



SatNet AmerHis Mesh Terminals



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Advantech Satellite Networks AmerHis terminals are full-featured DVB-RCS compliant terminals. These rack-mountable units are a slim 1U form

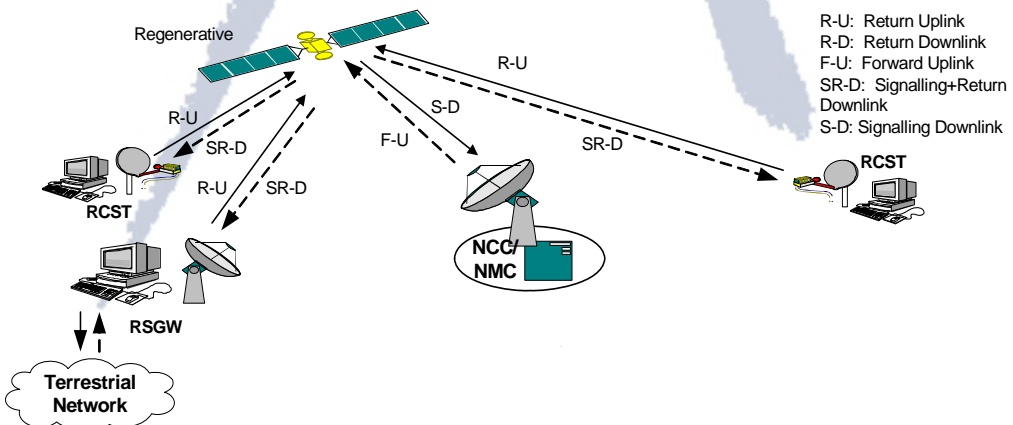
factor. They are configurable and out-of-the box ready for use in the AmerHis Mesh system.

The SatNet AmerHis Terminal offers simple connectivity to your corporate LAN and is one of the fastest satellite interactive terminals available today. A truly corporate solution, the Model 2020 is designed to provide enterprise level quality of service demanded of today's connected world.

As a replacement to your existing T1 or E1 line or as a backup, the Model 2020 always-on performance provides bandwidth when you need it. Designed to support up to 20Mbps on the AmerHis forward link and up to 4 Mbps on the return channel.

> AmerHis System

The AmerHis system is compliant with the standards DVB-S and DVB-RCS. The compatibility with these two standards is combined together with multispot capabilities and full mesh connectivity between the different U/L and D/L beams in the system. This allows User Terminals (RCST) to be directly connected. The Gateways (RSGW) provide access to terrestrial networks. The Network Control Center/Network Management Center (NCC/NMC) is responsible for managing on-board resources and user terminals. The following figure illustrates this new concept:





The main characteristics of the AmerHis system are:

- The up-link uses MF-TDMA according to the DVB-RCS standard, MPEG profile
- The down-link is fully DVB-S compatible
- A digital processor on-board the satellite allows to route MPEG packets from up-link to down-link beams in a flexible way with on-board multicast support
- The system implements a sophisticated connection control scheme, called C2P (note: this is not the same than the SatLabs' CCP protocol), allowing point-to-point as well as point-to-multipoint connections
- The system supports single hop connectivity between users (mesh connectivity) system; C2P allows to establish connection between Gateway and RCST
- The SatNet AmerHis Terminal can be reconfigured to support regular DVB-RCS star and/or AmerHis mesh system through through two different software loads
- Beam coverage: Ku band, Europe, Brazil, North and South America
- The system supports symmetric predictive traffic, as well as bursty traffic generated by a large number of users, owing to dynamic allocation
- The system supports access to external networks via the RSGWs such as PSTN and ISDN as well as private IP networks belonging to ISPs
- The system supports integrated IP based data services
- ISPs can manage their own low-cost gateway (RSGW) and provide Internet access to their subscribers; services such as VoIP and video conferencing can be provided; ISPs choose their own SLAs
- Companies can set up their own VPNs and share their allocated capacity between all their sites; the AmerHis system allows the scheduling of specific connectivity requirements
- The AmerHis payload offers multiplexing and demultiplexing of MPEG-2 transport streams and is therefore capable of offering IP services over MPEG-2 as well as routing video



> **Terminal Features:**

- Up to 20Mbps downstream; up to 4Mbps upstream
- Web Based Control Panel;
- Easy-to-configure Ethernet connectivity to your LAN or Router;
- Complete turnkey solution, you are on-line in hours;
- On-board TCP acceleration and IPSec options
- Application QoS
- Support for Multiple Subnets
- Fully upgradeable design

> **Sample Markets:**

- Enterprise/Corporate
- Government
- WiFi / Community hot spots
- Education
- Telemedicine
- Broadcast / SNG / Content Origination
- Multi-Dwelling/Tenant Units
- Cable Head end/Last Mile

> **Sample Applications:**

Email and Web Browsing, File Transfer, Video Streaming, VPN, VoIP, Cable Head-end, Video Conferencing, Corporate Networking, Multicasting, Broadcasting, Thin client, Video-On-Demand, Backup, Distance Learning, Point-Of-Sale, SCADA.

