

# 3.5 Meter ESA

Like all Kratos earth station antennas, the 3.5 Meter Earth Station Antenna provides high gain and exceptional pattern characteristics.

This antenna system is designed to address the stringent requirements of both the television broadcast industry and telecommunications network operators who demand unsurpassed flexibility and electrical performance in high-quality, cost-effective, and reliable packages.

The electrical performance and exceptional versatility provides the ability to configure the antenna with your choice of linearly- or circularly- polarized 2- or 4- port combining networks. That versatility is provided at the time of initial purchase, as well as in the future, as your satellite communication requirements evolve.

This antenna system is used worldwide in broadcast applications and high density data, voice and communications networks. The Kratos 3.5 meter earth station antenna features a precision one or two piece spun aluminum reflector with a uniquely designed dual optics Gregorian sub reflector tracking system which eliminates the need for costly jack drives and large motors while a motorized mount is also available.

This combination provides extremely accurate surface contour resulting in exceptionally high gain and closely controlled pattern characteristics. Kratos earth station antennas provide maximum durability with minimal maintenance.



## Features

- 3 year warranty on all structural components
- Ka Band Capabilities
- Single or Dual Piece Main Reflector
- Bonded and riveted torsion box for rigidity
- Heavy mounting ring for strength
- Advanced dual reflector Gregorian optics
- Sub reflector closed loop positioning for precise pointing accuracy

## Compliance

ITU-R S.580-6, 465-6, 732-1	Ku, K Band
US FCC 25.209	Ku, K Band

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## Design Standards

Reflector	Aluminum painted with highly diffusive white paint
Ground Mount	Hot-dipped galvanized steel, per ASTM-A123 for structural steel.
Hardware	Sizes ≤ 3/8 in (9.5mm), stainless steel, passivated per MIL-F-14072-E300 Sizes ≥ 3/8 in (9.5mm), hot-dipped galvanized stainless steel, passivated per ASTM-A123

## Environmental Performances

Operating Temperature	-40° to 52°C (-40° to 125°F)
Seismic (Earthquake)	1 G Vertical and Horizontal acceleration. Equivalent to a Richter Magnitude 8.3, and Grade 11 on the modified Mercalli Scale
Operational Winds	45 mph (72 km/h) Gusts to 65 mph (105 km/h)
Survival Winds	125 mph (200 km/h) in any position of operation
Rain	4 in (102 mm) per hour
Solar Radiation	360 BTU/hr/ft <sup>2</sup> (1135 Watts/m <sup>2</sup> )
Relative Humidity	100%
Shock and Vibration	As encountered by commercial Air, Rail and Truck shipment.
Atmospheric Conditions	As encountered by Moderately Corrosive Coastal and Industrial Areas.

## Mechanical Performances

The 3.5m Antenna mechanical general specifications and performances are listed in below table. Additional information, dimensions and layout may be provided by Kratos on a case-by-case basis.

Optics Type	Dual Reflector Gregorian
Reflector Material	Precision-Formed Aluminum
Reflector Segments	1
Mount Type	EI over Az, Tubular Mount

### Antenna Pointing Range, Coarse/(Continuous)

Elevation:	0-90° (90°) (NOMINAL)
Azimuth:	360° (±22.5° manual mount)(120° motorized mount) (NOMINAL)
Polarization	180° (180°)

## Shipping Information

### Packing Options

Standard Commercial Domestic Pack	Included
Ocean Export Pack - For non-containerized, packed for seal against salt water spray	OCEANSHP-SML
Air Export Pack - For freighter aircraft shipments. Lower deck AirPack requires specialized bids	AIR EXPORT PACK-SML
Container Packaging	CNTPCK-SML

