TDM/TDMA VSAT Mini HUB

UHP-1000 SATELLITE ROUTER

SCPC | TDM/TDMA | Hubless TDMA

VSAT NETWORK

UHP broadband VSAT networks provide a variety of modern telecommunications services to different customer groups – small and large businesses, governmental and individual users. Satellite network ensures global coverage and its services are available virtually everywhere.
It is the fastest and most efficient way to connect a number of remote users into a single global network with service quality comparable or exceeding performance of terrestrial infrastructure in large cities.

The UHP network uses efficient TDM/TDMA bandwidth on-demand multiple access to satellite capacity. The typical UHP network consists of one Hub and a number of associated remote terminals. UHP terminals may operate in hub-and-spoke (star) topology or in mesh mode, when terminals are connected via a single satellite hop bypassing the Hub. UHP terminals require no local management and are fully managed by the Hub.

- World's smallest, powerful TDM/TDMA Hub with on-demand dynamic bandwidth allocation
- Support of any topologies: "hub and spoke", "multilevel tree", "mesh"
- True High Throughput System with up to 86 Mbps in forward channel and up to 6.5 Mbps in return channels
- Easily upgradable to support higher throughputs, more return channels, redundancy and etc.
- DVB-S2 ACM VSAT technology with bandwidth-efficient LDPC coding in TDMA channel
- Innovative MF-TDMA protocol with proven efficiency of 96% in comparison with SCPC channels
- Ultra-low latency VSAT system with round-trip delay about 570 ms for TDMA mode of operations
- Support of VLAN, multi-level QoS, codec-independent handling of real-time traffic, TCP Acceleration
- Built-in adaptive hierarchic traffic shaper specially designed for VSAT applications
- Support of Mesh terminals without any upgrade or commercial license for the Mini Hub
- Pair of Mini Hubs may work in fully automated local- or geo-redundancy providing the highest reliability
- Fast network startup – network is ready for use in less than a minute upon power-up
- Compatible with majority of C, Ku and Ka-band RF systems, supplies power and reference signals
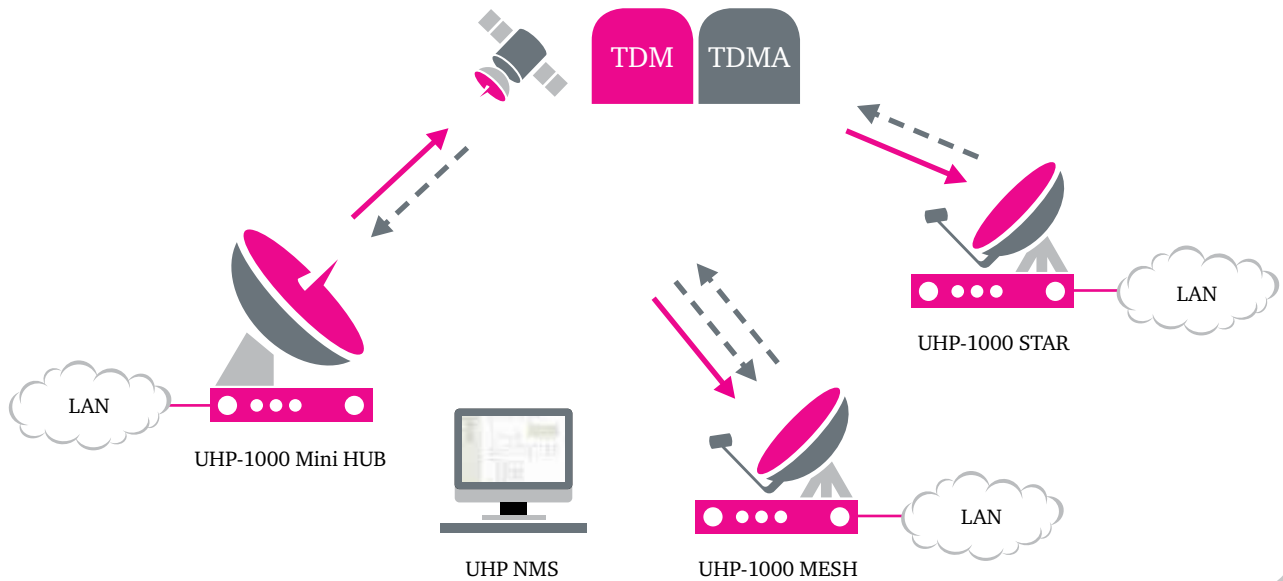
UHP TDM/TDMA Mini HUB

