

# 13.1 Meter Cassegrain Antenna

## Antenna Technologies



### Overview

The CPI Antenna Technologies' 13.1 meter antenna delivers exceptional performance for transmit/ receive and receive only applications for L through DBS Band frequencies. This antenna offers a reflector design that incorporates precision-formed panels, truss radials and hub assembly. It features an innovative cassegrain feed and subreflector design which results in high gain, low noise temperature, high antenna efficiency and excellent rejection of noise and microwave interference.

A large center hub provides spacious accommodation for equipment mounting. The reflector is supported by a galvanized Kingpost pedestal that provides the required stiffness for pointing and tracking accuracy. The pedestals are designed for full orbital arc coverage and are readily adaptable to ground or rooftop installations.

The electrical performance is compliant with FCC and ITU-RS-580 sidelobe specifications and Intelsat (A, B, C) and Eutelsat requirements.

### FEATURES:

- Fully interchangeable reflector components with aluminum reflector panels and galvanized steel backup structure
- Designed for 1.5 to 18 GHz operation, meeting FCC and ITU-RS-580 requirements
- Galvanized steel elevation-over-azimuth pedestal with jackscrews
- Survives 165 mph winds in any position

### OPTIONS:

- L, S, C, X, Ku and DBS Band feed configurations
- C/Ku receive only feed systems
- CP/LP manual or remote switchable feeds
- Specialized feed systems (e.g., extended, multi-band)
- Antenna control system with tracking
- Reflector and feed deicing systems
- Environmental hub configurations
- Integrated transmit cross-axis kits
- Integrated LNA or LNB systems
- HPAs, converters and M&C systems
- Packing for sea and air transport
- Turnkey installation and testing

### UPGRADES:

- X-Band low PIM reflector/feed customizations
- Continuous bullgear azimuth travel
- High wind configuration
- Low operating temperatures
- High power configurations

### BENEFITS:

- High antenna efficiency
- Excellent rejection of noise and microwave interference

### APPLICATIONS:

- Communications, Data Transfer, Broadcast

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## Specifications

ELECTRICAL <sup>(1)</sup>	Ext. C-Band 4 Port Circular Polarized		Ext. C-Band 4 Port Linear Polarized		X-Band 4 Port Circular Polarized	
	Receive	Transmit	Receive	Transmit	Receive	Transmit
Frequency (GHz)	3.400- 4.200	5.725 - 6.725	3.400 - 4.200	5.725 - 6.725	7.250 - 7.750	7.900 - 8.400
Antenna Gain, Midband dBi <sup>(2)</sup>	53.30	56.90	53.30	56.80	58.00	58.80
VSWR	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1
Pattern Beamwidth <sup>(2)</sup>						
-3 dB, at midband	0.36°	0.24°	0.36°	0.24°	0.19°	0.18°
-15 dB, at midband	0.76°	0.50°	0.76°	0.50°	0.40°	0.38°
Antenna Noise Temperature						
5° Elevation	71 K		56 K		104 K	
10° Elevation	62 K		47 K		95 K	
20° Elevation	57 K		40 K		89 K	
40° Elevation	55K		36 K		88 K	
Typical G/T (dB/K) <sup>(3)</sup>						
Midband	33.7 (35 K LNA 4.0 Ghz)		34.5 (35 K LNA 4.0 Ghz)		36.3 (60 K LNA)	
Axial Ratio (dB)	0.50 dB	0.50 dB			0.50 dB	0.50 dB
Power Handling (total)	5 kW CW		6 kW CW		5 kW CW	
Cross Polarization Isolation (dB)						
On Axis	30.8 dB	30.8 dB	35.0 dB	35.0 dB	21.3 dB	21.3 dB
Within a 1.0 dB Beamwidth	30.8 dB	30.8 dB	30.8 dB	30.8 dB	21.3 dB	21.3 dB
Port-to-Port Isolation (dB)						
Rx/Tx (Rx frequency)	0 dB	-85 dB	0 dB	-85 dB	0 dB	-140 dB
Tx/Rx (Tx frequency)	-85 dB	0 dB	-85 dB	0 dB	-110 dB	0 dB
Rx/Rx, Tx/Tx (CP mode)	17 dB	17 dB			17 dB	17 dB
Rx/Rx, Tx/Tx (LP mode)			35 dB	35 dB		
Sidelobe Performance	Meets FCC 25.209, Intelsat or ITU-RS-580					
RF Specification	975-4960		975-5552		975-5257	

<sup>(1)</sup> All values are at rear feed flange. <sup>(2)</sup> C-Band Rx values are at 4 GHz. <sup>(3)</sup> Typical G/T at 20° elevation with clear horizon using single bolt-on LNA feed.