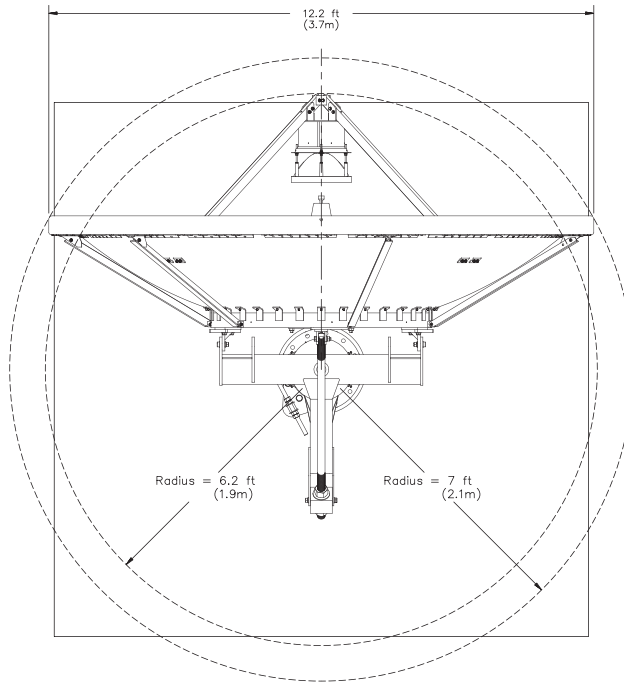
### Required Shipping Container

Open Top 20 ft land/sea container	Quantity 1
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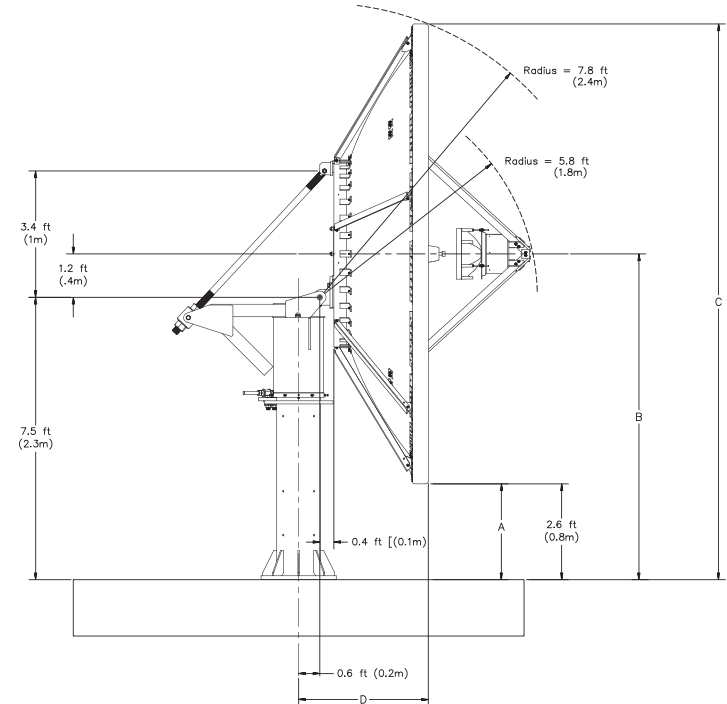
Shipping container information is given for basic configuration and may vary depending on the selected options, please contact Kratos for specific container loading plan.

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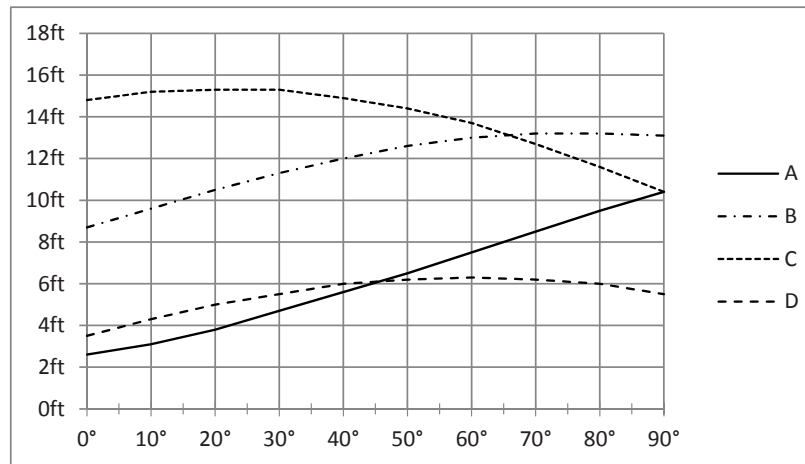
## Dimensional Drawings Non Motorizable Mount



