

VAC 10-700-097-D

Loop-In Y/C to Composite Converter (NTSC or PAL)

(Manual Rev A)

*[Unit ships with mating power connector and two 75
Ohm terminators]*

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Two Year Limited Warranty

All Video Accessory Corporation (VAC) products have a full two year limited warranty. Exclusion to the warranty include but are not limited to damage to external components, power LED failure where the product continues to functions, electrical damage due to lightning or ESD, and minor cosmetic imperfections in the epoxy that do not affect the unit's performance. The warranty shall be void if any alteration or repair of the VAC product is attempted by anyone not authorized by VAC. This warranty is expressly in lieu of all other warranties expressed or implied, including warranties of merchantability and fitness for use, and of all other obligation or liabilities on the part of VAC, and it neither assumes nor authorizes any other person to assume for it any liability in connection with the sale of this product. This warranty shall not apply to the product or any part thereof subjected to accident, negligence, alteration, abuse or misuse. No warranty whatsoever is made with respect to accessories or parts supplied by anyone other than VAC, and this warranty shall extend only to the original purchaser of the product. The warranty provided in this article is exclusive and in lieu of, and buyer hereby waives, all other remedies, express or implied, arising by law or otherwise, including consequential damages, where or not occasioned by negligence of VAC. This warranty shall not be extended, altered or varied except by written instrument signed by VAC and buyer, and shall only apply within the boundaries of the continental United States. Liability of VAC is limited repair or replacement at the option of VAC. Warranty work is to be sent to VAC. Freight charges will be the responsibility of the purchaser.

Rev. 01-01-2018

Document History

REV	Date	Action
A	March 5, 2013	<p>Rev D is a code modification to the Rev C unit.</p> <p>Removed the genlock between the video decoder and encoder.</p> <p>Tuned the SC frequency registers in the encoder to generate correct SC frequency without genlock.</p> <p>Added drawing to Power Requirement section.</p>

1.0 Basic Operation

The 10-700-097-D is a loop-thru input Y/C to Composite video converter. The unit has two composite outputs. All video connectors are BNC's. The unit is based on the Analog Devices ADV7180 decoder and the ADV7171 encoder. The unit also has a USB port that permits the user to output color bars and download new code.

2.0 Basic Functions

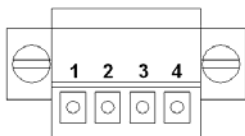
The Y/C input consists of two BNC's with two additional BNC's for the loop-thru function. If the loop-thru function is not used 75 Ohm terminators must be used on both loop-thru connectors. The internal isolated power supply eliminates ground loops between the power supply ground and the video grounds. All of the video signal BNC's shields are connected to the internal circuit ground plane. The unit will operate correctly on 10-24 VAC or 10-34 VDC.

The unit will operate as a Y/C to Composite converter without using the USB port as shipped from the factory. The unit automatically detects if the Y/C video input is NTSC or PAL timing and generates the correct composite video output (regardless of the Option setting). If no video is present on the input the LED will be yellow. The unit will output a solid blue screen if no video is present on the input. The format (NTSC or PAL) of the blue screen will match the last input video signal format or at power up the Option setting. The user can select an Option mode or the power up default mode can be set at the factory. When the unit detects video, the LED turns to green.

The maintenance mode permits the user to output color bars, change the default Option mode, and download new code.

3.0 Power Requirements

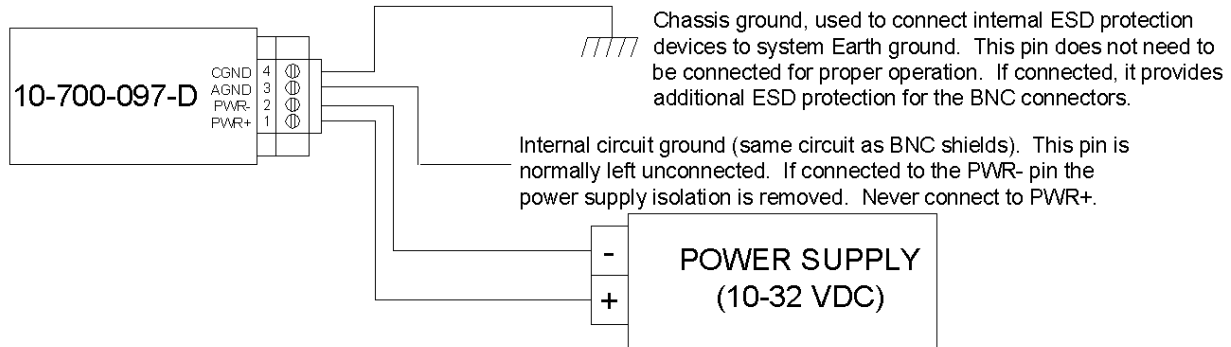
This unit has an internal switching supply that isolates supply power from the internal power and I/O. Units will operate correctly when powered by 10-32 VDC. The unit is equipped with full wave rectification, so power may be applied between Pins 1 & 2 using either polarity.



