MXPro

User Guide

VIDEONICS®

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STATEMENT OF WARRANTY

Videonics, Inc. warrants this product against defects in materials or workmanship as follows:

For a period of TWO years from the date of purchase, Videonics Inc. will repair or replace the unit, at our option, without charge for parts or labor. After the period of TWO years you must pay all parts and labor charges.

The limited warranty is extended only to the original purchaser and is valid only to consumers in the United States and Canada. It does not cover damage or failure caused by or attributable to Acts of God, abuse, misuse, improper or abnormal usage, faulty installation, improper maintenance, lightning, or other incidences of excessive voltage, or any repairs or tampering by other than a Videonics-authorized repair facility. It does not cover replacement of batteries or other consumable parts, transportation costs, or damage in transit. This warranty will become void if the serial number or model number identification has been wholly or partially removed or erased. Repair or replacement under the terms of this warranty do not extend the terms of this warranty. This warranty can not be modified by any agent of Videonics, Inc. unless in writing and signed by an officer of Videonics, Inc.

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To obtain warranty service, call or write Videonics HelpLine for a Return Authorization (RA) number. Please mark the RA number clearly on the outside of the package. Include a copy of your sales receipt, a brief description of the symptoms, your name, address, phone number and any special shipping instructions. Then deliver or ship the product, postage or shipping costs prepaid, to a Videonics-authorized repair facility. For the name of the nearest repair facility, Contact Videonics, Inc. HelpLine. See “Contacting Videonics” on page 8 for instructions.

DISCLAIMER

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FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, might cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user must correct the interference at his/her own expense.

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Declaration of Conformity

Application of Council Directive(s) ---------- 73/23/EEC, 89/336/EEC

Standards to which conformity is declared ---------- EN60950, EN55022 Class A, EN50082-1

Manufacturer's Name ---------- Videonics
Manufacturer's Address ---------- 1370 Dell Avenue
Campbell, CA 95008, USA

Importer's Name ---------- Videonics GmbH
Importer's Address ---------- Industriestrasse 2
90765 Furth/Bay, Germany

Type of Equipment ---------- Video Mixer

Name of Equipment ---------- MXPro

Model No. ---------- MX-3000 PAL

Serial No. ----------

Year of Manufacture ---------- 1998

I, the undersinged, hereby declare that the equipment specified above conforms to the above directive(s) and standard(s).

(Signature)

Parminder Gillon
(Full Name)

Test Engineer
(Position)

Place ---------- Campbell, California, USA

Date ---------- March 25, 1998

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Notes

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1

Introduction

Welcome to **MXPro**, and thank you for buying Videonics products.

This chapter contains:

- Brief descriptions of major MXPro features
- Typical uses for the MXPro
- How to contact Videonics
- An inventory of package contents
- Description of the contents of this User Guide

Please take a few moments to read the material so you can take full advantage of all MXPro benefits.

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Major Features

MXPro contains features found on most video mixers. In addition, it contains the special features described in this section.

Superb Video Quality — To ensure highest video quality, MXPro uses 10-bit (4:2:2) video technology for Y/C applications, and 8-bit 4:2:2 for Composite applications.

Four Input Synchronized Switcher — MXPro provides four input channels. This makes MXPro useful in live production settings where up to four cameras or other sources might be in use. MXPro synchronizes the inputs, so picture disruptions do not occur when switching between sources. Each channel has a composite video input, a Y/C video input, and a set of stereo audio inputs.

Pictures-in-Pictures (PIPs) — PIP allows multiple pictures to share the screen in various configurations. For example, one source might take the entire background while another image appears inside a separate, smaller window, both sharing the screen at the same time. You can use up to 16 images in a PIP configuration.

Effects Generator — Use a variety of effects to enhance a source or transition between sources. Select from over 500 effects, including natural shapes (diamonds, stars, and so forth), fancy edges, and borders. And, you can build your own custom menu for quick access to those effects you use most often.

Time Base Corrector (TBC) — MXPro automatically corrects the output's time base. MXPro stabilizes the output signal even when the input sources are not stable.

Chroma Key — Keying replaces parts of one picture with another, based on their color. Here the solid background behind Kong keys out and subsequently gets replaced with the picture of the bridge. The chroma key version shows Kong contemplating the bridge.

Frame Synchronizer and Digital Video Mixer — Mix any two input sources together using a variety of transitions — wipes, dissolves, flips, and so forth. With the frame synchronizer you can mix independent video signals.

Compose — MXPro provides a video painting system you can use to combine video stills, color shapes, and moving video on one screen. You can create a screen that contains a video still of a football coach (with a surrounding red border), combined with a moving video of the players in action on the field.

Audio Mixer — MXPro provides basic audio control. You can change the sound along with the video, or play a constant sound while the video plays. Audio can come from a video source or from external audio devices.

Connectivity — MXPro provides multiple video/audio outputs, including two Y/C Program outputs, two composite Program outputs, one composite Preview output, one set of stereo audio outputs, and a Headphone output.

Joystick — The joystick gives you fine control over color adjustments and positioning of PIP (picture-in-picture), compose, and the chroma key cursor.

Color Correction — Apply true RGB color correction to any or all input sources. Color correction parameters can be set separately for each channel.

Input Effects — Apply special effects such as flips, mosaics, and others to the signals coming in from any input source.

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Common Uses for MXPro

Multiple-Source Video Production — In a video production setup, you can connect one or more video sources (VCR's, camcorders, video disc players, cameras, title generators, computer graphics systems, and so forth) to MXPro's four input channels. The Program output can then be sent to a VTR or directly to a monitor.

You determine what is sent to the output. While the original inputs play, you can switch between any of MXPro's channels. You can use dissolves or other transitions to go from one channel to another. You can add special effects to any channel, and use advanced features such as compose and chroma key to enhance the production.

Single-Source Use — MXPro supports A/A roll, a method for creating interesting transitions with a single source. Its digital effects (such as picture freeze, posterization, and zooms) give added life to productions. You can use MXPro with a titler to mix and superimpose titles. Time Base Correction improves the picture (especially when making multiple-generation copies) by removing the jitter common to most VCR's.

Live Video — In live production setups, MXPro processes events as they occur. Good coverage requires seeing the events from different vantage points—which means you need multiple input sources. MXPro gives you the ability to connect up to four sources simultaneously. For example, at a sporting event, camera one might focus on the playing field, camera two on the team benches, camera three on the announcer, and camera four on the scoreboard. Using MXPro you can easily switch between the sources whenever necessary.

Note

MXPro is *not* an edit controller — that is, it does not control VCR's, camcorders, and similar devices. You can control the sources manually, or use external edit controllers such as those manufactured by Videonics.

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MXPro Package Contents

The MXPro package contains the items shown below. Check your package against the illustration. If anything is missing, contact the dealer where you purchased MXPro for the necessary replacements.

MXPro Unit

Power Adapter and Cord

User Guide

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About this User Guide

This User Guide contains the chapters, appendixes, and other sections shown in the following table.

Table 1: User Guide Contents

Chapter	Description
Chapter 1 **Introduction**	Basic overview of MXPro features, description of package contents, description of manual, and so forth.
Chapter 2 **Quick Start**	Brief steps to setting up MXPro with your equipment. Provided for people quite familiar with connecting video equipment.
Chapter 3 **Installing MXPro**	Instructions for setting up MXPro to work with your video equipment.
Chapter 4 **Basic Operations**	Explains most common procedures and functions used with MXPro.
Chapter 5 **Transitions**	Complete description of and instructions for using MXPro transitions. Also see Appendix A, Transitions List.
Chapter 6 **Input Effects**	How to use various effects with video input material.
Chapter 7 **Functions**	Descriptions of and instructions for using MXPro's built-in functions.
Chapter 8 **PIPs**	Instructions for using the Picture-in-Picture functions.
Chapter 9 **Compose**	How to create composed images consisting of rectangles, lines, still images, and/or moving images.
Chapter 10 **Chroma Key**	Instructions for creating chroma key images where specific colors (such as a blue screen) can be keyed out and replaced with a video sequence or other image.
Chapter 11 **Learn Mode**	How to use MXPro's Learn Mode for "recording" your mixing steps then playing them back.
Chapter 12 **Working with Audio**	How to use audio sources (tapes, CD's, and so forth) with MXPro.
Chapter 13 **Advanced Operations**	Descriptions of operations used infrequently, but still of substantial use for mixing video programs.

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Table 1: User Guide Contents (Continued)

Chapter	Description
Appendix A **Transitions List**	Complete list of transitions available with MXPro, along with their assigned code numbers and descriptions.
Appendix B **Time Base Corrector**	Explains the time-base corrector feature built into MXPro.
Appendix C **Video Quality**	Discusses issues concerning the level of quality in videos — that is, what to expect and what you can do to improve quality.
Appendix D **Technical Specifications**	MXPro product specifications.
Appendix E **MXPro	MX-1 Differences**	Summarizes operational differences between MXPro and Videonics MX-1 Video Mixer.
Glossary	Definitions of terms frequently used in conjunction with MXPro and video mixing procedures.
Index	Standard index to topics in this manual.

Conventions The User Guide employs the conventions described in this section.

Tips, Notes, Cautions, and Warnings use the following formats.

Tip

A tip provides useful information for doing various tasks and procedures.

Note

Notes contain information to supplement the other information contained throughout the guide.

CAUTION

Cautions warn that if you continue with what you are doing there is a danger of losing information.

WARNING!

Warnings mean stop what you are doing because there is danger of losing information and, possibly, damaging your equipment.

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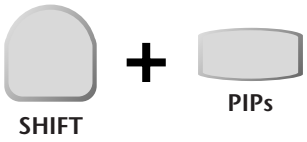
MXPro Buttons When referencing the various buttons (or, keys) and other controls on the MXPro keyboard, they appear in uppercase, boldface characters. For example, the keyboard contains the **PLAY** button and **T-BAR**.

In some cases you use two buttons together to perform a function. This is normally done using the shift button in combination with some other button. A plus (+) symbol indicates this. For example, you might be asked to enter **SHIFT+PIPS**. This means press and hold down the **SHIFT** button, press the **PIPs** button, then release both.



Sources, Channels, and Outputs The terms *Source*, *Channel*, and *Output* appear extensively throughout this guide. It's important to understand the differences between them.

A **Source** is a physical device, such as a VCR, that provides a video and/or audio signal.

A **Channel** is an internal MXPro component. The video and/or audio signal originating from a source travels along one of the channels.

An **Output** displays or records a mixed signal (such as the video on one channel, a transition, and the video on another channel) on an output device. The output device might be a recording VCR or a live broadcast signal.

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Contacting Videonics

Videonics provides technical and general support for all of its products. The following table provides information for contacting us with your suggestions, questions, and problems.

Table 2: Videonics Contacts

Department	Contact Information
Corporate Headquarters	**1370 Dell Avenue Campbell, CA 95008**
Main Phone Number	**(408) 866-8300**
Main Fax Number	**(408) 866-4859**
Product Information	**(800) 338-3348**
Information via E-Mail	**Info@Videonics.com**
Technical Support	**(408) 370-9963**
Support via E-Mail	**Helpline@Videonics.com**
Compuserve	**GO VIDEONICS Compuserve ID 72662,3115**
Internet World Wide Web	**http://www.videonics.com**
International Offices	**Contact Videonics for your local distributor**

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2

Quick Start

This chapter contains brief instructions for setting up MXPro with basic equipment. The instructions do not go into detail. If you feel comfortable connecting video and audio equipment, you can probably get started quickly using these instructions.

If you are upgrading from the Videonics MX-1, see Appendix E, *Information for MX-1 Users*, for helpful information in setting up your MXPro.

Skim the instructions in this chapter. If you have any questions about any of the steps, turn to Chapter 3, *Installing MXPro*, and follow the detailed instructions for setting up your equipment.

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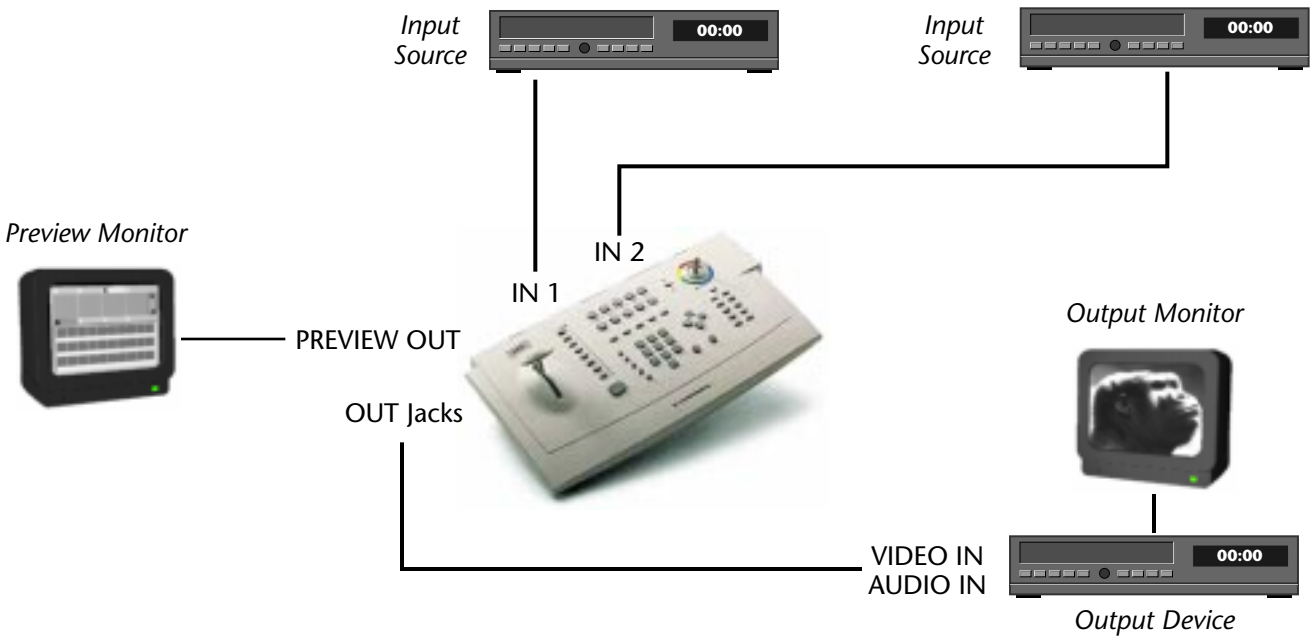
Quick Start Steps

Setting Up



- **Connect a COMPOSITE-type monitor to MXPro's PREVIEW OUT jack.**
- **Connect an Input Source (such as a VCR or camcorder) to MXPro's IN 1 jacks.**
- **Connect a second Input Source to MXPro's IN 2 jacks.**

  MXPro is set up, by default, to expect S-Video (Y/C) devices to be connected to the IN 1, IN 2, IN 3, and IN 4 input jacks. If you connect Composite devices to any of the jacks, you must tell MXPro this fact. See "Using the Route Function" below after completing the following steps.
- **Connect a VCR's VIDEO IN and AUDIO IN jacks to the OUT jacks on the MXPro rear panel. This is the device where you record the program.**
- **Connect a television or monitor to the recording VCR according to their instructions. Having this monitor available lets you see exactly what is being recorded (or, output).**

Note

These instructions assume a two-monitor setup. If you are using only one monitor, connect it to PREVIEW OUT.

- **Connect the MXPro power supply to the power supply jack on the rear panel.**
- **Connect the MXPro's power cord to a suitable outlet.**
- **Turn on all devices (the MXPro power switch is located on the right end of the unit) and let the tapes roll.**

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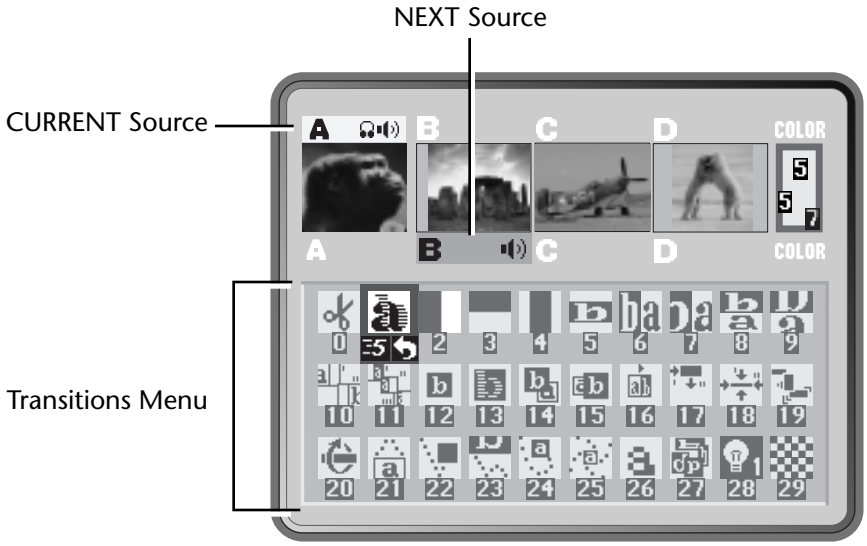
The Preview Screen

♦ **You should see the following (with some slight differences) on the Preview screen.**



Note

MXPro displays small previews of the sources you have attached. The images are scaled down both in size and frame rate and, therefore, don't play as smoothly as they would in a single-source video monitor image. This does not affect the quality of the video going to the output — it is always highest quality.

The PREVIEW screen contains the elements you need to run transitions:

CURRENT Source — The signal currently playing on the Output monitor. MXPro highlights the CURRENT source in Yellow (just above the preview images).

NEXT Source — The signal that will play on the Output monitor after the transition runs. MXPro highlights the NEXT source in Green.

Transitions Menu — Rows and columns of icons representing some of the transitions available. MXPro highlights the currently selected transition in Blue. The icons also show the speed and direction for the selected transition.

♦ Near the upper-right corner of the Preview screen is the Color Channel. The swatch shows samples of the current background color, border color, and border style. The numbers represent the current selection of color codes and styles.

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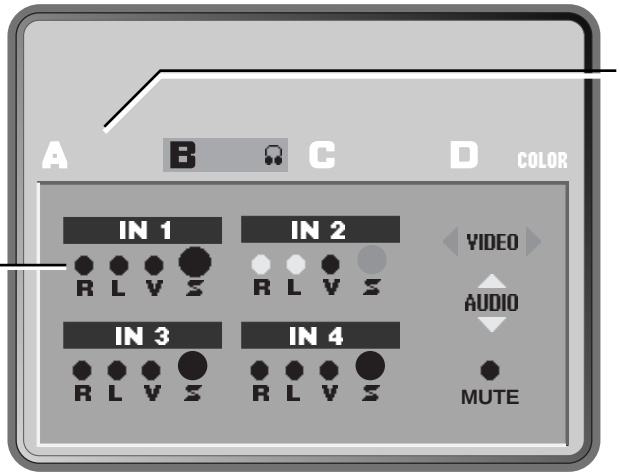
Using the Route Function

The Route functions ensures that MXPro understands where your input devices are connected on the rear panel. If you connect S-Video (Y/C) devices to the IN 1, IN 2, IN3, and/or IN 4 jacks, re-routing is not necessary. Go on to the next section, "Running the Demo". Otherwise:

- **After starting MXPro with all devices connected and turned on, press ROUTE to display the Route screen.**

This display indicates the S-Video (Y/C) and R/L audio connections from IN 2 are routed to Channel B.



Press **NEXT/X** where **X** is the channel (A, B, C, or D) *TO WHICH* you want to route the signals. MXPro highlights the channel you select.

The following instructions explain how to change the video routing for channel B from the S-Video (Y/C) connection on IN 2 to the Composite connection on IN 2.

- **Press LEFT ARROW. Note that the S highlight (for S-Video, or Y/C) under IN 2 moves left to highlight the V (Composite Video) option.**
- **To route other inputs to different channels, press NEXT/X, where X is the channel to which you want to route. Then repeat the preceding step.**
- **Press ROUTE again to exit from the Route screen.**

Running the Demo

The Demo gives you a quick look at some of MXPro's important features and assortment of transitions.

- **Press SHIFT+DEMO.**

  You should see the two sources alternating, with a variety of transition effects in between.

- **Press any key to stop the Demo whenever you want.**

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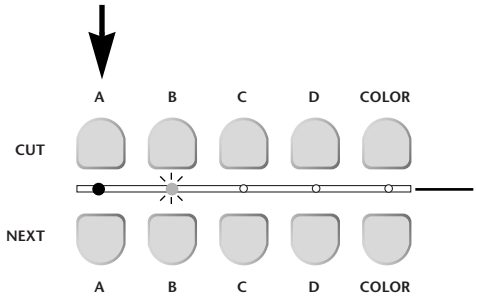
Cutting Between Sources

- **Press CUT/A.**



When you press one of the cut buttons, the small light below the buttons glows steadily to indicate it is the CURRENT source.

When you press one of NEXT buttons, the small light above that buttons blinks to indicate it is the NEXT source.

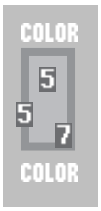
The light below the A button comes on and the Output monitor displays the signal from whatever device is plugged into the inputs labeled IN 1. The yellow highlight above preview image A tells you it is the currently active input.

- **Press CUT/B.**

  The light below the B button begins flashing (indicating B is both the CURRENT and NEXT source) and the Output monitor displays the signal from whatever device is plugged into the inputs labeled IN 2. The yellow highlight above preview image B tells you it is the currently active input.

- **If you have anything plugged into IN 3 or IN 4, press CUT/C and CUT/D, respectively, to display their signals.**

Borders and Solid Color Backgrounds



- **Press CUT/COLOR.**

  MXPro highlights the speaker, headphone, or color block above the channel indicator, but does not show the channel letter. The Output monitor shows a solid color screen.

- **To change the color, press BG COLOR.**

  Each time you press the button the color changes in the background color sample and at the Output. Continue pressing the button until you see a color you like.

- **You can also define a border color and style to use at the edge of most transitions and PIPs. Press BORDER COLOR and the color around the background color sample shows you the new choice. Press BORDER STYLE to select from different styles for the border.**

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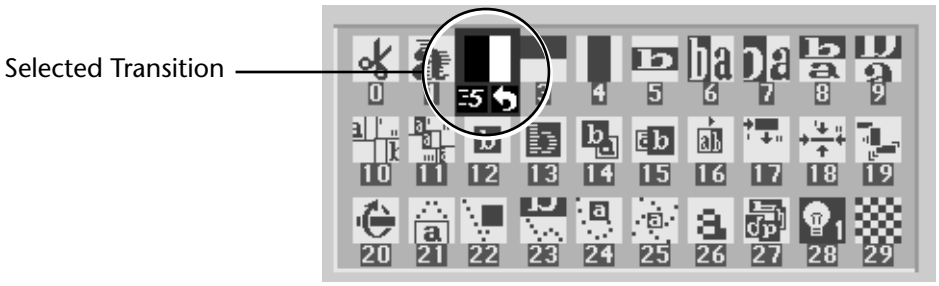
Setting up a Transition

To set up a transition you need to select the sources you want to use and the transition you want to use when switching between them. Here's how to transition from source A to source B using a horizontal wipe.

- **Press CUT/A to set A as the CURRENT source. MXPro shows a steadily glowing light below the CUT button you press.**
- **Press NEXT/B to set B as the NEXT source (the one you want to see after the transition finishes running). The LED light above the button you press flashes to indicate it is the NEXT source.**
- **Use the ARROW keys to highlight the Wipe transition in the Transitions Menu, as shown in the following example.**

  Use **LEFT** and **RIGHT ARROW**s to move the selection horizontally. Use **UP** and **DOWN ARROW**s to move the selection vertically: or, press **2** then **OK** to select the transition by number.



The screen shows: The CURRENT source (A), the NEXT source (B), and the desired effect (the horizontal wipe).

Running Transitions

You can run transitions automatically or manually.

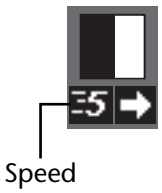
Automatic Transitions

- **Press PLAY. MXPro runs the transition at a pre-determined speed.**

  MXPro transitions between the two sources using the horizontal wipe transition. Both the Preview and Output screens show the results.

At the end of the wipe, B is on the OUTPUT monitor — it has become the CURRENT source. The yellow highlight above the preview images has changed to reflect that. Furthermore, A is now the NEXT source and the green highlight has been changed to A.

- **To wipe back and forth between sources A and B, press PLAY repeatedly.**
- **To change the speed at which a transition runs, press the SPEED button. The Speed indicator under the transition icon changes.**
- **Press the button again until the desired speed appears. 0 is the slowest speed, 9 is the fastest.**
- **Try this with various speeds: Change the speed and press PLAY.**



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Manual Transitions Use the **TAKE BAR** to run transitions and control their speed and direction.

- **Set up the transition as you would normally. However, instead of pressing PLAY, simply move the T-BAR.**

  The transition begins running as soon as you move the **T-BAR**. You can even move back and forth by moving the **T-BAR** in different directions. Give it a try!

Using CUT Transitions

Most video productions use simple cuts a majority of the time. To cut between any two sources (for example, you could cut from A to C to COLOR to D), use the **CUT** buttons.

There's a quick way to cut back and forth between two sources (such as A to B to A to B) using just the **PLAY** button, instead of having to alternate between two **CUT** buttons:

- **Press 0 to select transition 0, a simple cut.**
- **Press PLAY again and again.**
- **A solid color screen can be used as if it were a separate source. Press the NEXT/COLOR button and run any transition, or press CUT/COLOR.**

Choosing Transitions

The Preview screen contains the Transitions Menu. This menu contains icons and other information for all MXPro transitions. A blue highlight indicates the transition selected for the next transition.

- **Select Transitions in the following ways:**

  ARROW keys – Simply use the arrow keys to highlight the desired transition.

  NUMBER keys – MXPro assigns a unique number to every transition. The number appears below the transition icon on the PREVIEW screen (in the following example, the checkerboard transition is number 29). You can use the number to select a transition. (When you select/highlight a transition in the menu, MXPro shows the transition's speed and direction. At this point, the transition number is no longer visible.)

- **Enter 106 using the number keys (press 1, then 0, then 6), then press OK to highlight the transition icon.**

  MXPro replaces the current Transitions Menu and shows the one that contains the transition you selected.

- **Press PLAY.**

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Using Transition Categories

MXPro categorizes transitions into five major groups — **User**, **Basic**, **Edges**, **Trailing**, and **Shapes**. You can access any category at any time by pressing one of the Transition Category buttons.

When you press one of the buttons, the content of the Transitions Menu (see "The Preview Screen" on page 11) changes.

- **Press the TRAILING button. The Transitions Menu display a completely different set of transition icons.**
- **Use the ARROW keys to highlight a transition you'd like to see run, then press OK.**
- **Press PLAY or use the T-BAR to run the transition.**

The USER transition category is slightly different from the others. It originally contains a default set of transitions, each of which also exists in the other categories. You can "tailor" the content of the USER category to your specific needs and preferences. You'll learn more about this in later chapters.

Other Features

Refer to the rest of this User Guide to learn about the many additional MXPro features, including:

- **Using the DISPLAY button to change the content of the Preview screen.**
- **Freeze the picture.**
- **Separately control the sound.**
- **Apply input effects, such as mosaic, paint (posterization), negative, and more.**
- **Use chroma key to combine parts of one picture with parts of another.**
- **Compose your own pictures, made up of several stills, color rectangles, and a moving picture.**
- **Rearrange the inputs so A, B, C, and D, and their audio channels come from different rear panel jacks.**
- **Memorize a sequence of transitions and play them back.**

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3

Installing MXPro

This chapter explains how to install (or, set up) MXPro to use with other equipment. Major topics include:

- Understanding **Sources** and **Output**
- Understanding **Preview** and **Program** monitors
- Understanding the MXPro connectors
- Identifying **Cables** and **Adapters** you might need
- Installation Examples
- Installing a **Microphone**

If you are upgrading from the Videonics MX-1, see Appendix E, *Information for MX-1 Users*, for information that will be helpful setting up your equipment.

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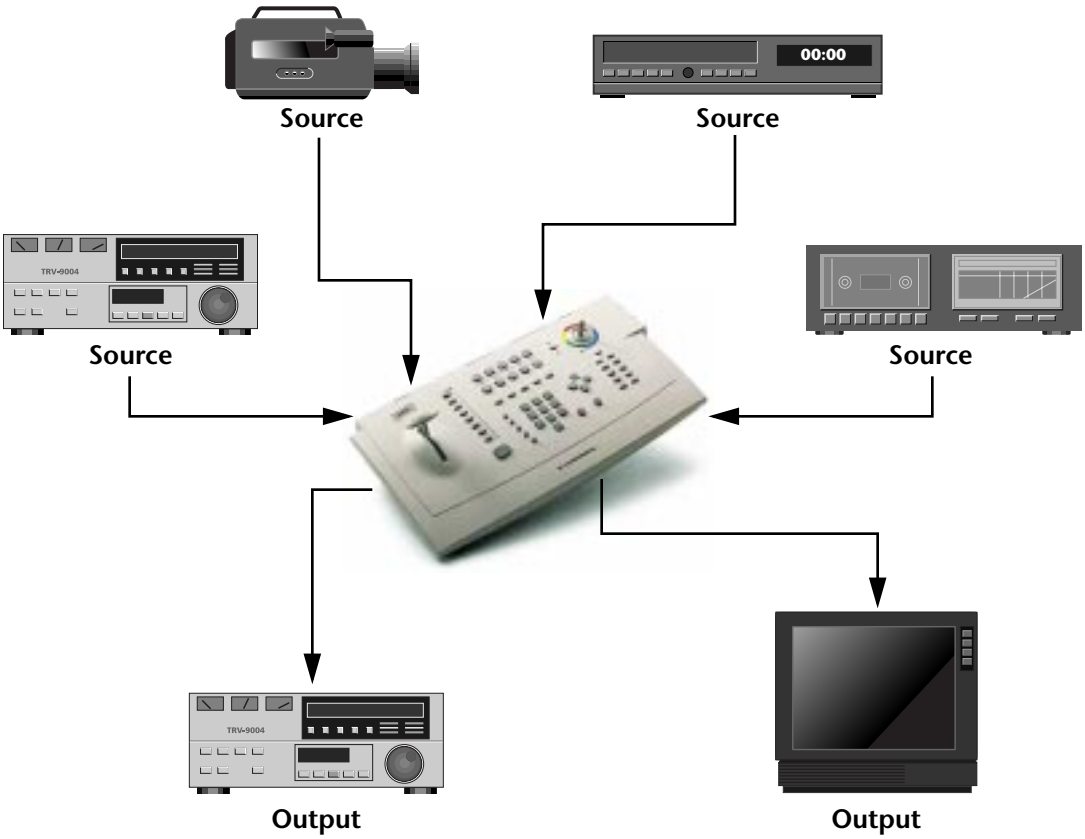
Sources and Output

Source and Output refer to the way you use devices with MXPro. You can simultaneously connect up to four source devices and two output devices to MXPro.



Source — A source is an input device. Each source provides a video signal, audio signal, or both. You use MXPro to combine and (optionally) animate these signals.

Output — An output is a device on which you record and/or broadcast a signal. The signal might contain video, audio, or both. This signal is often a mix of signals coming into MXPro from one or more of the sources. The output device might be a VCR with an optional monitor attached, or it might be a live broadcast.

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Preview and Program Monitors

MXPro designates monitors as either Preview or Program to indicate how a particular monitor may be used. This manual uses the following pictures to distinguish between the two monitors.

Preview Monitor

Program Monitor

Preview Monitor

The Preview monitor is your "working" monitor. Most of the time it contains controls for managing Source and Output devices. For example, it shows miniature versions of images coming from the attached VCR's and camcorders. The Preview monitor also shows a menu of transitions and other effects from which you can choose. See "Using the Preview Screen" beginning on page 35.

CAUTION

The Preview monitor must be a Composite device. Do not attempt to connect any other type of monitor to the PREVIEW OUT jack on the MXPro rear panel.

Program Monitor

The Program monitor shows the production exactly as recorded on the output device or displayed in a live video environment. The Program monitor shows the program complete with transitions and other effects. You normally connect the Program monitor to the output device. The Program monitor can be either a Composite or S-Video device.

Number of Monitors

You can operate MXPro with only one monitor connected to the Preview out. However, to greatly simplify your work you should have at least two monitors — one Preview and one Program. Instructions in this manual assume you have separate Preview and Program monitors.

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Understanding MXPro Connectors

To properly set up MXPro, you need to know how and where to connect external components – such as VCR's, camcorders, and so forth. You use cables to connect video devices to MXPro's rear panel. See "Cables and Adapters" on page 23.

Remove MXPro from its package and set it so you can see the rear panel. Refer to the panel and the illustration on page 21 while reading this section.

The MXPro rear panel has numerous connectors and they vary by type. You can connect input sources in any combination – up to a maximum of four. You can process just the video signal from a device, just the audio signal, or both.

You can connect two separate output devices to MXPro. You might, for example, direct one output to a recording device and the other to a live broadcast.

Note the labels associated with each and every connector on the MXPro rear panel.

POWER — An electrical power connector. Use the power cord and adapter in the MXPro package to connect the unit to an electrical outlet.

VIDEO IN (Y/C) — Connect S-Video sources to these connectors.

VIDEO IN — Connect Composite sources to these connectors.

