



1.8AEHT Positioner

Elevation-Over-Azimuth 1.8m Antenna Positioner

The Orbital Systems, Ltd. 1.8AEHT antenna positioner is designed and built to provide high reliability and to withstand severe environmental conditions. It is a high-quality, high-precision elevation-over-azimuth satellite tracking system suitable for operation at X-band and below. The 1.8AEHT 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, which makes the 1.8AEHT the optimal choice for service in remote locations and in hostile climates.

Standard System Features

The Orbital Systems, Ltd. 1.8AEHT antenna positioner is available with multiple reflector options. Standard equipment includes feed mounting poles, ACU-2 antenna control unit, and a complete tool kit. Gold-on-gold contact slip rings facilitate unlimited azimuth rotation. The 1.8AEHT antenna positioner operates on one or two RF channels to a maximum of 4 GHz. The 1.8AEHT antenna positioner also is available with standard options to provide AC or DC power and 100BASE-T Ethernet on the elevation arm.

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 and operate inside a controlled, optimal environment to increase their service life; no annual lubrication is required

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 1.8 m spun aluminum reflector; an optional 1.5 m reflector is available
- Equipped with feed poles for use with Orbital Systems, Ltd. feeds
- Many feeds are available with optional downconverters and polarity switching
- Orbital Systems, Ltd. feeds have a purge valve to control internal system moisture level
- Feed communication is integrated into the antenna control unit over ODB
- Typical 1.8 m X- and L-band system performance is 22 dB/K and 6 dB/K, respectively

Special Order Options

- A/C or DC power supplied through antenna positioner for elevation arm-mounted electronics
- Gigabit Ethernet through antenna positioner
- Additional RF channels through antenna positioner
- Additional data pairs through antenna positioner
- Optical multimode fiber through antenna positioner



Applications

When corresponding RF options are installed, the 1.8AEHT Positioner is designed for the following applications.

- LEO and MEO satellite tracking. Suitable for the EOS X band satellites such as Aqua, Terra, NPP, FY3, etc. and EOS L/S band satellites such as NOAA, FY1, DMSP.
- General satellite uplink/downlink telemetry (TT&C), including microsats.
- 3D radar applications for advanced weather and environmental analysis.
- Auto-tracking applications including UAS/UAV aircraft and missile tracking.

Operational Specifications

	X-Band LEO Tracking @ 1.8m Required	Continuous Capable
Azimuth Maximum Velocity.....	48°/ sec	>50°/ sec
Azimuth Maximum Acceleration.....	40°/ sec ²	>60°/ sec ²
Azimuth Peak Torque.....	434 Nm (320 ft/lbs)	>488 Nm (360 ft/lbs)
Azimuth Maximum Travel.....		Continuous Rotation
Elevation Maximum Velocity.....	9°/ sec	>50°/ sec
Elevation Maximum Acceleration.....	1°/ sec ²	>60°/ sec ²
Elevation Peak Torque.....	434 Nm (320 ft/lbs)	>488 Nm (360 ft/lbs)
Elevation Maximum Travel.....		194°
Brake Holding Torque.....		1235 Nm (>910 ft/lbs)
Mechanical Total Tracking Accuracy.....		0.10°
Absolute Position Feedback Accuracy.....		±0.02°

Electrical, Mechanical, and Environmental Specifications

Input Voltage, Frequency.....	115-208-225-240 VAC, 20A, 50/60 Hz, single phase
Input Amperage.....	Typ 2A, Max12A, Fuse at 15A (115V), 10A (220V)
Operating Temperature.....	-40° C to +55° C
Operating Maximum Wind Speed.....	88 k/hr (55 mph)
Non-operating Maximum Rain Load.....	25 cm (10") / hr
Maximum Ice Load.....	13mm (0.5")
Positioner Weight.....	136 kg (300 lbs)
Safety, Emissions, and Machinery Directive Ratings.....	CE Compliant; Tested in Independent Labs

CE Machinery Directive Compliance

1.8AEHT antenna positioners are also compliant with CE Machinery Directive IEC 60204-1. 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