### Notes:

- 10% of sidelobes may exceed the sidelobe specifications where applicable
- Power handling capability is based on and limited by the physical characteristics in the feed components.  
Microwave power at these levels may contribute to the radiation hazard or exceed certain off axis EIRP specifications.

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## Specifications

ELECTRICAL <sup>(1)</sup>	Ext. Ku-Band 4 Port Linear Polarized		DBS 4 Port Linear Polarized	
	Receive	Transmit	Receive	Transmit
Frequency (GHz)	10.700 - 12.750	13.750 - 14.800	10.700 - 12.750	17.300 - 18.400
Antenna Gain, Midband dBi <sup>(2)</sup>	62.00	63.40	62.30	65.20
VSWR	1.30:1	1.30:1	1.30:1	1.30:1
Pattern Beamwidth <sup>(2)</sup> -3 dB, at midband -15 dB, at midband	0.12° 0.25°	0.10° 0.21°	0.12° 0.25°	0.09° 0.19°
Antenna Noise Temperature 5° Elevation 10° Elevation 20° Elevation 40° Elevation	92 K 79 K 70 K 66 K		81 K 66 K 57 K 53 K	
Typical G/T (dB/K) <sup>(3)</sup> Midband	39.7 (70 K LNA 10.7 Ghz)		41.3 (70 K LNA ) 40.6 (90 K LNA )	
Axial Ratio (dB)				
Power Handling (total)	2 kW CW		2 kW CW	
Cross Polarization Isolation (dB) On Axis Within a 1.0 dB Beamwidth	35.0 dB 35.0 dB	35.0 dB 35.0 dB	35.0 dB 35.0 dB	35.0 dB 30.0 dB
Port-to-Port Isolation (dB) Rx/Tx (Rx frequency) Tx/Rx (Tx frequency) Rx/Rx, Tx//Tx (CP mode) Rx/Rx, Tx//Tx (LP mode)	-50 dB 0 dB	0 dB -5 dB	0 dB -85 dB	-75 dB 0 dB
Sidelobe Performance	Meets ITU-RS-580		Meets IESS Intelsat, Eutelsat, ITU RS 580	
RF Specification	975-2918		975-1713	

<sup>(1)</sup> All values are at rear feed flange. <sup>(2)</sup> C-Band Rx values are at 4 GHz. <sup>(3)</sup> Typical G/T at 20° elevation with clear horizon using single bolt-on LNA feed.

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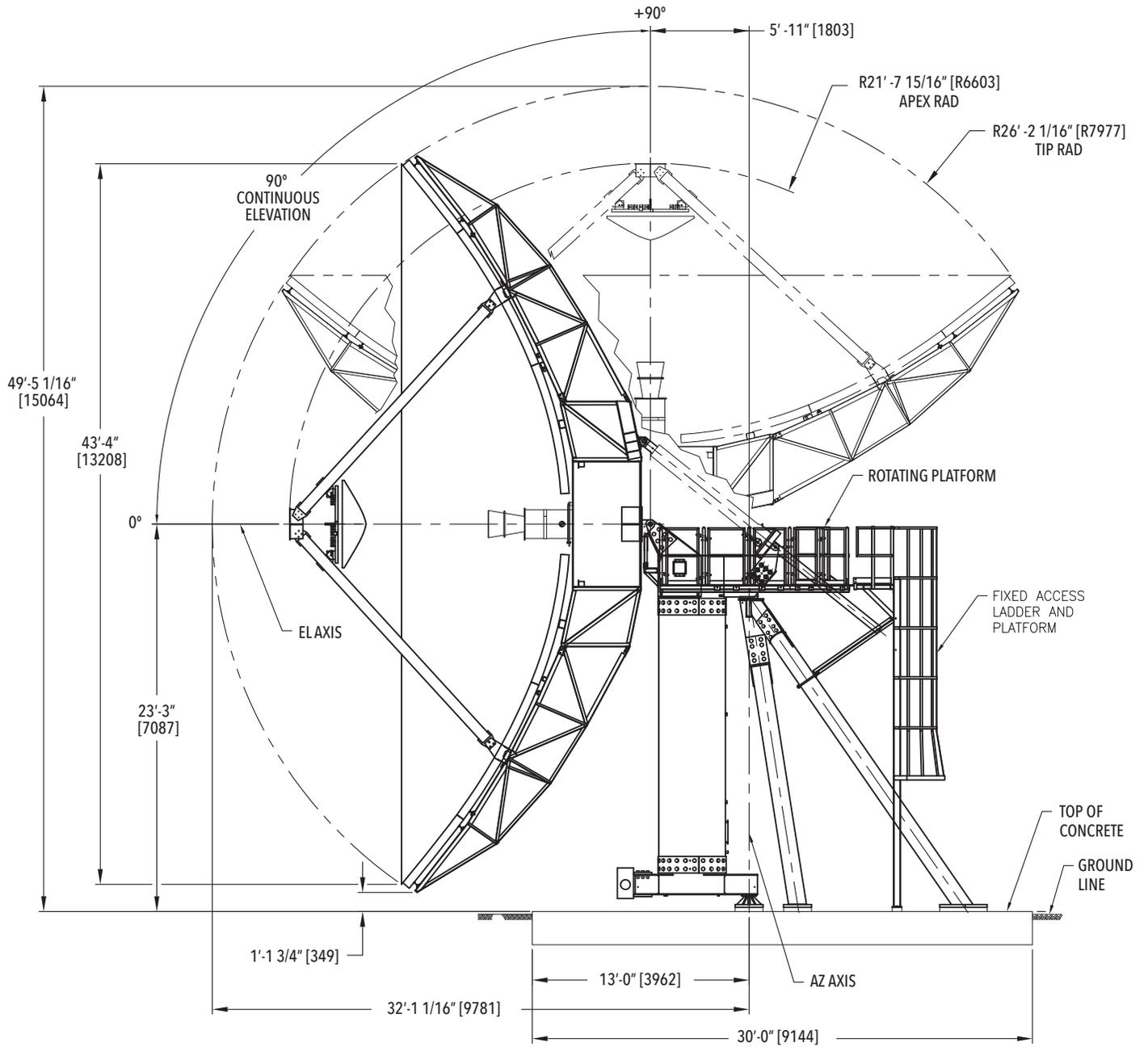
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## Specifications

