CALIAN
Confidence. Engineered.

Advanced Technologies

4m High-Performance Antenna

The Calian 4m high-performance 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. This antenna has been deployed widely and is field-proven. 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 2 axis motion, elevation over azimuth
Main reflector:	4m diameter Precision formed aluminum Surface accuracy below 0.008” RMS
Sub reflector:	High accuracy composite Surface accuracy below 0.002” RMS
Hub:	Up to 4ft. diameter for RF equipment integration available upon request
Pedestal:	High stiffness reinforced pedestal
Optional:	De-icing system Environmentally controlled hub Adjustable polarization

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:	0.005°
Tracking accuracy:	< 0.018°
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 and Fixed Tilt Options (up to 8.5°)
Drives:	Dual torque biased backlash-free drives in both axes

Power

Drive Systems:	208VAC 50/60Hz 3-phase
De-icing System:	208/220 3 phase
Auxiliary Circuits:	208VAC split phase 60 Hz 220VAC single phase 50 Hz (optional)

Feed Options

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

LP and CP broadband feed options available

Tracking Options

Multiple open and closed loop tracking options include: Table 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, up to 100 km/h (62 mph)
	Survival, 200 km/h (125 mph) in stow position
	Drive-to-stow wind, 125 kph (77 mph)
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 crate.

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	2CP + 2 Monopulse	2CP
Antenna Gain	57.29 dBi @21.5 GHz	60.38 dBi @31 GHz
Beamwidth @ -3dB	0.28°	0.19°
G/Ts at Clear Sky with 120 K LNA @ 20° Elevation		
17.70 GHz	32.61 dB/K	
19.60 GHz	33.35 dB/K	
21.50 GHz	33.63 dB/K	
Power handling, per port (CW)	500 watts	500 watts
VSWR (Feed interface)	1.25	1.25
Cross Pol Isolation (Axial Ratio)	32.78 dB (1.047)	32.78 dB (1.047)
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

Ku-Band Performance

	Rx	Tx
Frequency (GHz)	10.70 – 12.75	12.70 – 14.50
Feed Ports	2LP + 2 Monopulse	2LP
Antenna Gain	52.73 dBi @12.75 GHz	53.97 dBi @14.50 GHz
Beamwidth @ -3dB	0.47°	0.40°
G/Ts at Clear Sky with 59 K LNA @ 20° Elevation		
10.70 GHz	30.34 dB/K	
11.75 GHz	31.10 dB/K	
12.75 GHz	31.78 dB/K	
Power handling, per port (CW)	500 watts	500 watts
VSWR (Feed interface)	1.25	1.25
Cross Pol Isolation	35 dB	35 dB
Port to Port Isolation $R_x \rightarrow T_x$, $T_x \rightarrow R_x$	85 dB	85 dB
Port to Port Isolation $R_x \rightarrow R_x$, $T_x \rightarrow T_x$	35 dB	35 dB
Sidelobes	Meets ITU-R S-580-6	Meets ITU-R S-580-6

X-Band Performance

	Rx	Tx
Frequency (GHz)	7.25 – 7.75	7.90 – 8.40
Feed Ports	2CP + 2 Monopulse	2CP
Antenna Gain	48.48 dBi @7.75 GHz	49.17 dBi @8.40 GHz
Beamwidth @ -3dB	0.73°	0.67°
G/Ts at Clear Sky with 50 K LNA @ 10° Elevation		
7.25 GHz	27.53 dB/K	
7.50 GHz	27.82 dB/K	
7.75 GHz	28.09 dB/K	
Power handling, per port (CW)	500 watts	500 watts
VSWR (Feed interface)	1.30	1.30
Cross Pol Isolation (Axial Ratio)	32.78 dB (1.047)	32.78 dB (1.047)
Port to Port Isolation $R_x \rightarrow T_x$, $T_x \rightarrow R_x$	85 dB	85 dB
Port to Port Isolation $R_x \rightarrow R_x$, $T_x \rightarrow T_x$	18 dB	18 dB
Sidelobes	Meets ITU-R S-580-6	Meets ITU-R S-580-6

C-Band Performance

	Rx	Tx
Frequency (GHz)	3.400 – 4.200	5.725 – 6.725
Feed Ports	2CP + 2 Monopulse	2CP
Antenna Gain	43.38 dBi @4.200 GHz	47.45 dBi @6.725 GHz
Beamwidth @ -3dB	1.44°	0.88°
G/Ts at Clear Sky with 30 K LNA @ 20° Elevation		
3.400 GHz	22.33 dB/K	
3.800 GHz	23.29 dB/K	
4.200 GHz	24.16 dB/K	
Power handling, per port (CW)	500 watts	500 watts
VSWR (Feed interface)	1.25	1.25
Cross Pol Isolation (Axial Ratio)	32.78 dB (1.047)	32.78 dB (1.047)
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

S-Band Performance

	Rx	Tx
Frequency (GHz)	2.170 – 2.300	1.980 – 2.120
Feed Ports	2CP + 2 Monopulse	2CP
Antenna Gain	38.16 dBi @2.300 GHz	37.45 dBi @2.120 GHz
Beamwidth @ -3dB	2.44°	2.66°
G/Ts at Clear Sky with 45 K LNA @ 20° Elevation		
2.170 GHz	17.48 dB/K	
2.235 GHz	17.74 dB/K	
2.300 GHz	17.99 dB/K	
VSWR (Feed interface)	1.25	1.25
Cross Pol Isolation (Axial Ratio)	32.78 dB (1.047)	32.78 dB (1.047)
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

Contact Rob or Mohamed today.

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