



# 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 the industry leading software defined UHP MF-TDMA platform with high performance, High – efficiency Dynamic Network Access (H-DNA) technology to create a VSAT platform with industry leading performance, efficiency, scalability, flexibility, agility. CEL-100 router can process 150 000 IP packets per second, 225 Mbps of traffic and two carriers up to 500 Msps, it can do this in a super-compact size, with low power consumption (less than 8W) and with best utilization of the precious 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 and TDM/D-RAM networks with aggregate throughput up to 220 Mbps
- Two 500 Msps 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 150 000 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
- H-DNA (High – efficiency Dynamic SCPC Network Access )
- Two Ethernet user ports with built-in switch simplifies connection of CPE and maintenance
- Doppler compensation, preloaded coverage maps, OpenAMIP and automatic network roaming
- Highest reliability with over 200 000 hours MTBF



# Specifications

## Network

Topology	Star, Dual-Gateway
Modes of operation	TDM/TDMA Star terminal, TDM/DRAM Star terminal, TDM/DRAM 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%

### Universal D-RAM 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

#### HDNA Modulator

MODCODs	BPSK to QPSK 16ARY
Symbol Rate	40 ksps to 5 Msps.
Roll-Off	5%, 10%, 20%

## Routing & QoS

Protocols	IPv4/IPv6, IGMP, cRTP, SNMP, RIP, 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 150 000 packets per second
Management	HTTP interface, SNMP, Telnet, NMS

## Spectrum Analyzer (Optional)

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

## Interfaces

User LAN	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
IF Tx	950-2150 MHz, -1...-46 dBm; Ref. 10 MHz/+5 dBm; 24V/3A; F type



Model	Housing	Dimensions, mm	Weight, kg	Operating voltage	Operating temperature	Humidity, non-condensing
CEL-100	Compact	147x30x144	0.5	24 VDC or 100-240 VAC, 10W	0...+50 °C	Up to 95%
CEL-110	Board	130x20x140	0.1	24 VDC, 10W	-40...+60 °C	Up to 95%
CEL-120	Outdoor	157x90x318	2.3	24 VDC, 10W	-40...+60 °C	IP67-class
CEL-130	Rackmount	440x44x170	1.7	24 VDC or 100-240 VAC, 10W	0...+50 °C	Up to 95%
CEL-140	Dual	440x44x170	2.0	24 VDC or 100-240 VAC, 20W	0...+50 °C	Up to 95%

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## About Us

Comtech Telecommunications Corp. is a leading global technology company providing terrestrial and wireless network solutions, next-generation 9-1-1 emergency services, satellite and space communications technologies, and cloud native solutions to commercial and government customers around the world. Our unique culture of innovation and employee empowerment unleashes a relentless passion for customer success. With multiple facilities located in technology corridors throughout the United States and the world, Comtech leverages its global presence, technology leadership and decades of experience to create the world's most innovative communications solutions.

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Rev. EL-2.0 02/02/2023