Crystal Vision

demon

De-embedding Monitor

Meet Demon - a versatile De-embedding Monitor designed for applications requiring the monitoring of video and embedded audio at the same time.

Demon is so flexible it can convert your SDI with embedded audio into combinations of component, composite, Y/C and SDI distribution - along with 20 bit AES and analogue audio simultaneously. Being able to buy just one competitively-priced board for many different functions saves you both money and rack space.

The 625/525 line video output formats available are RGBS with syncs on G, YUVS with syncs on Y, Y/C, composite and non-reclocked SDI. The monitoring encoder can be configured to give a variety of these outputs depending on the frame rear module used (see combination boxes). A mixed syncs reference is provided for RGB monitoring requiring a separate sync.

The output audio is available simultaneously as four mono (two stereo) balanced analogue and two balanced or unbalanced AES, depending on the rear module. The four mono audio outputs are selected from any of the four channels from the chosen group. Audio monitoring is available via the mini headphone socket located on the front board edge and from the frame rear module where it is configurable as either AES or analogue.

15 presets allow you to store and recall parameters such as video output configurations, audio routing and audio group selection, and can also be accessed by GPI.

Demon has sophisticated audio error masking and protection. The powerful Toolbox Analyser continuously monitors the incoming SDI signal to detect any problems which may cause failures with other equipment in the chain.

This multi-featured 100mm x 266mm module fits in the three standard frames and can be integrated with any boards from the company's full product range. Demon can be used with the RM04, RM05, RM06 and RM22 frame rear modules, depending on the packing density and outputs required.

Control is as flexible as Demon itself: use board edge, active frame front panel, remote control panel, GPI or the Statesman PC Control System. The SDI loop-throughs are selected by movable links on the board.

Demon is particularly ideal for multi-channel broadcasters faced with many embedded feeds to monitor, or for applications needing to de-embed both analogue and digital audio at the same time. Demon can also be incorporated with a DTB-AV desk top box to drive a plasma or CRT display and active speakers for local audio de-embedding and extraction of analogue video.
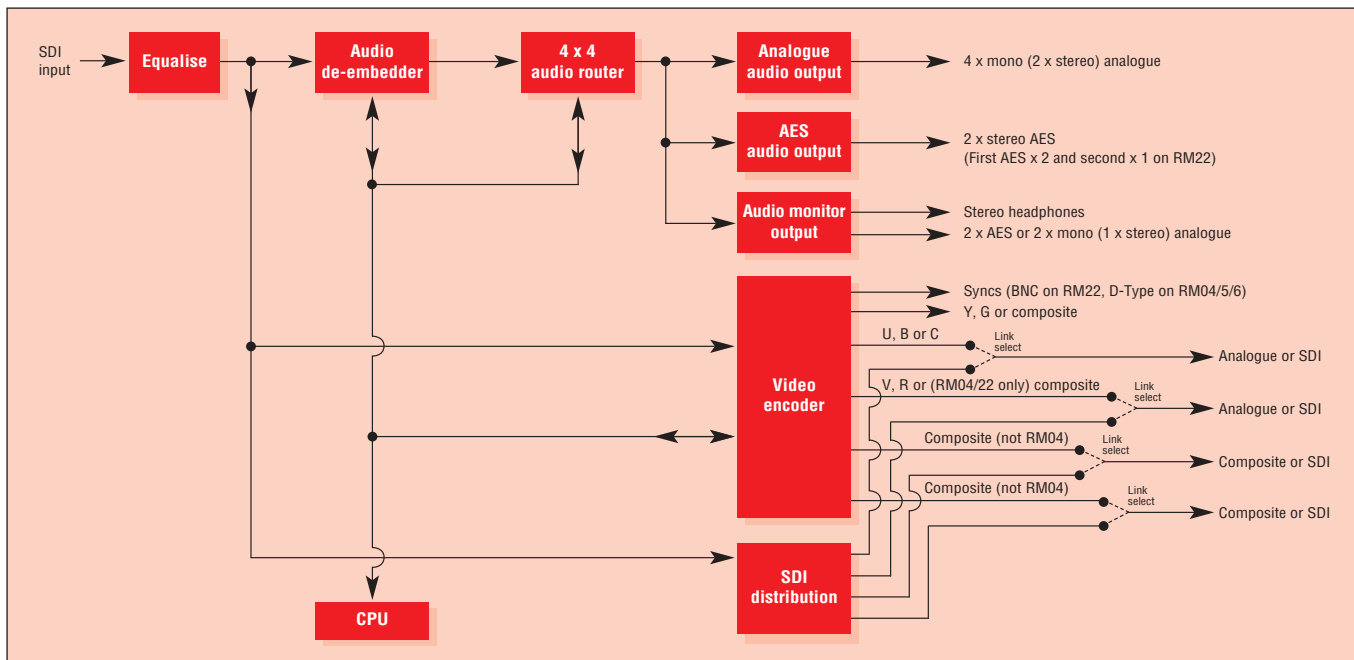
RM04 Output Combinations

