CALIAN®
Confidence. Engineered.

13.5m Full motion antenna

The Calian 13.5m full motion antenna system provides high accuracy, high efficiency Cassegrain optics and high-speed slewing making it suitable for tracking faster targets, including low-earth-orbit (LEO) or medium earth-orbit (MEO). The use of advanced manufacturing techniques results in a major step forward in affordable precision antenna design. The antenna can be fitted with several different feeds to support your application. Our ground station integration experience in the satellite industry means this antenna is designed to meet the needs of your network.

Specifications

General configuration

Configuration	• Dual reflector Cassegrain design • 3 axis motion (no keyhole), elevation over azimuth, with tilt
Main reflector	• 13.5m diameter • Precision formed aluminum • Surface accuracy below 0.008" RMS
Sub reflector	• High accuracy composite • Surface accuracy below 0.002" RMS
Hub	• Up to 10 ft. diameter for RF equipment integration available upon request
Pedestal	• State of the art cable wrap systems with ample space for customer cables
Optional	• Platform with staircase and hoist • 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	• < 0.019°
Tracking accuracy	• < 0.0029°
Speed	• up to 12°/s in azimuth • up to 6°/s in elevation
Acceleration	• 3°/s² in both axis
Travel range	• ±400° in azimuth • 0°- 90° in elevation • ±180° in 3rd tilt axis
Tilt:	• Active or Fixed Tilt (up to 8.5°)
Drives	• Dual torque biased backlash-free drives in all 3 axes

Power

Drive systems	• 380 to 480VAC 50/60Hz 3-phase
De-icing system	• 208/220 3 phase
Auxiliary circuits	• 208VAC split phase 60Hz • 220VAC single phase 50Hz (optional)

Optional frequency bands

- Supports single, dual, and multi-band feeds, e.g., S to Ka, S/X, C/Ku, X/Ku, X/Ka, Ku/Ka, L/S/Ka, etc.
- CP and LP Broadband feed options available

Tracking options

- Multiple open and closed loop tracking options include:
- Program track, NORAD TLE, IESS-412,
- Monopulse (optional), Step Track (optional)

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 100 kph (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, multilayer epoxy-based paint

Shipping configuration and features

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

Ka-band performance

	Rx	Tx
Frequency (GHz)	17.70 - 21.50	27.50 - 31.00
Feed ports	2 + 2 Monopulse	2
Antenna gain	67.3 dBi @21.5 GHz	70.3 dBi @31 GHz
Beamwidth @ -3dB	0.08°	0.06°
G/Ts at Clear Sky with 120 K LNA @ 20° Elevation		
17.70 GHz	42.7 dB/K	
19.60 GHz	43.4 dB/K	
21.50 GHz	43.7 dB/K	
Power handling, per port (CW)		650 W
VSWR (Feed interface)	1.25	1.25
Cross pol isolation	32.78 dB	32.78 dB
Port to port isolation $R_x \rightarrow T_x$, $T_x \rightarrow R_x$	85 dB	85 dB
Port to port isolation $R_x \rightarrow R_x$, $T_x \rightarrow T_x$	20 dB	20 dB
Sidelobes	Meets ITU-R S-580-6	Meets ITU-R S-580-6

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For more information, contact: antennas@calian.com