AUDIO IN — Connect audio devices to these connectors. Each set of connectors has L (Left) and R (Right) jacks for stereo input. See"Audio Connectors" on page 24.

There are a total of six output connectors — one Preview, two Composite, two S-Video, and a Headphones jack.

PREVIEW OUT — Connect a Composite video monitor to this jack. You cannot use an S-Video monitor as Preview. This monitor serves as your visual "interface" with MXPro: it's where you do most of your work.

OUT Y/C — Connect an S-Video output device. You record productions on this device, use it to display a live broadcast signal, or both.

OUT — Connect a Composite output device. Same as above, but use this connector if your output device is composite-type.

AUDIO OUT — Connect a suitable audio cable from this jack to the audio input on your output device.

CONTROL (GPI) — Connect a General Purpose Interface (GPI) device to this jack to control the MXPro from an external device or remote location. See "Using a GPI Device" beginning on page 126.

HEADPHONES — See "Using Headphones" on page 25.

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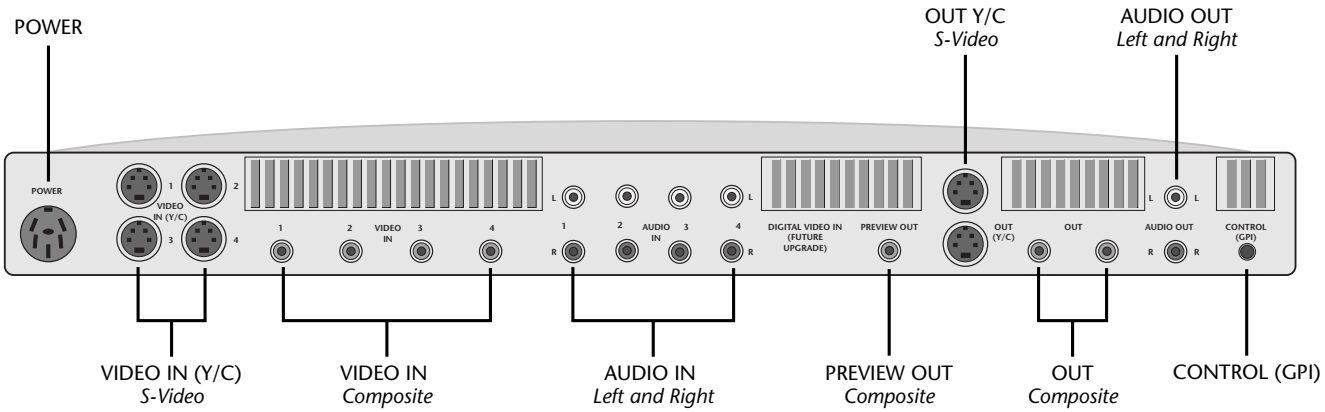
MXPro Rear Panel



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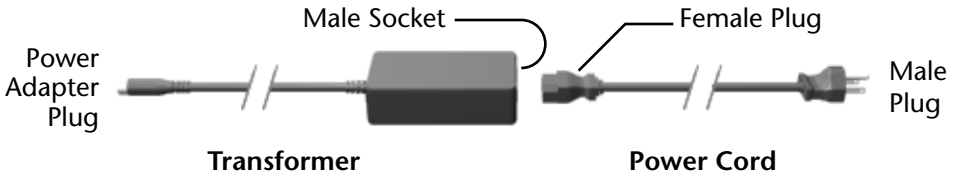
Power Connector

The MXPro package contains the required Transformer and Power Cord for the unit.



WARNING!

Use only the power cord and transformer provided in the package. Do not use this power cord and transformer with any other equipment. Failure to observe these conditions can damage your equipment and void your warranty.

Procedure

To connect the power cord and transformer:

1. Connect the Female Plug on the Power Cord into the Male Socket on the Transformer.
2. Connect the Male Plug on the Power Cord to a suitable power outlet.
3. Connect the Power Adapter Plug on the Transformer cord into the Power connector on the MXPro rear panel.
4. Turn the MXPro Power Switch (located on the right side of the unit) to the ON position.

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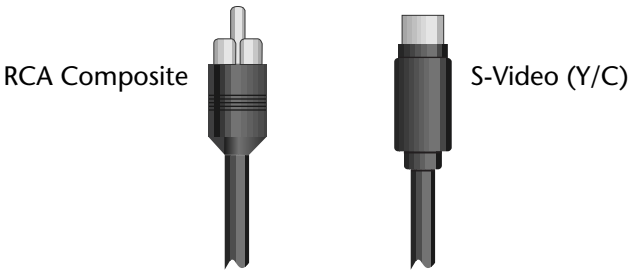
Cables and Adapters

To connect video devices to MXPro you need specific types of cables. You might also need one or more adapters, depending on your equipment.

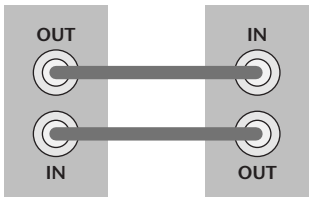
Look closely at the jacks on the MXPro rear panel and note that they accept RCA Composite or S-Video connectors.

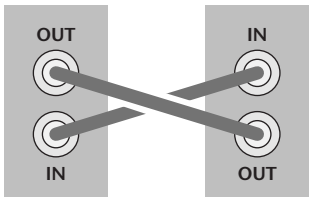


Before connecting any device to the MXPro, make sure the cable you are using has the right type of fitting for the jack you intend to use.

WARNING!

When making connections, always connect the OUT from one device to the IN on the other device. NEVER connect OUT to OUT or IN to IN.





Microphones

You can connect a microphone to any MXPro input jack, but you need a special adapter to make the connection. The type of adapter needed varies depending on the type of microphone you want to use. If you do not have the adapter you need, take your microphone to a local electronics supply store to make sure you select the correct adapter.

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Audio Connectors To connect a stereophonic audio device to MXPro, you need two separate audio cables — one for the Left channel and one for the Right.

To connect a monaural audio device you need a Y-Adapter cable. Connect the single end of the adapter to the line input or output on the device. Connect the two remaining ends to the Left and Right channel inputs or outputs on the MXPro rear panel.

The Y-Adapter cable does not provide stereophonic audio. It simply directs the mono signal to or from both MXPro channels.

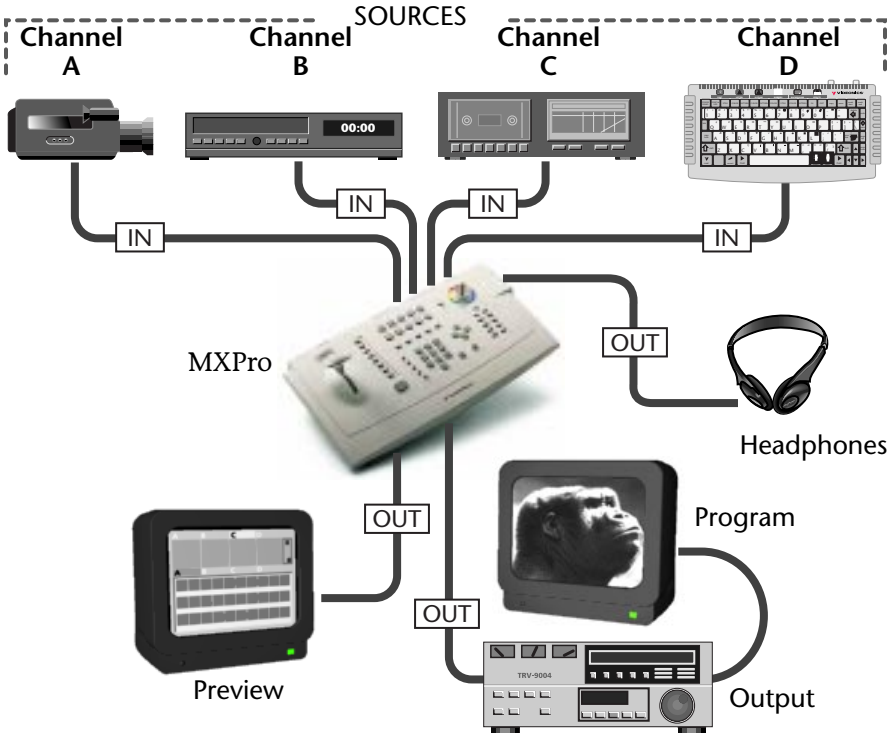
You can also connect a mono audio device using a single cable. Connect one end to the line in or out on the audio device, then connect the other end to either the Left or Right MXPro channel connector using the IN 3 set of inputs (only IN 3 can be configured for mono). Once connected, use the MXPro ROUTE function to specify which connector (Left or Right) you used. See "Route" beginning on page 77.

Installation Examples

This section shows examples of two common MXPro configurations, but does not describe every possibility.

Before proceeding, study the following diagram (MXPro Installation Concept) that shows overall configuration concepts.

MXPro Installation Concept



You can have up to four separate audio/video input sources. MXPro designates them as sources A, B, C, and D. You can use any mix of devices as necessary to complete your work so long as they are valid MXPro devices. For example, you can use VCR's, VTR's,

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camcorders, laserdisc players, satellite tuners, broadcast tuners/receivers, character generators (CG's), video-equipped computers, and audio devices (such as a CD player or tape deck).

MXPro sends the output signal to a recording device (such as a VCR) and/or a Program monitor.

A second monitor, Preview, can be used to display preview images of all input sources. The Preview monitor also displays the on-screen controls you use to operate MXPro.

Correlating Input Sources to MXPro Jacks

IMPORTANT INFORMATION

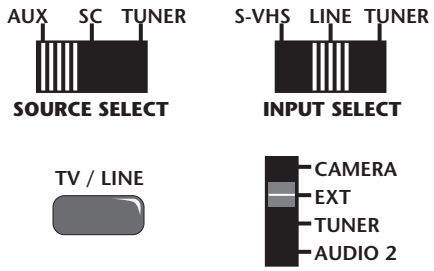
As stated above, MXPro designates your input sources as A, B, C, and D. However, if you examine the jacks on the MXPro rear panel you'll see they are labeled 1, 2, 3, and 4. Initially, there is a direct correlation between the letter and number designations: jack 1 corresponds to source A, jack 2 corresponds to source B, jack 3 to source C, and jack 4 to source D. You can re-route inputs to other channels. For more information, see "Route" beginning on page 77.

Using Headphones

To use headphones, connect them to the Headphone jack, which is located on the right end of the unit, near the power switch. The jack accepts standard stereo headphones with a miniature plug — however, output is monaural (a mix of right and left channels), not stereo. If your headphones have a large plug, you need an adapter to switch it to a miniature plug.

VCR Selector Switches

Many VCR's have an input selector switch that routes between Line (or AUX, EXT, A/V, or S) and Tuner. Here are some examples.



If you have such a switch on a device, set the switch to Line.

Some VCR's have more than one VIDEO IN jack (for example, one might be Composite and the other S-Video). Set the switch to match the jack you are using as the connector to MXPro.

General Notes

When connecting video and audio outputs from source devices, most of the time you'll probably connect to corresponding jacks on the MXPro rear panel. For example, if you connect the video to the VIDEO IN jack labeled "1," you'll most likely connect the audio to the AUDIO IN jack also labeled "1." However, this is not a requirement. You might use non-corresponding jacks — for example, you might connect the video from one source to VIDEO IN 1 but connect the audio from the same source to AUDIO IN 2 if you want to control the audio and video separately.

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Live Broadcast Configuration

This configuration is useful in a live broadcast environment.

1. Connect the VIDEO OUT from Camera 1 to VIDEO IN 1 on the MXPro rear panel. Connect the AUDIO OUTs from Camera 1 to AUDIO IN 1 on the rear panel.
2. Connect the VIDEO OUT from Camera 2 to VIDEO IN 2 on the MXPro rear panel. Connect the AUDIO OUTs from Camera 2 to AUDIO IN 2 on the rear panel.
3. **OPTIONAL** – Connect an audio source (CD player, tape deck, or microphone) to AUDIO IN 4 on the MXPro rear panel.
4. Connect a Composite-type monitor to the PREVIEW OUT jack on the rear panel.
5. **OPTIONAL** – Connect a GPI trigger device to the GPI CONTROL on the MXPro rear panel.
6. **OPTIONAL** – Connect a Character Generator (CG) to the OUT Y/C jack on the rear panel.

   With this configuration you can superimpose titles from the CG atop the output signal.
7. Connect a recording VTR to the OUT Y/C jack on the rear panel.

   If you are using the optional Character Generator (described above), connect the output from the CG to the VTR input.
8. Connect an Output Monitor to the recording VTR so you can see the signal being recorded.
9. Connect the Power Cord and Transformer to the MXPro rear panel. See “Power Connector” on page 22 for instructions.

Use the Route function (see page 77) to make sure your devices are directed to the correct MXPro channels.

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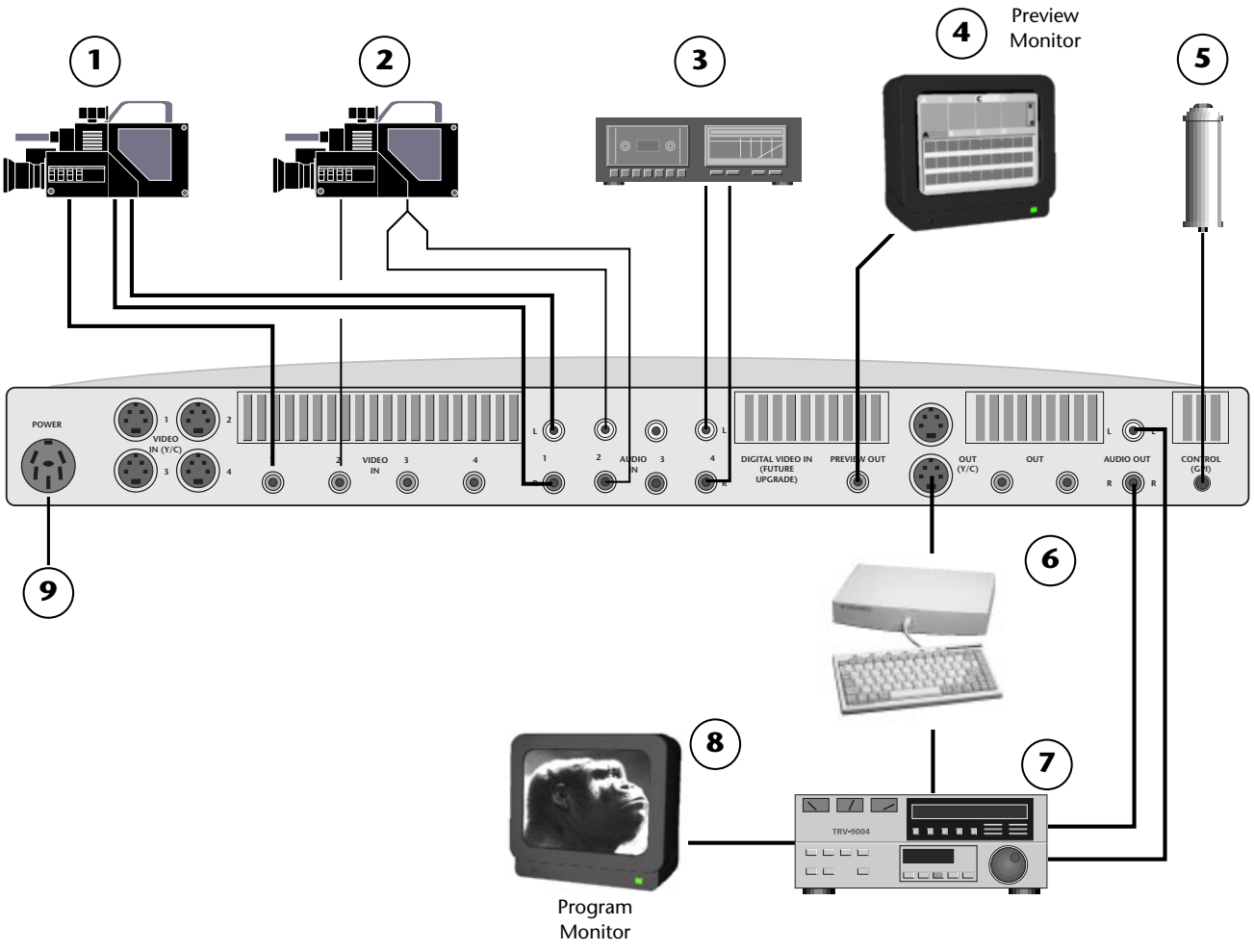
Live Broadcast Configuration



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Post Production Configuration

This configuration is useful in a Post-Production environment where you mix two or more programs together.

1. Connect the VIDEO OUT from VTR 1 to VIDEO IN 1 on the MXPro rear panel. Connect the AUDIO OUTs from VTR 1 to AUDIO IN 1 on the rear panel.
2. Connect the VIDEO OUT from VTR 2 to VIDEO IN 2 on the MXPro rear panel. Connect the AUDIO OUTs from VYR 2 to AUDIO IN 2 on the rear panel.
3. **OPTIONAL** – Connect an audio source (CD player, tape deck, or microphone) to AUDIO IN 4 on the MXPro rear panel.
4. Connect a Composite-type monitor to the PREVIEW OUT jack on the rear panel.
5. **OPTIONAL** – Connect a Character Generator (CG) to the OUT Y/C jack on the rear panel.

   With this configuration you can superimpose titles from the CG atop the output signal.
6. Connect a recording VTR to the OUT Y/C jack on the rear panel.

   If you are using the option Character Generator (described above), connect the output from the CG to the VTR input.
7. Connect an Output Monitor to the recording VTR so you can see the signal being recorded.
8. Connect the Power Cord and Transformer to the MXPro rear panel. See “Power Connector” on page 22 for instructions.

Use the Route function (see page 77) to make sure your devices are directed to the correct MXPro channels.

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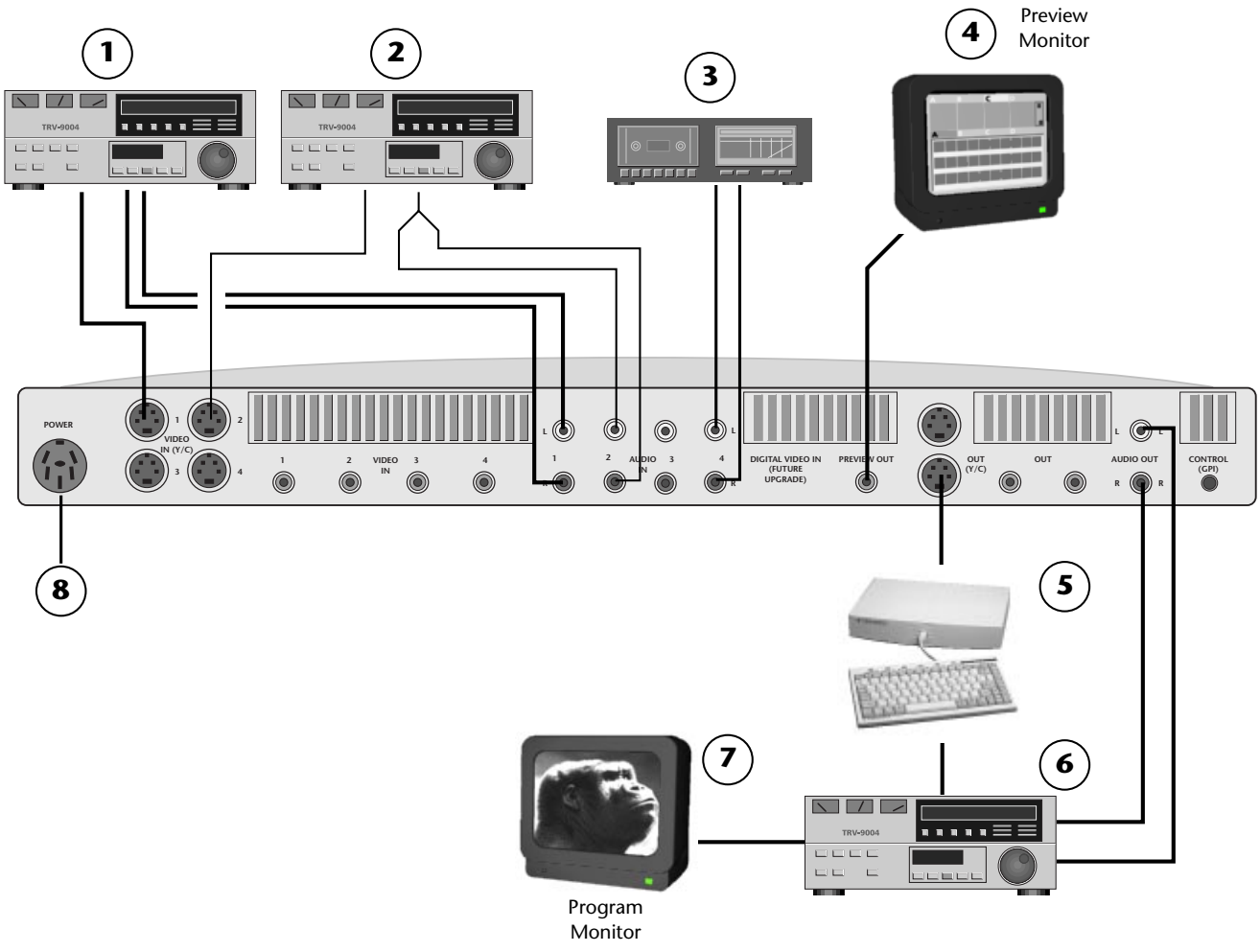
Post Production Configuration



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Using a Microphone with MXPro

This section explains how to connect a microphone to MXPro.

You need the following equipment:

- Professional quality microphone
- Microphone cable (male-XLR to female-XLR connectors)
- An audio Direct Box (which you can purchase from any professional audio equipment dealer)
- A 1/4 inch (Phone Jack) to RCA cable
- A female RCA to dual-male RCA "Y" Adapter

Procedure

To connect a microphone:

1. Using the microphone cable, connect it to the XLR (balanced) input on the Direct Box.
2. Plug the 1/4-inch-to-RCA cable into the 1/4-inch (unbalanced) output on the Direct Box.
3. Attach the RCA "Y" adapter to the 1/4-inch-to-RCA cable.
4. Plug the two male ends of the RCA "Y" Adapter into the Channel 4 R and L audio inputs on the MXPro rear panel.

To control the volume of the microphone, use the Background Music slider on the Audio Mixer screen (see "Using the Audio Mixer" beginning on page 118).

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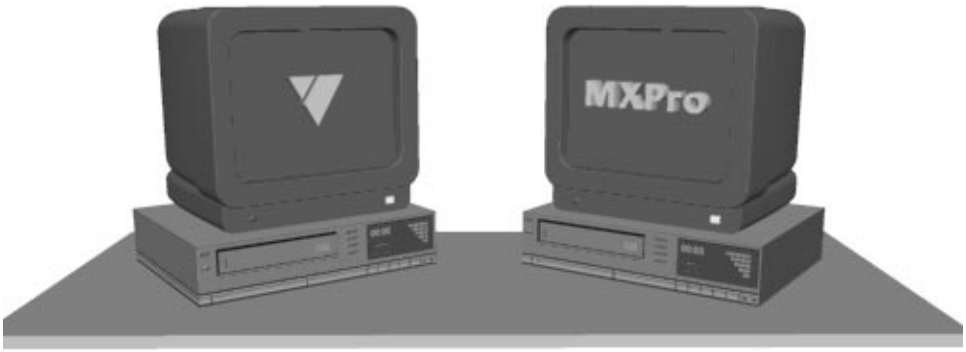
4

Basic Operations



This chapter describes several basic MXPro operations, including:

- Starting and stopping MXPro
- Using the MXPro keyboard
- Using the Preview screen
- Using CURRENT and NEXT sources
- Selecting Sources
- Using the VIDEO/AUDIO selector
- Cutting Between Sources
- Working with Color
- Using Backgrounds
- Using Borders

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Starting and Stopping MXPro

Press the Power switch to start or stop MXPro. The switch, located on the right-end of the unit, is a rocker-type switch. Also power on or off all sources and output devices.

Understanding the Keyboard

Use the MXPro keyboard to control how the unit operates. The better you understand all of the functions available from the keyboard the better your results.

This section briefly describes the button groups and, in some cases, individual buttons and controls. Additional information appears throughout this User Guide. Some of the following descriptions provide a reference to the page where you can find details. Refer to the illustration on the next page while reading this material.

1. **T-Bar (or, Take Bar)** — Use to manually control the way transitions run. See Chapter 5, *Transitions*.
2. **Function Buttons** — Provide immediate access to built-in functions, including **DISPLAY**, **SETUP**, **ROUTE**, **LEARN**, **COMPOSE**, **PIPS**, **AUDIO MIX**, and **FREEZE**. You can also access the built-in demo using these buttons. See Chapter 7, *Functions*, for details.
3. **Source Selectors** — Use to select the CURRENT (CUT) and NEXT sources for a production. Normally, you select the CURRENT and NEXT sources, select a transition to use between the two, then run it. For example, you might select a camcorder as one input source (CURRENT) and a VCR as the other (NEXT). You then select a transition, such as a dissolve or wipe. When you reach the point in the CURRENT source where you want to change to the NEXT source, press **PLAY** or use the **T-BAR** to instruct MXPro to play the transition. The CURRENT source becomes the new NEXT source, and the old NEXT source becomes the new CURRENT source. (See "Using CURRENT and NEXT Sources" beginning on page 38.) Use the COLOR buttons to create solid colored backgrounds and other effects. (See "Working with Colors" beginning on page 42.)
4. **Video/Audio Selector** — Determines whether VIDEO, AUDIO, or both VIDEO and AUDIO are affected when you run a transition. When set to **VIDEO**, the video changes but the audio does not. When set to **AUDIO**, the audio changes but the video does not. When set to both, the video and audio both change. See "Using the Video/Audio Selector" on page 40.
5. **Joystick** — Provides an easy way to make fine adjustments to various components. For example, when using PIPs the joystick positions the various picture elements on the screen — when using color correction, use the joystick to adjust the color. The joystick has other uses you'll learn about in later chapters.
6. **Power Switch and Headphone Jack** — These two components are located on the right-hand side of the unit, not on the top. The Power Switch is a rocker-type switch for turning the unit on and off. The Headphone Jack provides a means for connecting a set of headphones to the unit.
7. **Transition Category Buttons** — Gives you immediate access to the five, major categories of transitions, including **USER**, **BASIC**, **EDGES**, **TRAILING**, and **SHAPES**. All MXPro transitions fall into one of these categories. After pressing a button, you can search through the transitions in that category to find the one you want to use. See "Transition Categories and Menus" beginning on page 52.

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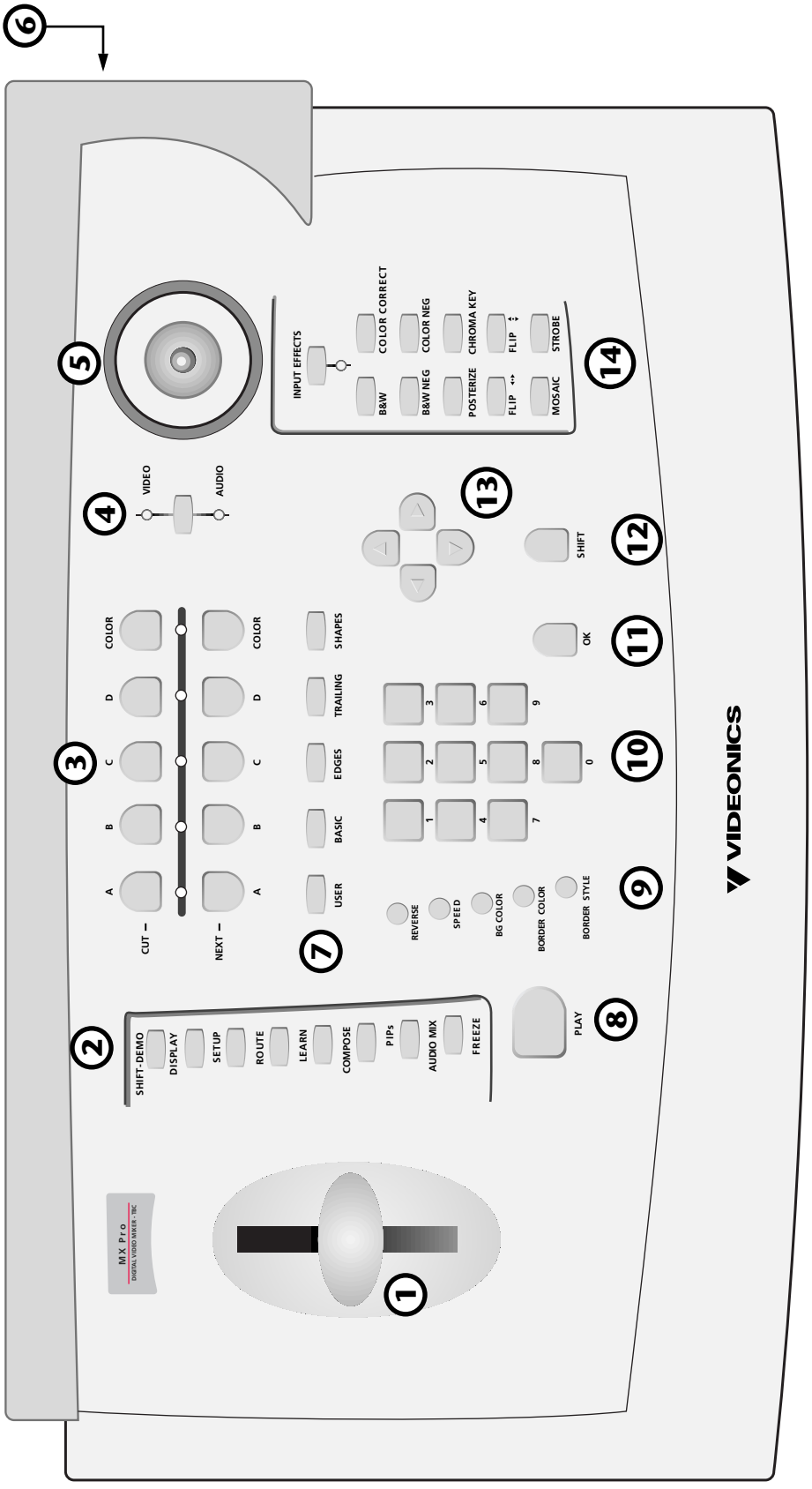
MXPro Keyboard



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8 **Play Button** — Press to invoke the next command, complete with transition if specified. In other words, set up your CURRENT and NEXT sources, select a transition, then press **PLAY** at the moment you want MXPro to perform the step.

9 **Control Buttons** — Use these buttons to reverse transition direction, change transition speed, specify background and border colors, and set border styles.

10 **Numeric Keypad** — Use for various functions, such as entering the number of a transition you want to use, setting a precise speed for a transition, and so forth.

11 **OK Button** — Generally used to indicate to MXPro that you have completed some operation and want the unit to prepare for or perform it accordingly.

12 **SHIFT Button** — A modifier key that invokes special functions when used in conjunction with other keyboard keys.

13 **Arrow Keys** — Primarily used for selecting effects and functions. For example, use the arrow keys to highlight a transition you want to use in the Transitions Menu.

14 **INPUT EFFECTS Buttons** — Provides access to effects you can apply to input sources. The light below the **INPUT EFFECTS** button glows when MXPro is in Input Effects mode. See Chapter 6, *Input Effects*, for more information.

