



SE4000

DVB MPEG-2 Contribution Encoder



HIGHLIGHTS

- ▶ *Modulated 70 and 140 IF and L-Band with internal 10 MHz High Stability Reference*
- ▶ *L-Band Monitor Port with F-Connector cables Directly Into IRD*
- ▶ *DVB QPSK, 8PSK and 16QAM Modulator with One-Touch Control Buttons*
- ▶ *100/1000 Base-T IP with COP3 FEC*
- ▶ *DVB-S2 Modulator with QPSK, 8PSK & 16APSK*
- ▶ *DS-3 / E3 Interface*
- ▶ *4:2:0 or 4:2:2, Field Upgradeable*
- ▶ *BISS Mode1 and E Conditional Access*
- ▶ *Front Panel Power Switch*
- ▶ *Backlit Alphanumeric Full-Travel Buttons*
- ▶ *Large Illuminated LCD Display*
- ▶ *1RU Compact rugged Rack-Mount Chassis is Ideal for DSN and Sports/Event Contribution*
- ▶ *Fully MPEG-2 and DVB Compliant*
- ▶ *Composite Broadcast Quality Video and Two Stereo Audio Channels*
- ▶ *Analog, AES Serial Digital Audio and SDI Embedded Audio Inputs*
- ▶ *Integrated 10 MHz High-Stability Reference*
- ▶ *Web Browser*

DESCRIPTION

The SE4000 MPEG-2 Encoder delivers features and performance collected over years of leadership in the Broadcast Contribution and Satellite Modem business. Comtech Tiernan Video, Inc. (ComtechTV) technology enabled the first commercial deployment of MPEG-2 video compression for use in the outside broadcast industry back in 1995, and continues today with advanced video compression technology supporting the ATSC digital television rollout. The SE4000 combines the leadership of Comtech modulation technology with proven ComtechTV encoding to provide a complete encoder and modulator solution in a rugged 1U chassis, and is ideal for mobile broadcast contribution applications as well as network and cable head end use.

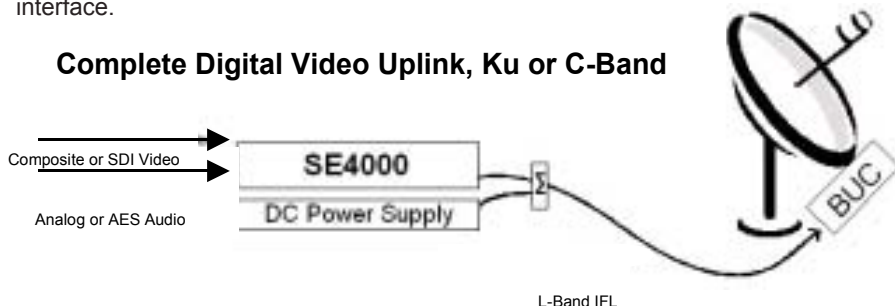
EASY TO USE: There is a complete set of backlit alphanumeric full-travel buttons on the front panel for easy configuration, even in the dark. The large LCD display is illuminated, yet provides high contrast for visibility in direct sunlight. The power switch is on the front panel for easy access. There are 24 user-programmable preset configurations that can be stored and recalled from the front panel menu. They can even be named by the user with the alphanumeric buttons to make them easy for the operator to remember.

RELIABLE AND AFFORDABLE: By using the latest integration of MPEG and low-power digital electronics technology, the SE4000 combines a complete modulator and encoder in a small, low power, quiet, highly reliable, and feature rich encoder. The SE4000 even includes redundant cooling fans with fault monitoring to ensure trouble free operation under the harshest of conditions.

DIRECT CONNECT TO ODU AND MONITOR IRDs: No longer do systems require external splitters or upconverters when using the SE4000. For the first time, Comtech satellite modulation technology has been married with the latest ComtechTV MPEG compression and MPEG systems to supply an encoder capable of delivering DVBS or DVB-S2 QPSK, 8PSK, 16QAM or 16APSK modulation in IF frequencies of 70 MHz and 140 MHz, plus an L-Band output from 950 to 2050 MHz. These outputs will interface to virtually any traditional upconverter and the latest low-power low-cost block upconverters (BUC), allowing significant savings in system equipment cost and complexity.

SECURE TRANSMISSION: BISS Mode 1 and Mode E are supported by the SE4000, in addition to the ComtechTV proprietary Privacy Guard Conditional Access (PGCA). PGCA is a fixed key scrambling system that is included as a standard feature in most ComtechTV encoders and decoders. It is addressable, and allows the decoder addresses to be added or deleted from the authorization list using the SE4000 front panel or remote control interface.

