TEXAS SPACE COMMUNICATIONS™

NEBULA 73

7.3M 2-AXIS Ka-BAND RX/TX L-BAND RX/TX

Product Overview

The 7.3m Full Motion Tracking Antenna is a high-performance premium solution engineered for reliable satellite communications, supporting both L-Band and Ka-Band operations for critical applications such as Earth observation, satellite telemetry, and remote sensing. This antenna is built to withstand rugged environments and ensure reliable performance under harsh conditions. It features advanced tracking capabilities, polarization options, and flexible frequency conversion.

Positioner Features

Reflector Size: 7.3m diameter

Feed System: Prime focus feed for L band, Cassegrainian feed for Ka band. Optimized for L/Ka-band simultaneous operations

Polarization Options: Dual Circular Polarization (LHCP/RHCP) selectable or simultaneous operation

Radome Option: Available for added protection and enhanced operational longevity in extreme environments

Performance Data

Parameter	Specification
Ka-Band Receive Frequency	19.8 – 20.65 GHz
Ka-Band Transmit Frequency	29.6– 30.45 GHz
Ka-Band Polarization	Selectable LHCP and RHCP Tx, with simultaneous operation capability for Rx
Ka-Band G/T	37 dB/K (typical) at 25°C, high elevation
Ka-Band EIRP	88.5 dBW (400W HPA in linear operation)
Ka-Band Receive IF Frequency	Block Conversion to 0.95 - 1.8 GHz
Ka-Band Upconversion	Block Conversion from 0.95 - 1.8 GHz
L-Band Receive Frequency	1.52 - 1.525 GHz
L-Band Transmit Frequency	1.67 - 1.675 GHz
L-Band Polarization	Selectable LHCP and RHCP Tx, with simultaneous operation capability for Rx
L-Band G/T	17.65 dB/K (typical) at 25°C, high elevation
L-Band EIRP	56 dBW (100W HPA in linear operation)
L-Band Receive IF Frequency	No Conversion
L-Band Upconversion	No Conversion

Antenna Control & Tracking System

Tracking Mode: Program Track/Step Track

Azimuth Axis Range: 360° continuous
Elevation Axis Range: 0°to +180°

Velocity & Acceleration:
Software-limited to 15 deg/s angular velocity and 15 deg/s² angular acceleration

Pointing Accuracy: < 0.05° RMS for highly accurate satellite acquisition and tracking

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Electrical and Environmental

Operating Temperature: -40°C to +55°C
Wind Speed: Operational < 88 km/h, survival < 200 km/h
Humidity: 100% outdoor conditions
Operating Altitude: 3000m
Input Power: 200 - 240 VAC, 20 A, 50/60 Hz, Three Phase
Weight: 8200 kg (Estimated)

Warranty

Warranty Period: 2 years

* Specifications subject to change.

Control Systems

Antenna Control Unit

Compact, field-replaceable module combining control, processing, and safety co-processors. Edge AI enables autotrack, orbit determination, and health monitoring. Cloud-ready with REST API, remote management, OTA updates, and precision timing via GPS or PTP.

Security

Secure architecture with Rust-based software, TLS1.3 encryption, OpenID Connect authentication, API proxy security layers, and role-based access control.

Dehydration System

Built-in pressurization technology to protect sensitive components from environmental damage.

Overview