STEP ELECTRONICS
A Division of Av-Comm

CPI
Communications & Power Industries

9.4 Meter ESA

Like all CPI Antenna Systems Division earth station antennas, the 9.4 Meter Earth Station Antenna provides high gain and exceptional pattern characteristics.

This antenna system is designed for worldwide use in C-, Ku-, K- and X- Band Low Pim high density data and communications networks.

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 CPI Antenna Systems Division 9.4 meter earth station antenna features a computer-optimized dual reflector Gregorian optics system and close-tolerance manufacturing techniques.

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

Features

- Rugged aluminum and steel construction
- Superior Pointing Accuracy
- Advanced Gregorian optics
- 3 Year Warranty on all Structural Components
- Configured for C- Band, X- Band, Ku- Band and K- Band transmit and receive

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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^2 (1135 Watts/m$^{2)}$
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 9.4m Antenna mechanical general specifications and performances are listed in below table. Additional information, dimensions and layout may be provided by CPI Antenna Systems Division on a case-by-case basis.

Optics Type	Dual Reflector Gregorian
Reflector Material	Precision-Formed Aluminum
Reflector Segments	20
Mount Type	El over Az, Pedestal Mount

Antenna Pointing Range, Coarse/(Continuous)	
Elevation:	0-90° (90°)
Azimuth:	210° (120°)
Polarization	180° (180°)

Hub/Enclosure Dimensions	
Diameter	2.14m (84 in)
Depth	1.22m (48 in)

Shipping Information

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

Required Shipping Container	
Standard 20 ft land/sea container	Quantity 1
Standard 40 ft land/sea container	Quantity 1

Shipping container information is given for basic configuration and may vary depending on the selected options, please contact CPI Antenna Systems Division for specific container loading plan.

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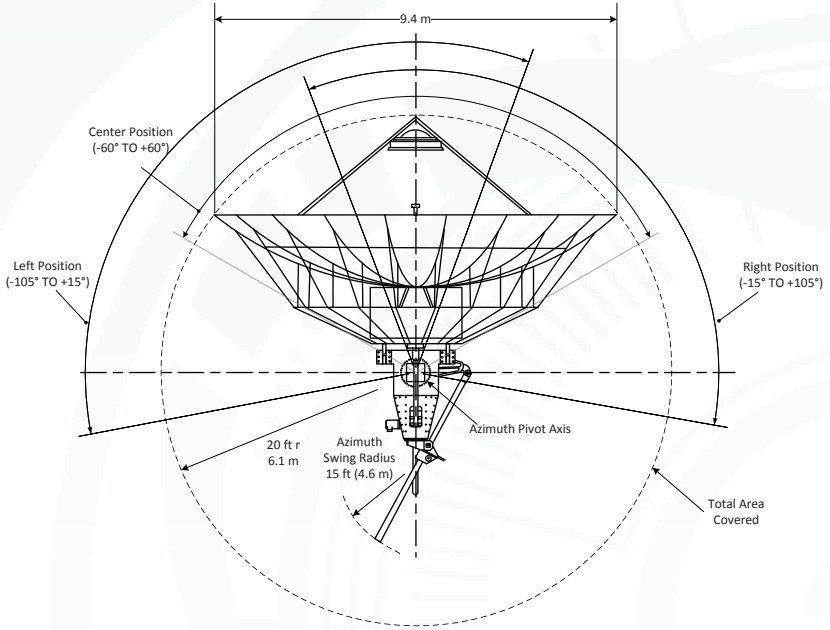
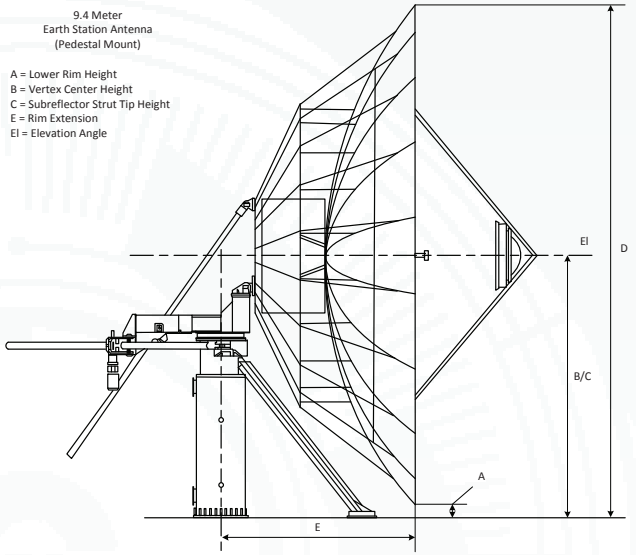
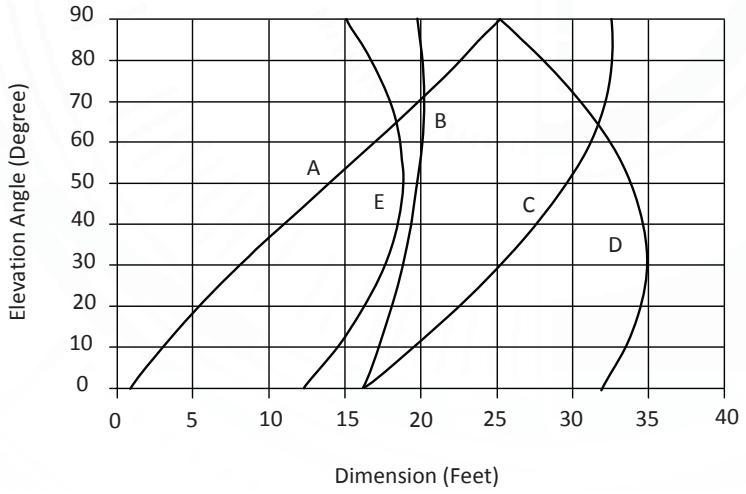
Dimensional Drawings