Complete Digital Video Uplink, Ku or C-Band



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TECHNICAL SPECIFICATIONS

STANDARD FEATURES

VIDEO INPUT:	PAL (625 Line) or NTSC (525 Line) Formats
ANALOG:	SMPTE 170M NTSC or ITU-R BT.470-6 PAL-I/B/D, BNC Connector
SERIAL DIGITAL:	SMPTE 259M SDI @ 270 Mbps, BNC Connector
VIDEO PROCESSING:	MPEG-2 4:2:0 (Main Profile @ Main Level), 1.0 to 15.0 Mbps Horizontal Resolutions: 720, 704, 640, 544, 480 and 352 Pixels/Line Vertical Resolutions 240 or 480 Lines (NTSC) or 288 or 576 Lines (PAL) 4:3 and 16:9 Configurable Aspect Ratio TBC, AGC, and Clamp for Composite Video Signal Restoration
VERTICAL BLANKING INTERVAL:	Proprietary Passing of NTSC Line 21 Closed Captions (Composite or SDI) ATSC Closed Captions, Per A/53 (Composite or SDI) DVB Teletext for World System Teletext on PAL Composite Video Full VBI passage with DVB expanded windows mode
LATENCY:	Ultra-Low Latency: 150 ms (Encode to Decode) Low Latency: 240 ms (Encode to Decode) Quality: 350 to 1000 ms (Encode to Decode)
AUDIO INPUTS:	Two Stereo or Four Independent Analog Mono Channels on Balanced XLR Connectors Two AES/EBU Digital Stereo Pairs on 75 Ohm BNC Connectors Two AES/EBU Digital Stereo Pairs Embedded in SDI, 48 Ksps Sample Rate
AUDIO PROCESSING:	MPEG-1 Layer II, AC3 2.0 Encoding, AC-3 5.1 Pass-Through Two Stereo Channels or Four Independent Mono Channels Sampling Rates of 32, 44.1 and 48 Ksps Output Rates from 64 to 640 Kbps
AUXILIARY DATA:	One Synchronous: 1 to 20 Mbps, Resolution 1 bps, EIA-422, on Female DB-9 Connector One Asynchronous: 1200 to 115 Kbps, EIA-232, on Female DB-9 Connector
CONTROL TABLES:	Internally-Generated DVB-Compatible PSI/SI Tables
CONDITIONAL ACCESS:	PGCA Proprietary Conditional Access, Enable/Disable IRDs from Front Panel or Remote Control
TIMING:	Lip Synchronization Adjustment -30 to +300 ms
TRANSPORT OUTPUT:	MPEG-2, DVB-Compliant Transport Stream Two DVB ASI Outputs (75 Ohm BNC Connectors), 1 to 80 Mbps, in Units of 1 bps
FRONT PANEL CONTROL:	Backlit, Full-Travel Pushbuttons; Three Special Purpose Buttons: Carrier, Modulate, Status Recessed Front Panel AC Power Switch Backlit 2 x 40 LCD Display 24 User-Programmable Preset Configurations
REMOTE CONTROL:	EIA-232 on Male DB-9 Connector (DTE), ASCII Commands IEEE 802.3 10/100 Base-T (Ethernet) on RJ-45 Connector HTML Web Browser, SNMP
FAULT MONITORING:	Contact Closure for Alarm Conditions on RJ-11 Connector
SOFTWARE UPGRADE:	Simplified EIA-232 Remote Port, Ethernet Remote Port
PHYSICAL:	1RU High, Rugged Chassis Suitable for Mobile Operations, 19" Rack-Mount, 15.5" (39.4 cm) Deep Weighs Less Than 5.5 kg (12 lbs.)
POWER SUPPLY:	Autoranging 90 to 240 VAC, 50/60 Hz, 70 Watts Typical Consumption
OPERATING CONDITIONS:	0° to +50°C, up to 95% Humidity, Non-Condensing Redundant Fans with Fault Monitoring

OPTIONAL FEATURES

VIDEO PROCESSING:	MPEG-2 4:2:2 (Studio Profile @ Main Level), 2.5 to 50 Mbps DVB 4:2:2 Expanded Windows Carries WSS, VPS, VITC, CC, AMOL, XDS, NABTS, and Others Field-Upgradeable From 4:2:0 to 4:2:2 Spatial and Temporal Pre-Filtering for Compression Efficiency and Noise Reduction
BUILT-IN TEST:	Internally Generated Audio Test Tone and Video Test Patterns
MODULATOR OUTPUT:	DVB-Compliant QPSK (Optional 8PSK and 16QAM) DVB S2 QPSK, 8PSK and 16APSK Symbol Rate 1 to 45 Msps IF Output: 52 to 88 MHz and 104 to 176 MHz, 0 to -20 dBm, 75 ohm BNC L-Band Output: 950 to 2050 MHz, 0 to -30 dBm, SMA Connector L-Band Monitor Output: 950 to 2050 MHz, F-Connector
DS-3 INTERFACE:	DS-3 / E3 Interface Board, BNC Female
IP INTERFACE:	100/1000 Base-T UDP, RTP or RTP with COP3 FEC Female
CONDITIONAL ACCESS:	BISS (Basic Interoperable Scrambling System) Modes 0, 1, and E