MECHANICAL/ENVIRONMENTAL <sup>(4)</sup>	Kingpost Pedestal (KX)	Turning Head (TH)
Antenna Diameter	13.1 meters (43.0 feet)	
Antenna Type	Cassegrain design	
Reflector Construction	36 (two-tier) (for C-Band) or 50 (three-tier) (for Ku-Band) precision-formed aluminum panels with heat-diffusing white paint galvanized steel back-up structure	
Hub Dimensions	89 in (226 cm) OD, 48 in (122 cm) depth	90 in (228 cm) OD, 49 in (124 cm) depth
Mount Configuration	Elevation over azimuth pedestal, constructed of galvanized steel	
Drive Type	Machine jack screw	200° continuous gear drive
Azimuth Travel	180° (3 segments @ 70°)	0 to 90° continuous jack screw
Elevation Travel	0 to 90° continuous	+/- 90 degree
Polarization Travel	+/- 90 degree	
Foundation (L x W x D)	30.0 x 30.0 x 2.0 ft (9.1 x 9.1 x 0.6 m)	31.5 x 31.5 x 3.5 ft (9.6 x 9.6 x 1.0 m)
Concrete	67.0 yds <sup>3</sup> (51.2 m <sup>3</sup> )	128.6 yds <sup>3</sup> (98.3 m <sup>3</sup> )
Reinforcing Steel	7,500 lbs. (3,402 kg)	14575 lbs. (6,611 kg)
Subbase	3000 psf subbase	3000 psf subbase
Shipping Containers	Five 40 ft HC containers	One 40 ft flatrack, Five 40 ft HC containers
Weights	Reflector: 25000 lbs Pedestal: 15,500 lbs	Reflector: 25000 lbs Pedestal: 40,000 lbs
Wind Loading	Operational Survival (any Position)	Operational Survival (any Position)
	45 mph (72 km/h) gusting to 60 mph (97 km/h) 165 mph (265 km/h) @ 58° F (15° C)	45 mph (72 km/h) gusting to 60 mph (97 km/h) 125 mph (200 km/h) @ 58° F (15° C)
Temperature	Operational Survival	Operational Survival
	+5° to +122°F (-15° to +50° C) -22° to +140°F (-30° to +60° C), low temperature options available	
Rain	Up to 4 in/h (10 cm/h)	
Relative Humidity	0 to 100% with condensation	
Solar Radiation	360 BTU/h/ft <sup>2</sup> (1,000 Kcal/h/m <sup>2</sup> )	
Ice	Survival	Survival
	1 in (2.5 cm) on all surfaces or 1/2 in (1.3 cm) on all surfaces with 80 mph (130 km/h) wind gusts	
Atmospheric Conditions	As encountered in coastal regions and/or heavily industrialized areas	
Shock and Vibration	As encountered during shipment by airplane, ship or truck	

