



VERTEX 16.4-METER

MODEL 16.4 THC (Turning Head Pedestal)



I N T E L S A T ' A ' E A R T H S T A T I O N

The Vertex Model 16.4THC antenna is the most recent state-of-the-art antenna design in the industry. This design configuration provides a high-quality product at an economical price. This system (16.4THC) is designed primarily for INTELSAT applications (I ESS-207), and provides a variety of features which meets the needs of various operational requirements.

Tasked with the goal to provide an installed, cost-effective antenna subsystem, the design was approached in part, to minimize field installation time by increasing the level of factory-controlled subassembly. This was achieved by precision fabrication tooling and higher level of factory subassemblies. An additional feature that benefits both the civil effort and provides superior operational flexibility is its azimuth coverage of up to 360 degrees azimuth coverage in six 85-degree overlapping segments. The enhanced stiffness of the reflector/pedestal system results in excellent performance for the most critical pointing/tracking requirements.

Vertex has proudly served the satellite communications industry since 1973 and has installed high-quality, superior performance antennas in over 70 different countries.

In addition to equipment, Vertex offers custom engineering, site testing, and after-sales service and maintenance.

Vertex can provide turnkey RF front-end systems which typically include, but are not limited to, the following equipment and services:

- Elevation-over-azimuth pedestal/reflector structure
- Dual-polarized (4-port) feed system
- Step or monopulse tracking control system
- Low noise amplifiers
- Interfacility waveguide and coax links
- Foundation
- Civil works
- Installation
- Checkout and full INTELSAT qualification tests

Vertex has the expertise and capability to provide full administrative, engineering, and technical assistance in each of these areas, and will undertake the necessary responsibility to achieve the level of results sought by each customer.

VERTEX ANTENNA DIVISION

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16.4-METER THC MECHANICAL SPECIFICATIONS

Azimuth Travel*	360° (Six overlapping 85° sections)
Azimuth Velocity	.03°/second**
Elevation Travel	0° to 90° continuous
Elevation Velocity	.03°/second*
Weight - Reflector	40,000 pounds (18,180 kg)
Weight - Pedestal	37,500 pounds (17,050) kg
Shipping Weight (Approximate)	85,000 pounds (38,600 kg)
Shipping Volume	7,000 cubic feet (200 cu.m.)
Reflector Structure	Steel
Pedestal Structure	Steel
Finishes Reflector Surface Backup Structure Pedestal Turning Head Pedestal Tube	Aluminum panels with heat-diffusing white paint Hot-dip galvanized Hot-dip galvanized Painted white (galvanized optional)
Surface Accuracy	0.025 inch rms (.6 mm) static
Foundation Size	31.5 ft. x 31.5 ft. x 3.5 ft. (9.6 m x 9.6 m x 1.0 m)
Concrete Volume	128.6 cubic yards (98.3 m ³)
Reinforcing Steel	14, 575 pounds (6620 kg)
Soil Bearing Pressure	3,000 lb/ft ² (14,650 kg/m ²)

* May be limited by R.F. axis crossover or other optional items.
 ** Other rates available.

16.4-METER THC ENVIRONMENTAL SPECIFICATIONS

Operational Winds	45 mph (72 km/h) gusts to 60 mph (97 km/h)
Survival Winds (any position)	125 mph (200 km/h) @ 58°F (15°C)
Ambient Temperature	Operational: +5° to +122°F (-15° to +50°C) Survival: -22° to +140°F (-30° to +60°C) Low temperature kits available
Relative Humidity	0% to 100% with condensation
Rain	Up to 4 in/hr. (10 cm/h)
Solar Radiation	360 BTU/h/ft ² (1000 Kcal/h/m ²)
Radial Ice (Operational)	1/4 inch (0.6 cm) on all surfaces except reflector and deicing heaters energized
Radial Ice (Survival)	1 inch (2.5 cm) on all surfaces or 1/2 inch ice (1.3 cm) with 80 mph (130 km/h) wind gusts
Shock and Vibration	As encountered during shipment by commercial air, sea or truck
Corrosive Atmosphere	As encountered in coastal regions and/or heavily industrialized areas
Seismic (Survival)	0.3 G's horizontal 0.1 G's vertical

NOTE: This document gives a description of only the prominent features of the product(s). Vertex reserves the right to change the specifications without notice.