UHP Mini Hub is an entry-level solution based on a single UHP-1000 satellite router which transmits one outbound TDM carrier towards all remote terminals and receives one inbound TDMA carrier shared between all remotes. Additional satellite routers are required to support more inbound carriers or to create redundant Hub configurations. UHP Mini Hub supports TDM/TDMA Mesh feature and allows single-hop connectivity between the remotes via the TDMA carrier. Any UHP-1000 router is software-upgradable to operate as a Mini Hub.

The outbound TDM channel uses the most efficient modulation and coding technologies based on DVB-S2 or DVB-S industry standards. The design of the outbound channel, in combination with the innovative, bandwidth-saving MF-TDMA protocol and LDPC FEC coding in the inbound channel, ensures industry-lowest operating costs and delivery of highest-quality services. UHP technology has unparalleled versatility and minimizes both CAPEX and OPEX, thus guaranteeing the lowest total cost of ownership for satellite networks of any configuration.

Typical Network Diagram of UHP TDM/TDMA Network

TDM TDMA

UHP-1000 STAR

LAN

LAN

UHP-1000 Mini HUB

UHP NMS

UHP-1000 MESH

LAN

UHP-1000 TDM/TDMA Mini HUB SPECIFICATIONS

NETWORK	
Mode of operation	TDM/TDMA, TDM/TDMA Mesh
Number of channels	One forward (TDM) channel and one return (TDMA) channel (expandable up to 250)
Number of remotes	Up to 2040 terminals (expandable up to 500'000)
TDM CHANNEL	
Data Rate	DVB-S: 250 ksps - 34 Msps; DVB-S2: 300 kSps - 32 MSps
Modulation / Coding	DVB-S (QPSK, Viterbi+RS); 1/2, 2/3, 3/4, 5/6, 7/8 DVB-S2 ACM Short Frame (QPSK); 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9 DVB-S2 ACM Short Frame (8PSK); 3/5, 2/3, 3/4, 5/6, 8/9 DVB-S2 ACM Short Frame (16APSK); 2/3, 3/4, 4/5, 5/6, 8/9
QoS	3-level prioritization, traffic policies, CIR, hierarchic 680-channel traffic shaper, FAP
TDMA CHANNEL	
Data Rate	From 133 kbps (100 ksps @ QPSK 2/3) up to 6,5 Mbps (4 Msps @ QPSK 5/6)
Modulation / Coding	QPSK, LDPC

Demodulator Performance, BER $<10^{-7}$			
	FEC	2/3	5/6
	C/N	5.4	6.9

QoS	3-level prioritization, traffic policies, CIR, Group CIR, hierarchic 680-channel traffic shaper
ROUTER	
Performance	Up to 60'000 pps
Support	DSCP, end-to-end VLAN, RIP, L2 Bridging, CRTP, DHCP, IGMP, proxy ARP, TCP Acceleration
Management	HTTP user interface, Network Management System, SNMP, Telnet, Service Monitoring
INTERFACES	
IF Rx	950-2050 MHz (LNB DC – 13.5V/18V 0.75A), F type
IF Tx	950-1750 MHz, –30…- 5 dBm, (LO 10 MHz / +5 dBm, BUC DC – 24V / 2A), F type
MECHANICAL / ENVIRONMENTAL (IDU)	
Power	176-283 VAC, 10 W
Operating temperature	$0^0…+50^0$C, humidity up to 90%
MTBF	200 000 hours (HRD5 methodology, ground fixed, 45 C degrees)
ORDER CODE / MODIFICATIONS	
UHP-1R1-HB	UHP-1000 DVB-S/S2 TDM/TDMA Mini HUB, 1 forward TDM and 1 return TDMA channels