

SATELLITE UPLINK DIGITAL MODULATOR + MPEG-2 ENCODER

The high quality, professional and cost-effective solution



MODULATION OPTIONS:
DVB-S
DVB-DSNG
DVB-S2

The “**DME 1000/SL**” is a high quality, professional, flexible and really cost-effective solution for digital satellite uplinks and synthesized terrestrial microwave links.

The unit combines a high performances MPEG-2 encoder (or optionally more) with a **DVB-S** QPSK modulator (optionally also 8PSK and 16QAM modulation schemes according to **DVB-DSNG** specification) and a synthesized output in the “L” band.

With the DVB-S2 option, the unit also complies with **ETSI EN 302 307 (DVB-S2 standard)** for BROADCAST and DSNG applications: supports all modulation schemes (QPSK, 8PSK, 16APSK and 32APSK), all code rates (both mandatory and optional), CCM (Constant Coding and Modulation), normal FEC-frame, Dummy frame Insertion, all roll-off factors and null packet deletion/insertion.

A key function of the modulator is the **digital non-linear pre-correction** with the possibility to store and recall of several setups. This function allows to correct the amplitude and phase vs. level distortions introduced by the high power amplifiers (HPAs), so increasing output power, MER and shoulders performances.

Features also include a 10MHz reference clock and the power supply for the BUC (Block Up Converter).

The DME 1000/SL, combined with a BUC and a parabolic antenna for the chosen frequency range (usually Ku band – 14 to 14.5GHz – of C band 5.85 to

6.43GHz), makes a complete satellite uplink solution. Another application of the DME 1000/SL is as encoder/s – digital modulator for synthesized terrestrial digital microwave links.

Applications

- Digital satellite Uplinks for Distribution, Contribution, DSNG / ENG Mobile news gathering;
- Digital Microwave Links (Mobile and STL);

Features

- 1 to 4 real time MPEG-2 video/dual audio Encoders (MP@ML – 4:2:0) and Multiplexer;
- Up to full D1 encoding resolution with up to 720 horizontal pixels;
- User configurable Encoders settings (GOP size and structure, resolution, filters, bit rate, ...) + four easy to recall pre-defined factory settings;
- Teletext or Closed Captioning extraction from video input and reinsertion in the transport stream (option for models with multiplexer board);
- **DVB-S / DVB-DSNG / DVB-S2** Modulation options with Symbol rate up to 30MS/s, Automatic T.S. adaptation and PCR time restamping;
- Synthesized “L” band output (950 to 1900MHz) with combined 10MHz reference clock and BUC power supply;
- User-friendly local control with front panel LCD display and keypad;
- RS485; Ethernet 10/100 Base-T (SNMP and web server support) remote control interface option.



MPEG-2 Encoder

VIDEO INPUTS

Video input format:	Analog: Composite PAL / SECAM / NTSC, Y-C (S – video) Digital: D1 (ITU-R 656) 8 Bit Parallel (internal connector) Option: SDI (Serial Digital Interface with embedded audio or with AES/EBU audio input)
Composite video input:	1Vp-p / 75 Ω / BNC socket
Composite video filter:	Notch or Comb (selectable)
Pre-processing:	TBC (Time Base Corrector) Noise Reduction Filter

VIDEO ENCODING

Standard:	ISO / IEC 13818-2 MP@ML (MPEG-2 4:2:0)
Bit rate:	Up to 15Mb/s
Supported resolutions:	Full D1, 3/4 D1, 2/3 D1, 1/2 D1, SIF, QSIF
Picture size:	Horizontal: up to 720 pixel in 32 pixel steps. Vertical: PAL – up to 576 pixel in 32 pixel steps NTSC – up to 480 pixel in 32 pixel steps
Picture encoding type:	I, P, B
GOP Structure:	Flexible
Minimum latency:	Around 200mS, according to settings (GOP structure, bit rate etc.)