Pin 1	PWR+ (10-32V Supply Connection +V)
Pin 2	PWR- (10-32V Return Connection -V/GND)
Pin 3	AGND/Circuit Ground (Same as BNC Shields)
Pin 4	CGND/Chassis Ground (ESD Protection Ground)

Internal Circuit ground (AGND/Pin-3) is the ground reference for the internal circuits and BNC shields. It is NOT the input voltage return path of pins 1 and 2. The user has the option of floating internal circuits, with respect to any system ground, by not connecting to this pin. The user also has the option to connect the circuit ground to the chassis ground or the input power ground (or both). This power connector pin-out permits the user to define the grounding

environment the unit is used in. The following diagram shows the basic power connector connections.



Chassis ground (CGND/Pin-4) is connected to internal ESD protection devices. The chassis ground does not need to be connected for proper operation. Secondary ESD protection connections exist between the input and output video signals and internal circuit ground.

The power connector (J3) is a 4 pin 3.5mm center header (Phoenix Contact #1897267) and mating power plug (Phoenix Contact #1847071) with screw flanges for vibration and shock resistance.

The unit has a multi-color LED (green/orange/yellow) to indicate power is connected and the internal uP is running.

4.0 Overall Specifications

Input Voltage Range:	2 Vpp max.
Input Format	NTSC (60 Hz) or PAL (B/G/H/I/D, 50Hz)
Input Impedance:	10K Ohms (loop-thru input)
Input Connectors:	BNC (4X)
Output Gain:	Unity
Output Coupling:	DC coupled (DC restored, clamped to ground)
Output Connectors:	BNC (2X)

Power LED:	Green/Yellow
Video Decoder	Analog Devices ADV7180
Video Encoder	Analog Devices ADV7171
Configuration port:	USB
Operating Temperature Range:	-40C to +80C
Operating Altitude Range	-100 to +18,000 feet (limit based on thermal cooling, not mechanical/structure considerations)
Power:	10-24 VAC or 10-34V DC (either polarity on PWR connector)
Supply Current:	12 VDC 260ma 28 VDC 125ma
Power Connector:	3.5mm 4 pin terminal block (Phoenix Contact #1911185) Mating plug (Phoenix Contact #1847071)
Package size:	4.4" X 2.2" X 0.65"
Package material:	Cytec FR-1047 epoxy and EA-87 hardener
Mounting:	Two 6-32 threaded inserts (pull tested to 100lb)
Weight:	7 oz.

5.0 USB Port

The USB port permits the user to communicate with the 10-700-097-D unit using a terminal emulator program like HyperTerminal. The unit has a Silicon Labs CP2102 USB-UART bridge IC to convert the USB data stream to an RS232 ASCII character stream that connects to the internal micro-processor. Text commands are used to control the 10-700-097-B. The following shows the communication configuration needed to be used by the terminal emulator program with the USB port configured as a virtual RS232 communications port.

Baud Rate	9600
Data Bits	8
Start Bits	1
Stop bits	1
Parity	None
Control	XON/XOFF

After connecting the unit to a laptop running HyperTerminal and selecting the correct virtual comm channel, power ON the 10-700-097-D, the user needs to enter two 'ENTER' (carriage returns) keys to enter the maintenance mode. In maintenance mode the output is a blue screen with the format indicated by the Option setting or color bars with the format indicated by the Option setting. External video is not passed through the unit in Maintenance Mode.

A software driver will need to be loaded onto the laptop to communicate with the CP2102 as a virtual RS232 port through a USB port. The driver can be downloaded from the Silicon Labs web site (www.silabs.com). If at any point the unit does not respond to key strokes, try using the HyperTerminal 'Disconnect' and 'Call' icons in the top toll bar.

The following shows the commands contained in the unit's code.

```
HELP
INFO
RUN
BARS ON
BARS OFF
OPTION
LOAD NEW CODE
```

There is a command to download new code into the unit. The user must contact the factory for additional information on how to use this command and where to obtain the additional information and code files.

WARNING: Once the user answers 'YES' to both prompts to load new code the internal FLASH memory is erased, a hex code file MUST be loaded for the unit to function.

5.1 HELP

This command lists the available commands in the maintenance mode code.

5.2 INFO

This command provides contact information for VAC, the three CRC values, the unit part number and serial numbers, and default Option mode number.

5.3 RUN

Exits the Maintenance mode and jumps to normal run mode. If a laptop is connected and configured to communicate with the unit, any key stroke will cause the unit to exit RUN mode and jump into Maintenance mode.

5.4 BARS ON

Turns Color Bars ON as the output signal. The output format is controlled by the current Option setting (11=NTSC, 12=PAL).

5.5 BARS OFF

Turns color bars OFF as the output signal. If color bars are on and the user issues a RUN command the bars are turned OFF.

5.6 OPTION

This command permits the user to set the power up default Option mode.

Option 11 – No video blue screen and Color Bars are NTSC format.

Option 12 – No video blue screen and Color Bars are PAL format.

5.7 LOAD NEW CODE

This command causes the unit to jump to the downloader code. The user is asked twice if they really want to load new code. Once the download process is started new code **MUST** be loaded for the unit to function correctly.

6.0 Package