TOP VIEW

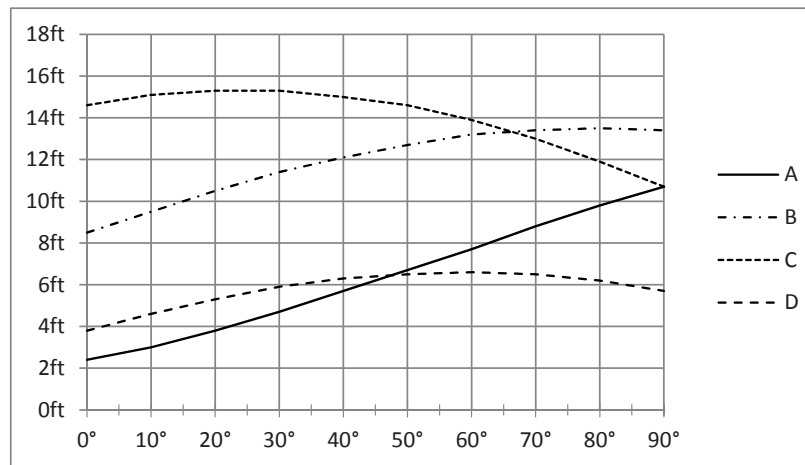
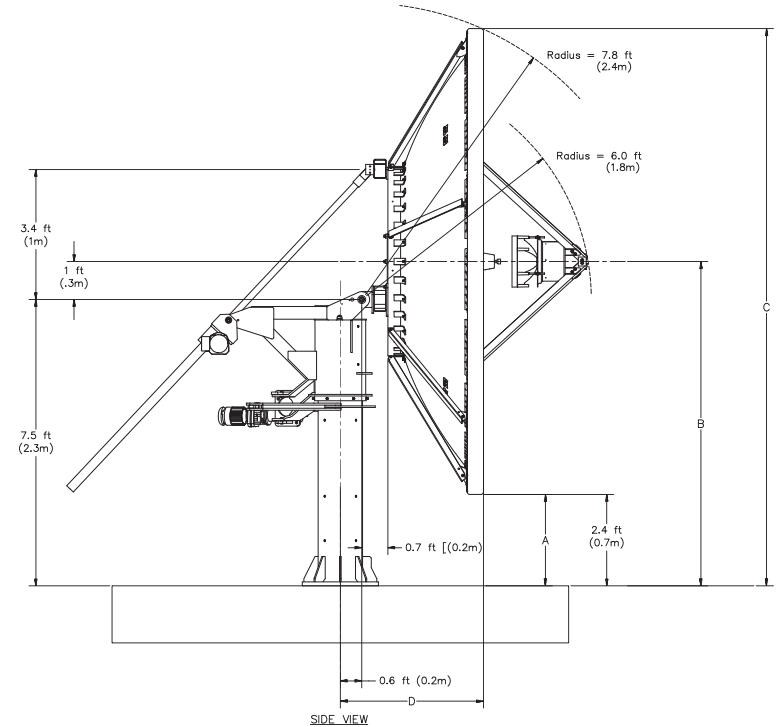
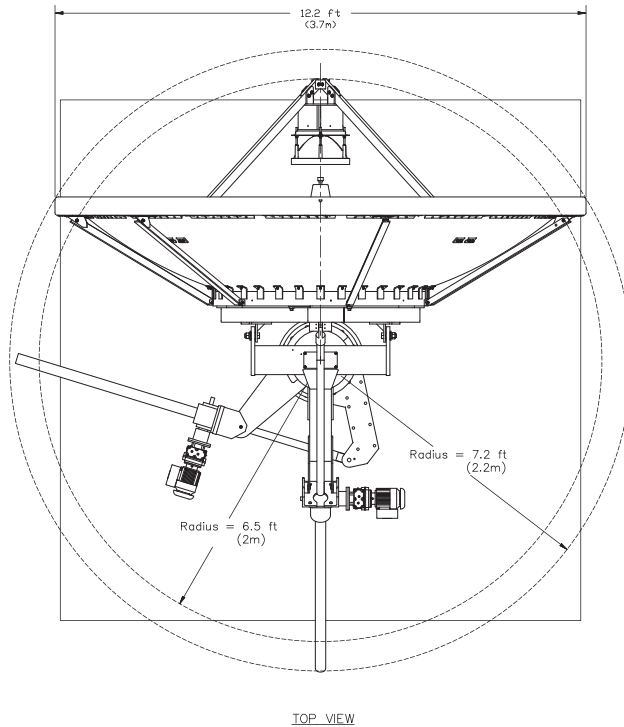