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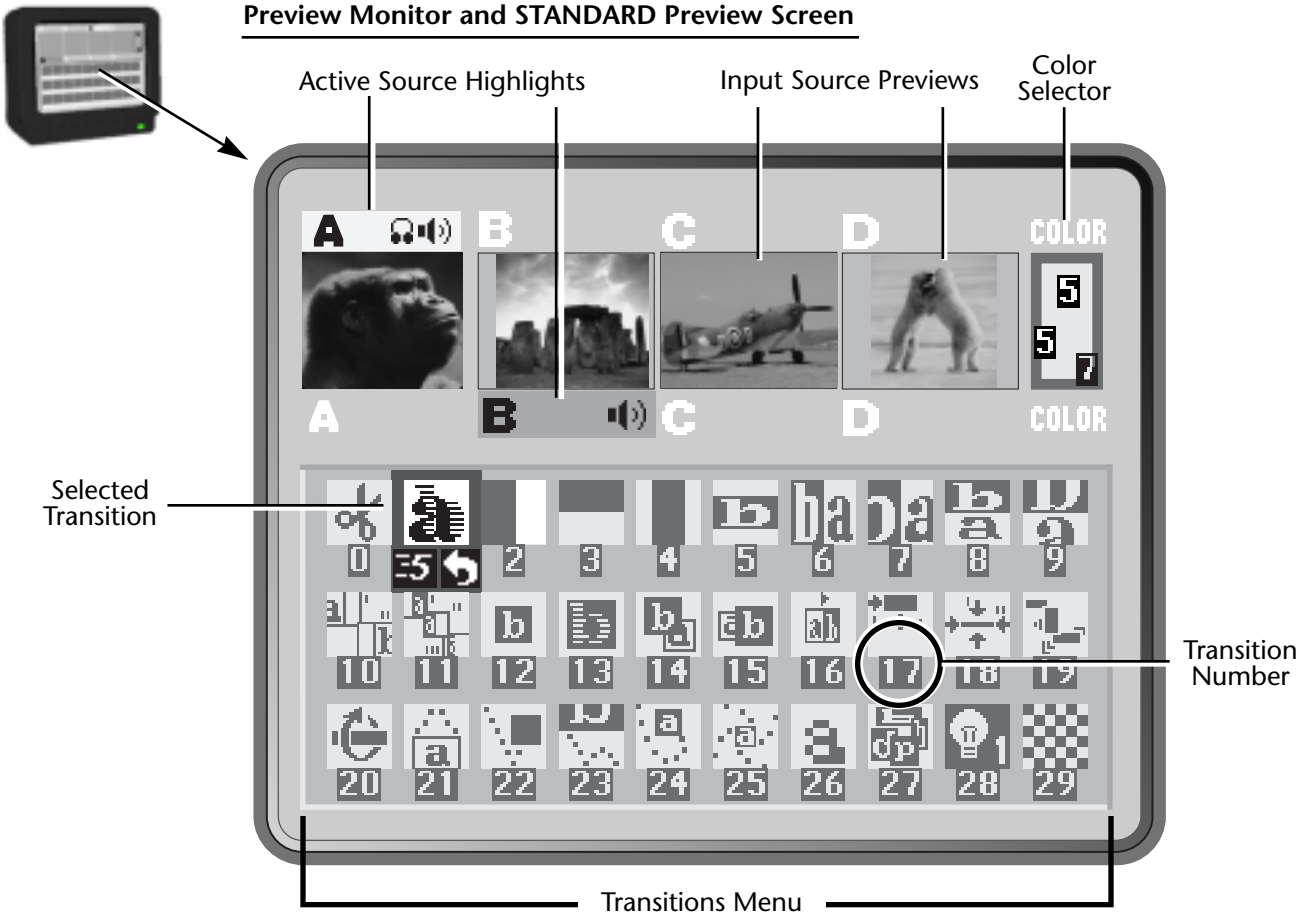
Using the Preview Screen

The Preview Screen is your control center for MXPro operations. This section describes individual items on the Preview screen. The Preview screen appears on the monitor attached to the MXPro PREVIEW OUT jack.

Preview Monitor and STANDARD Preview Screen



Note

MXPro always processes the output at the highest possible quality. The Input Source Previews, however, appear in reduced quality because MXPro must reduce the images to fit the smaller window. Playback of the images is also of reduced quality because MXPro must do a lot of additional work to play them. This becomes more evident when you display multiple moving images because MXPro must do even more work to handle all of the images simultaneously. What you see on the Preview screen is *not* indicative of what gets recorded or displayed on the output.

Changing the Display Configuration

Press the **DISPLAY** button to repeatedly cycle through five different configurations for the Preview screen, or use the shortcut key indicated for each:

- **STANDARD** — as shown above (**SHIFT+1**).
- **TWO CHANNEL** — Shows only enlarged CURRENT and NEXT Input Source Previews and the first two rows of the Transitions Menu (**SHIFT+2**).

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- **FULL** – Displays only the Input Source Preview windows, each in a larger size. Transitions Menu not displayed (**SHIFT+3**).
- **NEXT** — Displays full-screen image of the NEXT input source. Transitions Menu not displayed (**SHIFT+4**).
- **CURRENT** — Displays full-screen image of the CURRENT input source. Transitions Menu not displayed (**SHIFT+5**).

See "Display" beginning on page 73 for examples of these configurations. Unless stated otherwise, this guide assumes you are using the **STANDARD** preview.

Input Source Previews

A small, preview image from each input source appears in a separate window. Use the previews to direct the action, position cameras, find a particular sequence on a video tape, and so forth. The preview images do *not* show Input Effects (see Chapter 6, *Input Effects*).

Active Source Highlights

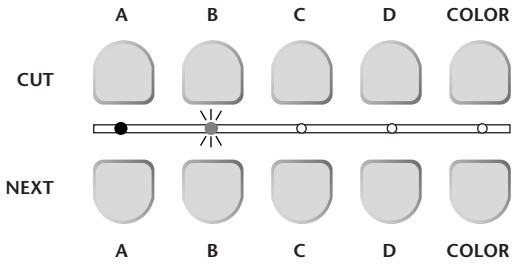
You can have up to four input sources. MXPro labels the sources A, B, C, and D. (There is also a fifth, built-in source — the mixer's own background color generator.) All transitions start with one source, called the CURRENT source, and end with another, called the NEXT source.

Colored highlights help identify one video source from another. Yellow highlights the CURRENT video source (above the preview image), and green highlights the NEXT video source (below it)

Some sources provide audio only, others provide both video and audio. The speaker icon (rather than a colored highlight) indicates the CURRENT and NEXT audio selections.

The headphones icon identifies the channel to which the headphone output is currently directed.

In addition to the highlights described above, indicator lights between the **CUT** and **NEXT** buttons indicate the currently selected video sources.



Indicator Lights
A steady light identifies the CURRENT video source. A blinking light identifies the NEXT video source.

Brief descriptions of the Transitions Menu, Highlights, and Indicators follow. For more detailed information, see Chapter 5, *Transitions*.

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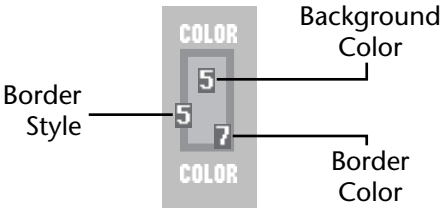
Color Selector

The Color Selector shows current choices for background color, border color, and border style. The selector shows the actual colors, and also shows the numeric values associated with each. This example shows a background color 5, border color 7, and border style 5.



If you turn off the border (that is, set the border style to zero), the border color swatch and number do not appear in the Color Selector.

You can cycle through all available colors for each component using the **BG COLOR**, **BORDER COLOR**, and **BORDER STYLE** buttons. See "Working with Colors" beginning on page 42.

Transitions Menu

The Transitions Menu shows up to 30 transitions at a time. MXPro groups the 500+ available transitions into distinct categories.

To access any transition category, press the appropriate Transition Category button.

See "Transition Categories and Menus" beginning on page 52 for more information.

Use the **ARROW** keys to navigate through the transitions in the current menu. If a category contains more transitions than can appear in the Transitions Menu at one time, continue pressing **DOWN ARROW** or **UP ARROW** to scroll the other transitions into the menu. When the transition you want appears in the Transitions Menu, use the **ARROW** Keys to select (or, highlight) it.

Selected Transition

When you select a transition in the menu, MXPro highlights it in blue. It also shows the current speed and direction for the transition. In this example, speed is 5 and the direction is forward (as indicated by the arrow).

You can change the speed at which a transition runs, and you can also change the direction in which it runs. See "Adjusting Transitions" beginning on page 58.

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Using CURRENT and NEXT Sources

The concept of CURRENT and NEXT sources is fundamental to MXPro operations. As you go about creating productions, you always have a CURRENT and NEXT source.

Example…

Suppose you want to create a sequence of transitions from Kong's thoughtful gaze to footage of a fighter plane contemplating take off and, finally, a shot of Stonehenge for a mystic closing.

Source **A** Source **B** Source **C**

Procedure

To identify the CURRENT and NEXT sources:

1. Begin with the footage of Kong staring thoughtfully upward. Press **CUT/A** to make this (Source A) the CURRENT source.
2. Press **NEXT/B** to make the fighter plane (Source B) the NEXT source.
3. Select a transition to use when switching from the CURRENT to NEXT source, such as a right-to-left wipe.

   Use the **ARROW** keys to highlight the transition in the Transitions Menu. See "Selecting Transitions" beginning on page 56 for details.
4. Roll the CURRENT source to the spot where the transition should run, then press **PLAY**.

   Immediately upon completion of the transition, MXPro makes the CURRENT source (Kong) the NEXT source, and makes the NEXT source (the fighter plane) the CURRENT source.

Tip

You can use this automatic swapping of CURRENT to NEXT and vice versa to your advantage. When you want to cut back and forth between only two sources, the automatic swapping always selects the next source for you.

For this procedure, however, you need to make Stonehenge the NEXT source so that when transitioning out of the fighter plane, Stonehenge comes on screen.

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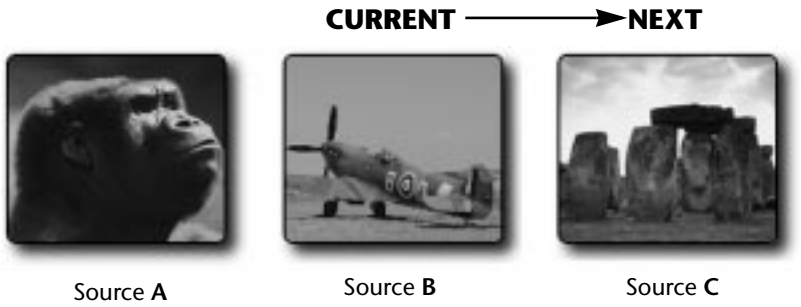
5 Press **NEXT/C** to select Stonehenge as the NEXT input source.



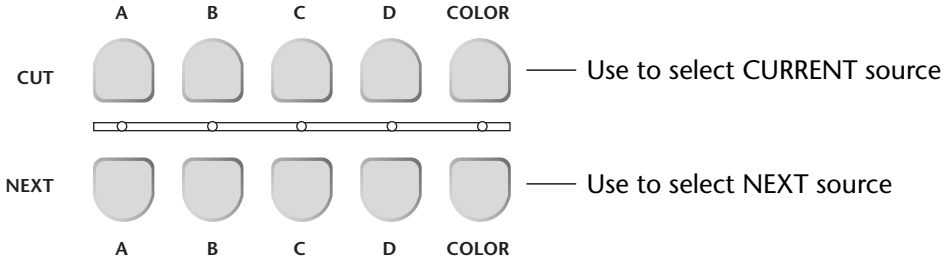
6 Select a transition to use this time to switch from CURRENT to NEXT source, such as a slow dissolve. The CURRENT source (the fighter plane) continues running, and being sent to the output device.

7 To transition to Stonehenge, hold down the **SHIFT** button and move the **T-BAR** to the top of its slot, then drag it down at whatever speed you want the dissolve to happen.

The **T-BAR** and the **PLAY** button run the same transition, except that the **T-BAR** lets you manually control the speed at which the transition runs.

Selecting Sources

Now that you understand the distinction between the CURRENT and NEXT source, you need to know how to select sources for each. Use the **CUT** and **NEXT** buttons on the MXPro keyboard to select sources.



Use the **CUT** buttons to select the CURRENT source. The four buttons labeled **A**, **B**, **C**, and **D** correspond directly to the Input Source Previews on the Preview Screen (see page 36) and to MXPro's four channels. Use the **COLOR** button to select a solid color background rather than an image coming from a source device (see "Using Color Backgrounds" on page 43). When you press any **CUT** button, the indicator light *below* that button glows steadily.

After selecting the CURRENT source, use the **NEXT** buttons to select the NEXT source. The buttons are labeled the same as the **CUT** buttons. When you press any **NEXT** button, the indicator light *above* that button flashes.

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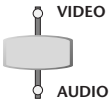
Using the Video/Audio Selector



The **VIDEO/AUDIO** selector controls which parts of the input signal get used from any given source.

You can set the **VIDEO/AUDIO** selector to any of three positions — **VIDEO** only, **AUDIO** only, or both. Press the button as required to turn on the Video, Audio, or both lights.

VIDEO – Video changes, audio does not.

AUDIO – Audio changes, video does not.

BOTH – Audio and Video both change.

Many sources (such as pre-recorded video tapes) carry both video and audio signals. Other input sources (such as a compact disc player) carry only audio signals, and some sources carry only video signals.

Example…

*You are producing a documentary on hot air ballooning. You want to over-dub the video footage of hot air balloons with a narrative audio track. Using the **VIDEO/AUDIO** selector you can process only the video from the VCR and combine it with the audio from an audio tape containing the voice-over material.*

Procedure

To do this type of mixing:

1. Connect the VCR to one of the MXPro inputs on the rear panel – such as set number one.
2. Connect the audio tape deck to a different set of inputs – such as set number two.
3. Press **CUT/A** to select the VCR input.
4. Press the **VIDEO/AUDIO** selector until only the **VIDEO** light is on.
5. Press **CUT/B** to select the audio deck input.
6. Press the **VIDEO/AUDIO** selector until only the **AUDIO** light is on.
7. Press **CUT/A** to make it the CURRENT source, then press **NEXT/B** to make it the NEXT source.
8. Start both input devices rolling.
9. Press **PLAY** to begin outputting the program.

Note

To designate any part of a signal with the **VIDEO/AUDIO** selector, an input device must be set up accordingly. For example, to process only the audio signal from a video tape in a VCR, the VCR's audio output must be connected to MXPro's audio input jacks. See Chapter 3, *Installing MXPro*, and also see "Route" beginning on page 77.

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Swapping Sources

This section discusses common ways to switch between source devices.

Simple Cuts

To switch to a specific source, press the **CUT** button for that source. The **CUT** buttons cause the switch to occur almost immediately. For example, press **CUT/A** to immediately switch to that input. You don't need to press **PLAY** or use the **T-BAR** when you use the **CUT** buttons.

To immediately switch to a colored background, press **CUT/COLOR**. MXPro displays the currently selected background color on the output. Set the background color to the color you want *before* pressing **CUT/COLOR**. See "Working with Colors" beginning on page 42 for further instructions.

When you perform a cut, the Preview screen shows the cut, then holds the picture for a moment so you can see the result on both the Preview and Program monitors. You don't have to wait for the Preview screen to reappear — you can switch to a different source whenever you want.

Swapping Between Two Sources

To switch back and forth between two sources (for example, A to B to A to B, and so on), use the **PLAY** button to automatically switch between the two.

Tip

When using this back-and-forth switching process, you might find it helpful to use the TWO CHANNEL mode for the Preview screen. See "Display" beginning on page 73.

Procedure

To switch sources using this method:

1. Press the **CUT** button for the source with which you want to begin — for example, press **CUT/A**.
2. Press the **NEXT** button for the other source — for example, press **NEXT/B**.
3. Use the **ARROW** keys to highlight and select a transition, or enter the transition number on the numeric keypad.

   When you need a very quick switch between sources — such as when doing a live broadcast of two individuals debating — use the Cut transition (zero).
4. Roll the input sources.
5. To run the transition, press **PLAY**. At this point, MXPro switches the sources — source A becomes the NEXT source, and source B becomes the CURRENT source.
6. To switch between sources A and B, press **PLAY** again.

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Working with Colors

Common uses for color include solid colored backgrounds and colored borders around objects. So, you need to know how to choose colors and identify those you've chosen.

MXPro gives each color a unique number ranging from 0 (zero) to 9. The following table defines these colors and their code numbers.

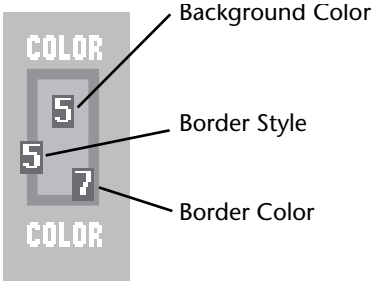
Table 3: Default Colors and Numbers

Code	Color	Code	Color
0	Black[a]	5	Green
1	White	6	Bright Blue
2	Gray	7	Light Blue
3	Red	8	Purple
4	Yellow	9	Medium Blue-Green

a. You cannot modify Black (color code 0).

The maximum number of colors in the MXPro palette is ten. You can change nine of the ten colors. You cannot change Black.

Identifying Colors



The **Color Selector** appears in the upper-right corner of the Preview screen. It indicates colors selected for the background and borders as well as border style.

The inner-most rectangle shows a sample of color assigned to the background as well as the color number. The border around the rectangle shows both the current border style and color and their associated color and style codes.

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Using Color Backgrounds

Colored backgrounds have many uses. For example, to dissolve to a solid black background when transitioning out of the CURRENT source, hold the black for a moment or two, then dissolve from the black background into the NEXT source.

Tip

Use the solid color background to lay down ten seconds of Black at the beginning of your video.

Transition into and out of solid colored backgrounds basically the same way as transitioning between sources. The difference is that you must select the background color you want to use *before* running the transition.

Procedure

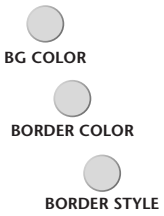
To make the selection:

1. Press **BG COLOR** until the color you want appears in the Color Selector.
2. To immediately cut to the colored background, press **CUT/COLOR**.

   To transition into the colored background, press **NEXT/COLOR**, then press **PLAY** or use the **T-BAR** to switch to the colored background.

Changing Colors and Styles

Use the **BG COLOR**, **BORDER COLOR**, and **BORDER STYLE** buttons to change colors and styles. In each case, press the button repeatedly to cycle through all of the available options for that particular setting.



The following sections describe the **BG COLOR**, **BORDER COLOR**, and **BORDER STYLE** buttons.

Procedure

If you already know the color number of the color you want to assign:

1. Press and hold either **BG COLOR** or **BORDER COLOR**, depending on which you want to change.
2. Enter the color number on the numeric keypad. For example, press and hold **BG COLOR**, then press **6** to specify bright blue.

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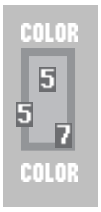
Creating Custom Colors

You can change any color *other than Black* (see Table 3 on page 42) to create custom colors. You cannot add more colors, but you can change the existing ones. Once you create a custom color, it stays permanently in the MXPro unit until and unless you change it again.

BG COLOR and **BORDER COLOR** share the color palette. Therefore, changing any color affects both the background and border colors.

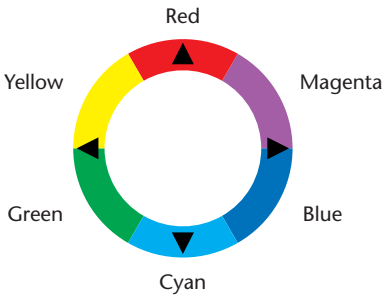
Procedure

To create a custom color:



1. Press **BG COLOR** or **BORDER COLOR** until the color you want to change appears in the Color Selector.
2. Press **LEARN+BG COLOR** or **LEARN+BORDER COLOR** (depending on which one you want to change).

   These key combinations activate Learn Color mode. MXPro blinks the **VIDEO/AUDIO** selector lights to indicate you are in the proper mode.
3. Use the **JOYSTICK** and **T-BAR** in combination to define the new color.
   - **a** Move the **T-BAR** up and down its slot to adjust luminance.
   - **b** Move the **JOYSTICK** relative to its color ring to adjust chrominance (or, color value).



4. When the color you want appears in the Color Selector, press **OK**. You exit from Learn Color mode and the **VIDEO/AUDIO** lights cease blinking.

   If you decide you don't want to change the color after manipulating the **JOYSTICK** and **T-BAR**, press **SHIFT+0** (zero) to revert back to the original color. MXPro restores the original color and exits from Learn Color mode (the **VIDEO/AUDIO** lights cease blinking).

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Using Borders

Borders have many uses, such as providing a distinct separation between two sources while running a transition.

Wipe Transition
No Border

Wipe Transition
White Border

You can also use borders to frame images in a picture-in-picture (PIP) image, and so forth. Whatever purpose you use a border for, you can specify the color and style for the border.

Note

For the two following procedures, note that not all border styles can be applied in all cases. Single PIPs as well as Edge and Shape transitions accept any border style. Basic transitions accept only color borders. You cannot apply border styles to Trailing transitions, nor can you use them in Compose or Multi-PIP modes.

Procedure

To specify border color:

- Repeatedly press **BORDER COLOR** to cycle through the available colors. The Color Selector shows the current color.

  Press **BORDER STYLE+0** (zero) to immediately turn off the border.

Procedure

To specify border style:

- Repeatedly press **BORDER STYLE** to cycle through the available styles. The Border Style indicator in the Color Selector increments by one each time you press the button. You can specify ten different styles (0 through 9).

Table 4: Border Styles (Defaults)

No.	Result	Notes
0	Border and Edges Off	
1-3	Soft Edge Border	Use **LEARN+UP/DOWN ARROW** keys to soften and harden border edges.
4-6	Colored Border	**LEARN+RIGHT/LEFT ARROW** keys adjust border thickness. **LEARN+UP/DOWN ARROW** keys soften the border.
7-9	Drop Shadow Border	**LEARN+ARROW** keys reposition drop shadow.

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Changing Border Styles

This section explains how to specify different edges, color borders, and drop shadows to use in conjunction with border styles.

Procedure

To change a border style setting

1. While the Preview screen is displayed, enter **BORDER STYLE+#** — where # can range from 1 to 9 (inclusive) and is the number of the border style you want to change, as shown in Table 4, *Border Styles (Defaults)*, above.
2. Select the shape or edge to which you want to add a border or shadow by selecting an appropriate transition.

Tip

Try using transitions 300-305 for edges and 554-562 for shapes.

3. Move the **T-BAR** to its mid point.
4. Press **LEARN+BORDER STYLE** to select a soft edge, color border, or drop shadow

Tip

Make note of the border style number you are changing for future reference.
You can also use PIP to select and modify border styles for shapes.

5. Use **LEARN+ARROW KEYS** (as indicated in Table 5, *Keys for Changing Border Attributes*, below) to specify what you want to change – thickness, softness, or position.
6. Return the **T-BAR** to its full up or full down position.

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MXPro automatically stores the border style so that it is available until and unless you change it again.

Table 5: Keys for Changing Border Attributes

Function	Key Combination
Toggle through Soft Edges, Color Border, and Drop Shadow	**LEARN+BORDER STYLE**
Soft Edges	
Increase Softness	**LEARN+UP ARROW**
Decrease Softness	**LEARN+DOWN ARROW**
Color Border	
Increase border width	**LEARN+RIGHT ARROW**
Decrease border width	**LEARN+LEFT ARROW**
Increase border softness	**LEARN+UP ARROW**
Decrease border softness	**LEARN+DOWN ARROW**
Drop Shadow[a]	
Move shadow Right	**LEARN+RIGHT ARROW**
Move shadow Left	**LEARN+LEFT ARROW**
Move shadow Up	**LEARN+UP ARROW**
Move shadow Down	**LEARN+DOWN ARROW**

a. Drop Shadows created for edges do not translate well to shapes, and vice-versa. Therefore, you should specify one set of drop shadow styles for shapes and another for edges.

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Notes

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5

Transitions

Using too many transitions of varying styles can be like taking a rollercoaster ride after eating a nine-course meal — messy and unpleasant.

MXPro contains over 500 transitions from which you can choose. Furthermore, you can manually control any transition to change the way it works, thereby creating your own versions of the supplied set.

Transitions artistically switch from one scene to the next in a production. MXPro transitions range from simple cuts, dissolves, and wipes to sophisticated zooms, fly-ins, and flips. You can change the speed (either manually or automatically) at which transitions run, and run them in reverse. Combine these features for many different variations.

In this chapter you'll learn about:

- Basic transition concepts – what is a transition and how to use it
- Transition Categories and Menus
- Selecting Sources to use during Transitions
- Selecting Transitions
- Adjusting Transitions
- Running Transitions

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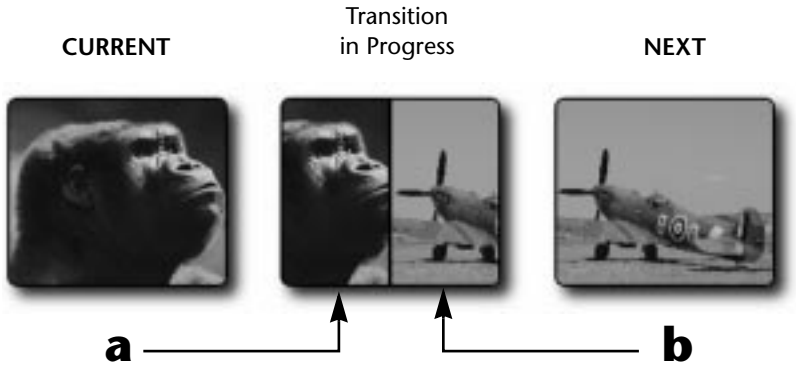
Basic Transition Concepts

Transitions create on-screen effects used when switching from one source to another (that is, one scene to another). The most basic type of transition is the *cut*, where the first frame from the NEXT source immediately replaces the last frame from the CURRENT source. Cuts produce abrupt changes. Other types of transitions use special effects to produce a smoother, more artistic change from one source to the next. The following illustration shows a horizontal wipe transition.



Note

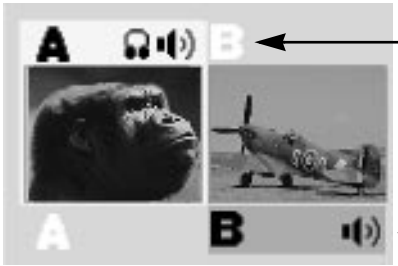
When discussing transitions, we use the letters **a** and **b** to differentiate the beginning scene (**a**) from the ending scene (**b**). These letters often appear in the transition icons to indicate the direction in which the transition travels. These letter indicators have **no relationship** to the A, B, C, and D letters used to differentiate between MXPro channels.

The following basic steps explain how to run a transition with MXPro. Each step is described in more detail later in this chapter.

Procedure

To run a transition:

1. Display the CURRENT source on the output screen. For example, press **CUT/A** to make A the current source.
2. Select the NEXT source — the one you want to appear on the output following the transition. For example, press **NEXT/B** to make that the next source.



Highlights above and below the source previews indicate CURRENT and NEXT sources, respectively.

3. Select a transition to use. For example, press the **BASIC** Transition Category button, then select a wipe transition from the menu.
4. Prepare the sources (such as VCR's and camcorders) and let them roll.
5. At the right moment, use either the **T-BAR** or the **PLAY** button to run the transition.

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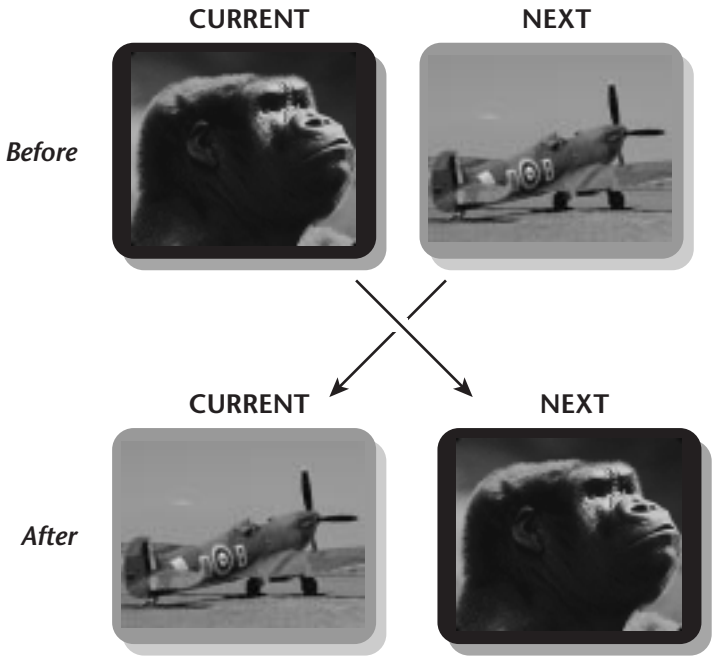
As you can see, you first set up the transition, then execute it. Nothing happens until you use the **T-BAR** or **PLAY** button to run the transition. So, you set everything up, then run the transition at the precise moment you want it to occur. As soon as one transition finishes, immediately set up the next one so that all you have to do is press **PLAY** or use the **T-BAR** to proceed.

You can select the CURRENT source, the NEXT source, and the transition in any order, and change them as many times as necessary before actually running the transition.

At the completion of the transition, the CURRENT and NEXT sources swap places — that is, CURRENT becomes NEXT, and NEXT becomes CURRENT.



At this point, you can do one of the following:

- Leave the CURRENT and NEXT sources as they are and switch back and forth between them; or,
- Select a new NEXT source and, optionally, a new transition, then repeat the process.

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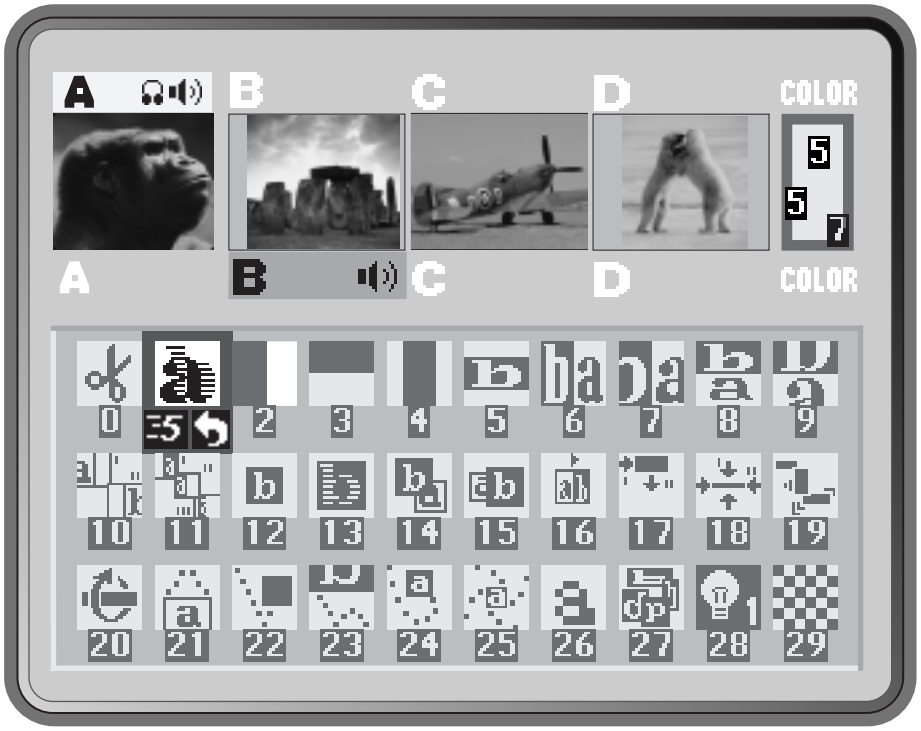
Transition Categories and Menus

To help manage the 500+ transitions, MXPro separates them into five logical categories — User, Basic, Edges, Trailing, and Shapes. Use the Transition Category buttons to access the different categories.

Transition Category Buttons

When you press a Transition Category button, MXPro displays the transitions available in that category in the Transitions Menu*. The content of the menu differs depending on which category you select. However, the menus have a common structure and always appear in the same place.

The content of the Transitions Menu differs depending on the Category selected.



Transitions Menu

Note

* – The Transitions Menu does *not* appear when you work with the FULL, CURRENT, or NEXT Preview screen. See "Display" beginning on page 73 for more information.

Use the **ARROW** keys to navigate the Transitions Menu. If the category contains more transitions than can appear in the menu at one time, use the **UP** and **DOWN ARROW** keys to scroll through them. You can scroll through only those transitions in the current category.

MXPro color codes the transition icons in the menu:

Basic	White
Edges	Blue
Trailing	Yellow
Shapes	Red

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Basic Transitions Category

This category includes common transitions, such as wipes and dissolves. The transitions in this category are color coded White. See page 132 for samples of the icons in this category.

MX-1 Compatibility If you are upgrading to MXPro from the Videonics MX-1 Video Mixer, the transitions in the Basic category are the same as the MX-1.

MXPro provides a set of hot keys that directly correspond to the MX-1 Effect buttons. Using the hot keys (in the following table) causes the MXPro Preview screen cursor to appear at the beginning of each section within the Basic (MX-1) category.

Table 6: MX-1 Compatibility Hot Keys

MX-1 Function	MXPro Hot Key
Fades and Dissolves (Positions cursor at transition 160)	**SHIFT+BASIC**
Wipes (Positions cursor at transition 30)	**SHIFT+EDGES**
Zooms (Positions cursor at transition 188)	**SHIFT+TRAILING**
Flips (Positions cursor at transition 210)	**SHIFT+SHAPES**

Edges Transitions Category

These transitions move a curved or jagged edge across the screen when transitioning to a different picture source. Transitions in this category are color coded Blue. See page 137 for samples.

Trailing Transitions Category

The transitions in this category leave a trail of images on the screen as a change occurs. The trailing images go away once the transition finishes. Transitions in this category are color coded Yellow. See page 138 for samples.

Shapes Transitions Category

These transitions occur as a wipe in the shape of a geometric object, such as a heart, a five-pointed star, a circle, and so forth. Transitions are color coded Red. See page 139 for samples.

User Transitions Category

It's *unlikely* you'll use all of the available transitions — but it is *likely* that you'll have a limited set you use most of the time. With this in mind, MXPro makes it easy for you to access your favorite transitions by creating your own personal menu — the User menu. MXPro comes with a default set, but you can add and remove them to tailor the User menu to your preferences and needs.

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Tip

During production planning, determine which transitions you want to use, then set up the User category to contain those transitions. This gives you quick, immediate access to the transitions you intend to use without having to search through the other categories. See the following section ("Changing User Transitions Menu") to learn how to tailor the menu to your preferences.

Changing User Transitions Menu

The first time you power up MXPro and press the **USER** Transitions Category button, the default transitions appear in the menu. The default set contains a variety of transitions from the other four categories, as defined by Videonics at the factory. If you are satisfied with the default set, there is no need to change them.

