

video quantizer 606h

general description

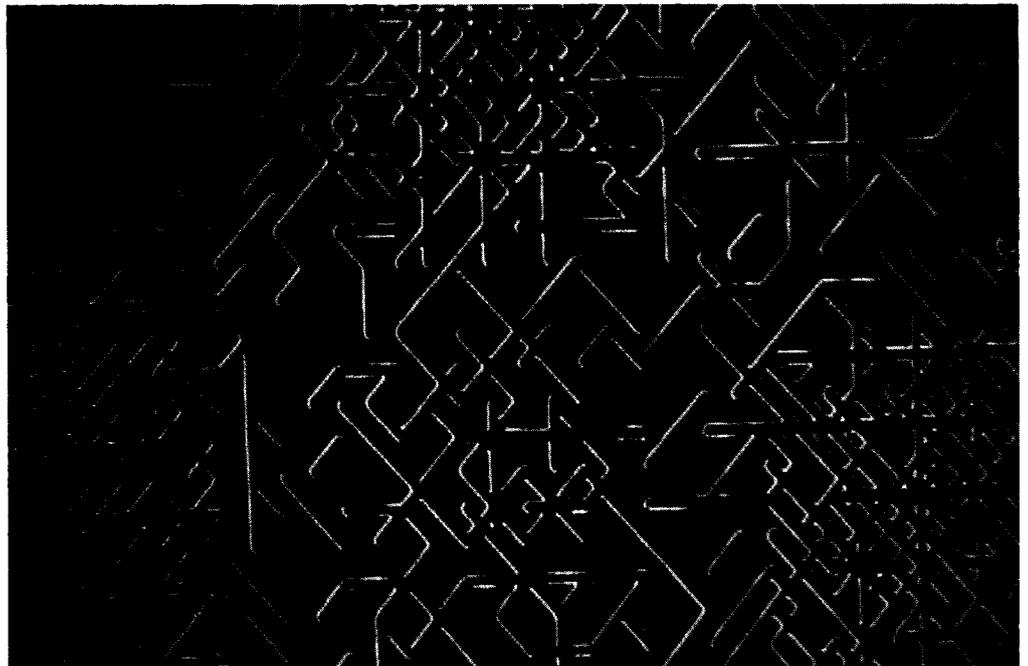
The Model 606H is an instrument designed to process the grayscale characteristics of monochrome video input signals in order to achieve radical alterations in output linearity or, alternately, to synthesize color signals from different shades of gray.

The unit operates on the input video signal by selecting from 1 to 16 separate narrow "slices" which are adjustable to any amplitude level between black and white. Selection of the thresholds may be linear, logarithmic, antilog, or on any other arbitrary basis. The control panel contains adjustments which allow the operator to vary the slice threshold as well as the color output from each of the 16 channels. A wide range of color variations may be produced by adjusting the amount of Red-Green-Blue sent to the output from each channel. The unit also contains a linear video amplifier, the output of which may be mixed as b/w with the quantized color signals for added versatility.

The Model 606H is intended primarily for television studio "special effects" production, but is suitable for a wide range of other uses. Effects achievable include:

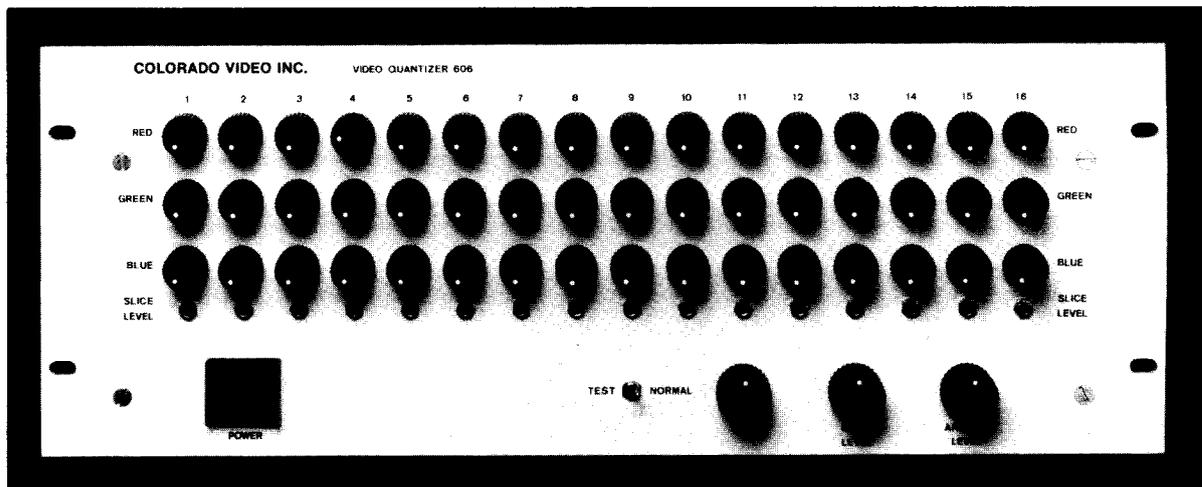
- Keying
- Tone Reduction
- Outlining
- Equal Brightness Contouring
- Grayscale Inversion
- Synthetic Color Generation
- Tinting
- Super-Graphic Pattern Generation

The 606H may be used with either noncomposite or composite video input signals from a television camera, flying spot scanner, video tape recorder, or other source.



specifications

Size:	7" x 19" x 12"	
Mounting:	Standard 19" rack	
Construction:	Plug-in cards, solid state, silicon	
Power:	117 VAC, 60 Hertz	
Inputs:	Video	1V, 75 ohms
	External Sync	4V, 1k ohms
	Blanking	4V, 1k ohms
	External Key	1V, 75 ohms
Outputs:	Video Red	1V, 75 ohms
	Video Green	1V, 75 ohms
	Video Blue	1V, 75 ohms
	Sync	3.5V, 75 ohms
Controls:	AC Power	
	Input Level	
	Bias	
	Analog Level	
	Quantizer	Normal/Test
	Quantizer Threshold	1 through 16
	Quantizer Mix Levels	Red 1 through 16
		Green 1 through 16
		Blue 1 through 16
Rear Controls:	Sync	Int/Ext
	Output Levels	Red
		Green
		Blue
Connectors:	BNC	



