ADVANCED BROADCASTING ELECTRONICS

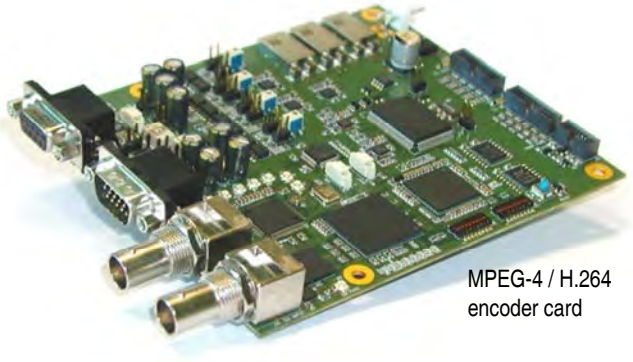
Series

EMX

MPEG-4 (H.264 - SD/HD) / MPEG-2 ENCODERS + MULTIPLEXER - REMULTIPLEXER

The high quality, professional and cost-effective solution

The "**EMX series**" is a high quality, professional, flexible and really cost-effective solution that combines one or more high performance MPEG-2 and/or MPEG-4 (H.264/AVC SD/HD) Encoder and, optionally, a multiplexer/remultiplexer.



MPEG-4 / H.264 encoder card

Applications:

- Digital TV Terrestrial Broadcasting
- Digital Satellite Uplinks for Distribution and Contribution
- DSNG Mobile news gathering
- Digital Microwave Links (Mobile and STL)

Features:

- 1 to 4 real time MPEG video/dual audio Encoders
- MPEG-4 H.264/AVC Encoder from SD (Standard Definition) to full HD (High Definition) High Profile @ Level 4.0 (with Down-scaler embedded)
- Encoding bit rate: from less than 2Mbit/s up to 24Mbit/s
- Basic T.S. multiplexing functions embedded in MPEG-2 and MPEG-4 encoders
- Audio encoding: MPEG-1 Audio Layer 2 (AAC-LC encoding option under development)
- Second audio pair option
- Inputs: SDI / HD-SDI with embedded or separate AES - EBU audio; analog SD Video and Audio
- MPEG-2 Encoder MP@ML 4:2:0 Up to full D1 encoding resolution with up to 720 horizontal pixels
- User configurable Encoders settings + easy to recall pre-defined factory settings
- Teletext or Closed Captioning extraction from video input and reinsertion in the Transport Stream;
- ASI and Ethernet (T.S. over IP) output and input interface options
- User-friendly local control with front panel LCD display and keypad;
- Ethernet 10/100 Base-T (RJ45 connector - SNMP, web server, e-mail client) remote control interface
- Stand-Alone unit 1U high.

MPEG-2 Encoder card

VIDEO INPUTS	
Video input format:	Digital SD-SDI with embedded or separate AES - EBU audio; Analog composite PAL / SECAM / NTSC
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 / GOP Structure:	I, P, B / Flexible
Minimum latency:	Around 200mS, according to settings (GOP structure, bit rate etc.)
AUDIO INPUTS AND ENCODING	
Audio input format:	Analog: mono, stereo, dual, joint stereo; Digital: SDI (Serial Digital Interface) with embedded audio or with AES/EBU audio input
Analog audio inputs:	0dBu (adjustable) / 600 Ω balanced
Sampling frequency:	32KHz, 44.1KHz, 48KHz
Encoding standard:	ISO / IEC11172-3 (MPEG-1 audio) layer 1/2 - compliant
Bit rate:	Max. 448Kb/s
OUTPUT STREAM	
Stream type:	Transport stream
System multiplexing:	ISO / IEC 13818-1 (MPEG-2) - Tables included: PAT, PMT, NIT, SDT (LCN support)
OTHERS SPECIFICATIONS	
Pre-settings:	№8 Factory preset + №8 User configurable
Teletext / Closed Captioning data:	Extraction from analogue video input and insertion in the T.S.

Outputs

Output digital interface:	DVB-ASI – Option: Ethernet (T.S. Over IP)

General Specifications

Power supply:	85 to 264Vac 50/60 Hz (others on request)
Remote control interface options:	Ethernet 10/100 Base-T (SNMP, web server, e-mail client).
Housing:	Rack drawer 19” 1U (depth 450mm - connectors and handles excluded)
Operating temperature range:	0 to 45° C.

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MPEG-4 (H.264/AVC) Encoder card

VIDEO INPUTS	
Video input format:	Digital SDI / HD-SDI with embedded or separate AES - EBU audio; Analog (Standard Definition only) composite PAL / SECAM / NTSC
Digital video input:	SDI / HD-SDI - 75Ω / BNC socket
Analog Composite video input:	1Vp-p / 75Ω / BNC socket
VIDEO ENCODING	
Standard:	ISO/IEC 14496-10 (H.264/AVC, 4:2:0) Main Profile Level 3.0 and High Profile Level 4.0
Bit rate:	From less than 2Mbit/s up to 24Mbit/s; Bit rate mode: CBR, VBR
Supported resolutions:	1920 x 1080 x 60i/50i/24p, 1440 x 1080 x 60i/50i/24p, 1280 x 720 x 60p/50p/24p, 720 x 480 x 60i, 720 x 576 x 50i
Down scale:	Embedded
Picture encoding type:	I, P, B
Minimum latency:	Around 500mS - according to settings (GOP structure, bit rate etc.)
AUDIO INPUTS AND ENCODING	
Audio input format:	Analog: Two channels (one pair) - mono, stereo Digital SDI/HD-SDI with embedded audio or with AES/EBU audio input
Analog audio inputs:	0dBu (adjustable) / 600Ω balanced
Sampling frequency:	48KHz
Encoding standard:	ISO / IEC11172-3 (MPEG-1 audio) layer 2 - compliant
Bit rate:	Max. 384Kb/s
Second audio pair option:	Stereo - up to 256Kb/s
OUTPUT STREAM	
Stream type:	Transport Stream
System multiplexing:	ISO / IEC 13818-1 (MPEG2 TS) - Tables included: PAT, PMT, NIT, SDT (LCN support)
OTHERS SPECIFICATIONS	
Pre-settings:	№8 Factory preset + №8 User configurable
Teletext / Closed Captioning data:	Extraction from analogue video input and insertion in the T.S.

