

# Crystal Vision

## EMDEC-100 Embedding Decoder

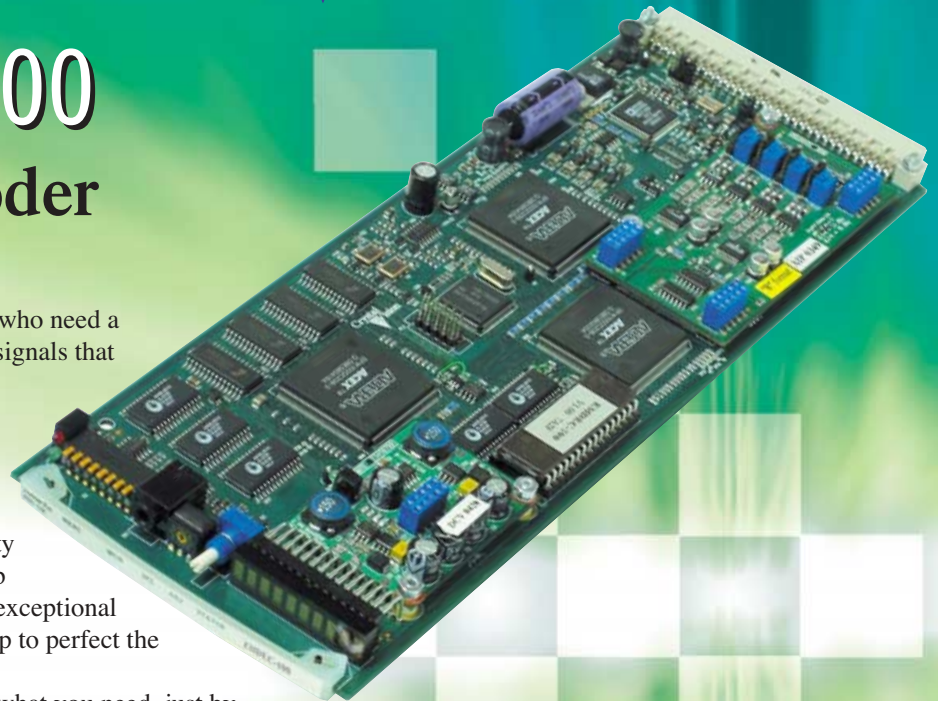
EMDEC-100 has been designed for engineers who need a broadcast decoder and an audio embedder for signals that are already correctly timed.

This low cost embedding decoder converts PAL/NTSC composite or Y/C video to SDI using a high quality 12 bit decoder. The data is sampled at 54 Mbit per second (four times oversampled) allowing the highest quality digital filtering. It also offers the latest in comb technology, with a five line comb resulting in exceptional decoding. Adjustable gains and levels both help to perfect the picture.

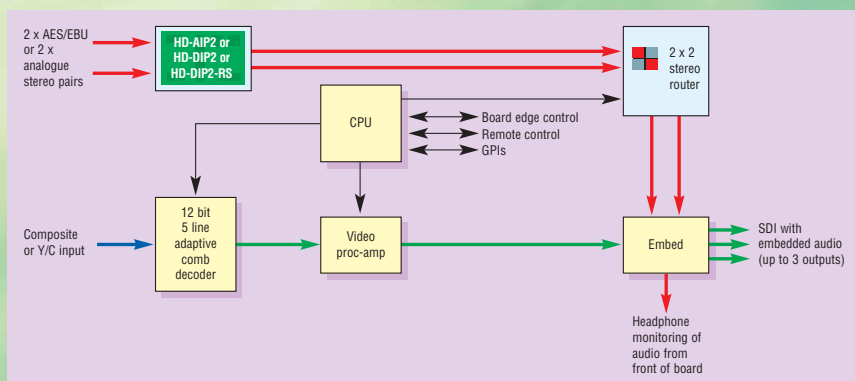
EMDEC-100 allows you to embed exactly what you need, just by fitting the appropriate audio piggyback. Fit the HD-AIP2 piggyback to embed analogue audio, the HD-DIP2 for synchronous AES or the HD-DIP2-RS for asynchronous AES. Those embedding analogue audio must also fit a DCDCV18 PSU. A 2 x 2 stereo router allows the shuffling of stereo pairs, while the audio can also be monitored from the front of the board using headphones. High quality audio is guaranteed with Crystal Vision's audio protection.