- YUV, analogue audio x 4 and 110ohm AES x 2
- RGB, analogue audio x 4 and 110ohm AES x 2
- Y/C, composite, analogue audio x 4 and 110ohm AES x 2
- Y/C, SDI, analogue audio x 4 and 110ohm AES x 2
- Composite x 2, SDI, analogue audio x 4 and 110ohm AES x 2
- SDI x 2, composite, analogue audio x 4 and 110ohm AES x 2

RM05/RM06 Output Combinations

- YUV, SDI x 2, analogue audio x 4 and 110ohm AES x 2
- YUV, composite x 2, analogue audio x 4 and 110ohm AES x 2
- YUV, composite, SDI, analogue audio x 4 and 110ohm AES x 2
- RGB, SDI x 2, analogue audio x 4 and 110ohm AES x 2
- RGB, composite x 2, analogue audio x 4 and 110ohm AES x 2
- RGB, composite, SDI, analogue audio x 4 and 110ohm AES x 2
- Y/C, composite x 3, analogue audio x 4 and 110ohm AES x 2
- Y/C, SDI x 2, composite, analogue audio x 4 and 110ohm AES x 2
- Y/C, composite x 2, SDI, analogue audio x 4 and 110ohm AES x 2
- Composite x 3, SDI x 2, analogue audio x 4 and 110ohm AES x 2
- Composite x 2, SDI x 3, analogue audio x 4 and 110ohm AES x 2
- Composite, SDI x 4, analogue audio x 4 and 110ohm AES x 2

RM22 Output Combinations

- YUV, SDI x 2, analogue audio x 4 and 75ohm AES x 3
- YUV, composite x 2, analogue audio x 4 and 75ohm AES x 3
- YUV, composite, SDI, analogue audio x 4 and 75ohm AES x 3
- RGB, SDI x 2, analogue audio x 4 and 75ohm AES x 3
- RGB, composite x 2, analogue audio x 4 and 75ohm AES x 3
- RGB, composite, SDI, analogue audio x 4 and 75ohm AES x 3
- Y/C, composite x 3, analogue audio x 4 and 75ohm AES x 3
- Y/C, SDI x 2, composite, analogue audio x 4 and 75ohm AES x 3
- Y/C, composite x 2, SDI, analogue audio x 4 and 75ohm AES x 3
- Composite x 4, SDI, analogue audio x 4 and 75ohm AES x 3
- Composite x 3, SDI x 2, analogue audio x 4 and 75ohm AES x 3
- Composite x 2, SDI x 3, analogue audio x 4 and 75ohm AES x 3

SDI input → **Equalise** → **Audio de-embedder** → **4 x 4 audio router** →

Analogue audio output → 4 x mono (2 x stereo) analogue

AES audio output → 2 x stereo AES (First AES x 2 and second x 1 on RM22)

Audio monitor output → Stereo headphones / 2 x AES or 2 x mono (1 x stereo) analogue

Video encoder
→ Syncs (BNC on RM22, D-Type on RM04/5/6)
→ Y, G or composite
U, B or C — Link select → Analogue or SDI
V, R or (RM04/22 only) composite — Link select → Analogue or SDI
Composite (not RM04) — Link select → Composite or SDI
Composite (not RM04) — Link select → Composite or SDI

SDI distribution

CPU

SPECIFICATION

MECHANICAL
Standard Crystal Vision module 266mm x 100mm
Weight: 200g
Power consumption: 6.5 Watts

VIDEO SDI INPUT
SDI 270Mbit to EBU 3267-E and SMPTE 259M
Cable equalisation >200m Belden 8281 or equivalent
Auto or manual 625/525 line selection
Automatic de-embedding of SMPTE or Sony format
Video input is 8 bit processed for 10 bit output DACs

ANALOGUE VIDEO OUPUTS
Maximum of five video outputs (depending on rear module) which can be combinations of analogue (RGB, YUV, Y/C, composite) and SDI
RM04 allows six different output combinations, RM05 and RM06 allow 12 combinations, and RM22 allows 12 combinations (see front page for details)

COMPONENT VIDEO PERFORMANCE
YUV and RGB into 75ohm. Y and G 1 volt with syncs. U/V and R/B 700mV +/-2%
RGB sync: 300mV sync with no burst
Frequency Response:
Luminance: +/-0.2dB to 5.5MHz
Chrominance: +/-0.2dB to 2.5MHz
Noise: <-60dB weighted luminance or chrominance
Gain Error: <1%

COMPOSITE VIDEO PERFORMANCE
Frequency Response:
Luminance: +/-0.2dB to 5MHz
Chrominance: +/-0.2dB to 2.5MHz
Noise: <-54dB weighted luminance or chrominance
Differential Gain: 2% typ.
Differential Phase: +/-0.5% typ.
Blanking: VBI blanked

AUDIO OUPUTS
2 analogue stereo pairs or 4 mono channels. Low output impedance (66ohm) balanced
2 x 20 bit AES/EBU stereo pairs 110ohm balanced or 75ohm unbalanced

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

SIGNAL TO NOISE
-82dBu / -100dBFS (+18dBu) rms., 22Hz to 22kHz typ.