SIDE VIEW



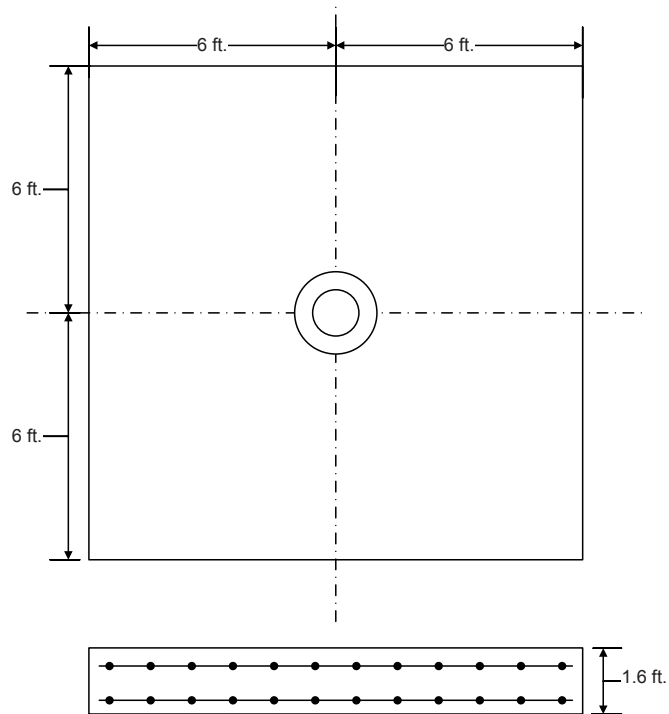
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## Dimensional Drawings Motorizable Mount

