
microHAM ARCO Smart Antenna Rotator Controller

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A rotator controller is an essential accessory in an amateur radio station that uses a directional Yagi antenna. Most controllers are basic, and some enable you to operate remotely. The microHAM Antenna Rotator Controller (ARCO) is different. First, this is an eye-catching unit, and I must admit that this is the best-looking rotator controller I have ever seen. It almost looks like another radio on the shelf. It's bigger than the Icom IC-7300 and has a large color touchscreen. It also has many cool features, and operating an antenna rotator has never been easier than with this controller.

According to the manufacturer, the ARCO controller was created to replace all other rotator control units, and is supposed to work with virtually any rotator. Although I was unable to test an azimuth/elevation type of rotator, according to the manufacturer it features several ways of controlling azimuth or elevation heading. While this controller is compatible with most rotators, double-check with your local dealer to ensure full compatibility before buying.



Bottom Line

The microHAM ARCO with the 7-inch color touchscreen is an eye-catching antenna rotator controller, but it's not only a good-looking controller for the station; it's one of the most advanced controllers. Its fully customizable configurations can ease the operations of any complex antenna setup.

The unit is standalone, but it can be operated remotely via a computer, tablet, or phone (more on this later).

Description

There are two versions of this controller. The 200 W unit is the standard version, and the 400 W unit is meant to be used with larger rotators. I have the Yaesu G-450A, and the 200 W version (the reviewed unit) is more than enough.

This rotator controller is huge, at $10.4 \times 4.9 \times 5.9$ inches (without protrusions). It's slightly taller than my Icom IC-7610. On the front panel, it has a 7-inch color touchscreen with intuitive functions. With a touch on the map, it turns. It has an infinite rotary knob to select an exact bearing by turning in either direction. After 3 seconds, the rotator moves to the desired bearing. You can cancel the rotation just by pushing the rotary knob. Under the rotary knob, there are traditional direction buttons — CCW and CW — for each direction to manually turn the rotator holding the selected pushbutton.

There are three LED indications on the front panel: **POWER** (amber when on), **FAULT** (normally off, red when a fault is detected), **MOTOR** (turns green when it's moving), and an on/off switch.

What makes this unit different is that there are rack-mount-style handles on each side of the front panel. It's useful when you need to transport it, because the ARCO weighs 6.28 pounds.

There are many ports on the rear panel (see Figure 8). This controller can be plugged into a standard ac outlet using the included standard power cord. If you order from the US, you will get the 115 V ac unit. It's internally switchable to 240 V ac, and you can confirm your pre-wired version by looking at the rear panel. Above the AC **LINE** connection is a 3.5-millimeter ($\frac{1}{8}$ -inch) stereo jack, which can be used to link multiple ARCO controllers together. There's a legacy



Figure 8 — The microHAM ARCO Smart Antenna Rotator Controller rear panel.

DB9 **SERIAL** RS-232 computer control port, a **LAN** Ethernet RJ-45 port to control the unit over IP, a USB B port (**USB**) for computer control, a USB A port (**FW**) for keypad connection or local firmware update, and a DB15 female (**D-SENSOR**) socket for digital position sensors. There are two different types of rotator connector, a 10-position removable terminal, and a rotator connection port connected in parallel with six conductors to connect directly to a Yaesu rotator. There's also a ground (**GND**) terminal bonded to the chassis, a fuse holder, and the cooling fan that I never heard running. The unit is always on, but goes into standby after a while.

Optional Accessories

While I was writing this review, microHAM launched three optional ARCO External Control (ARXC) accessories for the ARCO controller. These options appeared in the **SYSTEM** menu after upgrading the controller to the latest firmware (reviewed version 3.1.E). The three optional accessories are: the ARXC RELAY, which adds a user-programmable relay output for antenna and polarization switches control, or mast preamplifier bypass control; the ARXC MAGNETIC, which adds an antenna slippage watchdog and electronic compass sensor function to ARCO; and the ARXC LoRa, which consists of two LoRa communication modules paired for a wireless link between ARCO and ARXC modules (the operating frequency is 868 MHz). Note that this information was taken from the manufacturer's website, and none of the listed accessories were tested in this review.

Rotator Connections and Setup

In the manual setup section, the first thing mentioned is "Do not connect any rotator cables to the ARCO and make sure the power is switched to off." They also ask you to check that your unit is wired for your region AC voltage. After confirming the voltage, you can connect the power cord into the **LINE** socket.