EMDEC-100 is a 100mm x 266mm module which fits in the standard frames (4U, 2U, 1U and desk top box), allowing easy integration with any other interface or keying product from the Crystal Vision range. It can be used with five different frame rear modules (RM04, RM05, RM07, RM26 and RM30) and gives a maximum of three SDI outputs. Control is flexible and includes board edge switches, an active front panel on the frame, a remote control panel or the Statesman PC Control System.

EMDEC-100 is aimed at anyone who needs to bring correctly timed analogue video into an embedded environment. For those who additionally require a synchroniser and tracking audio delay to time their signals, Crystal Vision's EMDEC-200 is ideal.



- 12 bit embedding decoder
- Converts PAL/NTSC or Y/C to SDI
- Used for applications where signals already correctly timed
- High quality digital filtering and five line comb
- Competitively-priced
- Embed analogue or AES audio
- 2 x 2 stereo router
- 100mm x 266mm module allows 12 EMDEC-100s in 2U (24 in 4U, six in 1U and two in desk top box)
- Flexible control, including PC software



# SPECIFICATION

## EMDEC-100 MOTHERBOARD

### MECHANICAL

Standard Crystal Vision module 266mm x 100mm  
Weight: 200g without piggyback; 240g with piggyback fitted  
Power consumption: 10 Watts

### ANALOGUE INPUT

Composite video input, 1 volt with syncs  
625 line PAL or 525 line NTSC  
PAL and NTSC Y/C

### SDI OUTPUTS

SDI 270Mbit to EBU 3267-E and SMPTE 259M with inserted EDH  
Maximum of three SDI outputs (two outputs with frame rear modules RM04 and RM07 and three with RM05, RM26 and RM30). One less output in each case if Y/C input

### ANALOGUE PERFORMANCE

Sampling: 12 bit precision 54Mbit (four times oversampling)  
Exceptional performance is achieved by a 12 bit five line adaptive comb decoder  
Frequency response: +/- 0.5dB to 5.5MHz  
Gain error: <1%  
Differential phase and gain <1.5%, <1.5%  
Signal to Noise: <60dB  
Blanking: To analogue PAL/NTSC specifications, with selectable VBI blanking  
PAL lines 7 to 22 and 319 to 335. NTSC lines 10 to 20 and 273 to 282

### DELAY THROUGH BOARD

3 lines

### AUDIO INPUTS

One piggyback can be added to the main board to enable input of 2 x AES or 2 x analogue stereo pairs to be embedded into a single audio group  
Use HD-AIP2, HD-DIP2 or HD-DIP2-RS piggybacks to input analogue, synchronous AES or asynchronous AES audio

### EMBEDDER TIMING PERFORMANCE

Interchannel: <1 clock cycle  
Audio to video: Min 320us for AES audio input. Min 1ms for analogue audio input

### AUDIO MONITORING

One miniature front mounted audio jack and switch selects individual stereo audio analogue monitoring on both input and embedder

### LED INDICATION OF:

Analogue input present  
Power supplies okay

### GPI INPUT LEVELS

Electrically: Will tolerate 0V to 30V, pulled up to +5V through 10kOhm

### GPI OUTPUT LEVELS

Electrically: Open collector transistors 30V, 330Ohm current limit resistors. Pulled up to +5V through 10kOhm

### GPI INPUTS

Recall presets 0 to 15

### GPI OUTPUTS

Video input present

### LOCAL CONTROL

Board edge with 10 character alphanumeric display

### REMOTE CONTROL

RS422/485  
19200 baud, 8 bits, 1 stop no parity  
Control from frame active front panel and remote panel  
Statesman allows control from any PC on a network

### HD-AIP2 DUAL ANALOGUE AUDIO INPUT PIGGYBACK

#### AUDIO INPUT

Two analogue stereo pairs or four mono channels. 20 bit quantising A to Ds. High input impedance (20kOhm) balanced

#### INPUT LEVEL RANGE

0dBFS = +28dBu max / 0dBFS = +12dBu min  
Factory set default: 0dBFS = +18dBu or +24dBu by on board link

#### SIGNAL TO NOISE

-80dBu / -98dBFS (+18dBu) rms., 22Hz to 22kHz typ.

#### TOTAL HARMONIC DISTORTION

0.006% THD+N rms., 22Hz to 22kHz typ.

