MEOLink

VA-45-KA 4.5 Meter Ka-band Antenna

ViaSat's MEOLink IP trunking terminal enables emerging market telcos and ISPs to offer fiber-like performance for high-speed internet services over O3b's medium earth orbit (MEO) satellite constellation. In combination, the O3b satellites and the MEOLink terminal extend high speed internet access to rural markets over a cost effective satellite connection, making the Internet a truly global and universal experience.

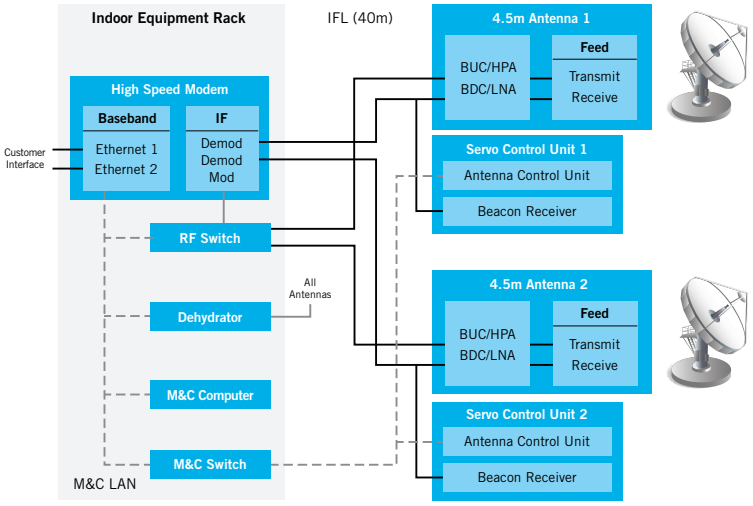
ViaSat's MEOLink terminal includes precision tracking antennas, a high-speed DVB-S2 modem, and an advanced uplink power control system. The system operations are coordinated with the fully automated MEOLink monitor and control system.

DESIGNED FOR PERFORMANCE

ViaSat's pair of 4.5 meter high-precision tracking antennas, designed specifically for the O3b MEO satellite constellation, to keep continuous contact with the satellite constellation. Automatically transferring active links between setting and rising satellites when both are in view enable the continuous (no-break) service. The shaped Cassegrain reflector, stiff precision pedestal and digital servo system combine to provide a high performance Ka-band antenna system.

High precision panels are supported by strong radial ribs attached to a steel hub that is integrated with the elevation housing. The reflector back structure and subreflector spars are designed to withstand stringent wind and gravity loads. Four Spars support a high-precision machined subreflector. The reflector has a solar diffusive coating to minimize the effects of thermal distortions.

The mount is designed to maintain positioning even in adverse wind conditions. Both azimuth and elevation use the same precision bearing with integrated drive mechanism and low backlash.



ANTENNA CONTROL SYSTEM

The servo control system is based on ViaSat's AC-4100 all digital antenna control system. This control system features:

- intelligent digitally controlled servo amplifiers
- high precision on axis optical encoders.
- beacon receiver that provides the signal required to support the step over program track function keeping the antenna pointed at the O3b satellite

EASE OF USE

Designed with service in mind, all of the servo components are easily accessed and can be swapped in minutes, no special tools required. The feed and the feed components are accessible using a standard ladder. The system is outfitted with spring loaded automatic lubrication devices for the main bearings. Standard grease fittings are easily accessible on the outside of the positioner making semi-annual maintenance hassle-free.

MEOLink 4.5M ANTENNA AT-A-GLANCE

- High efficiency shaped Cassegrain optics
- 4-port circularly polarized Ka-band feed
- Precision structural steel mount and riser
- Antenna controller with integrated GPS for precision time
- Step track over program track augmentation for optimized MEO tracking
- Digital servo system with high precision optical encoders
- Mounting provisions for HPAs and converters
- Hot dipped galvanized finish for all pedestal and riser steel components.
- International shipment in one 20' ISO Container

MEOLink VA-45-KA 4.5 Meter Ka-band Antenna

SPECIFICATIONS

ELECTRICAL

Operating Frequency (GHZ)	
» Receive	17.8 – 19.3
» Transmit	27.6 – 29.1
Beamwidth (3 dB)	
» Receive	0.23° typical
» Transmit	0.15° typical
Feed Network	
» 4-port Tx/Rx circular polarization	
» Tx Ports	WR34 Grooved
» Rx Ports	WR42 Grooved
» Transmit Power per port	400 W CW, maximum
» Tx/Rx isolation	≥ 85 dB
» Tx/Tx and Rx/Rx isolation	≥ 18 dB
» Receive Insertion Loss	≤ 0.35 dB
» Transmit Insertion Loss	≤ 0.42 dB
VSWR (Tx/Rx)	1.25:1 at the feed network
Polarization	RHCP & LHCP Sense Selectable
Axial Ratio	≤ 0.85 dB for Tx ≤ 0.90 dB for Rx
Envelope	1°<θ<48° = 32-25logθ >48° = 10 dBi For 80% of all sidelobes
G/T	≥ 32 dB/K at 20° elevation
EIRP	≥ 79 dBW (with 500 W HPA) ≥ 69 dBW (with 40 W HPA)

MECHANICAL

Reflector	
» Optics	Dual reflector, axis-symmetric
» Diameter	4.5 meters
» Panels	16 precision aluminum
» Subreflector	Solid machined aluminum
» Spars	4 aluminum
Mount Type	Elevation over Azimuth
Axis Drives	
» Elevation: Slewing Drive	0.25°/sec
» Azimuth: Slewing Drive	0.5°/sec
Antenna Travel	
» Elevation	0° to 90° continuous
» Azimuth	180° continuous

MECHANICAL (CONTINUED)

SERVO

» Brushless DC Servo Motors
» On-Axis Optical Encoders
» Digital Servo Control
» SGP4 Orbit Determined Program Track
» Step Track over Program Track Augmentation
» Integrated GPS, with available NTP time source

ENVIRONMENTAL

Temperature	-20° C to +48° C (Operational)
Humidity	0 to 100% RH, condensing
Wind	
» Operational	64 km/hr gusting to 96 km/h
» Survival	161 km/hr (stow mode)
Atmospheric Conditions	Salt, pollutants, and corrosive contaminants as found in coastal

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