



Features

- Up to n x155 Mbps Throughput *
- Up to n x 135 Mbps per forward link*
- Up to 120 Mbps Return Link*
- Support for thousands of terminals
- DVB-S/S2 RCS and/or DVB-SCPC
- Full Featured
- Up to 8 Mbps inbound per carrier
- DVB-S2 CCM/VCM/ACM outbound maximizes bandwidth efficiency
- Optimized for IP and multi-media content
- Open standard design (DVB-RCS)
- Qualified with multiple IP/DVB broadcast platform vendors
- Interoperable with 3rd party SatLabs certified terminal vendors
- Unique and powerful multi-carrier demodulation technology
- World-class scheduling efficiency, maximizing bandwidth utilization
- Always-on
- User-friendly Network Management System (IMS)
- Multi-Mode DVB-RCS and DVB-SCPC network architecture support
- Mesh Overlay (peer-to-peer) capability
- VCM/ACM, QoS, and TCP acceleration features are standard

*Higher rates available on special order

Overview

Advantech Wireless, a world leader in satellite communications, offers the world's leading, two-way, open standard (DVB-RCS), broadband satellite access system. DVB-RCS Hub, and in particular its Return Link Sub-System (RLSS), is at the heart of the broadband access system.

Hubs (including the RLSS) are turn-key systems which can be installed in days to enable a wide range of public and/or private network topologies with satellite interactive terminals.

The RLSS is a modular hub sub-system which can be integrated with new or installed IP/DVB broadcast platforms and IP switch/routing equipment to provide two-way satellite broadband access services.

The RLSS is designed to receive inbound traffic, handle inbound and outbound signalling, schedule and control networks of satellite interactive terminals (available from multiple suppliers). A single scalable RLSS unit can support networks ranging from just tens to thousands of simultaneously logged-on terminals.

The FLS100 is the outbound equivalent of the RLSS. The FLS100 takes IP traffic and using Multi-Protocol Encapsulation (MPE) transforms the data into an MPEG2 format for transmission on the outbound using its embedded DVB-S/S2 modulator.

System Costs

Advantech Wireless' Hubs and Terminals are highly flexible and several different network architectures are possible. Some key features of the DVB-RCS Hub include:

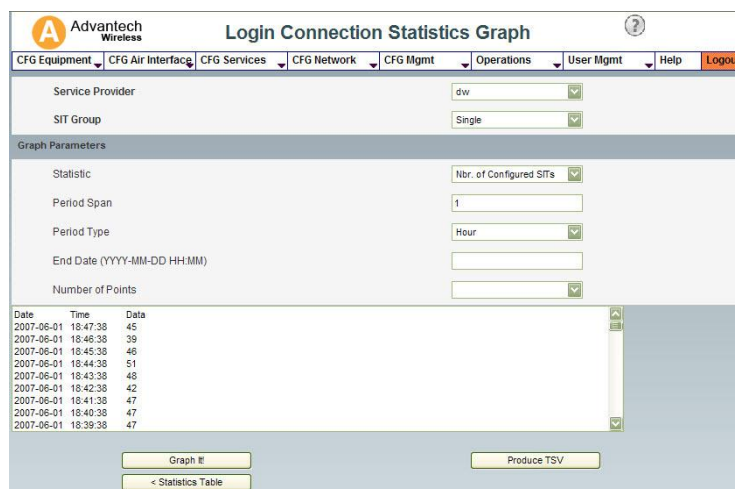
- Multi-carrier demodulation (MCD) card upgradeable to up to 96 carriers by remotely installed software license.
- Frequency independent—hubs, terminals and onboard processors can be operated in any frequency band (e.g., Ku, Ka, C, X or hybrids of these).
- Satellite versatility—the system can operate with the forward and return link on the same satellite, or on different satellites.
- Multi-mode System capability— evolves the DVB-RCS standard one step further by allowing for a centrally managed hybrid DVB-RCS and DVB-SCPC network.
- Terminal diversity—networks can support receive-only terminals at the same time as two-way terminals, as well as both mesh and star topologies of terminals.
- Network Architecture supported – Star, Mesh, OBP

Advantech Wireless' entire system, as well as the DVB-RCS standard, have been designed to minimize the cost of scaling a broadband access network from terminal populations as small as a few tens of terminals to thousands.

Performance of access layer protocols is highly dependent on traffic profile. Advantech Wireless' implementation of DVB-RCS, utilizing dynamic assignment techniques mandated in the DVB-RCS specification, has been specifically designed and tuned for multi-media traffic. In comparison, other VSAT systems are less dynamic and less flexible.

IMS100

Advantech Wireless' has responded to market demands by developing a powerful management system capable of meeting the functional and scalability requirements of a variety of system configurations. The Hubs feature the IMS100, which provides Hub & Network Operator Tools, Service Provisioning Tools and Multiple User Interfaces. The management of SLAs, Return Link and Forward Link Quality of Service (QoS) and the daily management of SITs, is made easy with the use of the IMS100.