AUDIO INPUTS AND ENCODING

Audio input format:	Analog: Two (mono, stereo, dual, joint stereo) Digital: LR Multiplex Serial (I2S) (internal connector) Option: SDI (Serial Digital Interface with embedded audio or with AES/EBU audio input)
Analog audio inputs:	0dBu (adjustable) / 600 Ω balanced / mini-DIN 6 pole
Sampling frequency:	32KHz, 44.1KHz, 48KHz
Encoding standard:	ISO / IEC11172-3 (MPEG-1 audio) layer 1/2 – compliant
Bit rate:	Max. 448Kb/s

STREAM AND INTERFACES

Stream type:	Transport stream
System multiplexing:	ISO / IEC 13818-1 (MPEG-2) – PAT and PMT tables

OTHERS SPECIFICATIONS

Pre-settings:	№4 Factory preset + №4 User configurable (by software, via RS232 port)
Teletext / Closed Captioning data:	Extraction from analogue video input

Multiplexer

MULTIPLEXING

Tables:	Add / modify (NIT, SDT, TDT, EIT)
Settings:	Fixed or by software via RS232 port
Optional Input:	DVB Transport Stream (ASI interface – PID Filtering and MHP support)
Optional output digital interface:	DVB – ASI
Teletext / Closed Captioning data:	Optional insertion in the transport stream

Modulator

DIGITAL MODULATOR

Modulation scheme:	QPSK (EN300 421 DVB-S) Option: QPSK, 8PSK, 16QAM (EN 301 210 DVB-DSNG) Option: QPSK, 8PSK, 16APSK, 32APSK (EN 302 307 DVB-S2)
L band output frequency:	950 to 1900MHz in 100KHz steps (option: smaller synthesizer steps)
L band local oscillator side band phase noise (typical values):	@10Hz offset: -65dBc/Hz @1KHz offset: -84dBc/Hz @100KHz offset: -95dBc/Hz @1MHz offset: -118dBc/Hz
Frequency reference clock:	Internal: 10MHz (stability +/- 5x10 ⁻⁷) available also for BUC reference Option: higher stability, external reference, GPS locked reference
Output level:	0dBm (Typ. adj. range: -30 to +5dBm – option: different output levels)
Output impedance and connector:	50 Ω “N” socket (option: 75 Ω)
Input Transport Stream Bit Rate:	Up to around 80 Mb/s (according to modulation scheme, Symbol Rate and Code Rate settings)
Symbol Rate:	Up to 30 MS/s in 1KS/s steps
Baseband Shaping (roll-off):	20% - 25% - 35% according to the standard
Required IF Bandwidth:	According to Symbol Rate: Bandwidth (in MHz) is approx. equal to the Symbol Rate (in MS/s) + the percentage of base band shaping
Forward error correction (FEC) encoding and data scrambling:	According to the standard (EN 300 421 DVB-S; EN 301 210 DVB-DSNG; EN 302 307 DVB-S2 for Broadcast and DSNG applications)

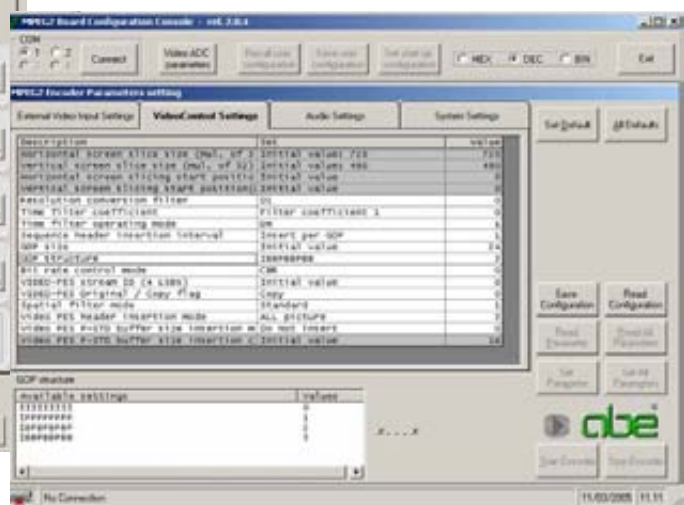
GENERAL SPECIFICATIONS

Power supply:	85 to 264Vac 50/60 Hz (Different power supplies available on request)
Remote control interface options:	RS485; Ethernet 10/100 Base-T (SNMP and web server support)
Optional BUC power supply:	24V 1.9A
Housing:	Rack drawer 19” 1U or 2U according to the option installed
Operating temperature range:	0 to 45° C.

