

2.4AEBP-2.4m Elevation-Over-Azimuth Antenna Positioner

Suitable for 2.4m antenna systems operating in X-, S-, and L-band applications

The Orbital Systems 2.4AEBP antenna positioner is designed and built to provide high reliability while withstanding severe environmental conditions. A high-quality, high-precision elevation-over-azimuth satellite tracking system suitable for operation at X- Band and below. The 2.4AEBP utilizes the proven orbital data bus (ODB) technology to provide integrated control of the antenna positioner and RF payload. Superior engineering, precision manufacturing and strict quality control standards result in maintenance free operation and making the 2.4AEBP the optimal choice for service in remote locations and hostile climates.

Features

The 2.4AEBP antenna positioner is available with multiple reflector options. Standard equipment includes feed mounting poles, ACU-2 antenna control unit, and a complete tool kit with every system. Gold-on-gold contact slip rings facilitate unlimited azimuth rotation and the positioner operates on one or two RF channels. The antenna positioner is available with standard options to provide AC or DC power and 100BASE-T Ethernet on the elevation arm. Reception loss caused by what is sometimes called a “keyhole effect” is eliminated by the high speed of azimuth rotation in Orbital Systems’ two axis products. When tracking a near overhead pass the antenna uses a predictive motion with a peak azimuth velocity of 60 degrees/sec, and acceleration at up to 60 degrees/sec². These very high speeds serve to reduce loss of signals on a worst case near overhead pass.

System Control and Tracking

- ACU-2 antenna control unit is standard and enables flexible control options
- Tracks satellites at X- Band and below without keyhole effect
- Customized controller interface options are available

Motors and Gears

- Mechanical system components are fully integrated, with IP65-rated brushless servomotors and integrated brakes, matched and tuned motor drives, and heavy duty gears.
- Gears are automatically heated to maintain optimal performance at temperatures as low as -40°C
- Gears are completely enclosed in a cast housing operating inside a controlled optimal environment to increase their service life requiring no annual lubrication.

Pressurization

- Antenna positioner and feed are pressurized with dehydrated air or nitrogen to prevent corrosion of system components
- Dry air is supplied using conventional transmission line dehydrator technology
- Temperature and humidity sensors in the electrical cabinet and feed are monitored by the antenna control unit which automatically purges the system of moisture
- System remains operational if pressurization fails

Reflectors and Feeds

- Supplied with a 2.4m spun aluminum reflector, see 2.4AEBP-3m data sheet for 3.0m version
- Equipped with feed poles for use with Orbital Systems feeds
- Many feeds are available with optional downconverters and polarity switching
- Feeds are equipped with purge valves to expel moisture from the system
- Feed communication is integrated into the antenna control unit over ODB
- Typical 2.4m X- and L- Band system performance is 24.5 dB/K and 8 dB/K, respectively

Special Order Options

- Mains A/C power supplied through antenna positioner for elevation arm-mounted electronics
- Gigabyte Ethernet through antenna positioner
- Additional RF channels through antenna positioner
- Additional data pairs through antenna positioner
- Optical multi mode fiber through antenna positioner



Applications:

The 2.4AEBP antenna positioner and its ancillary RF components are typically used for the following applications.

- (EOS-DB) - Earth Observing Systems - Direct Broadcast data, tracking LEO and MEO satellites
- TT&C - general satellite uplink and downlink telemetry, including microsats
- RADAR applications for advanced meteorological and environmental analysis
- SARSAT - Search and Rescue reception of MEO satellites in S- and L- Bands

Operational Specifications

	Required	Continuous Capable
Azimuth Maximum Velocity.....	57°/ Sec.....	>60°/ Sec
Azimuth Maximum Acceleration.....	39°/ Sec ²	>60°/ Sec ²
Azimuth Maximum Torque.....		>1586 Nm (1170 ft/lbs)
Azimuth Maximum Travel.....		Continuous Rotation
Elevation Maximum Velocity.....	9°/ Sec.....	>20°/ Sec
Elevation Maximum Acceleration.....	0.9°/ Sec ²	>60°/ Sec ²
Elevation Maximum Torque.....		>950 Nm (>700 ft/lbs)
Elevation Maximum Travel.....		184°
Brake Holding Torque.....		1947 Nm (>1436 ft/lbs)
Mechanical Total Tracking Accuracy.....		0.10°
Absolute Position Feedback Accuracy.....		±0.02°

Electrical, Mechanical, and Environmental Specifications

Input Voltage, Frequency.....	208 -240 VAC, 20 A, 50/60 Hz, Single Phase
Input Amperage.....	Typical 5 A; Maximum 15 A; Uses Standard 20 A Breaker
Operating Altitude.....	3000m Above Sea Level
Operating Temperature.....	-40° C to +55° C
Continuous Wind Speed for Operational Tracking.....	88 km/h (55 mph)
Maximum Wind Speed With Stow Pins Installed.....	200 km/h (125 mph)
Non-Operating Maximum Rain Load.....	25 cm (10 inches) Per Hour
Maximum Ice Load.....	13 mm (0.5 inches)
Weight.....	565 kg (1245 lbs)
Safety, Emissions, and Machinery Directive Ratings.....	CE Marked, Tested in Independent Labs

Electrical Cabinet and External Controls

The electrical cabinet is equipped with the following safety devices:

- Emergency stop switch
- Audible warning annunciator
- Visual warning indicator
- Padlocks to lock the left and right sides of the electrical cabinet

2.4AEBP antenna positioners are compliant with CE Machinery Directive IEC 60204-1