Discovery 300 DVB-RCS VSAT Hub





Advantech Wireless Multi-Mode Architecture

The Advantech Wireless multi-mode connectivity offering revolves around taking the DVB-RCS standard and evolving it one step further. The Advantech multi-mode approach delivers open standard benefits to fixed and mobile users. The S5420 VSAT terminal has the ability to be reconfigured between DVB-S/S2/TCC (SCPC) and DVB-RCS (MF-TDMA). Multi-mode operation brings an extra dimension to networks where the need for SCPC connectivity is frequent within the population of terminals but occasional at the individual terminal level.

The hub provides the forward link DVB-S2 modulated service to the multi-mode terminal using the standard DVB-RCS forward link. The return link operates typically in DVB-RCS mode but can switch to a DVB-S/S2/TCC SCPC mode through the hub station NMS which provides centralized management of the system. The switching mechanism, on the return link, between the DVB-RCS TDMA system and the DVB-S/S2/TCC SCPC modes is customer controlled and can be commanded by the hub Operator.

The Multi-Mode solution, with its scalability and flexible mix of DVB-SCPC and DVB-RCS terminals, offers a very cost-competitive solution for any size network. With the addition of the Mesh Overlay capability, Advantech Wireless offers a powerful network architecture that can meet the demanding requirements for virtually any application.

Advantech Wireless Hub Systems Offerings

	Discovery 100	Discovery 200	Discovery 300	Raptor
				
	Standard Rates Supported			
Throughput Mbps*	155	n x 155	n x 155	155
Forward Link Mbps*	135	n x 135	n x 135	135
Return Link Mbps*	24	72 (3x24)	120 (5x24)	24
# of Terminals Supported	10 – 500	100 – 1,500	1,000 +	10 – 500
*Maximum. Other rates are available on special order. n = number of outbound links				

Discovery 300 DVB-RCS VSAT Hub



Air Interface—Outbound

Modulation
Information Rates

DVB-S or DVB-S2, CCM/VCM/ACM, IP over MPEG
QPSK (DVB-S), QPSK, 8PSK, 16APSK, 32APSK (DVB-S2)
Up to 135 Mbps (1Msps to 45Msps)

Air Interface—Inbound

Modulation
Max Burst Info rates

DVB-RCS, IP over ATM or MPEG, Multiple Access Method MF-TDMA
QPSK, 8PSK
128 kbps—8 Mbps

Coding

RS/Convolutional or LDPC on the outbound; Turbo on the inbound

MAC Layer—Inbound

Protocol
QoS
Capacity Requesting
Bandwidth on Demand
(Return Link)

CF-DAMA (Combined Free & Demand-Assigned Multiple Access)
Constant Rate Assignment (CRA), Volume Based Dynamic Capacity (VBDC),
Rate Based Dynamic Capacity (RBDC), Free Capacity Assignment (FCA)
0-8 Mbps updated every 26.5 ms, framed in 1, or 2 ATM or 1 MPEG packet,
with in-band and out-of-band capacity requesting mechanisms

Interfaces

Network
NMS

IP over Ethernet (10/100/1000BaseT)
NetManager™, web interface control, remote terminal management, VNO
3rd Party Equipment—Standard SNMP interfaces available
Frequency Independent (can use any combination of C, Ku, Ka, X, etc.)
Can interface with any frequency at L-band IF frequency

Tx & Rx

RLSS Expansion Options

Additional Return Link
Carriers and Rates
Maximum number
of demodulators

Demodulator is programmable with up to 96 carriers, at rates from
128 kbps—8 Mbps up to a maximum total of 24 Mbps

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Each additional demodulator can provide up to 24Mbps of throughput
Each additional processor can support hundreds to thousands of terminals
Non-redundant and redundant Hub solutions available
in standard rack configurations.

The RLSS is assembled in standard 19" telecom racks.

All RLSS functions are housed in the same unit.

Scaling involves adding additional cards, then additional units
and then additional racks as required to expand terminal and
throughput capacity.

Additional Terminals
Units/Racks

FLSS Expansion Options

Additional Forward Link
Transport Streams and Rates

Up to 5 Forward Links supported
Each forward link 1Msps to 45Msps up to 135 Mbps (option)
Up to 5 FL per rack with 1:N redundancy

Included Features

Fade Countermeasure
PEP & Compression
VoIP
Multicast

VCM/ACM, ClearSky™
TCP/HTTP Acceleration & Data Compression
Virtual Telephony™, Advanced QoS
From hub or from behind remote

Options

Redundancy
Multiple Satellites/Beams
Network Architecture
Geographic Redundancy
Scalability
Mesh
Higher Layer Protocol Options

Non-Redundant, Hitless Hot Redundant, 1:N Redundant
Designed to support multiple satellites in mix of frequencies
DVB-RCS, DVB-SCPC, Multi-mode (DVB-RCS/DVB-SCPC), Mesh/Star
Automatic switchover between geographically redundant gateways
Scalable forward & return link capacities + number of supported remotes
Mesh overlay
IPSec/VPN, VLAN

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Ref.: PB-VSAT-HUB-D300 -12164