



Connect™ UAV Ground Station Modem

Overview

The **Connect™ UAV** ground station modem is a DVB-S2/S2X-compliant modem that interoperates with the **Quest™ UAV** onboard modem. It forms part of our suite of products that cover everything from onboard and ground communications to network management systems.

Its compact format makes it ideal for environments where space is at a premium, such as comms-on-the-move vehicles.

The **Connect™ UAV** modem supports high-data rate TCP/IP packet communications. Operating as a Layer 2 switch, the modem uses GSE packet encapsulation to pass Ethernet frames over the communications link. DiffServ DSCP-class based traffic shaping is supported as standard; our optional AES-256 packet encryption feature ensures all data remains secure.

Benefits

DVB-S2/S2X maximises the error-free data rate that can be achieved for a given transmit power level and is widely accepted as the most efficient waveform technology available anywhere.

In addition, the use of ACM ensures that the maximum amount of data is transmitted by continuously adapting the transmitted data rate to match the available received signal level.

The modem's receiver handles any Doppler Shift caused by the movement of the airborne vehicle to ensure uninterrupted communications under all conditions.

Features

- Data rates up to 1Gbps
- DVB-S2 & DVB-S2X waveforms
- Direct VHF/UHF/IF/L/S/C-band support (other bands supported via the use of external up/down conversion)
- Modulations up to 256APSK
- H.265 image & video decompression
- Handles high doppler frequencies
- Demodulated data output via Ethernet or high data rate serial interface
- Can be controlled via a web browser or via our MissionSpan™ NMS
- Dynamically varying data rate (ACM)
- Unique DVB-S2/S2X OQPSK option for low transmit power
- Can host third-party apps (5G/IoT/edge computing/cloud computing, etc.)
- Our UAV products are suitable for telecoms, ground observation, IOT/5G, intelligence gathering & other airborne applications



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Key Features

Function	Ground station modem for airborne applications that require bidirectional communications
Waveforms	DVB-S2 (EN 302 307-1) DVB-S2X (EN 302 307-2)
Data Rate (Tx & Rx)	50kbps to 1Gbps
Symbol Rate (Tx & Rx)	DVB-S2/DVB-S2X: 100ksps to 119Msps <i>Maximum occupied carrier bandwidth: 125MHz</i>
Frequency Range	VHF/UHF/IF/L/S/C-band (75MHz to 6GHz) SMA connectors for Tx & Rx (Other frequencies via external up/down conversion)
Data Interfaces	Gigabit Ethernet, LVDS, ASI, USB
Spectral Roll-off	Standard: Root-raised cosine filter provides choice of 5%, 10%, 15%, 20%, 25% & 35% carrier roll-off factors Option: Extended roll-off of 40% (reduces peak-to-average power ratio & amplifier back-off)
DVB-S2/S2X ACM	Varies data rate with with aircraft position, maximising throughput for the strength of signal being received
Adaptive Tx Predistorter	Corrects for linear & non-linear distortion in the RF chain; maximises linear output power & minimises required back-off; up to 2dB performance gain
Real-time Video Decompression	Hardware decompression of image & video data to the H.264/H.265 (HEVC) standards at 4K/Ultra High Definition resolutions & 60Hz frame rate, massively reducing storage requirements & data download
Output Power	-5 to -40dBm
Receiver input level	Varies with symbol rate; for a 20MHz carrier, receiver signal level should be between -65dBm & -10dBm (note performance will be degraded below -40dBm)

Mechanical/Environmental

Size	141 mm (W) x 133mm (D) x 36mm (H) A mounting bracket for fitting to a standard 19-inch rack can be provided; three modems can fit side-by-side in 1U of 19-inch rack space
Weight	< 0.5kg
Power Supply	90 to 264V AC input (external adaptor)
Compliances	FCC, CE & RoHS compliant
Safety	EN 62368-1
Emissions & Immunity	Emissions: EN 55032:2015 Immunity: EN 55024:2010, A1
Operating Temperature	0°C to +50°C

