



## SDTV MPEG 2 ENCODER & DECODER

SAPEC developed the **SIVAC 3000** MPEG2 SDTV(*ISO/IEC 13818*) encoder(**MVE**) and decoder(**MVD**) for video and audio transmission, they are housed in 1RU chassis for 19" racks, for use in applications from IP networks to multiple programs in SDH, for terrestrial and satellite applications, these equipments are capable to delivery clear and high quality audio and video MPEG2 streams.

**SIVAC 3000** encoders (**MVE**) and decoders(**MVD**) are characterized by its versatility as a low cost solution. Provides transport thru ASI but also supports PDH (*E3/DS3*), IP (*RTP/UDP*) transport, for audio and video, allowing multiple paths for the signals.

The encoder posses an internal multiplexer that can deliver one channel with video, audio and VBI data, and up to 3 channels for radios in MPEG2, allowing to deliver with one equipment four independent PMTs.

The equipments in this family can work with MP@ML profile and have the option to work with 422P@ML, easily adaptable to a wide range of professional applications.

**SIVAC 3000** uses SAPEC exclusive technology the **FastIP<sup>Sync</sup>**® that reduce the delay and deliver a better image quality due to the synchronizations algorithm that adapts dynamically to the IP network condition.

The **SIVAC 3000 MVE** and **MVD** have simple Web Browser configuration, integration with the centralized SIVAC-NMS management system, led indicators on the front panel that show the status, open communication protocol (SNMP), and local RS-232 and IP interface, delivering an easy to maintain architecture.

### BUSINESS BENEFITS

**Latency** – The codec solution have less than 140 ms delay in encoding and decoding audio and video in PDH and ASI transmission making it one of the fastest MPEG2 SD encoder on the market.

**Reliability** – The COP3/FEC function and build-in 1+1 redundancy provide a reliable audio and video signal transport.

**Flexibility** - The feature to transmit the transport stream by ASI ,PDH and IP simultaneous, provides a more secure transmission of audio and video by allowing redundant path.

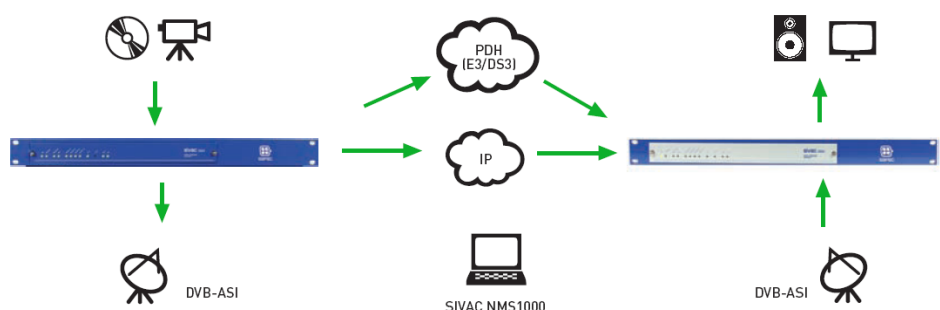
**Lowest power consumption** – with only 25w(per unit) it allows an easier electric installation and economy on power consumption.

### APPLICATIONS

SIVAC 3000 family supports multiple applications in different areas like:

- DIGITAL terrestrial and satellite applications like DVB-T, DVB-S, ATSC, etc;
- Multi-channel links via PDH;
- Contributions for professional use;
- Video over IP networks;
- Distributions networks via IP or ASI. Point-to-point transmissions;

### TYPICAL APPLICATION



## CHARACTERISTICS

- Support the standards:
  - DVB-T
  - DVB-S and
  - ATSC
- Support for SI information services
- Profiles:
  - 422P@ML
  - MP@ML
- Low encoding/decoding delay
- Video inputs:
  - 1xSDI
  - PAL & NTSC Analog input
- Resolutions from 352x576 to 720x576
- Up to 8 analog and/or AES/EBU and/or SDI Embedded audio channels
- Delivery of video blanking interval information: Teletext, VITS,...
- Internal video and audio pattern generator
- Transmission via:
  - DVB-ASI
  - PDH (E3/DS3)
  - IP(RTP/UDP) (SMPTE 2022)
- Remote software upgrading
- Contact-closure alarms
- Front panel LED status indicators
- Multiple management and configuration interfaces:
  - IP interfaces
  - TCP/IP from a web browser
  - SNMP-based alarms
  - Centralized management with SIVAC NMS

## TECHNICAL SPECIFICATIONS

### SIVAC 3000 MVE encoder

#### Video input

Digital Inputs	
Number of inputs:	1 x BNC
Formats:	SDI 4:2:2(SMPTE 259M)
Automatic Cable Equalization:	>250m Belden 8281

Analog Inputs	
Number of inputs:	1 x BNC
Formats:	PAL(ITU624-4) , NTSC (SMPTE 170M)
Impedance / Nominal Level:	75Ω/ 1Vpp
Bandwidth:	>5.8Mhz
S/N Lum Wt.	>68dB
Cable Eq / level adjustment:	>100m

Video Input Features	
Built-in video generators:	Color Bars Generator
Vertical interval processor:	VITS, Transparent and Teletext

Monitor Outputs	
AV-Monitored:	1 x BNC Analog video input
LOOP:	1 x BNC Analog video

#### Audio Input

SDI Embedded	
Number of outputs:	Up to 8 SDI embedded channels.