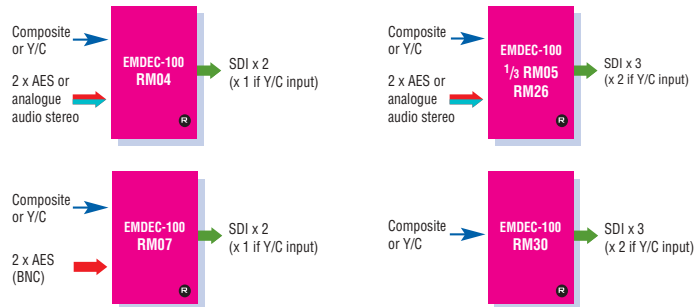
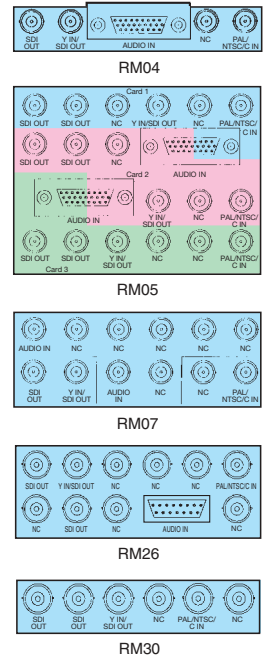
### INTERCHANNEL CROSSTALK

-98dB at 1kHz, -90dB at 20kHz, rms., typ.

### HD-DIP2 AND HD-DIP2-RS DUAL DIGITAL AUDIO INPUT PIGGYBACKS

#### AUDIO INPUT

Two 20 bit stereo pairs. AES3 110Ohm or HiZ (balanced) D-Type, or AES3-id (unbalanced) 75Ohm BNC. Set by on board jumper links  
48kHz audio synchronous to input video  
Asynchronous audio to video 48kHz + or - 50ppm  
HD-DIP2-RS is used for asynchronous AES inputs or AES at different sample rates (30kHz to 108kHz eg. 44.1kHz CD players or 96kHz DVD players)



## ORDERING INFORMATION

EMDEC-100	12 bit PAL/NTSC or Y/C to SDI embedding decoder (allows fitting of one audio input piggyback)
HD-AIP2	Analogue audio (two stereo pairs) input piggyback
HD-DIP2	75Ohm, 110Ohm, HiZ AES/EBU (two stereo pairs) input piggyback. 48kHz only, synchronous to video input
HD-DIP2-RS	Resampling version of HD-DIP2. 30-108kHz AES/EBU
DCDCV18	PSU for analogue audio configurations (one required if analogue audio piggyback fitted)
Indigo 4	4U frame with passive front panel for up to 24 Crystal Vision modules
Indigo 4SE	4U frame with passive front panel fitted with Statesman CPU for up to 24 Crystal Vision modules
Indigo 2	2U frame with passive front panel for up to 12 Crystal Vision modules
Indigo 2AE	2U frame with active front panel for up to 12 Crystal Vision modules
Indigo 2SE	2U frame with passive front panel fitted with Statesman CPU for up to 12 Crystal Vision modules
Indigo 1	1U frame with passive front panel for up to six Crystal Vision modules
Indigo 1A	1U frame with active front panel for up to six Crystal Vision modules
Indigo 1S	1U frame with passive front panel fitted with Statesman CPU for up to six Crystal Vision modules
Indigo DT	Desk top box with passive front panel for up to two Crystal Vision modules
Indigo DTA	Desk top box with active front panel for up to two Crystal Vision modules
Indigo DTS	Desk top box with passive front panel fitted with Statesman CPU for up to two Crystal Vision modules
RM04	Single slot frame rear module. Allows maximum number of EMDEC-100s in frame (24 in 4U, 12 in 2U, six in 1U, two in desk top box). Suitable for embedding analogue or 110Ohm digital audio. Gives access to two SDI outputs (or one if Y/C input). The default rear module and suitable for most applications
RM05	Four slot frame rear module. One rear module used for three EMDEC-100s, allowing 18 EMDEC-100s in 4U and nine in 2U. Suitable for embedding analogue or 110Ohm digital audio. Gives access to three SDI outputs (or two if Y/C input)
RM07	Two slot frame rear module. Allows 12 EMDEC-100s in 4U, six in 2U, three in 1U and one in desk top box. Suitable for embedding 75Ohm digital audio. Gives access to two SDI outputs (or one if Y/C input)
RM26	Two slot frame rear module. Allows 12 EMDEC-100s in 4U, six in 2U, three in 1U and one in desk top box. Suitable for embedding analogue or 110Ohm digital audio. Gives access to three SDI outputs (or two if Y/C input)
RM30	Single slot frame rear module. Allows maximum number of EMDEC-100s in frame (24 in 4U, 12 in 2U, six in 1U, two in desk top box). Does not have any audio connections - use for video only applications. Gives access to three SDI outputs (or two if Y/C input)
REMINd	19" remote control panel
Statesman	PC Control System

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