

# COMMERCIAL BROADBAND MODEM 400 (CBM-400)

## Multi-Mission Satellite Modem

### Multi-waveform software-defined modem enabling network interoperability and operational flexibility with FIPS 140-2 Level 2 Certified Transmission Security (TRANSEC)

The Viasat CBM-400 is a highly adaptable SATCOM modem platform delivering more bandwidth efficiency, interoperability, and security to mobile, on-the-pause, and fixed communications.

### Up to 400 Mbps total throughput for enterprise and tactical applications

With speeds up to 400 Mbps, the WGS-certified CBM-400 delivers satellite broadband performance for airborne, ground, nomadic, and fixed applications. Multiple form factors can be integrated into VSAT terminals or custom enclosures. Mobile users can pair the modem with an ultra-compact antenna on ground vehicles or aircraft to send and receive full HD video, voice, and data.

### Maintains interoperability with existing networks while enabling access to new high-speed networks

Benefiting from a software-defined architecture that includes waveforms for every topology, the CBM-400 platform is ready for a broad range of satellite networking challenges or operational environments: star and full-mesh networking with the LinkWay® waveform; point-to-point/point-to-multipoint networking with EBEM; airborne mobility with ArcLight® waveforms; and two integrated high-performance DVB-S2 integrated receiver decoders. The CBM-400 enables users to access Viasat's high-capacity networks when paired with a compatible feed assembly.

### Significantly reduces integration complexity and life cycle costs

A single CBM-400 solution significantly reduces the life-cycle cost associated with deploying, operating, maintaining, and upgrading a network. The CBM-400 collapses multiple hardware variants into a single modem, delivering operational and capital savings by minimizing the expense of procurement and integrated logistics support (ILS). The 1U CBM-400/E version operates as a LinkWay Network Control Center (NCC) and Master Reference Terminal (MRT), reducing the amount of equipment required.



## VIASAT CBM-400 AT-A-GLANCE

### One Platform for Multiple Missions and Networks

- › Serves multiple missions simply by switching waveforms
  - Full Mesh, Star, and Hybrid topologies with Comms-at-the-Halt and Comms-on-the-Move using the LinkWay® MF-TDMA waveform
  - High efficiency point-to-point networking using the FDMA Enhanced Bandwidth Efficient Modem (EBEM) waveform
  - Airborne and ground mobility communications using the ArcLight®1 and ArcLight®2 waveforms
  - Software-upgradeable for protected and future waveforms
- › OpenAMIP support for integration with compatible antennas when using LinkWay® and ArcLight® waveforms
- › Reduced logistics footprint
- › Operates on C, X, Ku, and Ka-band satellite frequencies
- › Available in rack-mount, embedded card set, ruggedized outdoor, ruggedized airborne, and 1/2-ATR enclosures - contact Viasat for additional information on standard or custom enclosures
- › The Ruggedized CBM-400 serves as the base of the MMT-600 and BAT-1350, both Viasat multi-band, multi-waveform terminals
- › Resilient LinkWay® mode available with optional feature license
- › Optional software support, maintenance, and extended warranties available

### Broadband for Bandwidth-Demanding Applications

- › HD video, high-resolution imagery, C2, SA
- › Internet, VPN, VTC, secure voice, email, and data

### High-Speed SATCOM with Bandwidth Efficiency

- › ArcLight®, LinkWay®, and EBEM are WGS Certified
- › 400 Mbps combined throughput
- › High-performance transmitters and receivers support FDMA operation up to 60 Msps
- › Dual DVB-S2 receivers, each supporting up to 170 Mbps IP Layer 3 traffic

### Viasat High-Capacity Ka-Band (HCKa) Service

- › Compatible with Viasat's High-Capacity Ka-band services providing broadband connectivity with reduced cost and complexity

### Security

- › FIPS 140-2 Level 2 Certified TRANSEC
- › Automatic over-the-air authentication, re-keying, and zeroization

# Viasat CBM-400

## Specifications

### LINKWAY® TRANSMITTER AND RECEIVER

<b>Symbol Rates</b>	Up to 10 Msps
<b>Data Rates</b>	Up to 14 Mbps
<b>Modulation (Code Rates)</b>	BPSK ( $\frac{1}{3}$ , $\frac{1}{2}$ , $\frac{2}{3}$ ); 2x and 4x spreading QPSK ( $\frac{1}{2}$ , $\frac{3}{4}$ , $\frac{3}{8}$ , $\frac{5}{8}$ ) 8PSK ( $\frac{3}{4}$ , $\frac{4}{5}$ , $\frac{5}{7}$ )
<b>FEC</b>	DVB-RCS Based
<b>TRANSEC</b>	AES 256 FIPS 140-2 Level 2 Certified
<b>CBM-400/E</b>	CBM-400/E variant serves as 1U combined NCC and MRT
<b>Optional Features</b>	Commercial Key Fill, ACSM, Resilient mode, OSPFv2

### EBEM TRANSMITTER AND RECEIVER IAW STANAG 4486

<b>Symbol Rates</b>	Up to 60 Msps
<b>Data Rates</b>	Up to 155 Mbps
<b>Modulations</b>	BPSK, QPSK, 8-PSK, 16-PSK
<b>FEC/Code Rate</b>	Turbo $\frac{1}{2}$ , $\frac{2}{3}$ , $\frac{3}{4}$ , $\frac{7}{8}$ , $\frac{1}{20}$
<b>TRANSEC</b>	AES 256 FIPS 140-2 Level 2 Certified
<b>Supported Features</b>	Information Throughput Adaptation, Full-Duplex (SMAT) and Simplex (PKI) Encryption, Automatic Uplink Power Control, Ethernet Bridge Mode, PPPoE

