

instruction manual  
video chroma keyer model 617GS

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**COLORADO VIDEO, INC**

**BOULDER, COLORADO**

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## **WARNING**

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications.

It has been tested and found to comply with the limits for a class A computing device pursuant to subpart of J of part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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## SECTION I

### GENERAL DESCRIPTION

#### 1.1 INTRODUCTION

This instruction manual is to be used as a guide to the installation, adjustment, operation and maintenance of the Colorado Video Model 617GS Video Chroma Keyer

#### 1.2 PURPOSE OF EQUIPMENT

The Model 617GS Video Chroma Keyer is a two-input device that substitutes video content from a "background" input for video of sampled chrominance and luminance values in the "foreground" input. This technique is commonly known as green-screen or blue-screen. A most commonly cited example of this technique is that of a weather-caster in front of a blue-screen being "keyed" over a weather map background.

#### 1.3 DESCRIPTION OF EQUIPMENT

The 617GS consists of a single printed circuit board mounted in an ABS case with external power supply.

#### 1.4 SPECIFICATIONS

Size:	2.4"H X 4.9"D X 6.9"W
Weight:	2 lbs. with power supply (wall-mount transformer)
Mounting:	Free standing
Power:	5 VDC regulated, 900mA
Inputs/Video:	Composite, 1 V p-p. (2) 75 ohms. 525 Line NTSC (625 line PAL optional) (s-video i/o optional)
Outputs:	Composite video, 1 V p-p into 75 ohms. (s-video i/o optional)
Controls:	Front Panel: Output: Keyed/Foreground Only Background: Freeze/Live Range Set (potentiometer) Chroma (push button) Luma (push button) Key Color: Capture (push button) Key Color: Display (push button)
Performance:	Resolution: 720x480 NTSC or 720 x 580 PAL

## SECTION II

### OPERATING INSTRUCTIONS

#### 2.1 INTRODUCTION

This section contains the general operating instructions and procedures for the Model 617GS Chroma keyer.

#### 2.2 SYSTEM SETUP & OPERATION

Connect your two video sources to the “foreground” and “background” input connectors. Connect the “output” to a terminated monitor or other destination. Connect the power adapter. Set the “output” switch to “foreground only” and the “background” switch to “live”.

Aim the foreground camera so that your desired key color occupies at least the center of its picture. Press and release the “key color” “capture” push button. To verify that a color sample has been successfully captured, press and hold the “key color” “display” button. The captured key color will be displayed in a rectangle at the center of the screen.

Switching the “output” switch to “keyed” will cause the 617GS to replace any area of the key color in the foreground picture with the corresponding area of the background picture.

Use the “range set” knob while holding down the “chroma” or “luma” buttons to optimize the chroma-key function for your setup. Keying works best if the sampled key color is perfectly consistent wherever it appears in the foreground picture. Shading, hot spots, and other variations, even camera noise, in the foreground picture can cause specks or spots of the background image to appear or not appear in areas where it should or shouldn't, respectively. The “range set” knob should be used to adjust the chroma keyer's tolerance of noise and unevenness in areas of the foreground input depending on your particular situation.

Using black, white, or shades of gray as the key color is possible but not as reliable as a heavily saturated color like pure red, green, blue, or yellow. This is because keying on a color allows the 617GS to detect the key color based on hue, saturation, and intensity. Keying on black, gray, or white allows keying on saturation (zero) and intensity but not hue because it is undefined when saturation is zero.

Moving the “background” switch to “freeze” stores the background image in memory. The background input need no longer be present once it is stored.

# warranty

Colorado Video, Incorporated warrants the equipment of its manufacture to be free of defects in material and/or workmanship under normal use and service. Colorado Video, Incorporated's obligation under this warranty is limited to making good at its laboratories any part or parts thereof, which shall within one (1) year after delivery to the original purchaser be returned to Colorado Video, Incorporated at its laboratories, with transportation charges prepaid, and which Colorado Video, Incorporated's examination shall disclose to its satisfaction to have been defective.

This warranty is expressly in lieu of all other warranties and representation, express or implied, and of all other obligations or liabilities on the part of Colorado Video, Incorporated. In no event shall Colorado Video, Incorporated be liable for damages of any kind connected with the use of its equipment or its failure to function properly.

This warranty shall not apply to any equipment which shall have been repaired or altered outside of Colorado Video, Incorporated's laboratories so as to, in Colorado Video, Incorporated's judgement, affect its use, function, reliability, or which shall have been subject to misuse, alteration, improper installation, negligence, or accident.

Before any equipment is returned to Colorado Video, Incorporated for repairs or adjustments, shipping instructions should be obtained from Colorado Video, Incorporated. Colorado Video, Incorporated assumes no responsibility for unauthorized returns.

# no color?

**Turn off the Line-Lock** feature of any video source connected to this equipment.

Most likely, any loss of color is because your video signal source does not conform to Electronic Industry Association (EIA) requirements.

Colorado Video equipment requires video input signals that conform to EIA RS-170A and NTSC specifications. These industry standard specifications require that color subcarrier frequency be  $3,579,545 \pm 10$  Hz, horizontal sync frequency be 15,734.263 Hz, and vertical sync frequency be 59.94 Hz. Video equipment must strictly adhere to these frequencies in order to maintain proper phase relationships between these three signals.

Cameras operating in Line-Lock mode violate these standards by synchronizing vertical sync to the 60 Hz (not 59.94 Hz) sine wave from the power line. To maintain proper phasing between horizontal and vertical sync, these cameras further have to violate the horizontal frequency specification by running at 15,750 Hz, not 15,734 Hz.

Colorado Video equipment runs at the horizontal and vertical sync frequencies present at its input. In order to maintain industry mandated phase relationships between vertical, horizontal, and color subcarrier, the subcarrier frequency may be forced too high for some monitors to display color. Many times in this situation, some monitors will display color while others will not.

**To set your camera for proper operation**, find a switch or jumper on the camera that refers to “line-lock” (sometimes “line-loc”) or “external” and switch it away from that position. Proper settings are referred to as “int”, “internal”, “internal crystal” or line-lock “off”. If this setting is not available, you can install a Time Base Corrector in series between the camera output and Colorado Video input. It is also possible that running your camera on a power adapter with a DC, not AC, output will solve the problem. It may be necessary to try both polarities when using a DC adapter.

**PAL Users:** The frequencies are different but the same principle applies.