HUB6000
SATELLITE HUB (R3.0)

Description

The versatile HUB6000 is the next generation satellite hub designed for data applications over satellite in full compliance with the updated DVB-S2 and DVB-S2X standards as well as ST Engineering iDirect S2 Extensions. The HUB6000 merges cutting edge modulation with the unique combination of traffic shaping and satellite segment bandwidth management. The multicarrier demodulator unit inside the hub integrates three demodulators in one unit which reduces the Total Cost of Ownership (TCO).

Efficiency at the Core

The HUB6000 Satellite Hub embeds the award-winning FlexACM® function. **FlexACM combines a set of advanced technologies which work together to ensure the satellite link is operating at full efficiency.**

These advanced technologies include Adaptive Coding and Modulation (ACM), Cross-Layer Optimization, Noise & Distortion Estimator (NoDE) and Thin Margin Manager (ThiMM). All of them individually reduce the satellite link margin and contribute to optimize the IP link.

New modulation and Forward Error Correction (FEC) codes up to 256APSK in the DVB-S2X standard in combination with innovative technologies such as wideband (up to 72 MBaud), Clean Channel Technology®, and Automated Equalink® 3.0 are embedded in the hub and bring the satellite link to full efficiency.

By increasing the amount of data that can be transferred per transponder the HUB6000 effectively increases business opportunities for service providers.

The performance can be increased even more by adding ST Engineering iDirect's network optimization technologies such as TCP acceleration and compression.

Optimal Availability

The auto-adaptive technology FlexACM embedded in the HUB6000 deals with fading conditions (rain, dust, interference) and inclined orbit satellites with varying throughput patterns.

Thanks to FlexACM these fading conditions will no longer interrupt the transmission between the hub and remote sites nor result in loss of data. The maximum possible throughput can be achieved at all times in accordance with Service Level Agreement (SLA) requirements.

Thanks to the Automatic Uplink Power Control feature it is possible to also combat uplink fading leading to even higher SLAs.

Flexible Business Models

The HUB6000 Satellite Hub provides a scalable and flexible platform which allows the customers to grow depending on their application and investment plan.

The hub brings the unique bandwidth manager feature where both the IP and satellite segment can be shaped. Individual customers are added or removed from the same network. Different services (internet access, VoIP, etc.) can be combined in the same satellite carrier with separate SLA requirements and rate options. Both Committed Information Rates (CIR) and Peak Rates (PIR) are offered in an adaptive environment at various speeds.

The HUB6000 can be configured to match the size and the satellite network configuration (one-way or two-way) independent of speed rate, modulation and amount of return links. Through Gigabit Ethernet interface the hub integrates seamlessly with terrestrial IP networks and equipment. Moreover the hub can be coupled with any industry standard EMS/NMS system.

SPECIFICATIONS

Key Features

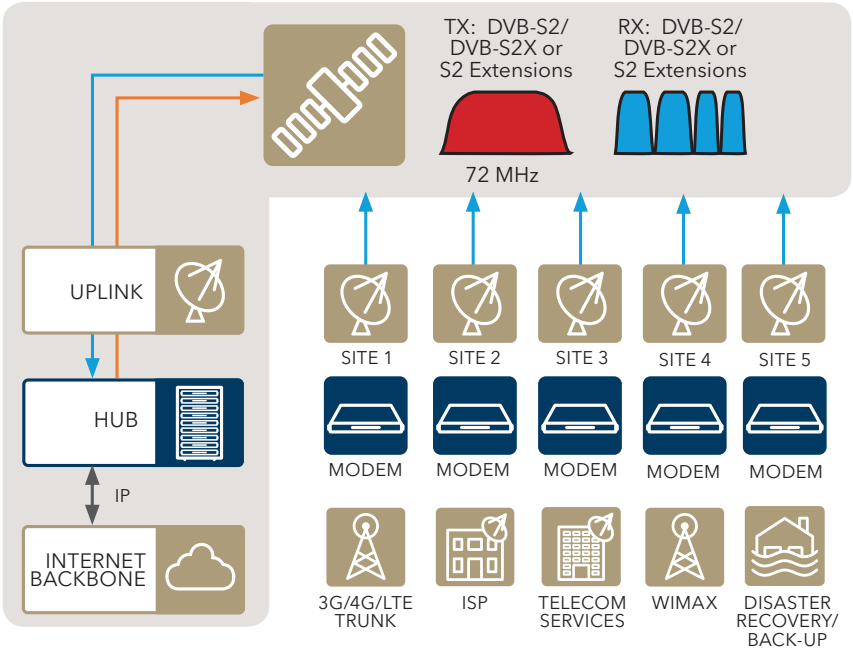
- Data rates up to 425 Mbit/s for handling new applications and lower TCO
- Baudrates upto 72 MBaud to handle all common transponder sizes
- DVB-S2 and optional DVB-S2X (QPSK upto 256APSK) for standard compliant optimal use of bandwidth
- S2 Extensions (up to 64APSK) for optimal closed network operation
- Clean Channel Technology for additional bandwidth efficiency gains by allowing optimal carrier spacing
- Optional Automated Equalink 3.0 for optimal use of semi-saturated transponders
- Help fight RFI by using the optional DVB Carrier ID (DVB-CID)
- All MODCODs and baudrates default enabled for flexible and optimal operation of the network
- Automatic Uplink Power Control for combating uplink fading in the return link
- Optional FlexACM for adaptive environments like variable interference or inclined orbit
- Standard GSE encapsulation for minimal overhead
- Support for MPE, ULE and XPE for working with legacy equipment
- Adaptive traffic shaping and bandwidth management allowing maximal SLA adherence even in case of ACM
- Advanced Quality of Service (QoS) for better customer experience
- Optional Network Optimization (acceleration & compression) components
- Easy integration with terrestrial data networks