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earth stations

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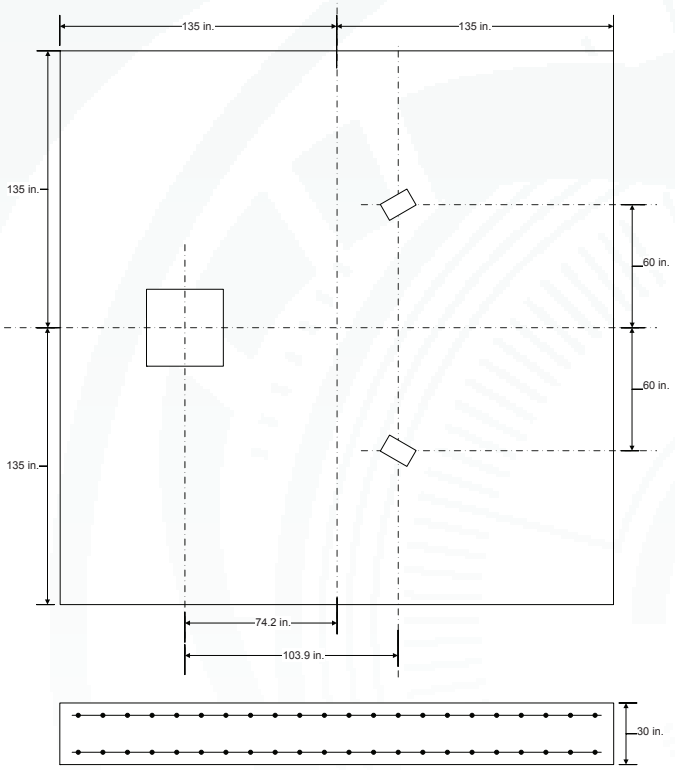
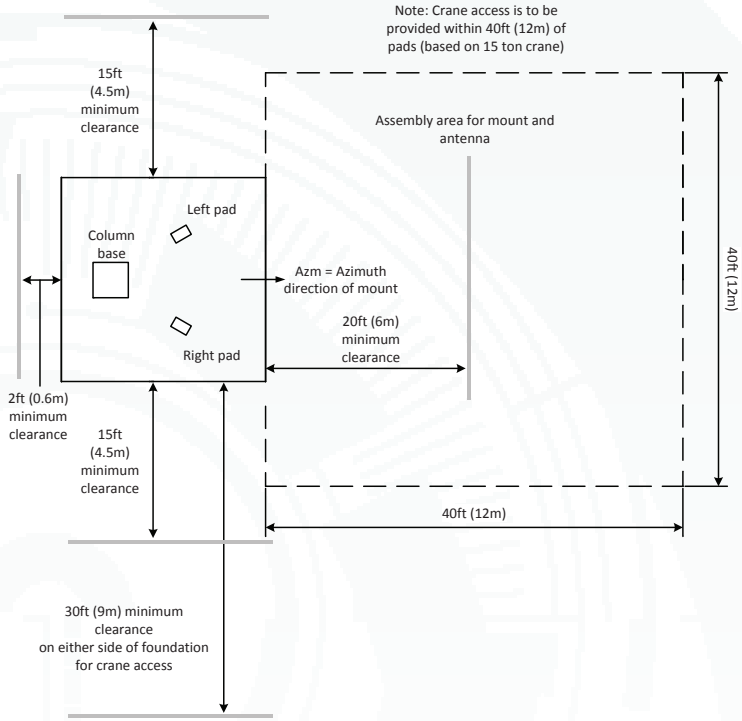
Typical Foundation Design