### SIMULTANEOUS DUAL-DVB-S2 RECEIVERS

<b>Symbol Rates</b>	1 to 50 Msps
<b>Data Rates</b>	Up to 170 Mbps
<b>Demodulation</b>	BPSK, QPSK, 8PSK, 16APSK
<b>FEC</b>	DVB-S2 code rates $\frac{1}{4}$ to $\frac{9}{10}$

### ARCLIGHT® 1 & 2

<b>Symbol Rates</b>	Up to 52 Msps
<b>Modulations</b>	ACSM: pi/2-BPSK, QPSK, 8-PSK, 16-PSK(1x to 5x spreading on pi/2-BPSK and QPSK); CRMA: GMSK
<b>FEC/Code Rate</b>	ACSM (DVB-S2 FEC): $\frac{1}{4}$ to $\frac{9}{10}$ ; CRMA (PCCC FEC): $\frac{1}{3}$

### VIASAT HIGH-CAPACITY SERVICE

<b>Support Service</b>	Viasat HCKa service when paired with compatible feed
	Standard plans of 52x5 Mbps and 15x5 Mbps (Downlink x Uplink)
	Tailored plans available

### INTERFACES

<b>IF Interfaces</b>	TNC or SMA; VSWR 2:1; 950-2050 MHz
<b>IF Interfaces (DVB-S2)</b>	TNC or SMA; VSWR 2:1; 900-2150 MHz
<b>Tx Interface Output Power</b>	-35 to +10 dBm
<b>Rx Interface Noise</b>	-140 to -90 dBm/Hz
<b>Reference to BUC, LNB</b>	10 MHz, -5 to 0 dBm output on IF interfaces
<b>ODU Power</b>	BUC up to 2.5A @ 18 or 24 VDC (rack mount) or up to 4 A @ external 18 to 52 VDC input (passthrough); LNB up to 500 mA @ 13, 18, or 21 VDC
<b>Ethernet</b>	4x RJ-45 10/100/1000: Data, Control, Expansion
<b>USB</b>	2x USB 2.0, USB-A Female
<b>Timing Reference</b>	50-Ohm, dual 5 MHz, 10 MHz or 1 PPS -5 to +5 dBm input or +10 to +13 dBm square-wave output
<b>ARINC 429</b>	4-channel receiver
<b>Miscellaneous</b>	RJ-45 with dual RS-232 or one RS-422 for ACU control, GPS NMEA-183 receiver, console port
<b>Antenna Control</b>	OpenAMIP v1.16 using LinkWay® and ArcLight®

### ENCLOSURES AND ENVIRONMENTAL

#### Rack Mount Enclosure

<b>AC Powered</b>	100 to 240 VAC, 47 to 63 Hz; 100 W typical
<b>Dimensions (W x H x D)</b>	17.0 x 1.75 x 14.0 in; 43.2 x 4.5 x 35.6 cm
<b>Weight</b>	<9 lb
<b>Temperature</b>	-40° to 60°C Operational, -40° to 70°C Storage; convection cooled
<b>Humidity</b>	Up to 95%, non-condensing

#### Card Set with Enhanced Heat Spreader

<b>DC Powered</b>	22 to 30 VDC; 60 W typical
<b>Dimensions (W x H x D)</b>	6 x 2.5 x 9.5 in; 15.2 x 6.4 x 24.1 cm
<b>Weight</b>	<4.5 lb
<b>Temperature</b>	-40° to 60°C Operational, -40° to 70°C Storage
<b>Humidity</b>	Up to 95%, non-condensing

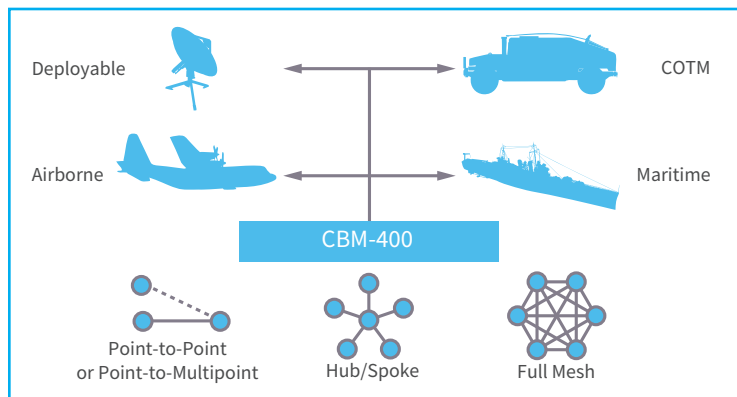
#### ½ ATR

<b>DC Powered</b>	26 to 30 VDC; 100 W typical
<b>Dimensions (W x H x D)</b>	4.88 x 7.62 x 13.5 in; 12.4 x 19.4 x 34.3 cm
<b>Weight</b>	<19 lb
<b>Temperature</b>	-40° to 60°C Operational, -54° to 70°C Storage; conduction cooled

#### Ruggedization

#### Ruggedized Outdoor Enclosure

<b>DC Powered</b>	10 to 36 VDC; 60 W typical
<b>Dimensions (W x H x D)</b>	8.90 x 3.25 x 13.80 in; 22.6 x 8.3 x 35.1 cm
<b>Weight</b>	<13.5 lb
<b>Temperature</b>	-40° to 60°C Operational, -40° to 70°C Storage; conduction cooled
<b>Ruggedization</b>	MIL-STD-810G, MIL-STD-461G, MIL-STD-1275D, IP-67



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