



COMTECH™

DCG-6052 Software-Defined Modem



Overview

Comtech's next generation Digital Common Ground (DCG) product portfolio is designed to enable new assured multi-orbit, multi-waveform communications capabilities for Government and commercial users across the globe. With a software-defined core, Comtech's Digital Common Ground (DCG) product portfolio is designed to deliver industry leading performance and flexibility — enabling warfighters and commercial users to maintain the information advantage needed in today's technology-driven society.

The DCG product portfolio provides the building blocks needed to enable the trusted, multi-orbit, all-digital communications systems of the future. The DCG product portfolio's open architecture rapidly adapts for specific mission or communication needs. It represents a transition away from stovepipes and siloed communication systems toward an open and flexible ground architecture.

DCG-6052 with dual modulators and demodulators is designed for remote terminals, offering high performance operation over GSO and NGSO constellations in different form factors.

Customer Value and Operational Benefits

Digital Transformation: Comtech's DCG product portfolio is designed to align with digital transformation and modernization initiatives to support the evolution of SATCOM infrastructures across commercial and government markets—enabling significantly enhanced flexibility, interoperability, and ease of operation while also reducing cost and removing complexity of operations.

The DCG product portfolio is Digital IF compliant in accordance with IEEE-ISTO 4900-2021.

Security: Comtech incorporates modern cybersecurity design principles at every level across its DCG product portfolio — ranging from a trusted supply chain to a thoughtful software upgrade lifecycle, including in-field updates. The DCG product portfolio assures secure over-the-air communications through multi-stream FIPS 140-3 Level 2 validated Transmission Security.

Superior Performance: DCG-6052 offers industry leading performance at remote terminals with multi-gigabit throughput in different form factors.

Enhanced Situational Awareness: The data-centric architecture of the DCG product portfolio enables seamless information exchange and facilitates a shared understanding of the battlespace, crucial for informed decision-making.

Multi-Orbit Capability & Improved Interoperability: The DCG product portfolio offers robust access to multi-orbit capabilities across commercial and purpose-built networks.

Waveform Flexibility: DCG-6052 supports a variety of waveforms including DVB-S2X, DSSS and EBEM. With a software defined core, Comtech's DCG product portfolio can easily add new waveforms and integrate new capabilities tailored to specific mission needs.

Typical Users & Applications

- US DoD and Coalition Partners
 - Aligned with DoD and coalition modernization priorities, supporting commercial and government satellite operations on a single common platform that can be reconfigured rapidly to address changing operations needs
 - Frequency and waveform flexible – blended satellite networks (commercial and DoD), including support for traditional and upcoming GEO platforms alongside modern LEO, MEO, and HEO constellations
 - Supporting in-field upgrades for modern satellite systems that are being developed in spiral upgrades, rather than a one-and-done design as was done in the past
 - Data-centric infrastructure – getting the right actionable intelligence to the right place as rapidly as possible
 - Aligned with modern cybersecurity design principles with an eye towards designing in cybersecurity at every level ranging from a trusted supply chain to a thoughtful software upgrade lifecycle, including in-field updates
 - Secure over-the-air communications through multi-stream FIPS 140-3 Level 2 TRANSEC
- MNOs, Telcos, Satellite Operators & Service Providers
 - High throughout multi-orbit connectivity
 - Aero, Maritime & Land mobility
 - Cell backhaul & Trunking
 - Fiber restoral
 - Disaster recovery

Key Features

- High performance software defined digital modem platform
- ODU and IDU packages with 2 modulators and 2 demodulators
- Multi-orbit capability supporting GSO and NGSO operation
- mPower Sovereign Operation
- Multi-waveform capability including DVB-S2X, DSSS and EBEM
- Digital Intermediate Frequency Interoperability (DIFI) compliant
- Up to 500 Msps symbol rate per carrier
- Up to 7 Gbps aggregate throughput
- Layer 2 (bridge) operation
- FIPS 140-3 Level 2 TRANSEC (Validation pending)
- MIL STD 188-165B
- Up to 4 1GbE ports for traffic and management (package dependent)
- Dual 10GbE ports for traffic (package dependent)
- 10GbE DIFI port (package dependent)
- Extended L-band: 950 to 2,450 MHz
- SNMPv3

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Specifications

Packaging	Outdoor Unit (ODU) IDU for terminal integration and rackmount unit (Future)
Mods/Demods	2 modulators and 2 demodulators
Waveform	DVB-S2X with ACM, Normal Frame EBEM (NATO STANAG 4486 Ed4) Direct Sequence Spread Spectrum (DSSS)
Modulation	DVB-S2X: QPSK, 8PSK, 16APSK, 32APSK, 64APSK, 128APSK, 256APSK EBEM: BPSK, QPSK, 8PSK, 16APSK DSSS: BPSK
Symbol Rate / Chip Rate	DVB-S2X: Up to 500 Msps per carrier EBEM: Up to 60 Msps per carrier DSSS: Up to 500 Mcps chip rate per carrier
Aggregate Data Rate	Up to 7 Gbps without TRANSEC Up to 6 Gbps with TRANSEC
Operating Frequency Range	950 to 2,450 MHz in 100 Hz steps
Digital IF	Compliant with Digital IF Interface (DIFI) standard IEEE-ISTO 4900-2021 Version 1.2 (Future)
TRANSEC	FIPS 140-3 Level 2
Built-in Test (BIT)	Fault and status reporting, BER performance monitoring, IF loopback, CW test modes, programmable BER test modes
Unit Management	Fault and status reporting, link performance, test modes SNMPv3

Modulator (L-band)

Output Power	0 to -40 dBm, 0.1 dB step
Output Return Loss	9.5 dB
Output Impedance	50 Ω
Output Accuracy	± 1.0 dB over frequency and temperature
On/Off Power Ratio (All modulators off)	-70 dBm across any 3 MHz BW -80 dBm across any 30 kHz BW
Output Spectrum	Selectable, Meets MIL-188-165B and DVB-S2X IAW ETSI EN 302-307-2
Spurious	Not to exceed -70 dBm over 10 kHz bandwidth
Harmonics	Not to exceed -70 dBm over 10 kHz bandwidth
BUC Reference	10 MHz

Demodulator (L-band)

Input Carrier Power (Single carrier)	-130 dBm/Hz + E_{Sym}/N_0 + 10 log SR [dBm] to -7 dBm, where SR is the symbol rate in symbols/sec and E_{Sym}/N_0 is the specified threshold performance value for a BER of 10^{-8}
Maximum Composite Power	0 dBm
Carrier Acquisition Range	± 30 kHz
Input Return Loss	9.5 dB
Input Impedance	50 Ω
LNB Reference	10 MHz

Interfaces (ODU)

Traffic & Management	4 x 1GbE, RJ-45
L-band TX	2 x TNC, 50 Ω
L-band RX	2 x TNC, 50 Ω
External Reference	5/10 MHz, TNC
1 PPS Timing	TNC

Available Options

How Enabled	Option
FAST	Symbol Rate/Aggregate Data Rate Tiers
FAST	MEO Mode
FAST	EBEM Waveform
FAST	DSSS
FAST	Digital IF (IAW IEEE-ISTO 4900-2021)

Environmental and Physical (ODU)

Prime Power	18 – 36 VDC, 250W (max)
Dimensions	11" x 9.5" x 3.03"
Temperature, Operating	-20° C to +55° C
Temperature, Storage (Non-operational)	-40° C to +65° C
Ingress Protection	IP67

See Comtech's Patents and Patents Pending at <http://patents.comtechdata.com>

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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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