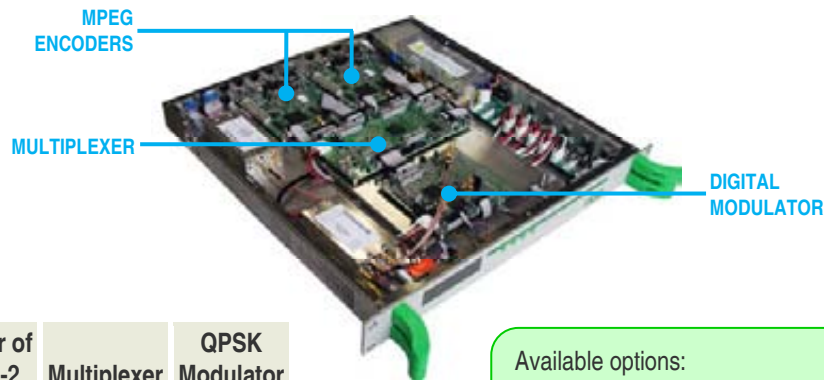
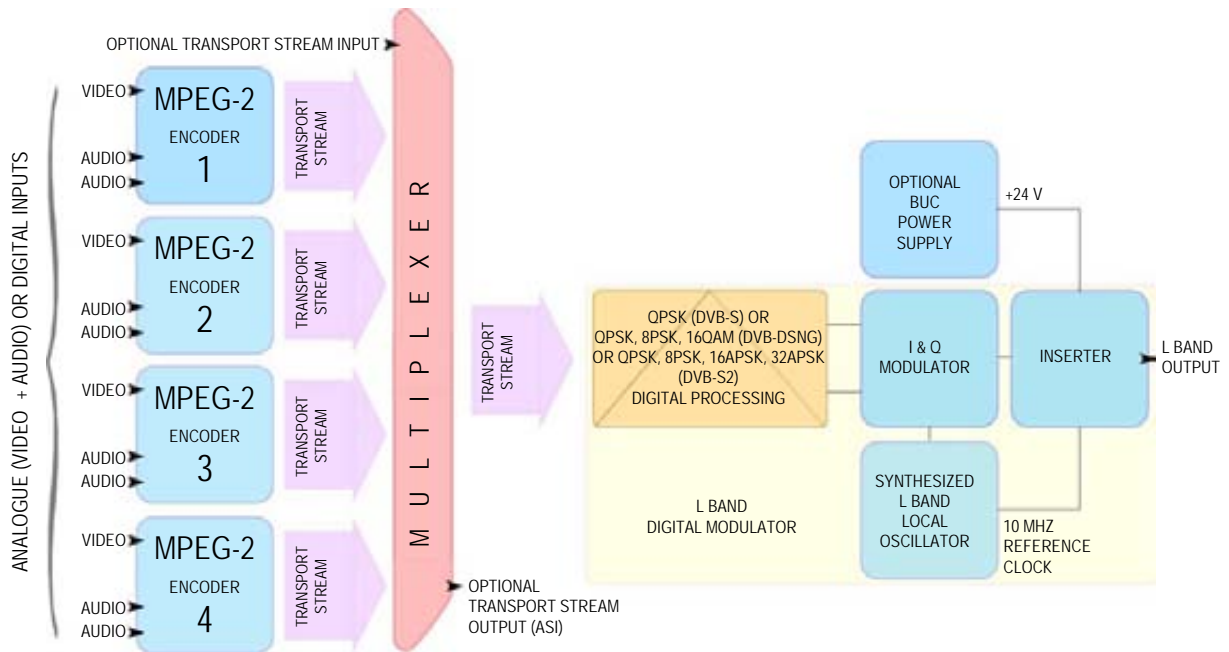


A screenshot of the Multiplexer / Remultiplexer configuration software

A screenshot of the MPEG-2 Encoder configuration software



DME 1000/SL Series MPEG-2 encoders + digital Modulator general block diagram



Model	Number of MPEG-2 encoders	Multiplexer	QPSK Modulator (DVB-S)
DME 1001-B/SL	1		✓
DME 1001/SL	1	✓	✓
DME 1002/SL	2	✓	✓
DME 1003/SL	3	✓	✓
DME 1004/SL	4	✓	✓

Available options:

- SDI / AES-EBU MPEG-2 encoder input
- DSNG (add 8PSK and 16 QAM modulation schemes)
- S2 (add QPSK, 8PSK, 16APSK and 32APSK modulation schemes)
- BUC power supply (24V 1.9A – on request different versions)
- Hi stability 10MHz reference oscillator



All specifications contained in this document may be changed without prior notice.