air, I called Matt Wilhelm, W1MSW, to work him on 6 meter CW over a path of about 40 miles straight north. Once we established communication, I rotated the beam manually to the west and listened as Matt's signal dropped as I turned away from him. I then entered the heading “000” into the control box and the rotator swung the beam back north with no difficulty.

Two rotation speeds are available — normal speed and half speed (for antennas that require more precise adjustment, such as a high-gain UHF Yagi). The manual says the rotator will make one 360 degree rotation in about 1 minute, and in the field, I found this to be about right at normal speed. Of course, lower voltages from your battery will affect rotation time.

The 12PR1A comes with a built-in sensor that will disable the rotator if rotation is blocked for more than 1 second, such as if an antenna element hits a tree branch. The message ANT JAM! will appear on the control head's display. Once the obstruction has been dealt with, you can either rotate



Figure 9 — The 12PR1A rotator installed on a temporary mast with a two-element 6 meter Yagi.

the antenna in the opposite direction or power-cycle the control head to clear the ANT JAM! message.

I didn't try this feature, but the manual includes a section on remotely controlling the 12PR1A using software that supports the Yaesu GS232A/B Rotator Control Protocol. The controller connects to a computer via a USB jack on the front panel.

Final Thoughts

I found the Portable Rotation 12PR1A to be a welcome addition to my portable field operation. If you're looking to turn your club's six-element tribander during Field Day, this rotator isn't for you. However, this rotator packs a lot of operating convenience into a small package. It's ideal for weekend trips to a rare grid square for VHF/UHF operating, a short-term public service event, or any other portable operation where having a light-duty rotator in the middle of nowhere saves effort and maximizes operating ease.

Manufacturer: Portable Rotation, 4010 Foothills Blvd, Ste 103 #118, Roseville, CA 95747, tel 800-366-9216; www.portablerotation.com. Price: \$329.95; Buddipole Adapter Kit, \$29.95; carry bag, \$29.95.