The **USER** category does not contain distinct transitions – that is, all transitions in the **USER** category actually exist in other categories (Basic, Edges, Trailing, and Shape). Think of the **USER** category as a collection of references to other transitions.

You can change as many transitions in the **USER** menu as you want.

Procedure

To change a transition in the User menu:

1. Decide which transition you want to add to the **USER** category. Refer to Appendix A, *Transitions List*, for a list of valid numbers and their associated transitions.
2. If necessary, press **DISPLAY** to set the Preview screen to STANDARD or TWO CHANNEL mode.

   In the other Preview modes (FULL, CURRENT, or NEXT), MXPro does not display the Transitions Menu. See "Display" beginning on page 73.
3. Press the **USER** Transition Category button to display the menu on the Preview screen.
4. Use the **ARROW** keys to highlight the transition you want to replace in the **USER** category.
5. Enter the number of the transition you selected in step 1, above. You can enter the number of any transition from any category.
6. Press **OK**.

Restoring Default User Transitions

You can easily restore the default set of transitions in the User category.

Procedure

To restore the default set of transition to the User menu:

1. If necessary, press the **USER** Transition Category button to display that menu on the Preview screen.
2. Enter **SHIFT+0** (zero). This restores the default set of transitions for this category.

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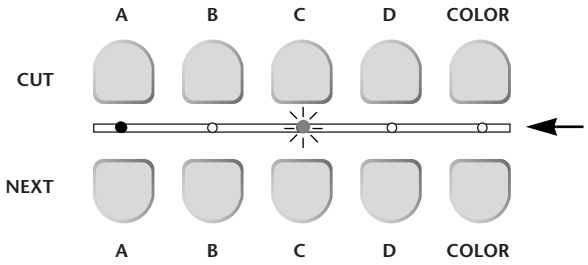
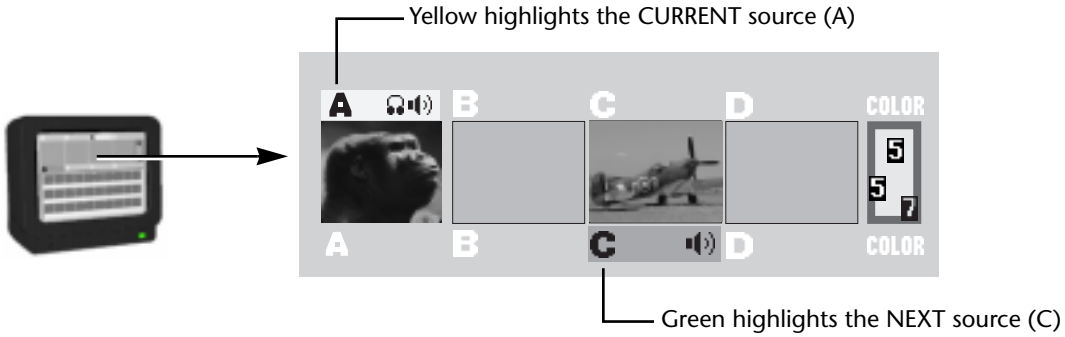
Selecting Sources to Use During Transitions

An important step in setting up a transition is to identify the CURRENT and NEXT sources. Use **CUT** and **NEXT** to choose the two sources. MXPro provides feedback in a couple of different ways to confirm your choices.

Selecting Sources and Getting Feedback



The lights between the rows of **CUT** and **NEXT** buttons act as indicators. A *steady* light identifies the CURRENT source (A) – a *flashing* light identifies the NEXT source (C).



MXPro identifies the CURRENT source by a **yellow highlight** on the Preview screen and a **steady light** beneath the corresponding **CUT** button. It identifies the NEXT source by a **green highlight** on the Preview screen and a **flashing light** above the corresponding **NEXT** button.

If you make CURRENT and NEXT the same source, the source light (between the two rows of buttons) flashes as though it were just the NEXT source.

Setting the CURRENT Source

In many cases you don't need to select the CURRENT source because the ending source from the previous transition automatically becomes the new CURRENT source (see the diagram on page 51). However, if you want to change the CURRENT source, press the corresponding **CUT** button. For example, pressing **CUT/D** makes D the CURRENT source, and the Program monitor immediately displays D's signal.

Setting the NEXT Source

To specify the NEXT source, press the corresponding **NEXT** button. For example, to make D the next source, press **NEXT/D**.

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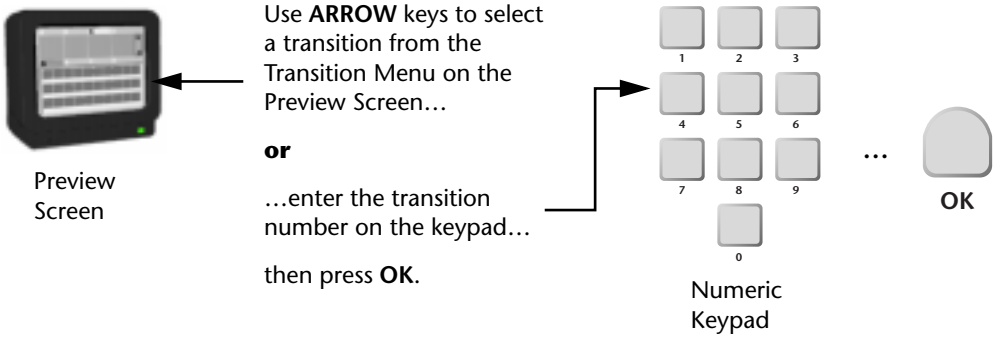
Selecting Transitions

To select a transition to use between the CURRENT and NEXT sources, do one of the following:

- Use the **ARROW** keys to select from the Transitions Menu on the Preview screen; or,
- Enter the transition's assigned number on the MXPro numeric keypad, then press **OK**.

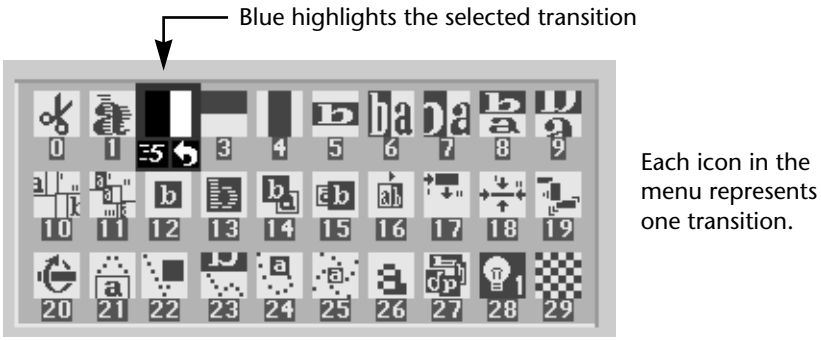


Note

When selecting from the **USER** category, you must *always use the **ARROW** keys to select a transition from the Transition Menu* on the Preview screen. Entering a transition number and pressing **OK** replaces the current transition with the one you select.

Using the Transitions Menu

The Transitions Menu appears just below the preview images on the Preview screen when you set the Preview to STANDARD or TWO CHANNEL mode (see "Display" beginning on page 73 for more information about Preview modes).



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Procedure

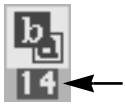
To select a transition from the Transitions Menu:

1. If necessary, press the appropriate Transition Category button to display the set of transitions containing the one you want.
2. Use the **ARROW** keys to highlight the transition you want to use.

   Blue highlights the currently selected transition. Use the **LEFT** and **RIGHT ARROWS** to move the highlight horizontally. Use the **UP** and **DOWN ARROWS** to move the highlight vertically. When you reach the bottom row of icons in the current menu, press **DOWN** arrow to display additional transitions in the category, if present.
3. After highlighting the transition you want, press **OK**.

Using Transition Numbers

Every transition has a number assigned for reference and identification. The number appears in the Transitions Menu just below each transition icon.



The transition number…
in this example, number 14

Procedure

To select a transition using transition numbers:

1. Enter the transition number on the keyboard.
2. Press **OK**.

   To immediately play back the transition, press **PLAY** rather than **OK**.

Refer to Appendix A, *Transitions List*, for a complete listing of transitions and their assigned numbers.

If you make a mistake entering a number, press **OK**, enter the number correctly, then press **OK** again.

Note

When you highlight a transition in a Transitions Menu, the highlighting obscures the transition number. The number below the transition icon represents the speed at which the transition plays. The following section, "Adjusting Transitions" discusses this.

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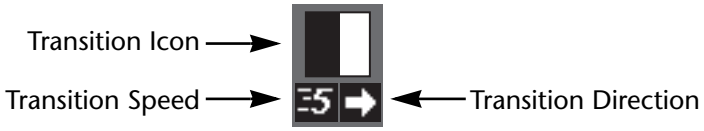
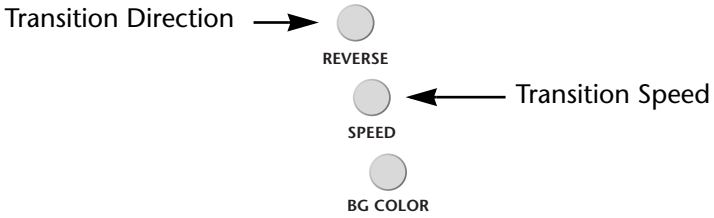
Adjusting Transitions

Every transition runs at a pre-set speed and direction. Symbols appear below the transition icon in the Transitions Menu indicating the current speed and direction.



Use the **SPEED** and **REVERSE** buttons to change the speed and/or direction of a transition.



Note

When you change a transition's speed and/or direction, **the change applies to all other transitions until you specifically change it**. For example, if you set the speed of the current transition to 4, all subsequent transitions run at this same speed until you again change the speed factor. This also applies to transition direction.

Changing Transition Speed

Transition speed values can range from 0 (slowest) to 9 (fastest).

Procedure

To change the transition's speed:

- Press **SPEED**. Each press increases the speed by one unit. Press **SHIFT+SPEED** to decrease the speed by one unit.

MXPro changes the Transition Speed indicator below the transition icon to the currently selected value. You can change the speed any time either prior to running the transition, or while it runs (which allows you to make adjustments "on the fly.")

Tip

*To directly set the speed to a specific value, press and hold the **SPEED** button while entering a value from **0** to **9** on the numeric keypad.*

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Changing Transition Direction

Transitions can run in two directions — forward and reverse. If you use the **PLAY** button, transitions run, by default, in the forward direction. If you use the **T-BAR**, moving it up runs the transition forward; moving it down runs it in reverse. For example, a simple wipe transition might move a vertical border across the screen from right-to-left or left-to-right, replacing scene **a** with scene **b**.

Example…

Suppose you're producing a video showing renovations to a building. Occasionally you want to go back and show how the building looked originally. When going back in time, use a wipe transition that moves from left-to-right. When going forward in time (to show the new modifications), reverse the wipe so that it moves from right-to-left.

Procedure

To reverse a transition:

- Press **REVERSE**.

  Remember, all transitions run in reverse until you press **REVERSE** again. Reverse has no effect on a simple Cut or Dissolve transition because reversing those transitions produces no visible result.

MXPro changes the Transition Direction indicator below the transition icon to the currently selected direction. When the arrow points **right**, the transition runs in its normal direction. When the arrow points **left**, the transition runs in reverse.


Forward


Reverse

The Reverse function does *not* change the relationship between the sources. For example, a vertical wipe from source A to B moves from the top of the screen to the bottom, replacing source A with B. If you apply the Reverse function, source B still replaces A, but the transition wipes from the bottom of the screen to the top.

Note

Mosaic, dissolve, and trailing transitions work in only one direction at all times, including when you press **FREEZE** before running the transition.

Note

You cannot run Trailing-type transitions in a reverse direction. If you select a Trailing-type transition, then move the **T-BAR** from its *up* or *down* position, MXPro performs a simple dissolve (transition 160).

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Using Auto-Reverse

Auto-Reverse automatically reverses the direction of transitions each time they run. In the previous building renovation example, you press **REVERSE** at the conclusion of each transition to alternate between left-to-right and right-to-left wipes. When you use Auto-Reverse, MXPro handles switching automatically. For example, if the transition is set to run from left-to-right, it automatically alternates between left-to-right and right-to-left each time it runs.

Procedure

To invoke the Auto-Reverse feature:

- Enter **SHIFT+REVERSE**.

With Auto-Reverse activated, MXPro displays a distinct arrow below the transition's icon in the Transitions Menu. To manually reverse the current direction even with Auto-Reverse activated, press **REVERSE** at any time.

 Auto-Reverse Forward

 Auto-Reverse Backward

Auto-Reverse remains active until you press **SHIFT+REVERSE** again to go back to one-way transitions. Auto-Reverse has no effect on dissolve and trailing transitions.

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Running Transitions

After selecting the CURRENT and NEXT sources and the transition to use, you can run the transition either *automatically* or *manually*.

- Use **PLAY** to run transitions **automatically**, when you want them to run smoothly and always the same way.
- Use the **T-BAR** to run transitions **manually**, when you want fine control over the way it runs. For example, you can make the transition speed up, slow down, or even reverse itself at any point.

Note

If you apply the strobe effect to a source, MXPro automatically turns it off while the transition runs (see "Strobe" on page 69).

Note

Running a Trailing-type transition ***to*** either the Color channel or a channel with no video source executes a simple dissolve (transition 160).

Running Transitions Automatically

Procedure

To run a transition automatically at a predetermined speed:


PLAY

- Press **PLAY**.

You can pause an automatic transition by pressing **PLAY** again. Each time you press the button, the transition alternately stops and starts until you finally allow it to finish. Although the transition pauses, the video continues to play.

Note

Compare this procedure with **FREEZE** function (see "Freeze" on page 83), which freezes the entire picture, transition, and video image.

Running Transitions Manually

Use the **T-BAR** to manually control transitions. You can change a transition's speed and reverse its direction.

Operating the T-BAR

The **T-BAR** operates as follows:

- Moving the **T-BAR** from the DOWN to UP position runs the transition *forward*.
- Moving the **T-BAR** from the UP to DOWN position runs the transition in *reverse*.
- Holding down the **SHIFT** button while moving the **T-BAR** disables **T-BAR** operation. Use this method to reposition the **T-BAR** without running a transition or effect.

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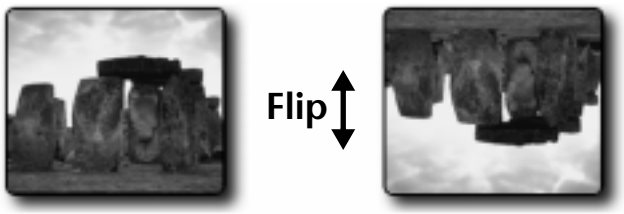
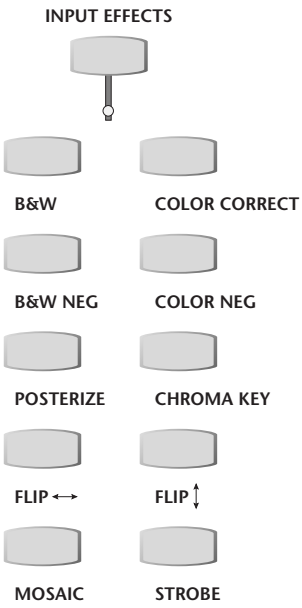
Input Effects

Use Input Effects to alter the signal coming into MXPro from a source device. You can create many different effects by combining Input Effects.



This chapter describes MXPro Input Effects, which are available in the following button group on the MXPro keyboard.



You ***can*** use Input Effects in the following ways:

- Apply input effects to any source.
- Combine as many different input effects as you want to create entirely new effects.
- Apply input effects to some, none, or all sources, in any combination.

You ***cannot*** use Input Effects:

- With trailing transitions.
- With Multi-PIPs.
- In Compose mode.

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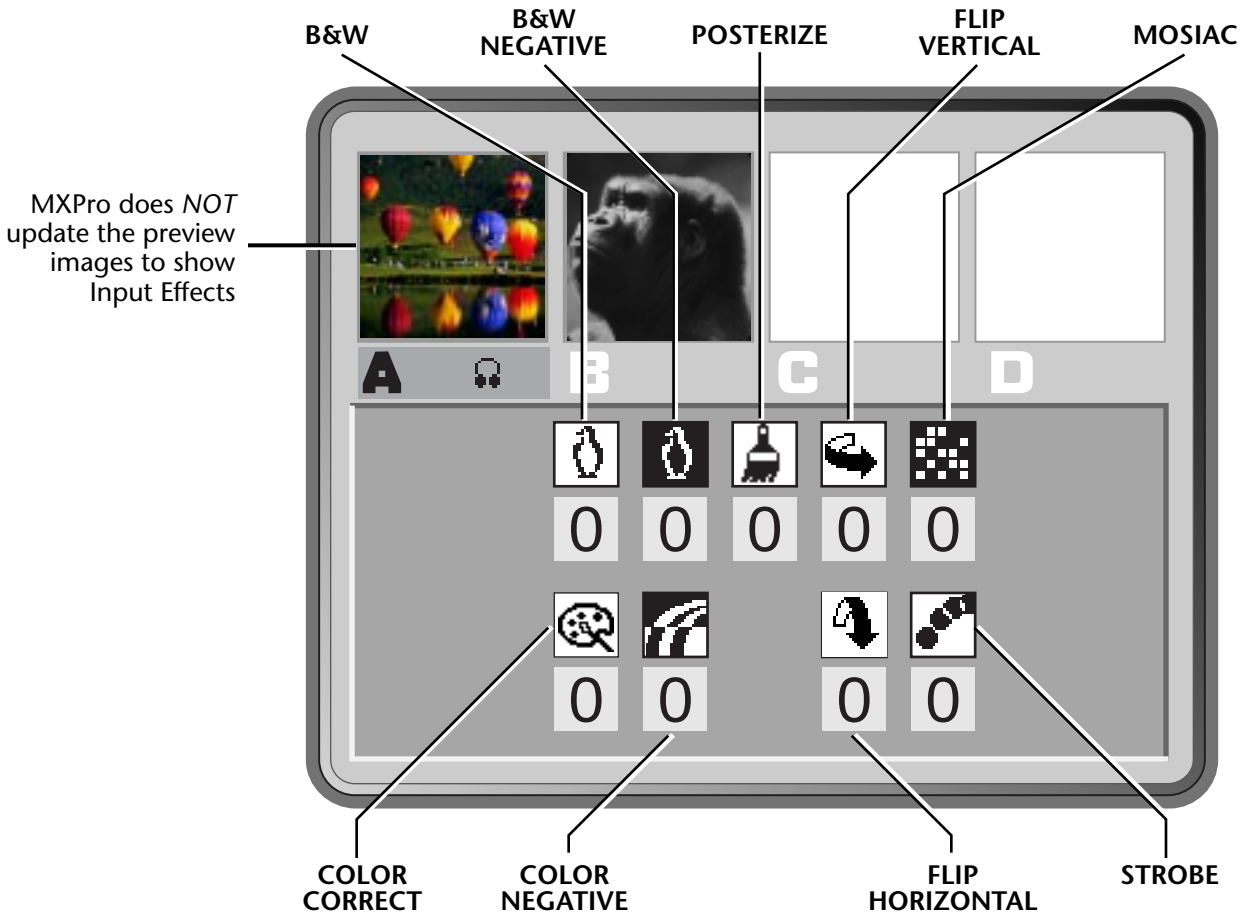
Input Effects Menu

Press any input effects button to display the Input Effects Menu — or, press the **INPUT EFFECTS** button.



When you press one of the input effects buttons (such as **POSTERIZE**), MXPro automatically selects that effect in the menu. When you press the **INPUT EFFECTS** button, MXPro selects the first item in the menu — **B&W**.

Note

The menu does *not* contain an icon or settings for the Chroma Key option. When you press the **CHROMA KEY** button, MXPro takes you directly to the Chroma Key screen. See Chapter 10, *Chroma Key*, for details.

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Special Key Combinations

Use the following key combinations while working with the Input Effects menu.

Table 7: Input Effects Mode Key Combinations

Key Combination	Result
ARROW KEYS	Moves cursor (or, highlight) between the different Input Effects.
Numeric Keypad	Directly sets the parameter value for the highlighted effect.
INPUT EFFECTS	Exits from Input Effects mode.
EFFECTS buttons	Moves the cursor directly to that effect – for example, press **POSTERIZE** to highlight that effect: press **MOSAIC** to highlight that effect: and so on. If the selected effect matches the currently highlighted one on the Input Effects menu, pressing the **EFFECTS** button increments the effect's parameter value by one.
SHIFT+0 (zero)	Resets all effects to 0 (off) for the selected channel.

When you are not working at the Input Effects menu, use the following key combinations.

Table 8: Main Mode Input Effects Key Combinations

Key Combination	Result
SHIFT+EFFECTS button	Increments the parameter value by one for the selected effect and applies it to the CURRENT source.
SHIFT+INPUT EFFECTS	Temporarily disables Input Effects from being sent to Program out. See the following paragraph.

When the Input Effects LED light is lit, Input Effects are **enabled**. MXPro applies the effects according to the parameter values for each effect.

When you use the **SHIFT+INPUT EFFECTS** key combination to **disable** Input Effects, MXPro turns off the LED light. It does not change any effects parameter values, but it does prevent the current Input Effects from being used. Press **SHIFT+INPUT EFFECTS** again to enable them.

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Using Input Effects

Input effects aren't visible in the small Preview thumbnails. To make them visible:

1. Make the channel to which the input effects are applied the NEXT source. That is, press **NEXT/A**, **B**, **C**, or **D**.
2. Press the **DISPLAY** button to display the NEXT Preview option (see "Display" beginning on page 73); or use the shortcut **SHIFT+4.**

Once you apply an input effect to a channel, it remains in effect at all times (even during transitions) until you specifically change it, with these exceptions:

- Some effects do not apply to the foreground image while using PIPs, Chroma Key, and Compose.
- MXPro Color Correction turns off during transitions if it is enabled on more than one channel. See "Color Correct" on page 68 for more information.
- MXPro turns off Strobe during transitions.
- MXPro turns off all Input Effects during Trailing transitions.

With the exception of Chroma Key, each input effect has associated with it a "parameter" value. In some cases, the value can be either 0 (zero) or 1. In others, it can range from 0 to 9. The Color Correction option also works a little differently: see "Color Correct" on page 68.

Procedure

To apply a parameter value:

1. Press **INPUT EFFECTS** or one of the input effects buttons to display the Input Effects menu.
2. If you haven't already done so, use the **ARROW** keys or **INPUT EFFECTS** button to select the Input Effect to which you want to apply parameter values.
3. Set the parameter value to **0** (zero) to turn it off, or to **1** to turn it on.
4. Use one of the **NEXT** buttons to select the source to which you want to apply the effect. For example, press **NEXT/B** to apply the effect to channel B.
5. Type the parameter value on the MXPro numeric keypad, or continue pressing the corresponding effects key until the parameter value you want appears in the menu.
6. Press **OK** to exit from Input Effects mode.

MXPro stores the most recent set of input effects. Therefore, when you turn the unit off, then turn it back on again, the most recent selection of input effects is still active.

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B&W

Changes the input picture to black and white. Removes all color from the image.

Parameter Values — Zero or one.

0 = Off: **1** = On

B&W Neg

Reverses all black and white values in the image. If applied to a color image, reverses all black and white values but does not change any color values in the image.

Parameter Values — Zero or one.

0 = Off: **1** = On

Note

To create a black and white negative effect, also turn on the B&W effect.

Posterize

Reduces picture's continuous tones to fewer levels. Creates a "painted" look.

Parameter Values — Zero through nine. Zero turns off the effect.

High values produce an extreme paint effect: low values create a subtle effect.

Flip Horizontal ↔

Flips picture left-to-right, creating a mirror image.

Parameter Values — Zero or one.

0 = Off: **1** = On

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Mosaic

Divides picture into tiles.

Parameter Values — Zero through seven. Zero turns off the effect.

Low values create numerous, small tiles. High values create fewer, larger tiles. Highest values might make image difficult to recognize.

Color Correct

Adjusts overall color values throughout the entire image. You cannot, however, apply Color Correction to PIP tiles.

You can set Color Correction values separately for each channel.

Parameter Values — Zero or one.

0 = Off: **1** = On

CAUTION

Apply Color Correction BEFORE going live or rolling tape. Because of the way MXPro implements Color Correction, the Program Output might be affected temporarily.

Procedure

To use Color Correct:

1. Press **COLOR CORRECT** to display the Input Effects menu, or press **INPUT EFFECTS** then use the **ARROW** keys to highlight the Color Correct icon.
2. Press the **NEXT** button that corresponds to the source you want to correct. For example, to apply color correction to channel C, press **NEXT/C**.
3. Turn on the Color Correct option. That is, either press **1** on the keyboard, or press **COLOR CORRECT** so the parameter value equals 1.

   MXPro replaces the Input Effects menu with a preview of the color corrected image.
4. Use the **JOYSTICK** to adjust the RGB (**R**ed, **G**reen, and **B**lue) values in the image.
5. Use the **T-BAR** to adjust the luminance of the image.
6. When the image looks the way you want, press **OK** to exit from Input Effects mode.

Tip

When you apply Color Correction to only one channel, it remains On during all transitions. When you apply it to more than one channel, it turns Off while the transition runs, then back On again when it finishes. Use Cut transitions only when applying Color Correction to more than one channel.

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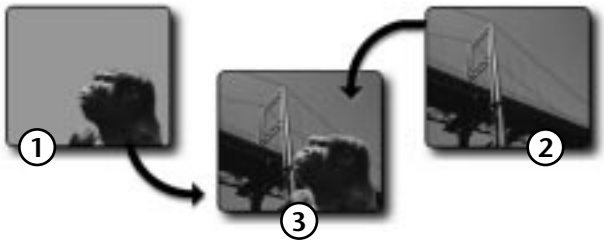
Color Neg

Inverts all colors in the image.

Parameter Values — Zero or one.

0 = Off: **1** = On

Chroma Key



Chroma key replaces all occurrences of a color in an image with a different image. In this example, (1) the block of color in the first image (the area behind Kong's head) gets replaced with the image of the Golden Gate Bridge (2). The resulting image (3) is Kong superimposed over the bridge. See Chapter 10, *Chroma Key*, for complete details.

Flip Vertical

Flips picture top-to-bottom.

Parameter Values — Zero or one.

0 = Off: **1** = On

Strobe

Slows down the picture's video frame rate. Motion appears halting, or jerky — like that produced by a strobe light.

Parameter Values — Zero through nine. Zero turns off the effect.

Higher values increase the effect. Setting 1, for example, produces the look of film: setting 2 makes video look like an old movie. All settings, except 1, temporarily disable strobe during transitions.

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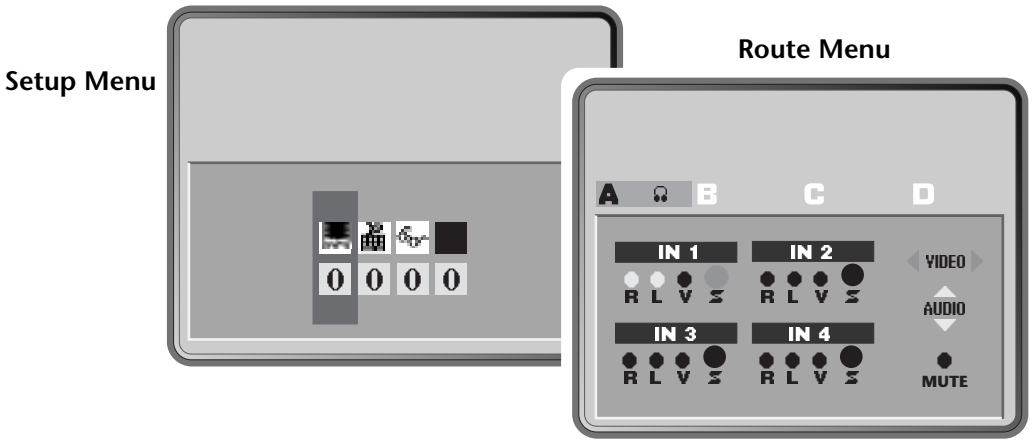
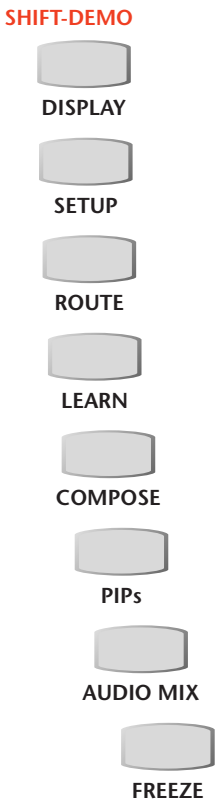
Functions



This chapter describes the Function buttons, which give you access to MXPro's built-in functions. The function button group contains eight buttons, but gives you access to more than eight functions.



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DEMO

Press **SHIFT+DEMO** to run a demonstration of several MXPro transitions and other effects. Demo works in conjunction with the CURRENT and NEXT sources. (If you have one source selected as CURRENT and NEXT, the Demo works with that source only.) The Demo shows many of the effects you can produce with MXPro.

The demo runs automatically and, upon reaching the end, starts over from the beginning.

Procedure

To run the demo:

1. Select the CURRENT and NEXT sources to use for input to the demo.

   To use a single source (such as channel A), press **CUT/A** and **NEXT/A**. To use two different sources (such as channels A and B), press **CUT/A** to make it the CURRENT source, then press **NEXT/B** to make it the NEXT source.
2. Press **SHIFT+DEMO** (or, **SHIFT+DISPLAY**) to start the demo running.
3. To exit from the demo, press any key.

Tip

If you see a transition you like while the demo runs, immediately press any key to stop the Demo. When the Preview screen returns, the last transition run is highlighted in the Transitions Menu. Make note of the transition number then add it to your custom User Transitions Menu. See "Changing User Transitions Menu" beginning on page 54.

Running a Locked Demo

You can run the demo in *locked* mode, which prevents it being stopped by pressing any key on the keyboard. This might be useful for running the demo in a kiosk, a trade show, or anyplace where someone might interrupt it.

Procedure

To run the demo in Locked mode:

1. Complete step 1 described above.
2. Press **LEARN+DISPLAY** to start the demo.
3. To exit from the locked demo, press **LEARN+DISPLAY** again.

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DISPLAY

To control what appears on the Preview monitor, use the **DISPLAY** function. Press **DISPLAY** to cycle through the different display configurations. See samples of these configurations on the next page. The illustrations show the key combination you can use to directly access any display configuration.

STANDARD – Provides most extensive display. Shows preview images of all active input sources and a menu of up to 30 different transitions from which you can choose.

TWO CHANNEL – Displays preview images only for the CURRENT and NEXT sources. Preview images increase in size, but Transitions Menu shows only 20 transitions.

FULL – Divides preview screen into four sections. Each section shows a preview image of the currently active input sources. The Transitions Menu is not available.

NEXT – Displays only a full-screen preview image of the NEXT source.

CURRENT – Displays only a full-screen preview image of the CURRENT source.

When you run a transition, the Preview screen shows a full-screen image, running at full frame-rate — the same as the signal going through the output channel.

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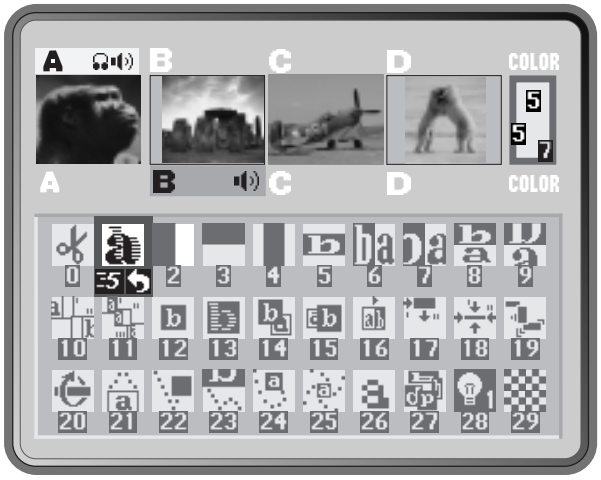
STANDARD – SHIFT+1



Note

For all examples on this page, assume source A is CURRENT and source B is NEXT. Input sources C and D show up only when using **STANDARD** or **FULL** options.

TWO CHANNEL – SHIFT+2

FULL – SHIFT+3

Flashing white border indicates CURRENT source, unless that source is the COLOR channel.

NEXT – SHIFT+4

CURRENT – SHIFT+5

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SETUP

The Setup functions control various aspects of the way MXPro operates, including Force Field Freeze, GPI Out Mode, Comb Filter, and Black Level.

To access the Setup functions, press **SETUP**.