606 VIDEO QUANTIZER

Inv #	REMARKS	S/N	MODEL	DATE
163	W-P AFB	001	21chan	1-15-70
162	Hyer	002		1-15-70
574	U of Iowa	003		1-15-70
310	Integrerad, Sweden	004		3-1-70
	IBM	005		3-1-70
268	Teletjockey	006	A*	4-2-70
372	U of San Diego	007		4-2-70
255	Rensselaer	008		4-2-70
385	KGM, England	009		4-2-70
270	WFAA - Dallas	010	A*	10-20-70
450	FT. Geo. Meade, MD	011	A	12-14-70
*	Salvaged Richard Taylor	012	(-5) Slicer	12-14-70
	??	013		
390	Brown Boveri & Co, Switzerland	014		9-13-71
389	Lockheed Missile + Space	015		9-13-71
5459	University of Illinois	016	(P)	9-17-71
420	LDS Hospital, Salt Lake City	017		9-17-71
422	Hughes	018	C	11-22-71
1240	Johansen Andersen	019		3-10-72
576	Cramer	020		4-24-72
548	Dupont	021	A	4-24-72
711	Marshall Space Flt Ctr	022		4-24-72
711	" " " "	023		4-24-72
493	Datex	024	A	4-24-72
820	KODAK	025	"C"	6-8-72
1558 553	Museum of Science (Boston) Tech Con	026	A	8-28-72
670	Tech Con	027	A	1-30-73
751	DIAMOND Power Specialty Corp.	028	A	4-25-73
735	Marshall Space Flt Ctr, NASA	029	STD(16)	6-5-73
863	Raytheon	030	" "	6-26-73
1020	Mob. Analy - John Brook.	031	" "	7-10-73
1130	IBM - Fishkill	032	" "	1-22-74
1099	IBM - Owego.	033	"C"	3-26-74
1038	Sperry.	034	"	"
1454	Chor Castle - Mexico	035	"	"

video mirror 420

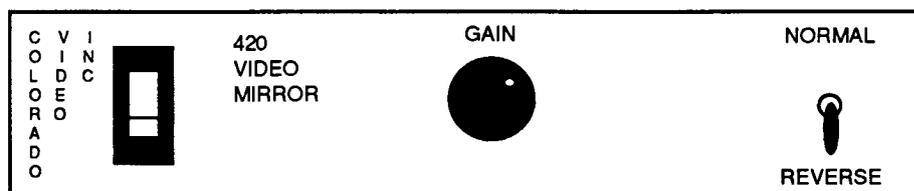
general description

The model 420 Video Mirror reverses the image from a monochrome video camera so that the camera appears to scan from right to left (opposite of the video monitor). It is useful in systems where optical mirrors cause an image reversal that needs to be corrected for proper image display.

Image reversal is accomplished by two 768 pixel memories that are fed by a high speed A/D converter and followed by a D/A converter. A single line within the image is fed into one memory while the previous line is being read out of the other memory in reverse direction. A front panel switch allows selection of either a reversed or normal output.

specifications

Size:	1 $\frac{2}{3}$ " x 8" x 11"
Weight	4 lbs
Mounting:	Freestanding (1 $\frac{3}{4}$ " x 19" rack mount optional)
Power:	117/220 VAC, 50/60 Hz, 20VA
Input Signal:	Video, composite, 1V p-p, 75 Ω Gain control can compensate for inputs from 0.7 to 1.4 V p-p
Output Signal:	Video, composite, 1 V p-p, 75 Ω
Controls:	Power: On/Off Mode: Reverse/Normal Video Gain
Indicators:	Power On
Connectors:	BNC
Resolution:	768 pixels per line
Grayscale:	8-bit (256 gray levels)
Delay:	One line (normal and reversed modes)



scan reverser 421

general description

The Model 421 Scan Reverser can reverse and/or invert a video image from a monochrome video camera so that the camera appears to scan from right to left and/or bottom to top (opposite of the video monitor). It is useful in situations where optical systems cause an image reversal or inversion that needs to be corrected for proper image display.

Image reversal and inversion is accomplished by two 512 x 480 pixel memories that are fed by a high speed A/D converter and followed by a D/A converter. A single frame is fed into one memory while the previous frame is being read out of the other memory in reverse direction. A four position front panel control allows the selection of normal, reversed (left to right), inverted (top to bottom), or reversed and inverted output.

specifications

Size:	3 $\frac{1}{2}$ " x 19" x 15"
Weight	17 lbs
Mounting:	Standard 19" rack or tabletop
Power:	117/220 VAC, 50/60 Hz, 75VA
Input Signal:	Video, composite, 1 V p-p, 75 Ω
Output Signal:	Video, composite, 1 V p-p, 75 Ω
Controls:	Power: On/Off Mode: Normal, T-B, L-R, Both White Level Black Level
Indicators:	Power On
Connectors:	BNC
Resolution:	512 x 480 picture elements
Grayscale:	8-bit (256 gray levels)
Delay:	One frame

video frame store 491

general description

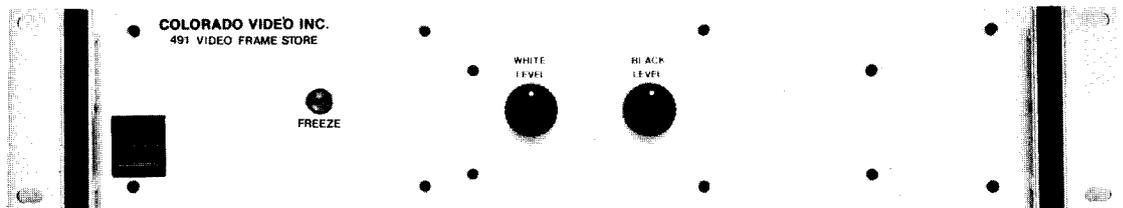
The model 491 Video Frame Store is designed for use in a wide range of industrial and scientific applications. Up to four synchronized video memories are available in a single chassis, thus allowing functions such as image comparison, overlays, subtraction, and R-G-B color synthesis. Direct recording of NTSC color video signals is an optional feature.