Architecture

Depending on the application and the activated features, the HUB6000 Satellite Hub can be used in conjunction with professional modems such as the MDM6000 or EL470.

Applications

- IP Trunking networks
- IP Access networks
- IP Backhauling networks
- Government and Defense networks
- Content Contribution and Distribution over IP
- Corporate networks



Point-to-multipoint

Related Products

MDM6000	Satellite Modem
NOP184x	PEP Servers
NOP183x	PEP Gateways
FRC07X0	Frequency Converters Portfolio
HUB650x	Newtec Dialog Hub
EL470	Satellite Modem

SUPPORT SERVICES FOR YOUR PROFESSIONAL EQUIPMENT

Care Pack Basic and Care Pack Enhanced are the ST Engineering iDirect service and support packages protecting your equipment over a three year period.

Input/Output Interfaces

SYSTEM ARCHITECTURE

- One-way or two-way point-to-multipoint operation
- IPv4 static routing or Ethernet bridging (IPv6,MPLS,VLAN compatible)
- Redundancy as option for Forward (1+1) and Return links (N+1)
- Built with proven FlexACM technology
- Remotes can be purchased separately
- Extendible with more remotes and/or higher speeds as the need arises
- 3x demodulators in one MCD6000 multicarrier demodulator unit

Modulation and Demodulation

SUPPORTED MODULATION SCHEMES AND FEC

- DVB-S2 (acc. ETSI EN 302 307 v1.2.1 for DVB-S2)
  Outer/Inner FEC: BCH/LDPC
  52 MODCODs (short & normal frames):
  QPSK: from 1/4 to 9/10
  8PSK: from 3/5 to 9/10
  16APSK: from 2/3 to 9/10
  32APSK: from 3/4 to 9/10
- Newtec S2 Extensions
  Outer/Inner FEC: BCH/LDPC
  54 MODCODs:
  QPSK: from 45/180 to 144/180
  8PSK: from 80/180 to 150/180
  16APSK: from 80/180 to 162/180
  32APSK: from 100/180 to 162/180
  64APSK: from 90/180 to 162/180
  29 Linear MODCODs:
  8PSK-L: from 80/180 to 120/180
  16APSK-L: from 80/180 to 162/180
  64APSK-L: from 90/180 to 162/180
- DVB-S2X standard
  Outer/Inner FEC: BCH/LDPC
  53 MODCODs (normal frames):
  QPSK: from 1/4 to 9/10
  8PSK: from 3/5 to 9/10
  16APSK: from 26/45 to 9/10
  32APSK: from 32/45 to 9/10
  64APSK: from 11/15 to 5/6
  128APSK: 3/4; 7/9
  256APSK: 32/45; 3/4
  13 Linear MODCODs (normal frames):
  8APSK-L: 5/9; 26/45
  16APSK-L: from 1/2 to 2/3
  32APSK-L: 2/3
  64APSK-L: 32/45
  256APSK-L: 29/45 to 11/15
  41 MODCODs (short frames):
  QPSK: from 11/45 to 8/9
  8PSK: from 7/15 to 8/9
  16APSK: from 7/15 to 8/9
  32APSK: from 2/3 to 8/9
- FlexACM controller (optional)
- FlexACM client embedded in MDM6000 modem (optional)
- Automatic Uplink Power Control

BAUD RATE RANGE

- Modulator: 256 kBaud - 72 MBaud
- Class 1 Demodulator: 1 - 60 MBaud (depending on MODCOD)
- Class 2 Demodulator: 256 kBaud - 72 MBaud

FRAME LENGTH

- Short frames of 16200 bits for DVB-S2 and DVB-S2X
- Normal frames of 64800 bits for DVB-S2, DVB-S2X and S2 Extensions

CLEAN CHANNEL TECHNOLOGY

- Roll-off : 5% -10% -15% -20% - 25% - 35%
- Optimum carrier spacing
- Advanced filter technology

AUTOMATED EQUALINK 2.0

- Linear pre-distortion
- Non-linear pre-distortion for all MODCODs

CARRIER INTERFERENCE REDUCTION

- DVB Carrier ID
  (CID according ETSI TS 103 129 v1.1.1)
- Spread Spectrum Modulator (BPSK)
- Supports User Data
- Compliant to DVB Standard