TOTAL HARMONIC DISTORTION
0.005% THD+N rms., 22Hz to 22kHz typ.

INTERCHANNEL CROSSTALK
-112dB at 1kHz, -98dB at 20kHz, rms., typ.

MONITORING
1 x miniature front mounting audio jack. Switch selected for individual stereo audio monitoring
1 x stereo or 2 x mono analogue or 2 x stereo AES outputs from rear of frame

STATUS MONITORING
Front of card edge visual monitoring with alphanumeric and LED indicators to indicate:
► PSU rails present: LED
► SDI input: Alphanumeric display
► AES audio input: Alphanumeric display
► Audio silence: Alphanumeric display

GPI INPUTS
4 x GPI allowing the recall of 15 presets

GPI OUTPUTS
2 x GPI for loss of video and audio silence

AUDIO PROTECTION IN DE-EMBEDDER
A variety of sophisticated techniques are employed to protect and minimise the effects of cuts to untimed and asynchronous SDI, SDI corruption and TRS loss in the SDI signal
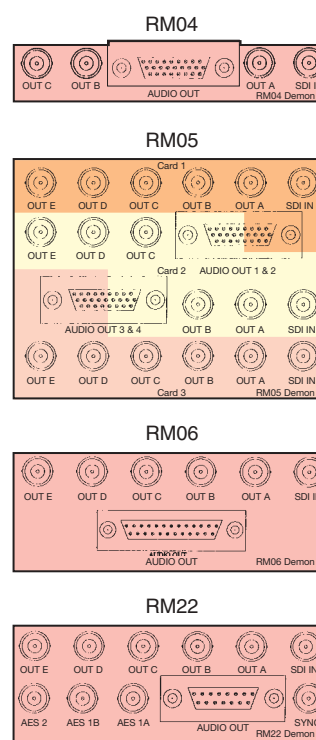
TEST PATTERNS
PAL 100% EBU Colour Bars
NTSC 75% EIA Color Bars
Fail of input: Blue, Black or Colour Bars selectable

TOOLBOX ANALYSER FUNCTIONS
The Toolbox Analyser provides a detailed analysis of the SDI input
Reports include: SDI present, audio groups present, selected audio present, selected audio silent, non audio HANC data present, audio marked for deletion, audio data rate OK/high/low, checksum and format errors, parity error, TRS OK, Video standard = 625/525 lines, Video Picture Luma Content present/low or missing, Video Picture Chroma Content present/low or missing

---

RM04
OUT C OUT B AUDIO OUT OUT A SDI IN RM04 Demon

RM05
Card 1
OUT E OUT D OUT C OUT B OUT A SDI IN
OUT E OUT D OUT C AUDIO OUT 1 & 2
Card 2
AUDIO OUT 3 & 4 OUT B OUT A SDI IN
Card 3
OUT E OUT D OUT C OUT B OUT A SDI IN RM05 Demon

RM06
OUT E OUT D OUT C OUT B OUT A SDI IN
AUDIO OUT RM06 Demon

RM22
OUT E OUT D OUT C OUT B OUT A SDI IN
AES 2 AES 1B AES 1A AUDIO OUT SYNC RM22 Demon

Crystal Vision Ltd.

Lion Technology Park,
Station Road East, Whittlesford,
Cambridge CB2 4NL, England.
Tel: +44 (0)1223 497049
Fax: +44 (0)1223 497059
E-mail: sales@crystalvision.tv
www.crystalvision.tv

ORDERING INFORMATION

Demon	De-embedding Monitor
FR2AV	2U frame for up to 12 Crystal Vision modules
FR1AV	1U frame for up to six Crystal Vision modules
DTB-AV	Desk top box for up to two Crystal Vision modules
RM04	Single slot frame rear module. Allows maximum number of Demon in frame (12 in 2U, six in 1U, two in desk top box). Gives access to three video outputs and both 110ohm balanced AES and analogue audio
RM05	Four slot frame rear module. One rear module used for three Demon, allowing nine Demon in 2U (fits in 2U frame only). Gives access to the maximum five video outputs and both 110ohm balanced AES and analogue audio
RM06	Two slot frame rear module. Allows six Demon in 2U, three in 1U and one in desk top box. Gives access to the maximum five video outputs and both 110ohm balanced AES and analogue audio
RM22	Two slot frame rear module. Allows six Demon in 2U, three in 1U and one in desk top box. Gives access to the maximum five video outputs and both 75ohm unbalanced AES and analogue audio
FP2-LF	Active control panel for 2U frame
FP1-LAV	Active control panel for 1U frame
FP1-SAV	Active control panel for desk top box
REM1U	19" remote panel
REM1US	Narrow 1U remote panel
Statesman	PC Control System

Performance and features are subject to change. Figures given are typical measured values.   DEM1105