

Products and Systems

Reliable, affordable and innovative elevation-over-azimuth satellite positioners and antenna systems are available in a variety of sizes from 1.5m to 7.3m. Orbital Systems ground station antenna systems are built to meet the high performance and accuracy requirements of demanding Telemetry, Tracking and Control (TT&C) and Earth Observation Satellite (EOS) tracking applications.

Antenna Positioners

- Designed for high reliability and minimal maintenance with first factory recommended maintenance at ten years
- Pressurized with dehydrated air to eliminate internal condensing humidity and to keep out dust, and internal temperature and humidity sensors control built in automatic purging system
- High accuracy axis feedback suitable for precision tracking from vectors and TLEs
- Uses the Orbital Data Bus (ODB) technology to integrate the positioners mechanical system with the RF payload to provide an integrated control interface that uses less internal cables and connections
- Designed for operation in extreme temperature ranges with typical operating temperature from -40° C to +55° C with built-in automatic heaters for operation in uncommonly cold climates
- RF cables are carried internally using a flex system rated for the life of the system
- Electronics are mounted on the elevation arm with options to provide AC or DC power, 100bT or 1000bT Ethernet or fiber
- Heavy duty spun aluminum reflectors for operation up to 18 GHz
- Two year warranty with typical Mean Time Between Failure (MTBF) over 10 years
- Comprehensive maintenance toolkit included
- Compliant with CE Electrical Safety, Emissions and Machinery Directive standards



Ka-, Ku-, X-, S-, and L- Band Feeds

- High efficiency feeds for RX and TX/RX applications with integrated downconverter options
- Multi-band feeds and optional polarity selection depending on application sensors control built in automatic purging system
- Built in filtering options to reject strong out of band interference
- Built in high isolation diplexers for TX/RX applications
- Feed and associated components are enclosed in machined and pressurized housing
- Feeds are integrated to the antenna controller over Orbital Data Bus (ODB)



Upconverters and Downconverters

- Downconverters for various applications built into feed or electronics enclosure on positioner arm
- Combination upconverter/downconverter/loopback test converter for TT&C applications
- Custom upconverters and downconverters
- Built in high isolation diplexers for TX/RX applications



Low-rate and High-rate Demodulators

- Versatile 1U rack EOS-DB digital receivers for X-, S-, and L- Band LEO and GEO satellites
- Processing of standard earth observation direct broadcast satellites in fixed modes
- Optional TT&C satellite modems and high rate general purpose demodulators through partner programs

Control Software

- Front end server for earth observation direct broadcast applications to schedule, acquisition and control ingest of satellites
- Mission Commander Free for TT&C systems to demo control protocols
- Established partnerships for M&C and C2 software firms to support Orbital Systems products



Telemetry Applications

Orbital Systems satellite ground station positioners and complete antenna systems are built to meet the high performance and accuracy requirements of demanding satellite tracking applications, including Telemetry, Tracking and Command (TT&C), Earth Observation (EO) Direct Broadcast (DB), RADAR, Search and Rescue (SARSAT), UAV/RPV tracking, and other custom applications.

Reception loss caused by what is sometimes referred to as a keyhole effect is eliminated by the high speed of azimuth rotation in Orbitals' two axis products. When tracking a near overhead pass the 2.4m through 3.7m two axis products use a predictive motion with a peak azimuth velocity of 60 degrees/sec, and acceleration at up to 60 degrees/sec². The 1.8m product does these motions at up to 50 degrees/sec. These very high speeds serve to reduce loss of signals on a worst case near overhead pass. Orbitals' 2.8m through 7.3m three axis products utilizes three axis tracking to reduce the worst case maximum tracking velocity requirement for a low LEO to about 7 degrees/sec allowing use at any practical frequency.

Positioners and TT&C Systems

Telemetry, Tracking and Command (TT&C) satellite tracking antenna systems from 1.5m to 7.3m

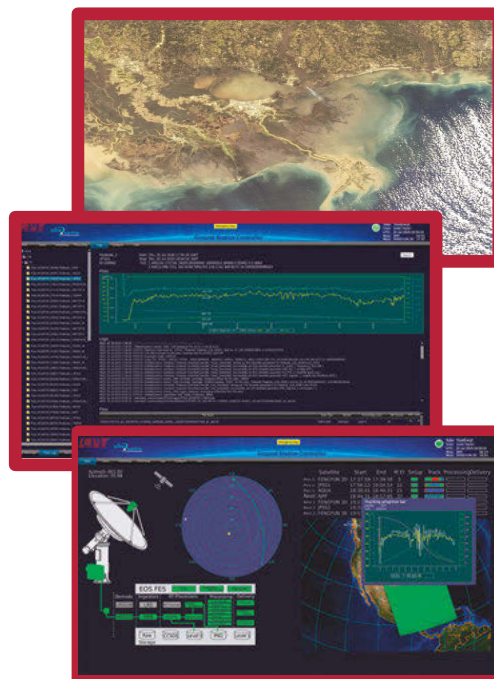
- Completely integrates RF components with the antenna positioner
- S-, X-, Ku- and Ka- band applications
- Downconverters, Upconverters, and Loopback test converters
- Available with 50W or 100W HPA
- Control through one convenient interface
- Extensive monitoring capabilities
- Automatic safety features prevent damage to expensive components
- Two axis high speed azimuth or three axis tracking
 - TLE tracking
 - Offsets to TLEs for first orbit applications (time, az/el)
 - Location vector and pointing vector tracking
- Mission Commander Free software is included with TT&C antenna systems
- OACP control protocol makes software interface development easy



