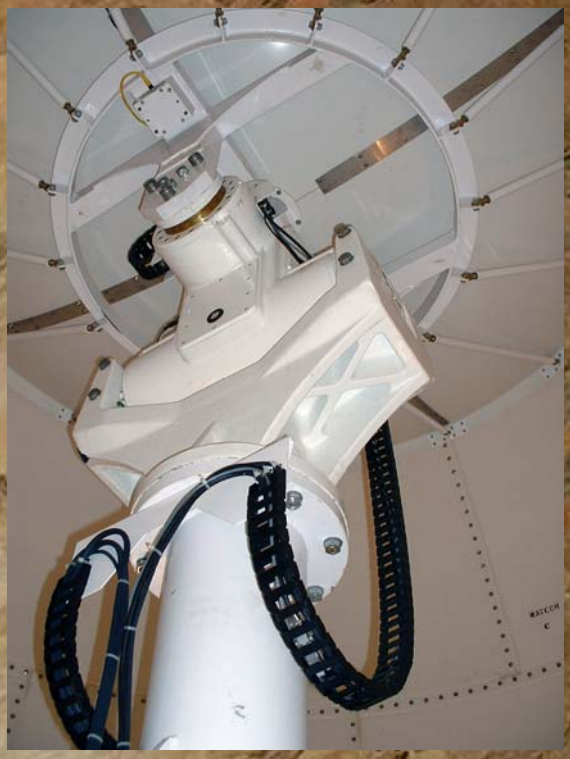
CGC Technology Ltd

ENGINEERING DESIGN & MANUFACTURE

TrackSat Antennas
6.1m



- Professional X/Y Antennas for Low Earth Orbiting (LEO) Satellites.
- Applications - Ideal for Remote Sensing, Communications, and TT & C.
- Science Missions - EOS, NASA - ESSP, Disaster Monitoring Constellation.
- Fixed and Transportable Systems.
- Smooth Tracking to better than 0.1°.
- Low Slew Rates.
- Complete Hemispherical Coverage - No Cone of Silence or cable wrap.
- Antenna Sizes range from 1.8m to 7m.
- Ethernet (TCP/IP) Antenna Control and Monitoring. Browser based operation.
- Options include: Radomes, Anti - Ice Kits, Lightning Protection, Extended Temperature Range. Built-in: GPS Network Time Server; Meteorological Sensors; Webcam.
- Site Installation, Civil Engineering, and Maintenance Contracts.

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Image courtesy of MODIS Rapid Response Project at NASA/GSFC

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6.1m S/X-Band Specification

Positioning System

Degrees of Freedom		Two (X/Y)
Velocity		4º/Sec
Acceleration		10º/Sec/Sec
Lost Motion		0.035º
Position Step Resolution		0.00004º
X/Y Drive Motors		DC Brushless Servo

Reflector

Reflector		6.1m Composite
Type		Prime Focus
Panels		9
Focal Length		2286mm
F/D		0.375

Environmental

Humidity		0 to 100% RH
Rain		Driving, up to 10cm/hr
Temperature	Std Operating:	-20º to +55º C
	Std Survival:	-25º to +60º C
Wind	Operating:	60 km/hr
	Survival:	150 km/hr
Corrosion		Resistant to salt air and spray.

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Clinometer

Angular Range	+/-3 degrees
Resolution	0.0001 degrees
Repeatability	0.0003 degrees
Time Constant	0.15 seconds
Natural Frequency	7Hz
Temperature Coefficient	±0.0002deg/ºC
Output	RS232 NEMA
Operating Temperature	-25ºC to +70ºC

Servo Cabinet

Control Interface	Physical	Ethernet 10/100Base-T Up to 100m using std Cat5e or many Km using fibre optic
	Protocol	TCP/IP
Upper Axis Interface	Motor	PWM Signals & Brake
	Encoder	Hall, Incremental Encoder, Motor Temp, and Limit.
Lower Axis Interface	Motor	PWM Signals & Brake
	Encoder	Hall, Incremental Encoder, Motor Temp, and Limit.
Clinometer Interface		RS232 & +24VDC
Power		220 - 240 Vac, 1ph, 20A

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S/X-Band Feed

Frequency Range	X-Band	8.025 - 8.4GHz
	S-Band	2.025 - 2.3GHz
Polarization		LHCP & RHCP
Axial Ratio		2 dB (max)
VSWR		1.7:1 (max)

X-Band LNA

Frequency Range	8.02 - 8.42GHz
Gain	45.0 dB (min)
Noise Figure	50K (max)
Operating Temperature	-40ºC to +60ºC

X-Band Downconverter

Frequency Range	8.02 - 8.42GHz
Conversion Gain	10 dB
Noise Figure	16 dB
IF Output	720MHz
Operating Temperature	-40ºC to +60ºC
Control	RS422

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S-Band LNA

Frequency Range		2.2 to 2.3 GHz
Gain		68 dB (Max)
Gain Flatness v Freq		±0.5 dB (Max)
Noise Figure @ 23ºC		0.4 dB
Output Power (P1dB)		+13dBm
Input VSWR		1.3:1 Max
Output VSWR		1.5:1 Max
DC Power		+15VDC @ 300mA
Temperature	Operating	-30C to +75C
	Storage	-40C to +85C

Options:

GPS Network Time Server (Optional)

General		12 ch digital GPS Receiver
Output		RJ45 10/100 Network
Timing Accuracy	Network	1-10 mS
	GPS	<1uS, relative to UTC
Power		85 - 260VAC
Temperature		0C to +50C
Humidity		85% (Max)

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Meteorological Sensors (Optional)

Wind Direction	0º to 360º
Wind Speed	4 to 280 Km/hr
External Temperature	-45C to +60C

Webcam (Optional)

Lens	F1.0 varifocal 3-8mm
Viewing Angle	27º to 67º
Focus Range	0.2m to infinity
Resolution	640 x 480
Frame Rate	Up to 30 Frames per Sec
Connections	RJ45 10/100 Network with Power over Ethernet

Extended Temperature Range (Optional)

Temperature	Operating:	-30º to +55º C
	Survival:	-30º to +60º C

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Radome (Optional)

Type	Sandwich Foam Core
Outside Diameter	9.4m
Outside Height	7.8m
Panels	75
Weight	1450 kg
Wind Speed (Max Gust)	200 km/hr
Design Gust Factor	1.1

Electromagnetic Performance

Transmission Loss	X-Band	<0.45 dB
Noise Temperature (5º)	X-Band	<15 K
Cross Polarization	X-Band	<-50 dB
Wet Transmission Loss	X-Band	<1.2 dB

Environmental

Temperature Range		-45ºC to +65º
Solar Radiation Rejection		>90%
Relative Humidity		0 to 100% RH
Fungus Resistance		Fed Std 454
Salt Atmosphere		Mil - Std 810
Precipitation		3.35 kPa
Sand and Dust	1 to 10 microns	0.006g/m³

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