Interfaces

INPUT/OUTPUT

- User Traffic on Gigabit Ethernet in/out
- M&C connectivity via separate Ethernet links
- All RF Interfaces on extended L-band (950-2150 MHz) or IF (50-180 MHz)

CONFIGURATION/MONITORING

- WEB GUIs to monitor all Newtec devices
- Command line interfaces
- SNMP

Functionalities

- VCM Multistream support
- FlexACM optional
- Supports GSE encapsulation
- Flexible traffic classification on VLAN/MPLS/IPv4/IPv6
- Traffic shaping using Cross-Layer-Optimization to take variable bandwidth into account
- Allows for overbooking and extensive SLA definition
- Optional IP Network Optimization Technology (Acceleration, Compression, Encryption) up to 200 Mbps
- Clean Channel Technology
- Wideband up to 72 MBaud
- Automatic Uplink Power Control
- Basic network monitoring functionality

Implementation Services

- Project management
- Network implementation design
- Hub configuration
- Factory integration and test
- Logistics documentation
- On-site services (3 days) for installation and training
- Remote installation support for remote sites
- Satellite System handover
- Start-up care & customer support hand-over

Physical

- Collection of 1U rack-mountable devices (standard 19 inch rack optional)
- Total number of units depending on configuration
- Minimum 5U for non-redundant one way system
- Cisco Gigabit Ethernet switch included
- Power: 100/240 AC, 50/60 Hz
- Operational Temperature: 10°C-40°C
- CE label on all devices

HUB6000 Technology

FlexACM: Is the unique and market proven end-to-end solution combining a range of technologies to maximise the efficiency of IP applications over adaptive satellite links at optimal efficiency.

S2 Extensions: The DVB-S2X standard, including higher order MODCODs (64APSK), additional FEC factors and smaller roll-off factors (5%, 10%, 15%) improving overall efficiency.

DVB-S2X: the DVB standard with features such as 256APSK, lower roll-offs and more granularity in MODCOD selection for better ACM rate adaption and higher efficiency.

Equalink: Gives significant improvements by pre-distorting the modulated signal resulting in 10% bandwidth gains and higher Quality of Service.

Carrier ID: Is an important part of the solution to mitigate carrier interference, with satellite interference becoming an increasing problem. CID is a signal embedded into a video or data transmission path. It allows satellite operators and end users to identify the source of an interfering carrier.

Clean Channel Technology: Improves satellite efficiency by up to 15% compared to the current DVB-S2 standard by implementing smaller roll- offs (5%, 10%, 15%) and advanced filter technology, thereby allowing optimum carrier spacing.

Cross-Layer-Optimization: Is the satellite modulation equipment in continuous interaction with Acceleration, Compression, Bandwidth Management and IP Shaping technology. As soon as a satellite link condition changes the link will be auto-optimised following Quality-of- Service and Priority Settings without the loss of data or link.

Thin Margin Manager (ThiMM): Offers an accurate prediction of the upcoming variation (depth and direction) of the link condition. As a result, the excess link margin can be kept to the absolute minimum and further increase the efficiency of the link.

Noise & Distortion Estimator (NoDE): Provides the estimation of the amount of linear and non-linear distortion on the received signal in order to provide the real satellite link margin and helps FlexACM to work at maximum accuracy.

ORDERING INFO

ST Engineering

HUB6000 Satellite Hub (R2.0)	Ordering n°
Default Configuration	
DVB-S2/DVB-S2X/S2 Extensions Satellite Hub including: - Ethernet switches, dynamic shaper, multi-site modulation controller - Outbound modulation up to 256APSK & 72 MBaud - Clean Channel Technology - CCM, VCM, Advanced Quality-of-Service (QoS) - AUPC - 10 Mbps - Single thread	**HUB6000**
Configuration Options Category	
	Select 1 option
Outbound rate license (select from drop-down)	10-425 Mbps
	Select 1 option
FlexACM License	yes/no
	Select 1 option
Network Optimization (Acceleration, Compression, Encryption)	yes/no
	Select 1 option
DVB Carrier Identifier	yes/no
	Select 1 option
Automated Equalink Pre-distortion	yes/no
	Select 1 option
DVB-S2X/S2 Extensions Support	yes/no
Configuration Options Inbound	
	Select required option
Return channel Class 2 Demodulator (select # return channels)	1-21
	Select 1 option
DVB-S2X/S2 Extensions Inbound License	yes/no
	Select 1 option
FlexACM Inbound License	yes/no
Redundancy	
	Select 1 option
Dual Power Supplies on Critical devices	yes/no
	Select 1 option
Outbound Redundancy	yes/no
	Select 1 option
Inbound Redundancy	yes/no
	Select 1 option
Rack Option	
	Select 1 option
19 inch Rack for Hub	yes/no

Contact your sales representative for details
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