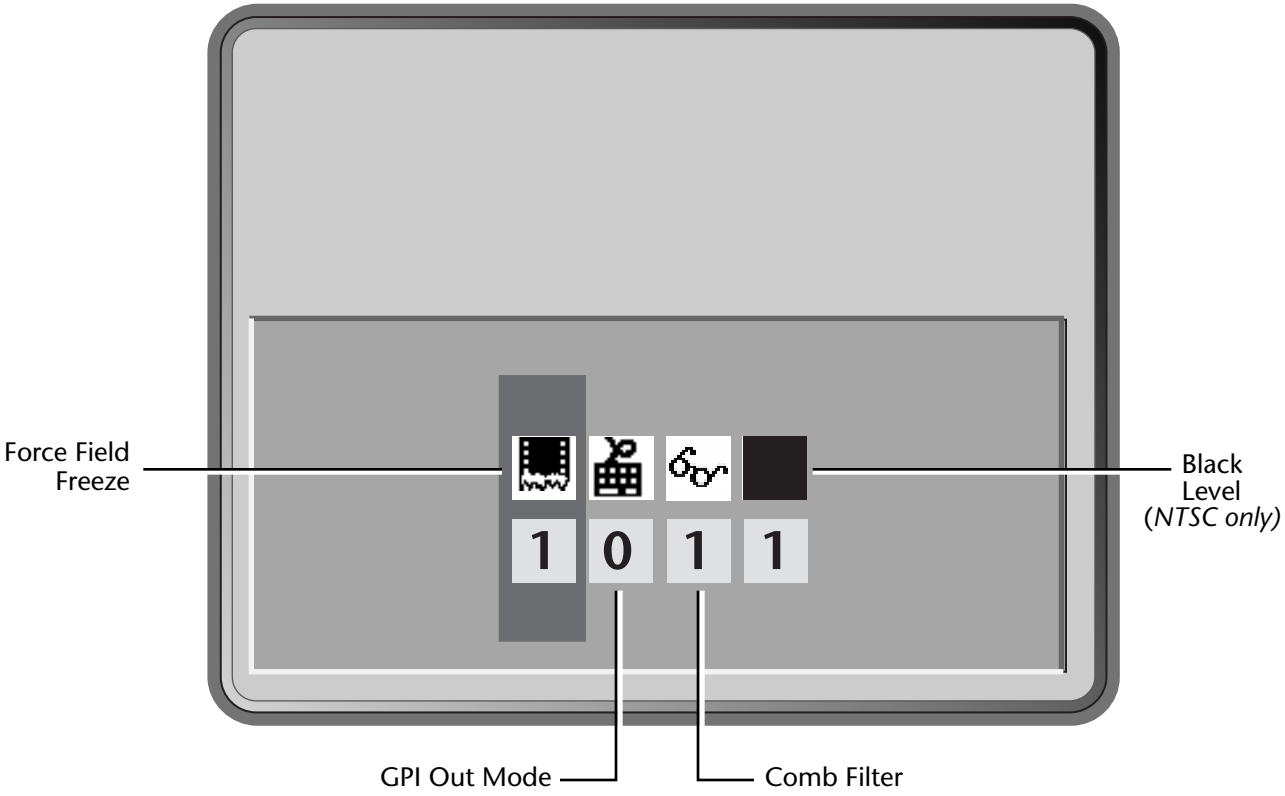

Table 9: Setup Menu Navigation Keys

To do this function:	Enter	Notes
Select a menu option	**LEFT** or **RIGHT ARROW**	Wraps through all options
Enter specific option value	**NUMBER** keys	If value entered is not valid, MXPro sets to nearest valid value.
Restore setup values to factory defaults.	**SHIFT+0**	
Exit from Setup menu	**OK**	

Each channel's setting can be different. Use the **NEXT** buttons to select the channel you want to affect. For example, to set options for channel C, press **NEXT/C** (MXPro highlights that channel on the Setup screen), then set the options as you want.

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Force Field Freeze

The Force Field Freeze option lets you specify whether you want MXPro to perform a frame or field freeze. This option works in conjunction with the Freeze feature (see "Freeze" on page 83).

Frame Freeze produces best quality, but it might produce a *jittering* effect when trying to freeze objects in motion. In such cases, use a Field Freeze

Field Freeze – MXPro freezes only *every other line* of the image. This produces a fast freeze, but image quality degrades somewhat. To use Field Freeze, set the Force Field Freeze option to 1.

Frame Freeze – MXPro freezes *every line* in the image. The freeze takes slightly longer, but the image quality matches the original because it uses all of the video signal. To use Frame Freeze, set the Force Field Freeze option to 0 (zero).

GPI Out Mode

This setting determines whether MXPro provides a GPI **output** to an external device, such as a character generator, thereby allowing you to *trigger* an external event based on an action from the MXPro. Set the value to **0** (zero) to use MXPro with an edit controller, such as the Videonics Edit Suite or Video ToolKit. Set the value to **1** to enable GPI output to trigger a Character Generator, such as the Videonics TitleMaker.

CAUTION

MXPro also accepts values 2 through 4 for this option. However, using any of these values might cause your equipment to malfunction and should not be used.

See "Using a GPI Device" beginning on page 126 for relevant information.

Comb Filter

This option can be used in some cases to affect the quality of the video coming from and input source. Normally, you should leave this set at the default – 1 or On. Change it only if asked to do so by a Videonics Customer Support Representative.

Black Level

Video equipment commonly uses one of two black level settings:

- **7.5 IRE** – The traditional black, which is the MXPro default setting.
- **0 IRE** – A darker black level favored by a variety of modern equipment.

To use the darker black (0 IRE) for the MXPro background and border colors, set Black Level to 0 (zero).

If you are working with equipment that requires 7.5 IRE, set Black Level to 1.

Note

Black Level is not available on PAL versions of MXPro.

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Route

The Route function has the following, primary purposes:

- Configure MXPro to match your equipment.
- Re-direct signals coming from an input device to different or multiple MXPro channels.
- Split the audio input on IN 3.

Configuring MXPro

MXPro ships from the factory with the following default options:

- Source Input 1's video and stereo audio are assigned to channel A, with the video signal routed through the S-Video connector.
- Source Input 2's video and stereo audio are assigned to channel B, with the video signal routed through the S-Video connector.
- Source Input 3's video and stereo audio are assigned to channel C, with the video signal routed through the S-Video connector.

  The audio inputs for Input 3 have a special feature. You can split the audio to two different channels. Then use the Route function to indicate which connector (Left or Right) you used.
- Source Input 4's video and stereo audio are assigned to channel D and the Background Music channel, with the video signal routed through the S-Video connector. The Background Music channel is permanently assigned to Audio Input 4 and cannot be changed. See Chapter 12, *Working with Audio*, for additional information.

Unless you tell MXPro otherwise, it assumes your sources are connected exactly as described above and shown in the following diagram.

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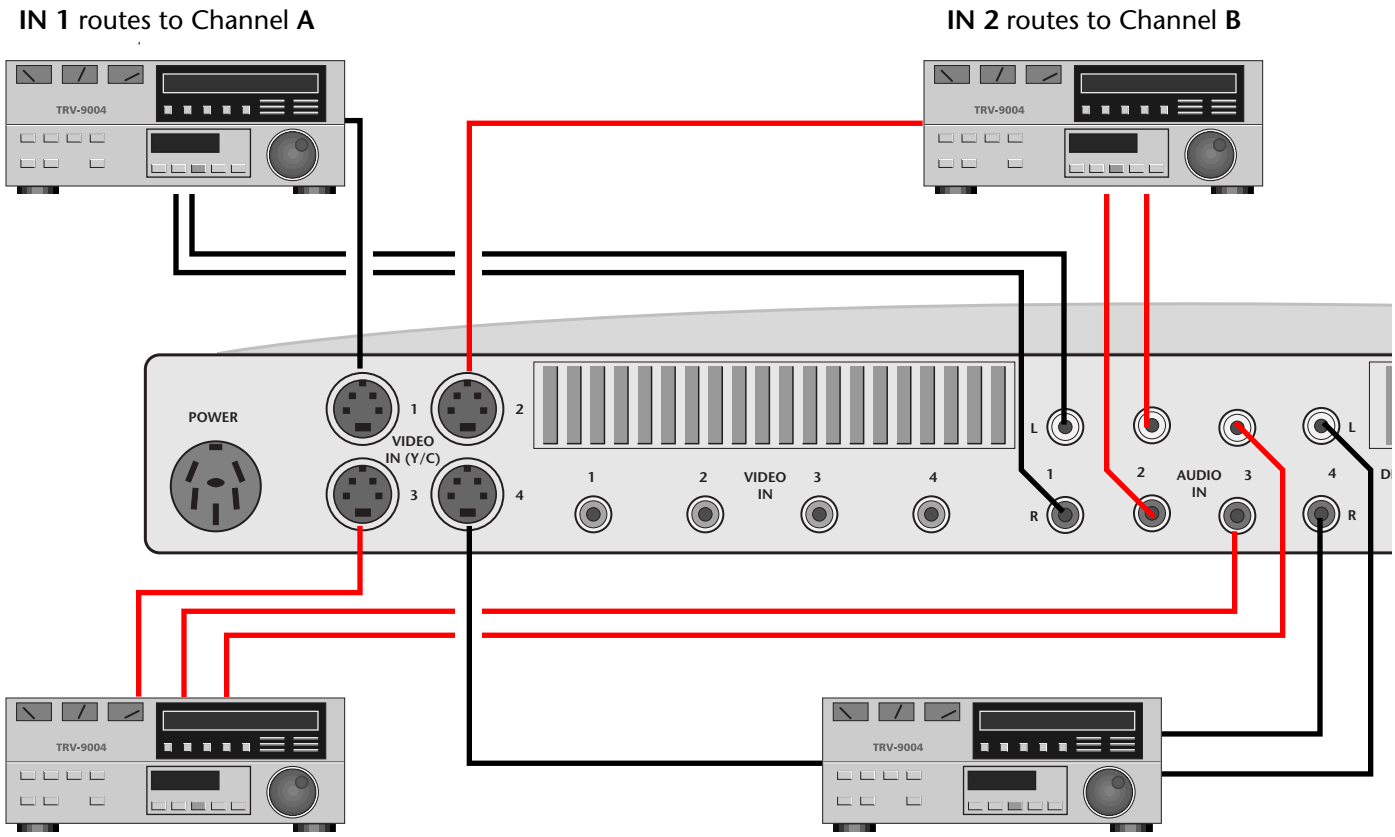
Default Settings for Route Function



If your set up does not match the default options, you need to change the Route settings. For example, assume you have an S-Video VCR attached to the input jacks marked 1 (**IN 1**), and a Composite VCR attached to the input jacks marked 2 (**IN 2**). You don't need to change anything for the first input because it matches the default settings. However, because the second source is a Composite device (rather than S-Video) you need to notify MXPro of this fact.

Procedure

To reconfigure Route settings:

1. Turn on both source devices and the Preview monitor. Start the source devices rolling.
2. Turn on MXPro.

   The introduction screen appears on the Preview monitor and, after a moment or two, the Preview screen replaces the introduction.
3. Press **ROUTE** to display the Route menu.

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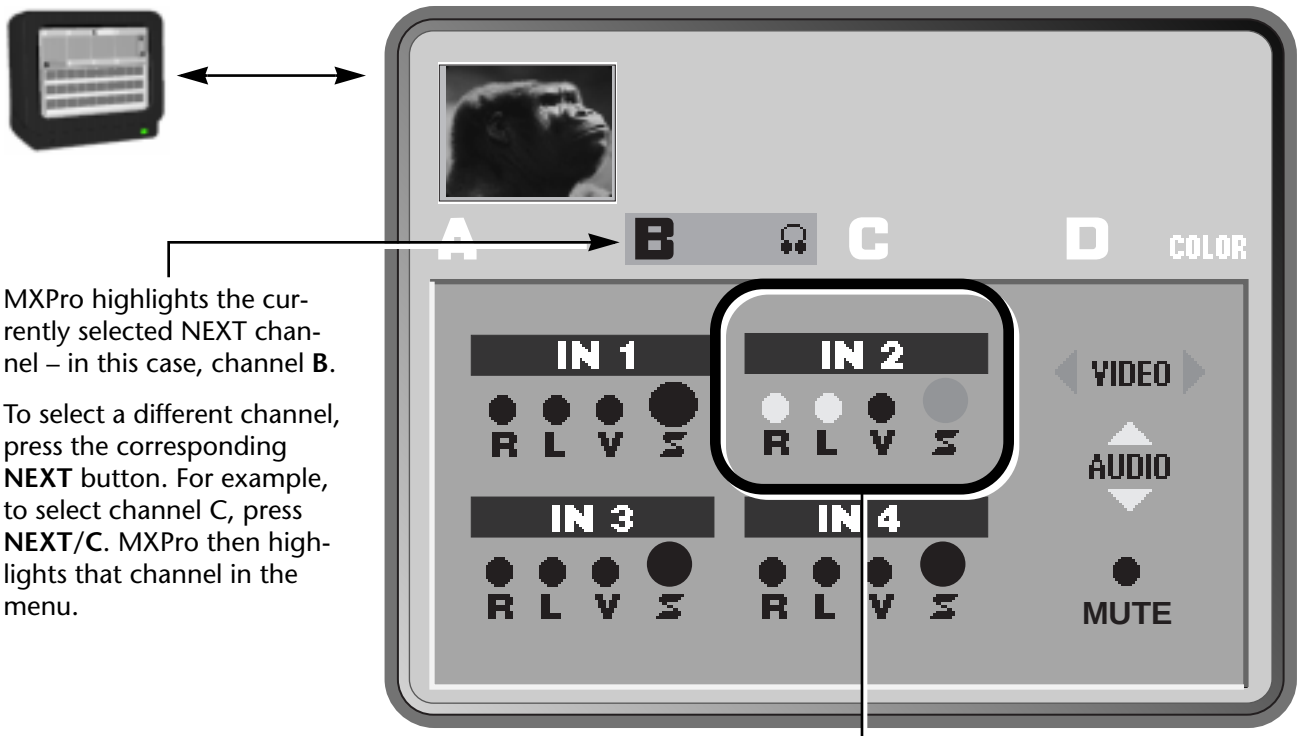


MXPro highlights the currently selected NEXT channel – in this case, channel **B**.

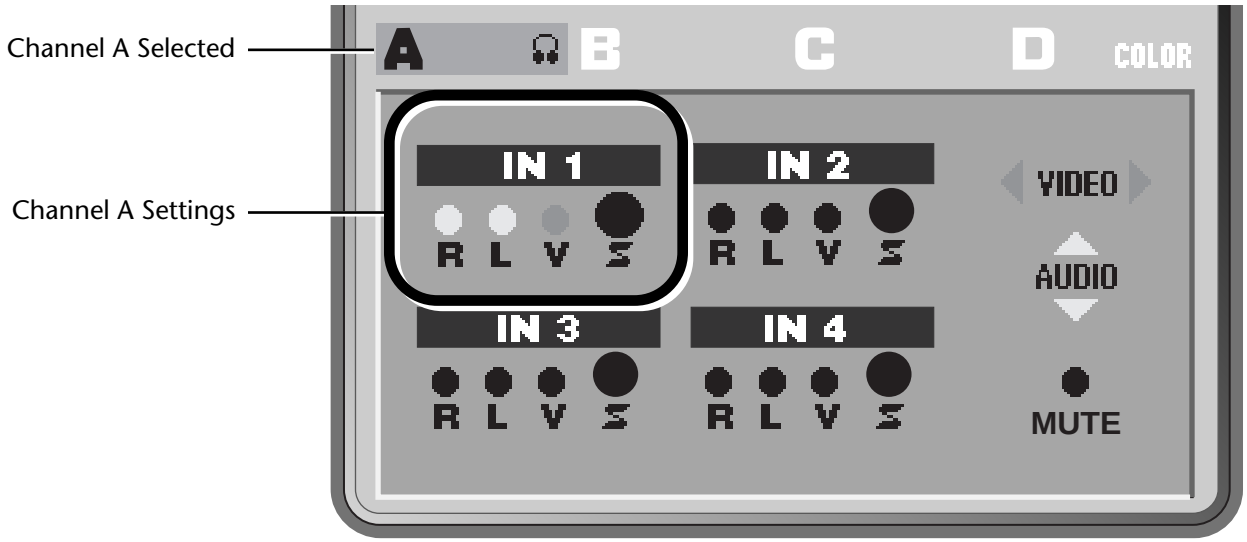
To select a different channel, press the corresponding **NEXT** button. For example, to select channel C, press **NEXT/C**. MXPro then highlights that channel in the menu.

MXPro highlights the appropriate **R**, **L**, **V**, and/or **S** connectors in the corresponding diagram showing the current configuration for the current channel.

Note above that channel B is currently selected. The **IN 2** diagram indicates that the audio signals route to the **R**ight and **L**eft jacks and the video signal routes through the **S**-Video jack. This is the correct configuration for this source, so no change is necessary.

4 Press **NEXT/A** to select that channel.

5 Press **LEFT ARROW** to highlight the **V** (Composite Video) option in the **IN 1** diagram.



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6 Repeat this process (if required) for any and all devices in your configuration.

7 When finished, press **ROUTE** to exit from the Route menu.

Note

If you do not see the proper image previews on the Preview screen, it might be that your configuration is not set up correctly.

Re-directing Input Signals

Use the Route function to re-direct signals coming from source devices to different MXPro channels. This gives you the ability to create interesting special effects.

Example…

*After routing a single input device (such as a VCR) into both the A and B channels on MXPro, you can change the image to black and white at various times to add drama to the production by assigning the B&W Input Effect to channel B. When you want the scene to change to black and white, press **CUT/B**. When you want to switch back to the original, color version of the scene, press **CUT/A**.*

*To carry this example further, suppose you also want to flip the image upside down, or apply a red tint to a hot scene, or use any other effect. You can route the input VCR through channels A, B, **and** C. The procedure is the same as above: just assign whatever effect you want to channel C, then cut (or use any transition) to display the effect. And, of course, you can also include channel D the same way you include the others.*

Procedure

To re-direct a signal to multiple channels:

For this example, assume that the source device is properly set up for channel A — that is, an S-Video VCR with stereo sound is directed to that channel. Your objective here is to set channel B so that it also receives the same signal from the same VCR at the same time.

1 Make sure the VCR is turned on.

2 If necessary, turn on MXPro.

3 Press **ROUTE** to display the Route menu.

4 Press **NEXT/B** to select the B channel.

5 Press **LEFT ARROW** or **RIGHT ARROW** as many times as necessary to highlight the **V** (Composite **V**ideo connector) option under the **IN 1** diagram. This routes the video signal from the input 1 video jack to the B channel.

6 Press the **UP ARROW** or **DOWN ARROW** as many times as necessary to highlight the **R** and **L** (**R**ight and **L**eft Audio) options under the **IN 1** diagram. This routes the audio signal from the input 1 audio jacks to the B channel.

The Route menu should look similar to the following when you complete these changes.

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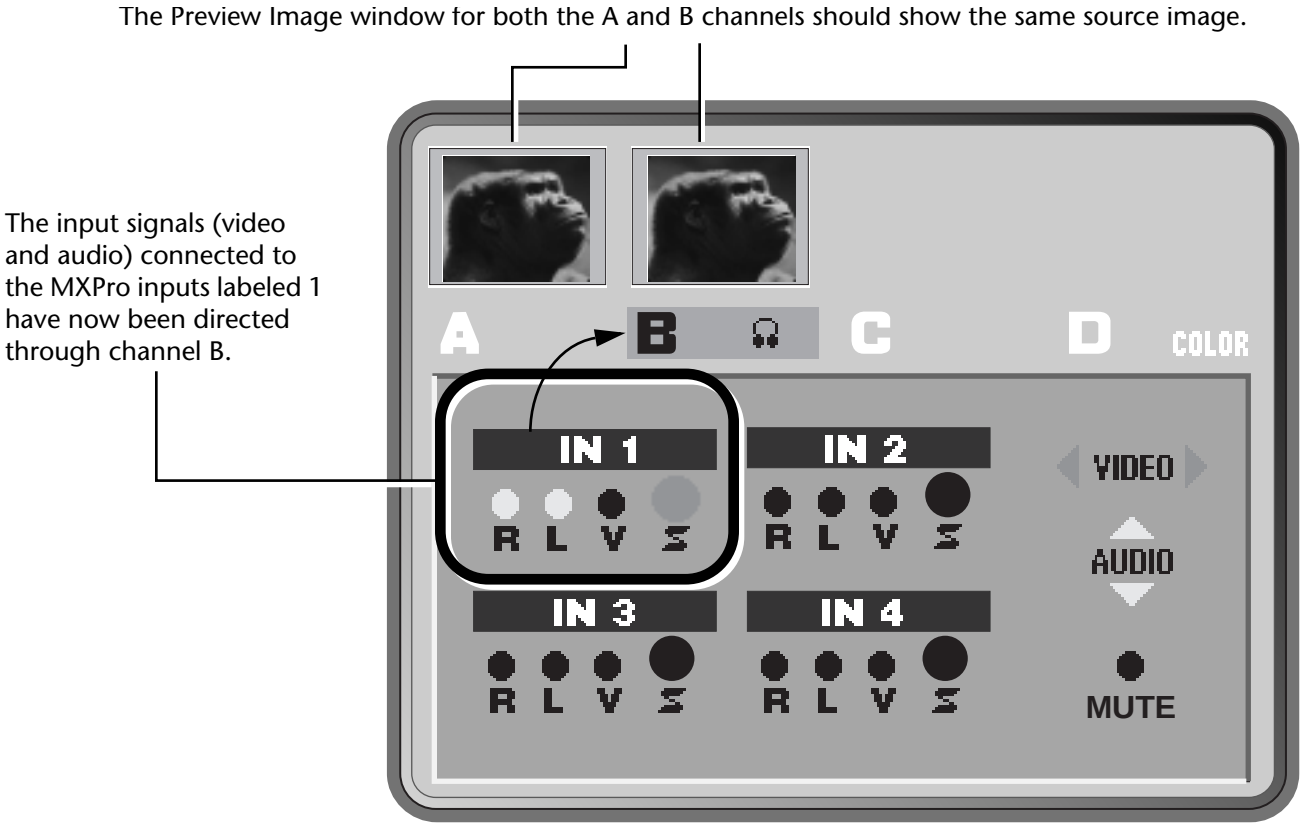

You can now apply whatever effects you want to the B channel. For example, to flip the image horizontally, go to the Input Effects menu and activate the Flip effect for channel B. During playback, alternately pressing **CUT/A** and **CUT/B** flips the image on the screen.

You can apply any of the other Input Effects to channel B, or to any channel for that matter.

Routing Audio through Color Channel

You can route an audio signal through the Color channel. This is useful, for example, if you want to fade to a solid color and would like to have a corresponding audio source.

Procedure

To route audio through the color channel:

1. Press **NEXT/COLOR** to select the color channel.
2. Make the proper settings for the appropriate **IN** options (**1**, **2**, **3**, or **4**) for the audio source you want to use, the same way you select for the other channels.

Navigating the Route Menu

Use the **LEFT** and **RIGHT ARROW** keys to move the Video selector between the input diagrams – IN 1, IN 2, IN 3, and IN 4.

Use the **UP** and **DOWN ARROW** keys to move the Audio selector between the input diagrams. After cycling through all of the inputs, MXPro highlights the **Mute** option. With this option selected, MXPro mutes the audio for the selected channel.

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Learn

The Learn feature consists of one or more *Learned Environments*. Within each Learned Environment you can create a *Learned Script*.

In a Learned Script you *teach* MXPro about a series of transitions and edits you want to include in a production. This is similar to using an **E**dit **D**ecision **L**ist (EDL), though not as flexible or powerful.

Once you activate the Learn feature, MXPro *remembers* each step you go through in preparing a production — including all transitions, input effects, and other operations. Thereafter, you can play back this *Learned Script* to automatically perform all of the steps and functions it contains.

See Chapter 11, *Learn Mode*, for further information.

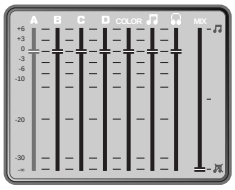
Compose

Use Compose to create screen images made up of several different graphic elements. For example, a composed screen might show two still images (polar bears in passionate embrace and Kong contemplating the meaning of the universe) placed atop solid colored rectangles and a solid colored background. With a character generator (or, titlemaker), you can also add text elements to composed screens and use the screen as subtitles or whatever need you might have. See Chapter 9, *Compose*.

PIPs

PIPs (Picture-In-Picture) let you combine images from separate sources and place them on the screen at the same time in separate windows (or, tiles). You have many options for arranging the PIP windows on the screen. See Chapter 8, *PIPs*.

Audio Mix



Use Audio Mix to adjust audio levels for any channel. See Chapter 12, *Working with Audio*.

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FREEZE

The Freeze effect immediately freezes the selected video source. You can freeze up to two video sources, then transition between them while retaining the freeze – that is, the freeze stays in MXPro's memory until you specifically release it.

This section describes the types of freeze effects you can produce with MXPro and how to use Freeze with transitions.

You can also use the Freeze effect with the MXPro PIP and Compose features. Refer to Chapter 8, *PIPs*, and Chapter 9, *Compose*, for further information.

Field and Frame Freezes

You can freeze either a video Field, or a full Frame.

Field Freeze – Captures every other horizontal line of the video. This is ideal for capturing anything in motion.

Frame Freeze – Captures all horizontal lines, thereby producing a higher resolution (better quality) image. Use Frame Freeze when working with still images, such as photographs. Using Frame Freeze with images in motion normally produces *jitter* in the movie.

MXPro captures using Field Freeze, by default. See "Force Field Freeze" on page 76 to learn how to change the default setting.

Major Freeze Functions

MXPro provides three major freeze functions: Freeze **Current**, Freeze **Next**, and Freeze **During** (Transitions).

Freeze Current Freezes the image on the Program Output device.

- To freeze the video on the current source, press **FREEZE**.
- To *un*freeze the video on the current source, press **FREEZE** again, or press the **CUT** button that corresponds to the current source.

Freeze Next Freezes the video on the Next source. This is useful for freezing an image, then transitioning to it.

Procedure

To use the Freeze Next function:

1. Enter **SHIFT**+4 to set your Preview monitor to Preview Next mode.
2. To freeze the video on the Next source, enter SHIFT+FREEZE.
3. To unfreeze the video on the Next source, do one of the following:

   Enter **SHIFT+FREEZ**E, again.

   Press the **NEXT** button that corresponds to the Next source – that is, the one below the flashing LED indicator near the top of the keyboard.
4. To *un*freeze the Next source in Preview modes other than Preview Next, press any of the **NEXT** buttons – **A**, **B**, **C**, **D**, or **COLOR**.

Freeze During (Transition) Stops the current transition and freezes both the Current and Next video sources.

- To restart the transition and unfreeze the Current and Next sources, press **FREEZE** or **PLAY**.

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Freeze Examples

This section discusses some common uses for the Freeze function. As you use MXPro over time, you'll probably create many others ways to use this function.

Single Source (A/A) Editing

When working with a single source, use the Freeze function to transition to or from the second image.

Procedure

To use Freeze with Single Source Editing:

1. Route a video source to Channel A.
2. Use the **CUT/A** and **NEXT/A** buttons to specify source A as both the Current and Next source.
3. Press **FREEZE** to freeze the Current source.

   MXPro freezes the Current source on the Program monitor, and the Next source (on the Preview monitor) continues moving even though there is only one source.
4. Enter **1+PLAY** to run a simple dissolve transition. The frozen image dissolves to moving video.
5. Press **NEXT/A** to release the freeze on the Next source.

   If you want, repeat steps 3 through 5 to freeze and dissolve back and forth.

   The following steps explain how to transition from moving video to a still image.
6. Enter **SHIFT+4** to select Preview Next mode on the Preview monitor.
7. Enter **SHIFT+FREEZ**E to create a still frame on the Next source.
8. Enter **1+PLAY** to dissolve from the Current moving video to the Next still image.
9. Press **FREEZE** to release the freeze on the Current source.

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Creating Still Montages

You can use the Freeze function to transition between a series of still images to create a "still montage." You can use anywhere from one to four sources.

Procedure

To create a still montage:

1. Route at least one video source to Channel A. Remember, you can use up to as many as four sources for this procedure.

   This example starts from a black screen, then transitions to a still image.
2. Enter **BG COLOR+0** (zero) to set the background color to black.
3. Press **CUT/COLOR** to set the Color Channel as the Current source. You now have a black screen on the Program monitor.
4. Press **NEXT/A** to set Channel A as the Next source.
5. Enter **SHIFT+4** to set the Preview monitor to Preview Next mode.

   You're now ready to create and transition to the first still image.
6. Enter **SHIFT+FREEZ**E to create a frozen image on the Next channel.
7. Enter **1+PLAY** to dissolve from black to the first frozen image.

   The Next and Current sources swap positions. You're now ready to select the second still image.
8. Press any **NEXT** button to release the freeze on the Next source and select a new source to freeze.
9. Enter **SHIFT+FREEZE** to freeze the Next image.
10. Enter **1+PLAY** to dissolve to the Next image.

To transition to other still images, repeat steps 8 through 10.

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Freeze and Transitions

The preceding examples used the dissolve transition to move between frozen images. You can use any MXPro transition to move between freezes, with the following exceptions:

- MXPro cannot perform a Trailing-type transition **TO** a frozen image. It releases the Next source prior to running the transition.
- MXPro can perform a Trailing-type transition **FROM** a frozen source to a moving source. However, it loses the freeze once the transition finishes.
- MXPro cannot compress frozen images. If you select a compression effect, MXPro automatically runs the selected effect without compressing the video; resulting in a wipe transition.
- To hold frame freezes, press **SHIFT+4** (to set the Preview monitor to Preview Next mode) or **SHIFT+5** (to set to Preview Current mode). In any other Preview mode, a Frame freeze reverts to a Field freeze once the transition begins to run.

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8

PIPs

Single PIP

Multi-PIP

PIPs (**P**icture-**I**n-**P**icture) provides a way to combine images on the same screen. For example, one image appears inside a small rectangle, and the other image fills the remainder of the screen, as shown by **Single PIP**, above.

You can freeze the background or foreground, or make either one a solid color.

You can create **Single PIP** configurations where two images appear on the screen at the same time. You can also create **Multi-PIP** configurations where up to sixteen images appear on the screen at the same time. Single PIP and Multi-PIP work differently.

PIP images consist of a *tile* (the video image) and a *mask* (the window or shape through which the tile shows).

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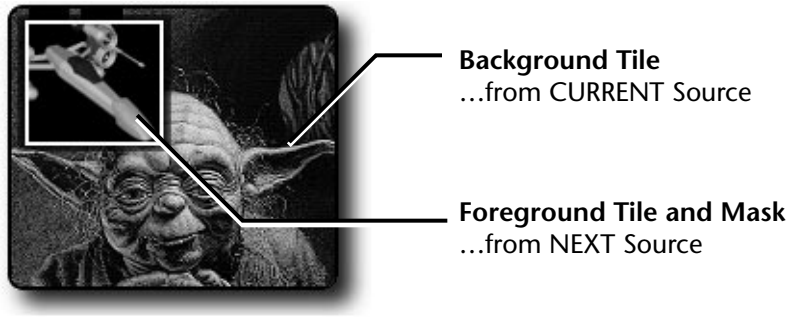
SINGLE PIP

In a Single PIP configuration, one tile fills the background while another tile and its mask *float* atop the background. The CURRENT source always serves as the background tile; the NEXT source always serves as the PIP image.



Background Tile

The background tile always fills the entire screen. You can apply Input Effects (Strobe, Freeze, and so forth) to the background tile, or make the tile a solid color. You cannot otherwise change the background tile in any way.

Foreground Tile

You can manipulate the foreground tile and mask in different ways, such as:

- Position the tile anywhere on screen.
- Change the size and shape of the tile and its mask.
- Create a border around the tile.
- Reposition, resize, and otherwise change the mask without changing its corresponding tile.

Procedure

To create and apply a Single PIP:

1. Assume the background image originates on input source A. Press **CUT/A** to make source A the CURRENT source. It serves as the background tile.

   If you want, instead, to make the background a solid color, press **CUT/COLOR**. See "Using Color Backgrounds" on page 43 to learn how to select colors.
2. Press **PLAY** to display the PIP on the Output.
3. Assume the image of the Star Fighter originates on input C. Press **NEXT/C** to make source C the NEXT source. It serves as the foreground tile.
4. Press **PIPs** to enter PIP mode. The Preview screen shows the background video with the foreground video inset in a small tile.
5. Press **NEXT/A**, **NEXT/B**, **NEXT/C**, **NEXT/D**, or **NEXT/COLOR** to change the image in the PIP window.
6. Press **PLAY** again to remove the PIP from the output.
7. To exit PIP mode, press **PIPs**.

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Manipulating the Foreground Tile

This section explains how to change the position, size, shape, and so forth of the foreground tile. In each case, do the steps *after* pressing **PIPS**, as described in the preceding steps. You can do any of these steps while the PIP plays on the Output.

Table 10: Manipulating PIPs Tiles

To change tile...	Use or press...	Notes...
Position		
	JOYSTICK	Moves tile around screen.
	SHIFT+ ⟷	Snaps PIP tile to correct aspect ratio, based on current horizontal dimensions.
	SHIFT+ ↕	Snaps PIP tile to correct aspect ratio, based on current vertical dimensions.
Size (*Resizing the tile normally distorts the image it contains.)*		
	T-BAR	Dynamically resizes foreground tile and its mask. Use the **T-BAR** to manually zoom the image while maintaining correct aspect ratio.
	UP ARROW	Increases the height of the foreground tile and its mask.
	DOWN ARROW	Decreases the height of the foreground tile and its mask.
	RIGHT ARROW	Increase the width of the foreground tile and its mask.
	LEFT ARROW	Decrease the width of the foreground tile and its mask.
	SHIFT+0 (zero)	Restore PIP tile to default size, shape, and position.
Shape		
	SHAPES	Cycles through available shapes for foreground tile.
	SHIFT+SHAPES	Cycles backward through shapes.
	n	Applies a specific shape to the tile, where ***n*** corresponds to the numbers shown in the shapes following this table.
Mosaic		
	SHIFT+OK+T-BAR	Increases/decreases granularity of the mosaic.

