

5.0AE3BP-5m Elevation-Over-Azimuth Antenna Positioner

Three axis positioner suitable for applications in Ku band and below

Orbital Systems 5.0AE3BP-5m antenna positioner is designed and built to provide high reliability while withstanding severe environmental conditions. The high quality, high precision, elevation-over-azimuth three axis satellite tracking system with 7° tilt is suitable for operation at Ku-Band and below. Superior engineering, precision manufacturing, and strict quality control standards result in near maintenance free operation making the 5.0AE3BP-5m the optimal choice for service in remote locations.

Features

Standard equipment includes, positioner, feed mounting poles, ACU-3 antenna control unit and a complete maintenance tool kit. The positioner also provides standard options for AC or DC power and 100BASE-T Ethernet on the elevation arm. Gold-on-gold contact slip ring and rotary joint facilitate unlimited azimuth rotation with two RF channels. Completely eliminating reception loss caused by what is sometimes called a "keyhole effect" in a near overhead pass the 5m positioner utilizes three axis tracking to reduce the worst case maximum tracking velocity requirements for a low LEO to about 7°/sec allowing use at any practical frequency.

System Control and Tracking

- ACU-3 antenna control unit supports TLE and vector tracking
- Tracks satellites at Ku band and below without keyhole effect
- Customized controller interface options 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 and operate inside a humidity controlled, environment to increase service life; lubrication not required for at least 10 years.

Pressurization

- Antenna positioner and feed are pressurized with dehydrated air to prevent corrosion of system components
- Dry air is supplied using 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

Premium Features

- External structure made from aluminum and stainless steel to prevent corrosion
- Red silicone seals and gaskets rated for the life of the system, silicone remains pliable
- Remote control stow pin operation
- Built-in maintenance ladder and platform

Reflectors and RF Options

- Supplied with a 5.0m composite reflector
- Enclosure containing HPA and other RF electronics mounts on elevation arm
- Feeds available with optional downconverters and polarity switching
- Communication with RF components is integrated into the ACU-3 over the ODB

Special Order Options

- Mains A/C power supplied through antenna positioner to arm-mounted electronics
- Gb Ethernet (1000BASE-T) through antenna positioner
- Additional data pairs through antenna positioner
- Single mode fiber is through antenna positioner



Applications:

The 5.0AE3BP-5m is typically used for the following applications:

TT&C - General satellite uplink and downlink telemetry

EOS - Tracking LEO and MEO Earth Observation Satellites

Operational Specifications

Azimuth Maximum Velocity.....	>20°/ Sec
Azimuth Maximum Acceleration	Up to 60°/ Sec ²
Azimuth Maximum Torque.....	6646 Nm (4900 ft/lbs)
Azimuth Maximum Travel.....	Unlimited Rotation
Elevation Maximum Velocity	>20°/ Sec
Elevation Maximum Acceleration	Up to 60°/ Sec ²
Elevation Maximum Torque.....	6646 Nm (4900 ft/lbs)
Minimum Tracking Elevation	-5°
3rd Axis Maximum Velocity.....	>20°/ Sec
3rd Axis Maximum Acceleration	Up to 60°/ Sec ²
3rd Axis Maximum Torque.....	6646 Nm (4900 ft/lbs)
3rd Axis Maximum Travel.....	Unlimited Rotation
Brake Holding Torque.....	19,659 Nm (14,500 ft/lbs)
Total System Tracking Accuracy.....	0.10°
Absolute Position Feedback Accuracy	±0.006°

Electrical, Mechanical and Environmental Specifications

Input Voltage, Frequency.....	208 -240 VAC, 30 A (5A Typical), 50/60 Hz, Single Phase
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	2,268 kg (5000 lbs)
Safety, Emissions, and Machinery Directive Ratings.....	CE Marked -Tested by Independent Labs

Electrical Cabinet and External Controls

The electrical cabinet is equipped with the following safety devices:

- Emergency stop switch
- Audible warning annunciator
- Main Steps / Tie and Handle Points
- Visual warning indicator
- Padlocks to lock the left and right sides of the electrical cabinet

5.0AE3BP antenna positioners are compliant with CE Machinery Directive IEC 60204-1