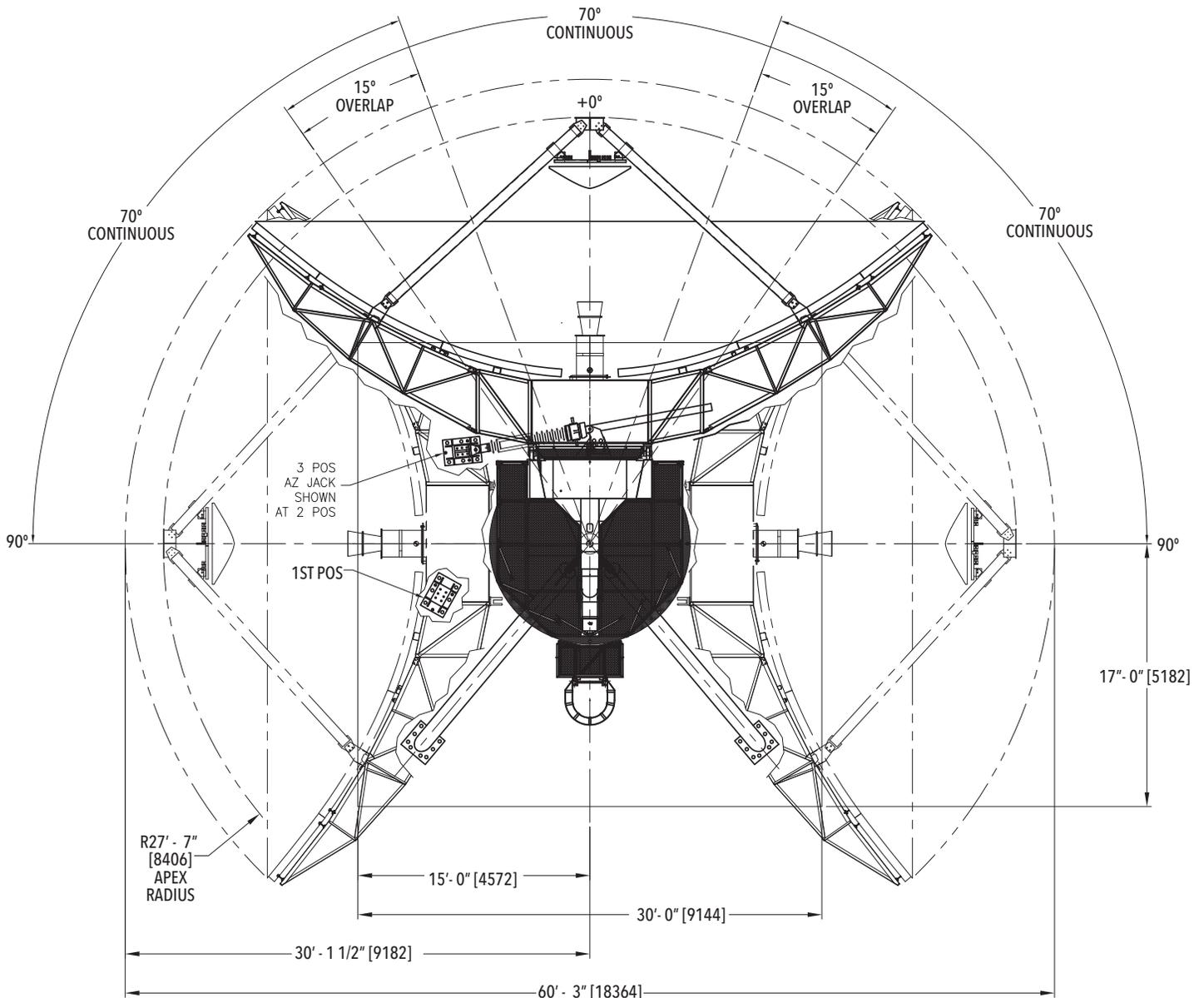
<sup>(4)</sup> Some specifications may vary based on the combination of equipment, options and/or upgrades ordered.

# 13.1 Meter Cassegrain Antenna



**SIDE ELEVATION**

# 13.1 Meter Cassegrain Antenna



**PLAN VIEW**

Contact us at [CustomerCareSAT@cpii.com](mailto:CustomerCareSAT@cpii.com) or call us at +1 770-689-2040

The data should be used for basic information only.  
 Formal, controlled specifications may be obtained from CPI for use in equipment design.



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