

DC12

SERIAL DIGITAL TO COMPOSITE CONVERTER

0. INTRODUCTION

- The P2C board receives serial 422 input signal and encodes this signal in a composite (PAL/NTSC) video signal.
- The board includes a 1H Time Base Corrector to remove jitter and phase noise from the incoming digital video input.
- When genlock mode is enabled, the composite video output is locked on the provided reference signal (genlock input signal). The horizontal and subcarrier phase are fully adjustable ($-7/+12 \mu\text{S}$ for H and 360° for SC). In this mode, the serial digital video input signal does not need to have a very precise phase with respect to the composite output phase requested. The serial digital video input signal only needs to be from $3 \mu\text{S}$ to $66 \mu\text{S}$ in advance on the composite output phase requested.
- When genlock is disabled, the composite video output is locked on the serial digital video input signal and a delay of $\pm 7 \mu\text{S}$ is introduced by the encoding process.
- The board delivers two video composite outputs (Y+C+S) and optionally Y/C, YUV and RGB outputs.
- All video processing including composite encoding are made in digital to give high performance and to get a time invariant operation. The final conversion to analogue is made through high performance 10-bit D/A converters using 27 MHz oversampling technic to get perfect frequency response.

1. CONNECTIONS

Connect the incoming SDI signal to the "Serial IN" BNC connector. The next connector ("Serial OUT") is a reclocked loop-through of the input. Connect a video reference (CB/BB) to the "REF" BNC connector. When the DC12 is used with a EVS Disk Recorder, the video reference must be the same for both. The PAL/NTSC output signal is available on the "CVBS OUT1" connector. The remaining BNC connector ("OUT2/LOOP") can be configured as a second PAL/NTSC output or as a loop-through for the video reference (see block diagram below for jumper's configuration)

2. SERIAL DIGITAL INPUT WITH LOOP

- One BNC for input, one BNC for loop.
- Input impedance: 75Ω .
- Active loop through with reclocking.



- Automatic cable equalization.
- 270 Mb/s serial input CCIR-601 compatible 525/625.
- 8/10 bit compatible input (10-bit significant)
- Serial 422 input available as an option.

3. GENLOCK INPUT

- 1 Vpp composite video input (regular composite video signal or black burst PAL/NTSC).
- Loop through input capability (2 X BNC).

4. VIDEO OUTPUTS

- 1 or 2 video composite outputs (selection by jumper).
- 1 Vpp on 75 Ω composite video output fully conform to PAL, NTSC US or NTSC_JAPAN.
- BNC connectors.
- Video levels, timing, rise and fall time fully conform to the PAL/NTSC video standard.
- User selection between PAL and NTSC US or NTSC japan operation.
- Video performance:
 - Luma bandwidth 5 MHz (± 0.1 dB)
 - Chroma filter according to CCIR Rec 624-3
 - Differential gain 0.9%
 - Differential phase 0.5%
- Optional piggy-back board for Y/C, YUV and RGB outputs.

5. SYNCHRONIZATION

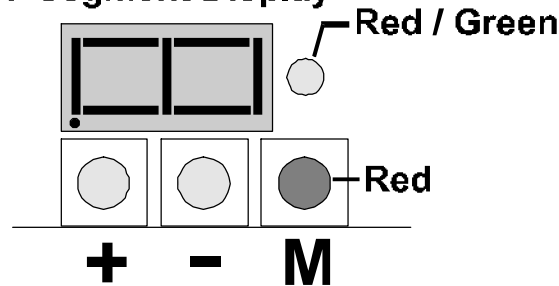
- Video outputs are locked on the genlock video input signal sent to the board or locked on the serial input signal (user selectable).
- Horizontal phase (video + sync phase) of the video output signal can be adjusted relatively to the genlock input signal received: -7 μ S to +12 μ S per 2 nS step.
- Subcarrier phase of the video output signal, can be adjusted relatively to the genlock input signal received: $\pm 180^\circ$ per 0.3° step.
- 422 digital input signal can have any phase relatively to the genlock reference signal but to get correct vertical phase the serial digital input signal must be from 3 μ S to 66 μ S in advance on the composite output phase requested.

-When genlock is disabled, the composite video output is locked on the serial digital video input signal and a delay of +/- 7 μ S is introduced by the encoding process.

6. CONTROL AND SET UP

- Encoder fully controlled by "on board set-up menu".

7-Segment Display



Green → you must select the parameter you want to adjust. +/- buttons can be used to scroll through parameters.

Red → a parameter has been selected. By pressing +/- buttons, you change the value of this parameter.

Display	Parameter	Default	Range
S	Genlock <u>S</u> ubcarrier Phase	(*)	0 – F
H	Genlock <u>H</u> orizontal Phase	(*)	0 – F
Y	Luminance (<u>Y</u>) Amplitude	(*)	0 – F
U	B-Y (<u>U</u>) Amplitude	(*)	0 – F
U	R-Y (<u>U</u>) Amplitude	(*)	0 – F
E	Set-up Amplitude	0	0 – F
H	Picture Position	0	0 – 9
T	<u>T</u> eletext Mode	0	0 (no VBI data) 1 (VBI data without set-up) 2 (VBI data with set-up)
C	<u>C</u> onfig mode	E	E (encoder mode) L (internal linear ramp mode) b (internal 75% color bar mode)
G	<u>G</u> enlock Mode	1	0 (locked on 422 data) 1 (locked on external reference)
L	<u>L</u> ine Mode	6	6 (PAL) 5 (NTSC US) 4 (NTSC Japan)
P	<u>P</u> rogram parameter		

(*) The value of these parameters depends on the selected standard (PAL, NTSC, NTSC Japan).

Buttons + & - : These are used to go UP & DOWN the MENU, when an adjustment mode is chosen, they are used to make the desired adjustments

Button M : This selects / de-selects the chosen menu items.

To store the value of parameters :

Key		[M]		[+]		[+]		[+]	
LED Display	P	1	2	3	S				

To recall previous value of parameters :

Key		[M]		[-]		[-]	
LED Display	P	1	0	S			

Example of adjustment : to adjust output luminance level

- 1/ With the LED green, use + / - buttons to set menu to **Y**.
- 2/ Select luminance adjustment mode by pressing button **M**. the LED turns red.
- 3/ Adjust **luminance** by pressing + / - buttons
- 4/ When adjustment is correct, **deselect** adjustment mode by pressing **M**. The LED is green again.

Further adjustments can be made as necessary ; when all adjustments have been made and the LED is green, settings can be stored by choosing P. on the 7-segment display by pressing +/- buttons. Press the button M to select this mode (LED turns red), button + should then be pressed 3 times. The 7-segment display should then read S.

- Optionally, the board can be fully controlled by a RS232 line.

7. MECHANICAL

- Width : 100 mm
- Height: 24 mm
- Depth : 316 mm
- Weight: 0.3 Kg

8. POWER

- * +5 VDC, 500 mA typ.
- * -5 VDC ,380 mA typ.
- * +12 VDC, 190 mA typ.
- * -12 VDC , 30 mA typ.

9. ENVIRONMENTAL

- Storage -10 °C to +60 °C
- Operation + 10 °C to 40 °C
- Humidity max 70 % non condensing.