Especially well suited to delay sensitive applications like VoIP, Video Conferencing, Distance Learning.

> **Frequency Combinations Potential Dimensioning Sets (worst case for Europe and Brazil)**

- Class 1, 512kbps uplink: 1.8m/2W
- Class 2, 1.036Mbps uplink: 1.8m/4W
- Class 3, 2.073Mbps uplink: 2.4M/ 4W
- Class 4, 4.147Mbps uplink: 2.4M/ 8W (external power supply)



> SATNET AMERHIS MESH TERMINAL FEATURES & SPECIFICATIONS

- Sample Services: DVB-RCS, TCP/IP, UDP/TCP, Unicast, Multicast, Broadcast
- Protocols: FTP, HTTP, SNMP, ICMP, IGMP
- Air Interface: DVB-RCS
 - MPEG/DVB-S downstream;
 - MPEG / MF-TDMA upstream: 3 or 4 MPEG packets per burst (Configuration 1) and 1 MPEG packet per burst (Configuration 2) supported
 - 24 MPEG packets per burst (Configuration 3) NOT supported
- Coding: Concatenated Reed-Solomon and Convolutional FEC downstream, Turbo coding upstream
- Modulation: QPSK Receive; QPSK Transmit
- Data Rates: Up to 20Mbps downstream and up to 4Mbps Upstream
- Upstream Burst Rates: 350.988 ks/s (C1), 701.976 ks/s (C2), 1403.952 ks/s (C3), 2807.904 ks/s (C4), depending on beam coverage and ODU size
- Demand assignment: CRA, RBDC, FCA supported
- Network Interface: Ethernet 10/100 BaseT
- ODU Interface: L-Band Rx; L-Band Tx
- IP Networking: DHCP server
- Network Management: SNMP Compatible, Web access, over the air S/W upgrade
- BUC Size: 1-8W, depending on model, internal vs external power supply
- Supply Voltage : 100-240 VAC; 50Hz / 60 Hz
- Certifications : CE, FCC, UL, CSA
- Outdoor Units should be dimensioned for each satellite & application on a case by case basis to satisfy needs & requirements:
 - Data Rate
 - Dish size
 - Tx Power
 - Link Quality
 - Availability



> Amerhis System Coverage Summary (based on Alcatel recommendation)

European Beam:

Symbol Rate	Class 1	Class 2	Class 3	Class 4
ODU Size	1.8m/2W	1.8m/4W	2.4m/4W	2.4m/8W
Frequency band	Extended			
Polarization	Linear, Orthogonal			
Availability	99.5% Uplink; 99.8% Downlink (27 Msps DVB-S)			
Coverage area	Spain and Portugal; Sizing based on worst location: Mahon			

Brazilian Beam:

Symbol Rate	Class 1	Class 2	Class 3	Class 4
ODU Size	1.8m/2W	1.8m/4W	2.4m/4W	2.4m/8W
Frequency band	Standard			
Polarization	Linear, Orthogonal			
Availability	99.5% Uplink; 99.8% Downlink (27 Msps DVB-S)			
Coverage area	Major cities in Brazil vis-à-vis Brasilia, Sao Paulo, Rio De Janeiro, Salvador, Vitoria, Porto Alegre, Curitiba, Belo Horizonte are covered. Sizing based on worst location: Brasilia			

North American Beam:

Symbol Rate	Class 1	Class 2	Class 3	Class 4
ODU Size	1.8m/2W	1.8m/4W 2.4m/2W	2.4m/8W 3.0m/4W	3.0m/8W
Frequency band	Extended			
Polarization	Linear, Orthogonal			
Availability	99.5% Uplink; 99.8% Downlink (27 Msps DVB-S)			
Coverage area	Region identified as NA below; Sizing based on worst location: Miami			

South American Beam:

Symbol Rate	Class 1	Class 2	Class 3	Class 4
ODU Size	2.4m/2W	2.4m/4W	2.4m/8W 3.0m/4W	3.0m/8W
Frequency band	Extended			
Polarization	Linear, Orthogonal			
Availability	99.5% Uplink; 99.8% Downlink (27 Msps DVB-S)			
Coverage area	Major cities in Peru, Ecuador, Colombia, Uruguay, Paraguay and Chile; Sizing based on worst location: Trinidad			