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Manufactured in
Great Britain



Enterprise Control Systems Ltd

specialist design through innovation and technology



EVENLODE

Lightweight Air Platform Transceiver

Evenlode is a lightweight data terminal specifically designed for Unmanned Aerial Vehicles (UAVs) but equally usable for other airborne, ground and maritime data applications. A pair of data terminals acting as a bi-directional network repeater provides an innovative solution for any information exchange requirement.

Evenlode is a modular, lightweight transceiver based on four distinct modules: transceiver, 10 W Radio Frequency (RF) amplifier, heat exchange and power supply module. These four modules together with antennas, output transmission isolation filter and receive Low Noise Block down converters make up a complete Evenlode system

The system has integrated Advanced Encryption Standard (AES) 256-bit (subject to export license) or Substitution Cipher Encryption. The uplink receiver and downlink transmitter are contained in a single transceiver module. The standard Evenlode transceiver is used with two receive antennas providing diversity reception. Uplink data can be used to provide UAV control, switch between different sensor inputs, provide camera control or be used to control downlink parameters. Ethernet and Asynchronous Serial Interface (ASI) inputs are provided for downlink data. The

ASI input may be from an external Video Encoder Module (VEM). The VEM has two internal video encoders capable of encoding any two video signals selected by the operator from four HD and two Standard Definition (SD) inputs. ASI and Ethernet data rates are independently controllable. Evenlode may behave as an Ethernet bi-directional network repeater and also be compatible with all Enterprise Control Systems Ltd (ECS) video equipment.

ECS supplies an extensive range of ground receiving systems and transceivers capable of integrating with Evenlode. These include fixed, vehicle-borne, briefcase and hand-held receivers and transceivers. An Evenlode ground data terminal will contain a Video Decoder Module in the same configuration as the air Video Encoder Module. ECS is able to provide omnidirectional, diversity, sector tracking, multi-input diversity and high-gain GPS tracking ground station options.

specification

An Evenlode System consists of the following:

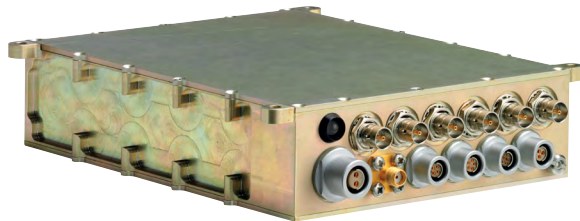
- The Evenlode Transceiver module (tailored to specific requirement) with Ethernet data buffer
- 2 x uplink, 1 x downlink antennas (colinear dipole, blade or directional spiral; Lightning Direct Strike (LDS) protected antennas optional)
- 2 x Low Noise Block down converters (LNB) for diversity reception and an RF output Isolation Filter
- High quality RF cabling, mating connectors and power cabling (installation dependant)
- Suitable ground transceiver with an antenna system specific to operational requirements.

Evenlode System Options:

- Networking of a number of ground Evenlode terminals and a central operations room to provide extended link range and remote uplink control
- Video Encoder Module capable of multiplexing video and audio onto an ASI transport stream for time-critical transmission with priority over Ethernet data
- Video Encoding onto IP (air and ground data terminals). multicast, unicast and broadcast. RTP and UDP protocols.
- EVENLODE Hard Disk Recorder module
- EVENLODE System Control Unit.

Evenlode Transceiver specification

Mechanical:	139 mm x 126 mm x 218 mm, 3 kg approx
Power Requirements:	100 W typ (L and S Band) 11-15, 22-30 VDC
Frequency:	1.2 - 6.4 GHz; uplink and downlink channel set each within a 10% proportional bandwidth. Isolation between channel sets
Link Mode Selection:	FEC - 1/2, 2/3, 3/4, 5/6 Guard Interval - 1/4, 1/8, 1/16, 1/32 Modulation - QPSK, 16QAM Channel Bandwidth - 1.5,2,3,4,5,6,7,8 MHz
Link Data Rate:	930 kpbs - 20.1 Mbps
Data Interfaces:	100/10BASE-T Ethernet and, ASI
Network Description:	Bidirectional OSI-Layer1 network repeater/2-port hub. Terminals on either side of the Evenlode link on the same collision domain. Integral 2-port switch or routing technology to customer requirements
GPS Input:	Line-powered GPS Active antenna, ARINC429 Interface or direct NMEA0183 feed also available. GPS input may also be via Ethernet port
Encryption:	AES 256 (subject to export license approval) or Substitution Cipher Encryption
Control Data:	Dedicated serial control (System Control Unit optional) or via Ethernet port. The Evenlode air transceiver may also be controlled via the uplink. Control of modulation, guard interval, forward error correction, channel bandwidth, encryption, frequency and power (low/high)
Environmental:	-20° C to +55 ° C temp, 0 - 95% rel humidity non-condensing, 25,000 ft altitude operating conditions
Certification:	Certified to RTCA DO160F Standards.



The Evenlode Video Encoder Module comprises of a dual video encoder. The module is capable of multiplexing two video (PAL, NTSC, 720p or 1080p) inputs using H.264 video compression. There are also 2 x stereo audio inputs. The module outputs an ASI 188 Byte Transport Stream.

The Evenlode Video Encoder Module comprises of 4 x SMPTE 292M/SMPTE 424M (HD-SDI) inputs, 2 x CVBS (SD) inputs and 2 x stereo line level (0dBm into 600Ω) audio inputs. Audio is not linked to video. The selection of which inputs are encoded is controlled via the Evenlode terminal.

Enterprise Control Systems Ltd has a policy of continuous development. Data contained on this sheet should be used for guidance only

Enterprise Control Systems Limited

ECS Technology Park
Wappenham
Northants NN12 8WJ

T. +44 (0)1327 860050
F. +44 (0)1327 860058
E. sales@enterprisecontrol.co.uk



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Manufactured in
Great Britain