A digital I/O option allows individual picture elements in the stored image to be accessed by a computer, processed, and returned to the Model 491 memory. This I/O option can easily be interfaced with most computers or other digital processing equipment. A single 16-bit duplex I/O module in the computer is all that is required for interfacing to modern mini-computers. All digital signals to or from the unit are buffered and are TTL compatible.

The "frame grab" process can be initiated by means of a front panel pushbutton, a remote pushbutton, a TTL compatible convert signal, or from a computer when an optional I/O module is installed. The unit digitizes and stores the first frame following the conclusion of a convert command. The video output is a standard video signal synchronized to the video input and can be switched or mixed with other video signals or recorded on conventional video tape recorders.

specifications

Size:	3½" x 19" x 15" (Single Memory) 5¼" x 19" x 15" (Multiple Memory)
Weight:	16 lbs. (Single Memory)
Mounting:	Standard 19" rack



Construction:	Card file
Power:	100/115/220 VAC, 50/60 Hertz, single phase, 75 watts
Input/Video:	Composite video; 1 V p-p, 75 ohms
Input/Control:	Store: Pulse, ground true, 1 us min. or switch closure to ground Memory control: TTL compatible signals
Output/Video:	Composite video; 1 V p-p, 75 ohms
Connectors:	Video: BNC Remote Control: 15-pin D, Female
Controls:	AC power: On/Off Freeze (can be remoted) White Level Black Level
Indicators:	AC Power
Resolution:	512 × 480 picture elements (525-line) 512 × 512 picture elements (625-line)
Frame Store Time:	1/30th second (525-line) 1/25th second (625-line)
Grayscale:	8-bits (256 gray levels)

options

- Direct Memory Access Digital I/O Module 793 (see 793 data sheet)
- NTSC Color
- Multiple Memories (4 maximum)

Output Configurations:

- Single Output (switchable)
- Multiple Outputs (simultaneous)
- Single Switchable plus Multiple
- RGB Sequencer
- 625-line Operation (512 scan line display)

video subtractor 492

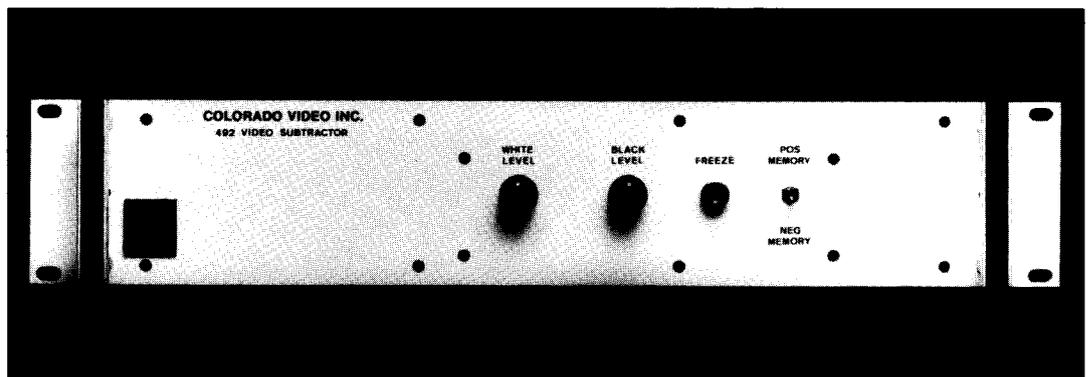
general description

The Model 492 Video Subtractor is a dual solid-state video memory unit capable of comparing one stored image with the other and displaying the difference. It is intended for use in inspection, registration, quality control, surveillance and other applications where differences between two images can be used for decision making or process control.

In a typical application, a reference image is digitized and stored in one of the two video memories in the Model 492. A subsequent image is stored in the other memory. The image is subtracted from the reference memory and the difference is provided as a video output for display on a standard television monitor. It is also possible to continuously compare the input video with the reference image. Separate video outputs of both memories are also provided. A digital I/O option allows the use of a computer to analyze either of the stored images.

specifications

Size:	3½" x 19" x 15"
Weight:	17 lbs.
Mounting:	Standard 19" rack or tabletop
Power:	100/115/230 VAC, 50/60 Hertz, single phase, 75 VA
Input:	Composite Video; 1 volt p-p, 75 ohms, 2:1 interlace



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

Outputs: Positive Memory and Negative Memory:
Composite Video; 1 volt p-p, 75 ohms, 2:1 interlace

Difference:
Composite Video; 1 volt p-p, 75 ohms, 2:1 interlace

Controls: Black Level
White Level
AC Power
Freeze
Positive Memory/Negative Memory

Connectors: Video: BNC
Remote Control: 15 Pin D, Female

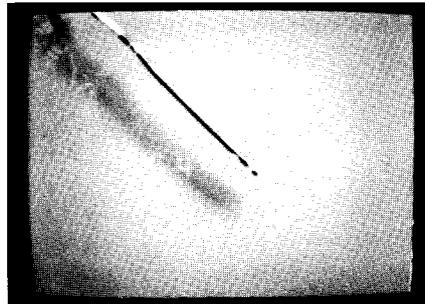
Performance: Resolution:
512 x 480 pixel memory

Grayscale:
8-bit (256 gray levels)