Foundation information are provided in bulletin 237742, please contact CPI Antenna Systems Division.

Typical Foundation Information



Soil Bearing Capacity,	2000 lb/ft^2 (9770 kg/m^2)
Reinforcing Steel,	2.93 tons (2660 kg)
Concrete Compressive Strength,	3000 psi (211 kg/cm^2)
Foundation Size:	(for specific standard soil and typical design)
Length	22.5 ft (6.86 m)
Width	22.5 ft (6.86 m)
Depth	2.5 ft (0.76 m)
Concrete Volume	46.9 yd^3 (35.86 m^3)
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	0.5°/s
Elevation	0.05°/s	0.5°/s
Polarization	1°/s	

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-MK94

Polarization Drive Kit (DC Step Motors)	
Standard Temperature (> -20°C)	NGC-PK9DRA
Low Temperature operation (< -20°C)	NGC-PK9DRA-LO

Outdoor Unit Controller (Tracking)	
Power 200 - 230 VAC, 3 Phase 50/60 Hz	NGC-ODU-208-5
Power 380 - 460 VAC, 3 Phase 50/60 Hz	NGC-ODU-380-5

Antenna controller, motorization and options are detailed in specific bulletins, please contact CPI Antenna Systems Division..

Antenna Configuration

Earth Station Antennas	
Motorizable Mount with Az/El Jackscrews.	ES94K-1

Motorization and NGC Options

Indoor	
NGC-IDU	NGC Rack Mounted Antenna Controller W/LCD Touch Panel
NGC-001	NGC-IDU Analog Telephone Modem
NGC-002	NGC-IDU Spectrum Analyzer Card, Analog
NGC-003	NGC-IDU DVB Receiver Card
NGC-004-02	NGC IDU, L-Band Internal Beacon Receiver
NGC-006	NGC-IDU Emergency Stop Button
NGC-007	NGC-IDU 10 Mhz Reference Source
NGC-008	NGC-IDU Redundant Power Supply
NGC-009	NGC-IDU Rack Slides
NGC-101	NGC-IDU Step Tracking Software
NGC-102	NGC-IDU Smartrack Software
NGC-103	NGC-IDU Predictive Track Software
NGC-104	NGC-IDU Full Tracking Capability Software
NGC-106	NGC-IDU Remote Access Software Package
NGC-107	NGC-IDU Spectrum Analyzer Enhanced User Interface
NGC-108	Receive Pattern Test Tool
NGC-109	Redundancy Control Software
NGC-111	Sand/Dust Deviator Feature
NGC-119	NGC High Availability System Redundancy 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 Announcator
NGC-211	Dual Path NGC Redundancy
NGC-AESC	Environmental System Controller

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Feed Matrix

C- BAND FEED SYSTEMS	PORT	Co-Pol	CP	LP	RX 3.625 - 4.2 GHz	RX 3.4 - 4.2 GHz	RX 4.5 - 4.8 GHz	TX 5.850 - 6.425 GHz	TX 5.850 -6.725 GHz	TX 5.725 - 6.725 GHz	TX 6.725 - 7.025 GHz
2CPWCR-94-206	2		**X**			X					
4CPNC-94-206	4		X		X			X			
4CPWC-94	4		**X**			X			X		
4LPNC-94	4			X	X			X			
4LPWWC-94	4			X		X				X	