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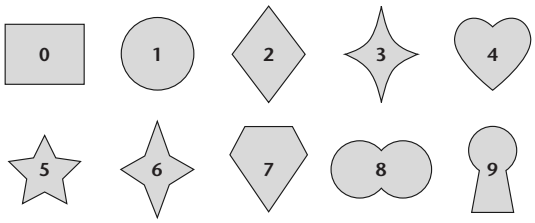
You can apply the following shapes to PIP tiles.

To select a shape, press the numeric key (0 through 9) that corresponds to the shape you want, as indicated below.



Manipulating the Mask

The mask changes shape, size, and position when you change the corresponding attribute of the foreground tile. You can, however, manipulate the mask independently, as described in this section.

Table 11: Manipulating PIPs Mask

To change mask...	Use or press...	Notes...
Position		
	SHIFT+JOYSTICK	Change mask position.
Style *(Press keys repeatedly to cycle through available colors and styles.)*		
	BORDER COLOR	Change mask border color.
	BORDER STYLE	Change mask border style.
Size		
	SHIFT+T-BAR	Change mask size.
	SHIFT+UP ARROW	Increase vertical size of mask.
	SHIFT+DOWN ARROW	Decrease vertical size of mask.
	SHIFT+RIGHT ARROW	Increase horizontal size of mask.
	SHIFT+LEFT ARROW	Decrease horizontal size of mask.

Using Other Effects with Single PIPs

Input Effects

You can apply any of the input effects (see Chapter 6, *Input Effects*) to the background and/or foreground tile. Apply the input effect(s) you want prior to entering PIP mode.

The Freeze Effect

You can apply the Freeze effect (see “Freeze” on page 83) to the background and/or foreground tile.

Press **FREEZE** while in PIPs mode to freeze the background. Press **FREEZE** again to release the freeze effect.

Press **SHIFT+FREEZE** while in PIPs mode to freeze the foreground tile. Press **SHIFT+FREEZE** again to release the freeze effect.

When you exit PIPs mode, MXPro removes the freeze effect from the foreground source.

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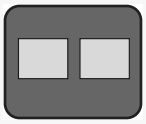
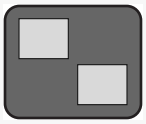
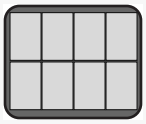
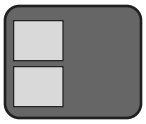
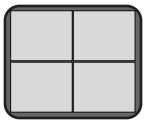
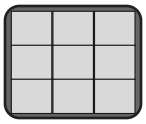
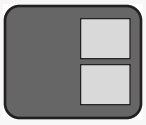
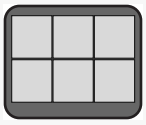
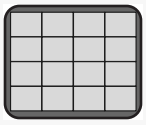
Multi-PIP

In a Multi-PIP configuration, as many as 16 separate images can share the screen at the same time, with each image inside a separate *tile*.

You can use any of the four input sources to provide the images that appear in the tiles. You might, for example, have the same image appear in eight of the tiles, and another image appear in the remaining eight tiles in a 16-tile configuration.

You can choose from 9 different multi-PIP configurations by pressing the number keys shown in the following table.

Table 12: Multi-PIP Screen Configurations

No.	Configuration	No.	Configuration	No.	Configuration
1		4		7	
2		5		8	
3		6		9	

When using configurations 1 through 4, the background always appears as a solid color. When using configurations 5 through 9, the tiles fill the entire screen, so there is no background.

The following procedure explains when to specify which configuration you want to use.

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Procedure

To create a Multi-PIP image such as the one shown above:

1. Assume the image of Kong originates on input source A. Press **CUT/A** to make source A the CURRENT source. It serves as the *primary* input.

   If you want, instead, to make the background a solid color, press **CUT/COLOR**. See "Using Color Backgrounds" on page 43 to learn how to select colors.

2. Assume the graphic of the word "Kong" originates on input C. Press **NEXT/C** to make source C the NEXT source. It serves as *secondary* input.

3. Press **SHIFT+PIPs** to enter Multi-PIP mode. The Preview screen defaults to show configuration 1 (two horizontal tiles). One of the tiles has a flashing border to indicate it is the current tile. One tile shows the primary input – Kong's head.

4. If this is the Multi-PIP configuration you want to use, move on to the next step: otherwise…

   a. Press the number on the keyboard that corresponds to the PIP configuration you want to use. (See Table 12, *Multi-PIP Screen Configurations*, at the beginning of this section.) MXPro displays the configuration on the Preview screen.

5. Use the **ARROW** keys to move the flashing border to a tile where you want to display the secondary input source: or, press **SHIFT+ARROW KEY** to move to the beginning or end of a row or column.

6. Press **NEXT/C**. Channel C, in this example, carries the video of the graphic word "Kong." That image appears in the tile you selected in the preceding step.

7. Repeat the two preceding steps for any other tile or tiles you want to carry the secondary input signal.

   You can direct any input signal (primary or secondary) to any tile.

8. When the Preview screen looks the way you want, press **PLAY** to cut to the Multi-PIP on the output; or use the **T-BAR** to fade the Multi-PIP to the output.

9. Press **SHIFT+PIPs** to return to the Preview screen.

Using Freeze Effect with Multi-PIPs

You can apply the Freeze effect (see "Freeze" on page 83) to any Multi-PIP tile.

Procedure

To use the Freeze effect with Multi-PIPs:

1. Use the **ARROW** keys to select a Multi-PIP tile.
2. Press **FREEZE**.
3. Press **FREEZE** again to release the effect.

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9

Compose

A Composition consists of individual tiles placed on the screen. A Composition can contain up to 16 separate tiles and one background. Tiles can be solid color rectangles, moving video sequences, or still (frozen) images.

COMPOSE provides a way to create screens containing picture elements, solid colors, and rectangles.

A composed screen consists of a *background* and one or more objects (called *tiles*) placed atop the background. The background fills the entire screen. Tiles can vary in size and appear anywhere on the screen.

IMPORTANT INFORMATION

You cannot save composed screens. Therefore, once you set up the composed screen the way you want it, you must immediately record or display it on the output device. If you move on to other functions without recording or displaying the composed screen, it is lost and cannot be recovered.

MXPro provides a limited set of "drawing tools" in Compose mode to help you create backgrounds and tiles.

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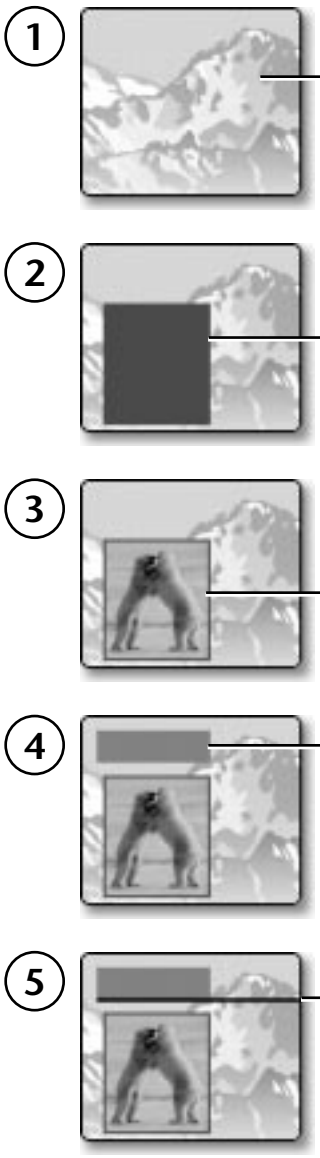
Basic Composition Steps

This section explains the steps involved in creating the composition screen shown at the beginning of this chapter. Further details for each of the steps then follow.



1. Select the background. This example uses a still image of a mountain range. You can use still images, moving video, a solid color background, or color bars.
2. Create a solid color tile. This rectangle serves as a background for the next element and separates it from the main background image.
3. Create the next tile, which is a moving video of two polar bears jousting.
4. Create another solid colored tile. You might eventually use this tile as a background for a text title.
5. Create one last solid color tile, but make it long and thin so that it looks like a simple, wide line.

Backgrounds

The background for a composition can be any of the following:

- A moving video sequence
- A still image (that is, a frozen frame from a video sequence)
- A solid color
- A set of color bars

As you'll learn later in this chapter (under "Creating a Composed Image"), you must establish the background ***before*** entering Compose mode.

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Foreground Tiles

Creating Color Tiles and Lines

Color tiles can be rectangles of any size and shape.

Colored lines are simply thin rectangles. You can create horizontal and vertical lines, but not diagonal ones.

When you place a color tile on the screen, it can overlap other tiles. If the other tile is a color tile, the new tile obscures the previous one wherever they overlap. However, if the other tile is a moving video, the color tile does not cover any portion of the moving video.

Once you create a color tile you can use **BG COLOR** to change its fill color.

Tiles cannot have borders.

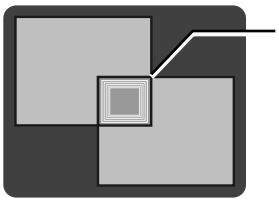
Creating Moving Video Tiles

A tile can contain video originating from any of the MXPro input sources.

The tile can be a rectangle of any size. MXPro scales the incoming video to fit within the tile, it does not crop the image.

Having more than one moving video source in a composition (such as a moving video background and one or more moving video tiles) normally reduces the overall frame rate, incrementally. That is, the more moving video you have on the screen, the *choppier* each one looks during playback.

When placing multiple moving video tiles on the screen, it is normally best if they do not overlap one another. When overlapping occurs, video in the common area flashes.



When moving video tiles overlap on the screen, the common area flashes.

Creating Still Image Tiles

Still image tiles can contain a frozen image from any of the input sources.

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Manipulating Tiles

You can place foreground tiles anywhere you want on the screen. You can set their size, fill them with color or images, and set their border characteristics.

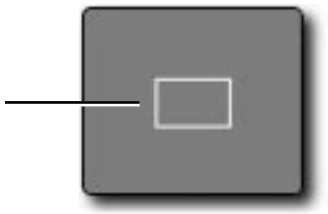
IMPORTANT INFORMATION

Remember, once you place and define a foreground tile you cannot change it. Placing the tile occurs once you move the Compose Cursor (or, rectangle) to any other position on the screen. You'll learn about the Compose Cursor in this section.

Positioning Tiles

When you press the **COMPOSE** button to enter Compose mode, MXPro shows your choice of background on both the Preview and Output monitors. MXPro also displays a flashing rectangle at the center of the Preview screen. This flashing rectangle is called the *Compose Cursor*.

The Compose Cursor (a flashing rectangle) appears on the Preview screen when you enter Compose mode.



JOYSTICK positions Compose Cursor

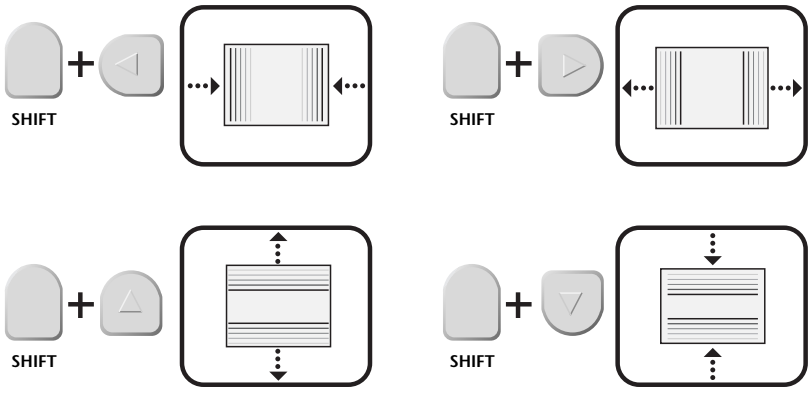
Use the **JOYSTICK** to move the Compose cursor where you want it on the screen. You can also use the **ARROW** keys to make fine adjustments.

Sizing Tiles

You can make foreground tiles any size you want, from covering the entire screen to a thin horizontal or vertical line.

Always establish the size of the tile ***before*** filling it with a solid color, moving video, or a still image.

Use the **SHIFT** key in conjunction with one of the **ARROW** keys to adjust tile size. Enter **SHIFT+0** (zero) to restore the tile to its default size.



Enter **SHIFT+FLIP**↔ to reproportion the tile based on its current width. Enter **SHIFT+FLIP**↕ to reproportion the tile based on its current height.

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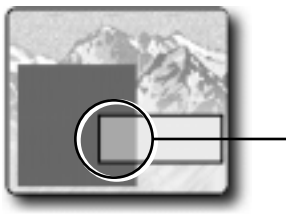
Composition Rules

Observe the following rules when creating compositions.

- Select and define the image you want to use as the background *before* entering Compose mode.
- A composition can contain one background and anywhere from one to 16 foreground tiles.
- When you create a foreground tile that overlaps an existing solid color rectangle or still image, the overlapping portion erases whatever it overlaps.



The larger tile is drawn first. When the second tile is drawn, it overlaps part of the larger one. The overlapping portion of the smaller tile erases that portion of the larger tile where the two overlap.

- Reducing the size of a still or moving video image normally introduces minor pixel artifacts, thus reducing quality.
- Once you place (or, *stamp*) a foreground tile into place, you cannot move or change it.
- To use a composed image, you must record or display it on the output. There is no other way to save the composition.
- You cannot use composed screens in conjunction with Learn mode.

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Creating a Composed Image

Procedure

To create a composition:

1. Create or choose the background on the Preview screen. Do this ***before*** entering Compose mode because the CURRENT source at the time you enter Compose mode automatically becomes the background for the composition.
   - **a** **Solid Color Background** – Use the **BG COLOR** button to select the color you want. Then press **CUT/COLOR** or use a transition to make COLOR the CURRENT source.
   - **b** **Moving Video Sequence** – Use the appropriate **CUT** button to make the desired input source the CURRENT one. For example, to use a moving video sequence from source C as the background, press **CUT/C**.
   - **c** **Still Image** – Use the appropriate **CUT** button to make the desired input source the CURRENT one. For example, to use a frame from source B as the background, press **CUT/B**. When the frame you want to use as the still image appears on the Preview screen, press **FREEZE** to create the still image.
   - **d** **Color Bars** – Press **SHIFT+NEXT COLOR** while in Compose mode to display color bars in the background.
   - **e** **Input Effects** – Apply any Input Effects you want to use before entering Compose mode.
2. Press **COMPOSE** to enter Compose mode.

   A full screen image of the CURRENT source (the one on the Output) replaces the Preview screen. The Compose Cursor appears on the Preview screen.

Tip

*To use color bars as the background, enter **SHIFT+NEXT COLOR** now – **before** creating foreground tiles.*

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3 Use the **JOYSTICK** or **ARROW KEYS** to position the Compose Cursor where you want it on the screen.

4 Size the Compose Cursor to the size you want for the foreground tile.

You can do the two preceding steps in either order.

5 Press one of the **NEXT** buttons to fill the tile with whatever color or image you want.

a **Solid Color Background** – Press **NEXT/COLOR** to fill the tile with the currently selected color.

To specify a different color from the one currently selected, press **BG COLOR** until the color you want fills the tile.

To create a custom color for the tile, press **LEARN+BG COLOR**, then use the **JOYSTICK** and **T-BAR** to create a new color. Press **OK** when the tile color is the one you want.

b **Moving Video Sequence** – Press the appropriate **NEXT** button to select source A, B, C, or D. If the dimensions of the tile and video do not match, the video appears distorted.

c **Frozen Image** – Fill the moving video tile with the image you want, then press **FREEZE**.

6 Repeat steps 3 through 5 until your composition is complete.

7 Use the **PLAY** button or **T-BAR** to send your composition to the Program.

Playing the Composition

Procedure

To play a composition on the output device:

♦ Press **PLAY** or use the **T-BAR**.

Moving the **T-BAR** from the top-to-bottom in its slot transitions the composition to Program. Moving it from bottom-to-top dissolves out.

Pressing **PLAY** produces a cut from the CURRENT source to the composed screen — using the **T-BAR** produces a dissolve. Pressing **PLAY** or using the **T-BAR** again lets you switch back and forth between the CURRENT source and the composed image.

Note

If you cut to any source or exit from Compose mode, your composed screen will be lost and cannot be recovered.

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Exiting from Compose Mode

Remember, if you do not record your composed image to the output device before exiting Compose mode, your composed image will be lost and cannot be recovered.

To exit from Compose mode, press **COMPOSE**.

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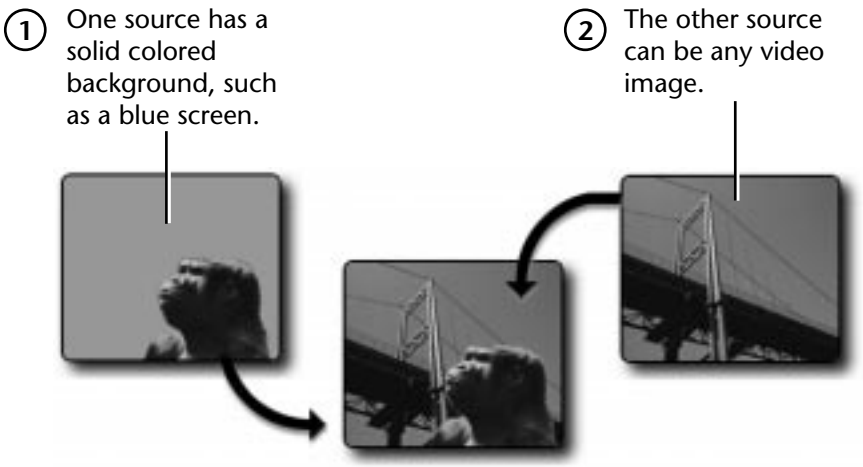
10

Chroma Key

Using Chroma Key you can combine two completely separate images to create a composite image that might be impossible to create any other way.

You've probably seen the Chroma Key effect used in television weather reports. The weather person stands in front of a "blue screen" (a solid blue background) and the weather map then *keys* onto the background from some other source.

CHROMA KEY combines two sources to create a composite image.



3 The Chroma Key effect replaces the solid colored background in the first image with the video signal from the second image. The second image replaces the background only where the designated color appears.

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Chroma Key requires careful preparation of the input sources to achieve the desired effect. Keep the following points in mind:

- The color used for the background must not appear elsewhere in the image. For example, if Kong's head (in the example above) contains colors close to the chroma key background, the picture of the bridge would appear in those areas. (Professionals often use a special "blue screen" paint for the backdrop when filming the image.)
- The color of the background must be evenly distributed. Glare from camera lights and shadows of the subject can alter the background color. MXPro's chroma key circuitry might not be able to handle the different values, thereby spoiling the illusion.

This chapter explains how to prepare footage for use with the Chroma Key feature. Of course, screen images appear in grayscale in this book.

Background Footage

Keyed Footage

Chroma Key Footage

The **Background** footage shows traffic moving along a freeway or highway.

The **Keyed** footage, specially prepared, shows our intrepid hero flying against a solid colored background.

The **Chroma Key** footage is the result of combining the Background footage and Keyed footage using the MXPro Chroma Key feature.

Preparing the Background Footage

Preparation of the Background footage does not require anything special. It might be footage of automobile traffic taken from a bridge.

Tip

The more unusual or dramatic the Background footage the greater the final effect of the Chroma Key.

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Preparing the Keyed Footage

Preparation of the Keyed footage presents a challenge. It is the most important and most difficult step, because the solid colored background is so crucial to the success of the illusion. To achieve the required background requires, in most cases, special props, lighting, and other materials.

In this example, we placed our flying hero atop a platform centered on the set.

Here's how the footage used in this example was prepared:

- Uniquely colored fabric was draped over the back, sides, and bottom of the set. The same fabric was used to wrap completely around the platform on which we posed our flying hero.

  When choosing the fabric color, it was important to try and select a fabric that did not contain any of the colors in our flying hero's wardrobe. A professional studio would most likely use a blue screen in place of the colored fabric. Blue screen paint is a very unique color that minimizes (though might not eliminate) glaring and shadowing.

- Key lights and fill lights were positioned so as to minimize glare and shadows during filming.

  Light bouncing off an area produces different shades of the background color. Likewise, shadows also produce varying shades. The key to successful Chroma Keys is to reduce as much as possible the colors in the background.

  The use of lighting filters, umbrellas, lighting stands, and similar tools can make a tremendous difference in the quality of the Chroma Key as well as the amount of "post production" work you must do to produce the exact illusion you want.

- Several test shots were made, then lighting was adjusted, the actor was repositioned, and so forth, until the optimum results were produced.

- Final footage was then shot.

Preparing the Chroma Key Footage

With the Background footage and Keyed footage recorded and available, you're ready to combine them into the Chroma Key effect. The following steps assume that source A is the Background footage (the traffic sequence) and source C is the Keyed footage (the flying hero).

Procedure

To prepare the Chroma Key footage:

1. If necessary, turn on MXPro and all sources.
2. Start both sources (A and C) rolling.
3. Select the Background footage as the CURRENT source — that is, press **CUT/A**. The image appears on the Program monitor.
4. Select the Keyed footage as the NEXT source — that is, press **NEXT/C**.

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5 Press **CHROMA KEY** to activate the effect. The Preview screen displays a full-screen picture of the Keyed footage from source C. A cursor (a small flashing circle) appears atop the image.

Once you activate Chroma Key it stays in effect until you specifically deactivate it (which you'll learn to do later in this procedure). To change the selected color or colors for the Chroma Key, press **SHIFT+CHROMA KEY**. This instructs MXPro to discard the current set of colors so you can specify different ones.

6 Use the **JOYSTICK** or **ARROW** keys to move the cursor so that it is directly over the area that contains the color to key out — that is, to specify the area in which the other video source is going to play.

7 Press **OK**. Those areas in the picture that match the color under the cursor get replaced by the background source.

- **a** If you need to include other colors in the keyed-out area, repeat the two preceding steps. You can repeat the steps as many times as necessary to key-out the entire background.
- **b** To remove the last keyed color change, enter **SHIFT+0** (zero).
- **c** To fine-tune the keyed color, use **SHIFT+ARROW KEY**.

If you aren't able to successfully isolate the background from the subject, you might have to re-shoot the scene using a background of a different color — or, you might just need to change the lighting to eliminate glare and shadows.

Cancelling the Selections If you need to start over, you can cancel all of the chroma key selections made thus far by pressing **SHIFT+CHROMA KEY**, as explained above.

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Performing the Chroma Key

When the Preview screen shows the desired chroma key results:

- Press **PLAY**. The Output monitor shows the Chroma Keyed image. Press **PLAY** again to cut back to the background source.

  You can also dissolve between the Background footage and the Chroma Key footage using the **T-BAR**, rather than pressing **PLAY**.

Using Freeze and Other Input Effects

You can apply Input Effects (including Freeze) to the Background footage, but *not* to the Keyed footage.

- To apply the freeze effect, press **FREEZE** either before or after pressing **CHROMA KEY** or **SHIFT+CHROMA KEY**.
- To apply any of the other Input Effects, apply them to the CURRENT source *before* pressing **CHROMA KEY**. MXPro ignores effects applied to the NEXT source during Chroma Key.

Fine-Tuning Key Colors

You can fine-tune the chroma key effect so that more or less of the keyed footage gets keyed. You can separately adjust the range of colors and video brightness that get keyed.

- To adjust the *brightness* range, enter **SHIFT+UP ARROW** to increase the range of brightness values that get keyed, replacing more of the keyed footage with the background footage. Use **SHIFT+DOWN ARROW** to decrease the brightness range, reducing the portion of the image that gets keyed.
- To adjust the *color range*, enter **SHIFT+RIGHT ARROW** to increase the range of colors that get keyed, replacing more of the keyed footage. Use **SHIFT+LEFT ARROW** to decrease the range of key-colors, reducing the portion of the image that gets keyed.

Ending Chroma Key

When you finish using chroma key, press **CHROMA KEY**.

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Notes

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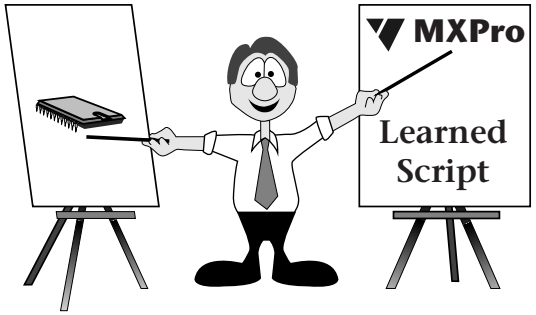
11

Learn Mode



In Learn Mode, MXPro "remembers" most of what you do, such as which transitions you used and how you used them. You can subsequently instruct MXPro to re-play those steps, at which time MXPro creates the production on the output device.

The basic steps involved in using Learn mode include:

- Create a *Learned Environment*.
- Place MXPro in Learn mode.
- Create the production, complete with transitions, freezes, input effects, and so forth. MXPro records each action to a *Learned Script*.
- Instruct MXPro to replay the Learned Script.

WARNING!

MXPro saves Learned Environments in memory, so they are available even when you turn the unit Off then back On again. On the other hand, MXPro DOES NOT save Learned Scripts in memory. Once you turn the unit Off, all Learned Scripts get erased.

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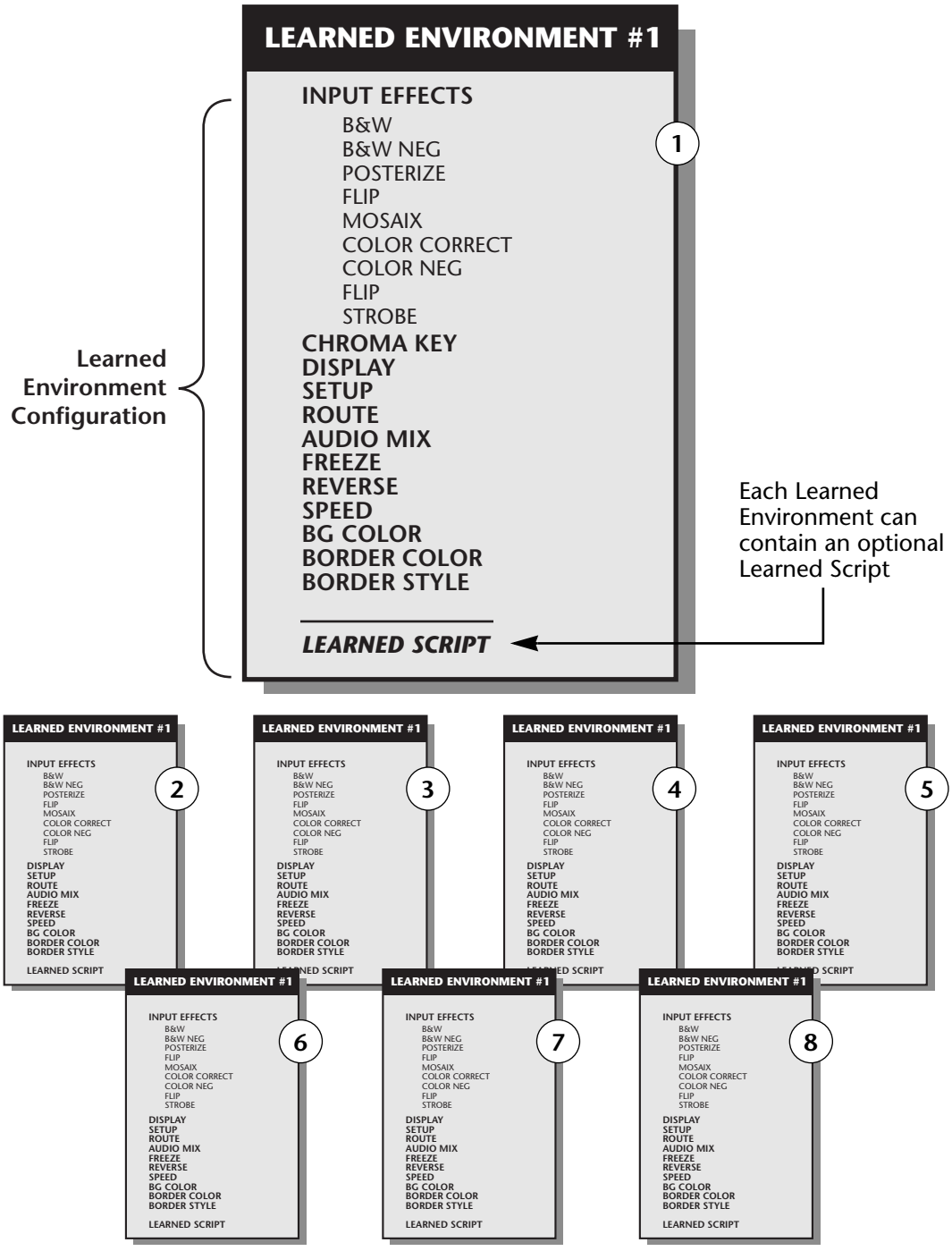
Learned Environments

A Learned Environment can be thought of as a "snapshot" of your current MXPro configuration, including input effects, functions, styles, and so forth, that are in effect when you create the Learned Environment. You can subsequently recall a Learned Environment whenever you want to use it. You might, for example, have one environment you use for mixing three VTR input sources; another for broadcasting from live cameras; another for applying special input effects; and so forth.

You can create up to eight separate Learned Environments, each with their own configuration, as shown by this illustration.



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Procedure

To create a Learned Environment:

1. Set up MXPro the way you want for this particular environment. This includes setting any input effects you want, selecting the initial CURRENT and NEXT sources, defining color, defining borders, and so forth.
2. Enter **LEARN+<*number*>**, where **<*number*>** can be any value from 1 to 8.

   MXPro saves all current settings under the number you enter. Note that the **INPUT EFFECTS** LED (or, light) flashes to let you know MXPro is in Learn Mode.

   At this point, you can create a Learned Script to save *with* the current Learned Environment. See the following section for further instructions.

   You can also save the environment *without* a Learned Script. To do so, just press **LEARN** to disengage Learn Mode.

Learned Scripts

Learned Scripts exist only within Learned Environments. Although you can create a Learned Script without first specifically creating a Learned Environment, MXPro automatically creates a Learned Environment using the current settings.

You can record one Learned Script for each Learned Environment. So, because you can create 8 Learned Environments, you can also create 8 Learned Scripts.

The total number of actions (or, *steps*) in all of the combined Learned Scripts cannot exceed 250. If you attempt to exceed this number, MXPro simply stops recording steps when it reaches capacity. You can replay all steps learned up to that point.

MXPro does *not* retain Learned Scripts when you turn the unit off, but it does retain the Learned Environment. Therefore, if you create a Learned Script within a Learned Environment then turn off MXPro, the Learned Environment is retained, but the Learned Script is not.

MXPro does *not* record the following steps while in Learn mode:

- Create or transition to Compose screens
- Use Chroma Key
- Use PIPs
- Use the Demo

You cannot modify a Learned Script after creating it. If you need to modify a Learned Script, you must re-record it from the beginning.

If you're familiar with the video-related term "Edit Decision List," MXPro is *not* an EDL. MXPro simply records certain steps, then replays them at your direction.

About Steps Most individual actions count as one step. For example, if you enter a two-digit transition number on the keyboard, that counts as two steps: each time you press **PLAY** or use the **T-BAR**, that also counts as one step: and so forth.

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Other buttons count as one step, including **SPEED**, **FREEZE**, **SETUP**, **INPUT EFFECTS**, **ARROW** keys, **CURRENT** and **NEXT** sources, and so forth.

Example…

The following Learned Script consists of 7 individual steps:

1. Press **NEXT/B** to select that device as the NEXT source (step one).
2. Press **SPEED** to increase the speed of the transition (step two).
3. Press **SPEED** again to increase the transition speed one more unit (step three).
4. Press **SPEED** once more to increase transition speed another unit (step four).
5. Enter **55** to designate that transition (steps five and six).

   It requires two steps to enter the two digits.
6. Press **PLAY** (step seven).

*Using **ARROW** keys to select a transition consumes one step for each key pressed. In most cases, to fit as many transitions as possible into a Learned Script, use the numeric keypad to enter transition numbers rather than using the **ARROW** keys.*

Select the CURRENT and NEXT sources before entering LEARN mode. LEARN mode interprets pressing the CUT button as a transition.

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Using Learn Mode

Procedure

Learn mode involves the following steps:

1. Activate all devices.

   Turn on MXPro and all devices you intend to use, if necessary.

2. Press **LEARN+<*number*>** to engage Learn mode, where **<*number*>** can be any value from 1 to 8. The number designates the Learned Environment you want to use.

   Note that the **INPUT EFFECTS** LED (or, light) flashes while MXPro is in Learn mode.

3. Enter production steps.

   Create the production in the same way you would even if you weren't using Learn mode.

4. Stop recording press **LEARN** again to disengage Learn Mode.

   Learn mode disengages automatically if you exceed 250 total steps, the maximum allowed in all combined Learned Scripts.

5. Play back the Learned Script.

   a. Enter **SHIFT+LEARN+<*learned script #*>** on the keyboard, where **<*learned script #*>** is the number of the Learned Environment and Learned Script you want to play back. Remember, the Learned Environment/Learned Script numbers can range from 1 through 8, inclusive.

   b. Press **PLAY** or use the **T-BAR** to run each step in a Learned Script. When you use the **T-BAR**, you can manually control any transition in the Learned Script.