Options: Digital I/O
625-line operation
NTSC color



Reference Image



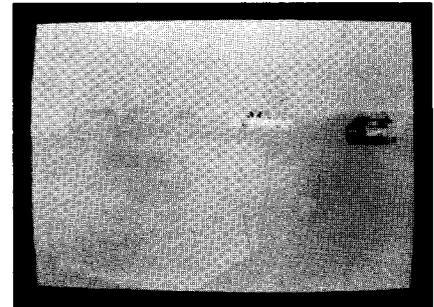
Subtracted Image



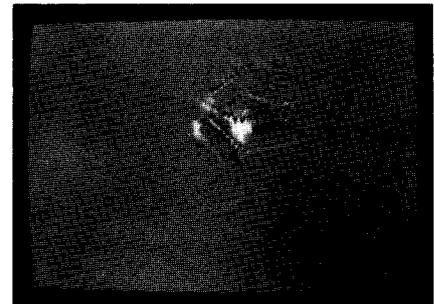
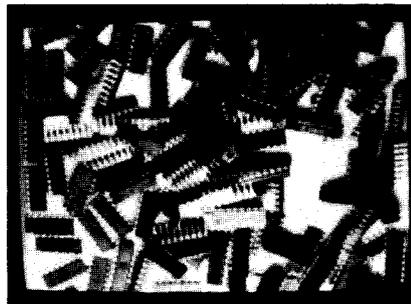
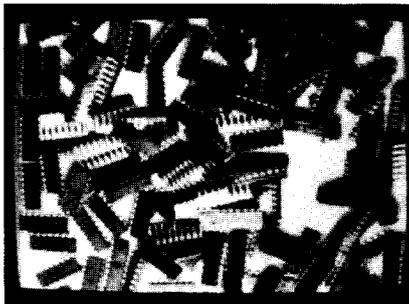
Reference Image



New Image



Subtracted Image



video peak store 493

general description

The Model 493 Video Peak Store is an instrument with unique capabilities. In essence, it is a video field/frame store device which will continually add new information to memory contents, if such new data is of higher amplitude than that already recorded. Processing occurs in "real time" and the video output signal is continuously viewable.

The 493 is not an averaging memory and so transient information is not lost over a period of time unless overwritten by higher amplitude signals. The peak recording process will cause some forms of noise to eventually "smooth" into a DC offset which is equivalent to the peak value of the noise waveforms.

The Model 493 Video Peak Store is a compact unit suitable for operation either in the field or in the laboratory. Options include computer I/O capability and Slow-Scan TV transmission of stored data to remote locations.

Operational modes with the Model 493 are:

1. Field/frame store with manual or remote "freeze" command
2. Peak store, adding "whiter" video information to memory contents
3. Peak store, adding "blacker" video information to memory contents
4. Peak storing on a continuous, manually controlled, or interval basis
5. Optional peak storing of NTSC color video signals

Applications of the 493 include:

SCAN CONVERSION:

Electro-optical scan conversion by means of focusing a TV camera at a CRT. Radar or non-conventional television scanning with image build-up over short or long periods of time.

TRANSIENT RECORDING:

Recording of phenomena such as daylight lightning strokes or use as a "storage" oscilloscope.

TRACKING:

Tracking of either a light target against a dark background or a dark target against a light background, leaving a visible record. Follow vehicles, microscopic biological movements or other subjects.

NOISE SMOOTHING:

Because the 493 is a data accumulating device, some forms of noise will eventually "smooth" into a DC offset, equivalent to the peak amplitude of the noise components.

MISCELLANEOUS:

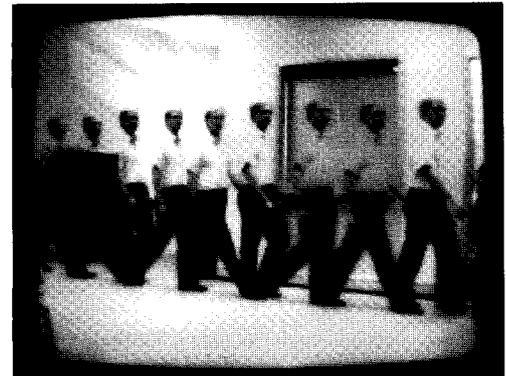
Stroboscopic image recording, "painting with light," or controlled addition of images to a display.

specifications

- Size:** 3½" x 19" x 15"
- Weight:** 16 lbs.
- Mounting:** Standard 19" rack or tabletop
- Power:** 100/115/230 VAC, 50/60 Hertz, single phase, 75 VA
- Input:** Composite video; 1 volt p-p, 75 ohms, 2:1 interlace
- Output:** Composite video; 1 volt p-p, 75 ohms, 2:1 interlace
- Controls:** Video level
Black level
Normal freeze/Peak store mode switch
Continuous freeze/Single record mode switch
Record pushbutton
Erase pushbutton
Peak store mode: white/black
AC power: on/off
- Connectors:** Video: BNC
Remote Control: 15 pin D, female
- Resolution:** 512×480 picture elements (525-line)
512×512 picture elements (625-line)
- Grayscale:** 8-bits (256 gray levels)
- Options:** Digital I/O
NTSC color
Slow-Scan TV output
625-line, 50 Hertz operation
Interval controller