EOS Data Capture and Processing

Pre-configured solution for reception and processing to level 0 files on disk for common X- and L- band Earth Observation Satellite Direct Broadcast. The choice of leading national and international meteorological and science research organizations.

- 2.4XLC EOS-DB Integrated System Bundle
 - 2.4m positioner (optional 3.0m, 3.7m or 5.0m)
 - Concentric X-L- dual band feed
 - Built in LNA/LNB and Downconverters
 - Low-rate and High-rate Demodulators
 - EOS Front End Server (EOS-FES)
 - Server hardware and software license
 - Dehydrator
 - Professional Installation
 - Standard two year warranty
 - Extended maintenance available after warranty expiration



*Optional Rack Enclosure Half Height Rack

Additional Applications

Orbital Systems is a leading manufacturer of antenna positioners and components used for a variety of tracking applications.

Custom Antenna Applications for System Integrators

Custom Built Antenna Applications for Systems Integrators

- Positioners only
- Custom RF components
- Assembly and trailer mounting



RADAR Positioners

RADAR Positioners for Systems Integrators

- Meteorological and Public Safety
- Precision scanning
- High speed slewing



UAV/RPV Tracking

Custom UAV/RPV Tracking Systems

- Unmanned Aerial Vehicles
- Remotely Piloted Vehicles



Search and Rescue Tracking

Search and Rescue Reception of LEO and MEO satellites in S-L- Band

- Special S-L- Band SARSAT optimized feed and Filters
- SARSAT optimized downconverter



Company Profile

Communications & Power Industries (CPI)

A leading provider of components and subsystems used in the generation, amplification, transmission and reception of microwave signals. A worldwide sales and service organization with a long heritage of technology leadership, innovation, product, and service excellence.

- Founded in 1948 as Varian Associates and spun out in 1995
- Acquired by Odyssey Investment Partners in 2017, a private equity firm with >20 years of investing and >\$5B of private equity capital invested in over 40 platform companies
- \$800M in annual sales with over 2000 employees worldwide
- Leading market share in Defense, Communications, Medical, Industrial and Scientific markets
- 5 Divisions with 13 manufacturing and engineering locations in North America and 40 offices around the globe

CPI Antenna Systems Division (ASD)

Combines the strength of ASC Signal, Malibu and Orbital Systems brands to deliver a broad range of leading-edge products, systems and technologies to support a variety of satellite applications, including 1m to 18m earth station antenna systems, data link systems, telemetry systems, HF antennas and HAPS systems.

- Multinational manufacturer of high-performance antenna products used for satellite communications, telemetry, radar, electronic warfare, and high-frequency (HF) applications
- \$80M in annual sales with over 200 employees
- Over 60 years of innovation with thousands of antennas installed worldwide serving commercial and governmental markets
- In-house service organization provides installation, logistics, and repair support worldwide with local assistance from CPI's international offices

Orbital Systems LLC

Designs and manufactures ground station antenna systems and components used for Telemetry, Tracking, and Control (TT&C), Earth Observation Satellite (EOS) - Direct Broadcast (DB) reception, RADAR, Search & Rescue (SARSAT), and custom tracking applications in Ka-, K-, Ku-, X-, S- and L-bands, single or multi-band configurations. Known for supplying reliable systems designed for operation in extreme conditions while delivering the lowest total cost of ownership. Supplies products directly to end users, certified resellers, and systems integrator partners for a variety of satellite tracking applications.

- Superior engineering, precision manufacturing and strict quality control standards result in maintenance free operation
- Field statistics show greater than 10 years Mean Time Between Failure (MTBF) and Low Mean Time to Repair (MTTR) when lightning and power surge damage excluded
- Average system design to delivery in four months with typical installation completed in 2 to 4 days
- 19,000 ft² (1800m²) engineering and manufacturing facility
- One acre (4050m²) system test enclosure for Factory Acceptance Testing (FAT) performed on every positioner and antenna system
- Worldwide professional installation and maintenance support
- Remote diagnostics and maintenance
- Extended maintenance available after warranty expiration



Document Number: MA 190-020, rev D.05
©Orbital Systems LLC, 2020 - Patents Pending, 2013 - 2020
Prices and specifications are subject to change without notice



OrbitalSales@cpii.com

+1.972.915.3669

www.orbitalsystems.com

