CALIAN
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4m Q/V-Band LEO Earth station antenna

The Calian 4m Q/V-Band LEO Earth station antenna combines high accuracy, high efficiency Cassegrain optics with high-speed slewing to track faster targets, including LEO and MEO satellites. The third tilt axis ensures uninterrupted tracking through overhead passes. This design approach combined with advanced manufacturing techniques results in a major step forward in affordable precision antenna design. Several different feeds can be fitted to support your band of operation. Calian's experience in ground station system engineering and integration has been incorporated into making this product better suited to a terminal or gateway application; examples include ease of maintenance for mechanical components and a hub designed to support a higher level of integration.

Specifications

General configuration

Configuration	• Dual reflector Cassegrain design • 3 axis motion (no keyhole), elevation over azimuth, with Tilt
Main reflector	• 4m diameter • High accuracy composite • Surface accuracy < 0.008" RMS
Sub reflector	• High accuracy composite • Surface accuracy < 0.002" RMS
Hub	• Up to 4 ft. diameter for RF equipment integration available upon request
Pedestal	• High stiffness reinforced pedestal
Optional	• De-icing system • Environmentally controlled hub

M&C interface

- Ethernet interface for M&C and user interface
- Full remote operation and monitoring with multiple tracking options
- The antenna can be controlled via the provided computer software application or via a customer interface

Mechanical performance

Pointing accuracy	• < 0.018°
Tracking accuracy	• < 0.0082°
Speed	• up to 15°/s in azimuth • up to 15°/s in elevation
Acceleration	• up to 15°/s^2 in both axis
Travel range	• ±200° in azimuth (400° continuous) Up to 0°- 180° in elevation
Tilt	• Active or Fixed Tilt (up to 8.5°)
Drives	• Dual torque biased backlash-free drives in both axes

Power

Drive systems	• 200 to 240VAC and 380 to 430VAC 3-phase, frequency 50/60Hz
De-icing system	• 208/220 3-phase
Auxiliary circuits	• 208VAC split phase 60 Hz • 220VAC single phase 50 Hz (optional)

Optional frequency bands

- Supports circular polarized single, dual, tri-band feeds, e.g., S to V, S/X, C/Ku, X/Ku, Ku/Ka, Q/V, C/Ku/Ka, Ka/Q/V, etc.

Tracking options

- Multiple open and closed loop tracking options include program track, NORAD TLE, IESS-412, monopulse, and step track

Environmental performance

Temperature	• Operational -30 to +60 °C • Survival -40 to +70 °C
Seismic	• 0.3g horizontal and vertical
Wind speed	• Operational 72kph (45mph) Gusting up to 100kph (62 mph) • Survival, 200 kph (125 mph) in stow position
Humidity	• 0 to 100% with condensation
Ice accumulation	• 30mm thick on all exposed surfaces
Corrosion	• Galvanized ASTM-A123, stainless and galvanized fasteners, multi-layer epoxy-based paint

Shipping configuration and features

- Modular design to allow for easy shipping in standard containers or crates
- Rapid deployment, assembly, and commissioning at customer site

Q-V-band performance

	Rx	Tx
Frequency (GHz)	37.50 – 42.50	47.20 – 52.40
Feed ports	2CP + 2 Monopulse	2CP
Antenna gain	Typical 62.20 dBi @42.50 GHz	Typical 63.64 dBi @52.40 GHz
Beamwidth @ -3dB	0.14°	0.11°
G/Ts at Clear Sky with 250 K LNA @ 20° Elevation		
37.70 GHz	34.20 dB/K	
40.00 GHz	34.63 dB/K	
42.50 GHz	35.00 dB/K	
EIRP with 250W HPA		Typical 81.34 dBW @ 52.40 GHz
Power handling, per port (CW)		250 watts
VSWR (Feed interface)	1.25	1.25
Cross pol isolation	30.85 dB	30.85 dB
Port to port isolation Rx→Tx, Tx→Rx	85 dB	85 dB
Port to port isolation Rx→Rx, Tx→Tx	17 dB	17 dB
Sidelobes	Meets ITU-R S-580-6	Meets ITU-R S-580-6

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