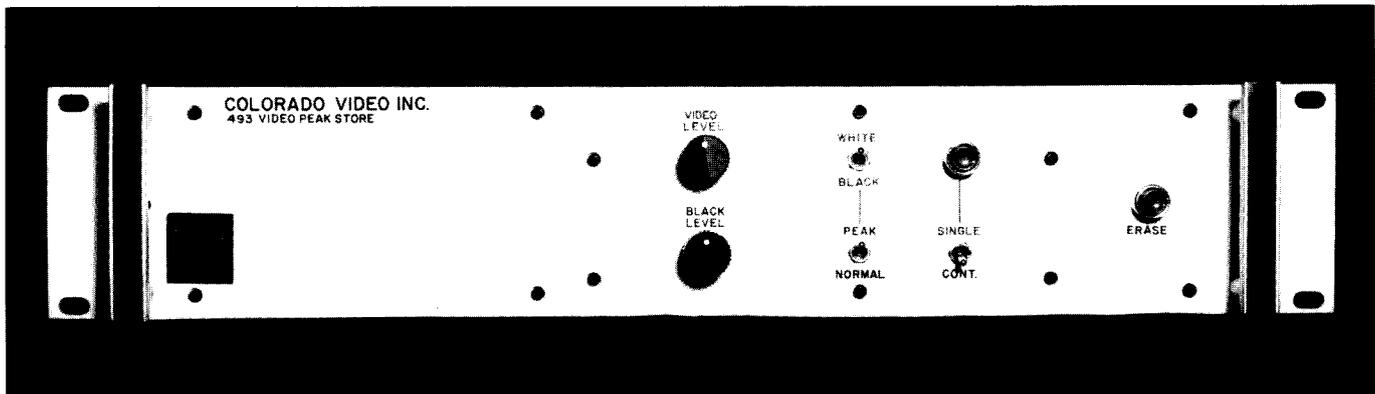
A ten minute daylight capture of multiple lightning strikes



Intrusion recording



A two hour "time exposure" of bird flight patterns



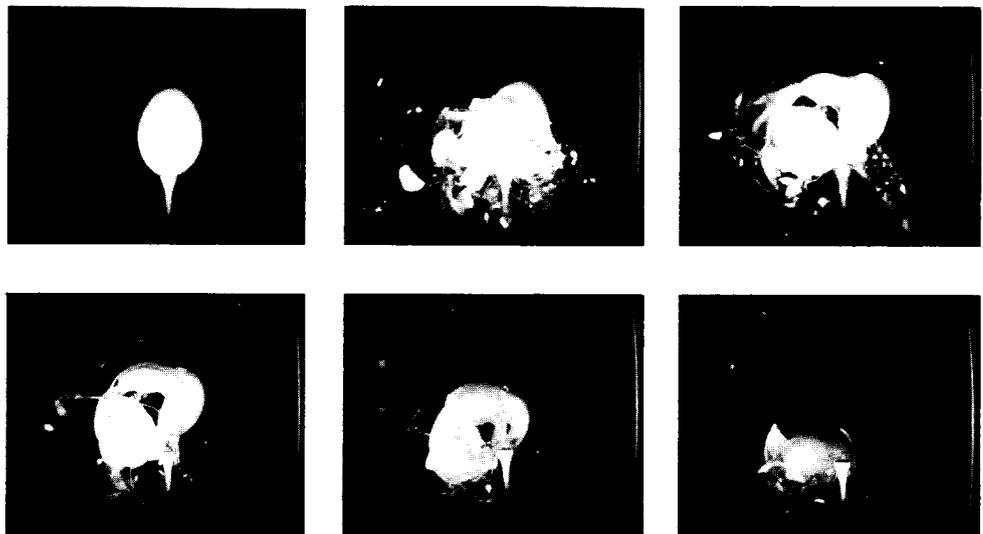
BOX 928 BOULDER, COLORADO 80306 USA
PHONE (303) 530-9580 FAX (303) 530-9569

colorado video inc

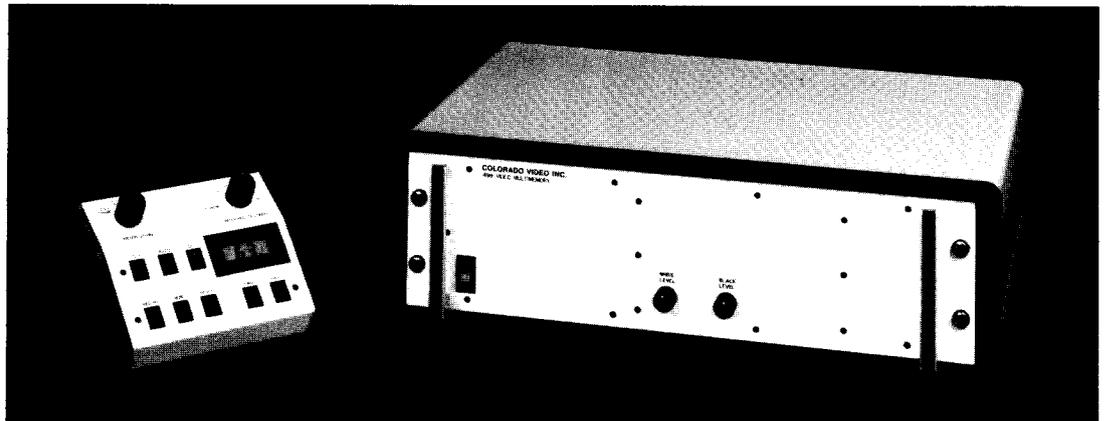
video multimemory 499

general description

The Video Multimemory Model 499 sequentially captures and reproduces a relatively large number of video images. Available for either 525 or 625 line TV systems, the 499 can be configured to store from 16 to 256 images depending on resolution and memory capacity. All images are 8 bit, providing 256 shades of gray. Individual images may be displayed by command, or all images may be automatically sequenced at normal rates or selected intervals of up to ten seconds. Both recording and playback rates may be controlled for "time lapse" effects.



Sequential images captured with the Model 499.