MXPro begins replaying the Learned Script and displays and/or records the results to the output device. (If the MXPro Preview screen is not currently visible on the Preview monitor, press **DISPLAY** until it appears.)

You can also use a GPI trigger device to play the steps in a Learned Script. A GPI trigger device works exactly the same as pressing **SHIFT+LEARN**. See "Using a GPI Device" beginning on page 126 for more information.

CAUTION

You cannot edit a Learned Script. The only way to change a Learned Script is to reenter it from the beginning. If you recall a Learned Script and begin entering commands, MXPro OVERWRITES the previous script.

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Other Useful Information

When MXPro comes to the end of a Learned Script, it stops. You can re-initiate the same or any other Learned Script by entering the **SHIFT+LEARN+<*learned script #*>** for the script you want to run.

You can do the following in a Learned Script:

- Perform transitions, including use of Reverse and Speed settings.
- Choose CURRENT and NEXT sources.
- Use the Freeze function.
- Transition audio, video, or both.

You ***cannot*** do the following in a Learned Script:

- Create or transition to Compose screens.
- Use Chroma Key.
- Use the Demo.
- Use PIPs.

MXPro memorizes a manual transition (such as when using the **T-BAR**) as an automatic transition at the currently set speed — that is, it is remembered as if you had used the **PLAY** button rather than the **T-BAR**.

MXPro erases a Learned Script when:

- You turn off MXPro.
- MXPro loses power (such as a power failure).
- You overwrite an existing Learned Script.

Aborting a Playback Session

Once MXPro begins playing back a Learned Script, you can abort the playback session, by pressing **LEARN**.

Once you end playback of a Learned Script, the **PLAY** button and the **T-BAR** act normally, playing the effect indicated on the screen rather than the Learned Script.

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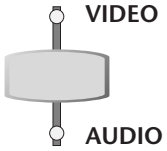
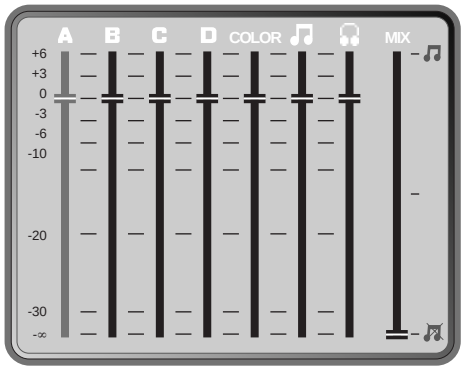
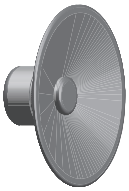
12

Working with Audio







MXPro provides flexible control for audio sources. You can:

- Easily switch between devices.
- Record video **and/or** audio from a device, in any combination.
- Allow or disallow transitions to affect audio.
- Automatically or manually fade the sound between sources.
- and more…

Before using audio sources, make sure they are properly connected to the MXPro. See Chapter 3, *Installing MXPro*, for instructions. You might also have to visit the Route menu to set up the audio devices correctly. See “Route” beginning on page 77 for more information and instructions.

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Audio Devices You Can Use

You can:

- Use *dedicated* audio input sources, such as audio cassette players, compact disc players, and even live microphones. (See "Using a Microphone with MXPro" on page 30 for installation instructions.)
- Use the audio signal coming from *combined* input sources, such as the audio track contained on a video tape.
- Separate the audio signal to record only the audio track from a video tape, laser disk player, and so forth.

Ways You Can Control Audio

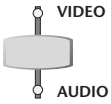
Basically, you can:

- Control the way audio transitions between scenes.
- Mix the audio coming from input sources

Controlling Audio Transitions

You control audio transitions somewhat the same as video transitions. However, MXPro gives you the ability to control audio and video separately. The two components for managing audio transitions are the **VIDEO/AUDIO** selector (on the keyboard) and the top of the Preview screen.

VIDEO/AUDIO Selector



Small lights appear above and below the **VIDEO/AUDIO** selector labeled **VIDEO** and **AUDIO**. The lights tell you whether the next transition will affect the video, the audio, or both. By pressing the **VIDEO/AUDIO** selector you can choose between the following states:

- To have the next transition affect both the video and audio, press **VIDEO/AUDIO** until both lights are on.
- To have the next transition affect only the audio (leaving the video unaffected), press **VIDEO/AUDIO** until only the **AUDIO** light is on.
- To have the next transition affect only the video (leaving the audio unaffected), press **VIDEO/AUDIO** until only the **VIDEO** light is on.

You'll learn more about using the **VIDEO/AUDIO** selector to achieve a sound mix later in this chapter under "Ways to Use Audio".

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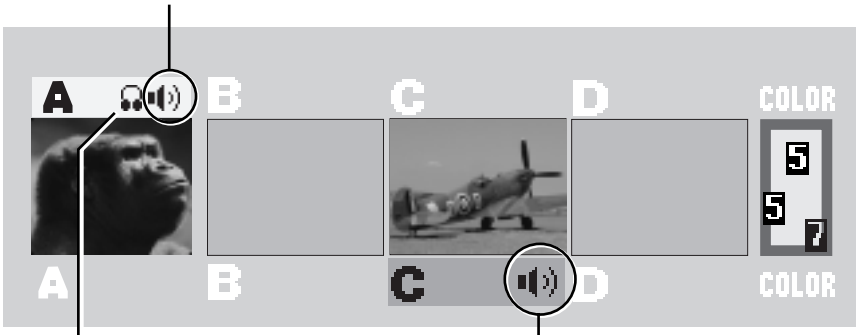
Selecting Audio Sources

Select audio sources the same way you select video sources, using the **CUT** and **NEXT** buttons and the highlights at the top of the Preview screen.



Remember, MXPro highlights the CURRENT video source in yellow (above the Preview window). The speaker icon inside the highlight indicates that the current audio is on channel A. MXPro highlights the NEXT video source in green (below the window). The speaker icon in this location means after you run the next transition, channel C's audio plays through.

In addition, the headphones icon indicates you can monitor this particular audio through the MXPro headphone jack, located on the right side of the unit.

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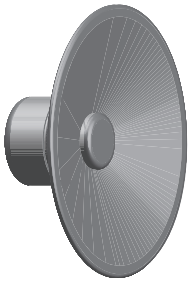
Ways to Use Audio



You can manage audio in several different ways during video transitions. This section explains some of the more useful methods.

Audio Accompanies Video

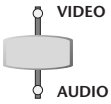
When you transition from one source to another, you might want the *native* audio (that is, the sound recorded on the original media) to transition right along with the video.

Example...

Suppose you want to dissolve from a shot of a car arriving in front of a house, to a shot of the person entering the house through the front door. In this case, you might want to hear the car drive up, then hear the door to the house open.

Procedure

To have audio accompany video and follow the same transition:



1. Set up the CURRENT and NEXT sources, and choose a transition.
2. Press **VIDEO/AUDIO** until both the **VIDEO** and **AUDIO** lights are on.
3. Press **PLAY** or use the **T-BAR** to run the transition.

Both the video and audio transition, together. The audio mixes together — that is, audio from the first video scene fades away gradually as the audio from the next scene fades in and mixes with the original audio.

You can control the duration of the fade by adjusting the speed of the transition. A slow transition fades the sound slowly, whereas a fast transition fades the sound quickly. (See “Changing Transition Speed” on page 58.) If you use a Cut transition, the sound switches abruptly.

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Continuous Audio

Example…

Suppose you taped a musical concert using two cameras. The first camera focuses on the musicians and picks up the audio. The second camera focuses around the audience to get the reactions of different listeners. You want to mix together the footage from both cameras, but have only the audio from the first camera play through all transitions.

Procedure

To use continuous audio:

1. Set up the CURRENT and NEXT sources, and choose a transition.

   Assume the tape from the first camera is on channel A, and the tape from the second on channel B. Press **CUT/A** to make it the CURRENT source, press **NEXT/B** to make it the NEXT source.

2. Press **VIDEO/AUDIO** until only the **VIDEO** light is on.

   This tells MXPro that when the transition runs, only the video changes. For example, press **CUT** to jump from the stage to the audience and the video on channel A continues to play during the transition and into the next scene.

3. Continue pressing **CUT** (or using other transitions) to switch back and forth between the stage and the audience.

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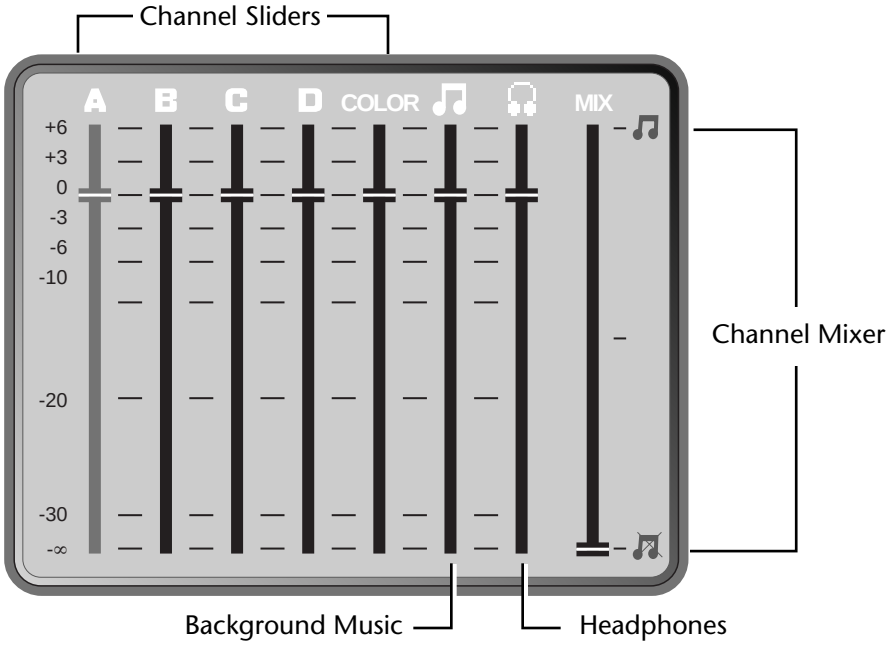
Using the Audio Mixer

MXPro's Audio Mixer provides extensive control over all audio channels. You can, for example, subdue the audio on one channel (such as background music) and pump up the audio on another (such as the narrative).

To access the Audio Mixer, press **AUDIO MIX** in the Functions button group.



Channel Sliders – Control the audio on the four standard MXPro channels — A, B, C, and D. You can also control audio coming through the COLOR channel if you first route the audio through that channel on the ROUTE screen. See "Route" beginning on page 77 for further instructions.

Background Music – This control works in conjunction with Input 4 to provide constant audio from a source (whether it be music, narrative, or whatever). That is, if you connect an audio source to channel D, you can control that source using the Background Music slider.

> If you connect a microphone to MXPro, use the Background Music slider to control microphone volume.

Headphones – Controls the output through the MXPro headphones jack. Note that the headphones monitor only one channel at a time, except during transitions.

Channel Mixer – Controls the mix between the Background Music channel and the channel audio.

Tip

When not using the Background Music feature, set the MIX channel slider all the way to the bottom.

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Audio Mixer Controls

The default settings in the Audio Mixer have all channels at 0 (zero) db. The MIX channel, however, is set at its mid-way point. Channel A is selected, as indicated by its highlighting.

The following tables explain how to operate the Audio Mixer controls from the MXPro keyboard.

Table 13: Selecting Mixer Channels

To...	Use these keys...
Select consecutive channels	**LEFT ARROW** and **RIGHT ARROW**
Select a specific channel	**NEXT/A** **NEXT/B** **NEXT/C** **NEXT/D** **NEXT/COLOR**
Select left-most channel	**SHIFT+LEFT ARROW**
Select right-most channel	**SHIFT+RIGHT ARROW**

Table 14: Adjusting Audio Levels

To...	Use these keys...
Raise level one tick	**UP ARROW**
Lower level one tick	**DOWN ARROW**
Raise level ten ticks	**SHIFT+UP ARROW**
Lower level ten ticks	**SHIFT+DOWN ARROW**
Raise/Lower level arbitrarily	**T-BAR**
Control mix between Background Music and channel audio	**SHIFT+T-BAR**
Restore previous slider positions	**SHIFT+0** (zero)

Using Background Audio

MXPro's **Input 4** has a special feature — you can use it for background music. To control the level of the music, use the Background Music slider in the Audio Mixer. Use the keyboard controls shown in the preceding table to adjust the audio level.

Depending on how you set things up, the CURRENT source transitions to the NEXT source and the background music plays uninterrupted between them. The audio from the CURRENT and NEXT sources normally follows the video transitions — for example, if you set up a dissolve transition, audio from the CURRENT source fades away, then the audio from the NEXT source fades in.

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Using Headphones

You might find headphones helpful for monitoring audio input signals. You can plug a set of headphones directly into the MXPro by connecting them to the Headphone jack located on the right side of the unit, next to the Power switch.

Note

You can use stereophonic headphones, but the audio is always monaural — that is, MXPro mixes the left and right channels together. However, stereo quality is retained when sending the audio to the output device.

Normally, headphones carry only the main sound — that is, the sound coming from the CURRENT input source. You can, however, monitor the sound from the NEXT source without disturbing the audio going to the output device.

Procedure

To monitor the audio on the NEXT source:

- Press **SHIFT+AUDIO MIX**.

  Each time you press **SHIFT+AUDIO MIX** you toggle between the audio on the CURRENT source and that on the NEXT source.

Advanced Audio Setups

If you have an external audio mixer device available, we recommend you use that device to manually control all sound. You can:

- Bypass the MXPro completely and connect the external mixer's output directly to the output's audio input; or,
- Connect the external mixer's output to any MXPro audio input, and permanently set that source as your sound input source. This lets you to use the external mixer when you need flexibility, or use MXPro when you want control of the audio. The latter gives you the ability to do more things, like fading audio automatically while video transitions run.

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13

Advanced Operations

This chapter discusses operations you might not use very often, but are quite helpful when you need them. They include:

- Using Titles with MXPro
- Using Color Bars
- Performing Roll Edits
- Operating in Live Environments
- Security Monitoring
- Using a GPI Device
- Calibrating the **T-BAR**
- Resetting MXPro to Factory Defaults

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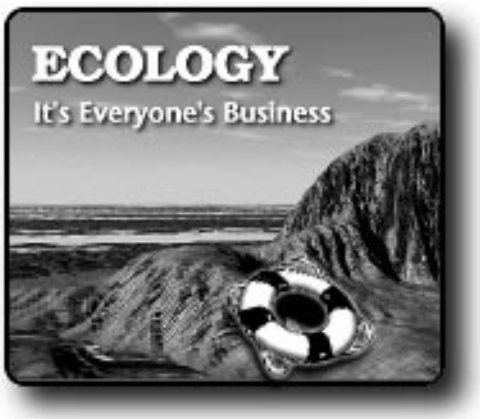
Using Titles

In Chapter 3, *Installing MXPro*, you learned how to install a character generator (**CG**) to use with MXPro (see "Live Broadcast Configuration" on page 26). Using a set up where you connect the CG between the MXPro and the output device (downstream), you can create titles for your productions. Using any of the Videonics TitleMaker products or PowerScript, you can superimpose titles over video and use transitions for sophisticated titling.



With a Videonics TitleMaker or PowerScript you can create high-quality, professional-looking titles for your productions.

Most CG's work in similar ways. Following is an example using a Videonics TitleMaker.

1. Use TitleMaker to create the pages you need for the titles.
2. Insert a blank page between each title page. The page should not contain any characters, its background should be set to video, and its duration should be set to infinite.
3. Press **PLAY** on the TitleMaker and the next title page appears superimposed over the MXPro output.

   At this point, you can run a transition and the title continues to superimpose while the transition runs.

You can also use other TitleMaker features, such as tinted backgrounds, patterns, scroll, and crawl. Because MXPro's TBC (**T**ime **B**ase **C**orrector) creates a stable time base, TitleMaker can lock to it securely to produce an excellent picture.

Using Color Bars

MXPro provides a set of standard color bars built into the unit. You can display the color bars on the Preview monitor.

Procedure

To display the built-in color bars:

1. Press **COMPOSE**. MXPro enters Compose mode, and a flashing rectangle appears.
2. Press **SHIFT+NEXT/COLOR**. A set of color bars appears on the Preview monitor.
3. Press **PLAY** to apply the color bars to Program out.
4. Press **COMPOSE** to remove the color bars and the flashing rectangle.

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Performing Roll Edits

Two types of roll edits are commonly used in video editing — **A/A** rolls, and **A/B** rolls. You can do both types of rolls with MXPro. A/A rolls can be accomplished with relative ease. As you'll learn later in this section, you can also do A/B roll editing with MXPro, although it does require good preparation and manual control of the devices. If you intend to do a lot of A/B roll editing, we recommend you consider a dedicated device, such as a Videonics A/B Roll Editor.

Cutting Between Scenes

Simple cuts between scenes do not require special features. All you have to do is pause the recording VCR at the end of one scene, then release pause when the next scene begins.

A/A Roll Edits

A/A roll edits can be defined as Single-Source editing because all of the original materials come from a single videotape. MXPro offers special features designed specifically for these types of situations.

An easy way to add interest to a single-source transition is to use the A/A roll edit (sometimes called an A/X/A edit). In this situation, the video freezes at the end of one scene, then a dissolve or other effect transitions to the next scene.

Example…

*You are producing a murder mystery. The door opens and the villain sneaks into the room. Slowly he moves toward the camera, then you press **FREEZE** to freeze the killer's menacing glare!*

Next, you pause the recorder and set up MXPro to perform a dissolve. Then you find the next scene and start it playing a bit before the scene starts. There's the victim — it's granny, sitting in a rocking chair with her back to the camera. You start the recorder. It's still recording the frozen picture. At the correct moment you transition from the frozen closeup of the murderer to granny in her chair. As the killer's face dissolves away, granny turns and we discover it's the constable, ready to arrest the scoundrel!

Procedure

To perform a roll edit such as this:

1. Roll the tape and press **FREEZE** at the appropriate moment to freeze the end of the scene.
2. Pause the recording device.
3. Set up the transition you want.
4. Position the source tape just before the next scene and let the scene play.
5. Release pause on the recording device to record more of the frozen picture.
6. At the appropriate moment, run the transition between the frozen picture and the rolling video from the next scene.

This type of A/A roll works best when the recording device has flying-erase heads — a feature that lets the VCR make a clean break when you pause the recording.

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You can perform an A/A roll with an automatic editing system. Press **FREEZE** at the end of one scene and wait for the editing system to start the next scene. While the controller locates the next scene, set up the transition you want. When you see the editor release the recorder from the pause state, press **PLAY** on the MXPro to run the transition.

Limitations on A/A Roll Transitions

Slide transitions, compresses, most zooms, and scaling effects automatically convert to wipes. Other transitions might not produce the impact you want when the frozen picture is similar to the incoming video. Experiment with various transitions to determine which ones produce the results you want.

A/B Roll Edits

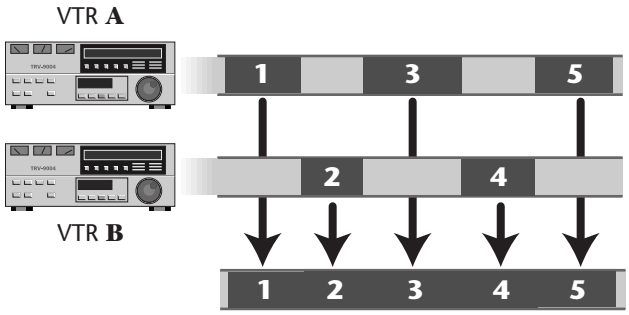
A/B roll editing involves editing scenes from multiple sources. When doing A/B roll edits, you must manually synchronize the sources so that they are timed correctly.

Normally, you record a countdown before each scene so you know when it starts, then back-time the transition accordingly.

Example...

Scene 1 is playing on VCR A. You know it ends soon, so you start VCR B, and pause it at a point 5 seconds before its action starts. When VCR A is 5 seconds from its end, you release VCR B and let it roll. At this point, both VCR A and B are rolling. At the desired moment, you perform the transition from VCR A to VCR B.

Another method of A/B roll editing involves the use of working copies. You copy the original footage to new tapes, placing every other scene on a different tape. The result might look similar to this:



Accurate placement of the scenes (1 through 5 in this example) allow both tapes to roll simultaneously so you can transition between scenes without having to start and stop each VCR at the correct moment in time. When you want to use a transition between scenes, you should overlap them by a couple of seconds to ensure the proper effect.

The advantage to this method is that it makes it easy to get exactly what you want on tape. It has two disadvantages, however — (1) it requires careful preparation and planning, and (2) it requires an extra "generation" in the tapes (that is, productions are a copy of a copy rather than a copy of the original).

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Transitions TO and FROM Solid Colors

You can insert a solid color background between two scenes for impact. For example, scene one dissolves to solid black, holds briefly, then dissolves from black to the next scene.

Procedure

To run this type of transition:

1. Assume your CURRENT source is on Channel A — press **CUT/A** to ensure it is the current one.
2. Select the transition you want to use from the Transitions Menu — in this example, select a slow dissolve.
3. Press **NEXT/COLOR** to activate the Color Selector on the Preview screen.
4. Press **BG COLOR** as many times as necessary to make the background black.
5. Press **PLAY** to run the transition and fade to black.
6. Assume your NEXT source (the one you are transitioning into) is on Channel C — press **NEXT/C** to make that the next source.
7. Select the transition you want to use from the Transitions Menu — again, for this example select a slow dissolve.
8. Press **PLAY** to transition from solid black to Channel C.

Tip

Use a wipe or dissolve to and from a solid colored background to indicate passage in time, a change in mood, or a change in scenery. For example, a red background might indicate anger or frustration; light green might indicate an open forest (tranquility) and dark green a rain forest (somber and cool).

Transitions to Modified Sources

Use MXPro's Input Effects to create a modified version of a source. This lets you transition between the modified and unmodified versions. For the following procedure, assume you want to flip a source image to create a *mirror image*.

Procedure

To run this type of transition:

1. Use MXPro's Route function to make the same source appear on two different channels. For example, route channels A and B to IN 1 on the ROUTE screen. (See "Route" on page 77.)
2. Enter **SHIFT+FLIP** (horizontal) to apply the effect.
3. Select a transition (such as number 6) to run between channels A and B.
4. Press **PLAY** or move the **T-BAR** to run the transition.

Prior to running the transition, the source appears normal. After running the transition, the source appears as a mirror-image of itself.

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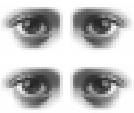
Operating in Live Environments

In most live environments you need the ability to quickly and easily switch between the various live feeds. MXPro serves this need well because you can view the four input sources on the Preview screen and easily run transitions from the CURRENT to the NEXT feed simply by pressing **PLAY** or moving the **T-BAR**.

Security Monitoring



MXPro also serves well for monitoring security cameras. For example, you might set up four different cameras and train them on areas that require security coverage. The Preview screen shows small images from each camera. Switch to FULL Preview (**SHIFT+3**) to see larger previews from all cameras. When you want to see a full screen image of a specific area, simply press the **CUT** button for that camera.

Using a GPI Device

You can connect a GPI (**G**eneral **P**urpose **I**nterface) device to MXPro. The GPI device can trigger an event from an external source, such as a push-button switch or an edit controller with GPI output. A GPI device is especially useful when you are positioned some distance away from MXPro but still want to be able to control its operation.

A GPI pulse causes MXPro to behave exactly as if the play button were pressed. Normally, it starts a transition you previously set up. If you have created a Learned sequence (see Chapter 11, *Learn Mode*), it triggers the next event in the sequence.

An edit controller or computer that provides a contact closure can also serve as a GPI triggering device.

WARNING!

Do not connect a power source of any kind to the Control GPI input connector on the MXPro. Doing so can damage the equipment and void your warranty.

You can use a remote push-button device to trigger events on MXPro. If you already have a GPI device you want to use, refer to “Live Broadcast Configuration” on page 26 to learn how to connect the device. If you do not have a GPI device but would like to build one, refer to the instructions in the next section.

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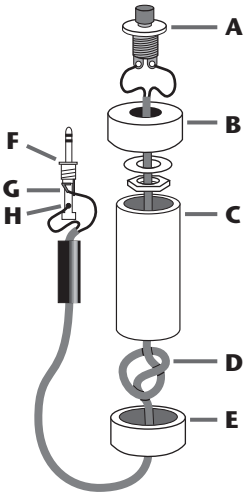
Instructions for Building a GPI Trigger

This section contains a diagram of the GPI Trigger Button you can build and all associated instructions.

Required Tools and Parts

Soldering Iron and Solder
Wire Cutters
Electric Drill



Parts Required

A "normally open momentary push-button switch" (**A**).

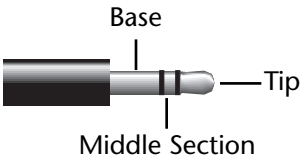
One four-inch piece of 3/4-inch PVC pipe (**C**) and two end caps (**B** and **E**).

3-conductor, 22-24 gauge stranded wire cable (**D**).

A stereo 3.5-mm mini-pin plug (**F**)

Instructions

1. Drill a 1/4-inch hole in the center of one PVC end cap (**E**) and a hole to match the push-button switch in the other end cap (**B**).
2. Feed one end of the cable through the end cap with the 1/4-inch hole (**E**) and strip the end of each wire.
3. Tie a single knot (**D**) about 8 inches from the end of the wire.
4. Slide the wire through the PVC pipe, the nut and washer, and the other end cap (**B**).
5. Solder the two wires at the knotted end to the two poles on the switch (**A**).
6. Slip the switch into the end cap and secure it using the nut and washer.
7. Solder the other ends of the cable to the plug (**F**).
8. Connect to the tip (**G**) and the base (**H**) of the plug. Don't connect anything to the middle section of the plug.



9. Push the end caps in place.
10. After you've tested the unit, you can cement the end caps (**A** and **E**) into place, if you want.
11. Solder the wires of the other end of the cord to the poles from the tip and base of the stereo mini-pin plug (**F**). If you aren't sure which poles are which, ask at the store when you make the purchase.
12. Plug your new remote trigger plug into the GPI jack on the MXPro rear panel.

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Using a GPI Trigger Device

If your edit controller is automatic and has GPI trigger, you can trigger each page in a project with the controller. You might need a special cable to connect the GPI jacks from the GPI device to MXPro.

WARNING!

Always turn off power before plugging into any GPI jack.

The following instructions explain how to automatically trigger events using the device described above. Instructions for other devices should be similar, but you should check the device instructions beforehand.

Procedure

To use a GPI device as a trigger:

1. Connect the GPI device to MXPro using an appropriate cable.
2. Press the GPI trigger button when you want to trigger an event. You can trigger events between scenes or anywhere in the middle of a scene. You can also trigger each event in a Learned Script (see "Learned Scripts" beginning on page 109).

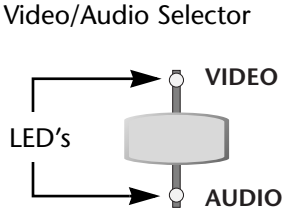
Calibrating the T-BAR

If you suspect that the **T-BAR** is not functioning properly, it might need re-calibration. A symptom of an incorrectly calibrated **T-BAR** might be that transitions do not run correctly from start-to-finish in each direction.

Procedure

To re-calibrate the T-BAR:

1. Turn MXPro off.
2. Press and hold **SHIFT+INPUT EFFECTS** while turning the unit back on.
3. When the LED light above **INPUT EFFECTS** comes on, release **SHIFT** and **INPUT EFFECTS**.
4. Move the **T-BAR** near the top of its slot, then press the **UP ARROW** key. The Video LED (above the **VIDEO/AUDIO** selector) lights up.



Do not push the **T-BAR** hard against the top or bottom of its slot during calibration. This over-calibrates the **T-BAR** and might prevent transitions from executing properly.

5. Move the **T-BAR** near the bottom of its slot, then press the **DOWN ARROW** key. The Audio LED (below the **VIDEO/AUDIO** selector) lights up.
6. Press **OK**.

All LED's on the unit go out and MXPro automatically re-initializes itself. The **T-BAR** is now properly calibrated.

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Resetting MXPro Factory Defaults

When you first power up MXPro, it operates using settings defined by Videonics. As you go about using MXPro and changing its various settings, the unit stores your settings in its memory (called NVRAM). You can reset all settings to their factory defaults.

Procedure

To reset MXPro to its factory defaults:

1. Power down the unit (using the Power switch).
2. Press down and hold the **SHIFT** and **SETUP** buttons.
3. Turn on MXPro's Power switch.
4. After the unit powers up and you see the Preview screen, release all buttons.

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Notes

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A

Transitions List

This appendix shows the icons assigned to each MXPro transition, and identifies them by number.

Some transition descriptions use special terms and abbreviations to describe how the transitions work.

(A) — The CURRENT source: the one on the screen before the transition begins.

(B) — The NEXT source: the one on the screen after the transition finishes.

Dissolve — One image fades away as another fades in.

Wipe — A simple window or boundary that reveals the underlying video. The video image neither moves nor changes size.

Slide — Leaves the video full size but the picture moves with the transition.

Comp, Exp — (Compress, Expand) The video resizes to fit the window. Normally, the entire picture scales to fill the window.

H, V — (Horizontal, Vertical) These refer to the direction in which the transition moves. For example, a V wipe is a horizontal line that moves vertically up or down the screen. When the effect runs in the forward (non-reversed) direction, vertical transitions move down the screen and horizontal transitions move from left to right, unless otherwise indicated.

CW, CCW — ClockWise and CounterClockWise movement.

L, R, Ctr, T, B — Left, Right, Center, Top, and Bottom, respectively.

TLC, TRC — Top Left Corner and Top Right Corner, respectively.

BLC, BRC — Bottom Left Corner and Bottom Right Corner, respectively.

"**;**" — Divides multi-step transitions. "/" indicates two actions that occur simultaneously.

***** — The transition always uses a fixed direction when performed from frozen picture. They are not affected by the **REVERSE** button.

— The transition operates differently when performed from a frozen picture. Simpler effects are substituted automatically.

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Basic Transitions

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The Basic Transitions category contains transitions numbered from 0 through 239. The category contains a wide assortment of effects.

Transitions 0 through 29 serve as the default assortment in the Transitions Menu. When you turn the unit on for the first time, these transitions appear in the menu. They provide a unique assortment of transitions suitable for many purposes.

In the following table, transitions marked with * (asterisk) always use fixed direction when performed from a frozen picture. They are not affected by the **REVERSE** button. Transitions marked with # (pound sign) operate differently when performed from a frozen picture. Simpler effects are automatically substituted.

