



Kramer Electronics, Ltd.

USER MANUAL

Video Audio Processor

MODEL:

SP-40

IMPORTANT: Before proceeding, please read paragraph entitled
"Unpacking and Contents"

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1 INTRODUCTION

The **SP-40** Video Processor provides the enterprising video user with a host of video processing, enhancing, correction and duplication features combined in a single inexpensive unit.

The **SP-40** Video Processor offers polished duplication tools together with integrated enhancing and special effects generation.

The SP-40 is:

- ❖ A unique s-Video / Composite Video Processor - Enhancer which allows converting s-Video tapes to standard Composite video and vice versa.
- ❖ A powerful Video and Audio Switcher which permits switching between two video/audio sources (one Composite, one Y/C) for easy signal routing.
- ❖ An audio mixer - allowing the user to mix the soundtrack of the selected video source with an auxiliary source, e.g., CD, tape, radio, etc.
- ❖ It replaces six or seven individual, different video and audio enhancement devices.

1.1 Factors Affecting Quality of Results

There are many factors affecting the quality of results when signals are transmitted from a source to an acceptor:

- **Connection cables** - Low quality cables are susceptible to interference; they degrade signal quality due to poor matching and cause elevated noise levels. They should therefore be of the best quality.
- **Sockets and connectors of the sources and acceptors** - So often ignored, they should be of highest quality, since "Zero Ohm" connection resistance is the objective. Sockets and connectors also must match the required impedance (75ohm in video). Cheap, low quality connectors tend to rust, thus causing breaks in the signal path.
- **Amplifying circuitry** - Must have quality performance when the desired end result is high linearity, low distortion and low noise operation.
- **Distance between sources and acceptors** - Plays a major role in the final result. For long distances between sources and acceptors, special measures should be taken in order to avoid cable losses. These include using higher quality cables or adding line amplifiers.
- **Interference from neighboring electrical appliances** - These can have an adverse effect on signal quality. Balanced audio lines are less prone to

interference, but unbalanced audio should be installed far from any mains power cables, electric motors, transmitters, etc. even when the cables are shielded.

1.2 A Quick Reference Guide

The following explanations provide you with all the information you will need about use and operation of the **SP-40** Video Processor. If you encounter any difficulties about a particular function, use this information, and the accompanying figures, as a quick reference guide.

1.2.1 Inputs:

VIDEO Inputs

Composite Video / s-Video input connectors. You can hook up any Composite video / S-Video source which supplies an appropriate signal to these connectors (Camcorders, VCRs etc.)

AUDIO Inputs 1 & 2

Audio Input RCA connectors, which are marked 1 and 2 for easy identification. These audio inputs correspond to the appropriate Composite VIDEO / s-Video INPUTS and the audio cables should lead from the audio jacks on the same VCR.

AUDIO Input Aux

The Aux audio input connects to an external audio source, which can be mixed with the original video soundtrack in full crossfade mode.

1.2.2 Outputs:

VIDEO OUTPUTS

Composite Video or s-Video Output connectors. You can hook up Composite / Super-VHS recording VCRs and/or monitors to these connectors. Both outputs are simultaneously active.

□ **AUDIO Outputs 1 & 2**

Audio Output RCA connectors. These audio output sockets correspond to the appropriate Video or s-Video Outputs and the audio cables should lead from the audio jacks on the same VCR.

1.3 **Front Panel Controls**

⊗ **Audio Mix**

For mixing a selected video/audio source with an auxiliary audio source. This control allows full panning between the selected source and the auxiliary source.

⊗ **Definition Control**

This control is used to sharpen picture images or to soften a scene while removing fine details (and snow). The control has an adaptive logarithmic response with Kramer's patented automatic noise limiting circuitry.

⊗ **CONTRAST Control**

The CONTRAST control affects the luminance of the video picture. It enables you to improve a picture's contrast level between peak white and black regions. The control has an adaptive logarithmic response with Kramer's patented automatic noise limiting circuitry.

⊗ **VIDEO GAIN Control**

This control allows you to fade in and out the picture by turning the knob counterclockwise, or adding brightness to a dark scene by turning the knob clockwise.

⊗ **COLOR Control**

The COLOR control allows you to vary the level of color intensity throughout the whole scene of a video tape. By turning the COLOR control clockwise, bright and lively colors are introduced into dull tapes. If there is a lot of color snow in the picture, turn the control counterclockwise until the noise interference is reduced to a reasonable level.

⊗ **BLACK Control**

The BLACK control determines the BLACK LEVEL of the signal, allowing fine tuning of the basic luminance level and the FADE to WHITE effect.

⊗ **SCREEN SPLITTER control**

The SCREEN SPLITTER can be employed with all the Video Processor outputs. It makes creative and effective editing processing an effortless task. You can continually compare, on the same video monitor, the results of your creative endeavor with the original version. When duplicating tapes, the SCREEN SPLITTER should be in the PROCESS position.

1.4 Additional Controls

⊗ **POWER ON/OFF Switch**

Pressing this button turns the **SP-40** Video Processor on. The switch will become lit.