The Model 499 occupies a 19" rackmount cabinet. A desk top controller selects various functions.

specifications

Size:	499:	3½" × 19" × 15"	
	499-2:	5¼" × 19" × 15"	
Weight:	499:	16 lbs.	
	499-2:	22 lbs.	
Power:	100/115/230 VAC, 50/60 Hertz, single phase, 75 VA		
Construction:	Card file		
Video In:	Composite, 1 volt p-p, 75 ohms, 2/1 interlace		
Video Out:	Composite, 1 volt p-p, 75 ohms, 2/1 interlace		
Connectors:	Video:	BNC	
	Remote Control:	25-Pin D, Female	
Controls:	Main Chassis:	Power On/Off Black Level White Level	
	Remote Control:	Record Run Forward/Reverse Loop Auto Reset Set/Recall Interval: 1 Frame, .1, .2, .5, 1, 2, 5, 10 sec. Resolution: Full Frame, Single Field, Low Resolution	
Picture Storage:	Model:	499	499-2
	Resolution:		
	512H × 512V	16	64
	512H × 256V	32	128
	256H × 256V	64	256
Option:	NTSC color with 512 × 512 or 512 × 256 resolution with some operating restrictions.		
	Digital I/O Interface Module 799		



Explosion sequence captured by the Model 499.

video contrast enhancer 605

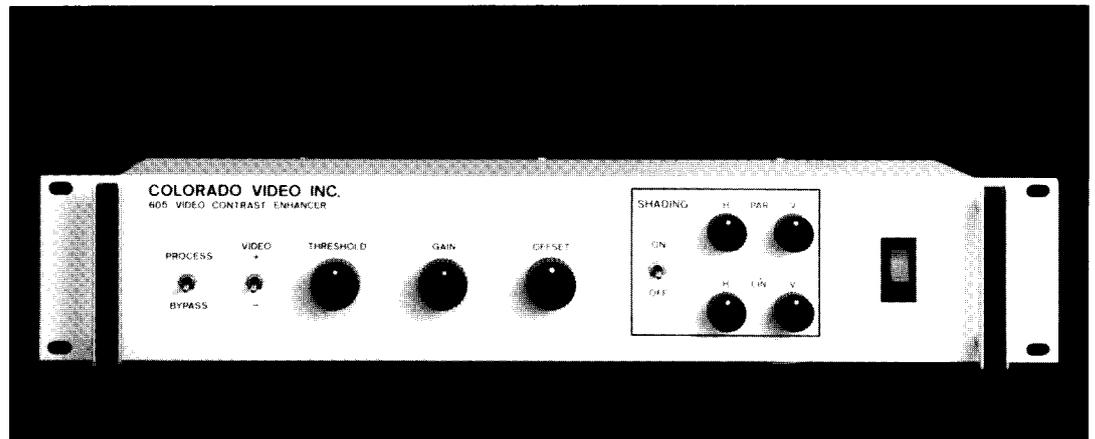
general description

The Model 605 Video Contrast Enhancer provides three simple but very useful video processing functions. These functions are grayscale enhancement, shading compensation and video inversion.

The grayscale enhancement function allows the stretching of a portion of the grayscale in the input video to occupy a much larger portion of the full grayscale range in the video output. This type of grayscale modification is useful in analyzing images in which the information of importance is inherently of low contrast from the other details within an image. It can aid significantly in the ability of an operator or machine vision system to detect an edge, defect, or other important but low contrast feature within an image.

The shading compensation feature provides input video brightness correction only. Ramp and parabolic waveforms are provided for each axis, with variable polarity and amplitude control. This type of shading correction can be beneficial when thresholding of the video is to be done by some following piece of processing equipment. It is also applicable when mechanical or other restrictions prevent the proper and even lighting of the object being viewed. The shading portion of the 605 precedes the grayscale processing and both may be used when desired.

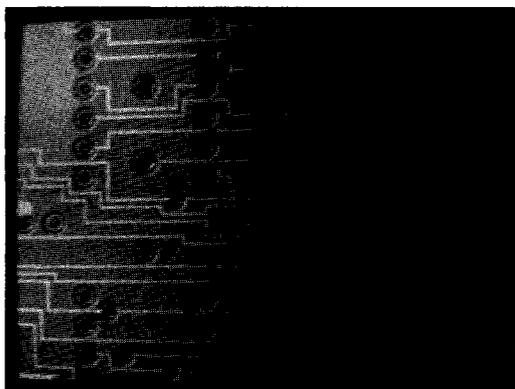
A switchable inverse video function provides monochromatic reversal of the video output signal. Blacks become white and whites become black. This feature can be advantageously applied in detecting cracks, defects, pits or scratches on a highly reflective background which normally cannot be handled by a processor or video monitor due to blooming or overload. Both shading and contrast enhancement can be used in conjunction with the inverse video feature.



specifications

Size:	3½" × 19" × 8"
Mounting:	Standard 19" rack
Weight:	7 lbs
Power:	117/220 VAC, 50/60 Hertz, 10 VA
Inputs:	Composite Video, 1 V p-p (75 ohm), terminated while in operation
Outputs:	Composite Video, nominal 1 V p-p into 75 ohm load
Enhancement Range:	Off (none) to 10:1 stretch, minimum
Shading Range:	0 to .3V, each waveshape
Controls:	Power Bypass/Operate Normal/Invert (negative video) Offset Enhancement: On/Off Gain Level Shading: On/Off Waveshape Polarity & Amplitude (4)

Specifications subject to change without notice



Original Image

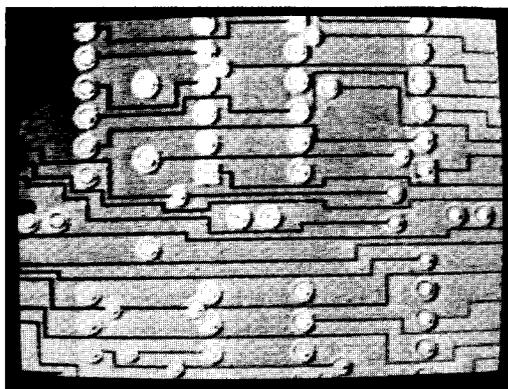


Image after enhancement,
shading compensation and inversion.

