

Market Solutions Unlimited, Inc.

VC-1200 Tracking Antenna

(Prototype Shown Here)



The Model VC-1200 Tracking Antenna System was designed and developed for Satellite Communication requirements located on an unstable platform. The Model VC-1200 Tracking Antenna system is suitable for Ships, Boats, Unstable Oil Platforms, unstable buildings and Vehicles "on the go". The antenna is designed to provide accurate and precise tracking of satellites in a geostationary orbit under conditions where the platform on which the antenna is mounted is very unstable. The antenna will provide precise pointing to within a three-sigma error of less than 0.035 degrees with a C/No of 40 dB/dBk, and up to +/- 25 Deg Roll, Pitch and Yaw of the mounting platform.

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Features

The Model VC-1200 Tracking Antenna System provides the following features

- A 1.2 Meter offset fed antenna with a 1.2 meter main reflector and a 0.3 meter Gregorian shaped sub-reflector.
- An elevation over azimuth pedestal with gear head motors in the Azimuth, Elevation and Polarization Axes.

⇒ An Antenna Control System which provides, Jog, Slew, Position, Program and pseudo Monopulse Tracking modes.



⇒ Software embedded, Antenna Mounted Antenna Control Unit, which can be accessed from any PC through the Ethernet.



⇐ A Three Channel Monopulse Tracking Receiver



⇐ Elevation, Cross Elevation (Azimuth) and Polarization tracking Couplers.

- Easy Installation with interfaces to Power, Ethernet and Signals. No connection to ship gyroscope required.

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SPECIFICATIONS

ITEM

Frequency
Return Loss
Insertion Loss
Tx/Rx Isolation
Feed Interface
Cross Polarization on axis
Cross Polarization within
1 dB Beam width

Tx/Rx Side lobe Level

29 - 25 log □ dBi
8 dBi
32 - 25 log □ dBi
-10 dBi
Midband Gain
Noise Temperature

System G/T (Calculated)

Mechanical

Dish Diameter
Dish Type
Radome
F/D Ratio
Focal Distance
Mount Type
Offset Angle
Elevation Adjustment
Azimuth Adjustment
Polarization Adjustment
Antenna Motorization
Feed Assembly

RF Package

Temperature

Operational
Survival

Rain

Operational
Survival

Ice

Survival

Wind (without Radome)

Wind Loading
Wind Survival

Velocity

Acceleration

Tracking Accuracy

RECEIVE

10.7 - 12.75 GHz
17.7 dB typ
0.3 dB typ
40 dB
WR75
35 dB
35 dB

$2.5^\circ < \theta < 7^\circ$

$7^\circ < \theta < 9.2^\circ$

$9.2^\circ < \theta < 48^\circ$

$48^\circ < \theta$

41.8 dBi

58° K @ 10° EL

19 dB/K typical

1.2 Meters (other sizes available)

Aluminum Gregorian Dual Optics

Fits in Radome with diameter of 2.3 meters

0.635

30 in / 76.2 cm

Elevation over Azimuth

22°

5° to 90° Continuous

360° Continuous

+/- 170°

3-axis servo controlled

Ku-Band TX/RX Cross Polarization linear feed assembly
with Monopulse Tracking in three axes

Integration of RF equipment either customer-furnished or
MSUI supplied

-40° to 50°C

-51° to 60°C

3.1 cm/h

7.6 cm/h

2.5cm (1 inch) radial or 1.3cm (.5 inch) radial+ 100 kph (60 mph)

100 k/h, gusts to 130 k/h

193 k/h

60°/sec

60°/sec²

0.035° with a C/No of 40 dB/DBK, with +/- 25 Deg Roll, Pitch and Yaw

TRANSMIT

13.75 - 14.5 GHz
20 dB typ
0.1 dB typ
80 dB
WR75
35 dB
35 dB

$2.5^\circ < \theta < 7^\circ$

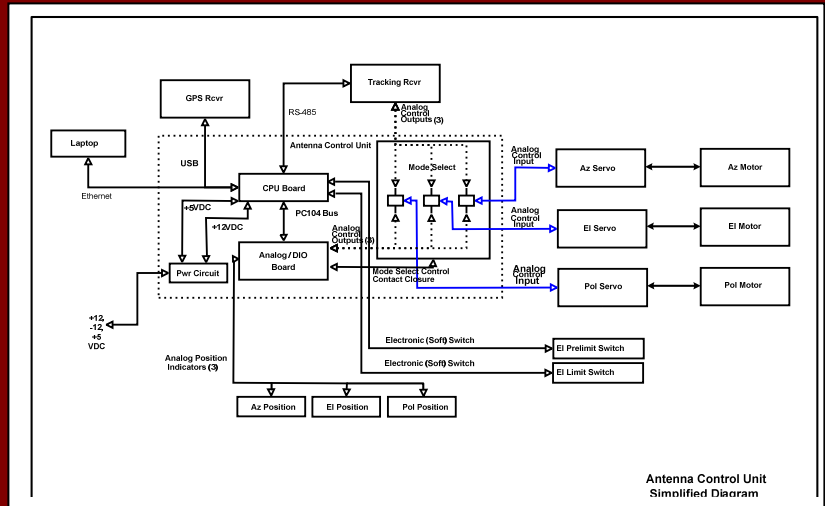
$7^\circ < \theta < 9.2^\circ$

$9.2^\circ < \theta < 48^\circ$

$48^\circ < \theta$

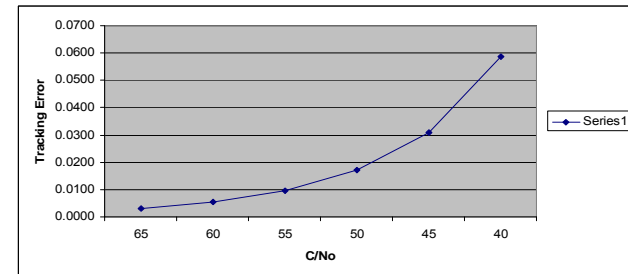
43.5 dBi

53° K @ 30° EL



Antenna Control Unit
Simplified Diagram

Tracking Error Due to Thermal Noise Vs C/No



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