

# UHP-230

## UNIVERSAL SATELLITE ROUTER

SCPC

TDM/TDMA

Hubless TDMA

We pioneered Software Defined UHP Architecture for VSAT in 2005 and successfully installed over 170 UHP VSAT networks worldwide. Innovation continues with the latest UHP-230 - the industry-highest processing capability router, which expands the UHP series of VSAT products. UHP-230 is based on a new advanced hardware platform and is backward compatible with previous generations of UHP routers. It comprises multi-channel DVB and MF TDMA demodulators, a universal SCPC/TDMA modulator and a powerful IP router. The primary application of UHP-230 is in Hub stations, where multiple routers can be cascaded in the rack. This satellite router is also a good fit for complex remote TDM/TDMA or Hubless TDMA terminals with high throughput and multi-mode operation.

Innovative algorithms for network access, resource allocation and data encapsulation as well as advanced modulation and coding, implemented in the UHP routers, ensure efficient utilization of satellite resource.



Multiple demodulators allow simultaneous reception of two TDM or SCPC carriers and group of TDMA mesh carriers from two distinct satellite beams or from two antennas. Universal modulator can instantaneously switch from TDMA burst mode to SCPC mode, thus assuring high data throughput and efficiency.

UHP-230 router is supplied in a compact 1U chassis for installation in a standard 19 inch rack. Built-in AC power supply with high power rating and 10 MHz frequency reference ensure reliable operation of the router itself and of the outdoor RF equipment from multiple vendors. Low power consumption, optional DC power input, and uniquely fast start on power-up facilitate use of alternative power sources, such as solar batteries.

- The world's fastest VSAT router with aggregate throughput up to 450 Mbps and powerful UHP-RTOS™
- Two independent DVB demodulators with separate software-switchable IF inputs and rate up to 65 Msps
- Enhanced DVB-S2 QPSK, 8PSK, 16APSK and 32APSK modulations with 5% or 20% roll-off
- Multichannel MF-TDMA demodulator with innovative protocol and proven efficiency of 96% vs. SCPC
- Adaptive coding and modulation (ACM) in forward and return channels, including SCPC and TDMA modes
- Various modes of operation and topologies: SCPC, TDM/TDMA, TDM/TDMA Mesh, Hubless TDMA
- HTS-ready VSAT with support of multiple beams, bands, satellites reception with traffic balancing
- Superior IP router productivity up to 226'000 pps and rich set of supported protocols, multi-level QoS
- Support of Layer 3 routing architecture and Layer 2 bridging mode with IPV6 transport
- Two Gigabyte Ethernet user's ports with built-in switch simplifies scalability and connection of CPE
- Ultra-low latency VSAT system with round-trip delay about 570 ms for TDMA mode of operations
- The industry's most compact full-scale 1U Hub with scalable MF-TDMA channels
- Support of 1:1 or 1:N automatic redundancy schemes without use of external controllers





## UHP-230 UNIVERSAL SATELLITE ROUTER SPECIFICATIONS (SW v3.4)

### NETWORK

Topology	'point-to-point', 'hub and spoke', 'multilevel tree', 'mesh'
Modes of operation	SCPC, SCPC DAMA, TDM/SCPC, TDM/TDMA, TDM/TDMA MF Mesh, Hubless MF TDMA
Network size	Up to 252 TDMA Inroute channels or MF groups and 500 000 terminals per network
Network role	SCPC modem, TDM/TDMA terminal or Hub, Hubless Slave or Master
Frequency bands	C, X, Ku, Ka, including multi-beam HTS satellites

### SCPC (TDM) CHANNEL - Two demodulators with selectable IF inputs

Modulation	DVB S2 ACM: QPSK, 8PSK, 16APSK, 32APSK; TLC; roll-off 5% or 20%									
Symbol rate	300 ksps - 65 Msps with 1 ksps step; max 53.8 Msps for 32APSK; In dual-demodulator mode 44.5 Msps (8PSK); 33.7 Msps (16APSK); 27.0 Msps (32APSK) max.									
Data rate	200 kbps - 225 Mbps									
C/N threshold levels, dB	FEC	1/3	2/5	1/2	3/5	2/3	3/4	4/5	5/6	8/9
BER <math>10^{-8}</math>	QPSK	-0.9	0.0	1.1	2.7	3.6	4.4	5.0	5.5	6.5
20% roll-off	8PSK	-	-	-	6.1	7.1	8.4	-	9.7	11.3
(+0.1 dB for 5% RO)	16APSK	-	-	-	-	9.4	10.8	11.5	12.2	13.4
	32APSK	-	-	-	-	-	14.6	15.8	16.9	18.4
QoS	8-level prioritization, traffic policies, CIR, MIR, group QoS, hierarchic traffic shaper, FAP									

### TDMA CHANNEL - Up to 4 demodulators with common IF input

Number of channels	1 standalone TDMA or up to 4-channel MF-TDMA group with common IF input									
Modulation	BPSK*, QPSK, 8PSK; ACM; TLC; roll-off 5% or 20%									
Symbol rate	100 ksps - 8 Msps; 1 ksps step; 10 Msps of aggregate rate for all TDMA demodulators									
TDMA Protocol	Frame 50 -1000 ms, 14 slot sizes, manageable minimal bandwidth; slot-to-slot fast MF-TDMA hopping									
C/N threshold levels, dB	FEC		1/2		2/3		3/4		5/6	
BER <math>10^{-7}</math>, 20% roll-off	QPSK		3.1		4.7		5.5		6.6	
(+0.5 dB for 5% RO)	8PSK		8.5		9.1		9.8		11.1	
QoS	CIR, MIR, group QoS, FAP, RT traffic support, day/night, hierarchic manager of TDMA bandwidth									

### ROUTER

Performance	Up to 220'000 packets per second
Support	DSCP, multiple IP/VLANs, NAT, proxy ARP, L2 Bridging, TCP Acceleration, AES-256, Jumbo frames
Protocols	DHCP, IGMP, SNMP, RIP, Sntp, TFTP, cRTP
Management	HTTP interface, SNMP, Telnet, NMS with VNO support

### INTERFACES

User LAN	2 x Gigabit Ethernet, RJ-45
Maintenance console	MiniUSB, B female
IF Rx (two inputs)	950-2150 MHz (LO 10 MHz/+5 dBm, 13.5/18 VDC 0.75 A), F type
IF Tx	950-1750 MHz (optionally up to 2150 MHz), -45... - 5 dBm, (LO 10 MHz/+5dBm, 24VDC/2A), F type

### MECHANICAL / ENVIRONMENTAL (IDU)

Power	90-264 VAC, 10 W; optional 24 VDC or 48 VDC
Operating temperature	0°... +50° C, humidity up to 90%
Size / Weight	440x44x172 mm / 1.7 kg
Applicable products	UHP-230-ST; UHP-230-HB; UHP-230-HA; UHP-230-IC; UHP-230-FM; UHP-230-FS; UHP-230-SC; UHP-230-SA



\* Available with future SW releases