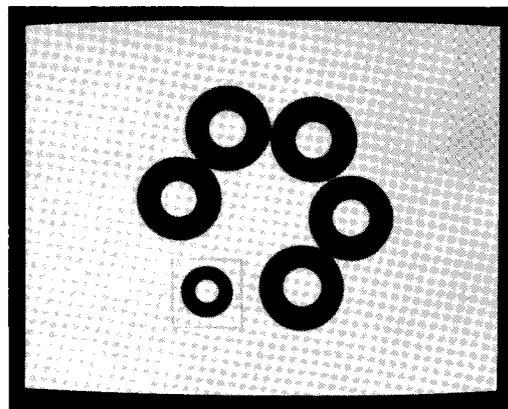
video pointer 610e

general description

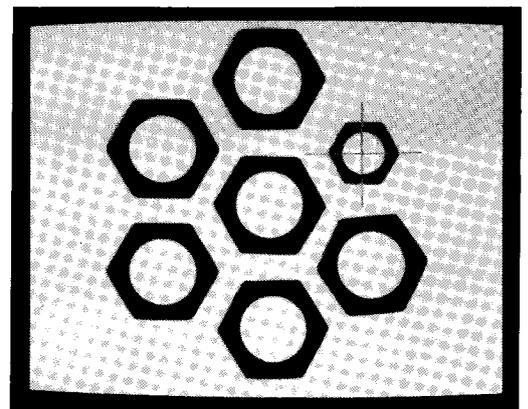
The Model 610E produces a series of oblong and crosshair patterns, as seen on the screen of a television monitor. By use of front panel controls or external control voltages, the patterns may be positioned to any location on the screen and changed in size over a range of ten to one.

The 610E contains two positionable pattern generators. The Box Outline generator section may be used to vary the horizontal and vertical size of the oblong produced, as well as to position the box anywhere in the field, horizontally and vertically. In addition, the separate Crosshair pattern may be positioned anywhere else on the screen, relative to the box, by its H and V controls. When the box is moved, the crosshairs track along with it.

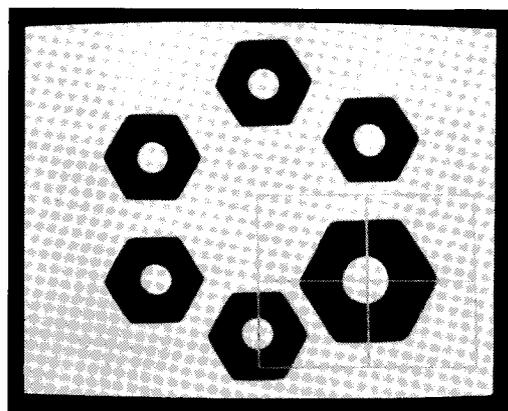
Uses of the Model 610E include calling attention to significant elements in a TV scene, X-Y target coordinate analysis (through internally or externally generated DC voltage), and as a gating signal for video keying. Conventional video signals from a TV camera or other source may be fed into the 610E, and the superimposed patterns may be varied continuously from black to white with the Matt Control.



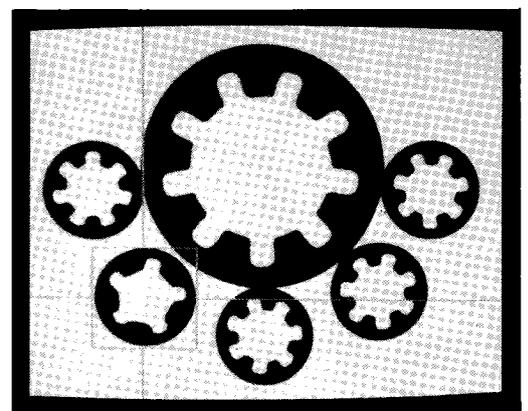
Box Outline



Small Crosshair



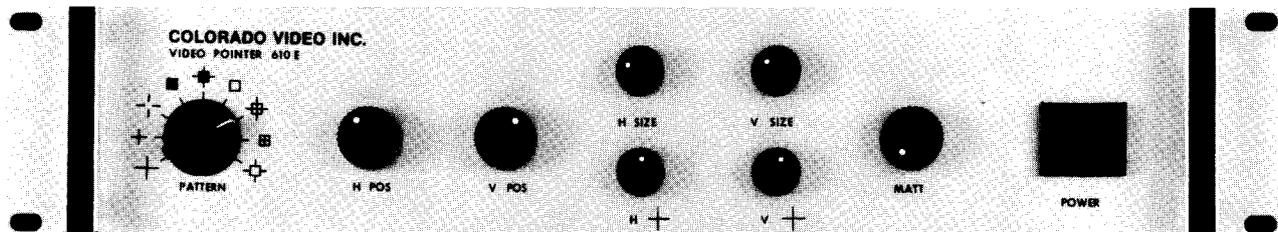
Large Crosshair & Box Outline



Interrupted Crosshair & Box Outline

specifications

Size:	3½" x 19" x 8"	
Mounting:	Standard 19" rack	
Construction:	Solid state, silicon	
Weight:	7 lbs.	
Power:	117/220 VAC, 50/400 Hertz, 7 Watts	
Connectors:	BNC and Blue Ribbon	
Inputs:	Video:	1V, 1K ohms
	H-Axis Position:	0 to +5 V, 5K ohms
	V-Axis Position:	0 to +5 V, 5K ohms
	H size:	0 to +5 V, 5K ohms
	V size:	0 to +5 V, 5K ohms
	H crosshair Pos:	+5 to -5 V, 5K ohms
	V crosshair Pos:	+5 to -5 V, 5K ohms
Outputs:	Video:	1 V p-p, 75 ohms
	Oblong:	1 V p-p, 75 ohms
Controls:	Pattern Selector:	Large Crosshair Small Crosshair Interrupted Crosshair Solid Box Large Crosshair & Solid Box Box Outline Large Crosshair & Box Outline Small Crosshair & Box Outline Interrupted Crosshair & Box Outline Horizontal Oblong Position Vertical Oblong Position Horizontal Oblong Size Vertical Oblong Size Horizontal Crosshair Position Vertical Crosshair Position Matt AC Power: On/Off
Indicator:	AC Power	
Marker:	Positionability:	80% or better of active raster height and width
Characteristics:	Linearity:	(Voltage to time conversion) ± 1% to 70% of active raster height and width.