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16.4-METER THC CASSEGRAIN R.F. SPECIFICATIONS	C-BAND 4-PORT CIRCULAR POL FEED	
	RECEIVE	TRANSMIT
Frequency in GHz*	3.625-4.200	5.850-6.425
Antenna Gain 3.620/5.850 GHz 3.910/6.137 GHz 4.200/6.425 GHz	54.6 dB 55.3 dB 55.9 dB	58.3 dB 58.6 dB 58.9 dB
Antenna Noise Temperature 5° Elevation 10° Elevation 20° Elevation 40° Elevation	51°K 39°K 33°K 30°K	
Typical G/T at 20° Elevation, 4.000 GHz, Clear Horizon with 35°K LNA with 50°K LNA	36.8 dB/K 36.0 dB/K	
Pattern Beamwidth in Degrees at 4.000/6.137 - 3 dB - 15 dB	<0.30 <0.63	<0.20 <0.42
Sidelobes First Sidelobe Level Across the Band Sidelobe Envelope	-14±2 dB Meets FCC Regulation 25.209, IESS 207 (Revised from 201) or ITU-580-4 (CCIR Recommendation 580-4)	
Cross Polarization Isolation on Axis within 1 dB Beamwidth	30.7 dB 30.7 dB	30.7 dB 30.7 dB
VSWR	1.25:1	1.25:1
Feed Insertion or Ohmic Loss	0.20 dB	0.20 dB
Receive-to-Receive Port Isolation	21.0 dB	
Transmit-to-Transmit Port Isolation		23.0 dB
Transmit-to-Receive Isolation	30.0 dB	30.0 dB
Transmit-to-Receive Isolation with Optional Filter	30.0 dB	85.0 dB
Axial Ratio (Voltage Axial Ratio)	0.50 dB (1.06)	0.50 dB (1.06)
Feed Interfaces	CPR-229G	CPR-159G
Total Power Handling Capability**		10 kW CW

* Other operational frequencies and multi-band feed systems available.

** Power handling capability is based on and limited by the physical characteristics in the feed components. Microwave power at these levels may contribute to radiation hazard or exceed certain off-axis e.i.r.p. specifications.

- NOTES:**
1. All values are at the rear feed output flange.
 2. Specifications subject to change without notice.
 3. Gain values have been determined analytically and are verifiable by standard test procedures within appropriate measurement accuracies.

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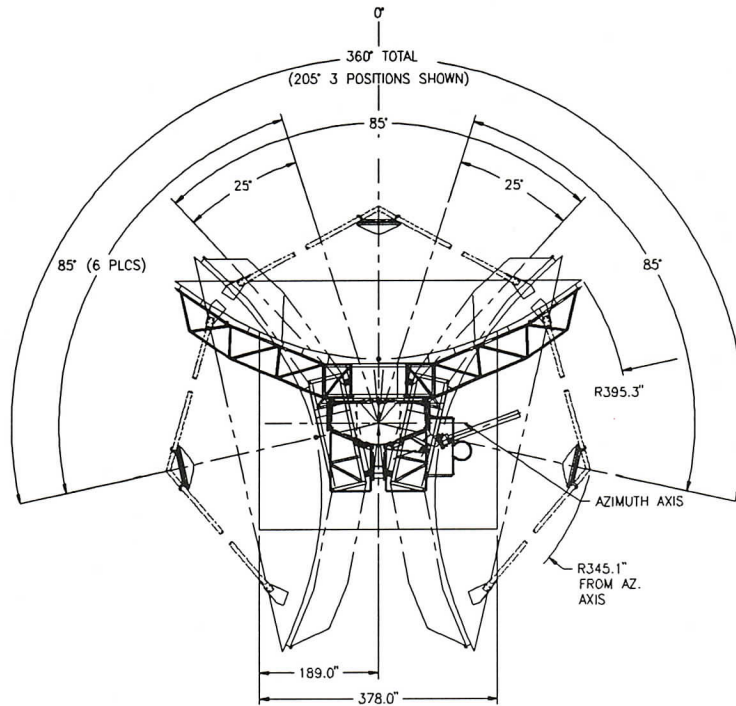


FIGURE 1

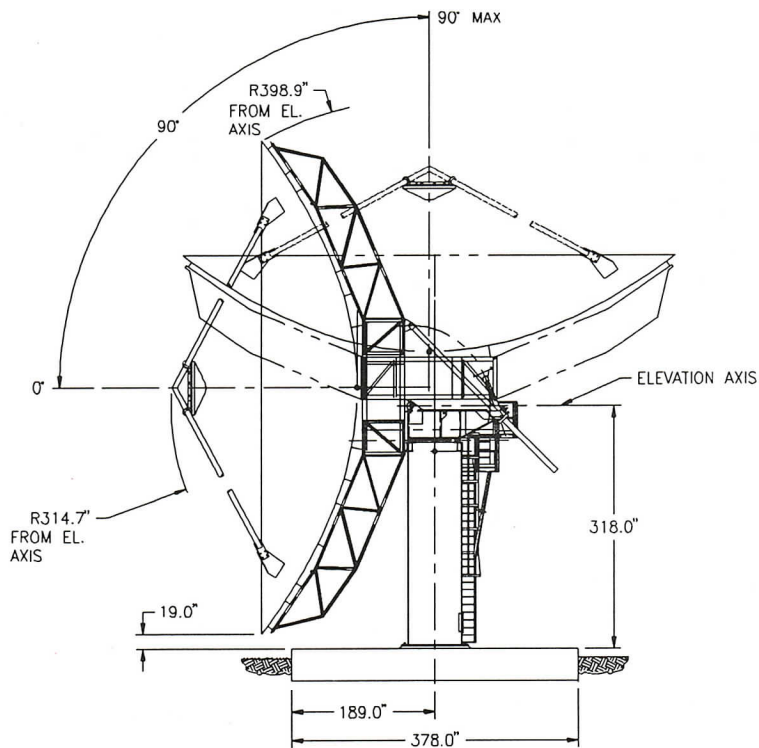


FIGURE 2

VERTEX ANTENNA DIVISION

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