



COMTECH™



Comtech ELEVATE CEL-100 Series

Broadband Satellite Router

High-Throughput Satellites (HTS) open unprecedented opportunities for networking over satellite. Comtech ELEVATE CEL-100 is a high-performance router designed specifically for large scale deployment in broadband VSAT networks operating over HTS. Comtech ELEVATE combines industry leading software-defined MF-TDMA platform with high performance, efficiency, scalability, flexibility, and agility.

Comtech CEL-100 router can process 150K IP packets per second, 225Mbps of traffic and two carriers up to 500Mps, it can do this in a super-compact size, with low power consumption (less than 8W) and with best utilization of the satellite resource, as evidenced by up to 256APSK modulation, 5% spectral roll-off, adaptive modulation and coding, adaptive power control and 97% efficient TDMA protocol.

Comtech ELEVATE CEL-100 is equipped with two high-speed DVB-S2/S2X demodulators together with their independent IF inputs and front ends.

The router can simultaneously receive two carriers transmitted via two different satellite beams.

Customer Benefits:

- High-performance Satellite Router for TDM/TDMA networks with aggregate throughput up to 260Mbps
- Two 500Mps DVB demodulators with separate IF inputs
- Efficient DVB-S2/S2X modulations with support for wideband HTS transponders
- MF-TDMA modulator with innovative protocol and proven efficiency of 97% compared to SCPC
- Adaptive coding and modulation and transmission power control in forward and return channels
- Ultra-low latency VSAT system with round-trip delay about 570 ms for TDMA mode of operations
- Superior IP router productivity up to 150K PPS, rich set of supported protocols
- Dual-stack IPv6/IPv4 routing architecture and Layer 2 bridging
- GTP header compression and acceleration
- Support of VLAN, multilevel QoS, codec independent handling of RT traffic, TCP acceleration, AES encryption
- Two Ethernet user ports with built-in switch simplify connection of CPE and maintenance
- Doppler compensation, preloaded coverage maps, OpenAMIP and automatic network roaming
- High reliability with over 200 000 hours MTBF



Specifications

Network

Topology	Star, Dual-Gateway
Modes of operation	TDM/TDMA Star terminal,, TDM/TDMA Rx-only, SCPC Demodulator, Spectrum Analyzer
Frequency bands	C, X, Ku, Ka, including multi-beam HTS satellites GEO/MEO/LEO

Demodulators

DVB Demodulator

Standard	DVB-S2 / DVB-S2X ACM
Channels	2 with selectable IF inputs
MODCODs	QPSK to 256APSK
Symbol Rate	300 ksps - 500 Msps
Roll-Off	5%, 20%

Modulator

TDMA Modulator

MODCODs	BPSK, QPSK, 8PSK, 16APSK / LDPC
Symbol Rate	100 ksps to 11 Msps. MF Hopping
Multi-frequency	Fast MF hopping
Roll-Off	5%, 20%
Spreading	Factors 2 and 4, max. 11.7 Mcps



Routing & QoS

Protocols	IPv4/IPv6, IGMP, cRTP, SNMP, RIPv2, SNTP, TFTP, PPP, DHCP, DHCP Relay, OpenAMIP
Support	DSCP, multiple IP/VLANs, PAT, proxy ARP, L2 Bridging, TCP & GTP Acceleration, Jumbo frames (2KB MTU), AES-256, X.509
QoS	8-level prioritization, traffic policies, CIR, MIR, group QoS, hierarchic traffic shaper, FAP
Performance	Up to 150K packets per second
Management	HTTP interface, SNMP, Telnet, NMS

Spectrum Analyzer (Optional)

Bandwidth	950-2150 MHz; accuracy: ±0.01%
Sweep time	1-2 sec
Span	Span 10 kHz - 1200 MHz; accuracy: ±1.8%
Measurement range	30 dB; Accuracy: ±6 dB; Relative: ±0.15 dB

Interfaces

User LAN (1XX-ST)	2 x Fast Ethernet 10/100 Base-T
User LAN (1XX-STG)	2 x Giga Ethernet 10/100/1000 Base-T
Maintenance	MiniUSB, B female
IF Rx (both inputs)	950-2150 MHz; Ref. 10 MHz/+5 dBm [RX1]; 13.5/18 VDC 0.75A; F type; 22 kHz Tone
IF Tx	950-2400 MHz, -1...-46 dBm; Ref. 10 MHz/+5 dBm; 24V/3A; F type



Model	Housing	LAN	Dimensions (mm)	Weight (Kg)	Operating voltage	Operating temperature	Humidity, non-condensing
CEL-100-ST	Compact	2 x Fast Ethernet	147x30x144	0.5	24 VDC or 100-240 VAC, 10W	0...+50 °C	Up to 95%
CEL-100-STG	Compact	2 x Giga Ethernet	147x30x144	0.5	24 VDC or 100-240 VAC, 10W	0...+50 °C	Up to 95%
CEL-110-ST	Board	2 x Fast Ethernet	130x20x140	0.1	24 VDC, 10W	-40...+60 °C*	Up to 95%
CEL-110-STG	Board	2 x Giga Ethernet	130x20x140	0.1	24 VDC, 10W	-40...+60 °C*	Up to 95%
CEL-120	Outdoor	1 x Giga Ethernet	157x90x318	2.3	24 VDC, 10W	-40...+60 °C	IP64-class
CEL-130	Rackmount	2 x Giga Ethernet	440x44x170	1.7	24 VDC or 100-240 VAC, 10W	0...+50 °C	Up to 95%
CEL-140	Dual	2 x Giga Ethernet	440x44x170	2.0	24 VDC or 100-240 VAC, 20W	0...+50 °C	Up to 95%

*Operation up to 60°C ambient is supported, provided that adequate airflow and heat dissipation are ensured by the integrator.

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About Us

Comtech Telecommunications Corp. delivers trusted mission-critical communications solutions used by military forces, government agencies, public safety organizations, mobile network operators and communities around the world. With nearly 60 years of global communications technology leadership, Comtech provides secure, resilient systems proven to perform in the world’s most demanding environments. Through advanced satellite and space communications systems and Allerium’s Next Generation 9-1-1 emergency services and location-intelligence platforms, Comtech delivers reliable connectivity across orbit, network and ground to keep essential missions, services and communities connected when it matters most. For more information, please visit comtech.com.

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