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

video screen splitter 613

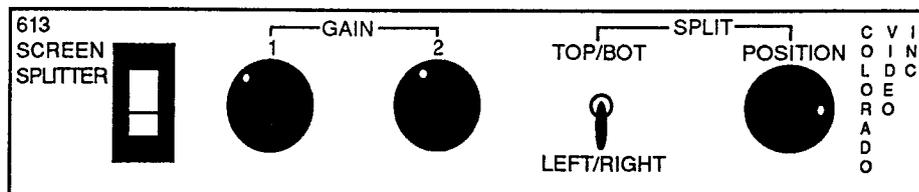
general description

The Model 613 Video Screen Splitter combines two synchronized video sources so that portions of both images are present in the output signal and thus on a single television screen. A front panel switch selects whether the screen is split top-to-bottom or left-to-right. Gain controls for both inputs are also provided on the front panel.

The unit can be used with either two monochrome or two color video sources or, under some restrictions, one of each. The front panel position control determines what proportion of the screen is dedicated to each source, adjustable from 0% to 100%.

specifications

Size:	12 $\frac{2}{3}$ " x 8" x 11"
Weight	3 lbs
Mounting:	Free standing (12 $\frac{1}{4}$ " x 19" rack mount optional)
Power:	117/220 VAC, 50/60 Hz, 3VA
Input Signal:	Video, composite, 1 V p-p, 75 Ω 525 line RS-170(A) (625 line CCIR optional)
Output Signal:	Video, composite, 1 V p-p, 75 Ω
Controls:	Power: On/Off Split: Top-Bot/Left-Right Split: Position Video In 1 Gain Video In 2 Gain
Indicators:	Power On
Connectors:	BNC
Bandwidth:	10 MHz



pattern generator 670

general description

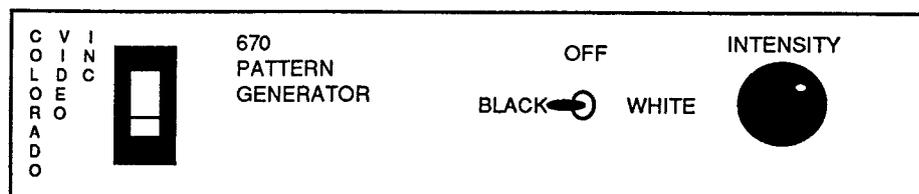
The Model 670 superimposes a fixed pattern over a monochrome or color video signal. It uses a custom programmed PROM for the precise, stable generation of overlays specified by the user. Patterns may be switch-selected as either white or black, to provide the best contrast with the video signal. Pattern intensity may be varied by front panel control.

The 670 can generate any pattern that fits into a 640 x 480 x 1 bit format. Patterns may be range marks, measuring scales, alphanumerics, logos, or other symbols. Typical applications include microscopy, boresighting, alignment, calibration, measuring, and camera or site identification. The 670 is particularly useful with solid state cameras where reticles can not be etched on the sensor face.

A variety of options are available including various TV line rates, other pattern resolutions, and multiple switch-selected patterns.

specifications

Size:	12 $\frac{2}{3}$ " x 8" x 11"
Weight	4 lbs
Mounting:	Freestanding (12 $\frac{3}{4}$ " x 19" rack mount optional)
Power:	117/220 VAC, 50/60 Hz
Input Signal:	Video, composite, 1 V p-p, 75 Ω
Output Signal:	Video, composite, 1 V p-p, 75 Ω
Controls:	Power: On/Off Pattern: Black/Off/White Intensity
Indicators:	Power On
Connectors:	BNC
Pattern Resolution:	640 Horizontal by 480 Vertical



video image storage system 941

general description

The Video Image Storage System consists of an IBM Personal System/2™ Model 30 computer with internal fixed disk, two special interface cards, cables and proprietary software. It is capable of storing and retrieving a large number of standard black and white or color television images. The 941 interfaces with one of several Colorado Video digital memory units for picture acquisition and display.

The 941 system is intended for applications where rapid access to any picture and long term preservation of information are important requirements. The computer permits the use of simple commands for storage and retrieval, and for keyboard entry of accompanying titles and text, as well as image analysis and transformation.

A 20 MByte internal disk is used to provide picture storage, while operating software is on a 3 1/2" diskette.

Software functions include:

1. Easy selection of operating modes.
2. Picture title and description listing by number.
3. Individual selection of a picture by its corresponding number, along with the ability to insert, edit or delete titles and descriptions.
4. Automatic display of a picture sequence.
5. Protection of selected pictures from accidental overwrite.
6. Picture size reduction for fast previewing (reproduced as a group of monochrome images on one screen).



IBM PS/2™ Model 30 computer control with typical menu

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specifications

Size:	System Unit: 16" x 16" x 4"; 19 lbs. Keyboard: 2" x 20" x 9"; 6 lbs. Monitor: 13" x 13" x 13"; 20 lbs.
Power:	120 VAC, 60 Hertz, 1.5 amp
Mounting:	Tabletop
Image Storage Capacity:	320 fields at 256 x 240 pixel resolution 160 fields at 512 x 240 pixel resolution 80 frames at 512 x 480 pixel resolution
Access Time:	1-4 seconds to store or display, depending upon the video memory chosen.
Options:	10 MByte removable cartridge disk Custom Software

Companion Video Memory

A Colorado Video video memory is required by the 941 system for picture storage and display. These items must be purchased separately. The presently available choices are:

- 240 VBI Transmitter
- 286 Digital Transceiver
- 290 Slow-Scan Transceiver
- 491 Video Frame Store
- 492 Video Subtractor
- 493 Video Peak Store
- 494 Video Scan Converter
- 495 Asynchronous Frame Store
- 497 Video Demultiplexer

Please consult separate data sheets for further information on the items above.