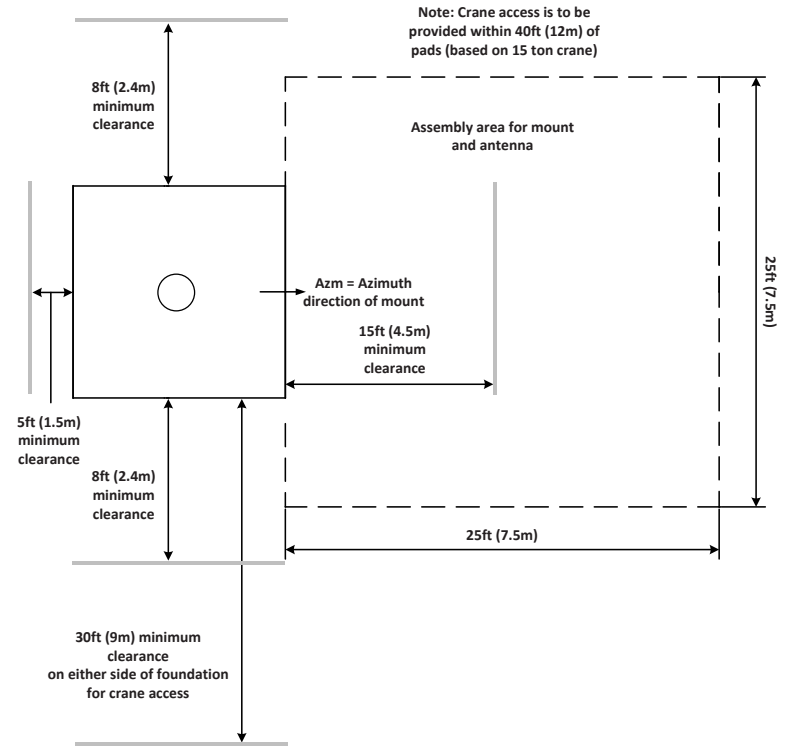


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## Typical Foundation Design



## Typical Foundation Information



Foundation information are provided in bulletin 237731, please contact Kratos.

Soil Bearing Capacity,	2000 lb/ft <sup>2</sup> (9770 kg/m <sup>2</sup> )
Reinforcing Steel,	821 Lbs (88 Kilograms)
Concrete Compressive Strength,	3000 psi (372 kg/cm <sup>2</sup> )
Foundation Size:	(for specific standard soil and typical design)
Length	12 ft (3.65 m)
Width	12 ft (3.65 m)
Depth	1 ft 6 in (0.457 m)
Concrete Volume	8 yd <sup>3</sup> (6.1 m <sup>3</sup> )
NOTE: Other typical foundation designs are available. Soil borings and foundation analysis should be performed by a qualified civil engineer.	

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## Motor Drive Speed Summary

	Variable	
Azimuth	0.05°/s	0.2°/s
Elevation	0.05°/s	0.2°/s
Polarization	1°/s	

Maximum achievable speed, may vary depending on antenna configuration, please contact Kratos

## Motorization

One motorization system is available for this antenna: the NGC tracking system that can support Steptrack, Smartrack and Ephemeris orbital tracking.

Motor Kit	
Azimuth/Elevation Motor Kit	NGC-MK5
Azimuth/Elevation Motor Kit High Accuracy	NGC-MK5KA
SRT Kit	
Subreflector Carriage. 2 Axis Control.	SRT-2-35
Polarization Drive Kit (DC Step Motors)	
Standard Temperature (> -20°C)	NGC-PK5DRA
Outdoor Unit Controller (Tracking)	
Power 200 - 230 VAC, 3 Phase 50/60 Hz	NGC-ODU-208-3 (-HA)
Power 380 - 460 VAC, 3 Phase 50/60 Hz	NGC-ODU-380-3 (-HA)
Stand Alone SRT Outdoor Unit Controller	
Power 100-240VAC single-phase 50/60 Hz	NGC-ODU-SRT

Antenna controller, motorization and options are detailed in specific bulletins, please contact Kratos.