Table 15: Descriptions of Basic Transitions

#	Description	#	Description
Default Transition Assortment			
0	Cut	15#	H Comp. (A) alongside (B) in motion; Exp. (B)
1	Dissolve	16	Comp. (A) to 1/2; roll R to (B); Exp
2	H Wipe	17	Slide in slice (B) from L at T; Wipe slice to full
3	V Wipe	18	V Comp. (A) to Ctr slice; H collapse slice to Ctr point
4	H Curtain Wipe (B) from Ctr to full	19	Butterfly from T L/random proportion
5	V Curtain Exp. (B) from Ctr to full	20	Ctr Exp. (B) with 2 flips
6	H Slide (A)/Exp. (B)	21	Ctr Comp. (A); swing back; out B
7	H Slide (A)/Slide (B)	22	Bounce off edges/Wipe
8	V Comp. (A)/Exp. (B)	23	Bounce in from T
9	V Slide (A)/Slide (B)	24*	Comp. (A) to T; CW spiral out to T
10#	H Slide (A) out L; Slide (B) in from L	25*	Comp. (A); CW spiral to Ctr
11*	H Comp. (A) R to 1/2 screen slice; Slide to L; slide under Ctr line	26#	Mosaic Zoom
12	Ctr Exp. (B)	27	Random Sizes & Flips (B)
13	Ctr Exp. & Dissolve (B)	28	Luminance Key 1
14#	Comp. (A) to lower R of (B); Exp. (B)	29	Checkerboard w/middle dissolve
Other Basic Transitions			
30	H Wipe	136	Diagonal Exp. (B) from TRC/Slide (A) to BLC
31*	H Comp. (A)/Wipe (B)	137	Diag. Slide (B) from TRC/Comp. (A) to BLC
32*	H Slide (A)/Wipe (B)	138*	Diagonal Comp. & Dissolve (A) to TRC
33	H Wipe (A)/Exp. (B)	139*	Diagonal Slide & Dissolve (A) to TRC
34	H Comp. (A)/Exp. (B)	140	Diagonal Wipe (B) from BLC
35	H Slide (A)/Exp. (B)	141	Diagonal Exp. (B) from BLC
36	H Wipe (A)/Slide (B)	142	Diagonal Comp. (B) to BLC; Exp.
37	H Comp. (A)/Slide (B)	143	Diag. Exp. (B) from BLC/Comp. (A) to TRC
38	H Slide (A)/Slide (B)	144	143, with overlap
39	H Picture Roll	145	Diagonal Slide (B) from BLC/Slide (A) to TRC
40	H Curtain Wipe (B) from Ctr to full	146	Diagonal Exp. (B) from BLC/Slide (A) to TRC
41	H Curtain Exp. (B) from Ctr to full	147	Diag. Slide (B) from BLC/Comp. (A) to TRC
42	H Wipe (B) from L Ctr	148*	Diagonal Comp. & Dissolve (A) to BLC
43	H Exp. (B) from L Ctr	149*	Diagonal Slide & Dissolve (A) to BLC

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Table 15: Descriptions of Basic Transitions (Continued)

#	Description	#	Description
44	H Exp. (B) from L Ctr/Comp. (A) to R Ctr		
45	H Exp. (B) from L Ctr/Slide (A) to R	150	Diagonal Wipe (B) from BRC
46	H Wipe (B) from R Ctr	151	Diagonal Exp. (B) from BRC
47	H Exp. (B) from R Ctr	152	Diagonal Comp. (B) to BRC; Exp.
48	H Exp. (B) from R Ctr/Comp. (A) to L Ctr	153	Diag. Exp. (B) from BRC/Comp. (A) to TLC
49	H Exp. (B) from R Ctr/Slide (A) to L	154	153 with overlap
50	H Slide & Wipe (B) from R Ctr/Slide (A) to L	155	Diagonal Slide (B) from BRC/Slide (A) to TLC
51	H Slide & Wipe (B) from L Ctr/Slide (A) to R	156	Diag. Slide (B) from BRC/Comp. (A) to TLC
52	H Slide (B) from L/Comp. (A) to R Ctr	157	Diagonal Exp. (B) from BRC/Slide (A) to TLC
53	H Slide (B) from R/Comp. (A) to L Ctr	158*	Diagonal Comp. & Dissolve (A) to BRC
54#	H Comp. (A) to Ctr line; Exp. (B) from line	159*	Diagonal Slide & Dissolve (A) to BRC
55#	H Comp. (A) to Ctr line; Exp. (B) from line	160	Dissolve
56#	H Slide (A) out L edge; Slide (B) in from edge	161	Ctr Exp. & Dissolve (B)
57	H Slide (A) out R edge; Slide (B) in from edge	162	Exp. & Dissolve (B) from R Ctr
58#	H Comp. (A) to L edge; Exp. (B) from edge	163	Exp. & Dissolve (B) from L Ctr
59	H Comp. (A) to R edge; Exp. (B) from edge	164	Exp. & Dissolve (B) from T Ctr
60	H Wipe 1/4 slice (B); H Wipe 1/2 slice (B); H wipe (B) to R	165	Exp. & Dissolve (B) from B Ctr
61	H Wipe 1/2 slice (B); V Wipe 1/2 slice (B); H wipe (B) to R	166	Diagonal Exp. & Dissolve (B) from TRC
62*	H Comp. (A) L to 1/2 screen slice; Slide slice R	167	Diagonal Exp. & Dissolve (B) from TLC
63*	H Comp. (A) L to 1/2 screen slice; Slide to R; slide under Ctr line	168	Diagonal Exp. & Dissolve (B) from BRC
64*	H Comp. (A) L to 1/2 screen slice; Slide to R; Comp. to Ctr line	169	Diagonal Exp. & Dissolve (B) from BLC
65*	H Comp. (A) R to 1/2 screen slice; Slide to L	170	Ctr Wipe
66*	H Comp. (A) R to 1/2 screen slice; Slide to L; slide under Ctr line	171	Ctr Exp. (B)
67*	H Comp. (A) R to 1/2 screen slice; Slide to L; Comp. to Ctr line	172	Ctr Wipe (B) with Slide from L
68	H Comp. line to L edge; Exp. to full screen	173	Ctr Wipe (B) with Slide from R
69	H Comp. line to R edge; Exp. to full screen	174	Ctr Wipe (B) with Slide from B
70	V Wipe	175	Ctr Wipe (B) with Slide from T
71*	V Comp. (A)/Wipe (B)	176	Ctr Wipe (B) with Slide from B L
72*	V Slide (A)/Wipe (B)	177	Ctr Wipe (B) with Slide from B R
73	V Wipe (A)/Exp. (B)	178	Ctr Wipe (B) with Slide from T L
74	V Comp. (A)/Exp. (B)	179	Ctr Wipe (B) with Slide from T R
75	V Slide (A)/Exp. (B)	180	Comp. (A) to 1/2; roll R to (B); Exp.
76	V Wipe (A)/Slide (B)	181	Comp. (A) to 1/2; slide R to (B); Exp.

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Table 15: Descriptions of Basic Transitions (Continued)

#	Description	#	Description
77	V Comp. (A)/Slide (B)	182	Comp. (A) to 1/2; roll down to (B); Exp.
78	V Slide (A)/Slide (B)	183	Comp. (A) to 1/2; slide down to (B); Exp.
79	V Picture Roll	184#	H Comp. (A) alongside (B) in motion; Exp. (B)
80	V Curtain Wipe (B) from Ctr to full	185#	H Comp. (A) alongside (B); shuffle; Exp. (B)
81	V Curtain Exp. (B) from Ctr to full	186#	V Comp. (A) above (B) in motion; Exp. (B)
82	V Wipe (B) from T Ctr	187#	V Comp. (A) above (B); shuffle; Exp. (B)
83	V Exp. (B) from T Ctr	188#	Comp. (A) to lower R of (B); Exp. (B)
84	V Exp. (B) from T Ctr/Comp. (A) to B Ctr	189#	Comp. (A) to lower L of (B); Exp. (B)
85	V Exp. (B) from T Ctr/Slide (A) to B	190	Bounce in from T
86	V Wipe (B) from B Ctr	191	Overshoot from T
87	V Exp. (B) from B Ctr	192	Bounce in from T with hammer effect on (A)
88	V Exp. (B) from B Ctr/Comp. (A) to T Ctr	193	Bounce off edges/Wipe
89	V Exp. (B) from B Ctr/Slide (A) to T	194	Bounce off edges/Exp.
90	V Slide & Wipe (B) from B Ctr/Slide (A) to T	195	Perimeter Slide/Exp.
91	V Slide & Wipe (B) from T Ctr/Slide (A) to B	196*	Ctr Wipe (A) to 1/16 screen; CW spiral reveal
92	V Slide (B) from T/Comp. (A) to B Ctr	197*	Ctr Wipe (A) to 1/16 screen; CCW spiral reveal
93	V Slide (B) from B/Comp. (A) to T Ctr	198*	Ctr Wipe (A) to 1/8 screen; CW spiral reveal
94	V Comp. (A) to Ctr line;Exp. (B) from line	199*	Ctr Wipe (A) to 1/8 screen; CCW spiral reveal
95	V Comp. (A) to Ctr line;H Exp. (B) from line	200*	Comp. (A) to T; CW spiral out to T
96	V Slide (A) out T edge; Slide (B) in from T	201*	Comp. (A) to T; CCW spiral out to T
97	V Slide (A) out B edge; Slide (B) in from B	202*	Comp. (A) to B; CW spiral out to B
98	V Comp. (A) to T edge; Exp. (B) from edge	203*	Comp. (A) to B; CCW spiral out to B
99	V Comp. (A) to B edge; Exp. (B) from edge	204*	Comp. (A) to L; CW spiral out to L
100	V Wipe 1/4 slice (B); V Wipe 1/2 slice (B); V wipe (B) to B	205*	Comp. (A) to L; CCW spiral out to L
101	V Wipe 1/2 slice (B); H Wipe 1/2 slice (B); V wipe (B) to B	206*	Comp. (A) to R; CW spiral out to R
102*	V Comp. (A) T to 1/2 screen slice; Slide slice to B	207*	Comp. (A) to R; CCW spiral out to R
103*	V Comp. (A) T to 1/2 screen slice; Slide to B; slide under Ctr line	208*	Comp. (A); CW spiral to Ctr
104*	V Comp. (A) T to 1/2 screen slice; Slide to B; Comp. to Ctr line	209*	Comp. (A); CCW spiral to Ctr
105*	V Comp. (A) B to 1/2 screen slice; Slide to T	210	Ctr Exp. (B) with 2 flips
106*	V Comp. (A) B to 1/2 screen slice; Slide to T; slide under Ctr line	211	Ctr Exp. (B) with 4 flips
107*	V Comp. (A) B to 1/2 screen slice; Slide to T; Comp. to Ctr line	212	Butterfly from T L/random proportion
108	V Comp. line to T edge; Exp. to full screen	213	Butterfly from T R/random proportion

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Table 15: Descriptions of Basic Transitions (Continued)

#	Description	#	Description
109	V Comp. line to B edge; Exp. to full screen	214	Fly-in from T L/fixed proportion
110	Slide in slice (B) from L Ctr; Wipe slice to full	215	Fly-in from T R/fixed proportion
111	Comp. in slice (B) from L Ctr; Exp. to full	216	Random Sizes & Flips (B); fills screen at end
112	Slide in slice (B) from R Ctr; Wipe slice to full	217	Random Wipes (B); Ctr wipe to full screen
113	Comp. in slice (B) from R Ctr; Exp. to full	218	H Cube Roll
114	Slide in slice (B) from L at T; Wipe slice to full	219	V Cube Roll
115	Comp. in slice (B) from L at T; Exp. to full	220	Zoom in on (A); zoom away from (B)
116	Slide in slice (B) from L at B; Wipe slice to full	221#	Mosaic Zoom
117	Comp. in slice (B) from L at B; Exp. to full	222	Ctr Comp. (A); swing back; out B
118	Slide in Ctr slice (B) from T; Wipe slice to full	223	Ctr Comp. (A); swing back; out T
119	Slide in Ctr slice (B) from B; Wipe slice to full	224#	Ctr Comp. (A);Ctr Exp. (B)
120	Diagonal Wipe (B) from TLC	225#	Ctr Comp. & Dissolve (A);Ctr Exp. & Dissolve (B)
121	Diagonal Exp. (B) from TLC	226	H Comp. (A) to Ctr slice; V Comp. slice to Ctr.
122	Diagonal Comp. (B) to TLC; Exp.	227	V Comp. (A) to Ctr slice; H Comp. slice to Ctr.
123	Diag. Exp. (B) from TLC/Comp. (A) to BRC	228	H Comp. (A) to Ctr slice; collapse to Ctr; Exp.
124	123 with overlap	229	Multi-direction Cube roll
125	Diag. Slide (B) from TLC/Slide (A) to BRC	230	H variable stripes
126	Diagonal Exp. (B) from TLC/Slide (A) to BRC	231	V variable stripes
127	Diag. Slide (B) from TLC/Comp. (A) to BRC	232	H stripe-wipe
128*	Diagonal Comp. & Dissolve (A) to TLC	233	V stripe-wipe
129*	Diagonal Slide & Dissolve (A) to TLC	234	Checkerboard w/middle dissolve
130	Diagonal Wipe (B) from TRC	235	Checkerboard w/start to finish dissolve
131	Diagonal Exp. (B) from TRC	236	Checkerboard w/shrinking checkers
132	Diagonal Comp. (B) to TRC; Exp.	237	Luminance Key 1
133	Diag. Exp. (B) from TRC/Comp. (A) to BLC	238	Luminance Key 2
134	133 with overlap	239	(A) wanders out
135	Diagonal Slide (B) from TRC/Slide (A) to BLC		

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Edge Transitions

Edge transitions move a border across the screen between the outgoing and incoming images. Edge transitions group into sets of six. For example, transitions 300 through 305 perform the same type of effect, but using six different edges: transitions 306 through 311 perform the same type of effect, but using the same six edges as the preceding group: and so forth.

Table 16: Edge Transitions

Horizontal Wipes											
300		301		302		303		304		305	
Horizontal Compress (A)/Wipe (B) *											
306		307		308		309		310		311	
Horizontal Slide (A)/Wipe (B) *											
312		313		314		315		316		317	
Horizontal Wipe (A)/Expand (B)											
318		319		320		321		322		323	
Horizontal Compress (A)/Expand (B)											
324		325		326		327		328		329	
Horizontal Slide (A)/Expand (B)											
330		331		332		333		334		335	
Horizontal Wipe (A)/Slide (B)											
336		337		338		339		340		341	
Horizontal Compress (A)/Slide (B)											
342		343		344		345		346		347	
Horizontal Slide (A)/Slide (B)											
348		349		350		351		352		353	

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Trailing Transitions

Trailing transitions leave duplicate versions of the image in their wake as they traverse the screen.

Table 17: Trailing Transitions

No.	Icon	Description	No.	Icon	Description
400		Rectangle bounces off bottom of screen	415		A circles in from TLC
401		B bounces off bottom of screen	416		A circles in from TRC
402		Rectangle bounces off bottom of screen	417		A circles in from BRC
403		B bounces off bottom of screen	418		A twirls in from edges
404		Rectangle around screen perimeter	419		A twirls in from edges
405		Rectangle around screen perimeter	420		Rectangle circles in from TLC
406		Rectangle circles in from L middle	421		Rectangle circles out from center
407		Rectangle circles in from R middle	422		Rectangle circles out from center
408		Rectangle circles in from L middle	423		Rectangle circles out from center
409		Rectangle circles in from R middle	424		A circles out from center
410		A circles in from L middle	425		A circles out from center
411		A circles in from R middle	426		Rectangle bounces off screen edges
412		A circles in from R middle	427		Rectangle circles screen perimeter
413		A circles in from L middle	428		A twirls away to BRC
414		A circles in from BLC	429		A twirls away to BLC

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Shape Transitions

Shape transitions use various geometric and custom shapes (stars, hearts, and so forth) to transition from one image to the next.

Table 18: Shape Transitions

Slide in slice (B) from R Ctr; Wipe slice to full											
500		501		502		503		504	
505		506		507		508			
Slide in Ctr slice (B) from T; Wipe slice to full											
509		510		511		512		513	
514		515		516		517			
Diagonal Slide Dissolve (A) to TRC *											
518		519		520		521		522	
523		524		525		526			
Diagonal Wipe (B) from BLC											
527		528		529		530		531	
532		533		534		535			
Ctr Expand Dissolve (B)											
536		537		538		539		540	
541		542		543		544			
Diagonal Expand Dissolve (B) from BLC											
545		546		547		548		549	
550		551		552		553			

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Table 18: Shape Transitions (Continued)

Ctr Wipe									
554		555		556		557		558	
559		560		561		562			
Ctr Wipe (B) witHorizontal Slide from T									
563		564		565		566		567	
568		569		570		571			
Bounce off edges/Wipe									
572		573		574		575		576	
577		578		579		580			
Ctr Wipe (A) to 1/16 screen; CCW spiral reveal *									
581		582		583		584		585	
586		587		588		589			
Random Sizes Flips (B); fills screen at end									
590		591		592		593		594	
595		596		597		598			
Random Wipes (B); Ctr wipe to full screen									
599		600		601		602		603	
604		605		606		607			
(A) wanders out									
608		609		610		611		612	
613		614		615		616			

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Table 18: Shape Transitions (Continued)

Horizontal Curtain Expand (B) from Ctr to full											
617		618		619		620		621	
622		623		624		625			
Horizontal Compress (A) to Ctr line; Expand (B) from line											
626		627		628		629		630	
631		632		633		634			
Horizontal Compress (A) L to 1/2 screen slice; Slide slice R *											
635		636		637		638		639	
640		641		642		643			
Horizontal Compress (A) L to 1/2 screen slice; Slide to R; slide under Ctr line *											
644		645		646		647		648	
649		650		651		652			
Horizontal Compress (A) R to 1/2 screen slice; Slide to L; Compress to Ctr line *											
653		654		655		656		657	
658		659		660		661			
Horizontal Compress line to L edge; Expand to full screen ??											
662		663		664		665		666	
667		668		669		670			
Horizontal wipe											
671		672		673		674		675	
676		677		678		679			

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Table 18: Shape Transitions (Continued)

Horizontal Compress (A)/Wipe (B) *											
680		681		682		683		684			
685		686		687		688					
Horizontal Wipe (A)/Expand (B)											
689		690		691		692		693			
694		695		696		697					
Horizontal Compress (A) to L edge; Expand (B) from edge											
698		699		700		701		702			
703		704		705		706					

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Default User Transitions

The User Transitions category contains a default set of transitions compiled from the other categories. You can tailor the User category to your particular needs — see "Changing User Transitions Menu" beginning on page 54.

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B

Time Base Corrector

The MXPro contains a **T**ime **B**ase **C**orrector (TBC) that ensures top quality results in your productions. The TBC operates automatically at all times. You don't have to do anything special to use the feature.

TBC compensates for image "shifting" and "wavering" that occurs with many VCR's, camcorders, and other video devices. It modifies the video signal so that all elements in the picture — lines, fields, frames, and individual dots (or, pixels) — appear on the OUTPUT screen exactly where they should. This improves video signal quality significantly.

Dual TBC Mode

You can use the MXPro TBC as a dedicated, two-channel device to induce time base correction on two separate channels. Set up your equipment as follows:

1. Set up the video devices normally — that is, make one the CURRENT source and make another the NEXT source.
2. Press **DISPLAY** so that the Preview screen shows the NEXT source. (See "Display" beginning on page 73 for instructions.)

The CURRENT source appears on the Output monitor. So the two sources each appear on separate monitors, and both have the benefit of time base correction.

While operating in Dual TBC Mode, MXPro can perform cut transitions as it normally does. Use the **CUT** buttons to change the CURRENT source — the one displayed on the Output screen. Use the **NEXT** buttons to choose the NEXT source — which appears on the Preview screen.

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Vertical Interval Data

Time code, closed captioning, and other data in the vertical interval should be added after mixing (downstream from MXPro). This is necessary because dissolves and other transitions mix the data signals, making them unreadable. The MXPro might remove vertical interval data from the sources, depending on how data has been added and the accuracy of a source's time base.

TBC Technical Information

The following information might be useful to video technicians.

- MXPro's TBC has no control options. MXPro always applies TBC to the entire signal, including the horizontal and vertical intervals.
- MXPro provides a dual-field TBC to correct two sources at the same time. Because all transitions and effects use only two of the four sources at any given time, the dual field TBC can correct the time base of the entire output signal, transitions and all.
- The output sync of the TBC is independent of all inputs. There is no way to synchronize it with an external sync or with any of the inputs.

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C

Video Quality

MXPro meets the highest video quality standards. However, video artifacts can appear in video productions, especially when you use sophisticated effects and transitions. This appendix describes some of the video artifacts that can occur.

Note

The situations and artifacts discussed in this appendix normally apply to advanced video concepts. They might, therefore, be of interest only to a selected audience.

Preview Image Quality

Images appearing on the MXPro Preview screen do not represent MXPro's true quality because they serve only as a representation of the images. Furthermore, the images do not show input effects or the results of advanced setup options. Depending on the type of devices attached, you might occasionally see lines along the sides of the preview images. This is especially noticeable when using cue or review (search) with a VCR or camcorder attached to an input jack, using poor quality video tapes, experiencing bad reception, and so forth. In such cases, you might be able to improve video quality using one or more of the following methods:

- Use only high-quality video sources.
- When using a camcorder or VCR with an Edit switch, turn the switch On to disable playback processing circuits.
- Turn Off any sharpness controls and enhancement circuits.

Preview image quality does not affect video output quality.

You can switch to a full-size, full frame-rate version of the NEXT or CURRENT source at any time using the **DISPLAY** button. See "Display" beginning on page 73 to learn about all of the display options.

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Video Scaling Artifacts

Reducing a video image's size can create artifacts because some picture information must be discarded to reduce the number of pixels in the image. In some cases, picture information might disappear when eliminating pixels. For example, lines in the image might appear jagged when MXPro removes pixels and, therefore, parts of the line.

Some MXPro transitions scale an image down gradually. This might cause small features to appear and disappear as the image scales down.

The artifacts described here are normal when performing advanced effects. They are normally minor when running transitions at normal speeds.

Freeze Quality

You can set MXPro to freeze either a frame or a field (see "Force Field Freeze" on page 76).

Freeze Field captures one field (half a video frame) and duplicates it to make the two fields that comprise a frame. This eliminates flashing caused when an object occupies a different position in the two captured fields, or when an object is so small it appear in only one field. MXPro's Field Freeze eliminates flashing artifacts but reduces vertical resolution because it shows only one field.

Freeze Frame captures all fields in the image. This produces a higher quality image, but some flashing might occur.

Upside-Down Video

When you flip video upside-down (as occurs automatically with some transitions and when using the Flip (vertical) option on the **INPUT EFFECTS** menu), the picture resolution reduces slightly and the frame rate also reduces to make the video image more stable. The reduction is subtle with most video and most effects, especially those that move quickly.

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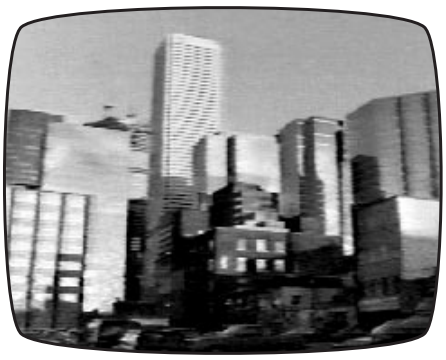
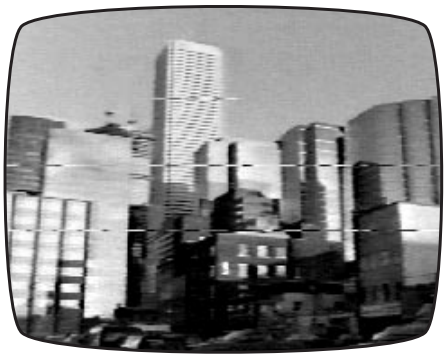
Video Processing Artifacts

Video processing circuits (such as enhancers, sharpness controls, and the playback circuitry in some VCR's) can *over-process* the video. This might cause the video signal to interfere with the invisible sync portion of the signal, thus making the signal non-standard. Video lines might shift to the right, black lines might enter the picture area from the left edge of the screen, white flashes might appear, the video image might be shredded, or you might see video tearing.



Normal Picture



Picture with Video Tearing

When these types of artifacts occur, reduce or remove the processing to bring the signal back to normal. VCR's and camcorders often have controls that can disable extra processing. If your VCR or camcorder has a Sharpness control, set it to zero or turn it off. If the device has an Edit switch, turn it on.

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D

Technical Specifications

MXPro is a four-input video production switcher, mixer, frame synchronizer/TBC (Time Base Corrector), Manual Color Corrector, and special effects generator.

Table 19: MXPro Technical Specifications

GENERAL	
Power Supply	External in-line; 110VAC@60Hz/220VAC@50 Hz universal
	CE/FCC/UL/CSA Approved (Non-US/Canada versions meet local regulatory standards)
Dimensions	16.6” x 9.5” x 3” 422mm x 241mm x 76mm
Weight	4 lbs. (1.8 kg)
Ambient Temperature	32-104°F 0-40°C
Ambient Humidity	Less than 90%
INPUTS	
Video	4 x S-video (Y/C): Y=1 Vp-p, C=0.30 Vp-p, 75-ohm, 4-pin mini-DIN connectors 4 x composite: 1.0 Vp-p 75-ohm, RCA connectors
Audio	8 x RCA connectors, 15 k ohms
GPI	Mini-jack
OUTPUTS	
Video (PREVIEW & MAIN)	1.0 Vp-p, 75 ohm, PREVIEW=1x RCA; MAIN=2x RCA Connectors 2x S-Video (MAIN): Y=1.0 Vp-p, C=0.3 Vp-p; 75 ohm, 4-pin mini-DIN connector
Audio (L and R)	1 k ohms, RCA connectors
Headphone	Stereo jack, 8-100 ohms, mono signal

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Table 19: MXPro Technical Specifications (Continued)

EFFECTS	
Video	501 Transitions
Input Effects	Strobe, Mosaic, Flips, and Posterize
Special Effects	Chroma Key and Compose
Audio	Mix, Fade, Background
COLOR GENERATORS	
	2 (Background and Border)
	Millions of Colors
VIDEO PERFORMANCE	
	Meets long-haul video broadcast specs including CCIR-601 sampling and RS-170A
Digital Conversion	13.5 MHz, 4:2:2, 10-bit quantization (Y/C); 8-bit quantization (composite)
Time Base	Meets RS-170A standard
Compatibility	Compatible with all NTSC video sources and tape formats (PAL version available)
Gain	Unity
S/N Ratio	Greater than 60 dB (Y/C); Greater than 56dB (composite)
Horizontal Resolution	480 TV Lines
AUDIO PERFORMANCE	
Frequency Response	20 Hz-20 kHz, ± 3 dB
S/N Ratio	80 dB
	Controls and Connectors

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E

Information for MX-1 Users

This appendix helps Videonics MX-1 users make an easy transition to MXPro. It highlights key operational commands from the MX-1 that have changed with MXPro.

MXPro offers many new features and expands the capability of some MX-1 operations. You won't be able to enjoy the full benefits of the new features without reading the other chapters in this User Guide.

MXPro Defaults to S-Video on All 4 Channels

If you use one or more Composite-type devices as input, you need to change the settings for those devices on the ROUTE screen. See "Route" beginning on page 77 for instructions.

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Setup Mode Differences.

MX-1 Setup functions can be found on the MXPro ROUTE screen.

MXPro Setup contains most of the functions found in MX-1 Advanced Setup, with the following changes and additions:

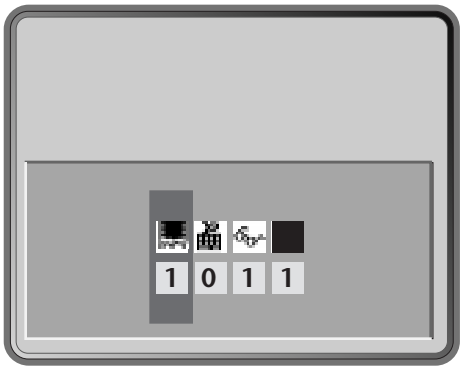
GPI Mode Added – See "GPI Out Mode" on page 76 and "Using a GPI Device" on page 126 for further information.

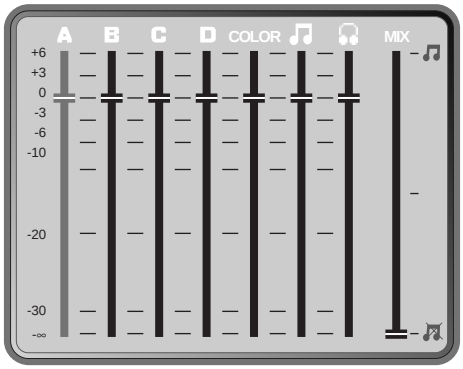
Comb Filter Added – See "Comb Filter" on page 76.

Frame/Field Freeze Added – See "Force Field Freeze" on page 76 and "Freeze" on page 83.

Frame Rate Lock and **Noise Filter** Removed

Headphone Control Moved – Controls for adjusting headphones are now found on the Audio Mix screen. See "Using the Audio Mixer" on page 118 and "Using Headphones" on page 120.





MXPro Contains NVRAM.

MXPro uses NVRAM (**N**on-**V**olatile **R**andom **A**ccess **M**emory) to store many different settings while the unit is powered down. When you subsequently turn the unit back on, all of the stored settings automatically reactivate.

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Transitions Organized Differently

All transitions available with the MX-1 are also available with MXPro, but you can now select from more than 500 different effects. See Appendix A, *Transitions List*, for a complete description of what is now available.

MX-1 buttons such as Flips, Wipes, and Fade/Dissolve no longer exist. Instead, MXPro categorizes transitions into these five groups.

Pressing any Transition Category button display the menu of transitions available in that category.

The **ARROW** keys move you only within the current category. To get to a different one, press a different Transition Category button (see page 52).

Take Bar Operations

MXPro's Take Bar provides added control over transitions by running it in the direction indicated by the transition direction setting.

See "Operating the T-BAR" beginning on page 61. Chapter 5, *Transitions*, contains several sections explaining use of the Take Bar.

Transitions Compatibility

If you are upgrading to MXPro from the Videonics MX-1 Video Mixer, the transitions in the Basic category are the same as the MX-1.

MXPro provides a set of hot keys that directly correspond to the MX-1 Effect buttons. Using the hot keys (Table 6, *MX-1 Compatibility Hot Keys* on page 53) causes the MXPro Preview screen cursor to appear at the beginning of each section within the Basic (MX-1) category.

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Glossary

Some terms defined in this glossary might not appear in the body of the User Guide.

A/A Roll
A term originating in the film world. Normally describes rolling a single source into an effects device, such as the Videonics MXPro, and creating transitions between the individual scenes.

A/B Roll
Variation of A/A Roll (described above). Normally describes rolling two or more sources into an effects device, such as the Videonics MXPro, and creating transitions between the various source images.

AV/Net™
A micro controller-based adapter offered by Videonics that can be daisy chained. It allows you to control multiple video devices using only one of your computer's serial ports.

Betacam
An industry standard format that uses half-inch videotape running at high speed to produce high quality video. It is an evolving standard. There are currently three versions in common use: Betacam, Betacam SP, and Digital Betacam.

Camcorder
Combination camera and video recorder in one device. Normally contains video recording heads as well as a video playback unit (that is, a mini-VCR).

Composite Video
The format used by televisions, many VCR's, and laser disc players. Also see **S-Video**.

Counter
A relative indicator of tape position. On VCR's that do not support time code, the tape counter stores scene locations. Because it is a relative indicator of tape position, it is subject to drift. The same tape logged on one VCR and viewed on another might report different counter locations for the same scene.

Deck
A video cassette/tape player or recorder, also called a *VCR* or *VTR*.

Digital Still Camera
A recording device for taking photographs and storing the information in digital form. The device is similar to a 35mm reflex lens camera that uses traditional film except that it stores the image on a silicon chip. Images can then be *downloaded* to a computer system.

Drop Frame
A variation on the SMPTE time code format. It refers to a scheme designed to compensate for the fact that NTSC actually runs at 29.97 fps. Normal Time Code (or, Non-Drop Frame Time Code) is recorded and calculated based on 30 fps. Because the actual number of frames per second is really 29.97, a discrepancy occurs causing a loss of slightly more than three seconds each hour. Drop frame corrects for this error by skipping two frames every minute, except on the tenth minute.

FPS
Frames **P**er **S**econd. The number of picture frames that are recorded or played during a one second period. Television nominally uses 29.97 fps (NTSC) or 25 fps (PAL).

Flying Erase Heads
Standard erase heads are mounted along the tape path in a VCR. A flying erase head is built into the video head drum just ahead of the video heads. It makes it possible to erase the video each helical scan at a time resulting in clean video edits with no *rainbow* effect. It is a requirement for high quality video editing.

IR
Infra**R**ed is one of several remote control protocols. It is a one way protocol that allows a device to send command to the VCR. Because this is a one-way communication, the VCR cannot send tape location information back. VCR's that offer this limited method of control are suitable only as record decks.

LTC
Longitudinal **T**ime **C**ode is an SMPTE-defined standard for time code, normally recorded onto a linear audio track of a VCR.

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NTSC
National **T**elevision **S**tandards **C**ommittee. A body that defines television standards in the USA. NTSC is characterized by each frame being composed of 525 horizontal scanning lines per frame, occurring at 30 frames per second. The format is used in North America, Central America, Japan, and parts of South America. (Also see **PAL** and **SECAM**.)

NVRAM
Non-**V**olatile **R**andom **A**ccess **M**emory. MXPro uses NVRAM to store unit settings so that they are available whenever you power up the unit. Normal (that is, volatile) RAM cannot store information once the power supply is turned off.

OSD
On **S**creen **D**isplay. A feature available on some consumer-level VCR's. When OSD is toggled ON, the VCR displays its status information on the connected video monitor.

PAL
Phase **A**lternating **L**ines. The dominant color television format in Western Europe, Australia, most of Asia, and parts of South America and Africa. PAL is characterized by each frame being composed of 625 horizontal scanning lines occurring 25 times per second. (Also see **NTSC** and **SECAM**.)

RCTC
Rewriteable **C**onsumer **T**ime **C**ode (also referred to as *RC*). Commonly available on 8mm and Hi-8 format devices.

S-Video
A video standard used by camcorders and VCR's relative to video signal formats. S-Video separates the Y (luminance) and C (chroma) signals to improve signal quality. Also see **Composite Video**.

SECAM
The standard video signal used in France, Eastern Europe, and parts of Asia and Africa. Also see **NTSC** and **PAL**.

SMPTE
Society of **M**otion **P**icture and **T**elevision **E**ngineers. (Pronounced *simp-tee*.) This committee of engineers and manufacturers establishes the most widely accepted standard for time code. They created specifications for two version of time code: LTC and VITC.

Time Code
A method of putting a unique number or address on each frame of a videotape. There are several formats of time code. The Society of Motion Picture and Television Engineers set the most common time code standard, called SMPTE.

VCR
Video **C**assette **R**ecorder. A video device normally used to record and play back video on cassettes. VCR is a consumer-level term: VCR's in the professional field are normally referred to as VTR's (**V**ideo **T**ape **R**ecorders). VCR's and VTR's perform the same functions, although VTR's usually provide many additional features and functions.

Video Editing
The process of applying special effects to video sequences and assembling those sequences into a video program.

VITC
Vertical **I**nterval **T**ime **C**ode. (Pronounced *vit-see*.) An SMPTE-defined standard for time code, recorded into the video signal during the vertical blanking interval.

VTR
Video **T**ape **R**ecorder. Similar to VCR (see above) except that VTR's are normally used in the professional video field and contain enhanced features. VCR is normally used in conjunction with consumer-level electronics.

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