⊗ **INPUT SELECTOR Switch**

When the switch marked Input 2 is pressed, source (input) no. 2 is selected (the Y/C) input. When the switch is released, input 1 is selected (Composite Video). When you select a source, that particular video source becomes the active video/audio signal being processed by the **SP-40** Processor as the related audio is also automatically selected.

⊗ **LIMITER Switch**

This unique switch may be used for two applications:
When the video signal is too bright, i.e., the sun is captured in the picture or a very strong light appears on the screen, creating an unpleasant burning effect, the limiter action reduces only the extra bright portion of the picture to normal white level without affecting the rest of the picture. This is different than the effects achieved by turning the Contrast or Video Gain controls to the counterclockwise position - as they affect the whole picture.
The second application is special effects creation - using this switch and other controls of the **SP-40**, such as Contrast, Video gain and Black.

Some experimentation is needed in order to get the feeling of this switch.

2 GETTING THE MOST OUT OF IT

You can select one of the two-video/audio sources - VCRs or cameras, one composite and one s-Video, to process, switch and distribute.

Portions of old Composite Video tapes can be converted to S-Video with little or no degradation in quality and inserted into new S-Video productions. Similarly, on the **SP-40** there are two video output connectors, one Composite video output and one s-Video.

The edited and revised output is available as Composite video and simultaneously as an s-Video signal (on the appropriate connectors) for recording or for viewing.

3 TREATING THE LOSS OF QUALITY

⊗ DEFINITION

Overall video picture loss, especially of fine details, occurs during recording for several reasons. It causes snow and reduces picture quality. To contend with this phenomenon, the DEFINITION control, when turned clockwise, restores the normal crispness of the original tape on the copy.

On the other hand, when a lot of snow exists in the video picture, turning the DEFINITION control counterclockwise results in removing the snow and softening the image.

How much to advance the DEFINITION control can be found only by experimentation, since the precise setting of the control depends on the equipment, tapes and sources used.

⊗ COLOR SATURATION

Dull colors often result from insufficient lighting during shooting. Also, color loss and snow distortion can result from the poor frequency response of some video tapes and recorders.

To overcome such deficiencies, the **SP-40** contains COLOR processor circuitry which solves problems of color loss and distortion by enhancing color saturation when turned clockwise, or reducing excessive color and snow from a video picture when turned counterclockwise from the center position (normal).

⊗ CONTRAST

Contrast adjustment deals with the black and white part of the signal and enables you to improve a picture's contrast level - the difference between peak white and black regions. Scenes recorded in strong sunlight tend to appear harsh and can be improved by reducing the contrast of the overall picture.

To reduce contrast, turn the CONTRAST control counterclockwise. Similarly, scenes taken in cloudy weather appear to be flat and can be improved by boosting the contrast, i.e., turning the CONTRAST control clockwise. Contrast adjustment also eliminates luminance (brightness) problems. If luminance is too high the

whole picture is too bright and if it is low the scene is too dark. Contrast is sometimes affected during tape duplication. In this case the CONTRAST control should be adjusted according to the best results obtainable in the copy. Some experimentation should take place in order to define the best setting for the equipment and tapes used.

⊗ **BLACK**

This control effects the black level of the video image, and may be used to raise or lower basal brightness levels. By using this control and the Video Gain control together, fade-to-gray or white effect may be achieved.

⊗ **VIDEO GAIN**

This control, when turned counterclockwise gradually decreases the brightness level, and is very useful to eliminate washed-white areas in the picture up to full fade to black (or gray or white - depending on the BLACK control setting.). Another major use of fading is to enhance switching from one scene to another. The first tape is totally faded out to black, the recording machine is paused, the user switches the processor to the second source, releases the recording pause control and fades-in the new scene. This is a simple but very effective cut-to-cut home editing tool.

When turned clockwise, the whole video image is brightened, thus curing problems of low light level recording.

⊗ **SCREEN SPLITTER**

The SCREEN SPLITTER makes creative and effective video processing an easy task. You can continually compare, on the same video monitor, the corrections and additions that you make with the enhancement tools.

The SCREEN SPLITTER control also allows you to zero-in on problem regions in each scene in order to facilitate enhancing. The entire picture is shown on the video monitor at all times. When the SPLITTER is in the BYPASS position, the SPLITTER activity is disengaged and only the original image appears on the screen. As you move the control clockwise, a portion of the left side of the screen appears in processed form. A hairline divides the processed (left) from the unprocessed picture (right).

As you move further clockwise, the portion of the processed picture increases, until at the PROCESS position, the entire picture is in the processed state. This is an extremely handy tool to constantly check your work.

Since the screen is split, you are not forced to remember what the previous screen looked like as happens in the majority of video processors on the market today. The screen splitter can also be use as an effective wiping device during video

editing. You can slowly wipe a picture off the screen to black, using the SPLITTER control.

☒ **LIMITER SWITCH**

When the picture has burnt, over-lit portions, this switch effectively reduces the over-lit portions back to normal, without effecting the rest of the picture. In many cases, picture instability may be caused by an excessive video level, and by activating this switch, video level is restored to normal, re-stabilizing the picture. Experiment with the special effects that may be created by using this switch in conjunction with the Contrast, Video gain and Black controls.