Waveforms / Forward Error Correction

DVB-S2X (EN 302 307-2)	Normal Frame: QPSK 13/45, 9/20, 11/20 8PSK 23/36, 25/36, 13/18 8APSK-L 5/9, 26/45 16APSK 26/45, 3/5, 28/45, 23/36, 25/36, 13/18, 7/9, 77/90 16APSK-L 5/9, 8/15, 1/2, 3/5, 2/3 32APSK 32/45, 11/15, 7/9 32APSK-L 2/3 64APSK 11/15, 7/9, 4/5, 5/6 64APSK-L 32/45 128APSK 3/4, 7/9 256APSK 32/45, 3/4 256APSK-L 29/45, 2/3, 31/45, 11/15 Short Frame: QPSK 11/45, 4/15, 14/45, 7/15, 8/15, 32/45 8PSK 7/15, 8/15, 26/45, 32/45 16APSK 7/15, 8/15, 26/45, 3/5, 32/45 32APSK 2/3, 32/45
	Normal Frame: QPSK 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 8PSK 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 16APSK 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 32APSK 3/4, 4/5, 5/6, 8/9, 9/10 Short Frame: QPSK 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9 8PSK 3/5, 2/3, 3/4, 5/6, 8/9 16APSK 2/3, 3/4, 4/5, 5/6, 8/9 32APSK 3/4, 4/5, 5/6, 8/9
DVB-S2 (EN 302 307-1)	

Monitor & Control (M&C)

SSH/Telnet/Serial	A command line interface allows secure login to the modem over the uplink channel & can be used to monitor & configure every aspect of the modem
Web User Interface	The satellite modem supports a built-in web server that serves web pages to any web browser
MissionSpan™ NMS	As part of the ground station control network, it allows all modems (onboard & on the ground) to be monitored & controlled through a single application

Ethernet Functionality

- Functions as Layer 2 switch
- DVB-S2/S2X GSE packet encapsulation
- DiffServ DSCP-class based traffic shaping
- Optional AES-256 packet encryption (export controlled)



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Ordering Information: Please select from the following options when placing an order

Feature		Options	Description
Hardware Platform	✓	Provided as standard	Chassis & all datasheet features <u>other than those specified below</u> are provided as standard
Data Rate	Select 1 option	100Mbps	Tx & Rx data rates to 100Mbps (50Msps)
		300Mbps	Tx & Rx data rates to 300Mbps (100Msps)
		500Mbps	Tx & Rx data rates to 500Mbps (119Msps)
		1Gbps	Tx & Rx data rates to 1Gbps (119Msps)
Waveforms	Select at least 1 option	DVB-S2	DVB-S2 QPSK, 8PSK, 16APSK & 32APSK operation per EN 302 307-1. Includes 5%, 10%, 15%, 20%, 25% & 35% spectral roll-offs
		DVB-S2X	DVB-S2X QPSK, 8PSK, 8APSK, 16APSK, 32APSK, 64APSK, 128APSK & 256APSK operation per EN 302 307-2. Includes 5%, 10%, 15%, 20%, 25% & 35% spectral roll-offs
ACM		DVB-S2/S2X ACM	Adaptive Coding & Modulation (ACM) mode for use with DVB-S2 & DVB-S2X
Decompression		Video Decompression	H.264/H.265 (HEVC) hardware image & video decompression
Predistortion		Adaptive Tx Predistorter	Predistorts the Tx output in order to compensate for linear & non-linear distortion in the received signal
Extended Roll-off		Extended Roll-off	Extends carrier roll-offs to include 40%
AES-256 Encryption		AES-256	Encapsulates all inter-modem TCP/IP packets within a secure VPN tunnel using AES-256 encryption (this feature is subject to export control)

For more information, including pricing, or to place an order, please contact us directly at:

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