## Motorization and NGC Options

Indoor	
NGC2-IDU	NGC Rack Mounted Antenna Controller W/LCD Touch Panel, 4 RU Unit
NGC2-IDU-1	NGC Rack Mounted Antenna Controller, 1 RU Unit
NGC2-IDU-2	NGC Rack Mounted Antenna Controller, 2 RU Unit
NGC2-002-06	NGC2-IDU Spectrum Analyzer Card - Analog; 1 X 6 Multi-Input Switch
NGC2-002-EDR	NGC2-IDU Spectrum Analyzer Card - Analog; Enhanced Dynamic Range
NGC2-002-EDR-06	NGC2-IDU Spectrum Analyzer Card - Analog; 1 X 6 Multi-Input Switch; Enhanced Dynamic Range
NGC2-004-03	NGC2 IDU, L-Band Internal Beacon Receiver
NGC2-006	NGC2-IDU Emergency Stop Button
NGC2-007	NGC2-IDU 10 MHz Reference GPS Based Source
NGC2-008	NGC2-IDU Power Supply
NGC2-009	NGC2-IDU Rack Slides
NGC2-100	NGC2-IDU HEO Tracking Software
NGC2-101	NGC2-IDU Step Tracking Software
NGC2-102	NGC2-IDU Smartrack Software
NGC2-103	NGC2-IDU Predictive Tracking Software
NGC2-104	NGC2-IDU Full Tracking Capability Software
NGC2-106	NGC2-IDU Remote Access Software Package
NGC2-107	NGC2-IDU Enhanced Spectrum Analyzer Function Software
NGC2-108	NGC2 Receive Pattern Testing Tool
NGC2-109	Redundancy/Switching Control Software
NGC2-111	Sand/Dust Deviator Feature
NGC2-112	Carrier Monitoring
NGC2-119	NGC2 Redundancy Control Software
Outdoor	
NGC-201	NGC ODU Low Temperature Kit (-40 C)
NGC-202	NGC ODU High Temperature Kit (+60 C)
NGC-205	NGC ODU AC Polarization Drive Interface
NGC-206	NGC Exterior Emergency Stop Button
NGC-207	Pre Movement Alert Warning Light and Annunciator
NGC-211	Dual Path NGC Redundancy
NGC-AESC	Environmental System Controller

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## Feed Matrix

KA- BAND FEED SYSTEMS	PORT	LP	CP	RX 17.7 - 20.2 GHz	RX 18.3 - 20.2 GHz	RX 21.4 - 22.0 GHz	TX 27.0 - 30.05 GHz	TX 27.50 - 31.00 GHz	TX 28.3 - 30.0 GHz
4CPWKA-35-206	4		X		X				X
4CPWWKA-35-206	4		X	X				X	
4LPEUTKA-35	4	X				X	X		
4LPNKA-35	4	X			X		X		
4LPWWKA-35-206	4	X		X				X	

RF Feed Specifications are detailed in specific bulletins, please contact Kratos.

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## Antenna Configurations

Ka Band Earth Station Antennas	
Manual Tubular Mount.	ES35-1
Manual Tubular Mount, Integral De-Ice Pads 208VAC	ES35-1-208
Manual Tubular Mount, Integral De-Ice Pads 380VAC	ES35-1-380
Motorizable Tubular Mount with Az/EI Jackscrews.	ES35MPJ-1
Motorizable Tubular Mount with Az/EI Jackscrews, Integral De-Ice Pads 208VAC	ES35MPJ-1-208
Motorizable Tubular Mount with Az/EI Jackscrews, Integral De-Ice Pads 380VAC	ES35MPJ-1-380

## Antenna Options and Spares

Anchor Bolt and Template Kits Option	
302689	Anchor Bolt and Template Kits

Heating Options	
FAD35	Anti-Dew Kit
FH35	Feed Heater Ka-Band
RMHC35	Remote Heater Controller

Environmental Systems Options	
PDCPKA-35-208	Precipitation Deviator Ka-band 208 VAC, 3 Phase
PDCPKA-35-380	Precipitation Deviator Ka-band 380 VAC, 3 Phase

Safety Options	
ANTGND-5	Foundation Installed Grounding Kit
LRK5	Lightning Rod Kit
OBWRNLT-UNV	Obstruction Warning Light Kit

Other Options	
221196	Handwheel Kit (2 required)
209906	Lubrication and Maintenance Kit
ANGVERN-49	Angle Vernier Kit
FTST	Feed System Testing
TK-MAN-SML	Tool Kit, Small Manual Antennas
TK-MOT-SML	Tool Kit, Small Motorized Antennas





**KRATOS**<sup>®</sup>  
READY FOR WHAT'S NEXT™



Kratos Antenna Solutions  
3801 E. Plano Parkway, Suite 200  
Plano Texas 75074  
USA  
Phone: +1-214-291-7654  
Fax: +1-214-291-7655  
Email: [Space@KratosDefense.com](mailto:Space@KratosDefense.com)

for information visit: [www.KratosDefense.com](http://www.KratosDefense.com)

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