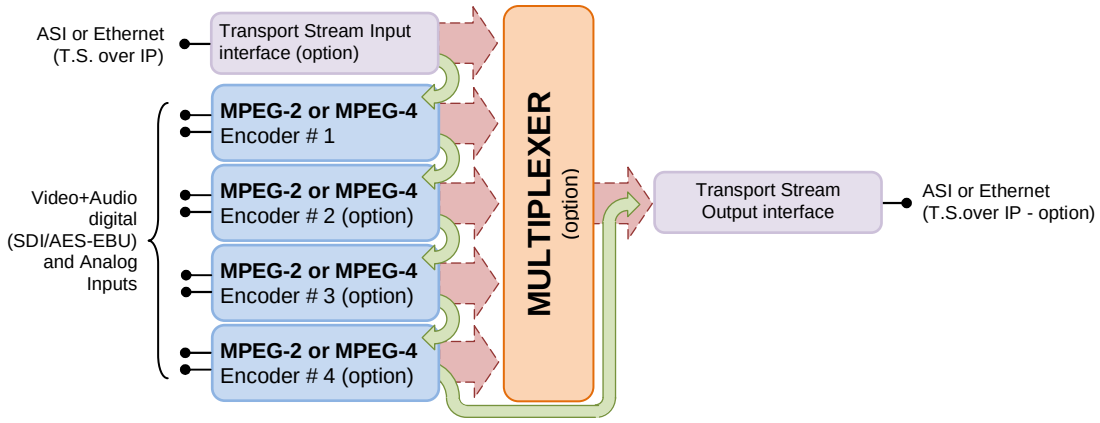
GBE input / output (T.S. over IP) card

Standard, data rate, connector:	IEEE802.3a; 100/1000 Mbps with auto detect; RJ-45 with LEDs
IP to T.S. delay, T.S. data rate:	1 to 120ms, over 100 Mbps
T.S. over IP encapsulation, addressing mode:	UDP, SMPTE 2022-2 (RTP); Unicast and Multicast (IGMP v2)
FEC:	As per Pro-MPEG Code of Practice #3 release 2 (SMPTE 2022-1); max. matrix size 100
T.S. packets per IP packet	1 to 7 (packet size: 188 or 204)

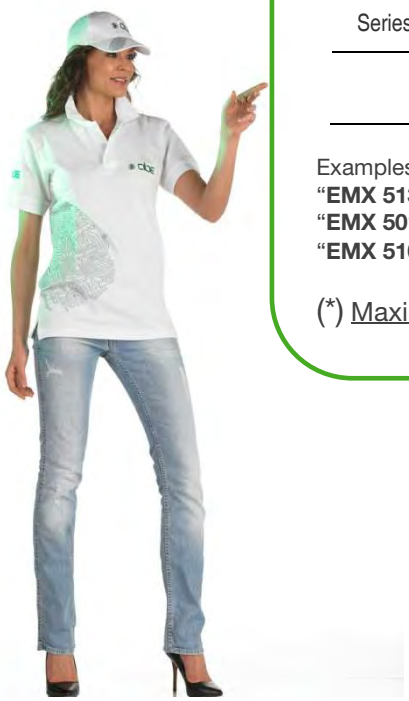
Multiplexer card (option)

Tables:	Add / modify (NIT, SDT, TDT, EIT)
Other functions:	PID filtering; MHP support

EMX block diagram



NOTE:
Without the multiplexer card option, the T.S. is generated with NIT and SDT tables.
With the multiplexer card option, are also added the TDT and EIT tables and on the optional transport stream input is possible to have advanced remultiplexing functions such as PID filtering.



CREATE YOUR OWN EQUIPMENT CODE

Series suffix and number	multiplexer card (0=no; 1=yes)	number of MPEG-4 (H.264) Encoder cards (*)	number of MPEG-2 Encoder cards (*)
EMX 5	**0 or 1**	**0 to 4**	**0 to 4**

Examples:
"**EMX 5131**" = Equipment with multiplexer, №3 MPEG-4 encoders and №1 MPEG-2 encoder
"**EMX 5012**" = Equipment without multiplexer, №1 MPEG-4 encoder and №2 MPEG-2 encoders
"**EMX 5101**" = Equipment with multiplexer, no MPEG-4 encoder and №1 MPEG-2 encoder

(*) Maximum number of MPEG-4 + MPEG-2 encoders is 4

AVAILABLE MAIN OPTIONS:

- Up to №4 MPEG-2 or MPEG-4 (H.264 SD-HD) encoders in a single 1U rack chassis
- Double (redundant) power supply
- T.S. input remultiplexed with the encoded programs
- Multiplexer card for advanced functions
- T.S. over IP (GBE) input / output
- Second (stereo pair) audio channel (for MPEG4 encoders)

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