Portable Rotation
Portable Antenna Rotor and Support Systems

Automatic Antenna Position Calibration Option

Model 12PRSAT-MAG

**Installation and Operating Manual**

Document Rev 1.3
Firmware 1.2x and Below

## Introduction:

The Automatic Antenna Position option provides the user with a fast and simple way to deploy the 12 Volt Dual Axis Portable Rotor System by providing automatic True North and 0 Degree Elevation antenna system positioning. The system consists of a Tilt Compensated 3-Axis Magnetometer and 3-axis Accelerometer that attaches to the Left (when viewed from the back) Antenna Arm. When deploying the system, the user only needs to set the Antenna in a Northerly position and approximately level and instruct the Hand Controller to do an Antenna Position Calibration. When finished the system will move the antenna back to 0 degrees True North and to 0 Degrees Elevation.

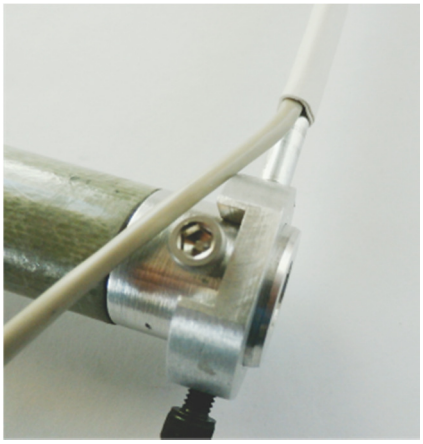
While in Remote Control mode, a move command to 0 Degrees Azimuth and 0 degrees Elevation will cause a short re-calibration to happen. This will correct any drift inaccuracies in the system and bring the antenna back to 0 degrees Azimuth and 0 degrees Elevation.

## Specifications:

Azimuth Accuracy: +/- 4 Degrees
Elevation Accuracy +/- 1 Degree

## Installation:

- Power off The Az/El Rotor System
- Remove the Left Antenna Arm and slide the mounting fixture over the end of the antenna Arm. Position such that it does not interfere with the Arm Set Screws or rub on the Elevation unit Enclosure

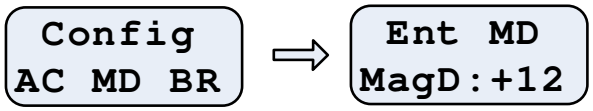


- Re-Attach the Antenna Arm, tightening the set screws
- Adjust the sensor Arm such that it is in alignment with the attached antenna and lightly tighten the set screw
- Plug in the 5 pin connector to the matching socket at the bottom of the Azimuth Unit. Tightening locking collar finger tight.
- Use Velcro straps in a few locations to mate the cable to the main Elevation cable, leaving some slack in the cable at the top.

## Initialization:

There are two required steps to initialize the Position Sensor for use: Setting your locations Declination and Calibrating the Sensor.

To set the Declination, Power on the System while holding the “CW” button. Press the “Mode” Button to select Magnetic Declination. Prior to this step it is recommended to look up your locations Declination, a number of web sites can be found with your locations information.



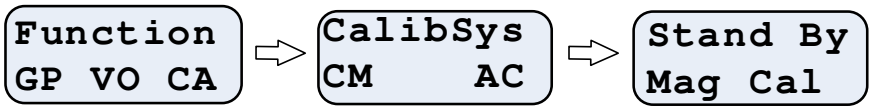

Turn On while Holding the CCW Button

Press the "MODE" button To Enter Declination

*[NOTE: Doing a Power-On full Reset operation, all data including the Declination and Calibration data are cleared if the 'All' option is used. A partial 'Part' will not clear saved magnetometer calibration and declination data but will clear direction data.]*

To perform a Magnetometer Calibration, with the Rotor System On, press all three buttons. After the firmware version is displayed the Function Menu is displayed.
Press the "CW" button to select the Calibrate function. The Calibrate System sub-menu is displayed. Press the "CCW" button to select the Calibrate Magnetometer option. The message "Stand By / Mag Cal" is displayed and both the Green and Red LEDs will alternately flash at a ½ second duty cycle.

The calibration cycle takes approximately 12 minutes to complete. The system moves the sensor through 180 degrees of elevation movement, then moves the azimuth by 30 degrees and then rotates the elevation unit back 180 degrees. This cycle repeats 6 times taking samples as the sensor moves. At the end of the calibration cycle, the data is saved and used to calculate the correction factor for hard metal and other magnetic interference sources.




Press all buttons brings up the Function Menu

Press the "CCW" buttons to calibrate the sensor

Calibration process Is active

When the LEDs stop flashing the process if finished.

## Operation:

The Automatic Antenna Calibration feature has two modes of operation; Manual and Automatic.

When in the Manual Mode, from the Calibrate System sub-menu, press the "CW" button for Antenna Calibration. The system will attempt to position the antenna to 0/0 degrees. The antenna direction must be within +/- 45 Degrees of True North and +/- 10 degrees of level with (0 Degrees Elevation). The Manual or Automatic Antenna Calibration function will not be done if the Calibration Process has not been done first.

When using the Auto Turn Function, a turn to 0 degrees Azimuth and 0 degrees Elevation will cause an Antenna re-calibration after returning to 0:0 degrees.

When in the Remote Mode of operation, any computer commanded turn to 0 degrees Azimuth and 0 degrees Elevation will cause an Antenna re-calibration after returning to 0:0 degrees. This can be automated by configuring the tracking application to park at 0:0 degrees

## Operational Summary:

Before Operation:

- Install the Magnetometer
- Enter Declination in degrees
- Perform a Magnetometer Calibration

Field Deployment

- Place antenna in a Northerly Direction and relatively level

- Perform an Automatic Antenna Calibration, the system will position the antenna to True North and at an Elevation of 0 degrees

Normal Operation

- Antenna Auto re-Calibration occurs on any computer commanded turn operation to 0 degrees Azimuth and 0 degrees Elevation.
- Many Satellite Tracking applications offer a Park operation that can be manually and/or automatically configured to issue a move to 0:0 degrees which will cause the Antenna Automatic Re-Calibration to be performed after returning to home position.