X- BAND FEED SYSTEMS	PORT	CP	LOW PIM	RX 7.25 - 7.75 GHz	TX 7.9 - 8.4 GHz
2CPX-94	2	X		X	X
4CPX-94	4	X		X	X
2CPMX-94	2	X	X	X	X
4CPMX-94	4	X	X	X	X

Ku- BAND FEED SYSTEMS	PORT	LP	RX 10.7 - 12.5 GHz	RX 10.7 - 12.75 GHz	RX 10.7 - 11.7 GHz	TX 12.75- 13.25 GHz	TX 12.75 - 14.5 GHz	TX 13.0 - 14.5 GHz	TX 13.75- 14.5 GHz	TX 13.75- 14.8 GHz
2LPKU-94	2	X		**X**						X
2LPKUR-94-W	2	X		X						
4LPKU-94-1	4	X		X						**X**
4LPKU-94-2	4	X			**X**	**X**				**X**
4LPKU-94-4	4	X		X				**X**		
4LPKU-94-6	4	X	X				**X**			

K- BAND FEED SYSTEMS	PORT	CP	LP	RX 10.7 - 12.75 GHz	TX 17.3 - 18.4 GHz
2LPKK-94	2		X	X	**X**
4LPKK-94	4		X	X	X
4CPKK-94	4	X		X	X

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Antenna Options and Spares

Anchor Bolt and Template Kits Options	
303410	Anchor Bolt Template Kit
175370	Foundation Kit

Azimuth and Elevation Cross Axis Waveguide Options	
XAPKK-94	K-Band cross Axis and Polarization Axis Waveguide Kit.
XAPKK-94-UPG	K-Band Cross Axis and Polarization Axis Waveguide Kit Upgrade. Upgrades XAPKK-49 for use with 4-port K-Band Feeds.
XAPKU-94	Ku-Band Cross Axis and Polarization Axis Waveguide Kit. Single run for 2-Port Ku-Band Feeds.
XAPKU-94-UPG	Ku-Band Cross Axis and Polarization Axis Waveguide Kit Upgrade. Upgrades XAPKU-49 for use with 4-Port Ku-Band Feeds. Provides Additional Waveguide Run.

Heating Options	
FH5A	Ku and K-Band Feed Heater
WEC94R-208-100	Electric Hot Air De-Ice System, 208 VAC, 3 Phase (not for Ka band)
WEC94R-380-100	Electric Hot Air De-Ice System, 380 VAC, 3 Phase (not for Ka band)

Hub Equipment Options	
EMRGYLT-115	Emergency Hub Light Kit, 115 VAC
EMRGYLT-230	Emergency Hub Light Kit, 230 VAC
FV8HV2-115	Fan Vent Kit, 2 Louvers. 115 VAC
FV8HV2-230	Fan Vent Kit, 2 Louvers. 230 VAC
FV8HV4-115	Fan Vent Kit, 4 Louvers. 115 VAC
FV8HV4-230	Fan Vent Kit, 4 Louvers. 230 VAC
HUBHTR-230	Antenna Hub Heater, 230 VAC
HUBLCNTR-115/240	Hub Power Center, 115/240 VAC
HUBLCNTR-230	Hub Power Center, 230 VAC
HUBLT-115	Hub Light Kit, 115 VAC
HUBLT-230	Hub Light Kit, 230 VAC

Safety Options	
ANTGND-9	Foundation Installed Grounding Kit
LRK9	Lightning Rod Kit
MANPL94	Maintenance Platform and Ladder Kit
OBWRNLT-UNV	Obstruction Warning Light Kit

Other Options	
209906-2	Lubrication and Maintenance Kit
BRNG-76-KU	Guard, Feed Window Ku-band
FTST	Feed System Testing
TK-MAN-LG	Tool Kit, Large Manual Antennas
TK-MOT-LG	Tool Kit, Large Motorized Antennas

Environment Systems Options	
PDKU-94-208	Precipitation Deviator, 208/230 VAC.
PDKU-94-380	Precipitation Deviator, 380/415 VAC.

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