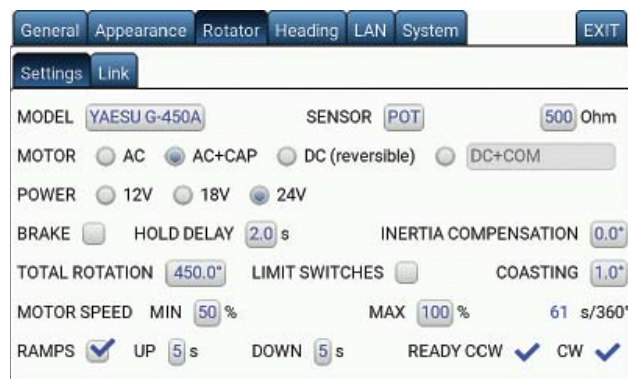


Figure 9 — The ARCO Rotator settings menu tab.

Before connecting your rotator to the controller, ensure you have the correct pinout for your specific model. If you've just installed a new rotator, you will need to do a rotator centering. Everything is well explained in the manual. If you're just swapping a controller of an existing rotator, you can skip the centering procedure. The next step is the calibration procedure. This is to ensure that the controller knows where the limits are for each direction.

After turning on the ARCO, it may take a few moments to boot. It's less than 10 seconds when a rotator is connected. At the bottom left of the screen, there's a gear logo that you just touch to enter the settings menu. To set up your rotator, you will need to go to the **ROTATOR** tab. You can see my settings in Figure 9.

The settings menu has six tabs. The first one (**GENERAL**) is for setting up your location with your grid square, the distance unit (kilometers or miles), time and date, the screensaver, the park position, and a few control options (see Figure 10).

The second tab is **APPEARANCE**, which has five sub-tabs (see Figure 11). In the first sub-tab (**GLOBAL**), you can set your preferred look of the display. You have a day and night brightness adjustment, two background settings (light and dark — I prefer the dark look), and a few heading settings. The four other sub-tabs are for the map customizable presets (more on this later).

In the **HEADING** tab, you will find two sub-tabs, one for the calibration and the other to define three individual antennas installed on the same rotator (see Figure 12). You can also set the mounting offset of the additional antennas versus the main antenna (antenna #1).

The **LAN** tab is for setting your IP network. You can remotely control this unit via any VNC software. You

will find VNC software for free on any platform, including Windows, macOS, Linux, iOS, and Android, so you can remotely control the ARCO on any smart device. In my opinion, the VNC solution is the best for remote operations, as it doesn't require any proprietary software. Note that all the screen captures used in this review were taken from my MacBook using free VNC software. With the VNC software, you see the same thing as the ARCO touchscreen simultaneously with the unit.

The last tab is **SYSTEM**, with six sub-tabs. The first one is **SYSTEM** (see Figure 13), and the five others are to set up the optional accessories (not tested in this review). In the **SYSTEM** sub-tab, you can upgrade the ARCO firmware directly if the unit is connected to the internet. From there you touch the **LOAD** button to see if there's new firmware available. A pop-up screen will open and show you the currently running and latest available versions. To upgrade, there will be another **LOAD** button beside the version. Touching it will automatically download the new version and upgrade the device.



Figure 10 — The ARCO **GENERAL** settings menu tab.

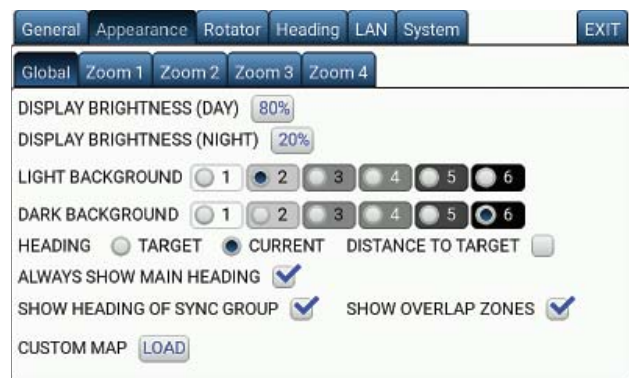


Figure 11 — The ARCO **APPEARANCE** settings menu tab.

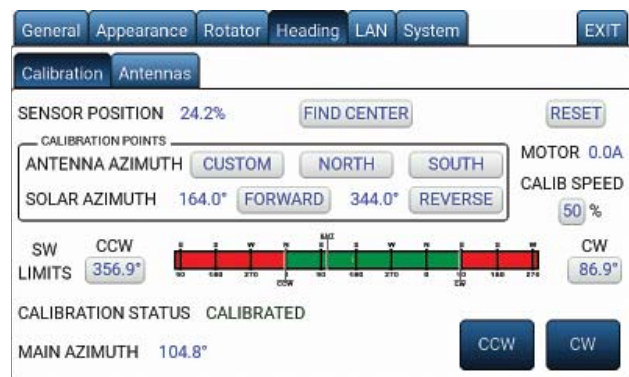


Figure 12 — The ARCO **HEADING** (calibration) settings menu tab.

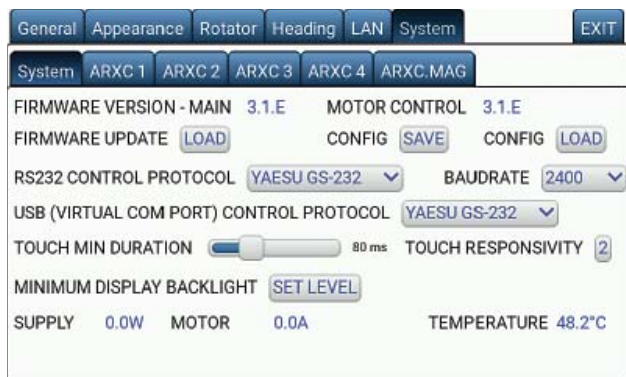


Figure 13 — The ARCO SYSTEM settings menu tab.



Figure 14 — The main screen map recall for different customizable altitude views.

Operating the ARCO Controller

The front panel touchscreen is very intuitive. Just touch somewhere on the map, and 3 seconds later it will turn. You can configure up to four different customizable maps in the **APPEARANCE** setting tab. Having different maps depending on your operation is very useful. With the different altitude views, you can see the full world map (at 12,000 miles altitude) for chasing DX on 20 meters, but you may want to see only the North American continent while operating on 6 meters (2,400 miles altitude), or a low altitude view for 2 meters operation (300 miles altitude). The altitude is completely customizable. You can toggle between your customized maps by touching the **MAP ZOOM** on the touchscreen (see Figure 14). It's better to set up the four presets in advance, as they will be recalled instantaneously, because generating a new map can take about 1 minute.

You can use the infinite rotary knob to select an exact bearing manually by turning in either direction. After 3 seconds, the rotator will move in the desired direction to the selected bearing. You can cancel the rotation by pushing the rotary knob. Under the rotary knob, there are traditional direction buttons — CCW and CW — for each direction to manually turn the rotator.

Touching the azimuth number on the top right of the screen will bring you to the **HEADING DIAL SCREEN**, which allows you to enter the desired heading with the large on-screen keypad (see Figure 15). It also allows you to set the heading based on your location to a specific DXCC country or prefix, or particular WAZ or ITU zone, to turn your antenna in the proper direction. Touching the **NEW** azimuth will toggle between the short and long path bearing. It shows that this controller was designed with the DXers in mind, as it's complete and easy to operate.

You can program six memory presets that can be recalled just by touching them on the touchscreen.



Figure 15 — The **HEADING DIAL SCREEN** allows you to enter the desired heading with the large on-screen keypad. It also allows you to set the heading for the QRA locator by specific DXCC country or prefix, or particular WAZ or ITU zone, to turn your antenna in the proper direction.

You also personalize the memory name. For example, I have one named "PARK," which I use to place my antenna so it will be best positioned for the lesser wind load against my QTH-predominant wind direction. But even if I forget to park my antenna manually, I programmed the controller to automatically park to the correct bearing after a certain time (programmable between 1 and 99 hours; see Figure 10).

In Conclusion

This may seem like a long review for an antenna rotator controller, and I didn't cover everything the ARCO controller can do. This is a complex unit, but it makes your operations very simple, and I just love it. I have used this unit for the past 7 months without any issues or bugs, so this one is a keeper for me.

Manufacturer: microHAM, Maticna 28, Galanta, 92401, Slovak Republic, www.microham.com. Price: \$799.99 for the 200 W version (as reviewed), \$899 for the 400 W version. Available for purchase in the US via DX Engineering, www.dxengineering.com.