Analog Inputs:	
Number of inputs:	Up to 8 mono or 4 stereo channels
Format:	Balanced analog audio
Impedance:	600 or high-impedance (>22 K )
S/N:	80dB rms, >62dBq Ops
Features:	Audio pattern generator

Digital Inputs:	
Number of inputs:	4 stereo channels
Format:	AES/EBU
Sample frequency:	32Khz, 44.1 Khz or 48Khz
Impedance:	110 Ω, balanced

#### Video encoding

Standard:	MPEG-2(ISO/IEC 13818)
Profile / Level:	MPEG-2 422P@ML; 2,5 to 50 Mbps(Optional) MPEG-2 MP@ML; 1 to 15 Mbps
Configurable GOP settings:	Open and Close GOP, GOP size,I,P,B Images
Encoding Resolutions:	525 : 720 x 480, 704 x 480, 640 x 480, 544x480, 528x480, 480x480, 352x480 625 : 720 x 576, 704 x 576, 640x576, 544 x 576, 528x576 , 480x576 ,352x576
Delay:	< 140 ms in encoding and decoding with MVD
Extra Delay:	Selectable extra delay feature to work with midle down gamma decoders

#### Audio encoding

Audio Formats:	MPEG-1 Layer II (ISO/IEC 11172-3)
Encoding Bit-Rates:	From 64 kbps to 384 kbps (per stereo channel)
Operating Modes:	Stereo, Joint Stereo, Mono and Dual Mono

#### Internal Multiplexer

PMT:	Up to 4 PMT
PMT Tables:	PID, Type of Service Programa Name

#### Network Interfaces

PDH	
Number of inputs:	1xBNC
Number of outputs:	1xBNC
System Specifications:	E3(G.751), DS-3(C-bit parity)

ASI	
Number of outputs:	2xBNC
System Specifications:	ASI
Standard:	EN50083-9

Ethernet	
Number of outputs:	1xRJ-45
Jitter Reduction:	FastIPsync
Interface:	10/100 Mbps
Encapsulation:	TS over IP: UDP, RTP, and RTP with COP3 FEC (SMPTE 2022) (Multicast / Unicast / Multi-Unicast with 2 streams )

#### System management

WEB Browser:	WEB Browser access
NMS:	SIVAC NMS Control (optinal SAPEC NMS software)

## SIVAC 3000 MVD decoder

#### Video Output

Digital Outputs	
Number of outputs:	2 x BNC
Formats:	SDI 4:2:2(SMPTE 259M)

Analog Outputs	
Number of outputs:	2 x BNC
Formats:	PAL(ITU624-4) , NTSC (SMPTE 170M)
Impedance / Nominal Level:	75Ω / 1Vpp
Bandwidth:	>5.8Mhz
S/N Lum Wt.:	>68dB
Cable Eq / level adjustment:	>100m

Input Features	
Vertical interval processor:	VITS, Transparent and Teletext locally inserted

#### Audio Output

SDI Embedded	
Number of outputs:	Up to 8 SDI embedded channels.

Analog Outputs	
Number of outputs:	Up to 8 mono or 4 stereo channels
Format:	Balanced analog audio
Impedance:	600 or high-impedance (>22 K )
S/N:	80dB rms, >62dBq Ops

Digital Outputs	
Number of outputs:	4 stereo channels
Format:	AES/EBU
Sample frequency:	48Khz
Impedance:	110 Ω, balanced

#### Video decoding

Standard:	MPEG-2(ISO/IEC 13818)
Profile / Level:	MPEG-2 422P@ML; 2 to 50 Mbps(Optional) MPEG-2 MP@ML; 1 to 15 Mbps
Decoding Resolutions:	525 : 720 x 480, 704 x 480, 640 x 480, 544x480, 528x480, 480x480, 352x480 625 : 720 x 576, 704 x 576, 640x576, 544 x 576, 528x576 , 480x576 ,352x576

#### Audio decoding

Audio Formats:	MPEG-1 Layer II (ISO/IEC 11172-3)
Decoding Bit-Rates:	From 64 kbps to 384 kbps (per stereo channel)

#### Internal Demultiplexer

PMT:	Up to 4 PMT
PMT Tables:	PID, Type of Service Programa Name

#### Network Interfaces

PDH	
Number of inputs:	1xBNC
Number of outputs:	1xBNC
System Specifications:	E3(G.751), DS-3(C-bit parity)

ASI	
Number of inputs:	1xBNC
System Specifications:	ASI
Standard:	EN50083-9

Ethernet	
Number of inputs:	1xRJ-45
Jitter Reduction:	FastIPsync
Interface:	10/100 Mbps
Encapsulation:	TS over IP: UDP, RTP, and RTP with COP3 FEC (SMPTE 2022) (Multicast / Unicast / Multi-Unicast with 2 streams )

#### Environmental

Power	
Input Voltage Range:	AC 105 - 240 V and DC 36V - 72V
Typical Consumption:	<25W
Operating Temperature:	0°C to 50°C

Physical	
Dimensions :	19" wide x 1RU high x 280 mm



Local Distributor:

