

Crystal Vision

ENC116 Broadcast Encoder

The ENC116 is a 10 bit SDI to PAL/NTSC or Y/C broadcast encoder, ideal for applications where composite sources need to be combined or switched between cleanly. With its abundance of features, this 100mm x 266mm module will quite simply give you exceptional broadcast encoding.

The ENC116 has a sophisticated five line TBC which allows SDI which has been delayed by up to five lines through processing to be retimed. This allows hot cuts to inputs which - if within the five line window - will result in no disturbance on output.

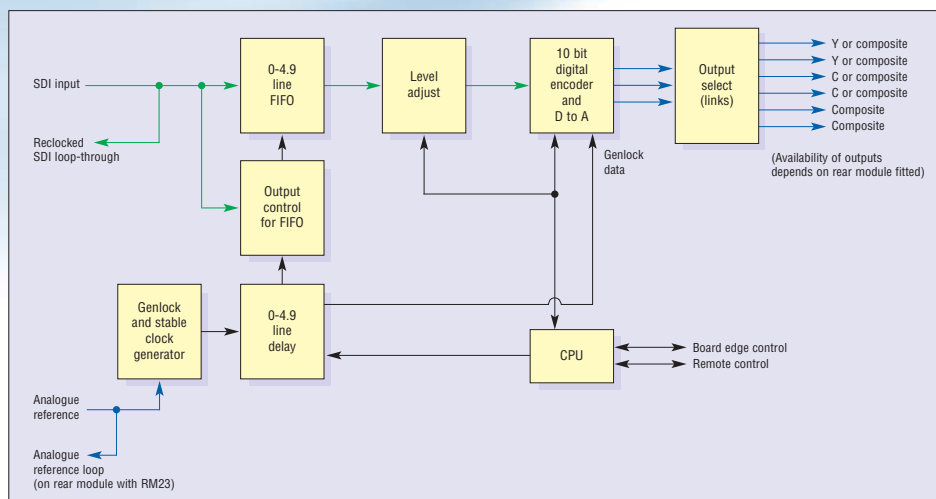
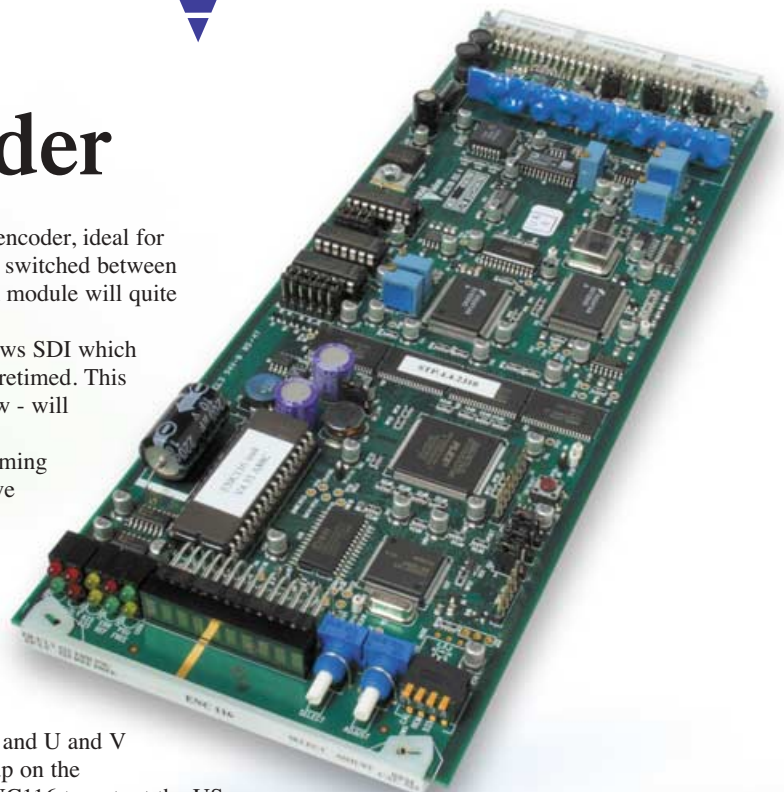
The ENC116 gives you accurate control over the output timing relative to the reference, with vertical adjustment from 0 to five lines in line steps, horizontal coarse adjustment from -4us to one line in seven pixel steps and horizontal sub-pixel adjustment from 0 to one pixel in 1/32 pixel steps. One of the board's key advantages is its ability to lock to a sub-carrier phase reference: this means that when combining two composite signals the sub-carrier phases will be aligned and therefore the colour preserved.

The ENC116 guarantees reliability with its low jitter of approximately 500ps. Overall, burst, luminance, chrominance and U and V gains can all be adjusted to optimise your picture quality. Setup on the Y output can be selected in 525 line applications, allowing ENC116 to output the US (NTSC-M) and Japanese (NTSC-J) standards.

The ENC116 copes admirably should the unexpected happen. There is indication when the TBC is out of range and whether the timing is early or late, while on loss of reference continuous output is maintained.

With its ability to fit in four sizes of frame (4U, 2U, 1U and desk top box) alongside any other product from the range, the ENC116 will suit every application, large or small. Being able to use it with four different frame rear modules (RM01, RM02, RM18 and RM23) brings a flexible choice of outputs, selected as either all composite or as a mixture of composite with Y/C. To aid system integration, the SDI input is reclocked and provided as an additional output. There is a control method to suit you, with board edge switches, an active front panel on the frame, a remote control panel and the Statesman PC software all available.


The ENC116 provides solid, reliable encoding. Ideal applications include broadcast encoding where the analogue output will be combined with another composite signal, encoding for an analogue mixer and converting jittery SDI to stable composite.





 10 bit SDI to PAL/NTSC or Y/C broadcast encoder


 Up to six analogue outputs


 5 line TBC


 Can lock to sub-carrier phase reference

 Very accurate timing adjustments

 Low jitter of 500ps

 Adjustable gains

 Space-saving: 100mm x 266mm module allows 12 ENC116 in 2U (24 in 4U, six in 1U and two in desk top box)

 Flexible control, from board edge to PC software

SPECIFICATION

MECHANICAL

Standard Crystal Vision module 266mm x 100mm
 Weight: 210g
 Power consumption: 7.4 Watts

VIDEO INPUT

One input
 SDI 270Mbit to EBU 3267-E and SMPTE 259M
 Cable equalisation >200m Belden 8281 or equivalent
 Auto 625/525 line selection

ANALOGUE REFERENCE

Composite Black and Burst
 Amplitude of syncs 300mV +/- 10%
 Link on PCB selects 75Ohm termination or high impedance for loop-through
 In genlock mode the composite output is time-base corrected and phase-locked to the reference. In free-run mode the composite output is locked to the syncs embedded in the SDI stream with the phase reset every eight fields. If the reference is removed it switches to free-run mode and the output timing continues as if the reference is present

VIDEO OUTPUTS

Maximum of six analogue outputs (two outputs with frame rear module RM23, three with RM01, five with RM02 and six with RM18). On-board links allow the selection of all composite outputs, or a mixture of composite and Y/C
 Reclocked SDI board loop-through available - loop needs ENC116 to be fitted. SDI 270Mbit to EBU 3267-E and SMPTE 259M. Will drive >200m Belden 8281 or equivalent

Reference board loop-through available with RM02 and RM18 - loop needs ENC116 to be fitted. Reference rear module loop-through available with RM23 - loop does not need ENC116 to be fitted as rear module has all circuitry required

If the input SDI is removed the ENC116 will output Black and Burst or one of three test patterns (chroma-modulated luma ramp, 75% bars or 100% bars)

ANALOGUE PERFORMANCE

Frequency response: 0.1dB 0 to 5.5 MHz
 Differential Phase: <1°
 Differential Gain: <1%
 Signal to Noise: <-60dB weighted
 Blanking: To PAL/NTSC specification horizontally and vertically with selectable VBI blanking. PAL lines 7 to 22 and 320 to 335 and NTSC lines 10 to 20 and 273 to 282. Active PAL lines 6 to 22 and 319 to 335 is available as a menu selectable option

VIDEO TIMING ADJUSTMENTS

Output timing can be set to be the same as the analogue reference, or it can be offset by the user to be between 4us earlier than the reference and 4.9 lines later. The SDI input must be earlier than the required output by a minimum of 4.3us and a maximum of 4.9 lines. If the input is outside of this window a valid composite output will still be created, but the content of the picture will be vertically offset

DELAY THROUGH BOARD

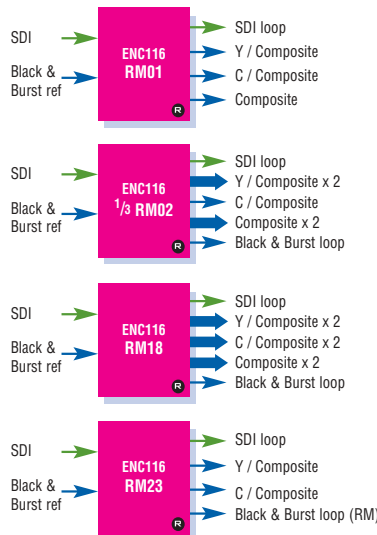
4.3us min - 4.9 line max

LED INDICATION OF:

Power supplies on board
 SDI input present
 SDI input lock error
 625/525 input standard
 Genlock reference present
 Reference lock error, or mis-terminated reference
 Output not phase-locked to input
 Input out of TBC range. Indication is given of early by <5 lines, late by <5 lines and more than 5 lines out of range

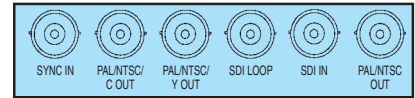
LOCAL CONTROL

Board edge with ten character alphanumeric display
 Move links to select between composite and Y/C on some of the outputs
 Output timing relative to reference can be set by vertical offset (0 to 5 lines in line steps), horizontal coarse adjustment (-4us to 1 line in seven pixel steps) and horizontal sub-pixel adjustment (0 to 1 pixel in 1/32 pixel steps)
 SCH phase can be adjusted in coarse steps of 1/2° and fine steps of 1/16°
 Adjustment of gains (YUV, burst, luminance, chroma and individual U and V) in 0.1% steps
 When selected, the amount of NTSC setup can be set from -10 IRE to +20 IRE in 0.3 IRE steps

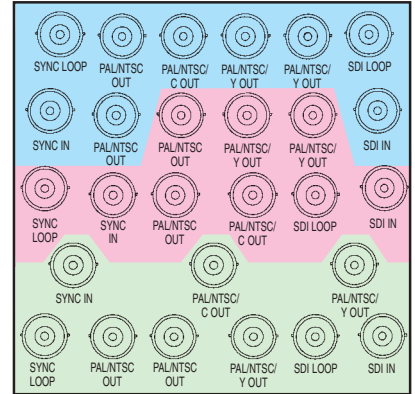


REMOTE CONTROL

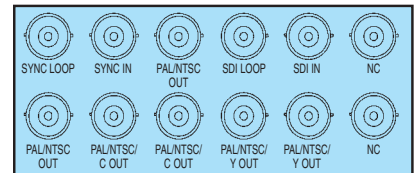
RS422/485
 19200 baud, 8 bits, 1 stop no parity
 Control from frame front panel and remote panel
 Statesman allows control from any PC on a network



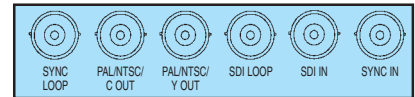
RM01



RM02



RM18



RM23

ORDERING INFORMATION

ENC116	10 bit SDI to composite or Y/C broadcast encoder with output timing adjustments
Indigo 4	4U frame with passive front panel for up to 24 Crystal Vision modules
Indigo 4S	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 2A	2U frame with active front panel for up to 12 Crystal Vision modules
Indigo 2S	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
RM01	Single slot frame rear module. Allows maximum number of ENC116 in frame (24 in 4U, 12 in 2U, six in 1U, two in desk top box). Gives access to three analogue outputs (three composite or one composite with Y/C) and a reclocked SDI board loop-through
RM02	Four slot frame rear module. One rear module used for three ENC116, allowing 18 ENC116s in 4U and nine in 2U. Gives access to five analogue outputs (five composite or three composite with Y/C) and both reclocked SDI and Black and Burst board loop-throughs
RM18	Two slot frame rear module. Allows 12 ENC116 in 4U, six in 2U, three in 1U and one in desk top box. Gives access to six analogue outputs (six composite, four composite with Y/C or two composite with two Y/C) and both reclocked SDI and Black and Burst board loop-throughs
RM23	Single slot frame rear module. Allows maximum number of ENC116 in frame (24 in 4U, 12 in 2U, six in 1U, two in desk top box). Gives access to two analogue outputs (two composite or one Y/C), a reclocked SDI board loop-through and a Black and Burst rear module loop-through
REMIND	19" remote control panel
Statesman	PC Control System

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