The use of this switch does not affect the color quality of the over-lit portions, as it functions as a soft-limiter.

3.1 A Final Check

Prior to starting out on your video editing session verify that all controls are in normal position, according to the following list.

- POWER switch - depressed.
- INPUT SELECTOR switch - according to desired setup.
- AUDIO MIX control - at SOURCE position.
- DEFINITION control - mid position.
- CONTRAST control - mid position.
- VIDEO GAIN control - mid position.
- COLOR control - mid position.
- BLACK control - mid position.
- SCREEN SPLITTER control - mid position
- LIMITER switch - off (released).

3.2 Converting Composite to s-Video

A Composite Video signal fed from a Composite video source, through the INPUT 1 connector, can be converted to an s-Video signal and merged into any s-Video tape.



Old videotapes can be edited using such functions as CONTRAST, DEFINITION, COLOR, BLACK LEVEL and RGB and then converted to s-Video. This is a life-saving device when you are stuck with a library of old Composite VHS tapes. The opposite can be done as well.

In fact, you can process any video signal or combine it with any other signal using the **SP-40**. The final product can be recorded on a Composite video or s-Video VCR with no apparent generation loss or degradation in picture quality.

4 TECHNICAL SPECIFICATIONS

INPUTS: One composite video, 1Vpp/75 Ω on a BNC, one Y/C – Vpp/75 Ω (Y) 0.3V/75 Ω (C), on 4P.

Two stereo audio, 1Vpp/50 k Ω , one AUX stereo audio input, 1Vpp/50 k Ω on RCAs.

OUTPUTS: One composite video, 1Vpp/75 Ω on a BNC, one Y/C -1Vpp/75 Ω (Y), 0.3V/75 Ω (C) on 4P.

Two stereo audio, 1Vpp/100 Ω on RCAs.

DIFF. GAIN: 0.7%.

DIFF. PHASE: 0.23 Deg.

VIDEO COUPLING: DC clamped outputs.

Y BANDWIDTH: 65 MHz.

CONTROLS: Video Gain (Fade to +6dB), Contrast, Definition, Color Saturation (-30dB to +6dB)
Black Level (-0.3V to +0.7V), Limiter switch, Screen Splitter (Process to Bypass)
Audio mix - full crossfade between source and Aux.

DIMENSIONS: 30 cm x 16.3 cm x 4.3 cm (11.8" x 6.4" x 1.7", W, D, H).

POWER SOURCE: 115VAC, 60 Hz 11.5 VA.

WEIGHT: 1.9 Kg. (4.2 Lbs.) Approx.

ACCESSORIES: Power cord.



LIMITED WARRANTY

Kramer Electronics (hereafter Kramer) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for three years from the date of the first customer purchase.

WHO IS PROTECTED

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

- 1) Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the web site www.kramerelectronics.com.
- 2) Any product, on which the serial number has been defaced, modified or removed.
- 3) Damage, deterioration or malfunction resulting from:
 - a) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature.
 - b) Product modification, or failure to follow instructions supplied with the product.
 - c) Repair or attempted repair by anyone not authorized by Kramer.
 - d) Any shipment of the product (claims must be presented to the carrier).
 - e) Removal or installation of the product.
 - f) Any other cause, which does not relate to a product defect.
 - g) Cartons, equipment enclosures, cables or accessories used in conjunction with the product.

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

- 1) Removal or installations charges.
- 2) Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
- 3) Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

- 1) To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
- 2) Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).



- 3) For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

Kramer's liability for any defective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

- 1) Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
- 2) Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

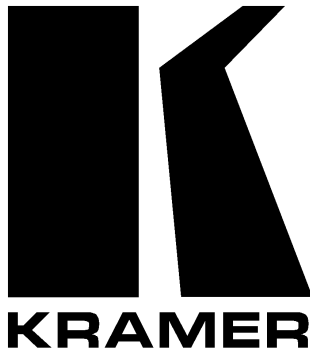
NOTICE

This equipment has been tested to determine compliance with the requirements of:

- EN-50081:** "Electromagnetic compatibility (EMC);
generic emission standard.
Part 1: Residential, commercial and light industry"
- EN-50082:** "Electromagnetic compatibility (EMC) generic immunity standard.
Part 1: Residential, commercial and light industry environment".
- CFR-47** FCC Rules and Regulations:
Part 15- "Radio frequency devices:
Subpart B- Unintentional radiators"

CAUTION!

- ⊗ Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- ⊗ Use the supplied DC power supply to feed power to the machine.
- ⊗ Please use recommended interconnection cables to connect the machine to other components.



**The list of Kramer distributors appears on our web site:
www.kramerelectronics.com**

**From the web site it is also possible to e-mail factory headquarters.
We welcome your questions, comments and feedback.**

Kramer Electronics, Ltd.

3 Am VeOlamo Street. Jerusalem 95463, Israel Tel: (972-2)-654-4000.
Fax: (972-2)-653-5369, E-mail: kramere@netvision.net.il